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ABSTRACT

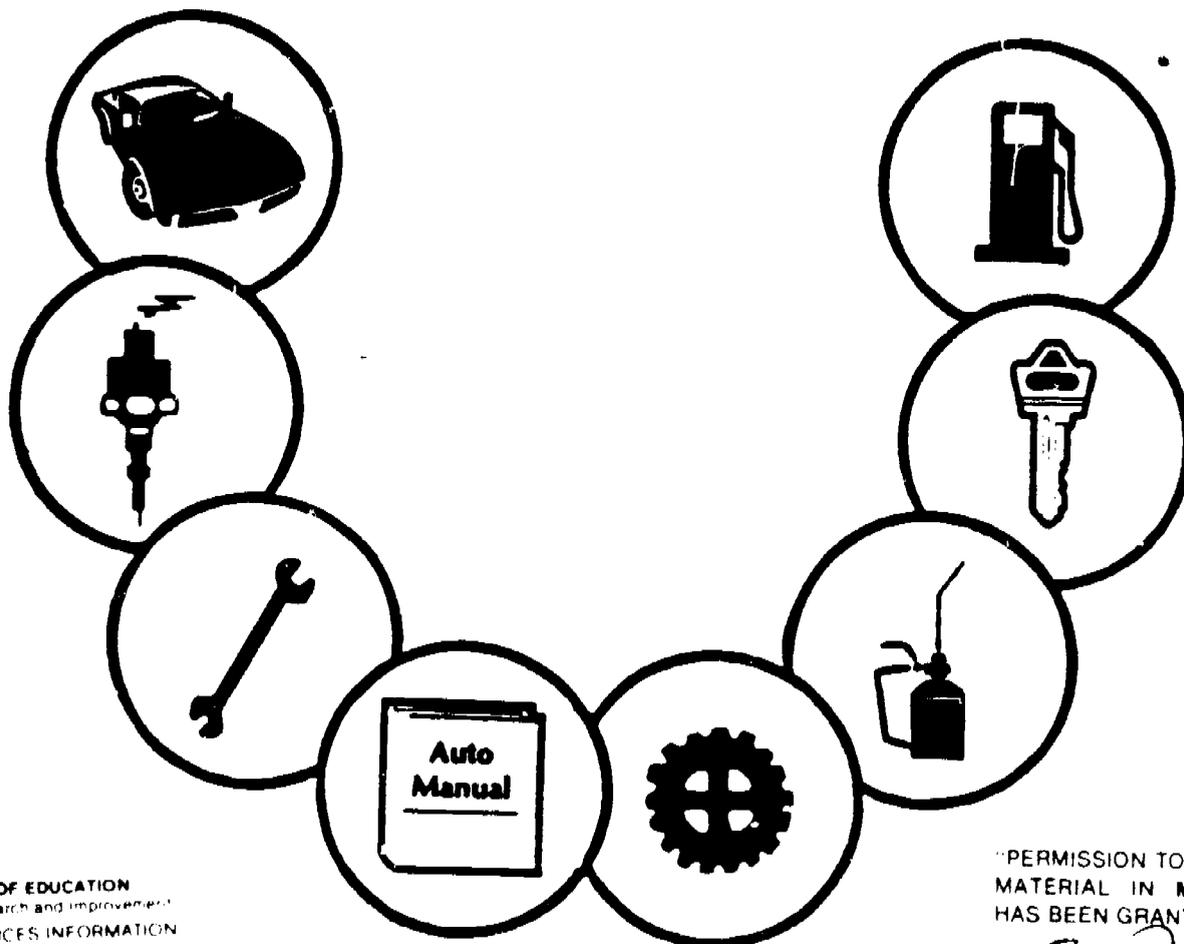
This packet contains an instructor's guide, student task sheets, and an illustrated vocabulary list for a program in automotive technology for handicapped students (special vocational education). The instructor's guide consists of a matrix of modules with vocabulary divided into 30 units of study for Auto Mechanics I and 17 units for Auto Mechanics II; suggestions for using student task sheets; a list of supplemental resources; and an index of all vocabulary words used in the program. Each of the student task sheets for levels I and II includes an introduction, performance objective, learning activities, additional activities, and a crossword. Units cover vocabulary for the 47 units of study of the auto mechanics I and II program. Included in the student task sheets are illustrated lists of all vocabulary words introduced in the units. (KC)

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Special Vocational Education

LIAISON PROGRAM FOR AUTOMOTIVE TECHNOLOGY

ED 329 736



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Kentucky Department of Education**

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CE 057 219

**Liaison Program
for
Handicapped Students**

**Joan Martin, Project Director
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**Developed by
Center for Career and Vocational Teacher Education
Western Kentucky University
Bowling Green, KY 42101**

**for
Kentucky Department of Education**

1990

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AUTO MECHANICS

Vocabulary

CONTENT

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4	<u>List of Vocabulary</u>	- Divided into 30 units of study for Auto Mechanics I and 17 units of study for Auto Mechanics II - Subdivided according to student task sheets - * Words related to unit but defined in earlier unit
17	<u>Suggestions for Student Task Sheets</u>	- Student learning style - Ideas for using activity sheets - About the materials
19	<u>Additional Resources</u>	- List of available supplemental material
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AUTO MECHANICS I

MATRIX

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AUTO MECHANICS II

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AUTO MECHANICS I

TECHNICAL TERMINOLOGY

AM-1 BATTERIES

p.5 accessories
alligator clips
ammeter
ampere
battery acid

p.7 charger
conductor
corrode
density
discharge

p.9 electrolyte
excessive
frayed
hydrometer
malfunction

p.11 ratio
refractometer
specification
sulfuric acid
terminal

p.13 vehicle
ventilated
visually inspect
voltage
voltmeter

AM-2 GENERATORS / ALTERNATORS

p.5 align
alternators
amperage
armature
components

p.7 diode
generator
ground terminal
ignition switch
inertia

p.9 jumper lead
load capacity

mallet
open circuit
polarized

p.11 radio condenser
reverse
spacer
tension
tension gauge

p.13 torque
torque wrench
vibration
vibration

AM-3 REPAIRING STARTERS

p.5 battery ground cable
brushes
commuter
disassemble
drive housing

p.7 end-frame
energized
field coil
gear teeth
growler

p.9 insulation
internal
laminations
over-running clutch
parallel

p.11 pinion
resistance
revolutions
rivet
retainer

p.13 RPM indicator
shaft
shift lever
snap ring
solenoid

AM-3 REPAIRING STARTERS

p.15 solvent
V-blocks
* ammeter
armature
specifications
voltmeter

AM-4 POINTS AND CONDENSERS

p.5 arcing
ballast resistor
breaker plate
breaker points
calibrate

p.7 cam
capacity
centrifugal
condenser
distributor

p.9 dwell
dwell meter
hex key
idle
ignition

p.11 ignition coil
micro
microfarads
ohmmeter
oscilloscope

p.13 pivot pin
points
primary wire
resistor
rotor

p.15 tachometer
tolerance
* align
alligator clips
condenser
lubricant
resistance
retainers
specifications

AM-5 SET IGNITION TIMING

p.5 abnormal
choke
depress
diaphragm
disconnect

p.7 dual diaphragm vacuum
advance unit
ignition timing
piston
portable
procedure

p.9 RPM
TDC
thermal
vacuum hose
vibration damper
* align
centrifugal
compression
distributor
excessive
specifications
tachometer
vehicle

AM-6 MAINTAINING SPARK PLUGS

p.5 aluminum
blast jet
brittle
carbon
compressed air

p.7 defective
deposit fouling
gap
install
oil fouling

p.9 ratchet
regapping
spark plug
threaded
turbulence
* components
solvent
torque

AM-7 PRIMARY IGNITION CIRCUITS

p.5 bypass circuit
original
primary circuit
secondary circuit
* ballast resistor
condenser
distributor
ignition
ignition coil
ignition switch
ignition system
malfunction
resistor
specification
visually inspect
voltmeter

exhaust
external
intake manifold
linkage

p.9 maximum
performance
pollutant
sensor
snorkel

p.11 temperature sensor
*diaphragm
foreign
internal
vacuum hoses
visually inspect

AM-8 MAINTAINING FUEL FILTER

p.5 bronze
carburetor
ceramic
filter
flare-nut wrench

p.7 foreign
fuel pump
jets
periodic
pleated

p.9 residue
sintered bronze
volume
* capacity
component
reverse
solvent
vehicle
ventilated

AM-10 FUEL LINES AND HOSES

p.5 burrs
compression
flare
flexible
neoprene
porous

p.3 precaution
ream
siphon
* battery ground cable
carburetor
defective
malfunction
vehicle
vibration

AM-9 CARBURETOR AIR CLEANER

p.5 accelerate
air cleaner
chamber
combustion
damper

p.7 emission

AM-11 FUEL PUMP

p.2 combination
contamination
crankcase
fire extinguisher
fuel pump
gasket

p.3 gravity
mechanic's stethoscope
rupture

AM-11 FUEL PUMP

serviceable

- p.9 vapor
* alignment
diaphragm
external
malfunction
specifications

AM-12 CARBURETOR

- p.3 carburetor float bowl
flare-nut wrench
throttle
* carburetor
defective
disconnect
gasket
install
linkage
malfunction
manifold
RPM
tachometer

AM-13 COOLING SYSTEM

- p.3 adapter
antifreeze
cooling system
cross flow
dissipate
- p.5 ethylene glycol
Fahrenheit
hydrometer
methanol
premature
- p.7 pressurized
radiator
reservoir
solution
thermometer
* component
specification
thermostat
vehicle

AM-14 HOSES/THERMOSTATS/CORE
PLUGS

- p.5 core plug
deterioration
thermostat
* bleed
brittle
coolant
defective
disconnect
excessive
gasket
malfunction
radiator
thermostat
vehicle

AM-15 COOLING SYSTEM
COMPONENTS

- p.5 ball bearing
bimetallic
fan clutch unit
operational
spiral
- p.7 variation
water pump
* brittle
chamber
clutch
cooling system
components
defective
deterioration
gasket
radiator
thermostat

AM-16 EXHAUST COMPONENTS

- p.5 assemblies
carbon monoxide
chassis
counterweight
exhaust manifold

AM-16 EXHAUST COMPONENTS

p.7 exhaust pipe
exhaust system
extractor
flange
inoperative

p.9 muffler
penetrate
pneumatic
sever
tail pipe

p.11 vacuum gauge
warped
* accelerate
combustion
components
deterioration
excessive
gaskets
internal
manifold
vehicle

AM-17 TESTING COMPRESSION

p.5. analyzing
cylinder
diagnosing
displacement
distributor cap

p.7 exhaust valve
gauge
intake valve
minimum
piston rings

p.9 pressure
* abnormal
carburetor
compression
cylinder
flexible
gasket
malfunction
precaution

AM-18 ENGINE LUBRICATION

p.5 bearing
bypass valve
dilution
oil pump
oil seals

p.7 plunger
rotary
* crankcase
diagnose
dipstick
excessive
external
gaskets
gauge
internal
lubrication
malfunction
vertical

AM-19 ENGINE OIL AND FILTER

p.5 dipstick
frequency
full flow oil filter
lubricant
lubricate

p.7 oil filter
oxidation
viscosity
* crankcase
gasket
lubricate
vehicle
viscosity

AM-20 CYLINDER HEAD

p.5 cylinder head
diagonal
feeler gauge
push rods
rocker arm

p.7 sequence

AM-20 CYLINDER HEAD

studs
torque specification
* aluminum
corrosion
exhaust manifold
gaskets
intake manifold
maximum
original
procedure
specification
torque
vacuum
ventilation

AM-21 UNIVERSAL JOINTS

p.5 audible
circumference
dial indicator
differential
drive shaft

p.7 exerted
mechanical vibrations
perpendicular
pinion angle gauge
propeller shaft

p.9 splines
transmission
universal joints
wheel hop
yoke
* accessory
align
distortion
flange
hoist
lubricated
malfunction
pinion
torque

AM-22 AUTOMATIC TRANSMISSIONS

p.5 automatic transmission
bell housing
detent
extension

fluid pressure

p.7 manual linkage
manual transmission
modulator
neutral
O-ring

p.9 quadrant
servo
selector shaft seal
* gasket
intake manifold
linkage
malfunction
precaution
TRS
vehicle

AM-23 BRAKE PERFORMANCE

p.5 abutments
anchor pin
backing plate
brake drum
brittleness

p.7 caliper
chafe
contaminant
disc brakes
equalize

p.9 hydraulic brake
lug nut
master cylinder
OSHA
piston dust boots

p.11 rotor
sediment
steering knuckle
tire pressure gauge
* feeler gauge
maximum
micrometer
minimum
reservoir
specification

AM-24 HYDRAULIC BRAKE SYSTEM

- p.3 bleeding
disconnect
flare
manually
power booster
- p.5 wheel cylinder
- * bleed
calipers
hydraulic brake
master cylinder
pressure
vehicle

AM-25 DRUM BRAKE COMPONENTS

- p.3 boss
brake lining
brake shoes
defective
drum brake
- p.5 primary brake shoe
secondary brake shoe
- * backing plates
component
cylinder
malfunctions
specification
vehicle

AM-26 MASTER AND WHEEL
CYLINDERS

- p.5 clevis
flare-nut wrench
master cylinder push rod
retaining clip
- * assemblies
bleed
component
contaminated
defective
disconnect
exterior
master cylinder
precaution
procedures
wheel cylinder

AM-27 DISC BRAKE COMPONENTS

- p.5 assemble
brake fade
cotter pin
crocus cloth
dust boot
- * abutments
component
depress
disc brake
distortion
external
feeler gauge
gasket
interior
internal
- * lubricate
malfunction
master cylinder
O-ring
piston
reservoir
retaining clips
rotor
steering knuckle
tolernace
torque
vehicle
vibration
vise

AM-28 SHOCK ABSORBERS

- p.5 bushing
C-clamp
drift pin punch
hex
mounts
- p.7 oscillation
shock absorber
sleeve
suspension
vertical
- * boss
chassis
cotter pin
maximum
original
suspension
vehicle

AM-29 MANUAL STEERING GEAR

p.3 cross shaft
shimmy
spline
worm gear
* alignment
bushing
chassis
excessive
flange
hoist
linkage
lubricate
malfunction
manual
vehicle

AM-30 POWER STEERING PUMPS

p.5 seepage
torque wrench
* adapter
component
crocus cloth
defective
disconnect
excessive
external
malfunction
maximum
O-ring
reservoir
torque specification
vehicle

AUTO MECHANICS II

AM-31 INSPECTING LIGHTING SYSTEM

p.5 concealed
eterior
malfunction
temporarily
visually inspect

p.7 lighting system
back-up lights
brake lights
clearance lights
courtesy lights

p.9 headlights
parking lights
tail lights
turn signal lights
license plate lights

p.11 control switch
vehicle

AM-32 SERVICING LIGHTING SYSTEM

p.5 head lamp lenses
bezels
headlight aimer
mechanical-type aimers
visibility

p.7 equalize
maximum
obstructing
protruding
specification

AM-33 COMPONENTS AND FLASHER UNITS

p.5 flasher
directional flasher
lights
emergency flasher lights
dimmer switch
ground circuit

p.7 component
defective
corrosion
chafe
inoperative

p.9 fuse box
ohmmeter
voltage regulator
short circuit
open circuit

AM-34 ASSEMBLY FUSE BOX

p.5 battery ground cable
battery post
consistently
disconnect
fuse retaining spring
clips

p.7 humidity
oxidize
reconnect
terminal
wiring harness
* corrode
fuse box
malfunction
ohmmeter
specifications
vehicle

AM-35 ANALYZE FUEL SYSTEM

p.5 air cleaner
air horn
carburetor
carburetor bowl cover
compressed air

p.7 contamination
emission
fire extinguisher
float baffle
fuel pump

AM-35 ANALYZE FUEL SYSTEM

p.9 fuel system
gauge wire
grommet
interior
link

p.11 metering rod
purge
rollover check valve
syphon
tachometer

p.13 throttle plate
vacuum hose
transducer
ventilation
venturi

p.15 volatile

AM-36 EXHAUST EMISSION CONTROLS

p.5 CO
CTO
ESC
ppm
RPM

p.7 TCS
TRS
hydrocarbons (HC)
emission control system
emissions analyzer

p.9 combustion
spark control system
deceleration valve
distributor vacuum
advance
manifold vacuum

p.11 solenoid valve
vacuum
vacuum gauge
energized
infra-red exhaust
analyzer

p.13 oxides of nitrogen (NOx)
tees

* malfunction
neutral
tachometer

AM-37 MANIFOLD HEAT CONTROLS

p.5 exhaust manifold
intake manifold
accelerate
detonation
snorkel

p.7 heat raiser valve
aerosol
bimetallic
counterweight
frozen

p.9 interval
periodic
shaft
solvent

* carburetor
vehicle

AM-38 COOLING SYSTEM

p.5 cooling system
coolant
antifreeze
radiator
radiator fins

p.7 thermostat
flush
flushing gun cone
pressure flushing
reverse flushing

p.9 operating
aluminum
engine inlet hose
excessive
external

p.11 stant tester
* maximum
temporarily
vehicle
visual inspection

AM-39 REMOVE ENGINE

- p.5 chafe marks
exhaust pipe
extension
hoist
hydraulic jack
- p.7 linkages
metal fatigue
motor mounts
neoprene
torque specifications
- p.9 vibration
 - * componenttransmission jack
vehicle

AM-40 CLEAN ENGINES

- p.5 caustic
distributor
fusible links
lacquer
low flash point
- p.7 lubricant
saturated
steam cleaner
swab
toxic
- p.9 vapor
 - * carburetorcontamination
excessive
exterior
interior
solvent
suspension
vehicle
ventilation
volatile

AM-41 DISASSEMBLE ENGINES

- p.5 accessory
alignment
air impact wrench
camshaft
cylinder heads

- p.7 disassemble
flywheel
harmonic balancer
horizontal
interchanged
- p.9 keepers
pistons
push rods
reverse
ridge reamer
- p.11 ring ridge
rocker arm
spring retainers
TDC
tappets
- p.13 timing gear
torque
valve spring compressor
vertical
 - * alternatorcarburetor
crank shaft
distributor
exhaust manifolds
fuel pump
intake manifold
internal
vibration

AM-42 TEST MANUAL
TRANSMISSIONS

- p.5 bell housing
clevis
clutch
manual transmission
shift rods
- p.7 transmission
transmission mounts
yoke
 - * acceleratedecelerate
disassemble
exterior
external
hoist
internal
lubricant
malfunction

AM-42 TEST MANUAL
TRANSMISSIONS

neutral
vehicle
visually inspect

AM-43 REPLACE MANUAL
TRANSMISSION

p.5 clutch disc
differential
drive shaft
extension
flywheel housing

p.7 housing
minimum
* hoist
lubricant
manual transmission
motor mounts
transmission jack
transmission mounts
vibration

AM-44 SPEEDOMETERS

p.5 speedometer cable
speedometer cable housing
speedometer drive pinion
transmission output shaft
pinion

p.7 cog wheel
adapter
ferrule
graphite grease
O-ring

p.9 erratic
flexible
ratio
* excessive
housing
interior
lubricant
transmission

AM-45 PARKING BRAKES

p.5 brake drum
parking brake lever
brake shoe
primary brake shoe
secondary brake shoe

p.7 brake bands
parking brake linkages
drive line parking brakes
engage
actuated

p.9 conduits
compress
disconnect
frayed
oxidized wire

p.11 retaining clip
strut
* defective
external
flexible
hoist
internal
linkages
lubricant
solvent
transmission output shaft
vehicle

AM-46 AIR CONDITIONING
CONTROLS

p.5 deflected
diverted
double action vacuum door
heater control valve
mode doors

p.7 partial
plenum
pneumatic
ports
posi-grip

p.9 refrigerant
temperature door
vacuum control device
valve
* humidity

AM-46 AIR CONDITIONING
CONTROLS

partial
throttle valve

AM-47 HEATER CORE AND HOSES

p.5 defroster hose
duct
fins
heater core
inlet tubes

p.7 outlet tubes
solder
vicinity
* defective
interior
malfunction
thermostat
vehicle

AUTO MECHANICS

Vocabulary

SUGGESTIONS FOR STUDENT TASK SHEETS

PURPOSE AND OBJECTIVES

To provide support tutorial reading material for Liaison teachers to use with Auto Mechanics students in state vocational-technical schools and in vocational area centers specifically to:

1. teach work-related terminology
2. allow flexibility of usage by the teacher/tutor
3. present a format that is highly visual with a readability level of 3-5 and minimal written instructions.

STUDENT LEARNING STYLE

- Visual - Student reads or views material
 - Student can work alone
- Oral - Student hears or says information
 - Student works with another person
- Kinesthetic - Student manipulates material
 - Student can work alone or with another person

Match the learning activity to the student's learning style.

IDEAS FOR USING ACTIVITY SHEETS

- Visual - Use the Study Sheets "as is."
 - Make study cards (flash cards) from the Study Sheets (see 'Kinesthetic' for instructions).
 - Make study cards (flash cards) in Units with cards provided.
- Oral - With all activities: read the instructions to the student, say the vocabulary word to the student, and read the definition to the student.
- Kinesthetic - Make study cards (flash cards) from the Study Sheets
 1. Make one or two copies of the Study Sheets, depending on the activity.
 2. For making flash cards, cut the rows on solid lines, cut the visual off, and fold the remaining part of row in half. Paste or tape together. Repeat for each row.

ACTIVITIES

1. Flash cards - self-study or with someone
2. Matching
 - match word cards with definition cards (arranged in two columns)
 - match word cards with visuals
 - mix and match
 - match word cards with combined strip of definitions and visuals

ABOUT THE MATERIALS

Task instructions are written to help the teacher work through the assignment with the student. The Task Assignment Sheets were not written on a 3-5 grade readability level.

Each vocabulary word is divided into syllables according to pronunciation, with the pronunciation emphasis underlined. Pronunciation symbols of phonic spelling could be confusing to some students and so they have not been included. (It is assumed that the teacher will be helping the student with pronunciation.)

AUTO MECHANICS

Vocabulary

ADDITIONAL RESOURCES

Vocational Preparation Curriculum: Auto Service
University of Missouri - Columbia
Instructional Materials Laboratory

Specifically developed for disadvantaged and/or handicapped students.

21 units. Purchase price: approximately \$16.00. Available for loan through the WKU Special Needs Library, 404 CEB.

English as a Second Language/Automotive Mechanic
Gateway Technical Institute

Developed for students with limited English skills, the material includes reading, writing, speaking/listning and interpersonal relations. Available for loan through the WKU Special Needs Library, 404 CEB.

Vocational Vocabulary Module: Auto Service
University of Missouri - Columbia

Five slide sets and five audio cassettes for learning the technical vocabulary. Includes support material. Purchase price: approximately \$80.00. Available for loan through the WKU Special Needs Library, 404 CEB.

Puzzles and Posters

MECC, 3490 Lexington Avenue North, St. Paul, MN 55111

Computer disk includes three programs: 1) Word Find (You type the list of words and the program prints it in a block of letters plus the answer key); 2) Crossword Puzzles (You type the list of clues and choose preferred format and the program prints the puzzle plus the answer key); 3) Blockletters (You type the word and the program prints it in large, banner size letters). Available for Apple, Radio Shack, IBM or Commodore. Printer needed. Purchase price: \$44.00.

Automobile Maintenance Reading and Language Activities
New Jersey Vocational Technical Curriculum Laboratory

Reading and language activities for special needs students. Activities include: the main idea, meaning from context, true/false, completion, vocabulary/spelling, word find, puzzles.

Available for loan through the WKU Special Needs Library, 404 CEB.

AM-IG-19

AUTO MECHANICS

abnormal 5-5
abutments 23-5
accelerate 9-5, 37-5
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actuated 45-7
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air horn 35-5
air impact wrench 41-5
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alignment 41-5
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amperage 2-5
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armature 2-5
assemble 27-5
assemblies 16-5
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automatic transmission 22-5
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backing plate 23-5
ball bearing 15-5
ballast resistor 4-5
battery acid 1-5
battery ground cable 3-5, 34-5
battery post 34-5
bearing 18-5
bell housing 22-5, 42-5
blast jet 6-5
bleeding hydraulic brakes 24-3
boss 25-3
brake bands 45-7
brake drum 23-5, 45-5
brake fade 27-5
brake lights 31-7
brake shoes 25-3, 45-5
breaker plate 4-5
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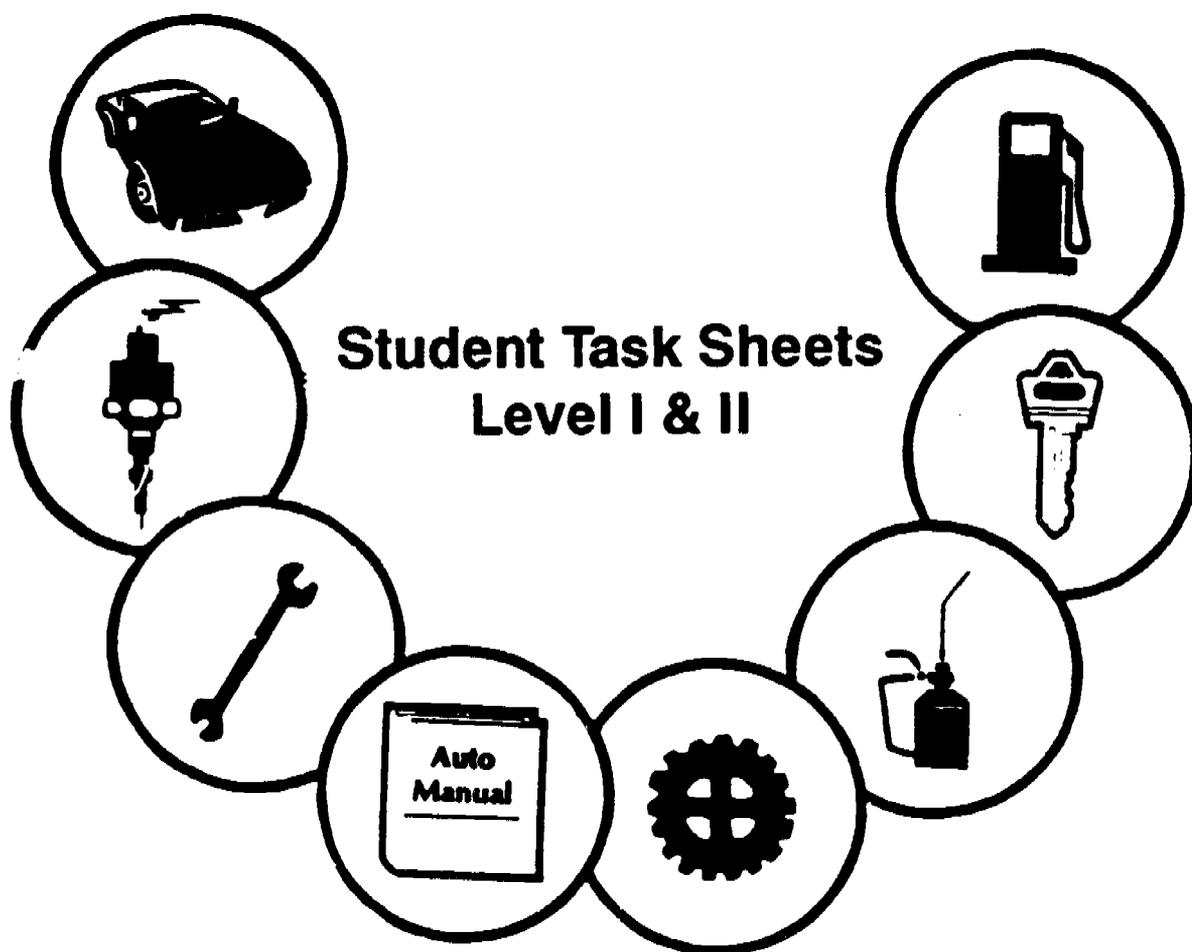
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CE

Special Vocational Education

LIAISON PROGRAM FOR AUTOMOTIVE TECHNOLOGY



Office of Secondary Vocational Education
Kentucky Department of Education

The Kentucky Department of Education provides
equal educational and employment opportunities

**Liaison Program
for
Handicapped Students**

**Joan Martin, Project Director
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**Developed by
Center for Career and Vocational Teacher Education
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**for
Kentucky Department of Education**

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LEARNING WORDS USED IN SERVICING AND REPLACING BATTERIES

INTRODUCTION

The storage battery is the primary source of electricity for starting the engine. It also acts as a back-up supply of electricity for running the engine and accessories. Larger batteries are required in vehicles with big engines or numerous electrical accessories. A properly maintained battery should be kept clean, charged, filled with electrolyte, and secure in the battery box. In this unit you will learn the technical vocabulary related to servicing batteries.

PERFORMANCE OBJECTIVE

You will match 25 words used in servicing and replacing batteries with their definitions. Your teacher will provide a list of words and definitions. You should match at least 20 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

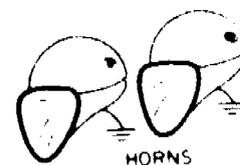
-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
 2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
 3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
 4. USE the Answer Key on the back as a self-check.
 5. STUDY the words that were a problem.
-

SERVICING AND REPLACING BATTERIES

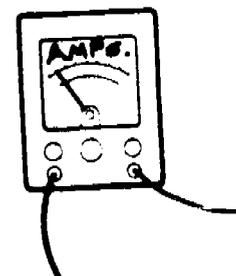
accessories something added on
(ac ces so ries)



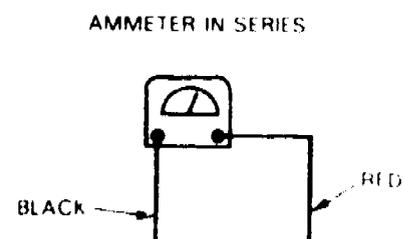
alligator a tool that has strong
(al li ga tor) jaws that are toothed
clips
(clips)



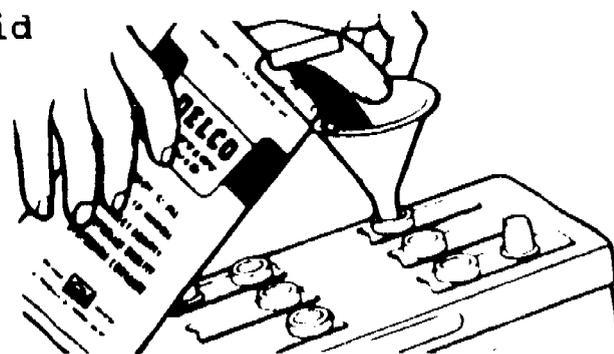
ammeter an instrument that measures
(am me ter) the flow of electricity



ampere a measure of how much
(am pere) electricity is flowing



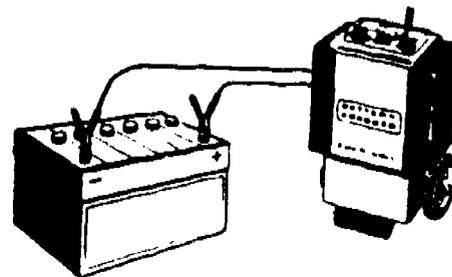
battery acid a mixture of sulfuric acid
(bat ter y ac id) and water in a battery



SERVICING AND REPLACING BATTERIES

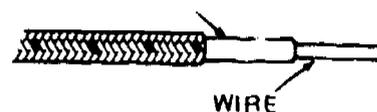
charger
(charg er)

a device used to pass
electricity through the
battery to give it energy
again



conductor
(con duc tor)

material that provides a path
for electric current to flow



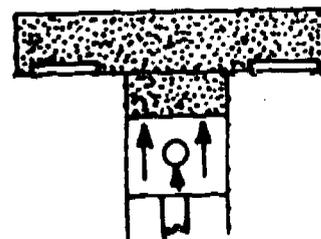
corrode
(cor rode)

removal of surface materials
by chemical action



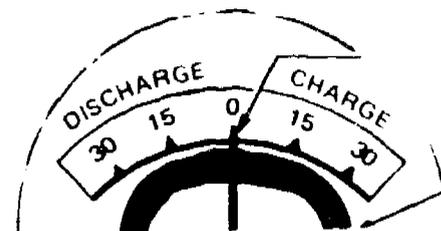
density
(den si ty)

how tightly packed material
is



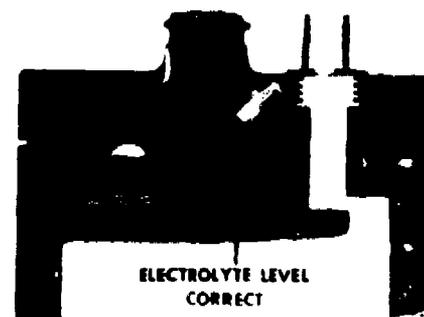
discharge
(dis charge)

the loss of electric current
from a battery



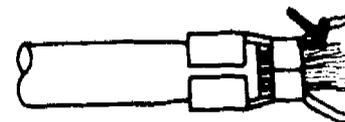
SERVICING AND REPLACING BATTERIES

electrolyte the 60% water and 40%
 (e lec tro lyte) sulfuric acid mixture in a
 battery



excessive more than enough
 (ex ces sive)

frayed worn away at the edge in a
 (frayed) ragged pattern



hydrometer a float device to determine
 (hy drom e tor) the state of charge in a
 battery



malfunction does not work correctly
 (mal func tion)

SERVICING AND REPLACING BATTERIES

ratio the number of times one
 (ra tio) thing is smaller or larger
 than another

refractometer a tool used to find how
 (re frac tom e ter) much charge a battery
 cell has



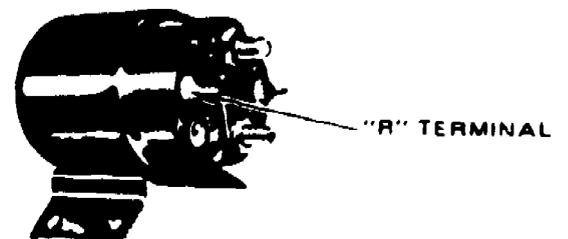
specification information of design
 (spec i fi ca tion) details, supplying size,
 quantity, performance, etc.



sulfuric acid an acid that is strong, oily,
 (sul fur ic ac id) and wears away material

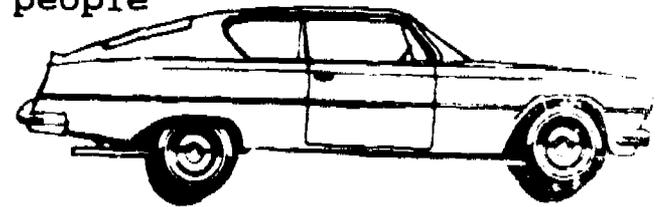


terminal the junction where wires
 (ter mi nal) attach to make electricity flow

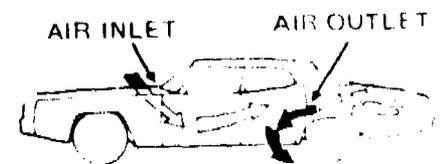


SERVICING AND REPLACING BATTERIES

vehicle
(ve hi cle) a device for carrying people
or objects



ventilated
(ven ti lated) allows air to move through
or around



visually
(vis ual ly) examine carefully while
inspect looking for wear or the
(in spect) cause of failure



voltage
(volt age) the force that makes
electricity flow in a
conductor

voltmeter
(volt me ter) an instrument used to
measure volts



BATTERIES

V I S U A L L Y I N S P E C T D U O L O X
 D I S T R I B U T O R C O N D U C T O R E
 L Z S U L F U R I C A C I D V O L T A G E
 B A T T E R Y A C I D C Y L I N D E R R N
 D I S P L A C E M E N T D E N S I T Y W C
 H K S P Z F R A Y E D A M P E R E P R Y T
 H Y D R O M E T E R V E H I C L E S D J Z
 W E X C E S S I V E D I P S T I C K H N S
 S P E C I F I C A T I O N C A R B O N Z I
 R E F R A C T O M E T E R A T I O Q P G Z
 F N W L K F V O L T M E T E R Z F W F L M
 C H A R G E R N A C C E S S O R I E S N M
 E L E C T R O L Y T E V E N T I L A T E D
 K C T H E R M O M E T E R C O R R O D E S
 W D I K S Y L U B R I C A N T H T A I O I
 D I S C H A R G E A M M E T E R L O Q Q Q
 C X S U N G Q W O L O K C S O X D N W T T
 H B F E C A L L I G A T O R C L I P S L S
 M A L F U N C T I O N S T E R M I N A L S

Can you find these words?

VISUALLY INSPECT
 SPECIFICATION
 DISPLACEMENT
 DISTRIBUTOR
 VENTILATED
 TERMINALS
 ACCESSORIES
 ELECTROLYTE

ALLIGATOR CLIPS
 REFRACTOMETER
 THERMOMETER
 BATTERY ACID
 HYDROMETER
 LUBRICANT
 AMPERE
 CONDUCTOR

FRAYED
 RATIO
 AMMETER
 DENSITY
 DIPSTICK
 DISCHARGE
 VOLTMETER
 EXCESSIVE

CHARGER
 CARBON
 SULFURIC ACID
 CORRODE
 VOLTAGE
 MALFUNCTIONS
 CYLINDER
 VEHICLES

ACROSS

BATTERIES

ANSWER KEY

V I S U A L L Y I N S P E C T
D I S T R I B U T O R C O N D U C T O R .
. . S U L F U R I C A C I D V O L T A G E
B A T T E R Y A C I D C Y L I N D E R . .
D I S P L A C E M E N T D E N S I T Y . .
. F R A Y E D A M P E R E
H Y D R O M E T E R V E H I C L E S
. E X C E S S I V E D I P S T I C K
S P E C I F I C A T I O N C A R B O N
R E F R A C T O M E T E R R A T I O
. V O L T M E T E R
C H A R G E R . A C C E S S O R I E S
E L E C T R O L Y T E V E N T I L A T E D
. . T H E R M O M E T E R C O R R O D E
. L U B R I C A N T
D I S C H A R G E A M M E T E R
.
. A L L I G A T O R C L I P S
M A L F U N C T I O N S T E R M I N A L S

BATTERIES

J S P E C I F I C A T I O N H C O B Y L X
 R G D W I N A C Y L I N D E R A Y D K U C
 B A T T E R Y A C I D K I N A R O D S B V
 E C V E N T I L A T E D S D D B C Z H R O
 D C R L U E K L N R K W P A Q O L E R I L
 L E T R V I S U A L L Y I N S P E C T
 N S K C Y M A G U R C H A R G E R Z F A M
 I S G T R I M A L F U N C T I O N S R N E
 T O S R O N M T F Z A D E N S I T Y A T T
 P R D O H A E O U V H A M P E R E I C R E
 S I T L D L T R R O T H E R M O M E T E R
 G E D Y I S E C I L P E N L R A T I O D I
 D S I T S G R L C T W Z T X E Q I F M N C
 S P P E C F I A A I O N N F R A Y E D O
 Z Y S H H C N P C G K D C O N D U C T O R
 F H T T A F N S I E E X C E S S I V E S R
 O G I S R C A P D I S T R I B U T O R L O
 M G C A G W H Y D R O M E T E R U W Y Q D
 C P K V E H I C L E S M P D D R W S Y C E

Can you find these words?

VISUALLY INSPECT
 SPECIFICATION
 DISPLACEMENT
 DISTRIBUTOR
 VENTILATED
 TERMINALS
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 VOLTAGE
 MALFUNCTIONS
 CYLINDER
 VEHICLES

ACROSS/DOWN

BATTERIES

ANSWER KEY

. S P E C I F I C A T I O N . C . . . L .
. C Y L I N D E R A . . . U .
B A T T E R Y A C I D . I . . R . . . B V
. C V E N T I L A T E D S . . B . . . R O
. C . L . E . L P . . O . . R I L
. E . E . R V I S U A L L Y I N S P E C T
. S . C . M A G U . C H A R G E R . F A M
. S . T . I M A L F U N C T I O N S R N E
. O . R . N M T F . . D E N S I T Y A T T
. R . O . A E O U V . A M P E R E . C . E
. I . L D L T R R O T H E R M O M E T E R
. E D Y I S E C I L . . N . R A T I O . .
. S I T S . R L C T . . T M . C
S P P E C . . I A A F R A Y E D O
. . S . H . . P C G . . C O N D U C T O R
. . T . A . . S I E E X C E S S I V E S R
. . I . R . . . D I S T R I B U T O R . O
. . C . G . H Y D R O M E T E R D
. . K V E H I C L E S E

BATTERIES

R V E H I C L E S O U M Y O U S Y V Z P M
 N E L E C T R O L Y T E P N F E P C O H A
 Y N F S C N V B A T T E R Y A C I D Q O L
 H T E R U Y V D K Q W O Q L M E N I R R F
 Q I P J A L L I G A T O R C L I P S E C U
 O L G C F C F I S P E C I F I C A T I O N
 C A R B O N T U N U C O R R O D E R D N C
 H T S K I K G O R D A U Z E G M Q I I D T
 D E N S I T Y M M I E L J A O L A B S U I
 E D I P S T I C K E C R L M M V C U P C O
 K U L U B R I C A N T A R Y P P C T L T N
 S G G D I S C H A R G E C A I I E O A O S
 C V A Z V D T M O G H L R I K N S R C R Q
 N G B V O L T M E T E R A T D O S U E U G
 Z I X P L X I R A T I O S V P D O P M K S
 A M M E T E R H Y D R O M E T E R W E D B
 A B C H A R G E R W D I D R B Q I G N C C
 X V H Z G V M R E X C E S S I V E U T E T
 F R A Y E D I T T E R M I N A L S B Y O X

Can you find these words?

VISUALLY INSPECT
 SPECIFICATION
 DISPLACEMENT
 DISTRIBUTOR
 VENTILATED
 TERMINALS
 ACCESSORIES
 ELECTROLYTE

ALLIGATOR CLIPS
 REFRACTOMETER
 THERMOMETER
 BATTERY ACID
 HYDROMETER
 LUBRICANT
 AMPERE
 CONDUCTOR

FRAYED
 RATIO
 AMMETER
 DENSITY
 DIPSTICK
 DISCHARGE
 VOLTMETER
 EXCESSIVE

CHARGER
 CARBON
 SULFURIC ACID
 CORRODE
 VOLTAGE
 MALFUNCTIONS
 CYLINDER
 VEHICLES

ACROSS/DOWN/DIAGONAL

BATTERIES III

ANSWER KEY

R V E H I C L E S M
. E L E C T R O L Y T E A
. N F S C . . B A T T E R Y A C I D . . L
. T . R U Y V I . R F
. I . . A L L I G A T O R C L I P S E C U
. L . . . C P I S P E C I F I C A T I O N
C A R B O N T H N U C O R R O D E R D N C
. T O U D A M . I I D T
D E N S I T Y . M R E L . A O . A B S U I
. D I P S T I C K E I R L M M . C U P C O
. . L U B R I C A N T C R Y . P C T L T N
. . . D I S C H A R G E A . I . E O A O S
. . . . V H . R C . N S R C R .
. . . V O L T M E T E R A T I O S . E . .
. . . . L . . R A T I O S . . D O P M . .
A M M E T E R H Y D R O M E T E R . E . .
. . C H A R G E R I . N C .
. . . . G . . . E X C E S S I V E . T . T
F R A Y E D . T E R M I N A L S

BATTERIES I

XX	1	XX																	
XX		XX																	
XX		XX																	
XX		XX																	
XX		XX	XX	XX	2	XX	XX	XX											
XX	XX	XX	XX	3	XX		XX	XX	XX		XX	XX	XX						
XX	XX	XX	XX	4														XX	XX
XX	XX	XX	XX		XX		XX	XX	XX										
XX	XX	XX	XX		XX		XX	XX	XX										
XX	6												XX	XX	XX	XX		XX	XX
XX		XX	XX		XX														
XX		XX	XX		XX														
XX		XX	XX		XX														
XX		XX	XX		XX														
XX		XX	XX		XX														
XX		XX	XX		XX														
XX																			
XX																			

ACROSS

DOWN:

- 4. a tool that has strong jaws that are toothed (2 words)
- 6. something added on

- 1. machine used to pass electricity through the battery to give it energy again
- 2. a measure of how much electricity is flowing
- 3. a mixture of sulfuric acid and water in a battery (2 words)
- 6. a tool that measures the flow of electricity

BATTERIES I

ANSWER KEY

ACROSS

DOWN

- 4. ALLIGATORCLIPS
- 6. ACCESSORIES

- 1. CHARGER
- 2. AMPERE
- 3. BATTERYACID
- 6. AMMETER

C
H
A
R
G
E
M
E
M
E
R
E
M
Y
A
C
C
E
S
S
O
R
I
E
S
E
M
R
M
Y
E
A
T
C
E
I
R
D

B
A
L
L
I
G
A
T
O
R
C
L
I
P
S
T
T
A
C
C
E
S
S
O
R
I
E
S
M
R
M
Y
E
A
T
C
E
I
R
D

BATTERIES II

XX	1	XX																	
XX		XX																	
XX		XX																	
XX	3									XX	XX								
XX		XX																	
XX	4									XX		XX							
XX		XX	5									XX							
XX		XX		XX															
XX		XX		XX															
XX		XX		XX															
XX		XX		XX															
XX		XX																	
XX																			
XX																			

ACROSS:

DOWN:

- 3. more than enough
- 4. the flow of electricity from a battery
- 5. something that makes a path for a flow of electric current

- 1. the acid mixture in a battery cell
- 4. how packed tightly something is

BATTERIES II

ANSWER KEY

ACROSS: 3. EXCESSIVE
4. DISCHARGE
5. CONDUCTOR

DOWN: 1. ELECTROLYTE
4. DENSITY

E
L
E
E X C E S S I V E
T
D I S C H A R G E R
E C O N D U C T O R
N L
S Y
I T
T E
Y

BATTERIES III

XX	1	XX	2	XX	XX	XX	XX												
XX		XX		XX	XX	XX	XX												
XX		XX		XX	XX	XX	XX												
XX	3	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX						
XX		XX	XX	XX	XX	XX		XX		XX	XX	XX	XX						
XX	XX	XX	XX	XX	XX	4													XX
XX		XX		XX	XX	XX	XX												
XX		XX																	
XX	XX	XX	XX	XX	5											XX	XX	XX	XX
XX		XX																	
XX		XX																	
XX		XX																	
XX		XX																	
7									XX										
XX		XX																	
XX		XX																	
XX		XX																	
XX																			

ACROSS:

DOWN:

- 4. a tool used to find how much charge a battery cell has
- 5. not working
- 7. a tool to measure the gravity of liquids

- 1. the difference in numbers of the things that are almost alike
- 2. worn away at the edge
- 3. a certain part

BATTERIES III

ANSWER KEY

- | | | | | | |
|---------|----|---------------|-------|----|---------------|
| ACROSS: | 4. | REFRACTOMETER | DOWN: | 1. | RATIO |
| | 5. | MALFUNCTIONS | | 2. | FRAYED |
| | 7. | HYDROMETER | | 3. | SPECIFICATION |

R F
 A R
 S T A
 P I Y
 R E F R A C T O M E T E R
 C D
 I
 M A L F U N C T I O N S
 I
 C
 A
 H Y D R O M E T E R
 I
 O
 N

BATTERIES IV

XX																			
XX	2	XX																	
3										XX	X	XX	XX	XX	4	XX	XX	XX	
XX		XX	XX	XX	XX	XX	XX		XX	XX	XX								
XX		XX	XX	XX	XX	XX	XX		XX	XX	XX								
XX		XX	XX	XX	XX	XX	XX		XX	XX	XX								
XX		XX	XX	XX	XX	XX	XX		XX	XX	XX								
XX		XX	XX	XX	XX	XX	XX		XX	XX	XX								
XX	XX	XX	XX	6														XX	
XX		XX	XX	XX	XX	XX	XX		XX	XX	XX								
XX		XX	7								XX								
XX		XX	XX	XX	XX	XX		XX	XX										
XX		XX																	
XX		XX																	
XX	XX	8												XX	XX	XX	XX	XX	
XX		XX																	
XX		XX																	

ACROSS:

DOWN:

- 3. air can move through
- 6. to look closely (2 words)
- 7. something that carries people
- 8. an acid that is strong, oily, and wears away material (2 words)

- 2. the points where wires join to make electricity flow
- 4. a tool used to measure the difference in volts
- 7. the pressure of electricity that makes it flow

LEARNING WORDS USED IN REPLACING GENERATORS AND ALTERNATORS

INTRODUCTION

There are many different generators and alternators just as there are different automobile models and production-year designs. Each generator or alternator must be matched to its component regulator, or serious charging system damage may occur. The experienced mechanic must be able to identify charging system components, locate the proper service manuals, and make adjustments or replacements according to specifications. In this unit you will learn the technical vocabulary related to generators and alternators.

PERFORMANCE OBJECTIVES

You will match 24 words used in replacing generators and alternators with their definitions. Your teacher will provide a list of words and definitions. You should match at least 19 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the definitions in your own words. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another.
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been **studied**.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

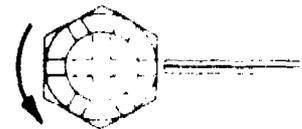
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

REPLACING GENERATORS AND ALTERNATORS

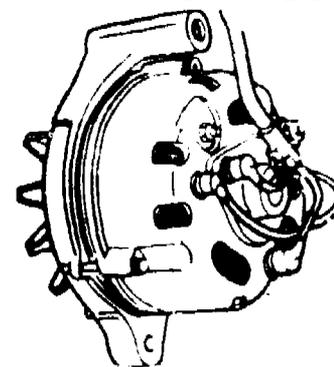
align
(a lign)

adjust to work as planned
by the factory



alternators
(al ter na tors)

devices that change mechanical
(me chan i cal) energy into
electrical energy (like charging
the battery)

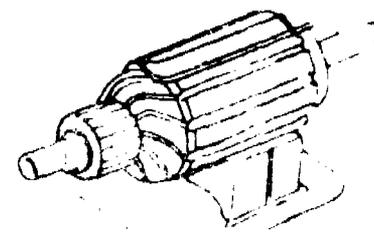


amperage
(am per age)

strength of flow of electricity

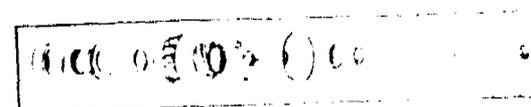
armature
(ar ma ture)

an iron core with wire wrapped
around it that picks up electricity
from a magnetic field



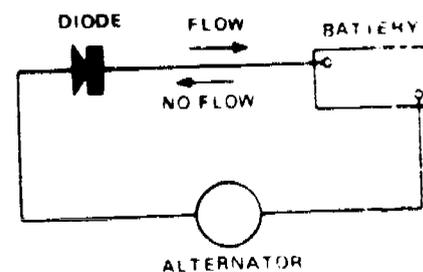
components
(com po nents)

simple parts of a system

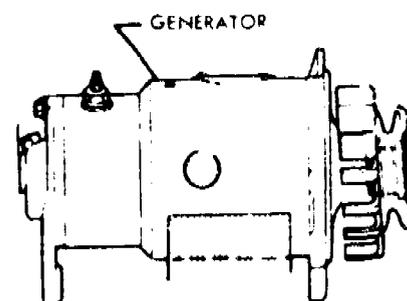


REPLACING GENERATORS AND ALTERNATORS

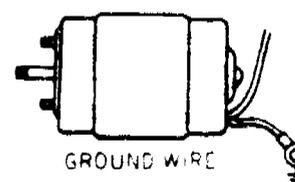
diode
(di ode) a solid-state electrical device that allows the passage of an electric current in one direction only



generator
(gen er a tor) an electromagnetic (e lec tro mag net ic) device that makes electricity



ground terminal
(ground ter mi nal) the end of an electrical cable that joins to the metal part of a vehicle



ignition switch
(ig ni tion switch) controls the flow of electricity to the ignition of an engine



inertia
(in er tia) the force that keeps moving things moving or things that are not moving from moving

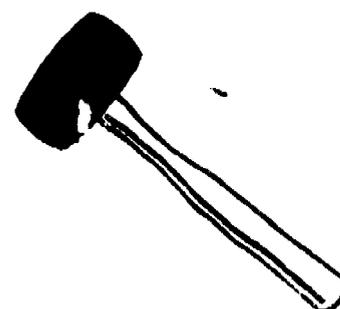
REPLACING GENERATORS AND ALTERNATORS

jumper lead
(jum per lead) a wire that is used to go around a switch to give current to a certain part

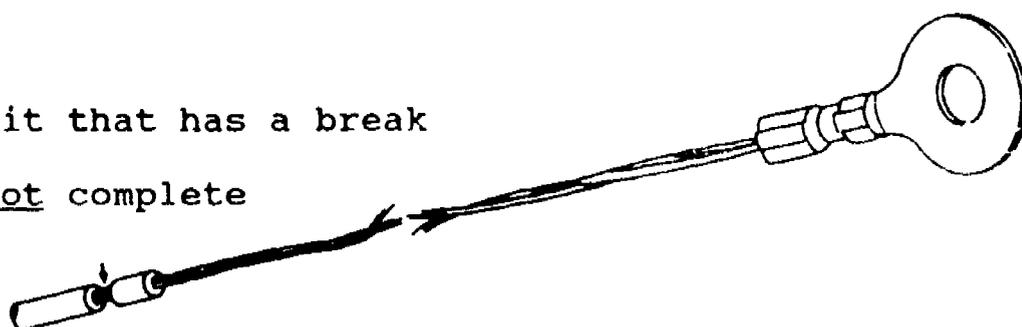


load capacity
(load ca pac i ty) how much electricity a unit will take safely

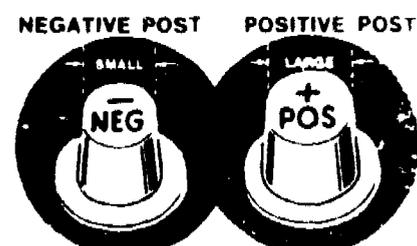
mallet
(mal let) a tool with a large soft head used to hammer without harming a surface



open circuit
(o pen cir cuit) a circuit that has a break or is not complete



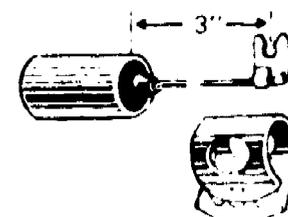
polarized
(po lar ized) to start the flow of electricity in the correct direction



REPLACING GENERATORS AND ALTERNATORS

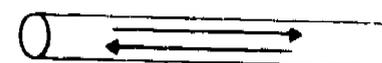
radio
 (ra di o)
 condenser
 (con dens er)

another name for a capacitor -
 stores electrical energy



reverse
 (re verse)

to turn around the other way,
 or to make something go in
 the opposite direction



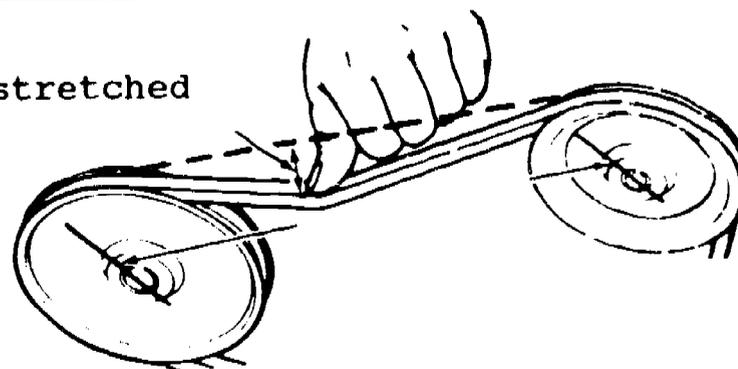
spacer
 (spac er)

a metal ring or sleeve that
 holds parts in position



tension
 (ten sion)

something pulled or stretched



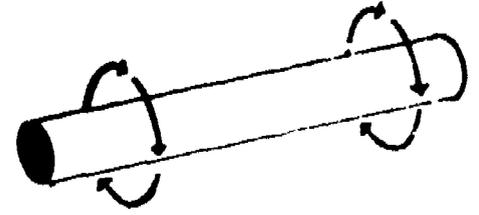
tension guage
 (ten sion guage)

a tool to measure the force of
 pulling or stretching

REPLACING GENERATORS AND ALTERNATORS

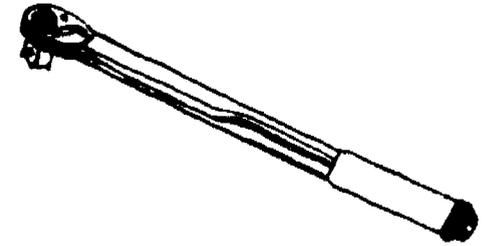
torque
(torque)

the turning or twisting force



torque wrench
(torque wrench)

a tool used to tighten a nut
or bolt according to certain
limits



vibration
(vi bra tion)

a rapid, undesirable back
and forth movement

vise
(vise)

a tool with two jaws to
hold something (vise)



GENERATORS & ALTERNATORS

R A D I O C O N D E N S E R B W P U Q O L
 O P E N C I R C U I T S A M P E R A G E M
 A L T E R N A T O R S J U M P E R L E A D
 R E V E R S E F R H B A T U L M K F Z H L
 C A C H X S A U F Z T C D Z N U O A C N B
 L C R X P C A M Y A H H V A V V B I G T E
 S P A C E R M M L G E N E R A T O R Q U E
 M A L L E T K O K P F O H Y A F G K M E A
 G R O U N D T E R M I N A L V I S E J W H
 V I B R A T I O N P O L A R I Z E D M T T
 K T D J I R T Z M E R I Y U Z Z E W P E K
 C D W N E V C Z H X E A J I S F G V Z O U
 L O A D C A P A C I T Y B F C R L F L J R
 T O R Q U E W R E N C H B U O C B Q M V N
 C O N D E N S E R J G Q R Y E M E Z H U F
 I G N I T I O N S W I T C H E O K T E F I
 C O M P O N E N T S I N E R T I A B L B W
 S P E C I F I C A T I O N D I O D E Q X R
 A A R M A T U R E A L I G N T E N S I O N

Can you find these words?

RADIO CONDENSER
 IGNITION SWITCH
 GROUND TERMINAL
 SPECIFICATION
 TORQUE WRENCH
 OPEN CIRCUITS
 LOAD CAPACITY
 ALTERNATORS
 JUMPER LEAD

COMPONENTS
 VIBRATION
 POLARIZED
 GENERATOR
 CONDENSER
 ARMATURE
 AMPERAGE
 TENSION
 REVERSE

INERTIA
 TORQUE
 SPACER
 MALLET
 DIODE
 ALIGN
 VISE

ACROSS

GENERATORS & ALTERNATORS

ANSWER KEY

R A D I O C O N D E N S E R
O P E N C I R C U I T S A M P E R A G E .
A L T E R N A T O R S J U M P E R L E A D
R E V E R S E
.
.
S P A C E R . . . G E N E R A T O R Q U E
M A L L E T
G R O U N D T E R M I N A L V I S E . . .
V I B R A T I O N P O L A R I Z E D . . .
.
.
L O A D C A P A C I T Y
T O R Q U E W R E N C H
C O N D E N S E R
I G N I T I O N S W I T C H
C O M P O N E N T S I N E R T I A
S P E C I F I C A T I O N D I O D E . . .
. A R M A T U R E A L I G N T E N S I O N

GENERATORS & ALTERNATORS

C A L T E R N A T O R S P Y K R R T O V T
 W G L H W L O A D C A P A C I T Y E F I T
 A X Z N Y N G J U M P E R L E A D N H B Y
 M A X N T L R A D I O C O N D E N S E R C
 P S G O T R O N I G V I S E G K V I G A K
 E A R M A T U R E N J F I J O J J O W T U
 R V A L I G N U O I O I E O O D C N E I G
 A Z L W R N D Y V T Y C X P H N E J Q O I
 G E N E R A T O R I O A G E C S T N I N Y
 E T O R Q U E F K O P T C N O C S T L J I
 U O R E V E R S E N H I K C M S P A C E R
 D D E D G I M M Z S R O K I P G O E V X E
 H I N E R T I A L W I N J R O B L G J W I
 B O V Q F T N L Q I N N E C N I A Z M O E
 W D F J P A A L K T O R Q U E W R E N C H
 A E Q R T P L E H C J V B I N X I R E Z Y
 W W I C Y Z Z T H H B W C T T J Z N I J U
 N H T R R A G O Q N L E Z S S D E H B R F
 X S Y K L M H P C D L Q F Q P I D G B H F

Can you find these words?

RADIO CONDENSER
 IGNITION SWITCH
 GROUND TERMINAL
 SPECIFICATION
 TORQUE WRENCH
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 AMPERAGE
 TENSION
 REVERSE

INERTIA
 TORQUE
 SPACER
 MALLET
 DIODE
 ALIGN
 VISE

ACROSS/DOWN

GENERATORS & ALTERNATORS

ANSWER KEY

. A L T E R N A T O R S T . V .
. L O A D C A P A C I T Y E . I .
A G J U M P E R L E A D N . B .
M R A D I O C O N D E N S E R .
P O . . G V I S E . . . I . A .
E A R M A T U R E N . F O . T .
R . A L I G N U . I . I . O . . . N . I .
A D . . T . C . P O .
G E N E R A T O R I . A . E C N .
E T O R Q U E . . O . T . N O
. . R E V E R S E N . I . C M S P A C E R
. D M M . S . O . I P G O
. I N E R T I A . W . N . R O . L
. O N L . I . . . C N . A
. D A L . T O R Q U E W R E N C H
. E L E . C . . . I N . I
. T . H . . . T T . Z
. S S . E
. D

GENERATORS & ALTERNATORS

W W P C N F D M A B G S P A C E R X X L D
 A B R N S X Z U C Q Q A W O A C A Y M A H
 V R T E N S I O N Y V U L Y L I L H E A F
 L O A D C A P A C I T Y X J W A I L I D J
 G C G M A L T E R N A T O R S C R T W U S
 E W O R A D I O C O N D E N S E R I I U N
 G F F M O L A G M I J V U A P E D N Z A V
 Y Z G X P U L M N W F J M N N G I T E I
 H E P E E O N E P I L I U I O I M T O V D
 S Z S L N W N D T E T J C I L I H Z R D J
 E C T G C E L E T P R I T A T H F O Q V E
 K X H K I Y R N N E S A O V T C C M U T I
 K E P H R B F A U T R R G N S I Z W E R E
 W X I N C O O Q T B S M E E S B O K W R K
 M K R L U Z R J I O D A I V Z W B N R U N
 C P P R I O G V Y T R T X N E C I B E F H
 W X V X T X A W L B Q U H S A R K T N S O
 F X C X S E O . S G Q R M T Q L S H C W W
 K Y G U E W C A O P Y E C G V I S E H H Z

Can you find these words?

RADIO CONDENSER
 IGNITION SWITCH
 GROUND TERMINAL
 SPECIFICATION
 TORQUE WRENCH
 OPEN CIRCUITS
 LOAD CAPACITY
 ALTERNATORS
 JUMPER LEAD

COMPONENTS
 VIBRATION
 POLARIZED
 GENERATOR
 CONDENSER
 ARMATURE
 AMPERAGE
 TENSION
 REVERSE

INERTIA
 TORQUE
 SPACER
 MALLET
 DIODE
 ALIGN
 VISE

ACROSS/DOWN/DIAGONAL

GENERATORS & ALTERNATORS

. S P A C E R . D
. O A .
. . 1 S I O N L . . . E A .
L O A L P A C I T Y . . . A . L I . .
. C G M A L T E R N A T O R S . R T . . .
. . O R A D I O C O N D E N S E R I . . .
. . . M O L A G . I P E D N Z . .
. . G . P U L M N . F . . M N N G I T E .
. . . E E O N E P I . I U I O I . . O . D
. . . . N . N D T E T J C I L . . . R D .
. . . . C E . E T . R I T A Q . E
. . . . I . R . N E . A O . T . . . U . .
. . . . R . . A U T R R G N . I . . E . .
. . . . C . . Q T B S M E E S . O . W . .
. . . . U . R . I O . A I V . W . N R . .
. . . . I O . V . . R T . N E . I . E . .
. . . . T U . . A R . T N . .
. . . . S R . . . L S . C . .
. E . . V I S E H H .

GENERATORS & ALTERNATORS I

ANSWER KEY

ACROSS:

- 1. ALIGN
- 5. COMPONENTS
- 8. DIODE

DOWN:

- 2. GENERATOR
- 3. ARMATURE
- 4. ALTERNATORS
- 6. AMPERAGE

A	L	I	G	N		A
		E				R
		N				M
		E				A
		R				T
		A			U	A
		T			R	L
	C	O	M	P	O	N
		E	N	T	S	
		R				A
						M
						P
						E
						R
						A
						A
						G
			D	I	O	D
				E		
						E
						S

GENERATORS & ALTERNATORS II

ANSWER KEY

ACROSS:

- 2. MALLET
- 4. GROUNDTERMINAL
- 6. INERTIA
- 8. JUMPERLEAD

DOWN:

- 1. REVERSE
- 3. LOADCAPACITY
- 5. IGNITIONSWITCH
- 7. POLARIZED

R

M A L L E T

L V

G R O U N D T E R M I N A L

A R G

D S I N E R T I A

C P E I

A O T

J U M P E R L E A D I

A A O

C R N

I I S

T Z W

Y E I

 D T

 C

 H

GENERATORS & ALTERNATORS III

XX	1	XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX	XX	XX	XX	XX	3												XX	XX	XX	XX
4						XX														
XX	XX	XX	XX	XX		XX	XX	XX	5									XX	XX	XX
XX	XX	XX	6				XX													
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX																				
XX																				
XX																				
XX																				

ACROSS:

DOWN:

- 3. a tool used to tighten a nut or bolt according to certain limits (2 words)
- 4. the turning or twisting force
- 5. moving back and forth
- 6. a tool with two jaws to hold something

- 1. a metal ring
- 3. something pulled or stretched

GENERATORS & ALTERNATORS III

ANSWER KEY

ACROSS:

- 3. TORQUEWRENCH
- 4. TORQUE
- 5. VIBRATION
- 6. VISE

DOWN:

- 1. SPACER
- 3. TENSION

S

P

A

C

E

T O R Q U E W R E N C H

T O R Q U E

N

V I B R A T I O N

V I S E

I

O

N

LEARNING WORDS USED IN REPAIRING STARTERS

INTRODUCTION

The auto mechanic must be prepared to perform full service on the starter motor. To give full service, the mechanic must not only replace starters, but he must also be capable of making the repairs normally performed in the field. In this unit you will learn the technical vocabulary related to repairing starters.

PERFORMANCE OBJECTIVES

You will match 27 words used in repairing starters with their definitions. Your teacher will provide a list of words and definitions. You should match at least 22 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

-
6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
-

-
4. USE the Answer Key on the back of the activity page when needed.

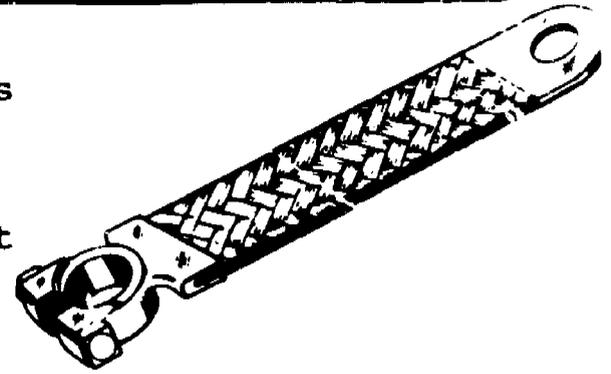
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

REPAIRING STARTERS

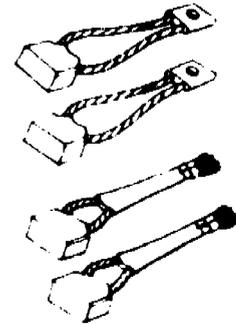
battery
(bat ter y)
ground cable
(groun ca ble)

the heavy wire that fastens
from the negative post on
the battery to a metal part
of the vehicle



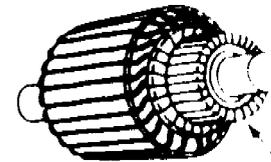
brushes
(brush es)

made of carbon or copper,
they contact the commutator
to carry current in a motor
or generator



commutator
(com mu ta tor)

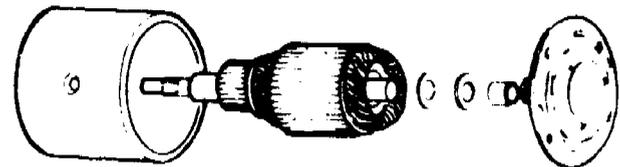
a part of the armature to
which the wires are fastened
and which the brushes contact



COMMUTATOR

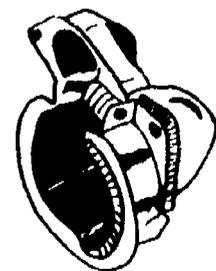
disassemble
(dis as sem ble)

to take apart



drive housing
(drive hous ing)

end of the starter motor
that is bolted to the engine



REPAIRING STARTERS

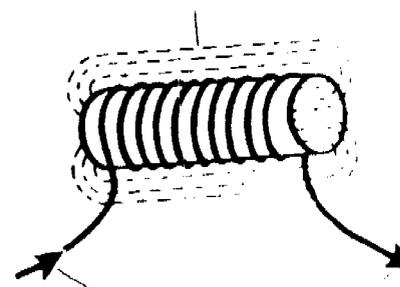
end-frame
(end frame)

end of the starter motor
that holds the bushing for
commutator, end of armature,
and sometimes brush holders



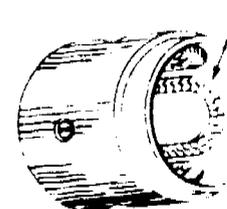
energized
(en er gized)

charged with energy



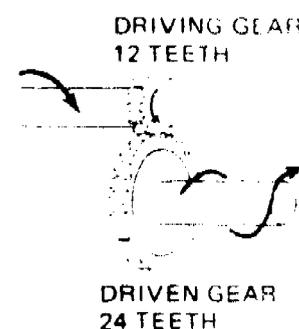
field coil
(field coil)

a wire that is insulated
and wraps around an iron or
steel pole and is fastened
to the starter body



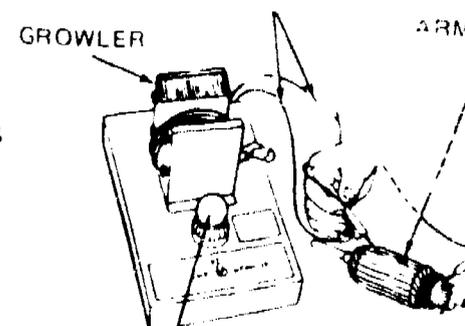
gear teeth
(gear teeth)

the teeth on a gear that
mesh with the spaces between
the teeth on another gear



growler
(growl er)

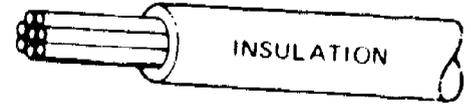
a tool used to test a starter
armature for electrical problems



REPAIRING STARTERS

insulation
(in su la tion)

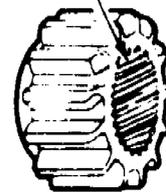
material that will not
conduct electricity or heat



internal
(in ter nal)

inside

INTERNAL
SPLINES



PINION

laminations
(lam i na tions)

many thin sheets
put together



over-running
(o ver-run ning)
clutch
(clutch)

a starter drive gear that
will disengage the starter
when the engine starts



parallel
(par al lel)

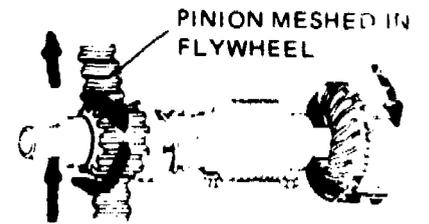
side by side facing the
same way



REPAIRING STARTERS

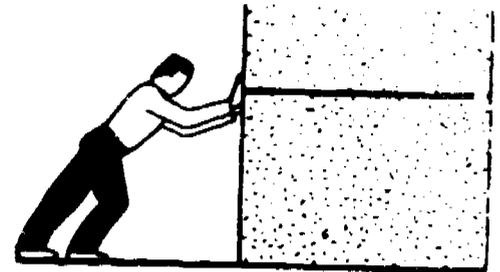
pinion
(pin ion)

a small gear whose teeth
mesh with a large gear.



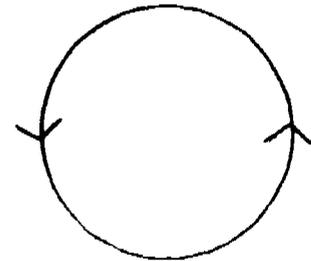
resistance
(re sis tance)

a force that stops or
slows down motion



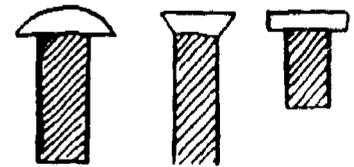
revolutions
(rev o lu tions)

turning through a
complete circle



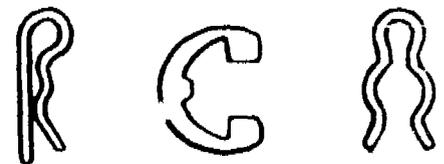
rivet
(riv et)

metal pin used to hold
things together



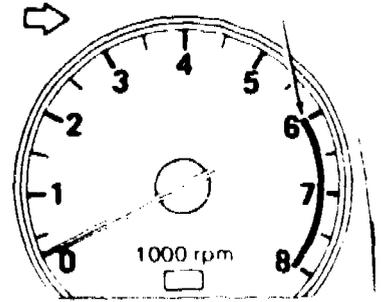
retainer
(re tain er)

something that holds an
object in place

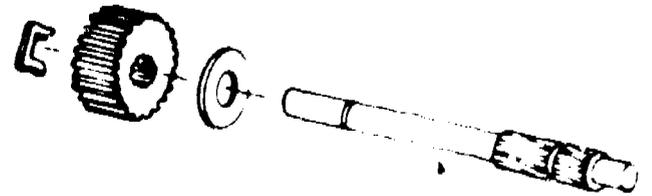


REPAIRING STARTERS

RPM indicator a device to show revolutions
(RPM in di ca tor) per minute (tachometer)



shaft a long round bar on
(shaft) which something turns



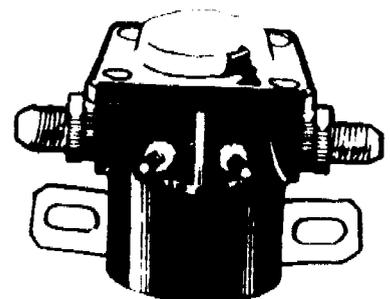
shift lever a device used to shift gears
(shift lever) into and out of mesh



snap ring a split ring that snaps on
(snap ring) to a shaft



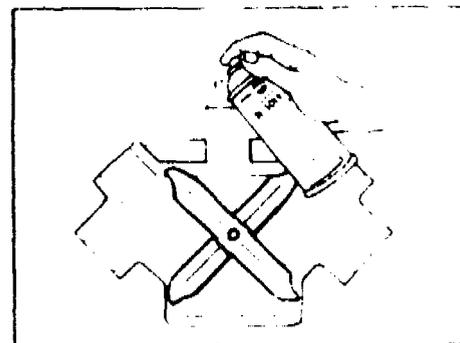
solenoid converts electrical energy
(so le noid) into mechanical energy



REPAIRING STARTERS

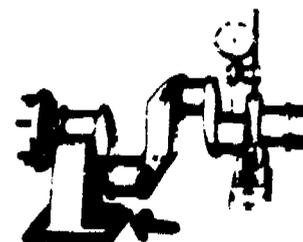
solvent
(sol vent)

a liquid that is used for
cleaning because it dissolves
grease and dirt



V-blocks
(V-blocks)

a fixture that holds round
objects so that they can be
cut or machined



STARTERS

L K O J U Y N V T E Q Z P M K L U H N R C
 F Y B P Q Z U M R C Q B K S L I O M D R M
 R P M I N D I C A T O R P A R A L L E L K
 D I S A S S E M B L E F I E L D C O I L P
 L A M I N A T I O N S O L E N O I D Y U M
 L B H Y N C R V U M I N Y V O R I V E T Q
 I N S U L A T I O N I N T E R N A L L P J
 S H I F T L E V E R E T A I N E R A Q W Z
 B R U S H E S G R O W L E R P Q D Z C X N
 S O L V E N T P I N I O N Z J K F D T Y N
 L A Q W S R T B S U M I K F O L P S X B F
 L J U E N E R G I Z E D G E A R T E E T H
 R E S I S T A N C E C O M M U T A T O R A
 S N A P R I N G L O M Y V X W Q Z H T Y B
 D R I V E H O U S I N G P B G X E J M Y N
 E N D F R A M E L G Y N E X W C R B G T N
 K J H G F V B N Y R E V S C M N L X Z D F
 L P O M I E W F V V B L O C K S L K J G F
 R E V O L U T I O N S O P I S H A F T K J

Can you find these words?

REVOLUTIONS
 SHIFT LEVER
 COMMUTATOR
 FIELD COIL
 RETAINER
 END FRAME
 SOLVENT
 PINION
 SHAFT

RPM INDICATOR
 LAMINATIONS
 RESISTANCE
 SOLENOID
 PARALLEL
 GROWLER
 INTERNAL
 RIVET

DRIVE HOUSING
 DISASSEMBLE
 INSULATION
 GEAR TEETH
 ENERGIZED
 SNAP RING
 V-BLOCKS
 BRUSHES

ACROSS

STARTERS

ANSWER KEY

.

 R P M I N D I C A T O R P A R A L L E L .
 D I S A S S E M B L E F I E L D C O I L .
 L A M I N A T I O N S O L E N O I D . . .
 R I V E T .
 I N S U L A T I O N I N T E R N A L . . .
 S H I F T L E V E R R E T A I N E R
 B R U S H E S G R O W L E R
 S O L V E N T P I N I O N

 . . . E N E R G I Z E D G E A R T E E T H
 R E S I S T A N C E C O M M U T A T O R A
 S N A P R I N G
 D R I V E H O U S I N G
 E N D F R A M E

 V B L O C K S
 R E V O L U T I O N S . . . S H A F T . .

STARTERS

R I T B V F W Q B K E X U V T J G T Q S N
 S X T U Q F V L W E C T E I S I E N W O B
 D J K S H I U S K C O J Z Q S H A F T L R
 A L G D L S L B T C I J S M I W R P W E U
 O P A R A L L E L D R E V O L U T I O N S
 X O G T M T C D N D P V L S P D E N W O H
 F F I D I S A S S E M B L E S S E I Y I E
 U J S V N N K D I H I L M D E H T O N D S
 C G R L A A C R R I N O S P H I H N K W E
 O G W I T P I I E L D C O I L F I N S P P
 M E Y O I R E V T O I K L N G T U G K Q B
 M N X G O I D E A I C S V S R L J O F K I
 U E J N N N M H I W A I E U O E P H K Q C
 T R W R S G S O N I T P N L W V I B T H X
 A G N M V X Q U E I O T T A L E W G A Z O
 T I U E U T S S R E R I N T E R N A L V D
 O Z J H P V K I P S R C U I R I V E T B E
 R E S I S T A N C E X I K O I K J S M O J
 O D L Y E C Q G J P R I E N D F R A M E F

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 V-BLOCKS
 BRUSHES

ACROSS/DOWN

STARTERS

ANSWER KEY

. G . . S .
. E . . O B
. S H A F T L R
. . . . L R P . E U
. P A R A L L E L . R E V O L U T I O N S
. . . . M P V E N . O H
. . . D I S A S S E M B L E . S E I . I E
. . . . N N . D . . I L . . . H T O . D S
C . . . A A . R R . N O S . . I H N . . .
O . . . T P . I E . D C O I L F
M E . . I R . V T . I K L N G T
M N . . O I . E A . C S V S R L
U E . . N N . H I . A . E U O E
T R . . S G . O N . T . N L W V I
A G U E . O . T A L E
T I S R . R I N T E R N A L . . .
O Z I . T . . . I R I V E T . . .
R E S I S T A N C E . . . O
. D G E N D F R A M E .

STARTERS

Z S O L E N O I D E X C E S S I V E D Q O
 S H A F T P N R M T M G S N W R I C G P L
 K I N S U L A T I O N N O D E W I N C B J
 D F P Y H A V G G I O I Q L E R I W N Y N
 Z T V B L O C K S I T Y W U E R G F C I H
 K L W C O M M U T A T O R C P I N I O N L
 M E A P V P O U N Q R G N A O K O E Z T U
 R V C M H H L I G G T A N J X T B L P E B
 P E E I E O M G K E T S I U X E O D V R D
 M R W V V A G Z R S A F E T H I C C E N O
 I F I E L O C P I Q O R P M I F I O N A E
 N R R I V E T S K Y U V T B Q G A I D L E
 D I S A S S E M B L E F E E R L B L F E M
 I Z O L K R E T A I N E R H E U D M R U W
 L E L T C N P E X E O L M I I T S M A P M
 A T R R E D Q N B P X Z A F C C H H M V H
 T L W K N B M K Q M N B P A R A L L E L U
 O K M A C Z W R J L N C R E F D N E O S M
 R J S B G R V T Q N R S O L V E N T I E W

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 INSULATION
 GEAR TEETH
 ENERGIZED
 SNAP RING
 V-BLOCKS
 BRUSHES

ACROSS/DOWN/DIAGONAL

STARTERS

ANSWER KEY

. S O L E N O I D E X C E S S I V E . . .
 S H A F T G S N . R . . G . .
 . I N S U L A T I O N N O . E
 . F I O I . L . R I
 . T V B L O C K S I T . W . E R G F . I .
 . L . C O M M U T A T O R C P I N I O N .
 . E O U N . R . N A . . . E Z T .
 R V . . . H L I G G . A N L . E .
 P E . . E O M . . E T S D . R D
 M R . V V A . . . S A C E N .
 I F I E L . . . I . . R O N A .
 N R R I V E T S . . U V T P . . . I D L .
 D I S A S S E M B L E B E E R . . L F . .
 I . . . R E T A I N E R H E U . . R . .
 C I I T S . A . .
 A C C H H M . .
 T P A R A L L E L .
 O N E . S .
 R S O L V E N T . . .

STARTERS I

XX																				
XX																				
XX	XX	XX	XX	XX	XX	2											XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX													
XX	3									XX										
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX	4								XX	XX	XX	XX	XX	XX	
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ACROSS:

DOWN:

- 2. to take apart
- 3. charged
- 4. unit that holds the bushing for commutator, end of armature, & brush holders (-)
- 6. a bar that lets current flow through

- 2. a unit that is bolted to the engine (2 words)
- 5. pieces of carbon or copper that rub the commutator to help start a motor



STARTERS I

ANSWER KEY

ACROSS:

DOWN:

- 2. DISASSEMBLE
- 3. ENERGIZED
- 4. ENDFRAME
- 6. COMMUTATOR

- 2. DRIVEHOUSING
- 5. BRUSHES

D I S A S S E M B L E

R

E N E R G I Z E D

V

E N D F R A M E

H

B

C O M M U T A T O R

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STARTERS II

XX																				
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ACROSS:

DOWN:

- 2. device to show revolutions per minute (2 words)
- 5. many thin sheets of something put together
- 7. something that stops the flow of electricity or heat

- 1. a metal pin used to hold things together
- 2. something turning all the way around
- 3. something that holds an object in place
- 4. side by side facing the same way
- 6. inside

STARTERS II

ANSWER KEY

ACROSS:

- 2. RPM INDICATOR
- 5. LAMINATIONS
- 7. INSULATION

DOWN:

- 1. RIVET
- 2. REVOLUTIONS
- 3. RETAINER
- 4. PARALLEL
- 6. INTERNAL

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                                     V
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                                     R P M I N D I C A T O R
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R                                     V
E                                     O           P
T                                     L A M I N A T I O N S
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STARTERS III

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ACROSS:

DOWN:

- 2. a magnetic switch that changes over-running clutch into being engaged
- 3. a split ring that snaps into a shaft or hole (2 words)
- 7. device that holds round things so that they can be worked on (-)

- 2. a device used to shift gears (2 words)
- 4. a long form like a tube
- 6. a liquid that loosens something and adds it to the liquid

STARTERS III

ANSWER KEY

ACROSS:

- 2. SOLENOID
- 3. SNAPRING
- 7. VBLOCKS

DOWN:

- 2. SHIFTLIVER
- 4. SHAFT
- 6. SOLVENT

S O L E N O I D

H

S N A P R I N G

F

S T

H L

A E S

F V B L O C K S

T E L

R V

E

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T

STARTERS IV

XX																				
XX																				
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XX																				

ACROSS:

- 3. a wire that is covered and wraps around an iron or steel center (2 words)
- 5. a small wheel with spokes that goes around inside a wheel with notches
- 6. a tool used to test a starter

DOWN:

- 1. something that stops or slows down motion
- 2. the teeth on a gear that join with the spaces between teeth on another gear (2 words)

STARTER III

ANSWER KEY

ACROSS:

- 3. FIELD COIL
- 5. PINION
- 6. GROWLER

DOWN:

- 1. RESISTANCE
- 2. GEAR TEETH

	R		G							
F	I	E	L	D	C	O	I	L		E
	S		A							
	I		R							
	S		T							
	T		E							
	A		E							
P	I	N	I	O	N		T			
	C		H							
G	R	O	W	L	E	R				

LEARNING WORDS USED IN INSPECTING AND REPLACING POINTS AND CONDENSERS

INTRODUCTION

For efficient ignition system operation, the current flow through the primary circuit of the ignition system must be interrupted (broken) instantly and cleanly with no current jumping or arcing across the point of contact when the connection is broken. The breaker points are used to connect and disconnect the flow of current in the primary circuit. The unit that prevents arcing of current when the points open is the condenser. In this unit you will learn the technical vocabulary related to points and condensers.

PERFORMANCE OBJECTIVE

You will match 27 words used in inspecting and replacing points and condensers with their definitions. Your teacher will provide a list of words and definitions. You should match at least 22 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

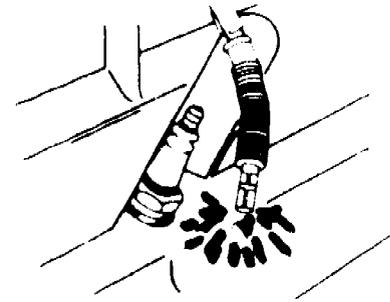
-
3. Find each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

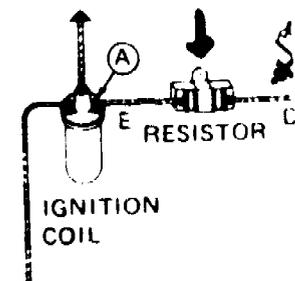
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

INSPECTING AND REPLACING POINTS AND CONDENSERS

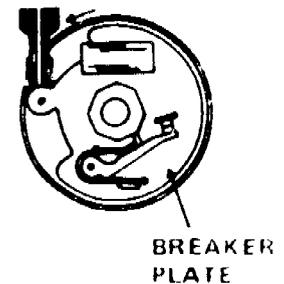
arcing
(arc ing) electricity jumping across
two closely spaced points



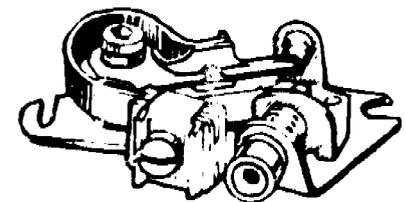
ballast
(bal last) resistor
(re sis tor) a unit placed in series in the
ignition (ig ni tion) primary
(pri ma ry) circuit to lower
battery voltage to the breaker
points



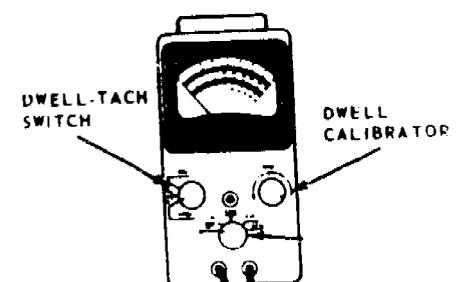
breaker plate
(break er plate) a plate inside the distributor
(dis trib u tor) where the
breaker points are mounted



breaker points
(break er points) a contact switch that opens
and closes as the distributor
shaft turns

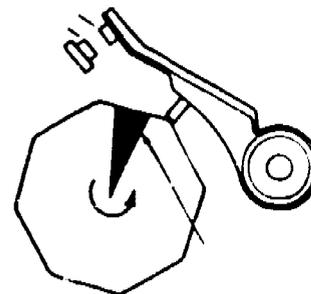


calibrate
(cal i brate) to check the setting of a
meter



INSPECTING AND REPLACING POINTS AND CONDENSERS

cam
(cam) a device used to open
the breaker points



capacity
(ca pac i ty) able to contain, absorb or hold

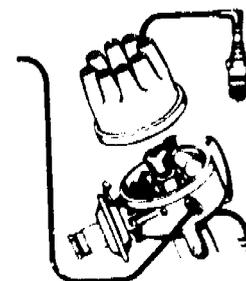
centrifugal
(cen trif u gal) a force that tries to pull a
rotating object away from its
circular path



condenser
(con dens er) a device that receives or
stores an electric charge



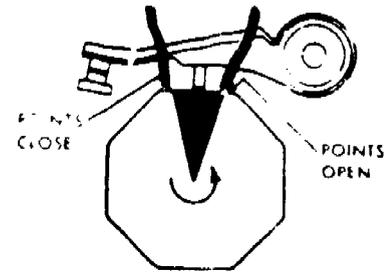
distributor
(dis trib u tor) a rotating switch that opens the
breaker points and directs high
voltage to engine spark plugs



INSPECTING AND REPLACING POINTS AND CONDENSERS

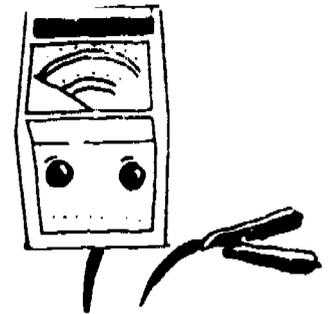
dwell
 (dwell)

the number of degrees of a circle that the distributor (dis trib u tor points are closed during the rotation of the distributor shaft



dwell meter
 (dwell me ter)

an instrument that measures degrees of dwell



hex key
 (hex key)

a tool that turns bolts or screws which have a six-sided recess

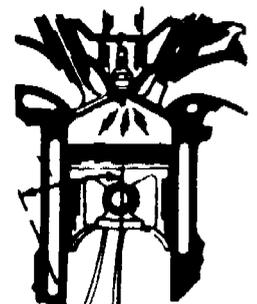


idle
 (i dle)

the engine running at a slow speed with throttle (throt tle) closed

ignition
 (ig ni tion)

lighting fuel with a spark for gas engine or with heat of compressor (com pres sion) for diesel

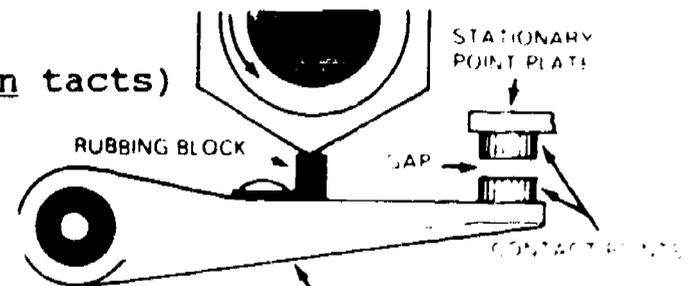


INSPECTING AND REPLACING POINTS AND CONDENSERS

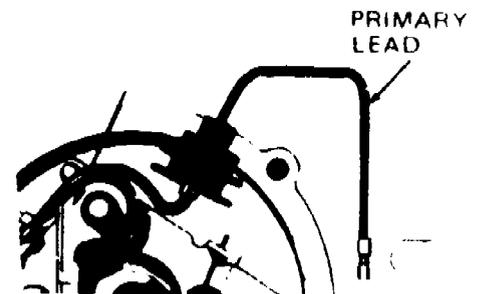
pivot pin a pin on the shaft that allows
(piv ot pin) parts to move



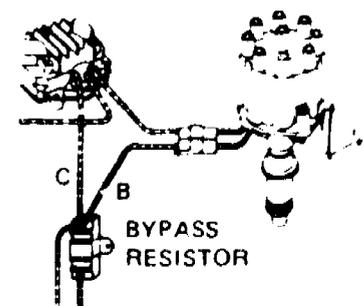
points electric contacts (con tacts)
(points)



primary wire wiring used for sending low
(pri ma ry wire) voltage to points



resistor a device put in a circuit to
(re sis tor) lower voltage

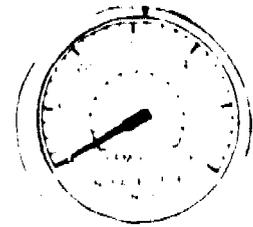


rotor the part of a mechanism
(ro tor) that turns

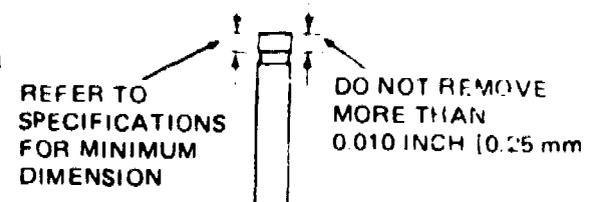


INSPECTING AND REPLACING POINTS AND CONDENSERS

tachometer an instrument to show the
 (ta chom e ter) speed of the engine in rpm
 (revolutions per minute)



tolerance the amount a measurement may
 (tol er ance) be different from the design
 specifications and still be
 correct to use



POINTS & CONDENSERS

B A L L A S T R E S I S T O R M F X X N I
 I G N I T I O N C O I L R E S I S T O R S
 D W E L L M E T E R M I C R O X S P R J U
 H B Y Z M V C K N P N O R F V H J J X N O
 I G N I T I O N V P X U W U O N Z I M I J
 A C R W J T H M W R I H Q I O M T Z G C A
 V S B T K D Q P V H Z N U T Y F N L T K T
 S J O W D I S T R I B U T O R P O I N T S
 C A P A C I T Y S T A C H O M E T E R O D
 C A L I B R A T E O C I E P B U A H S I Z
 P R I M A R Y W I R E O H M M E T E R N S
 C A M Y C E N T R I F U G A L H E X K E Y
 R O T O R G B R E A K E R P O I N T S R A
 O S C I L L O S C O P E T O L E R A N C E
 P I V O T P I N I D L E X L T F L Z P M C
 Z P V H J Z L M S M G B S W F K B T B U O
 K R Z A J C W J X U F L Q Y W D W E L L O
 F L M I C R O F A R A D S L E I D J L Z Q
 B R E A K E R P L A T E A R C I N G X O A

Can you find these words?

BALLAST RESISTOR
 OSCILLOSCOPE
 PRIMARY WIRE
 CENTRIFUGAL
 TOLERANCE
 PIVOT PIN
 CAPACITY
 ARCING
 DWELL

BREAKER POINTS
 IGNITION COIL
 MICROFARADS
 TACHOMETER
 CALIBRATE
 OHMMETER
 POINTS
 ROTOR
 IDLE

BREAKER PLATE
 DISTRIBUTOR
 DWELL METER
 RESISTOR
 IGNITION
 HEX KEY
 MICRO
 CAM

ACROSS

POINTS & CONDENSERS

ANSWER KEY

BALLAST RESISTOR
IGNITION COIL RESISTOR .
DWELL METER MICRO
.
IGNITION
.
.
. DISTRIBUTOR POINTS
CAPACITY . TACHOMETER . .
CALIBRATE
PRIMARY WIRE OHMMETER . .
CAM . CENTRIFUGAL HEX KEY
ROTOR . BREAKER POINTS . .
OSCILLOSCOPE TOLERANCE
PIVOT PIN IDLE
.
. DWELL .
. . MICROFARADS
BREAKER PLATE ARcing . . .

POINTS & CONDENSERS

M O W L G T E I C N I T I O N C O I L U O
 C P R I M A R Y W I R E K K D D R O K K H
 E I O G M C Q F Y H I P B B W I M Y V A U
 G V T N B H B A L L A S T R E S I S T O R
 G O O I R O R L Z P L P U T L T C W U H Q
 F T R T E M E N R U B Q F B L R R C K M F
 P P P I A E A E E I B U P E M I O C F M Y
 P I V O K T K M T T X Q A F E B F U L E N
 T N C N E E E S O D I X C Q T U A T H T A
 I R A N R R R A M H R C C E E T R T K E W
 T E R B P K P Y I W E Y T U R O A D C R T
 O S C I L L O S C O P E C E U R D D I V P
 L I I C A L I B R A T E A N N O S S X E T
 E S N W T Y N L O E Z U P B Q F L P S W G
 R T G C E N T R I F U G A L V T K E M X U
 A O P U C U S L I D V V C D Z N H J N X M
 N R S P C T Q D D S E A I L H W H R U H U
 C A M Q T Z E L L J D K T V P N W A A D Z
 E S G W I E C H E X K E Y O Z X Q J D H Y

Can you find these words?

BALLAST RESISTOR
 OSCILLOSCOPE
 PRIMARY WIRE
 CENTRIFUGAL
 TOLERANCE
 PIVOT PIN
 CAPACITY
 ARCING
 DWELL

BREAKER POINTS
 IGNITION COIL
 MICROFARADS
 TACHOMETER
 CALIBRATE
 OHMMETER
 POINTS
 ROTOR
 IDLE

BREAKER PLATE
 DISTRIBUTOR
 DWELL METER
 RESISTOR
 IGNITION
 HEX KEY
 MICRO
 CAM

ACROSS/DOWN

POINTS & CONDENSERS

ANSWER KEY

. T . I G N I T I O N C O I L . .
 . P R I M A R Y W I R E . . D D
 . I O G . C W I M
 . V I N B H B A L L A S T R E S I S T O R
 . O O I R O R L T C . . H .
 . T P T E M E L R R . . M .
 . P . I A E A M I O . . M .
 . I . O K T K E B F . . E .
 . N . N E E E T U A . . T .
 . R A . R R R . M E T R . . E .
 T E R . P . P . I R O A . . R .
 O S C I L L O S C O P E C . . R D
 L I I C A L I B R A T E A . . . S
 E S N . T . N . O . . . P
 R T G C E N T R I F U G A L
 A O S . I . . . C
 N R D . . . I
 C A M L . . . T
 E H E X K E Y

POINTS & CONDENSERS

I R K L G Y B O Y M S D R J B T T I R W W
 G C A L I B R A T E H H M P I Z Q U M G V
 N M A M I C R O F A R A D S Y T O P U I R
 I O O O B S U E B R E A K E R P O I N T S
 T C B S O B B P A O B E K J G G V V O R K
 I A R C I N G W L K Q X U Z H I E O E Z Q
 O P Z I D W E L L M E T E R R R J T B N D
 N B Y L J H B O A H N R M H I N E P O J V
 C J U L R E S I S T O R P W B M X I I M M
 O Y J O E R U B T X E M Y L O L T N X C K
 I V T S S O N L R T B N E H A I B F C S M
 L C Q C A T O L E R A N C E N T W P O F F
 A F A O R F M M S M Y A K G X P E M N L M
 A H S P U Q M D I S T R I B U T O R D A E
 N D O E A H B R S B C H O A R F M I C R O
 E N Y A O C P M T I S J L T L M B G N K S
 D T V I Z L I L O V J K L N O W B Z X T M
 M L O V C E N T R I F U G A L R C Y D O S
 S F Y H B M M Q Y J N I S C P G O P V V O

Can you find these words?

BALLAST RESISTOR
 OSCILLOSCOPE
 PRIMARY WIRE
 CENTRIFUGAL
 TOLERANCE
 PIVOT PIN
 CAPACITY
 ARCING
 DWELL

BREAKER POINTS
 IGNITION COIL
 MICROFARADS
 TACHOMETER
 CALIBRATE
 OHMMETER
 POINTS
 ROTOR
 IDLE

BREAKER PLATE
 DISTRIBUTOR
 DWELL METER
 RESISTOR
 IGNITION
 HEX KEY
 MICRO
 CAM

ACROSS/DOWN/DIAGONAL.

POINTS & CONDENSERS

ANSWER KEY

I

G C A L I B R A T E

N . . M I C R O F A R A D S Y . . P . . .

I . . O . . . E B R E A K E R P O I N T S

T . . S A K V . R .

I A R C I N G . L K . X E O E . .

O . . I D W E L L M E T E R . R . T . N .

N . . L A H . R E P O . .

C . . L R E S I S T O R P W . M . I . . .

O . . O T . E . Y L O . T N . . .

I . . S R T . R . H A I

L C . C . T O L E R A N C E N T E

. A O M S M . A . G . P E . . L M

. P . . M D I S T R I B U T O R D A .

. E A H . R S O . . . M I C R O

. O C P . T T N . .

. I . O O T .

. C E N T R I F U G A L R S

. Y

POINTS & CONDENSERS I

XX																				
XX	1	XX	XX	XX	XX	XX	XX	2	XX	XX	XX	XX	XX	XX						
XX	XX	XX	XX	XX	3											XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX		XX	4	XX	XX	5	XX		XX	XX	XX	XX	XX	
XX	XX	XX	XX	6									XX		XX	XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX		XX		XX	XX		XX		XX	XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX		XX		XX	XX		XX		XX	XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX		XX		XX	XX		XX		XX	XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX		XX		XX	XX		XX		XX	XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX		XX		XX	XX		XX		XX	XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX		XX		XX	XX		XX		XX	XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														

ACROSS:

DOWN:

- 3. a plate inside the distributor (2 words)
- 6. to check the setting of a tool

- 1. moving out while turning around
- 2. how much something holds
- 3. unit joined into ignition primary circuit to lower battery voltage to coil (2 words)
- 4. sparks jumping across a point of touching
- 5. a tool that turns six-sided things (2 words)

POINTS & CONDENSERS I

ANSWER KEY

ACROSS:

- 3. BREAKER PLATE
- 6. CALIBRATE

DOWN:

- 1. CENTRIFUGAL
- 2. CAPACITY
- 3. BALLAST RESISTOR
- 4. ARCING
- 5. HEX KEY

	C			C
	B	R	E	A
	K	E	R	P
	L	A	T	E
	A	N		P
	L	T		A
	L	R	A	H
	C			C
C	A	L	I	B
	R	A	T	E
	S	F	C	X
	T	U	I	K
	R	G	N	E
	E	A	G	Y
	S	L		
	I			
	S			
	T			
	O			
	R			

POINTS & CONDENSERS II

XX																				
XX																				
XX	XX	XX	XX	1			2			3						XX	XX	XX	XX	XX
XX	XX	XX	XX		XX	XX		XX	XX		XX									
XX	XX	XX	XX		XX	XX		XX	XX		XX									
XX	XX	XX	XX		XX	XX		XX	4			5					XX	XX	XX	XX
XX	XX	XX	XX		XX	XX	XX	XX	XX		XX		XX							
XX	XX	XX	XX		XX	XX	XX	XX	XX		XX		XX							
XX	XX	XX	XX		XX	6					XX		XX							
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XX		XX		XX																
XX		XX		XX																
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XX		XX		XX																
XX		XX		XX																
XX		XX		XX																
XX		XX		XX																
XX		XX		XX																

ACROSS:

1. a unit used to step up battery voltage to fire spark plugs (2 words)
4. a pin on the shaft that allows parts to move (2 words)
6. a small amount

DOWN:

1. lighting fuel with a spark for gas engine or with heat of compression for diesel
2. the engine running at a slow speed with throttle closed
3. a high speed voltmeter that shows the result on a screen like a TV
5. a tool to measure the resistance in a unit

POINTS & CONDENSERS

ANSWER KEY

ACROSS:

1. IGNITION COIL
4. PIVOT PIN
6. MICRO

DOWN:

1. IGNITION
2. IDLE
3. OSCILLOSCOPE
5. OHMMETER

I G N I T I O N C O I L
 G D S
 N L C
 I E P I V O T P I N
 T L H
 I L M
 O M I C R O M
 N S E
 C T
 O E
 P R
 E

POINTS & CONDENSERS III

XX																				
XX	1	XX																		
XX	XX	XX	XX	XX	2									XX	XX	XX	XX	XX	XX	
XX		XX																		
XX	XX	XX	XX	3									4	XX	XX	XX	XX	XX	XX	
XX		XX	XX	XX		XX	XX	XX	XX	XX	XX									
XX		XX	XX	XX		XX	XX	XX	XX	XX	XX									
XX		XX	XX	XX		XX	XX	XX	XX	XX	XX									
XX		XX	XX	XX		XX	XX	XX	XX	XX	XX									
XX		XX	XX	XX		XX	XX	XX	XX	XX	XX									
XX		XX	5	XX																
XX		XX		XX																
XX		XX		XX																
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		

ACROSS :

DOWN :

- 2. the amount of differences in a measurement that is all right
- 3. instrument used to show the speed of the engine in RPM (revolutions per minute)
- 7. electric contacts in electric system to make high voltage

- 1. wiring used for sending low current to points (2 words)
- 4. the turning around part of a machine
- 5. a device put in a circuit to lower voltage

POINTS & CONDENSERS III

ANSWER KEY

ACROSS:

- 2. TOLERANCE
- 3. TACHOMETER
- 7. POINTS

DOWN:

- 1. PRIMARY WIRE
- 4. ROTOR
- 5. RESISTOR

P
 T O L E R A N C E
 I
 T A C H O M E T E R
 A O
 R T
 Y O
 W R
 I R
 R E
 E S
 I
 P O I N T S
 T
 O
 R

POINTS & CONDENSERS IV

ANSWER KEY

ACROSS:

DOWN:

- | | | | |
|----|----------------|----|-------------|
| 1. | DWELL METER | 2. | MICROFARADS |
| 4. | BREAKER POINTS | 3. | CAM |
| 5. | DWELL | | |

D W E L L M E T E R

I

C C

B R E A K E R P O I N T S

O M

F

A

R

A

D W E L L

S

1.0

LEARNING WORDS USED IN SETTING IGNITION TIMING

INTRODUCTION

Ignition must occur at just the right time for proper fuel burning at low engine RPM. The best time for the spark to occur in the cylinder is just before the piston gets to the top of the compression stroke. At faster engine speeds the spark has to be introduced earlier. Since the fuel burns at a fairly fixed rate, the piston may be too far down into the cylinder to achieve maximum pressure on the piston and power loss will result. Getting the spark into the cylinder at the correct time is called ignition timing. In this unit you will learn the technical vocabulary related to ignition timing.

PERFORMANCE OBJECTIVES

You will match 15 words used in setting ignition timing with their definitions. Your teacher will provide a list of words and definitions. You **should match at least 12 words** with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

SET IGNITION TIMING

abnormal
(ab nor mal)

not all right



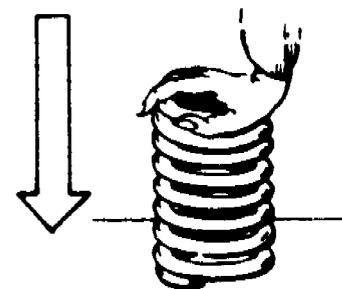
choke
(choke)

a device in the carburetor
(car bu re tor) to give a
cold engine more gasoline
for easier starting



depress
(de press)

to press down



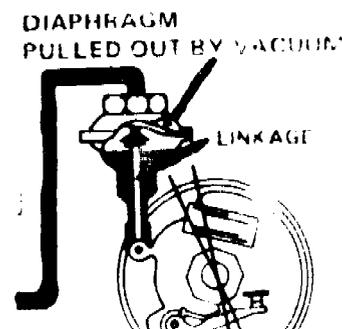
diaphragm
(di a phragm)

a thin, flexible disc that
moves with a small amount
of pressure



disconnect
(dis con nect)

to separate or pull apart



SET IGNITION TIMING

dual diaphragm

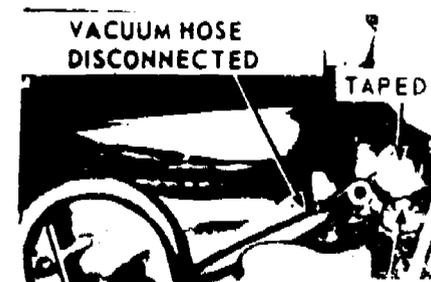
(dual di a phragm)

vacuum advance unit

(vac u um ad vance
u nit)

a unit that changes the

timing of the ignition

(ig ni tion)

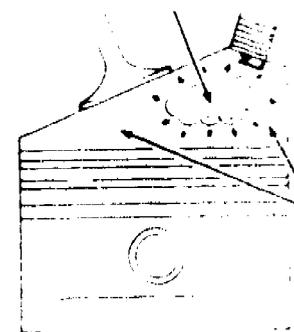
ignition timing

(ig ni tion tim ing)

causing combustion to take

place when the piston is

in the right position



piston

(pis ton)

a part that moves in the

cylinder and transfers the

force of combustion to the

piston rod and crank shaft

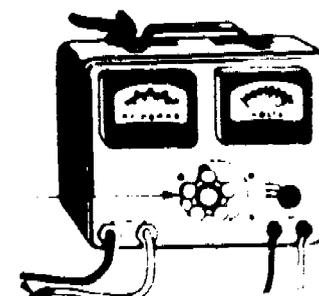


portable

(port able)

can be moved easily from

one place to another

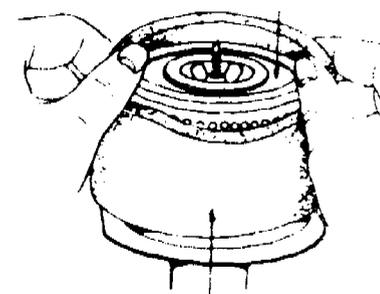


procedure

(pro ce dure)

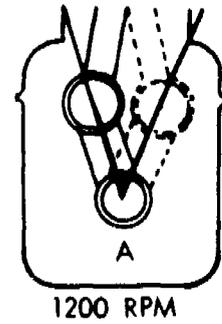
the order in which things

should be done

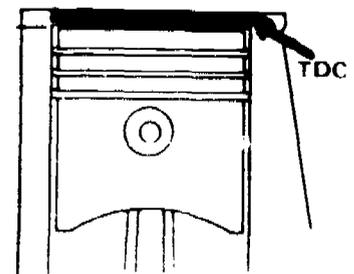


SET IGNITION TIMING

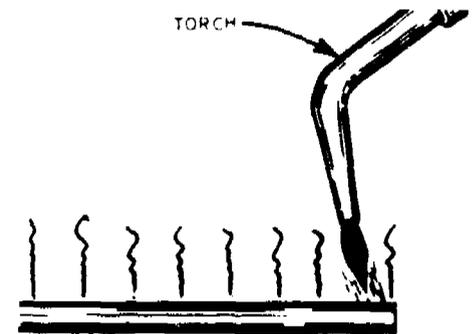
RPM revolutions per minute
 (RPM)



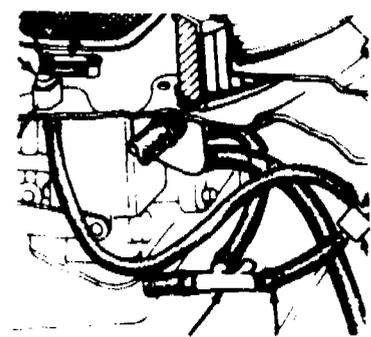
TDC top dead center
 (TDC)



thermal heat
 (ther mal)



vacuum hose a hose in which air pressure
 (vac u um hose) (pres sure) is lower than
 that outside the hose



vibration a device that is fastened
 (vi bra tion) to the front of the crankshaft;
 damper decreases vibration
 (damp er)



IGNITION TIMING

V I B R A T I O N D A M P E R M Z V
 U U W U R V J G E J K O C K B D W J
 V F A Q R L K R P M S F S P J D Q R
 J D T D E C R K E Y V O W K C R S
 P R O C E D U R E K G Y A W I R U D
 O M K B G P H U D L H X N E L I N F
 X Q O J E Z V Z U Q R N M G N A R N
 T W H F H L N L X K C F D M U O U J
 D I S C O N N E C T A B N O R M A L
 P O R T A B L E K Y S C H O K E X I
 I O T B R S T D E P R E S S B X N Y
 Q I K L V Z H A T Q J J H P Q O T L
 I G N I T I O N T I M I N G Q K S Q
 N I L G C U J D I A P H R A G M A Y
 I C Y L B E T R D H E I L R K E X X
 V J J C J H B H D X K J P S N I M P
 O H D U Z I B N V A E B T W T D C C
 V A C U U M H O S E A L E P K V T W
 Z P I S T O N M U K V T H E R M A L

Can you find these words?

VIBRATION DAMPER
 DISCONNECT
 PORTABLE
 THERMAL
 RPM

IGNITION TIMING
 PROCEDURE
 CHOKE
 PISTON
 TDC

VACUUM HOSE
 DIAPHRAGM
 ABNORMAL
 DEPRESS

ACROSS

IGNITION TIMING

O O D T N N F N K P I S T O N O B T E K K
 J L M F N E T R T T D E P R E S S O F Q B
 P J H X F F D B F J I L X Q W R S U E M V
 B Y Z B S B C H O K E P R P M S X H X K P
 M V I U E S W P E S P M D R V A I V M Z R
 A Y X U L O V I B R A T I O N D A M P E R
 O U O V D N H G F R W K S C O Q K S P D K
 W H D T B R Q N W P J Z C E U Q Y L L T Y
 U Y J L D N D I Z R P K O D T W I P R U A
 F D F M S G Z T T V L G N U K M B R N P F
 C I W T U Z K I I B A T N R E Y N G G K N
 V A C U U M H O S E B H E E I N R X L F S
 H P I C X I C N M Z N E C K C X D C F M C
 T H E Z Y I R T D P O R T A B L E R N E T
 J R P H I W H I N B R M G E X D E B N Y N
 J A Q V B U K M R U M A G F X P C U B G I
 U G E P T F V I D Y A L X B P W E O B Z S
 N M W Z V B D N G P L F X C C E C T L N E
 O T W S V O N G N O J M B A D N U D Z X L

Can you find these words?

VIBRATION DAMPER
 DISCONNECT
 PORTABLE
 THERMAL
 RPM

IGNITION TIMING
 PROCEDURE
 CHOKE
 PISTON
 TDC

VACUUM HOSE
 DIAPHRAGM
 ABNORMAL
 DEPRESS

ACROSS/DOWN

IGNITION TIMING

ANSWER KEY

. P I S T O N

. T . . . D E P R E S S

. D

. C H O K E . R P M

. D R

. V I B R A T I O N D A M P E R

. G S C

. N C E

. I O D

. D T N U

. I I . . A T N R

V A C U U M H O S E B H E E

. P N . . N E C

. H T . P O R T A B L E

. R I . . R M

. A M . . M A

. G I . . A L

. M N . . L

. G

IGNITION TIMING

A P U A H W J S E O W W R X H Z O J Z Q
 H G P Y F G T R Q R M R A I Q Q Z T Y S
 G O L Z T V U K V I D V I A K D C U E B
 U J W F X D V A C U U M H O S E S P C L
 B P I L E I I G N I T I O N T I M I N G
 M P M C B A B S W X I E J M X D J S R I
 K B O V T P R E C V K W Y Q O K S I H V
 V R L O W H A E T O Z L E X Q E R Q N O
 P K R U T R T S H F N H K W R N G O Z G
 S A Y G P A I C E Z O N X P A I Z B P D
 Z I W A P G O G R R T P E P Q N S X G Z
 H M V B O M N I M G B D F C Q Z B T J Z
 T Y P O R T A B L E K E C M T J G C J R
 X U I R T T M E Q O R Q O J B V T M C B
 S Z S M W P P B W D V L M R Y B N E K H
 S D T A R T E X X M H T O I W A K Z O A
 J P O L J C R T B Q Z C L Q N R N K E O
 F R N I S S X S K J Y Z G I U X F A E C

Can you find these words?

VIBRATION DAMPER
 DISCONNECT
 PORTABLE
 THERMAL
 RPM

IGNITION TIMING
 PROCEDURE
 CHOKE
 PISTON
 TDC

VACUUM HOSE
 DIAPHRAGM
 ABNORMAL
 DEPRESS

ACROSS/DOWN/DIAGONAL

IGNITION TIMING

ANSWER KEY

. E
. R
. U
. D V A C U U M H O S E
. E I I G N I T I O N T I M I N G
. C . A B S E S
. O P R . C . K S
. R H A . T O E
P R T . H . N R
. A I C E N . P
. A . G O . R . T . E
. B . M N . M D . C
. P O R T A B L E C . T
. I R M
. S M . P P
. T A R . E
. O L R
. N

IGNITION TIMING I

XX																				
XX																				
XX	2									XX	XX	XX								
XX										XX	XX	XX								
XX		XX																		
XX		XX																		
XX	XX	XX	3					XX		XX										
XX		XX																		
XX	5								XX	XX	XX	XX	XX	XX						
XX		XX																		
XX	6							XX	XX	XX	XX	XX	XX							
XX		XX																		
XX		XX																		
XX																				

ACROSS:

DOWN:

- 2. a thin flexible disc that moves with a small amount of pressure
- 3. a device in the carburetor to make a richer mixture and help an engine to start
- 5. not all right
- 6. to press down

- 2. to separate

IGNITION TIMING I

ANSWER KEY

ACROSS:

- 2. DIAPHRAGM
- 3. CHOKE
- 5. ABNORMAL
- 6. DEPRESS

DOWN:

- 2. DISCONNECT

DIAPHRAGM
I
S
C H O K E C
O
A B N O R M A L
N
D E P R E S S
C
T

IGNITION TIMING II

XX																				
XX																				
XX	1								XX	XX	XX	XX								
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		

ACROSS:

1. can be moved easily from one place to another
3. causing combustion to take place when the piston is in the right position
4. heat
5. Revolutions Per Minute

DOWN:

1. the order in which things should be done
2. part that can move, fitted to a cylinder that moves up & down as the crankshaft turns

IGNITION TIMING II

ANSWER KEY

ACROSS:

- 1. PORTABLE
- 3. IGNITION TIMING
- 4. THERMAL
- 5. RPM

DOWN:

- 1. PROCEDURE
- 2. PISTON

 P O R T A B L E
P R
I G N I T I O N T I M I N G
S C
T T H E R M A L
O D
N U
 R P M
 E

LEARNING WORDS USED IN MAINTAINING SPARK PLUGS

INTRODUCTION

Many engine problems can be caused by a defective or burned spark plug. Most manufacturers will recommend replacing spark plugs after the automobile has been driven a certain number of miles. Occasionally a single plug will break down before the complete set does; in this case a single plug replacement may become necessary. In this unit you will learn the technical vocabulary related to spark plugs.

PERFORMANCE OBJECTIVES

You will match 15 words used in maintaining spark plugs with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. Do this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

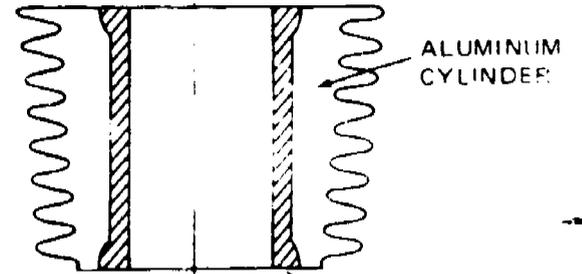
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

MAINTAINING SPARK PLUGS

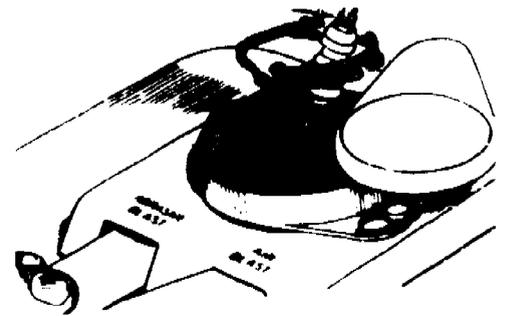
aluminum
(a lu mi num)

a light weight silver
colored metal



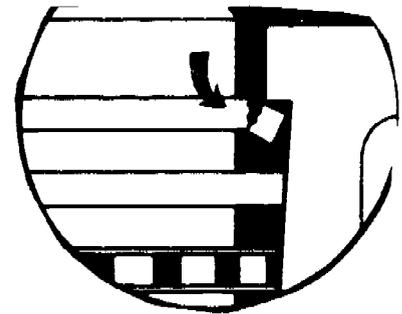
blast jet
(blast jet)

sand and high air pressure
used to clean spark plugs



brittle
(brit tle)

easy to break



carbon
(car bon)

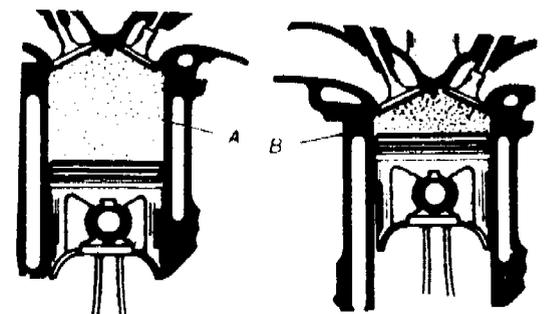
hard or soft black deposits
left on parts after fuel burns



CARBON FOULED

compressed air
(com pressed air)

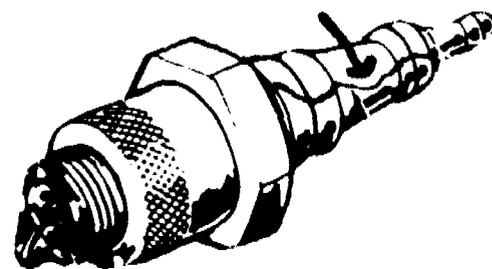
air that is squeezed into a
small space



MAINTAINING SPARK PLUGS

defective
(de fec tive)

having a weak area or
something wrong



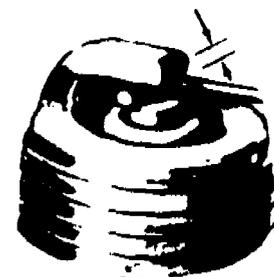
deposit fouling
(de pos it foul ing)

carbon build up on
spark plugs



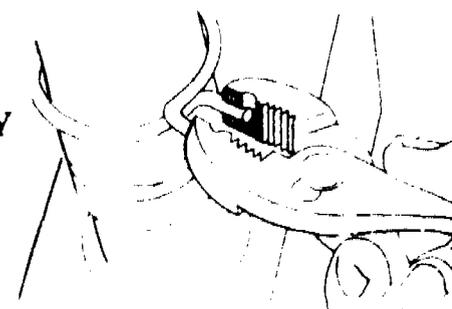
gap
(gap)

a space between two things
(as spark plug electrodes)



install
(in stall)

to fasten a part or accessory
into place



oil fouling
(oil foul ing)

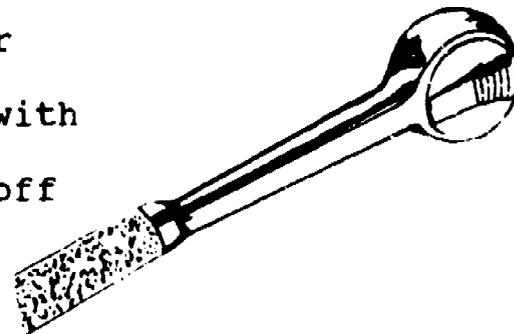
oil on the spark plugs that
keeps them from firing



MAINTAINING SPARK PLUGS

ratchet
(ratch et)

a tool which turns in either
direction you select, used with
sockets (sock ets) to take off
or tighten nuts or bolts



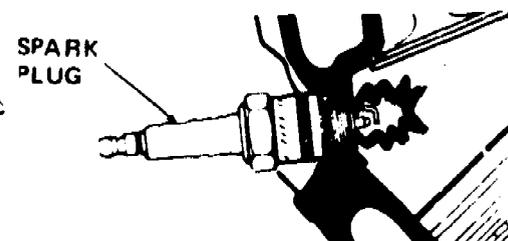
regapping
(re gap ping)

resetting the space between
spark plug electrodes



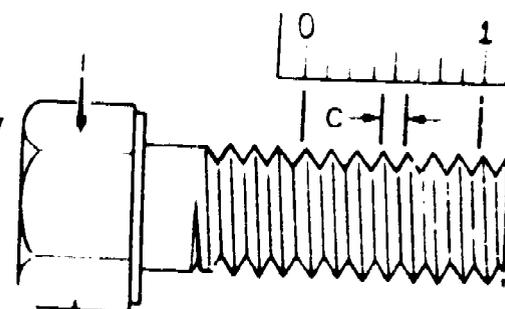
spark plug
(spark plug)

a device that ignites the
fuel mixture with an electric
spark



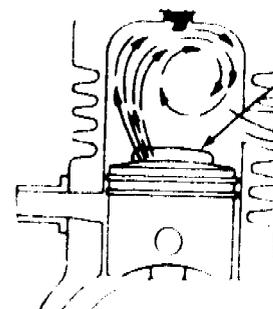
threaded
(thread ed)

ridges cut on a nut or a screw



turbulence
(tur bu lence)

a strong swirling agitation
of air or water



SPARK PLUGS

D E P O S I T F O U L I N G R A T C H E T
 B L A S T J E T A R C U A Z S R N C H U E
 Z K K W X E L G T C F D I I S H G G T Z M
 B R I T T L E Q H M T W I B L O J Y D Y M
 B R X K G P U Q D I P H O B V H B T W C K
 N E Q F F U U D E F E C T I V E N P D L T
 M P B C T K V C O M P R E S S E D A I R F
 A L U M I N U M L Y L X J L L A G E Z S V
 Z F G F F G Z B B J S X C R K L Z J Z C V
 M P X I O X D L I C M L W M L A F I X S Z
 H W R E G A P P I N G R J U R Y L Z I Y N
 H C V V U O D C K H V W L I W Z Y K N G Q
 G A P Z W T I L J G U F I A A V R U F S Z
 I N S T A L L E D T H R E A D E D H I J S
 F O U L I N G P B V X T D K U P Z H I Y D
 X J W G D S P A R K P L U G S H Q J H V O
 J E L B R J Y K J B Z K R J O W B Y I C D
 Y X L K D W X T U U L Z N Q L B E J E O B
 T U R B U L E N C E Z H Z N H T M R O D I

Can you find these words?

DEPOSIT FOULING
 SPARK PLUGS
 DEFECTIVE
 ALUMINUM
 BRITTLE

COMPRESSED AIR
 REGAPPING
 THREADED
 RATCHET
 ARC

TURBULENCE
 INSTALLED
 BLAST JET
 FOULING
 GAP

ACROSS

SPARK PLUGS

ANSWER KEY

DEPOSITFOULINGGRATCHE T
BLASTJETARC
.
BRITTLE
.
. DEFECTIVE
. COMPRESSED AIR .
ALUMINUM
.
.
. . REGAPPING
.
GAP
INSTALLEDTHREADED
FOULING
. SPARK PLUGS
.
.
TURBULENCE

SPARK PLUGS

Q J H J S E G K T H R E A D E D Y S M
 U D L J P P X Z Z A E U R H M O M K L
 M X Y B A F L H R M G N C H W A K O Y
 S H I R R C I N S T A L L E D T S O I
 S Z H G K O Z W U E P M K V Y Y A K W
 W X R D P M P F X D P X E D S G F P E
 L Y D N L P A L U M I N U M L A G F G
 I G Z T U R B U L E N C E S L Y R Q A
 S J R D G E N I E J G G C V Y W G X S
 X F B F S S D S M B G B M E F R X A R
 H Y U N O S E B X L A R W X S X D M B
 J G J Z B E F R F A F A Q M P T A Z V
 V D E R S D E P O S I T F O U L I N G
 E I G M J A C J U T F C M H K U P D P
 B K U X S I T H L J W H A M M E J O F
 D W N K A R I J I E Q E F Y Y T M I I
 V H X H V I V U N T L T U W X A G T W
 B R I T T L E G G B U I G Z S K Q W X

Can you find these words?

DEPOSIT FOULING
 SPARK PLUGS
 DEFECTIVE
 ALUMINUM
 BRITTLE

COMPRESSED AIR
 REGAPPING
 THREADED
 RATCHET
 ARC

TURBULENCE
 INSTALLED
 BLAST JET
 FOULING
 GAP

ACROSS/DOWN

SPARK PLUGS

ANSWER KEY

. . . . S . . . T H R E A D E D . . .
 P E . R
 A G . C
 R C I N S T A L L E D
 K O P
 P M P
 L P A L U M I N U M
 . . . T U R B U L E N C E
 G E G
 S S D . . B
 S E . . L . R
 E F . F A . A
 D E P O S I T F O U L I N G
 A C . U T . C
 I T . L J . H
 R I . I E . E
 V . N T . T
 B R I T T L E . G

SPARK PLUGS

U Q I R H V E C E N U F R A X X N Z R W Q
 L M C E K T I O N H W P N C J P O L L S O
 H Y B L P E P M A Y L E A U Q R Y E Q U U
 B I E F Z I L P R M Q R P Q I V M L F Q I
 O Q X D K T U R B U L E N C E P Y I Q V J
 H B L A S T J E T R A T C H E T R E V H Y
 O M R D L Q M S A E X K I K U I O T K S A
 D H A B N K A S A G U I D I Y B Q B C F X
 G V J K L E I E S A R C E E U B N H A D I
 I O B H N D C D E P O S I T F O U L I N G
 F K R B R C E A J P A M K E I E K A R O V
 Z O U K H D V I B I U R L I E N C Y T D A
 A G A E A Z M R F N U T K H U R Y T S C Y
 G P Q E E E S L I G T W V P X Y B Q I R N
 K K R X A E R M F I N S T A L L E D J V O
 Q H V U B C U P R V S G G W P U V E N Q E
 T S X E K L M B D C A B P Z T Q G P Y X X
 M G F J A C F R S R B H W T T B M S W K F

Can you find these words?

DEPOSIT FOULING
 SPARK PLUGS
 DEFECTIVE
 ALUMINUM
 BRITTLE

COMPRESSED AIR
 REGAPPING
 THREADED
 RATCHET
 ARC

TURBULENCE
 INSTALLED
 BLAST JET
 FOULING
 GAP

ACROSS/DOWN/DIAGONAL

SPARK PLUGS

ANSWER KEY

. C

. O

. M

. P

. T U R B U L E N C E

. B L A S T J E T R A T C H E T

. S . E

. S . G . . D

. E S A R C . E

. D E P O S I T F O U L I N G

. E A . P A M . E . E

. D . I . I U R L . . . C

. A . . R . N . T K T

. E I G T . . P I

. . R M . I N S T A L L E D . V

. H U . R U E

T L . B G

. A S

SPARK PLUGS I

XX																				
XX																				
XX	XX	XX	1	XX																
XX	XX	XX		XX																
XX	XX	XX		XX																
XX	XX	XX		XX	XX	XX	XX	2	XX											
XX	XX	XX		XX	XX	XX	XX		XX	XX	XX	XX	XX	XX	3	XX	XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX		XX	XX	XX	XX	4	XX		XX	XX	XX	XX	XX
XX	XX	XX	5														XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX		XX	XX	XX	XX		XX		XX	XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX		XX	XX	XX	XX		XX		XX	XX	XX	XX	XX
XX	XX	XX		XX		XX														
XX		XX																		
XX		XX																		
XX	6							XX												
XX		XX																		

ACROSS:

DOWN:

- 5. a lot of carbon on the spark plugs (2 words)
- 6. easy to break

- 1. air that is pushed together in a small space (2 words)
- 2. having a weak area or something wrong
- 3. a light, silver colored material
- 4. sand and strong air used to clean spark plugs (2 words)

SPARK PLUGS I

ANSWER KEY

ACROSS:

DOWN:

- 5. DEPOSIT FOULING
- 6. BRITTLE

- 1. COMPRESSED AIR
- 2. DEFECTIVE
- 3. ALUMINUM
- 4. BLAST JET

C
 O
 M
 P D
 R E A
 E F L
 S E U
 S C M
 E T B I
 D E P O S I T F O U L I N G
 A V A U
 I E S M
 R T
 J
 B R I T T L E
 T

SPARK PLUGS II

XX																				
XX																				
XX																				
XX	XX	XX	XX	XX	1			2				XX								
XX		XX																		
XX	3								4	XX	XX	XX	XX							
XX		XX		XX	XX	XX	XX													
XX		XX		XX	XX	XX	XX													
XX		XX																		
XX		XX																		
XX	XX	XX	6							XX										
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		

ACROSS:

DOWN:

- | | |
|---|--|
| <p>1. to fasten a part or accessory into place</p> <p>3. to reset the gap between spark plug electrodes</p> <p>6. a tool with handle used with sockets to take off or tighten nuts or bolts</p> | <p>2. a strong motion of air or water</p> <p>4. a space between two things</p> |
|---|--|

SPARK PLUGS II

ANSWER KEY

ACROSS:

- 1. INSTALL
- 3. REGAPPING
- 6. RATCHET

DOWN:

- 2. TURBULENCE
- 4. GAP

I N S T A L L

U

R E G A P P I N G

B A

U P

L

R A T C H E T

N

C

E

LEARNING WORDS USED IN MAINTAINING PRIMARY IGNITION CIRCUITS

INTRODUCTION

Much of the maintenance that is required on an automobile is performed on the ignition system which consists of two circuits: the primary and secondary. The primary circuit may be conventional (having breaker points), or it may be electronic (without breaker points). The primary circuit carries battery voltage during engine starting, or slightly reduced voltage during engine running, which is not capable of producing an electric arc sufficient in strength to ignite a fuel-air mixture in the engine combustion chambers. In this unit you will learn the technical vocabulary related to primary ignition circuits.

PERFORMANCE OBJECTIVES

You will match 4 words used in maintaining primary ignition circuits with their definitions. Your teacher will provide a list of words and definitions. You should match at least 3 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

CROSSWORD

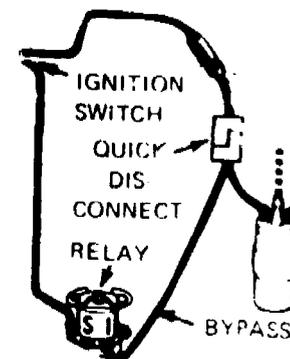
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

-
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
 4. USE the Answer Key on the back as a self-check.
 5. STUDY the words that were a problem.

MAINTAINING PRIMARY IGNITION CIRCUITS

bypass circuit
(by pass circuit)

move around the circuit by
another path

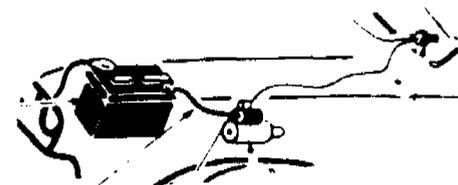


original
(o rig inal)

the first

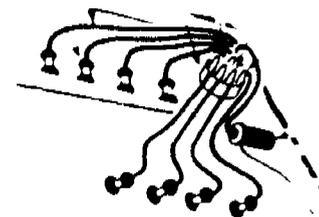
primary circuit
(pri ma ry circuit)

the low voltage of the
ignition (ig ni tion)
system or battery voltage



secondary circuit
(sec on da ry circuit)

the high voltage of the
ignition (ig ni tion) system
or spark plug voltage



PRIMARY IGNITION CIRCUITS

XX																				
XX																				
XX	2	XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX	XX	XX	3														XX	XX	XX	XX
XX		XX																		
XX																				
XX																				

ACROSS:

DOWN:

3. the low voltage current
of the ignition system
(2 words)

2. the first

PRIMARY IGNITION CIRCUITS

ANSWER KEY

ACROSS:

3. PRIMARY CIRCUIT

DOWN:

2. ORIGINAL

O

R

I

G

I

N

P R I M A R Y C I R C U I T

L

LEARNING WORDS USED IN MAINTAINING FUEL FILTER

INTRODUCTION

The fuel system of the automobile is just as important as any other automotive system. Without fuel, the engine would not run, and without proper maintenance, it will not run correctly. The fuel filter is one important component of the fuel system. In this unit you will learn the technical vocabulary related to the fuel filter.

PERFORMANCE OBJECTIVES

You will match 13 words used in maintaining fuel filters with their definitions. Your teacher will provide a list of words and definitions. You should match at least 10 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

-
6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
-

-
4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

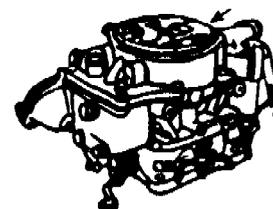
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

MAINTAINING FUEL FILTER

bronze
(bronze) a metal made of copper and tin sometimes used in a gas filter

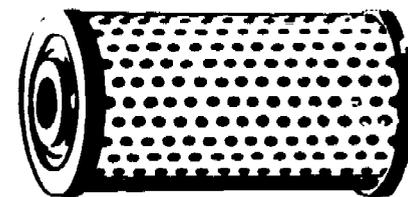


carburetor
(car bu re tor) a device that mixes air and fuel for the engine

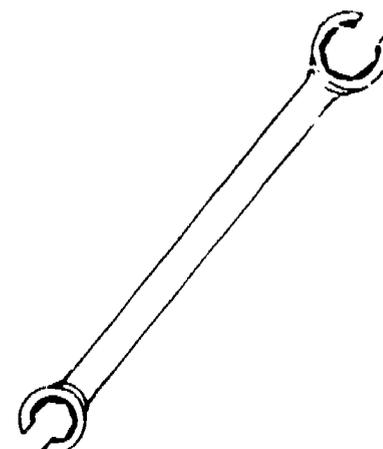


ceramic
(cer am ic) a material made from clay that has been baked in a kiln and slows down the flow of heat

filter
(fil ter) a device with very small pores to remove dirt and other things from air, oil, water, or fuel



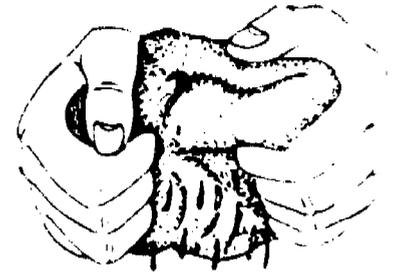
flare-nut wrench
(flare-nut wrench) a tool to remove and replace the nut that holds joints on tubings such as fuel lines



MAINTAINING FUEL FILTER

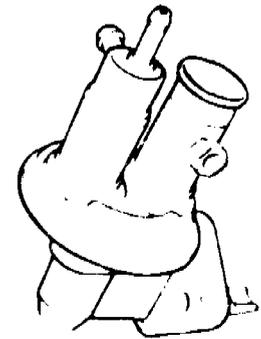
foreign
(for eign)

comes from outside - does
not belong, such as dirt in
a carburetor



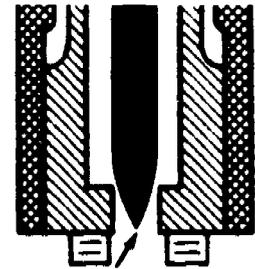
fuel pump
(fuel pump)

a device that pumps fuel from
the gas tank to the carburetor
(car bu re tor)



jets
(jets)

small holes used to meter
the flow of fuel

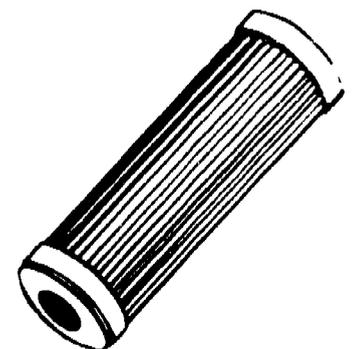


periodic
(pe ri od ic)

from time to time

pleated
(pleat ed)

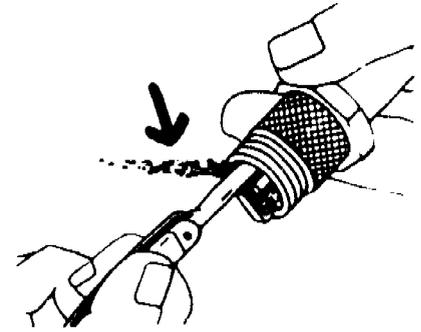
pressed into folds



MAINTAINING FUEL FILTER

residue
(res i due)

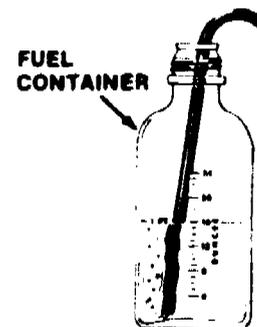
the part left over



sintered bronze made of tiny beads of
(sin tered bronze) bronze welded together
to form a fuel filter

volume
(vol ume)

how much space there is in
an enclosure



FUEL FILTER

S I N T E R E D B R O N Z E P A K Z R M Z
 N I V B P B R O N Z E L P W F G A Q Z D X
 R E S I D U E T S V L R O L D V L J M A A
 M F W I S U M L C I Q J N Z U N K H F V O
 V O L U M E U F K Z B J B F K P U Y L X D
 H X E A H A H Y B V P Y U H R Y Y I C V L
 Z M I N F G S U W Q C E R A M I C M O Q E
 L Z P B J A J B A P X Z S R W S X F E C U
 Z D J G C P E R I O D I C T V L L Q U U W
 F X A H O O D A G K M Z V S Y T N Y Q X I
 U W Y Y V U V D A N F O R E I G N P L K P
 F L A R E N U T W R E N C H P L E A T E D
 O S I C T C O N S E F I L T E R G T I Z Y
 Z P W W X S G K S T U N V M C B R S O M S
 F V W F H M S H P S A T Q V F A C P H A D
 F U E L P U M P J E T S Y T Z A Q Q K X D
 O Z E X Y G F A V Y K O L Z B O J J U T L
 F Z C A Q K D H Y C E Q Z D G I R B E C C
 C A R B U R E T O R K I L D C B N K S A F

Can you find these words?

SINTERED BRONZE
 CARBURETOR
 RESIDUE
 CERAMIC
 BRONZE

FLARE NUT WRENCH
 PERIODIC
 PLEATED
 VOLUME

FUEL PUMP
 FOREIGN
 FILTER
 JETS

ACROSS

FUEL FILTER

ANSWER KEY

S I N T E R E D B R O N Z E
. B R O N Z E
R E S I D U E
.
V O L U M E
.
. C E R A M I C
.
. P E R I O D I C
.
. F O R E I G N
F L A R E N U T W R E N C H P L E A T E D
. F I L T E R
.
.
F U E L P U M P J E T S
.
.
C A R B U R E T O R

FUEL FILTER

G F Z H Y K W E R Z P Y B O Y Y W D N Y
 T Q I Y E S Z E S I H F R U J B O N F B
 X U J A K U F I L F D F O R E I G N Q S
 E W O J G P X Y B I M U N B T W L W P Z
 U P L E A T E D D L T E Z H S H Q G U O
 R E S I D U E Y F T F L E Q S K J V F T
 O R Y L J E O N L E T P X S P S X V L S
 J I A L O G Z C A R B U R E T O R I P F
 V O L U M E K N R A Z M J F C Y U L Y N
 X P C I S B P P E T C P C O E S X Q G G
 I I W K M J S I N T E R E D B R O N Z E
 B C K E T K J N U T U V L V G H B X J B
 L T N S O Q M Z T L Z G T G B H I R A W
 P U W O Z W C R W J Q V Z W L I I C A K
 B U K M K V C E R A M I C O O M Q F X M
 X V S U C D M R E G K O O A X Q S W P E
 H S O V M E E I N X Z H E U R Z T A E H
 M B J I O W K P C P Z Z L X G G G T P L
 X S D Y H Z I I H A R R T U V T B R B S

Can you find these words?

SINTERED BRONZE
 CARBURETOR
 RESIDUE
 CERAMIC
 BRONZE

FLARE NUT WRENCH
 PERIODIC
 PLEATED
 VOLUME

FUEL PUMP
 FOREIGN
 FILTER
 JETS

ACROSS/DOWN

FUEL FILTER

ANSWER KEY

. B
. R . J
. F . F O R E I G N . .
. I . U N . T
. P L E A T E D . L . E Z . S
R E S I D U E . F T . L E
. R L E . P
. I C A R B U R E T O R . . .
V O L U M E . . R . . M
. D E . . P
. I S I N T E R E D B R O N Z E
. C U
. T
. W
. C E R A M I C
. E
. N
. C
. H

FUEL FILTER

V K F J T E O N M F H J T X L Q W R Z T E
 L I R F O Y F N K A Q A A Y A B D A G Z W
 N O P U C M R F A V N K W M L L I I N T T
 F P M T E L G Y B L M U H D R J O O N S W
 L Y C B F N B F E M C P B O W O R Z P I G
 K Q P E T I B R E C M L T M R B M N D L P
 N K F T L R L G O U R E S I D U E J J O W
 X T J X P F K T P N R A L E R B W L W B P
 P C V F S J U L E U Z T R J Z V E K Q W T
 Z E L K E S E M B R J E T S S L F J O K Y
 D R R A L U U R G N T D V S L D P O J R P
 R A X I F L A R E N U T W R E N C H L G X
 Y M I X O C Y D I K M T T H J E V T N E W
 W I F V R D O S T B O C M E B P V I X Q I
 U C V O E U I A V H E G Z T C T X C H D E
 Y M J C I M E C B N U E Z H U C O Z Y D Y
 C M R G G S B Z H E I K V P O H T R Z F X
 C K U Z N W L G V M V T R J E V X Z E T U

Can you find these words?

SINTERED BRONZE
 CARBURETOR
 RESIDUE
 CERAMIC
 BRONZE

FLARE NUT WRENCH
 PERIODIC
 PLEATED
 VOLUME

FUEL PUMP
 FOREIGN
 FILTER
 JETS

ACROSS/DOWN/DIAGONAL

FUEL FILTER

ANSWER KEY

. E
. Z .
. N . .
. R . . O . . .
. . . . F . B P . O . . R
. I . R . . M L T . . B
. L . O U R E S I D U E
. T P N R A . E
P C L E U Z T R
. E E M B R J E T S
. R R . . U U R . . T D
. A . I F L A R E N U T W R E N C H
. M . . O C . . I
. I . V R D . S
. C . . E . I
. I . . C
. G
. N

FUEL FILTER I

XX	1	XX																		
XX		XX																		
XX		XX		XX																
XX		XX		XX																
XX	XX	3						XX		XX	4							XX	XX	XX
XX		XX		XX		XX														
XX	5	XX	XX	XX	6														XX	XX
XX		XX	XX	XX	XX	XX		XX		XX		XX								
XX		XX	XX	XX	XX	XX		XX		XX		XX								
XX		XX	XX	XX	XX	XX		XX		XX		XX								
XX		XX	XX	XX	XX	XX		XX		XX		XX								
XX		XX	XX	7	XX	XX		XX	XX	XX		XX								
XX		XX	XX		XX	XX		XX	XX	XX		XX								
XX		XX	XX		XX	XX		XX												
XX		XX	XX		XX	XX		XX												
XX	XX	XX	XX		XX	XX		XX												
XX	XX	XX	XX		XX															

ACROSS:

DOWN:

- 3. device to remove dirt and other things from air, oil, water, or fuel
- 4. from some other place
- 6. a part in the filter between the fuel pump and carburetor (2 words)

- 1. a device that mixes air and fuel for the engine
- 2. a tool to use with the nut that holds joints on tubings (3 words)
- 4. a device that pumps fuel from the gas tank to the carburetor (2 words)
- 5. from time to time
- 7. how much space is in an object or area

FUEL FILTER I

ANSWER KEY

ACROSS:

- 3. FILTER
- 4. FOREIGN
- 6. SINTERED BRONZE

DOWN:

- 1. CARBURETOR
- 2. FLARE NUT WRENCH
- 4. FUEL PUMP
- 5. PERIODIC
- 7. VOLUME

C

F A

L R

A B

F I L T E R U F O R E I G N

E R U

P S I N T E R E D B R O N Z E

E U T L

R T O P

I W R U

O V R M

D I S C O N N E C T P

I L N

C U

M

E

FUEL FILTER II

XX																					
XX																					
XX	XX	XX	XX	XX	1	XX															
XX	XX	XX	XX	XX		XX															
XX	XX	XX	XX	XX		XX	XX	XX	2	XX											
XX	XX	XX	XX	XX		XX	3							XX							
XX	XX	XX	XX	XX		XX	XX	XX		XX											
XX	XX	XX	XX	4						XX											
XX		XX																			
XX		XX																			
XX	5				XX																
XX																					
XX																					

ACROSS:

DOWN:

- | | |
|---|---|
| <p>3. pressed into folds</p> <p>4. a material made from fired clay that slows the flow of heat</p> <p>5. small holes used to control the flow of fuel</p> | <p>1. metal usually made of copper and tin</p> <p>2. the part left over</p> |
|---|---|

FUEL FILTER

ANSWER KEY

ACROSS:

- 3. PLEATED
- 4. CERAMIC
- 5. JETS

DOWN:

- 1. BRONZE
- 2. RESIDUE

B
R
O R
N P L E A T E D
Z S
C E R A M I C
D
U
J E T S

LEARNING WORDS USED IN SERVICING A CARBURETOR AIR CLEANER

INTRODUCTION

Air drawn into the engine must be as clean as possible. If dust or foreign matter is allowed to enter the engine's intake system, it acts as an abrasive that wears internal engine parts to a rough or undersized finish. Under extreme conditions, this could result in the need for a complete engine overhaul. Due to new emission control standards, air cleaners incorporate controls that improve cold engine performance and also limit certain pollutants that the engine produces. In this unit you will learn the technical vocabulary related to a carburetor air cleaner.

PERFORMANCE OBJECTIVES

You will match 16 words used in servicing a carburetor air cleaner with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

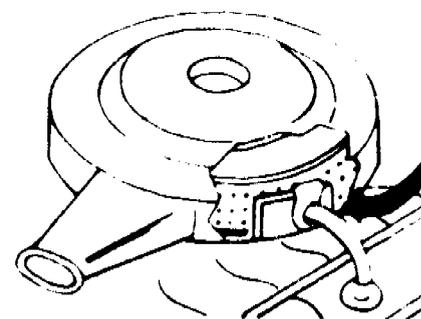
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

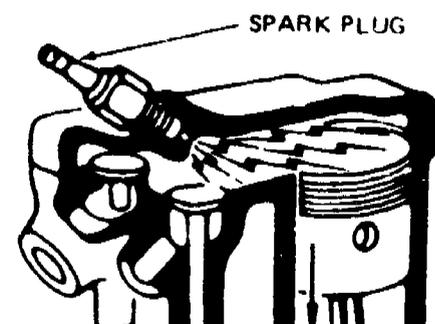
SERVICING CARBURETOR AIR CLEANER

accelerate to increase speed
 (ac cel er ate)

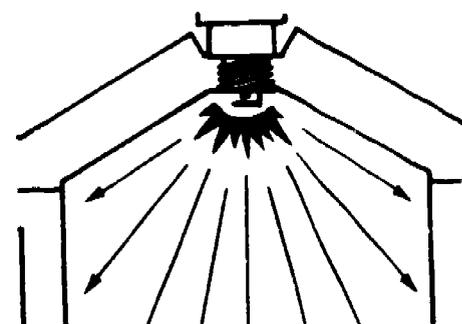
air cleaner a device used to clean
 (air clean er) the air as it goes into
 the engine



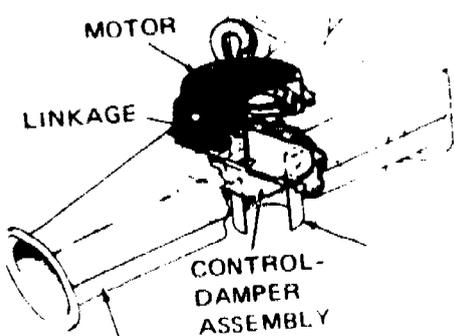
chamber the area where gas burns
 (cham ber) in an engine



combustion the rapid burning of air
 (com bus tion) and fuel that makes heat



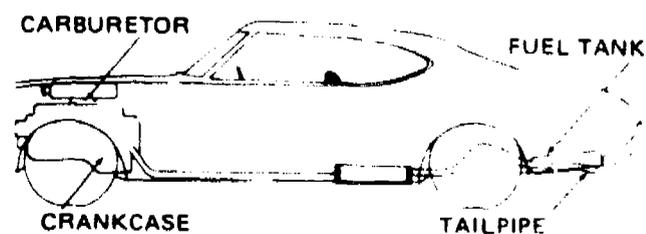
damper a part inside the carburetor
 (damp er) (car bu re tor) air cleaner
 that changes the flow of
 incoming air



SERVICING CARBURETOR AIR CLEANER

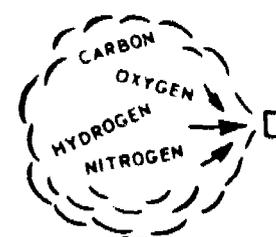
emission
(e mis sion)

the exhausting of waste
gasses



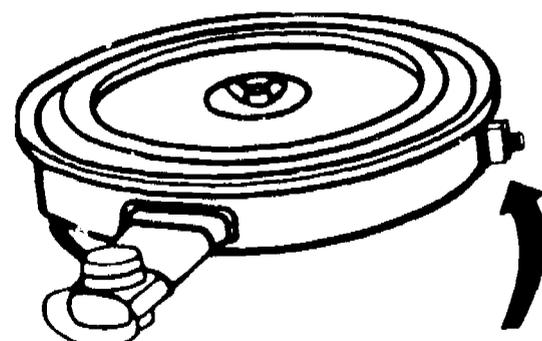
exhaust
(ex haust)

waste gasses from an engine



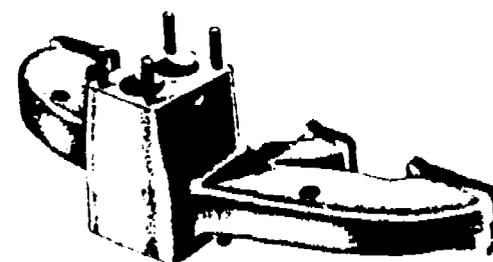
external
(ex ter nal)

outside



intake
(in take)
manifold
(man i fold)

passages that the air and
fuel mixture flows through
from the carburetor to
each cylinder



linkage
(link age)

rods or levers that transfer
movement from one unit to
another



SERVICING CARBURETOR AIR CLEANER

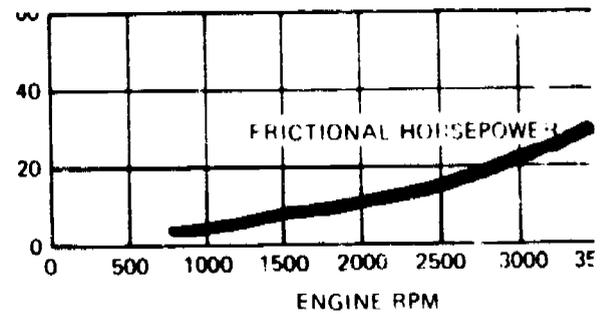
maximum
(max i mum)

the most or the best



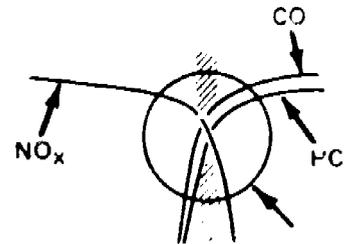
performance
(per form ance)

a measure of how something
acts



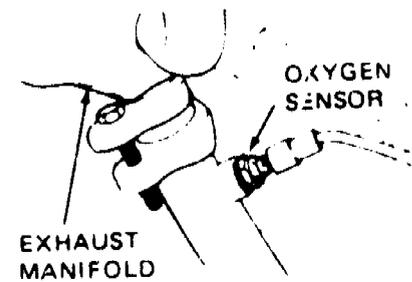
pollutant
(pol lut ant)

a harmful material discharged
into the air or water



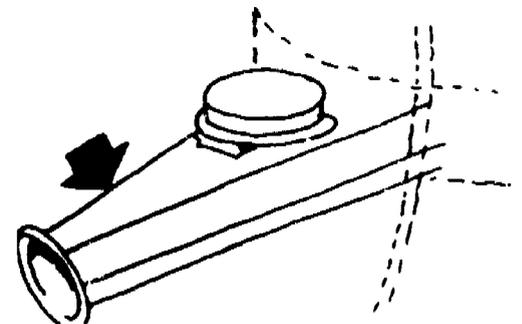
sensor
(sen sor)

a device that detects and
sends a signal



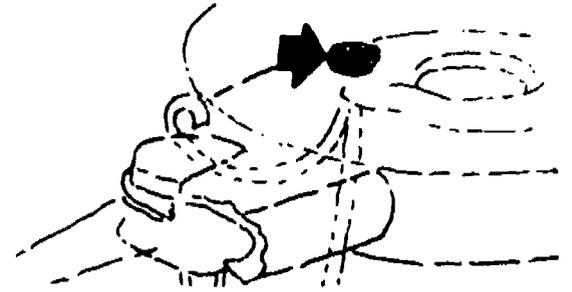
snorkel
(snor kel)

a tube that admits hot or
cool air to the air cleaner



SERVICING CARBURETOR AIR CLEANER

temperature a device that detects the
(tem per ature) air temperature in the air
sensor cleaner
(sen sor)



CARBURETOR AIR CLEANER

I N T A K E M A N I F O L D D F I Y F W S
 H Q I V J J S F C O M B U S T I O N R B H
 P O L L U T A N T O B T S F P P V D O R X
 E M I S S I O N C H A M B E R P B L E H X
 E X T E R N A L G D G S U Z X D K K B E Q
 S P Z Z D H N Z X S B V R Q P J T J A V P
 G G O M Y E H Z T D U P I K M A Q I Q D S
 L R E X H A U S T U U A L G Z U O Z G G U
 K F J Q A B B R L S B P Y B V L T I O K F
 C J Y Q S R T Z R L I N K A G E Z R V N V
 N U P U Y P M O E X T D S E N S O R Q D C
 H A I P A X Y O H Z H T M T F C T U W S F
 M A X I M U M T E H D M K F K D I F I X N
 O T I E M P O Y O A P Z P L O Y W J N G S
 H V D P U A X K L Y U E A C S M B J G I O
 U E Z N E M T Y A I R C L E A N E R U O T
 P E R F O R M A N C E O T H C M P S T A J
 A C C E L E R A T E S N O R K E L Y A Q W
 D A M P E R D V K T L P P V B Z L S S U D

Can you find these words?

INTAKE MANIFOLD
 ACCELERATE
 EMISSION
 LINKAGE
 CHAMBER

COMBUSTION
 POLLUTANT
 SNORKEL
 SENSOR
 EXHAUST

PERFORMANCE
 AIR CLEANER
 EXTERNAL
 MAXIMUM
 DAMPER

ACROSS

CARBURETOR AIR CLEANER

ANSWER KEY

I N T A K E M A N I F O L D
. C O M B U S T I O N . . .
P O L L U T A N T
E M I S S I O N C H A M B E R
E X T E R N A L
.
.
. . E X H A U S T
.
. L I N K A G E
. S E N S O R
.
M A X I M U M
.
.
. A I R C L E A N E R
P E R F O R M A N C E
A C C E L E R A T E S N O R K E L
D A M P E R

153

CARBURETOR AIR CLEANER

K C P K T V B K P L R F N D U T P Z X D X
 M A J D D A M P E R I K Y U Q Y X U H I K
 U O O S E N S O R T O E L Z P C U F Y K B
 A O F N H T Z O F K R X M X O Q S B C W Z
 C O M B U S T I O N O C I M L R H L N D H
 C K C P U X S E R B W I R A L O V Y T N W
 E S C K X E U T M J P F V X U N I S C B C
 L X L N M X X A A J T Q T I T Y O D W S H
 E U V R B A S I N T A K E M A N I F O L D
 R Z L K C L O R C O T H X U N U K P L Q C
 A S G Z F N U C E P N M T M T L S D D A D
 T O W A R E M L D O E P E M I S S I O N P
 F P Z L W B E E O S M Z R P E X H A U S T
 Q D D O T Q D A T E E S N O R K E L L S O
 W D P L Y U E N N O B J A Q R K K N F A Q
 Q F N V L G H E B O H E L E U W Q N P W R
 J P S N W J W R H A W H T V G B K S Z A S
 B Y J L I N K A G E K J M I M I H S R Y Z
 Q W V C H A M B E R K I R Z B R C C N R V

Can you find these words?

INTAKE MANIFOLD
 ACCELERATE
 EMISSION
 LINKAGE
 CHAMBER

COMBUSTION
 POLLUTANT
 SNORKEL
 SENSOR
 EXHAUST

PERFORMANCE
 AIR CLEANER
 EXTERNAL
 MAXIMUM
 DAMPER

ACROSS/DOWN

CARBURETOR AIR CLEANER

ANSWER KEY

. P
. D A M P E R
. S E N S O R P
A F O
C O M B U S T I O N M L
C R A L
E M X U
L A A I T
E I N T A K E M A N I F O L D
R R C X U N
A C E T M T
T L E M I S S I O N .
E E R . E X H A U S T
. A S N O R K E L . . .
. N A
. E L
. R
. L I N K A G E
. C H A M B E R

CARBURETOR AIR CLEANER

F H E X H A U S T E S C I B U M E H R E N
 P C T G Y C H A M B E R F L L Y Z L I G Q
 Y B T V U C E C J Q V M T H R P C C G V O
 Y L Y T W E X T E R N A L B H Q A B S F H
 J P A P O L L U T A N T I U F L E G N U T
 M I I J C E M I S S I O N B A U G O C K O
 P E R F O R M A N C E D K C I X L T G H H
 I P C N M A U I O T M T A S G R R X C I N
 O S L W B T S O R A A A G W E T X Q M U H
 Z W E U U E A R K A X K E C J L K F A P E
 N A A N S A Q P E O I T E B P I J O I G M
 G O N Q T Q E C L M M M U M N C P S V U T
 D A E Y I R O K C O U P S D A M P E R R X
 Y O R I O X Q V D S M M W O V N Q O A H O
 P Q Q S N J K V Z E E X S T A B I O N X P
 Q I N C X M M U Q O T A B Z L W L F Q N H
 B E C V L G H G N O U D K W A A O N O W Q
 S O Z O S O R Q U S A E C X D E P T J L Y
 A Y G H S S F K B S W A C J K A G E D B D

Can you find these words?

INTAKE MANIFOLD
 ACCELERATE
 EMISSION
 LINKAGE
 CHAMBER

COMBUSTION
 POLLUTANT
 SNORKEL
 SENSOR
 EXHAUST

PERFORMANCE
 AIR CLEANER
 EXTERNAL
 MAXIMUM
 DAMPER

ACROSS/DOWN/DIAGONAL

CARBURETOR AIR CLEANER

ANSWER KEY

. . E X H A U S T

. C H A M B E R

. C

. E X T E R N A L

. . A P O L L U T A N T I

. . I . C E M I S S I O N

P E R F O R M A N C E . K

. . C . M A . . O T M . A

. . L . B T . . R . A . G

. . E . U E . . K . X K E

. . A . S . . . E . I . E

. . N . T . . . L . M . . M

. . E . I R U . . D A M P E R . .

. . R . O M N

. . . S N I

. . N F

. . E O

S L

. D

CARBURETOR AIR CLEANER I

XX																			
XX																			
XX	XX	XX	2	3									XX						
XX	XX	XX			XX														
XX	4							XX											
XX	XX	XX	XX		XX														
XX	XX	XX	XX		XX														
XX	XX	XX	XX		XX														
XX	XX	XX	XX		XX	6							XX						
XX	XX	XX	XX		XX		XX												
XX	XX	XX	XX	7												8	XX	XX	XX
XX	XX	XX	XX		XX		XX		XX	XX	XX								
XX	XX	XX	XX		XX		XX		XX	XX	XX								
XX	XX	XX	XX		XX		XX		XX	XX	XX								
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX								
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX								
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX								
XX																			

ACROSS:

DOWN:

- 2. to increase speed
- 4. the area where gas burns in an engine
- 6. waste vapor from an engine
- 7. area in the engine that the air and fuel mixture flows through (2 words)

- 3. the action of air and fuel that makes heat outside
- 6. outside
- 8. a part inside the carburetor air cleaner that slows the flow

CARBURETOR AIR CLEANER I

ANSWER KEY

ACROSS:

DOWN:

- | | | | |
|----|----------------|----|------------|
| 2. | ACCELERATE | 3. | COMBUSTION |
| 4. | CHAMBER | 6. | EXTERNAL |
| 6. | EXHAUST | 8. | DAMPER |
| 7. | INTAKEMANIFOLD | | |

A C C E L E R A T E

O

C H A M B E R

B

U

S E X H A U S T

T X

I N T A K E M A N I F O L D

O E A

N R M

N P

A E

L R

CARBURETOR AIR CLEANER II

ANSWER KEY

ACROSS:

- 3. SNORKEL
- 5. PERFORMANCE
- 6. MAXIMUM
- 7. LINKAGE

DOWN:

- 1. SENSOR
- 2. POLLUTANT

S P
 E S N O R K E L
 N L
 S L
 O U
 R T
 A

P E R F O R M A N C E

T

M A X I M U M

L I N K A G E

LEARNING WORDS USED IN REPAIRING AND REPLACING FUEL LINES AND HOSES

INTRODUCTION

Fuel lines and hoses are generally considered to be trouble-free. It is often taken for granted that these parts do not fail. However, fuel lines or hoses often do fail. Flexible lines may become porous or flake off in their interior. Porous lines will allow air to enter the fuel on the suction side of the fuel pump, while clogged lines will restrict the flow of fuel to the pump or carburetor. Leaks may appear anywhere along the fuel feeder system but are very noticeable on the pressure side of the fuel pump. Tank-to-fuel pump metal lines may rub through due to friction of parts moving against each other. In this unit you will learn the technical vocabulary related to fuel lines and hoses.

PERFORMANCE OBJECTIVES

You will match 9 words used in repairing and replacing fuel lines and hoses with their definitions. Your teacher will provide a list of words and definitions. You should match at least 7 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

-
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
 5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
-

-
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

REPAIRING AND REPLACING FUEL LINES AND HOSES

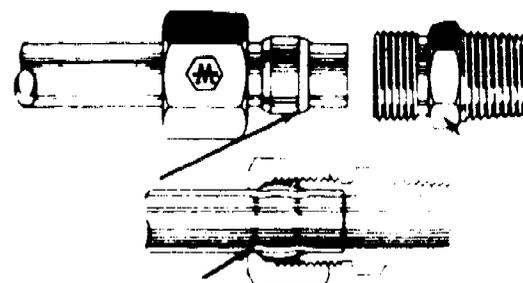
burrs
(burrs)

rough edges on metal after
it has been cut



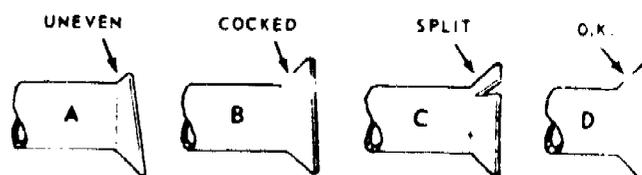
compression
(com pres sion)

squeezing matter into a
smaller space



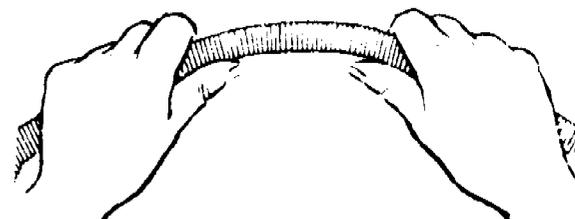
flare
(flare)

to curve outward



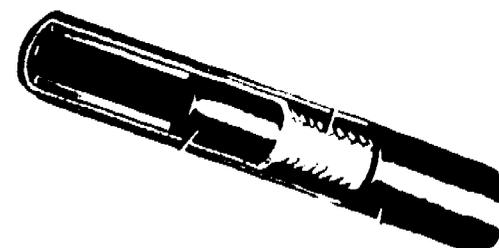
flexible
(flex i ble)

something that can bend
easily and not break



neoprene
(ne o prene)

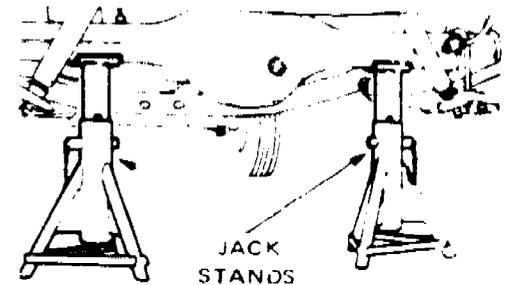
a rubber that is resistant
to chemicals



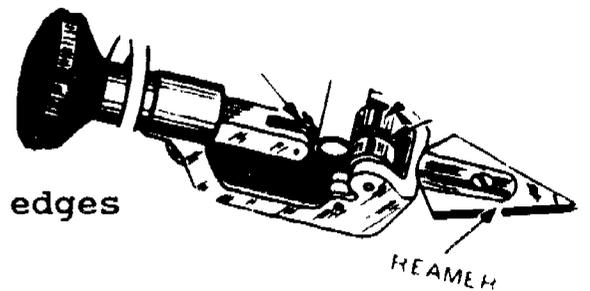
REPAIRING AND REPLACING FUEL LINES AND HOSES

porous having holes that let liquid
(po rous) or gas pass through

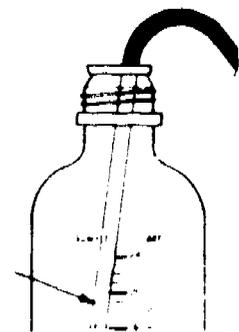
precaution taking care before you act so
(pre cau tion) that nothing wrong happens



ream to make a whole bigger by
(ream) using a tool with cutting edges



siphon a tube that carries liquid up
(si phon) over the edge of a container



FUEL LINES & HOSES

C O M P R E S S I O N F L E X I B L E O M
 S O D T I T A D P S T Z O H W M S S P D C
 G P L T M L P R E C A U T I O N O Z C E I
 X G D G C K T Y W X A Q O B R S Y P G W H
 F Y E J O U C D E O Z R P O R O U S Y J Y
 Y V K N S M K F V G A H B N G I Z P G N U
 A U Q Y H T B W Z W W G E P X A D V D H X
 A C X E A Z V E C M J M F R S I P H O N M
 Q V A H J I X Q V O H E O B F V Y W Z Y H
 O B T Y O R T M Y X Q H H A L I F L A W P
 D F L D P K R F K P M O F O E Y X Y C G E
 I Y F D T P T O F K T X Q L F L A R E F Q
 X O O B E U K J N H A B A O K O B Y W Z I
 B U R R S J S Z T E L V N I Y D Z P D L I
 D J I T E J V T L J P X C J X N B O R H M
 B T F S U T L Z M D S R W S R M S T Y R D
 Z X N Z M C W F T R E A M I Q T Y H I O Y
 N E O P R E N E O G M L B U H B U R U F A

Can you find these words?

COMPRESSION
 FLEXIBLE
 BURRS

PRECAUTION
 SIPHON
 REAM

NEOPRENE
 POROUS
 FLARE

ACROSS

FUEL LINES & HOSES

X Q U J F H F K Y Y E S T E N W U D Q Y
 S I P H O N G Z B A N A T I J T L P G X
 D T S K R E P F L F W A A Q I K P Q T U
 H F U S S O O L V L G O A S H I C E R R
 R F T G G P R E C A U T I O N S G X Y N
 C Q Y E C R O X O R N A A E W G O C A K
 N Y F N P E U I M E S W O R D H B R P S
 N G Y W L N S B P V Q U A J F E S W I N
 R H Z R D E T L R E K N P O X K G L L F
 W E O T N S Q E E B Y Q W L I X S O P B
 H D W X B U R R S X T T C P V R E U D I
 O I X C U V E J S B I J Z Y B O F O N P
 W S X X B S A D I W N J Q R B R W U E T
 P T J G Z S M G O E V G P D A D Q I E T
 L V Y O Q B P H N Y B J X B Q M Y K E M

Can you find these words?

COMPRESSION
 FLEXIBLE
 BURRS

PRECAUTION
 SIPHON
 REAM

NEOPRENE
 POROUS
 FLARE

ACROSS/DOWN

FUEL LINES & HOSES

ANSWER KEY

.
S I P H O N
. E P F . F
. O C L . L
. P R E C A U T I O N
. R O V O R
. E U I M E
. N S B P
. E . L R
. E E
. B U R R S
. E . S
. A . I
. M . O
. N

FUEL LINES & HOSES

M S Y Y A S H B P T Y V D S H Q N
X U W G F P W P Q R Z Z G K V O A
J Z D Q O E Y I I B Q H U N I Z G
S W Q Z F S H C D W I U Z S V O H
L C C N W E O B O M N S S S P Q J
A O Q V Z M Q R E F L E X I B L E
J J U E P M G B U R R S A P B E G
Z X A N Z O Z Q R P A A N H N B T
E U Y A V T R K M Y S T A O T Q H
I H F L T N E O P R E N E N Z X Q
Y H H P R E C A U T I O N S L E C
N K U A R E S N K S U X R Q E K A
F W G A T V A B R U W T Y M D C F
X J L A K B U M Z C Q H Y Z Z V E
Z F F K D X D O I B K P H F M M V

Can you find these words?

COMPRESSION
FLEXIBLE
BURRS

PRECAUTION
SIPHON
REAM

NEOPRENE
POROUS
FLARE

ACROSS/DOWN/DIAGONAL

FUEL LINES & HOSES

ANSWER KEY

. N
. O .
. I . .
. S . . .
. S S . . .
. F L E X I B L E
. . . . P . . B U R R S . P . . .
. O . . . P . . . H . . .
. R . M O . . .
. N E O P R E N E N . . .
. . . P R E C A U T I O N
. . . . R E . . . S
. . . . A . . A
. . L M
. F

FUEL LINES & HOSES I

XX																				
XX																				
XX	2	XX	XX	XX	XX	XX														
XX		XX	XX	XX	XX	XX														
XX	XX	XX	XX	3					4	XX	XX	XX	5	XX		XX	XX	XX	XX	XX
XX		XX	XX	XX		XX		XX	XX	XX	XX	XX								
XX	6											XX	XX							
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX																				
XX																				

ACROSS

3. a tube that lets liquid run from one level to a lower one
6. something being pressed into a smaller space

DOWN:

2. rough edges on metal after it has been cut
4. a rubber that is resistant to chemicals
5. something that can bend easily and not break
7. having holes that let liquid or gas pass through

FUEL LINES & HOSES I

ANSWER KEY

ACROSS:

- 3. SIPHON
- 6. COMPRESSION

DOWN:

- 2. BURRS
- 4. NEOPRENE
- 5. FLEXIBLE
- 7. POROUS

			B
			U
S	I	P	H
O	N		
		F	R
		E	L
			R
		C	O
		M	P
		R	E
		S	S
		I	O
		N	X
		R	R
		I	
		E	O
			B
		N	U
			L
		E	S
			E

FUEL LINES & HOSES II

XX																				
XX																				
XX	1	XX																		
XX		XX																		
XX		XX																		
XX	XX	XX	XX	XX	XX	2				XX										
XX		XX																		
XX	XX	XX	XX	XX	XX	4										XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	5					XX											
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX		XX													
XX																				
XX																				

ACROSS:

DOWN:

- 2. to make a hole bigger by using a tool with cutting edges
- 4. taking care before you act so that nothing wrong happens
- 5. rough edges on metal after it has been cut

- 1. to curve outward
- 4. having holes that let liquid or gas pass through

FUEL LINES & HOSES II

ACROSS:

- 2. REAM
- 4. PRECAUTION
- 5. BURRS

DOWN:

- 1. FLARE
- 4. POROUS

F

L

R E A M

R

P R E C A U T I O N

O

B U R R S

O

U

S

LEARNING WORDS USED IN REPLACING A FUEL PUMP

INTRODUCTION

An important job of the auto mechanic is keeping an engine performing to the manufacturer's specifications. One major contributor to engine performance is a well functioning fuel system. The fuel pump is an important part of this fuel system. In this unit you will learn the technical vocabulary related to the fuel pump.

PERFORMANCE OBJECTIVES

You will match 11 words used in replacing a fuel pump with their definitions. Your teacher will provide a list of words and definitions. You should match at least 8 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

-
6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
-

-
4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

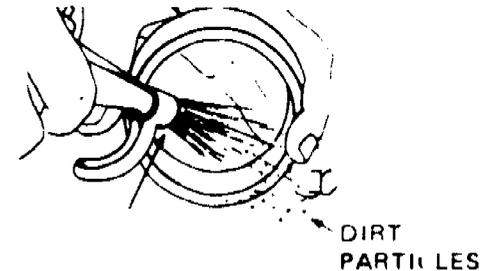
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

REPLACING FUEL PUMP

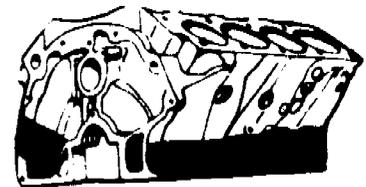
combination one thing joined with others
 (com bi na tion) for a common purpose



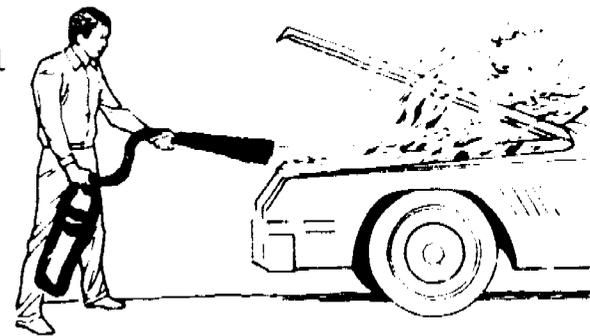
contamination foreign material on or in
 (con tam i na tion) something



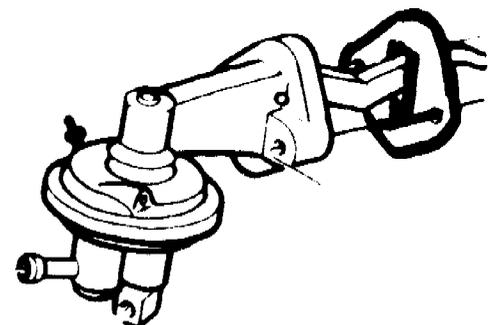
crankcase part of the engine block
 (crank case) that holds the crankshaft



fire a device that has a chemical
 (fire) inside that puts out fires
 extinguisher
 (ex tin guish er)



fuel pump a device that pumps fuel
 (fuel pump) from the gas tank to the
 carburetor (car bu re tor)



REPLACING FUEL PUMP

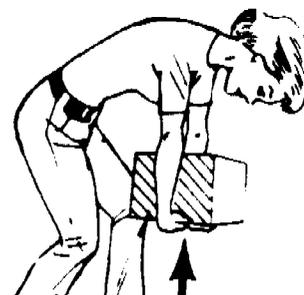
gasket
(gas ket)

something put between two
parts to make a seal



gravity
(grav i ty)

the pull of the earth
on objects



mechanic's
(me chan ic's)
stethoscope
(steth o scope)

a tool used to amplify
sounds



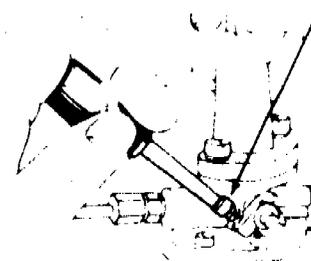
rupture
(rup ture)

to break open



serviceable
(serv ice a ble)

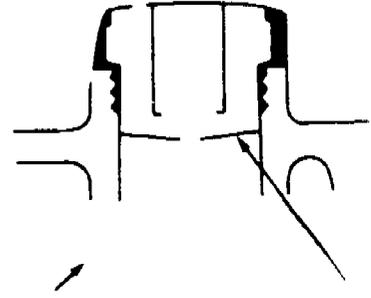
something that may be
repaired and used again



REPLACING FUEL PUMP

vapor
(va por)

a gas form of a liquid



FUEL PUMP

C O N T A M I N A T I O N G A S K E T Q N
 C R A N K C A S E V A P O R N T B H E G L
 O S X L H E J P Q W D E S F S L E N K T S
 N X O E L G R A V I T Y B M E N V T Q V P
 Q O T Z A O S B E I G A H V N A G E P K T
 H B I E R E V Q V J I Y O H B H G Q X K Q
 S X H C B R M O A C I S O I O H U A I U V
 S E R V I C E A B L E Z M L E V E I Z T P
 O E M P D V P S C H M W Q H M D V I J E X
 C T X M Z F C T A Y B E O U Q F S W H V W
 A R L X G Q O J K M S O V G U I B K J X Q
 W J U C V U P I U A T U W T V N T A C C Z
 N O X K T S Q U N C L P G R F A K W C N O
 O C K S E B A O M H R U P T U R E A O G E
 C Z V G U I V H R Y U O C O O U D G X K T
 S I E Z X F E Y B C W W P I J Y K V J Y C
 A O Q A Y O K F Q J L Z Q H T J U T G N B
 P M Y L X M S D M I V X P D U Q Q N C A X
 U K C O M B I N A T I O N F U E L P U M P

Can you find these words?

CONTAMINATION
 CRANKCASE
 GRAVITY

SERVICEABLE
 FUEL PUMP
 GASKET

COMBINATION
 RUPTURE
 VAPOR

ACROSS

FUEL PUMP

N H W R H H M K R S L C P B
 Y W I M U B K E U L N Y U G
 F H Q F Z P C H P V R T S H
 D G K J A C O K T A M R C D
 N G H F A F M N U C B D Z L
 F U M U A P B W R R A Z J G
 A Q S E R V I C E A B L E H
 G G W L A F N O K N H G B G
 S X C P A L A N V K M D E M
 T Z Y U A V T T A C O L Q D
 J V V M A L I A G A S K E T
 I A J P A C O M N S H B H N
 G P J M C X N I M E Z B A K
 R O X L P G Z N Z M Y T Z Y
 A R A C O A R A P M Q G U J
 V I X O A C I T P D H S X M
 I F C Y B S H I V T I U N Q
 T S A O J R N O G G E C W R
 Y B S W O V S N Z G P A T M

Can you find these words?

CONTAMINATION
 CRANKCASE
 GRAVITY

SERVICEABLE
 FUEL PUMP
 GASKET

COMBINATION
 RUPTURE
 VAPOR

ACROSS/DOWN

FUEL PUMP

ANSWER KEY

. R
. U
. C . P
. O . T
. . . F . . M . U C
. . . U . . B . R R
. . S E R V I C E A B L E .
. . . L . . N O . N
. . . P . . A N . K
. . . U . . T T . C
. V . M . . I A G A S K E T
. A . P . . O M . S
G P N I . E
R O N
A R A
V T
I I
T O
Y N

FUEL PUMP

S O R U Y R V U P N A H I Y E P R C S N
 R O M Y A D F Z N R P J U E Y L U Q O N
 G A U N Q Z G U N V T K Y C H X P I N A
 C W I G G A S K E T S G R A V I T Y D R
 D A S R K Y B H W L L O F X H A U M Z R
 F O C C F B T L R B P X L Y N R R E H P
 Z O R J A F R I M X L U C I A C E G D M
 O A A R Z P A X C B T H M R Z A G N M H
 P A N S Z R R J Q H Z A K P J R T K I O
 L H K W I C N O W B T A O I Y Q I W J Y
 S H C G F G A T P N G G H R P Z Q U Q U
 T F A A S C Y C O M B I N A T I O N U Y
 P B S E R V I C E A B L E O U J R B T N
 I A E O Y B D F N D K Y O J W V Z R K Z
 I X P Q B G I Y C L R A C X Z I A X K X
 F A B O X V S Y O H O E T V Y Q V Z N B
 V V O M A I F T W O J Z Z M G B X K X Z
 G A U W Y K B L A P Z T B P B O M I J M
 J W S V V T C O Z X S H B M W Y U Z X X

Can you find these words?

CONTAMINATION
 CRANKCASE
 GRAVITY

SERVICEABLE
 FUEL PUMP
 GASKET

COMBINATION
 RUPTURE
 VAPOR

ACROSS/DOWN/DIAGONAL

FUEL PUMP

ANSWER KEY

. R . . N
 F U . O .
 U P I . .
 G A S K E T . G R A V I T Y . .
 L A U . . .
 . . C P . . . N . R . . .
 . . R U . I . . E . . .
 . . A M
 . . N A . P
 . . K T
 . . C N
 . . A C O M B I N A T I O N . .
 . . S E R V I C E A B L E
 . . E O
 . . P
 . A
 V

FUEL PUMP I

XX	1	XX																		
XX		XX																		
XX		XX																		
XX	XX	XX	XX	XX	XX	3											XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX	XX		XX	XX	XX	XX		XX								
XX	XX	4	XX	XX	XX		XX	XX	XX	XX		XX								
XX	XX		XX	XX	XX		XX	XX	XX	XX		XX								
XX	XX		XX	XX	XX		XX	XX	XX	XX		XX								
XX	XX		XX	XX	XX		XX													
XX	XX		XX	XX	XX		XX													
XX	XX		XX	XX	6						XX									
XX	XX		XX	XX	XX		XX													
XX	XX		XX	XX	XX		XX													
XX	XX	XX	7					XX												
XX	XX	XX	XX	XX	XX		XX													
XX																				

ACROSS:

DOWN:

- | | | | |
|----|--|----|--|
| 3. | one thing joined with another | 1. | a unit that holds the crankshaft |
| 6. | something put between two parts to make a seal | 3. | dirt on or in something |
| 7. | a gas form of a liquid | 4. | a device that pumps fuel from the gas tank to the carburetor (2 words) |

FUEL PUMP I

ANSWER KEY

ACROSS:

- 3. COMBINATION
- 6. GASKET
- 7. VAPOR

DOWN:

- 1. CRANKCASE
- 3. CONTAMINATION
- 4. FUELPUMP

C
R
A
C O M B I N A T I O N
O K
N C
F T A
U A S
E M E
L I
P N
U G A S K E T
M T
P I
V A P O R
N

FUEL PUMP II

XX																				
XX																				
XX																				
XX	XX	XX	1								XX									
XX																				
XX	XX	XX	XX	XX	XX	3											XX	XX	XX	XX
XX																				
XX																				
XX																				
XX																				
XX																				
XX																				
XX	XX	XX	4								XX									
XX																				
XX																				

ACROSS:

1. the pull of objects toward the earth
3. something that can be repaired and used again
4. to break open

FUEL PUMP 11

ANSWER KEY

ACROSS:

1. GRAVITY
3. SERVICEABLE
4. RUPTURE

G R A V I T Y

S E R V I C E A B L E

R U P T U R E

LEARNING WORDS USED IN INSTALLING CARBURETORS

INTRODUCTION

It is extremely important to keep carburetor parts and circuits as clean as possible. Bits of dirt and dust that are allowed to get into the carburetor will probably cause carburetor and engine trouble sooner or later. Other malfunctions and conditions also make it necessary to remove the carburetor. Many shops, garages or service areas often prefer to remove the old carburetor and install a new one when the old carburetor is diagnosed as defective. In this unit you will learn the technical vocabulary related to installing carburetors.

PERFORMANCE OBJECTIVES

You will match 3 words used in installing carburetors with their definitions. Your teacher will provide a list of words and definitions. You should match all of the words with their correct definitions.

LEARNING ACTIVITIES

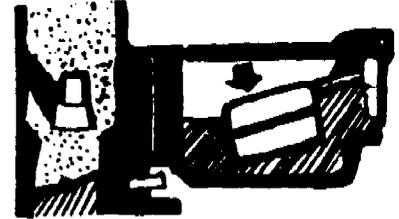
Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

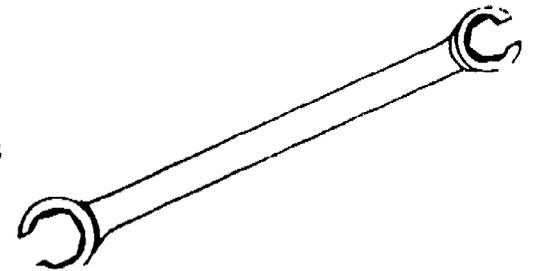
-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.
-

INSTALLING CARBURETORS

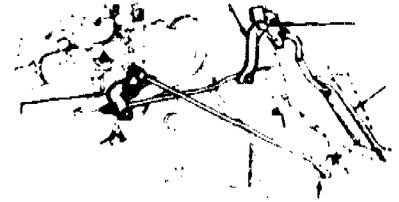
carburetor the part of the carburetor
 (car bu re tor) that holds fuel with a
 floatbowl floating device that controls
 (float bowl) fuel level



flare-nut wrench a tool to use with the nut
 (flare-nut wrench) that holds joints on things



throttle a device in the carburetor
 (throt tle) (car bu re tor) that lets a
 driver change the speed of
 the engine



INSTALLING CARBURETORS

Word Find Puzzles for Units AM-12, AM-13, AM-14, and AM-15 have been combined into one group of puzzles and may be found on Pages AM-15-4 to AM-15-6.

There is no Crossword Puzzle for Unit 12.

LEARNING WORDS USED IN CHECKING THE COOLING SYSTEM

INTRODUCTION

Most auto engines in use today have a liquid cooling system. The cooling system must maintain a normal engine operating temperature while the vehicle is carrying a heavy load and/or when the temperature around the cylinder walls change. Outside temperatures may range from a minus 30 degrees Fahrenheit (-30° F.) to 500 degrees Fahrenheit (500° F.) next to the cylinder walls at the moment of combustion. One-third of the heat of combustion is dissipated by the cooling system, one-third is expelled out the exhaust system, and the remaining one-third is used to propel the vehicle. All components of the cooling system must function properly to prevent damage or premature wear on the engine. In this unit you will learn the technical vocabulary related to the cooling system.

PERFORMANCE OBJECTIVES

You will match 15 words used in checking cooling systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

-
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
 5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
-

CHECKING COOLING SYSTEM

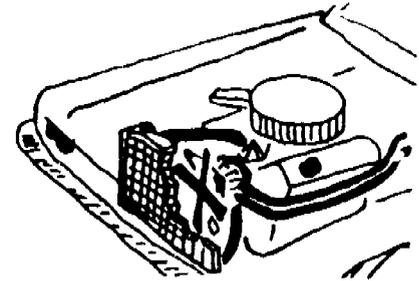
adapter
(a dapt er) a part or fitting used to join
two parts so that these parts
fit together



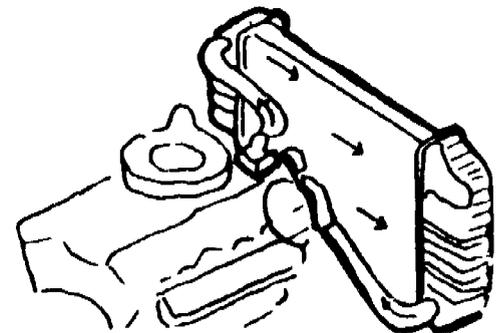
antifreeze
(an ti freeze) a chemical that lowers the
freezing temperature of water



cooling system
(cool ing sys tem) the parts that keep the
engine at the right
temperature



cross flow
(cross flow) the liquid flows into the
radiator (ra di a tor) and
across to the other side
and then out

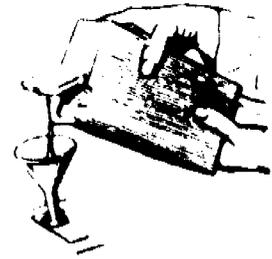


dissipate
(dis si pate) to break up and scatter

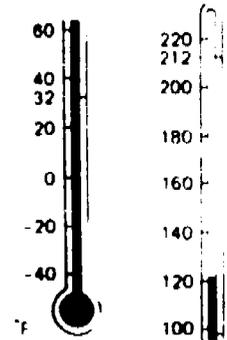


CHECKING COOLING SYSTEM

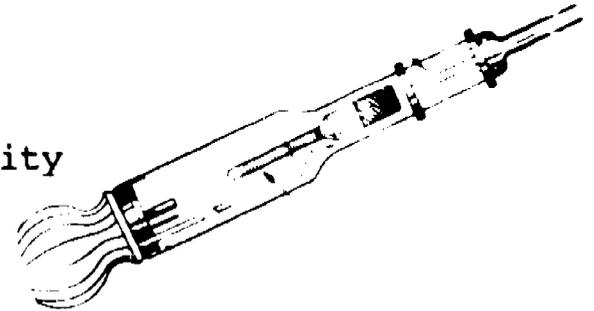
ethylene glycol a chemical (chem i cal) used
(eth yl ene glycol) as an antifreeze



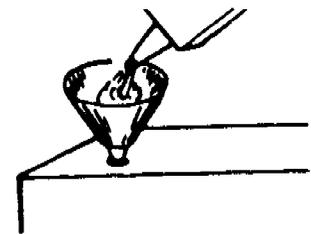
Fahrenheit a scale to measure temperature
(Fahr en heit) with freezing at 32° and
boiling at 212°



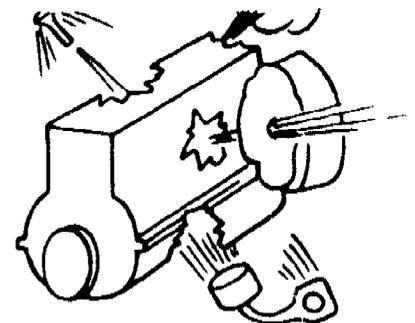
hydrometer a tool used to measure the
(hy drom e ter) specific (spe cif ic) gravity
(grav i ty) of liquid



methanol alcohol used as an antifreeze
(meth a nol) that can catch on fire



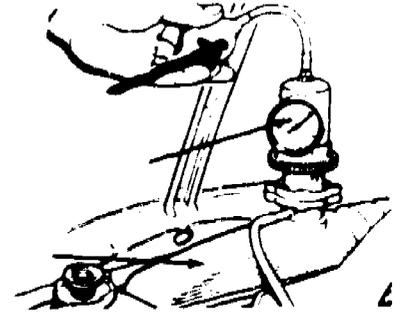
premature something that happens before
(pre ma ture) it is supposed to



CHECKING COOLING SYSTEM

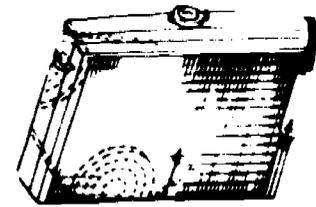
pressurized
(pres sur ized)

something that is under
pressure



radiator
(ra di a tor)

a unit that removes the
heat of an engine by
flowing air through it



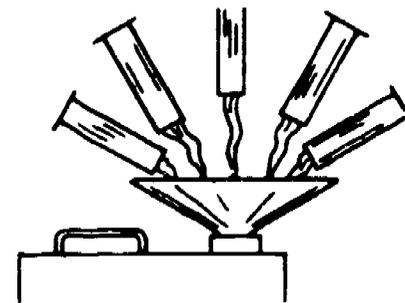
reservoir
(res er voir)

a container that holds
a supply of liquid



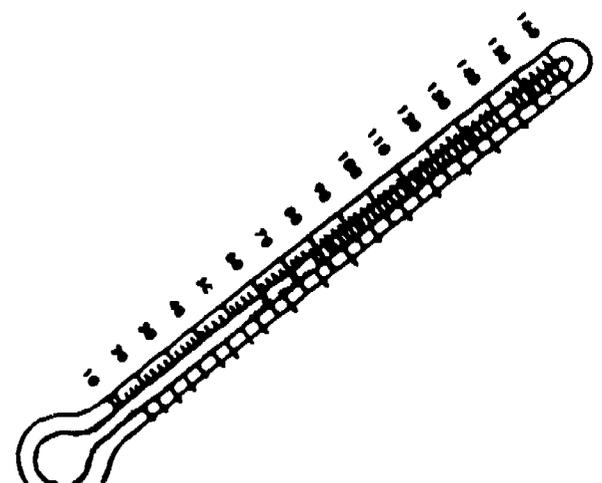
solution
(so lu tion)

a combination of two or
more liquids



thermometer
(ther mom e ter)

an instrument used to
measure temperature



CHECKING COOLING SYSTEM

Word Find Puzzles for Units
AM-12, AM-13, AM-14, and
AM-15 have been combined into
one group of puzzles and may
be found on Pages AM-15-4 to
AM-15-6.

COOLING SYSTEM I

XX																				
XX	1	XX	XX																	
XX		XX	XX																	
XX	2				3						XX		XX	XX						
XX	XX	XX	XX	XX	4	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX			XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	5									
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX
XX	XX	XX	6									XX	XX	XX	XX	XX	XX		XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	7	XX	XX		XX	XX	8	XX	XX		XX								
XX	XX		XX	XX		XX	XX		XX	XX		XX								
XX	XX		XX	XX		XX	XX		XX	XX		XX								
XX	XX		XX	XX		XX	XX		XX	XX		XX								
XX	XX		XX	XX	XX	XX	XX		XX											
XX	XX		XX	XX	10								XX							
XX	XX		XX	XX	XX	XX	XX		XX											
XX	XX		XX	XX	XX	XX	XX		XX											

ACROSS:

DOWN:

- | | |
|---|--|
| <p>2. a liquid that lowers the freezing temperature</p> <p>5. a tool used to measure the specific gravity of liquid</p> <p>6. to break up and scatter</p> <p>10. a unit that lowers the temperature of an engine with flowing air</p> | <p>1. a device used to join two parts so that the unit works well</p> <p>3. the measure of temperature with freezing at 32</p> <p>4. the liquid flows into the radiator and across to the other side and then out (2 words)</p> <p>7. an antifreeze that can catch on fire</p> <p>8. a liquid made of two or more things</p> |
|---|--|

COOLING SYSTEM I

ANSWER KEY

ACROSS:

- 2. ANTIFREEZE
- 5. HYDROMETER
- 6. DISSIPATE
- 10. RADIATOR

DOWN:

- 1. ADAPTER
- 3. FAHRENHEIT
- 4. CROSSFLOW
- 7. METHANOL
- 8. SOLUTION

A

D

A N T I F R E E Z E A

C A P

R H Y D R O M E T E R

O R E

D I S S I P A T E R

S N

M F S H

E L O E

T O L I

H W U T

A T

N R A D I A T O R

O O

L N

COOLING SYSTEM II

XX																				
XX	1	XX																		
XX	XX	XX	XX	XX	2	XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX	XX	XX	XX	XX	6														XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX								
XX		XX																		

ACROSS:

DOWN:

- 4. something that is under pressure
- 5. a unit that holds liquid
- 6. a chemical used as an antifreeze (2 words)

- 1. something that happens before it is suppose to
- 2. the parts that keep the engine at the right temperature (2 words)

COOLING SYSTEM II

ACROSS:

DOWN:

- 4. PRESSURIZED
- 5. RESERVOIR
- 6. ETHYLENEGLYCOL

- 1. PREMATURE
- 2. COOLINGSYSTEM

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V	
O	
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N	
E	
G	
L	
Y	
C	
O	
L	
M	

**LEARNING WORDS USED IN REPLACING HOSES,
THERMOSTATS, AND CORE PLUGS**

INTRODUCTION

The most common method of cooling automobile engines is the liquid cooling method. A liquid is forced through special passages inside the engine. The liquid passes through a series of hoses and a radiator where the heat is transferred to the atmosphere. As a mechanic, you must be able to service or replace the various parts of the cooling system to keep the engine performing properly. In this unit you will learn the technical vocabulary related to hoses, thermostats, and core plugs.

PERFORMANCE OBJECTIVES

You will match 3 words used in replacing hoses, thermostats, and core plugs with their definitions. Your teacher will provide a list of words and definitions. You should match all of the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

CROSSWORD

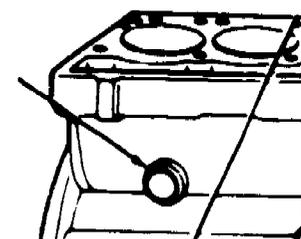
1. USE this activity after the vocabulary words in one unit have been learned.
 2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
-

-
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
 4. USE the Answer Key on the back as a self-check.
 5. STUDY the words that were a problem.

REPLACING HOSES, THERMOSTATS, AND CORE PLUGS

core plug
(core plug)

a round metal plug in head
and block castings sometimes
called a freeze-out plug



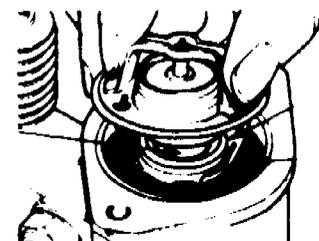
deterioration
(de te ri o
ra tion)

something becoming worse or
lower in quality (qual i ty)



thermostat
(ther mo stat)

a device that controls
temperature



REPLACING HOSES, THERMOSTATS, AND CORE PLUGS

Word Find Puzzles for Units
AM-12, AM-13, AM-14, and
AM-15 have been combined
into one group of puzzles
and may be found on Pages
AM-15-4 to AM-15-6.

HOSES AND CORE PLUGS

XX																				
XX																				
XX	XX	XX	XX	2									XX							
XX																				
XX																				
XX																				
XX																				
XX	XX	XX	XX	4													XX	XX	XX	XX
XX																				
XX																				

ACROSS:

- 2. a round metal plug that will blow out if the thermostat overheats (2 words)
- 4. something becoming worse or lower in quality

HOSES AND CORE PLUGS

ANSWER KEY

ACROSS:

- 2. COREPLUG
- 4. DETERIORATION

C O R E P L U G

D E T E R I O R A T I O N

LEARNING WORDS USED IN REPLACING COOLING SYSTEM COMPONENTS

INTRODUCTION

The most common method of cooling internal combustion engines is the liquid cooling method. A liquid is forced through special passages inside the engine and passed through a series of hoses and a radiator, where the heat is transferred to the atmosphere. In this unit you will learn the technical vocabulary related to cooling system components.

PERFORMANCE OBJECTIVES

You will match 7 words used in replacing cooling system components with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

-
6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
-

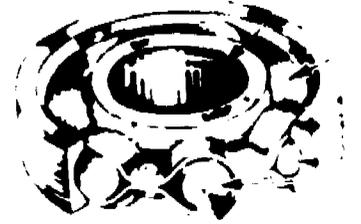
-
4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

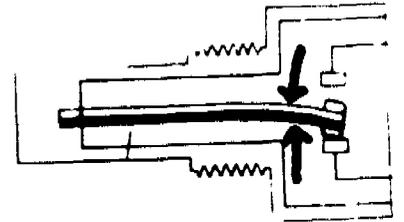
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

REPLACING COOLING SYSTEM COMPONENTS

ball bearing a metal unit with steel
 (ball bear ing) balls inside used to lower
 friction (fric tion)



bimetallic made of two metals that
 (bi me tall ic) sense different conditions

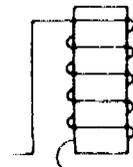


fan clutch unit a unit that is run by a
 (fan cluth u nit) temperature sensitive fluid
 and fastened to the water
 pump and fan blades



operational in working condition
 (op er a tion al)

spiral winding around a center
 (spi ral) from the bottom to the top



REPLACING COOLING SYSTEM COMPONENTS

variation

change

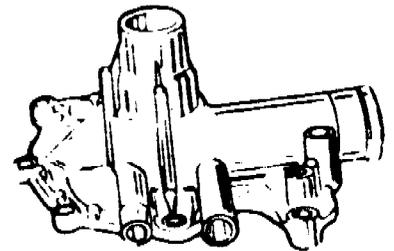
(var i a tion)

water pump

a device used to move a liquid

(wa ter pump)

through the cooling system

(sys tem)

COOLING SYSTEM

E T H Y L E " L G L Y C O L S P S N Z I X
 B A L L B E A R I N G D I S S I P A T E E
 P R E S S U R I Z E D A L J J V C K Q H W
 O P E R A T I O N A L U J K P S K C D S S
 I E O J U H R E S E R V O I R A L I B L E
 A D A P T F R O X Z T O W R S J M X L J K
 P R E M A T U R E I Q H Y D R O M E T E R
 M E T H A N O L H N O V C O A R M W H E P
 U D E T E R I O R A T I O N S P I R A L I
 N J W E C O O L I N G S Y S T E M V X E A
 B I M E T A L L I C W A T E R P U M P U Q
 T H R O T T L E F A H R E N H E I T M I O
 C R O S S F L O W S O L U T I O N Y J C P
 O S C O E K J I P P J Y K Y D D M T G V T
 D E Q Z A K R E G V A R I A T I O N V S Z
 A M B P E B U V C O R E P L U G Y B H G C
 A N T I F R E E Z E J R A D I A T O R A A

Can you find these words?

ETHYLENE GLYCOL
 OPERATIONAL
 BIMETALLIC
 ANTIFREEZE
 RESERVOIR
 CROSS FLOW
 THROTTLE
 METHANOL

DETERIORATION
 BALL BEARING
 HYDROMETER
 WATER PUMP
 PREMATURE
 SOLUTION
 RADIATOR
 SPIRAL

COOLING SYSTEM
 PRESSURIZED
 FAHRENHEIT
 VARIATION
 DISSIPATE
 CORE PLUG
 ADAPTER

ACROSS

COOLING SYSTEM

ANSWER KEY

E T H Y L E N E G L Y C O L
B A L L B E A R I N G D I S S I P A T E .
P R E S S U R I Z E D
O P E R A T I O N A L
. R E S E R V O I R
A D A P T E R
P R E M A T U R E . . H Y D R O M E T E R
M E T H A N O L
. D E T E R I O R A T I O N S P I R A L .
. . . C O O L I N G S Y S T E M
B I M E T A L L I C W A T E R P U M P . .
T H R O T T L E F A H R E N H E I T . . .
C R O S S F L O W S O L U T I O N
.
. V A R I A T I O N
. C O R E P L U G
A N T I F R E E Z E . R A D I A T O R . .

COOLING SYSTEM

G Q G W W U U I B P Z X K X T M I C M Y
 R G C F D C L G Q D J C C A O R O C O E V
 A F Q I A V D P Y H Q O O A P A I S N T F
 X G L F S P I R A L R B O R E D P H U H D
 X L L C R O S S F L O W L I T I C A L A D
 R X B J Z G S D E T E R I O R A T I O N U
 T W B V A R I A T I O N N Y V T C T O O F
 X A A W P H P D H P Q P G V G O B A P L A
 X T L J R R A T Y P R E S S U R I Z E D H
 R E L R E A T T L Z A H Y D R O M E T E R
 S R B B M E E R E G O L S O B D E X G A E
 O P E R A T I O N A L A T O D P T A S D N
 L U A N T I F R E E Z E E M Y X A B W A H
 U M R C U V H R G B W U M P B R L H P P E
 T P I I R Y L I L Z N C O R E P L U G T I
 I N N B E E C Q Y R E S E R V O I R U E T
 O R G J B H B E C F V W X O O X C P B R R
 N U V Q K F S A O R A G O A A M J T S S Z
 R G T H R O T T L E A O B M H S Q U H W L

Can you find these words?

ETHYLENE GLYCOL
 OPERATIONAL
 BIMETALLIC
 ANTIFREEZE
 RESERVOIR
 CROSS FLOW
 THROTTLE
 METHANOL

DETERIORATION
 BALL BEARING
 HYDROMETER
 WATER PUMP
 PREMATURE
 SOLUTION
 RADIATOR
 SPIRAL

COOLING SYSTEM
 PRESSURIZED
 FAHRENHEIT
 VARIATION
 DISSIPATE
 CORE PLUG
 ADAPTER

ACROSS/DOWN

COOLING SYSTEM

ANSWER KEY

. M .
. C . R . . . E .
. D O . . A . . . T .
. S P I R A L . . O . . D . . . H .
. . . C R O S S F L O W L . . I . . . A .
. S D E T E R I O R A T I O N .
. W B V A R I A T I O N N . . T . . . O F
. A A . P . P . H . . . G . . O B . . L A
. T L . R . A . Y P R E S S U R I Z E D H
. E L . E . T . L . . H Y D R O M E T E R
S R B . M . E . E . . . S . . . E . . A E
O P E R A T I O N A L . T . . . T . . D N
L U A N T I F R E E Z E E . . . A . . A H
U M R . U . . . G . . . M . . . L . . P E
T P I . R . . . L . . C O R E P L U G T I
I . N . E . . . Y R E S E R V O I R . E T
O . G C C . . R .
N O
. . T H R O T T L E

COOLING SYSTEM

Z E Y Q P L B X A O A M O W G A W C P R N
 D A F U D I S S I P A T E Q S X H R L Y Z
 U A Z Y B A L L B E A R I N G O C O C R G
 M A W R O C F A H R E N H E I T C S H N B
 N E A E A O T A P A O S B J W Y R S T F N
 J A T N O O K H Z T P C I Y L D A F T I B
 T N E H T L W N R I F R M G W I D L M E V
 U V R O A I X A Q O O P E N C G I O T P L
 P P P P O N F X U N T N T S L J A W L D X
 R E U R O G O R H A E T A X S S T V K E O
 P U M E I S O L E L U U L L N U O A A T N
 C E P M L Y D B Y E A V L E L A R R B C H
 S O S A U S S H O R Z Z I Y W Q E I C O E
 S P J T J T T W P A Y E C D V S Y A Z R R
 V D I U D E T E R I O R A T I O N T O E U
 H Y D R O M E T E R R E S E R V O I R P D
 X O M E A G Y O I B J S O L U T I O N L O
 A K B R J L I G Z R Y P B F G S O N Z U C
 T R W D P H A D A P T E R T N L W L X G T

Can you find these words?

ETHYLENE GLYCOL
 OPERATIONAL
 BIMETALLIC
 ANTIFREEZE
 RESERVOIR
 CROSS FLOW
 THROTTLE
 METHANOL

DETERIORATION
 BALL BEARING
 HYDROMETER
 WATER PUMP
 PREMATURE
 SOLUTION
 RADIATOR
 SPIRAL

COOLING SYSTEM
 PRESSURIZED
 FAHRENHEIT
 VARIATION
 DISSIPATE
 CORE PLUB
 ADAPTER

ACROSS/DOWN/DIAGONAL

COOLING SYSTEM

ANSWER KEY

. O C
. . . . D I S S I P A T E R L . .
. . . . B A L L B E A R I N G . . O
M . W . . C F A H R E N H E I T C S
. E A . . O T . . A . . B . . Y R S
. . T N . O . H . T P . I . L . A F
. . E H T L . . R I . R M G . . D L
. . R . A I . . . O . . E . . . I O
. . P P . N F . . N T N T S . . A W
. . U R . G O R . A E T A . S . T V
. . M E . S . L E L . . L . . U O A
. . P M . Y . . Y E . . L E . . R R . C
S . . A . S . H . . Z . I I . O
. P . T . T T E C A Z R
. . I U D E T E R I O R A T I O N T . E
H Y D R O M E T E R R E S E R V O I R P D
. . . . E A S O L U T I O N L
. L N . U
. A D A P T E R G



COOLING SYSTEM COMPONENTS

XX																		
XX	1	XX	XX	XX	XX	XX												
XX		XX	XX	XX	XX	XX												
XX		XX	2	XX	XX	XX												
XX	XX	XX	XX	3	XX		XX		XX	XX	XX							
XX	XX	XX	XX		XX		XX		XX	XX	XX							
XX	XX	XX	XX		XX	XX	4											XX
XX	XX	XX	XX		XX	XX		XX		XX	XX	XX						
XX	XX	XX	5														XX	XX
XX	XX	XX	XX		XX	XX		XX		XX	XX	XX						
XX	XX	XX	XX		XX	XX		XX		XX	XX	XX						
XX	XX	XX	XX		XX	XX		XX		XX	XX	XX						
XX	XX	XX	XX		XX	XX		XX										
XX	XX	XX	6										XX	XX	XX	XX	XX	XX
XX	XX	XX	XX		XX	XX		XX										
XX		XX																
XX		XX																

ACROSS:

DOWN:

- | | |
|---|---|
| <p>4. made of two metals</p> <p>5. a unit that is run by fluid and fastened to the water pump (3 words)</p> <p>6. a device used to move a liquid through the cooling system (2 words)</p> | <p>1. winding around a center from the bottom to the top</p> <p>2. change</p> <p>3. in working condition</p> <p>4. a metal unit with steel balls inside to lower friction (2 words)</p> |
|---|---|

COOLING SYSTEM COMPONENTS

ANSWER KEY

ACROSS:

DOWN:

- 4. BIMETALLIC
- 5. FANCLUTCHUNIT
- 6. WATERPUMP

- 1. SPIRAL
- 2. VARIATION
- 3. OPERATIONAL
- 4. BALLBEARING

S
P
I V
O R A
P A R
E B I M E T A L L I C
R A A
F A N C L U T C H U N I T
T L I
I B O
O E N
N A
W A T E R P U M P
L I
N
G

LEARNING WORDS USED IN INSPECTING AND REPLACING EXHAUST COMPONENTS

INTRODUCTION

The purpose of the exhaust system is three-fold. First it must carry the exhaust gases from the engine underneath the car to the rear of the passenger compartment. The second job is to prevent carbon monoxide from entering the passenger compartment. The final job is to silence the combustion and exhaust noise from the engine. The exhaust system consists of the exhaust manifold(s), exhaust pipe, muffler, tailpipe, clamps, and hangers. In this unit you will learn the technical vocabulary related to the components of the exhaust system.

PERFORMANCE OBJECTIVES

You will match 17 words used in inspecting and replacing exhaust components with their definitions. Your teacher will provide a list of words and definitions. You should match at least 14 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

INSPECTING AND REPLACING EXHAUST COMPONENT

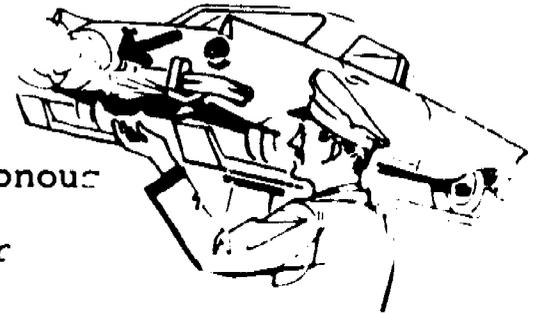
assemblies
(as sem blies)

the parts put together to
make a whole unit



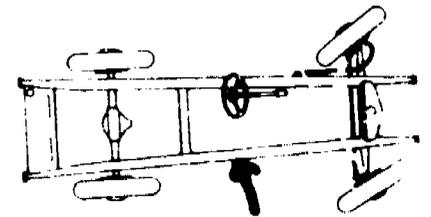
carbon monoxide
(car bon mon ox ide)

a gas from incomplete
combustion that is poisonous
and has no color or odor



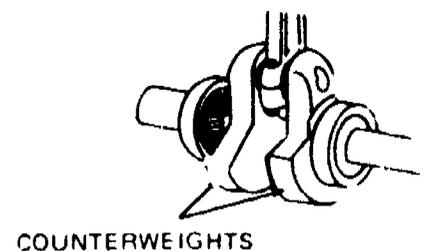
chassis
(chas sis)

the frame of a car that the
body and other parts
fasten to



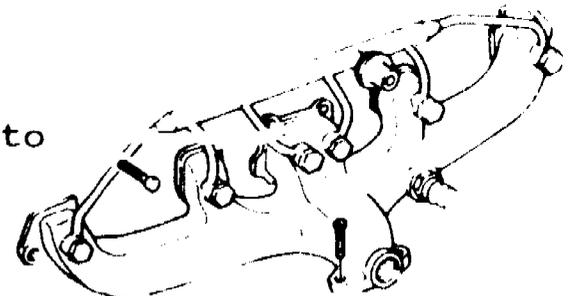
counterweight
(coun ter weight)

a weight added to a part
so that the part will be
balanced



exhaust manifold
(ex haust man i fold)

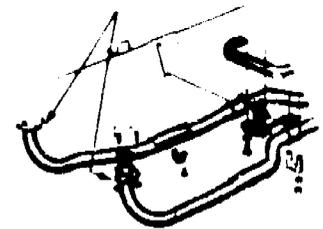
pipes that carry waste
vapor from the engine to
the exhaust pipes



INSPECTING AND REPLACING EXHAUST COMPONENTS

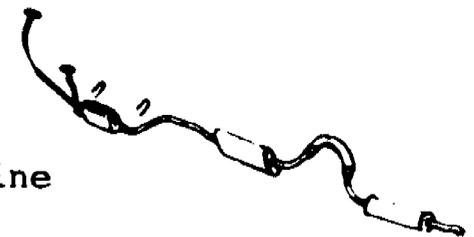
exhaust pipe
(ex haust pipe)

the pipe that carries waste
vapor from the exhaust
manifold to the muffler



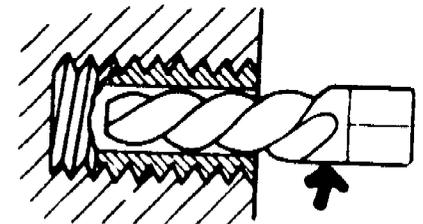
exhaust system
(ex haust sys tem)

all the parts that carry
waste vapor from the engine



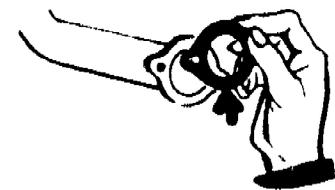
extractor
(ex trac tor)

the tool that is used to
take out a broken bolt



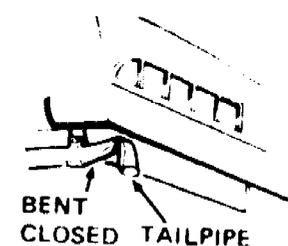
flange
(flange)

a mating surface for
bolting parts together



inoperative
(in op er a tive)

not working



INSPECTING AND REPLACING EXHAUST COMPONENTS

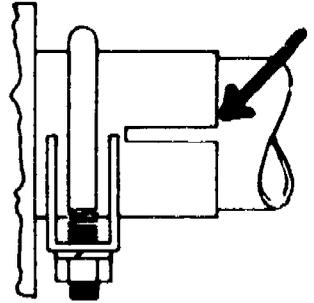
muffler
(muf fler)

a unit used to quieten
the sound of exhaust gases
from an engine that is running



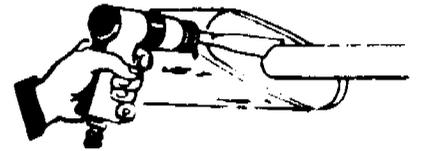
penetrate
(pen e trate)

to go through something



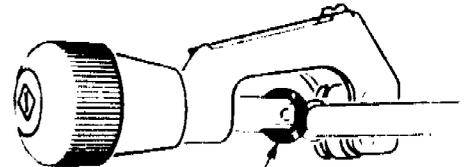
pneumatic
(pneu mat ic)

operated by compressed air



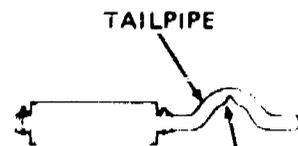
sever
(sev er)

cut or separate



tail pipe
(tail pipe)

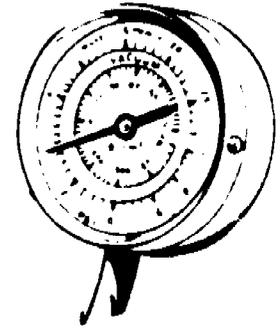
the pipe that carries waste
vapor from the muffler to
the atmosphere



INSPECTING AND REPLACING EXHAUST COMPONENTS

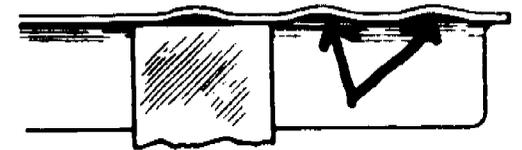
vacuum gauge
(vac u um gauge)

a tool used to measure the
vacuum in an area



warped
(warped)

twisted in form because
of heat



EXHAUST COMPONENTS

E X H A U S T M A N I F O L D U B R R H D
 C O U N T E R W E I G H T M U F F L E R Y
 I N O P E R A T I V E P E N E T R A T E H
 E X T R A C T O R S E V E R J A S W R L Y
 T A I L P I P E Q B D X Y X F D D E B M X
 C A R B O N M O N O X I D E T A C L Q B K
 O S L S T R R E X H A U S T S Y S T E M X
 V P J O D Y Y X Q F W O O X U J B N V X X
 K K B M P B Q K O M V L K T A H G X G S E
 A S S E M B L I E S K E J D N G N W E W Z
 V A C U U M G A U G E W B E W G Q R J G V
 K F A N M Q J P N E U M A T I C M Q F Y L
 R A Q X E O S X L S E P G G N L M C D U C
 Y L S F P A B Z R C H A S S I S S E J P D
 O D W A R P E D Y T U D O M S A N Y O R O
 A H O V S K F C S D E X H A U S T P I P E
 N C S V N Z B A A L W X J W F L A N G E X

Can you find these words?

EXHAUST MANIFOLD
 COUNTERWEIGHT
 EXHAUST PIPE
 PENETRATE
 MUFFLER
 FLANGE

CARBON MONOXIDE
 VACUUM GAUGE
 ASSEMBLIES
 EXTRACTOR
 CHASSIS
 SEVER

EXHAUST SYSTEM
 INOPERATIVE
 PNEUMATIC
 TAIL PIPE
 WARPED

ACROSS

EXHAUST COMPONENTS

ANSWER KEY

E X H A U S T M A N I F O L D
C O U N T E R W E I G H T M U F F L E R .
I N O P E R A T I V E P E N E T R A T E .
E X T R A C T O R S E V E R
T A I L P I P E
C A R B O N M O N O X I D E
. E X H A U S T S Y S T E M .
.
.
A S S E M B L I E S
V A C U U M G A U G E
.
. P N E U M A T I C
. C H A S S I S
. . W A R P E D
. E X H A U S T P I P E
. F L A N G E .

EXHAUST COMPONENTS

L T E N B V B V Q E J X J L Q C E N P Z P
 C A R B O N M O N O X I D E F D A N N M W
 O I H U F I S T F X V X G X K P V A E U D
 U L O C Q Q V S Q Q P E F H T N B A U F N
 N P T M D I V A C U U M G A U G E O M F B
 T I F G W I W H B W X A H U Q A T A A L G
 E P W C L F P Y E X H A U S T S Y S T E M
 R E L T J U I N O P E R A T I V E C I R N
 W R V B W X O H U Y H K S M T F X C C X E
 E X H A U S T P I P E B S A Q J T H P F H
 I S J S I Y S D S J T P E N E T R A T E G
 G E I F T D P F M B A X M I T B A S L M L
 H R H X A T N C X X R K B F K Q C S W I N
 T Y O O F V Y T I K M G L O V F T I G D O
 H I V R E L O V I I F A I L O L C S S Z A
 U F J C V E Z T K W I S E D W A R P E D A
 P A A G I X U Q C A N K S X Z N J G V N O
 H X A W E S U A B D G V E P H G V N E X E
 Q W S K K Y G S X J F Z L X S E K C R W H

Can you find these words?

EXHAUST MANIFOLD
 COUNTERWEIGHT
 EXHAUST PIPE
 PENETRATE
 MUFFLER
 FLANGE

CARBON MONOXIDE
 VACUUM GAUGE
 ASSEMBLIES
 EXTRACTOR
 CHASSIS
 SEVER

EXHAUST SYSTEM
 INOPERATIVE
 PNEUMATIC
 TAIL PIPE
 WARPED

ACROSS/DOWN

EXHAUST COMPONENTS

ANSWER KEY

. T P . .
 C A R B O N M O N O X I D E N M .
 O I X E U .
 U L H U F .
 N P V A C U U M G A U G E . M F .
 T I U A L .
 E P E X H A U S T S Y S T E M
 R E I N O P E R A T I V E . I R .
 W S M . . X C C . .
 E X H A U S T P I P E . S A . . T H . . .
 I P E N E T R A T E .
 G M I . . A S . . .
 H B F . . C S . . .
 T L O . F T I . . .
 I L . L O S S . .
 E D W A R P E D .
 S . . N . . V . .
 G . . E . .
 E . . R . .

EXHAUST COMPONENTS

B I T G Q W A R P E D Q W C R R B W A J
 R Y F R E G T R L N E Y W E B F W S Z M
 U H K L Y X X Q I G E O E J E B V E R F
 O P A H A O H M U N Q U T M A J M P Z Q
 J L H J G N C A R B O N M O N O X I D E
 H X W C B B G O U G S P R A I A N J E X
 F E E M H M A E U S A V E R T L I P O H
 L X V M U A E A F N T D D R V I I C E A
 A T J U M F S T P P T S Z H A P C T F U
 T R C Q S X F S J A K E Y D T T A X Y S
 X A S S E M B L I E S V R S X R I C T T
 V C I F D H Z H E S H U U W T E R V M M
 K T Q L D F L X X R N A I E E E Y W E A
 L O N J P J M Q S A H S N C B I M E O N
 W R E B T I H B B X S E V E R P C P O I
 U S C S M Y P R E C P J K U M M J H X F
 V D U H W U T E O Z U V E F U E K P T O
 I T K S K J I I P T N G M B U E Y G R L
 H R V I Q I H E P W A G F V R N A S H D

Can you find these words?

EXHAUST MANIFOLD
 COUNTERWEIGHT
 EXHAUST PIPE
 PENETRATE
 MUFFLER
 FLANGE

CARBON MONOXIDE
 VACUUM GAUGE
 ASSEMBLIES
 EXTRACTOR
 CHASSIS
 SEVER

EXHAUST SYSTEM
 INOPERATIVE
 PNEUMATIC
 TAIL PIPE
 WARPED

ACROSS/DOWN/DIAGONAL

EXHAUST COMPONENTS

ANSWER KEY

. W A R P E D

. . F . E N E

. . . L . X . . I G E

. . . . A . H . U N . U

. N C A R B O N M O N O X I D E

. . . C . . G O U . . P . A E X

. E . M H M . E U S . . E . T . . P . H

. X . . U A . . . N T . . R . I I . E A

. T . U . F S . . . T S . . A P C T . U

T R C . . . F S . . . E Y . T T A . . S

. A S S E M B L I E S . R S . R I . . T

V C I E S . . U W T . . V . M

. T . L R . A . E E E . . E A

. O . . P H . N . . I M . . N

. R . . . I . . . X S E V E R . G . . I

. P . E . P H . F

. E T O

. L

. D

EXHAUST COMPONENTS I

XX																				
XX	1	XX																		
XX		XX	2										3					XX	XX	XX
XX		XX		XX		XX														
XX												XX	XX		XX	XX	XX	XX	XX	XX
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX	5	XX														
XX	XX	XX		XX		XX														
XX	6									XX										
XX	XX	XX		XX		XX														
XX	XX	XX		XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														

ACROSS:

DOWN:

- 2. the pipes that carry waste vapor from the engine (2 words)
- 4. the pipe that carries waste vapor from the exhaust manifold (2 words)
- 6. something that is used to take out a part

- 1. the parts put together to make a whole unit
- 2. all the parts that carry waste vapor from the engine (2 words)
- 3. a part that is like an arm that holds something in place
- 5. the frame of a car that the body sits on

EXHAUST COMPONENTS 1

ANSWER KEY

ACROSS:

DOWN:

- 2. EXHAUSTMANIFOLD
- 4. EXHAUSTPIPE
- 6. EXTRACTOR

- 1. ASSEMBLIES
- 2. EXHAUST SYSTEM
- 3. FLANGE
- 5. CHASSIS

A
 S E X H A U S T M A N I F O L D
 S X L
 E X H A U S T P I P E A
 M A N
 B U G
 L S E
 I T
 E S
 S Y C
 S H
 E X T R A C T O R
 E S
 M S
 I
 S

EXHAUST COMPONENTS II

XX																				
XX																				
XX	XX	XX	XX	1	XX															
XX	XX	XX	XX		XX															
XX	XX	XX	2										XX							
XX	XX	XX	XX		XX															
XX	XX	XX	XX		XX															
XX	XX	XX	XX	3									XX							
XX	XX	XX	XX		XX	4	XX	XX	XX	XX	XX	XX								
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX								
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX								
XX	XX	XX	5														XX	XX	XX	XX
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX								
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX								
XX	XX	XX	XX		XX	XX	XX	XX	XX	XX	6						XX	XX	XX	XX
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX								
XX	XX	7					XX		XX	XX	XX	XX	XX	XX						
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX								
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX								
XX	8							XX	XX	XX	XX	XX								
XX																				

ACROSS:

DOWN:

- | | | | |
|----|--|----|--|
| 2. | run by air | 1. | not working |
| 3. | to go through something | 4. | the pipe that carries waste vapor from the muffler (2 words) |
| 5. | a gas that is poisonous and has not color or odor (2 words) | | |
| 6. | changed in form because of heat | | |
| 7. | cut or separate | | |
| 8. | a unit used to quietly pass exhaust gases from an engine that is running | | |

EXHAUST COMPONENTS II

ANSWER KEY

ACROSS:

- 2. PNEUMATIC
- 3. PENETRATE
- 5. CARBONMONOXIDE
- 6. WARPED
- 7. SEVER
- 8. MUFFLER

DOWN:

- 1. INOPERATIVE
- 4. TAILPIPE

I
P N E U M A T I C
O
P E N E T R A T E
E T
R A
C A R B O N M O N O X I D E
T L
I W A R P E D
S E V E R I
E P
M U F F L E R

LEARNING WORDS USED IN TESTING COMPRESSION

INTRODUCTION

The present day auto mechanic is faced with the increasingly difficult task of analyzing and diagnosing engine performance problems. One test which may be used to diagnose a mechanical malfunction is the cylinder compression test. When properly conducted, this test may be used to determine whether the malfunction is because of a bad valve, bad rings, or a leaking head gasket. This test can be deceptive to the inexperienced mechanic since a cylinder that is pumping oil may produce a higher compression reading than a normal cylinder. Also, the test will not determine which valve--intake or exhaust--is leaking. The test will help to determine whether the engine is in a balanced condition--that is, all cylinders should be within 10 pounds pressure when compared to the average cylinder. In this unit you will learn the technical vocabulary related to testing compression.

PERFORMANCE OBJECTIVES

You will match 11 words used in testing compression with their definitions. Your teacher will provide a list of words and definitions. You should match at least 9 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

-
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
 5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another.
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
-

-
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

TESTING COMPRESSION

analyzing
(an a lyz ing)

studying closely to find
the problem



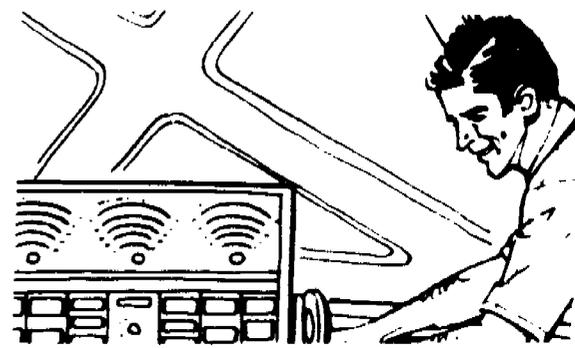
cylinder
(cyl in der)

a round opening in an engine
block that the piston moves up
and down in



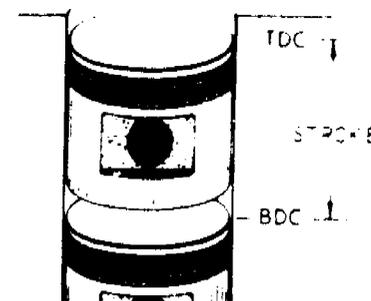
diagnosing
(di ag no sing)

identifying the problem



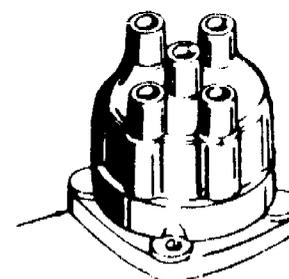
displacement
(dis place ment)

the space that the piston
occupies from the top to
the bottom of its travel



distributor
(dis trib u tor)
cap
(cap)

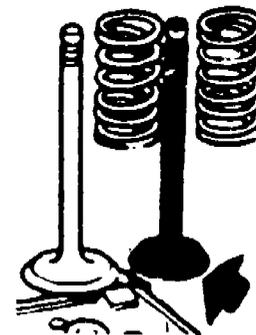
a covered cap that has a
central point for receiving
coil voltage and then sends
it to the spark plugs



TESTING COMPRESSION

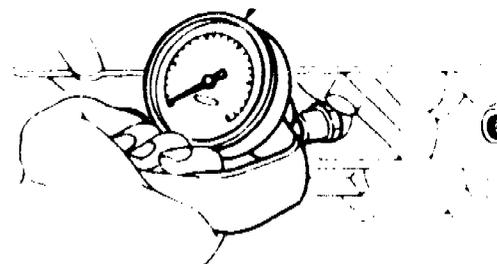
exhaust valve
(ex haust valve)

the part through which
burned fuel passes from the
cylinder (cyl in der) to
the exhaust manifold



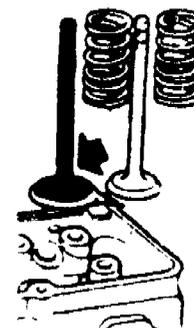
gauge
(gauge)

a tool used to measure
or test



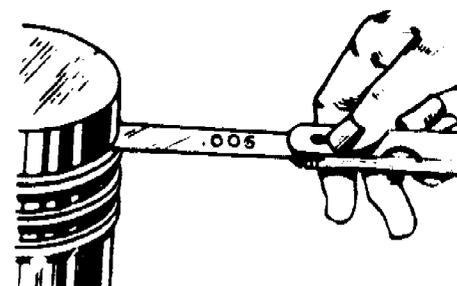
intake valve
(in take valve)

valve through which fuel
mixture enters the cylinder
(cyl in der)



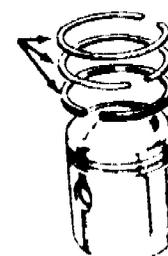
minimum
(min i mum)

the least or smallest



piston rings
(pis ton rings)

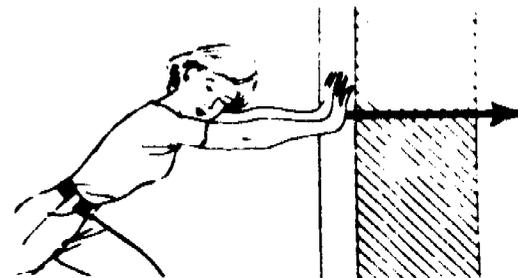
parts used to seal compression
above the piston and oil below
the piston



TESTING COMPRESSION

pressure
(pres sure)

the force exerted against
something



TESTING COMPRESSION

D I S T R I B U T O R C A P L S O C P N G
 P R E S S U R E G A U G E E K Z J Y U F P
 X W R W T X B T M Y D E U B N B A Y L Q L
 A N L R R H Z M F H A U D R O R R E O D H
 G U Z A M O K J N Q M Q N D Z D M C Z F D
 S N U S E R P F D W L Z N N J A H N W N V
 G B D F S X V G L P S Z H A C W J D E W M
 M I G U D X G G R X I Z R T L D T W K J K
 Y F O A N E F I D U N Y Z A R U Z F L E E
 E X H A U S T V A L V E L T U A J G Y C M
 M B S Q L T X Q G P E B I U G R E S F K W
 R I O M I N I M U M X I B D Q W V S D A M
 O W I U O U L C J E C M Z V B E X Z I S X
 O A P V S I D U P I I W M E H S U F A I E
 T Z E U U D H H X Z R X Z F O S L T Q R R
 I N T A K E V A L V E H H Y I S Z J F I E
 P I S T O N R I N G S H F L R C X V G S V
 N D I A G N O S I N G C O G C N X N Z G B
 G Y C Q X J C C L A N A L Y Z I N G M M Q

Can you find these words?

DISTRIBUTOR CAP
 INTAKE VALVE
 ANALYZING

EXHAUST VALVE
 DIAGNOSING
 PRESSURE

PISTON RINGS
 MINIMUM
 GAUGE

ACROSS

TESTING COMPRESSION

ANSWER KEY

D I S T R I B U T O R C A P

P R E S S U R E G A U G E

.

.

.

.

.

.

.

.

E X H A U S T V A L V E

.

. . . M I N I M U M

.

.

.

I N T A K E V A L V E

P I S T O N R I N G S

. D I A G N O S I N G

. A N A L Y Z I N G . . .



TESTING COMPRESSION

G E A T L T B H C S L Y I C B D H G M
 W E A D Y S P I Q Z S X I S F J Y K W
 N A P F O E C K T Y P K X J T Z R Z L
 K X E X T X U U O F G J C N S Y Q G E
 U J A P Y H N T Y A N A L Y Z I N G A
 P W O W D A Y T U Y K F X V O N M L L
 M I N I M U M J I A B J H P M T P P P
 L Q T D I S T R I B U T O R C A P G Z
 L O P I S T O N R I N G S E X K G J F
 H R P A F V V V A C A P Q S G E P E C
 I E E G M A D M F I O Y H S Y V P E K
 I N Y N A L U N J Q J S U G A U G E
 I Y B O F V S O F X H T D R Z L C F B
 L T H S V E B X D A N I Y E R V F W G
 P Q L I K Q W Q Y G J U P W M E J E V
 E Y C N D M H U T M O L F H X T N V A
 B P V G R K I G J A O R H M T O P C O

Can you find these words?

DISTRIBUTOR CAP
 INTAKE VALVE
 ANALYZING

EXHAUST VALVE
 DIAGNOSING
 PRESSURE

PISTON RINGS
 MINIMUM
 GAUGE

ACROSS/DOWN

TESTING COMPRESSION

ANSWER KEY

.

 E
 X
 H A N A L Y Z I N G .
 A N
 M I N I M U M P . T
 D I S T R I B U T O R C A P
 P I S T O N R I N G S E . K
 A . V S . E
 G . A S . V
 N . L U G A U G E
 O . V R . L
 S . E E . V
 I E
 N
 G

TESTING COMPRESSION

N W J O O T F N Y G K P M Z J Y L Y P B T
 H D Q V T K D P N R U J J U F D G A U G E
 W X D G B I V I R U Q E G T B W C K M P A
 I U Z M C Q Z S N E T F P T H R U U I O I
 B T A H A Y T T M T S W A O O O B A I P S
 K V H V L K P O P V A S Q T Q Q K V F P W
 I M Y A P X W N E L E K U W G A C V O J O
 M I N I M U M R Z G J B E R I L C F J T S
 F A A X H N R I N G I T C V E H B N G E R
 J J K S V X E N J R G Q U P A O S R Q S U
 M J M J F H A G T D N F J Y M L T T Q Y C
 I I E X H A U S T V A L V E Z T V J Q T B
 I K H R H I I D U A I X N O Q V H E Z A J
 V A N L R D I A G N O S I N G J Q P J S U
 O Z V C O Z F A N V C M J Y K D I U Y H W
 F S K V G P A E T Y Z A J Z T R Q D Y L K
 V Y F H L O S W A C O O S J N F H F S Y S
 W N P M A M A D Y Y R Z F Q O K A L U B H
 K G A P Y U Z U C V P J Y S F O X O N G B

Can you find these words?

DISTRIBUTOR CAP
 INTAKE VALVE
 ANALYZING

EXHAUST VALVE
 DIAGNOSING
 PRESSURE

PISTON RINGS
 MINIMUM
 GAUGE

ACROSS/DOWN/DIAGONAL

TESTING COMPRESSION

ANSWER KEY

. G P
. P N G A U G E
. I R C
. Z S N E R
. Y . T . T S O
. L . . O . . A S . T
. A N K U
M I N I M U M R B E R
. A I . . I . . V E
. N . R A
. G T L
. . E X H A U S T V A L V E . . V
. I E
. D I A G N O S I N G
.
.
.
.
.



TESTING COMPRESSION I

XX																				
XX																				
XX	3	XX																		
XX		XX																		
XX	4									XX	XX	XX	XX							
XX		XX																		
XX	XX	XX	XX	XX	XX	5							XX							
XX		XX																		
XX	XX	XX	XX	XX	6								XX							
XX		XX																		
XX		XX																		
XX	7					XX														
XX																				
XX																				

ACROSS:

DOWN:

- | | |
|---|-------------------------------|
| <p>2. the order in which things should be done</p> <p>4. looking closely to find the problem</p> <p>5. the least or smallest</p> <p>6. the pushing against something</p> <p>7. a tool used to measure or test</p> | <p>3. finding the problem</p> |
|---|-------------------------------|

TESTING COMPRESSION I

ANSWER KEY

ACROSS:

DOWN:

- | | | | |
|----|-----------|----|------------|
| 4. | ANALYZING | 3. | DIAGNOSING |
| 5. | MINIMUM | | |
| 6. | PRESSURE | | |
| 7. | GAUGE | | |

D

I

A N A L Y Z I N G

G

M I N I M U M

O

P R E S S U R E

I

N

G A U G E

237

TESTING COMPRESSION II

XX	XX	XX	XX	XX	XX	1	XX													
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	2	XX	3											XX	XX	XX	XX
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX		XX													
XX	XX	4														XX	XX	XX	XX	XX
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX															
XX	XX	XX	XX		XX															
XX	XX	XX	XX		XX															

ACROSS:

DOWN:

- 3. valve through which fuel mixture enters cylinder (2 words)
- 4. covered cap that has central point to receive voltage & send to outer points (2 words)

- 1. parts used to seal burning fuel charge above the piston (2 words)
- 2. part through which burned fuel passes from cylinder to exhaust manifold (2 words)

TESTING COMPRESSION II

ANSWER KEY

ACROSS:

DOWN:

- 3. INTAKEVALVE
- 4. DISTRIBUTORCAP

- 1. PISTONRINGS
- 2. EXHAUSTVALVE

P

E I N T A K E V A L V E

X S

H T

A O

U N

D I S T R I B U T O R C A P

T I

V N

A G

L S

V

E

LEARNING WORDS USED IN INSPECTING ENGINE LUBRICATION SYSTEM

INTRODUCTION

The lubrication system is actually an integral part of the engine. The operation of the system, like all other engine systems, is essential to the operation of the engine. A basic understanding of the lubricating system is critical before the mechanic can properly diagnose some of the system problems. In this unit you will learn the technical vocabulary related to the engine lubrication system.

PERFORMANCE OBJECTIVES

You will match 7 words used in inspecting engine lubrication systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

-
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
 4. USE the Answer Key on the back as a self-check.
 5. STUDY the words that were a problem.

INSPECTING ENGINE LUBRICATION SYSTEM

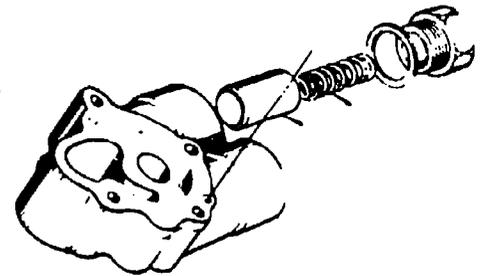
bearing
(bear ing)

lubricated surface on
which a part rotates



bypass valve
(by pass valve)

a part that can open and
let fluid go through a
different way



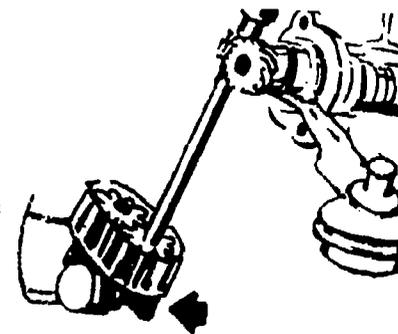
dilution
(di lu tion)

a liquid solution that
has been thinned



oil pump
(oil pump)

a device used to force oil
to moving parts of the engine



oil seals
(oil seals)

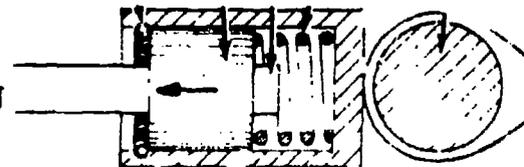
parts used to keep oil from
flowing past a certain area



INSPECTING ENGINE LUBRICATION SYSTEM

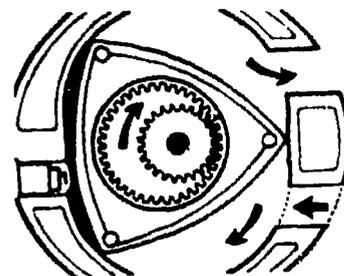
plunger
(plung er)

a rod or piston that
operates with a plunging
motion



rotary
(ro ta ry)

turning



INSPECTING ENGINE LUBRICATION SYSTEM

Word Find Puzzles for Units
AM-18 and AM-19 have been
combined into one group of
puzzles and may be found
on Pages AM-19-3 to
AM-19-5.

ENGINE LUBRICATION

XX																				
XX																				
XX	XX	XX	XX	XX	1								XX							
XX	XX	XX	XX	XX	XX								XX							
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
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XX	XX	3											XX							
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX									
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XX	5						6	XX												
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		

ACROSS:

DOWN:

- | | |
|--|---|
| <p>1. a device used to force oil to parts of the engine (2 words)</p> <p>3. part that can open and let fluid go through a different way (2 words)</p> <p>4. the area of a unit on which a turning part sits</p> <p>5. the rod that carries the valves in a tire valve unit</p> | <p>1. parts used to keep oil from flowing past a certain area (2 words)</p> <p>2. a liquid solution that has been thinned down</p> <p>6. turning around</p> |
|--|---|

ENGINE LUBRICATION

ANSWER KEY

ACROSS:

DOWN:

- 1. OILPUMP
- 3. BYPASSVALVE
- 4. BEARING
- 5. PLUNGER

- 1. OILSEALS
- 2. DILUTION
- 6. ROTARY

O I L P U M P

I

L

S

D

E

I

B Y P A S S V A L V E

L

U

S

T

B E A R I N G

O

P L U N G E R

O

T

A

R

Y

LEARNING WORDS USED IN CHANGING ENGINE OIL AND FILTER

INTRODUCTION

One of the most common operations of the automotive service trade is changing the engine oil and filter. The mechanic is often asked to perform this task, especially when there are no separate servicemen or facilities for this purpose. The frequency of this operation is one of the most important factors that determines the life of the engine. In this unit you will learn the technical vocabulary related to the engine oil and filter.

PERFORMANCE OBJECTIVES

You will match 8 words used in changing engine oil and filter with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 of the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

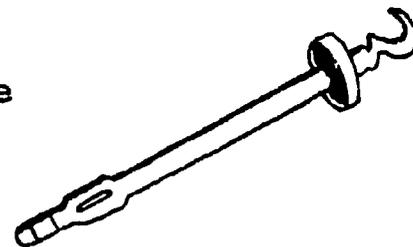
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
 2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
 3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
 4. USE the Answer Key on the back as a self-check.
 5. STUDY the words that were a problem.
-

CHANGING ENGINE OIL AND FILTER

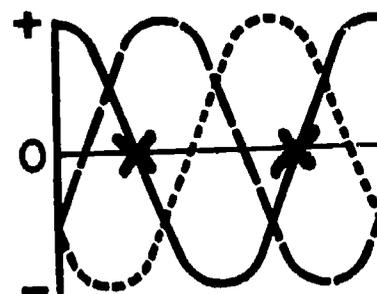
dipstick
(dip stick)

a rod used to measure the
level of engine oil



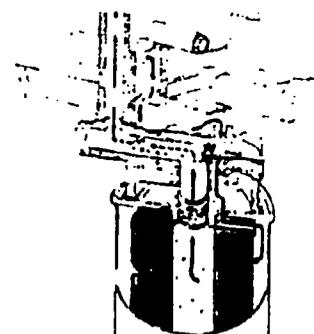
frequency
(fre quen cy)

how often something happens



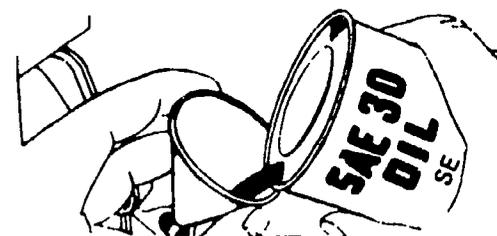
full flow
(full flow)
oil filter
(oil fil ter)

a device which filters all
the oil moving through the
lubrication system



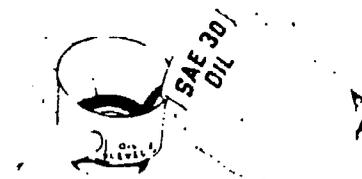
lubricant
(lu bri cant)

a slippery substance that
reduces friction



lubricate
(lu bri cate)

using grease or oil between
two parts to slow down wear



CHANGING ENGINE OIL AND FILTER

oil filter
(oil fil ter)

a device used to strain
engine oil to take out small
pieces of dirt and metal



oxidation
(ox i da tion)

rusting; the wearing away of
a metal due to combining with
oxygen (ox y gen)

viscosity
(vis cos i ty)

how easily a liquid flows



ENGINE OIL & LUBRICATION

B Y P A S S V A L V E P L U N G E R B T A
 Q P O K O I L S E A L S B E A R I N G Y R
 X I O W H Z A P V T K Y D V F A E R W T Y
 O U L I B B N V J F K C F V Q K S K A H P
 N G R G M E E C S T B C U U B L L F Z Q F
 E K J Q O U H A K J V V F J M G O C O P Q
 I N I O A S N V W N A T O A U L B G K N J
 R O T A R Y V Z Y Z A L L H O I L P U M P
 F K I M M A C C K U X K O D Y O A J U Y C
 M E H Z W V A K G I L U K Y T M T F U L J
 S G M S Q J O M N I F K E D I L U T I O N
 M C F B F C E R T O X I D A T I O N X W C
 O I L F I L T E R C U G M Z E G Y A X V G
 H C Y U W T Y V T G L Z Y D I U X V N Q L
 A A W H M Q U V O R C L D W N F L X R Y H
 T V E K D R Y S A Y L O S C G K V F B W A
 K V Z N F N B E V Y D Q F W N A P S X E J
 F R E Q U E N C Y O C O R S P A I M F L H

Can you find these words?

BYPASS VALVE
 FREQUENCY
 DILUTION
 BEARING

OXIDATION
 PLUNGER
 ROTARY

OIL FILTER
 OIL SEALS
 OIL PUMP

ACROSS

ENGINE OIL & LUBRICATION

ANSWER KEY

BYPASS VALVE PLUNGER . . .

. . . . OIL SEALS BEARING . .

.

.

.

.

.

ROTARY OIL PUMP

.

.

. DILUTION

. OXIDATION . . .

OIL FILTER

.

.

.

.

FREQUENCY

ENGINE OIL & LUBRICATION

B F W Q D H D D O I L P U M P W P I
 W F Q W F I B Y I Q V Y T F B M B Z
 D Y B V U N T A L T U Q E B K L P S
 A A Y Z J C O A S E B Z G N A V C G
 E T O W T L X O E D F Z D V R F H A
 N B O J B V I O A H V O D Z O O F H
 L U U M G D A L U D I L U T I O N
 G S J B Y P A S S V A L V E A H X Y
 P B Q R F Y T O Z V J F F B R V R E
 T E J I P Y I A W E J I X H Y X C N
 I A F S K Y O A A N P L U N G E R E
 F R E Q U E N C Y O U T Y C U D A P
 B I M M J D Y C O S O E U M C E N Y
 G N F W W I F M X U G R Y D Y B S Y
 V G L L D U X E A W W K K S H N C A

Can you find these words?

BYPASS VALVE
 FREQUENCY
 DILUTION
 BEARING

OXIDATION
 PLUNGER
 ROTARY

OIL FILTER
 OIL SEALS
 OIL PUMP

ACROSS/DOWN

ENGINE OIL & LUBRICATION

ANSWER KEY

. O I L P U M P . . .
. I
. L
. O . S
. X . E R . . .
. I . A . . O . . O . . .
. D . L . D I L U T I O N
. . . B Y P A S S V A L V E A . . .
. B T F . . R . . .
. E I I . . Y . . .
. A O . . . P L U N G E R .
F R E Q U E N C Y . . T
. I E
. N R
. G

ENGINE OIL & LUBRICATION

C X F O W D T U F W Y G G D A G E C F S Z
 A Y P K D V N C T N Y P H Z D V G S Q X Z
 A Q E V U U J S Q U N R O I L F I L T E R
 B S N W F P C E I O R Z A A F W R K D A F
 G C D N O H T V I X I B V B Z Q D D U X D
 J I O P M Q R T F I I S B A F G S T G B W
 E Y K B G I U U A D S T Y A G P N R M G D
 R U Y B U L B B E A R I N G C Q B L I P Z
 M X J D I R T J P T P I O T N M L E W G D
 M T F D G S S Y J I B Y S S Q A E O G G P
 K D B B P A B F M O C O L Z G F Q Y T Y O
 U R Q W L U E D F N U A D P W M J N Y U W
 R V T D U N L Q E V E H M O V R W R T B Q
 I O N K N K G U X S Y U G C S J D H W S F
 K F T I G D Q V L H P O R D E D N U Y G Y
 Y B N A E E V I W L T R Q N I H G C D O L
 K P O A R R O S I P A M C Y W U O H D R P
 X X F F W Y A O N H H M A M P O G O D Q W

Can you find these words?

BYPASS VALVE
 FREQUENCY
 DILUTION
 BEARING

OXIDATION
 PLUNGER
 ROTARY

OIL FILTER
 OIL SEALS
 OIL PUMP

ACROSS/DOWN/DIAGONAL

ENGINE OIL & LUBRICATION

ANSWER KEY

. E
. V
. N . O I L F I L T E R
. O . . . A
. I X . . V
. T . I . S
. U . . D S
. L . B E A R I N G
. I . . . P T
. D . . . Y . I . Y . S
. P . B . . O C . L
. L N . A . P
R U E . E . M
. O N U . S . U
. T . G . Q . L . P
. A E E . I . L
. R R O . I
. F . Y . O

ENGINE OIL & LUBRICATION

XX																				
XX																				
XX	XX	XX	XX	XX	XX	2									XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX	3									XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX		XX													
XX																				
XX																				

ACROSS:

DOWN:

- 2. rusting; the wearing away of a metal due to oxygen
- 3. how often something happens

- 2. a device used to strain oil in the engine to take out small pieces (2 words)

ENGINE OIL & LUBRICATION

ANSWER KEY

ACROSS:

- 2. OXIDATION
- 3. FREQUENCY

DOWN:

- 2. OILFILTER

O X I D A T I O N

I

L

F R E Q U E N C Y

I

L

T

E

R

LEARNING WORDS USED IN REMOVING AND REPLACING THE CYLINDER HEAD

INTRODUCTION

The automobile engine's cylinder head is one of the most important parts of the engine. The mechanic may have to remove the cylinder head to correct specific problems such as a leak between the head and block. The cylinder head may be removed during an engine overhaul or for a valve reconditioning job. Regardless of the reason for its removal, the mechanic must observe proper procedures and techniques. In this unit you will learn the technical vocabulary related to removing and replacing the cylinder head.

PERFORMANCE OBJECTIVES

You will match 8 words used in removing and replacing the cylinder head with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

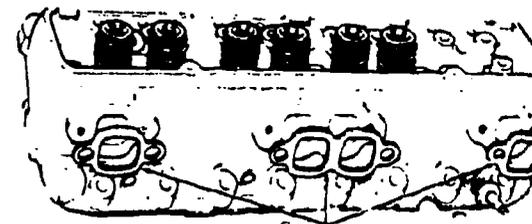
-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

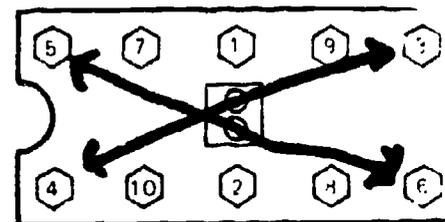
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

REMOVING AND REPLACING CYLINDER HEAD

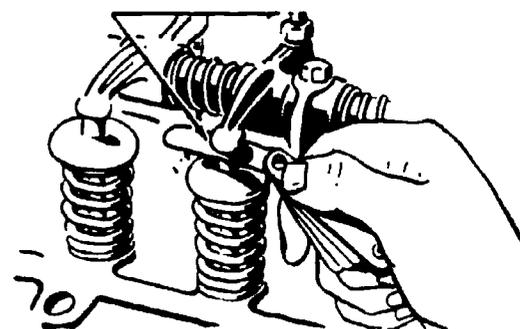
cylinder head large metal casting fastened
(cyl in der head) to the top of cylinder block



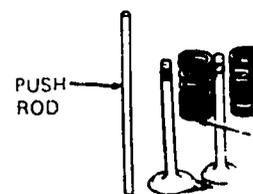
diagonal from one corner to the
(di ag o nal) opposite corner



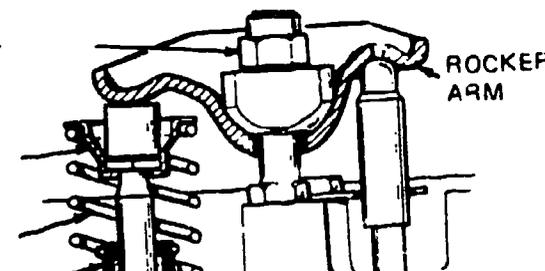
feeler gauge a thin strip of steel used
(feel er gauge) to check the space between
parts



push rods rods that join valve lifter
(push rods) to rocker arm

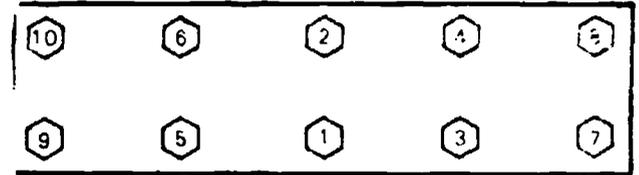


rocker arm part of the valve mechanism
(rock er arm) that changes the direction
of travel

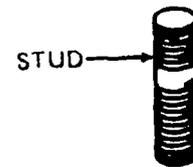


REMOVING AND REPLACING CYLINDER HEAD

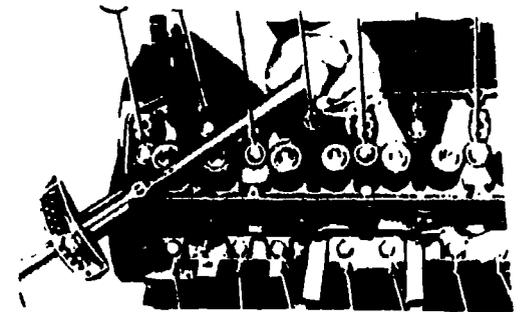
sequence the order in which something
 (sequence) happens



studs metal rods that are
 (studs) threaded on both ends



torque the amount of tightening
 (torque) for bolts
 specification
 (specification)



CYLINDER HEAD

C Y L I N D E R H E A D K D N W Q Z
 N T J E H Y T O O S A W K Z X N L O
 F R C R V K X L G I A K U I J U L Z
 D R E H R C A G X V S X G O A P P W
 W H V X S D D I M D K D B V F T E A
 A S N F F Q Y E D A N R D F G Q H E
 R O C K E R A R M S R L C X Z X I B
 Q K I U L H T V H T B O T P I V Y M
 F E E L E R G A U G E O A P E C K D
 J V D M O T A P P M A B H J E A O C
 L B B Y I E V A C U U M M V O N E N
 D Q S E Q U E N C E G A S K E T S H
 U L O H D J W L N E G X U P J Z D C
 P U S H R O D S Z M O L T N G C E N
 U B W O G M V S T U D S L I H G A K
 Z W D I A G O N A L M J E M J C C Y
 K U R V M F A M U U W P Y D H R F G
 T O R Q U E Z A O X N H L R Y P M N

Can you find these words?

CYLINDER HEAD
 SEQUENCE
 GASKETS
 TORQUE

FEELER GAUGE
 PUSH RODS
 STUDS

ROCKER ARMS
 DIAGONAL
 VACUUM

ACROSS

CYLINDER HEAD

ANSWER KEY

C Y L I N D E R H E A D
.
.
.
.
.
.
.
R O C K E R A R M S
.
F E E L E R G A U G E
.
.
V A C U U M
S E Q U E N C E G A S K E T S
.
P U S H R O D S
.
S T U D S
D I A G O N A L
.
T O R Q U E

CYLINDER HEAD

H C C U P P N Q L U X U W P P S H Z
 G M O L H T F H Z A O G C P P J J E
 S R T R L Q O A A D O G S U V V Y E
 T H F I E T J F O D A G A S K E T S
 O R C E F A K A X Z O I T H Z K N G
 R O C K E R A R M S O L A R H B I M
 Q X A S E Q U E N C E W E O L B A C
 U Q C Y L I N D E R H E A D W A X R
 E N H Y E S O I J O G X Q S J F P U
 Z B V I R Z V A C U U M N O J H L X
 X J A P G K A G Z O I G D P M N E R
 I P C D A D H O R O S B D M N I N L
 D Y S T U D S N W O N S R N N T S L
 I D I D G R Q A H V U A J W V A M Q
 I A W O E I R L N S U N E K G D K L

Can you find these words?

CYLINDER HEAD
 SEQUENCE
 GASKETS
 TORQUE

FEELER GAUGE
 PUSH RODS
 STUDS

ROCKER ARMS
 DIAGONAL
 VACUUM

ACROSS/DOWN

CYLINDER HEAD

ANSWER KEY

.
. P
. U
T G A S K E T S
O . . . F H
R O C K E R A R M S . . . R
Q . . S E Q U E N C E . . O
U . C Y L I N D E R H E A D
E . . . E . . I S
. . . . R . V A C U U M
. . . . G . . G
. . . . A . . O
. . S T U D S N
. . . . G . . A
. . . . E . . L

CYLINDER HEAD

P O M J F F O X E R C O X Z B F P
 L A O R F C J I X E Z Y S B M C R
 H Y S O D K Z K P R W M A E W I P
 I O O T S P R T R S R R A Q L X O
 Q I B B U O Q F P A S O V H M V D
 O M N I K D O F R L N Y J D L S J
 M M Q Y I M S E Q U E N C E D R Y
 H N Z G A S K E T S S F C O H H U
 F M Z Y N C Y L I N D E R H E A D
 V T M Q O K A E Z K B H T M P Y A
 Z A Z R L N B R S T S S Y A W G B
 N G J P O B S G I U D K H I V Y O
 A P V G N K J A P Y V Y B Z D C T
 N T A T O R Q U E R P U C A W E L
 D I C G G C Y G U G Z W E T J M F
 D M U L C D C E R Y F P B E N X Q
 W B U X V F F E U R D A C P X A Y
 V M M I O T V C B G R E Z E T K L

Can you find these words?

CYLINDER HEAD
 SEQUENCE
 GASKETS
 TORQUE

FEELER GAUGE
 PUSH RODS
 STUDS

ROCKER ARMS
 DIAGONAL
 VACUUM

ACROSS/DOWN/DIAGONAL

CYLINDER HEAD

ANSWER KEY

.
. S
. . S M
. . . T R
. . . . U A
. D . F R S .
. S E Q U E N C E D . .
. . . G A S K E T S . . . O . . .
. C Y L I N D E R H E A D
. . . . O . A E . . . H
. . . R . N . R . . S
. . . . O . . G . U
. . V G . . . A P
. . A T O R Q U E
. I C G
D . U E
. . U
. . M

CYLINDER HEAD

XX																				
XX																				
XX	2						3		XX											
XX	XX							XX	XX	XX	XX	4	XX							
XX									XX	XX	XX	XX	XX	XX						
XX	XX	XX	XX	5											XX	XX	XX	XX	XX	XX
XX		XX	XX	XX	XX		XX													
XX		XX	XX	XX	XX		XX													
XX	XX	6								XX	XX		XX							
XX		XX	XX	XX	XX		XX													
XX		XX	XX	XX	XX		XX													
XX		XX	XX	XX	XX		XX													
XX		XX	XX	XX	XX		XX													
XX		XX	XX	XX	XX		XX													
XX		XX	XX	XX	XX		XX													
XX	XX	XX	XX	8					XX											
XX																				
XX																				
XX																				
XX																				

ACROSS:

DOWN:

- | | |
|---|---|
| <p>2. the order in which something happens</p> <p>5. a thin strip of steel used to check the space between parts (2 words)</p> <p>6. from one corner to the opposite corner</p> <p>8. metal rods that are threaded on both ends</p> | <p>3. a metal section fastened to the top of the cylinder (2 words)</p> <p>4. rods that join the valve lifter to the rocker arm (2 words)</p> |
|---|---|

CYLINDER HEAD

ANSWER KEY

ACROSS:

DOWN:

- | | | | |
|----|-------------|----|--------------|
| 2. | SEQUENCE | 3. | CYLINDERHEAD |
| 5. | FEELERGAUGE | 4. | PUSHRODS |
| 6. | DIAGONAL | | |
| 8. | STUDS | | |

S E Q U E N C E

Y P

F E E L E R G A U G E

I S

D I A G O N A L H

D R

E O

R D

H S

E

A

S T U D S

LEARNING WORDS USED IN MAINTAINING UNIVERSAL JOINTS

INTRODUCTION

The purpose of the drive shaft is to connect the transmission to the differential pinion. There should be a straight line connection between the transmission and the rear axle. This is impossible, however, because the rear axle is constantly moving up and down to follow the surface of the road. Therefore, universal joints are placed at each end of the drive shaft to allow the shaft to bend without breaking. There are several different types of universal joints, but all are designed for the same purpose. When checking out a suspected drive shaft or universal joint vibration or noise, follow a logical sequence of steps. In this unit you will learn the technical vocabulary related to maintaining universal joints.

PERFORMANCE OBJECTIVES

You will match 15 words used in maintaining universal joints with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

-
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
 5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
-

-
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
 2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
 3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
 4. USE the Answer Key on the back as a self-check.
 5. STUDY the words that were a problem.
-

MAINTAINING UNIVERSAL JOINTS

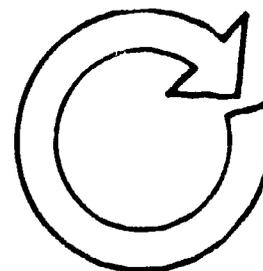
audible
(au di ble)

can be heard

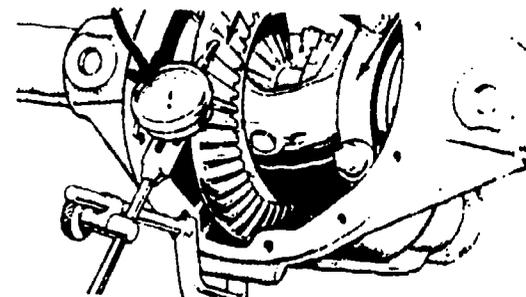


circumference
(cir cum fer ence)

the outside line of a circle

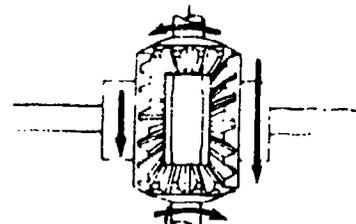


dial indicator
(dial in di ca tor) measurement by a needle that
moves across a dial face



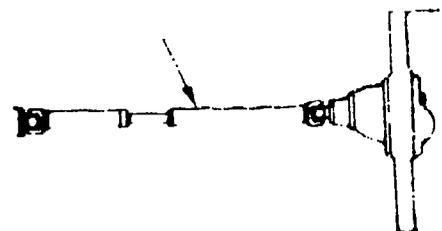
differential
(dif fer en tial)

a unit that will allow both
drive axles to turn at
different speeds



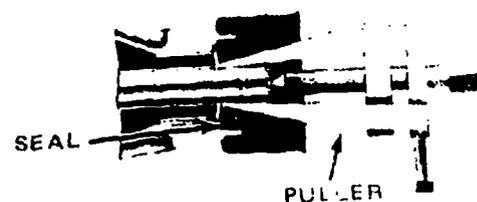
drive shaft
(drive shaft)

a long tube that joins the
transmission (trans mis sion)
output shaft to the differential
(dif fer en tial) pinion shaft

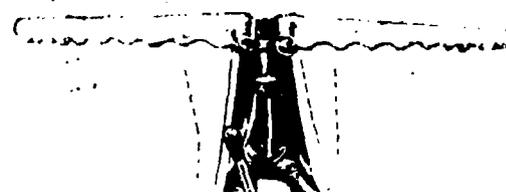


MAINTAINING UNIVERSAL JOINTS

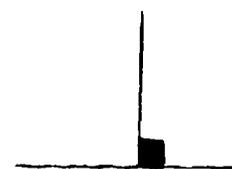
exerted force put forth strongly
 (ex ert ed)



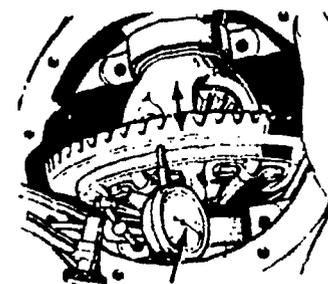
mechanical rapid back and forth
 (me chan i cal) movement that is felt
 vibrations
 (vi bra tions)



perpendicular at a right angle
 (per pen dic u lar)



pinion angle gauge a tool used to measure the
 (pin ion an gle) drive pinion angle with the
 gauge driving gear
 (gauge)



propeller shaft same as a drive shaft
 (pro pel ler shaft)



MAINTAINING UNIVERSAL JOINTS

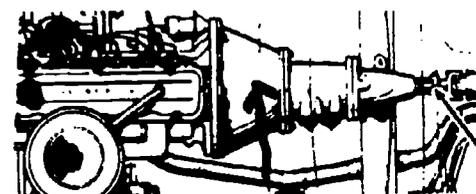
splines
(splines)

ridges or grooves that allow
one part to fit into another
part



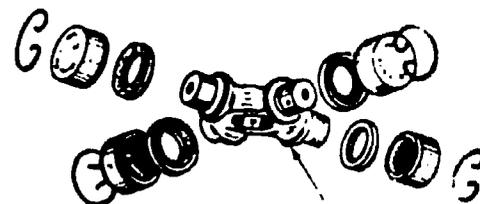
transmission
(trans mis sion)

a device that gives different
gear ratios between the engine
and drive wheels



universal joints
(u ni ver sal)
joints
(joints)

flexible joints in the drive
shaft that allow changes in
driving shaft length and angle



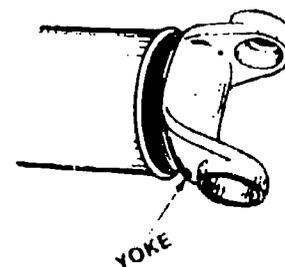
wheel hop
(wheel hop)

a hopping of drive wheels when
tires lose traction as the
vehicle is accelerated



yoke
(yoke)

curved slotted part of the
universal joint



UNIVERSAL JOINTS

U N I V E R S A L J O I N T S K O E T E T
 P E R P E N D I C U L A R E X E R T E D M
 D I F F E R E N T I A L U M I K U Q R O I
 T R A N S M I S S I O N S P L I N E S C F
 D R I V E S H A F T Y O K E K Q E U F R S
 T J E N B Z D I A L I N D I C A T O R Q U
 V I B R A T I O N S Q J F L C X U K R J T
 Z Y I Z A U D I B L E F V V Q E Z V W I J
 Z R I D C H T R O V G U W C G G H K V A U
 A Q O G U P S D M P Q N X M Y M T Q X W J
 L C I R C U M F E R E N C E W W A R V X U
 P A Q H T O V W I T X R B U Z G E X Z X R
 P O N O C E A S O R Y P E A H P G J T A P
 Y G I D Z P Q N L O C E N S I V O S W P Z
 T Y R D B U Z K V J Q A Z M Q S G W Z D W
 R U O D Z W Y V V X B O B J B P S F C X W
 D F V V Z J Z Q C I Z H E M L K E F Y U K
 X G W D L C A P R O P E L L E R S H A F T
 O C I D L L S K D I S O W H E E L H O P S

Can you find these words?

UNIVERSAL JOINTS
 DIAL INDICATOR
 DRIVE SHAFT
 WHEEL HOP
 AUDIBLE

PROPELLER SHAFT
 CIRCUMFERENCE
 DIFFERENTIAL
 SPLINES
 YOKE

PERPENDICULAR
 TRANSMISSION
 VIBRATIONS
 EXERTED

ACROSS

UNIVERSAL JOINTS

Y M B D J G P I O V B F B U A Z L H X C F
 M W D W W S E Q V O N C O P E O N E O S T
 S T Z H N Z R X A U D I E L E K R X P K X
 B O V B H T P K O X F R Z Z Y O K E Z Y I
 O L V S F N E D O F I C O S W E O R O O B
 D B B X U Y N I S P P U N W W F Y T F S A
 J J X A Q B D A O C R M Z N H D W E I X L
 V O E W J S I L O L O F T W E B V D K R K
 K C Y P D H C I O K P F F K E N Q R F L D
 E G R Y R M U N I V E R S A L J O I N T S
 F M W N I Q L D I P L E S Q H X S A C F N
 D F P M V E A I W L L N P R O Z N W T L O
 Z P M U E S R C O Z E C L S P I U I K L P
 Z Z U A S E U A J V R E I O G B R J G H M
 T E L C H O M T Z R S V N D U E M Z U T Q
 V I B R A T I O N S H W E B H M H N H K R
 E T M M F E D R T R A N S M I S S I O N M
 S D U V T V O R D I F F E R E N T I A L G
 U O L R J C C U T X T G Z G M Y W B L F V

Can you find these words?

UNIVERSAL JOINTS
 DIAL INDICATOR
 DRIVE SHAFT
 WHEEL HOP
 AUDIBLE

PROPELLER SHAFT
 CIRCUMFERENCE
 DIFFERENTIAL
 SPLINES
 YOKE

PERPENDICULAR
 TRANSMISSION
 VIBRATIONS
 EXERTED

ACROSS/DOWN

UNIVERSAL JOINTS

ANSWER KEY

. P
. E C E
. R . A U D I B L E . . X
. P R . . Y O K E
. E D . . . C R
. N I . . P U . . W . . T
. D A . . R M . . H . . E
. I L . . O F . . E . . D
. D . C I . . P E . . E
. R . U N I V E R S A L J O I N T S
. I . L D . . L E S . H
. V . A I . . L N P . O
. E . R C . . E C L . P
. S . . A . . R E I
. H . . T . . S . N
V I B R A T I O N S H . E
. F . . R T R A N S M I S S I O N .
. T . . . D I F F E R E N T I A L .
. T

UNIVERSAL JOINTS

Z P W N C H D N S N Q Y O K E V H R M T S
 J E O A U D I B L E K X F I U N D M F C A
 T R A N S M I S S I O N O I Q N M A H N S
 P P J C B H J F G W I O G K C V H Q S C E
 U E S S P W H V F H I Z Y H E S X R V U Z
 X N C I R C U M F E R E N C E M S Y U D K
 L D I N O C G A I E R Y M V Q N P U V U R
 E I I V P E B O R L H E I S O P F E Z C Q
 L C I A E R O T Z H F R N I V O Q A Y R R
 E U O I L R T K A O D M T T X D V G D F R
 U L Q C L I S I G P G A F V I S Z C F H Y
 T A J E E O N A X B R M J T X A M T Y U R
 P R I I R C O D L B Y R Z Q K F L L U Q S
 L L T I S T I O I J N I F V R E F U B E K
 G W Y I H B E V I C O A U A R X L I N M T
 P X P I A N U S B O A I E R H T H I K K S
 B N B I F R C T T R O T N U O R L G P Z O
 E X E R T E D F S J L I O T G P Z W K I G
 J C X H Q V V H F N Y R O R S B K V R L M

Can you find these words?

UNIVERSAL JOINTS
 DIAL INDICATOR
 DRIVE SHAFT
 WHEEL HOP
 AUDIBLE

PROPELLER SHAFT
 CIRCUMFERENCE
 DIFFERENTIAL
 SPLINES
 YOKE

PERPENDICULAR
 TRANSMISSION
 VIBRATIONS
 EXERTED

ACROSS/DOWN/DIAGONAL

UNIVERSAL JOINTS

ANSWER KEY

. P Y O K E T .
 . E . A U D I B L E F . . .
 T R A N S M I S S I O N A . . .
 . P F . W H
 U E . . P . . . F H S
 . N C I R C U M F E R E N C E . S
 . D I . O E R . . V . N
 . I I V P L . E I . O
 . C . A E H . R N I
 . U . . L R O D . T T
 . L . . L I S . . P . A . . I
 . A . . E . N A . . R A
 . R . . R . . D L B L S
 S I J E
 H . . V . C O N
 A A I I
 F T N L
 E X E R T E D O T . P
 R S

UNIVERSAL JOINTS I

XX																				
XX	XX	XX	XX	XX	1	XX														
XX	XX	XX	XX	2													XX	XX	XX	XX
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	4													XX	XX	XX	XX	XX
XX	XX	XX		XX		XX														
XX	XX	XX		XX		XX														
XX	XX	XX		XX		XX	6								XX	XX	XX	XX	XX	XX
XX	XX	XX		XX		XX														
XX	XX	XX		XX		XX														
XX	XX	XX		XX		XX														
XX	XX	XX		XX																
XX	XX	XX		XX																
XX	XX	XX		XX																

ACROSS:

DOWN:

- 2. tool that shows measurement by a needle that moves across a dial face (2 words)
- 4. a unit that will drive both rear axles at the same time
- 6. can be heard

- 1. the outside line of a circle
- 4. a long tube that joins the transmission output shaft to the differential pinion shaft (2 words)

UNIVERSAL JOINTS I

ANSWER KEY

ACROSS:

- 2. DIALINDICATOR
- 4. DIFFERENTIAL
- 6. AUDIBLE

DOWN:

- 1. CIRCUMFERENCE
- 4. DRIVESHAFT

C
D I A L I N D I C A T O R
R
C
U
M
D I F F E R E N T I A L
R E
I R
V E A U D I B L E
E N
S C
H E
A
F
T

UNIVERSAL JOINTS II

XX	XX	XX	1	XX																
XX	XX	XX		XX																
XX	2									3				XX	XX	4	XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	6	XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX
XX	XX	XX		XX	XX	XX	XX	XX	XX		XX	XX	XX		XX		XX	XX	XX	XX

ACROSS:

DOWN:

2. at a right angle to something

1. a device that gives different gear ratios between the engine and rear wheels

3. flexible joints in the drive shaft that let changes happen in driving shaft & driven shaft (2 words)

4. a hopping of the rear wheels when a vehicle speeds up (2 words)

6. action put forth strongly



UNIVERSAL JOINTS II

ANSWER KEY

ACROSS:

2. PERPENDICULAR

DOWN:

1. TRANSMISSION
3. UNIVERSALJOINTS
4. WHEELHOP
6. EXERTED

T			
P	E	R	P
E	R	P	E
N	D	I	C
D	I	C	U
I	C	U	L
C	U	L	A
U	L	A	R
L	A	R	
A	R		W
R			H
	N		E
A		I	E
N		V	E
S		E	L
S		R	H
M		S	O
I		A	P
I		L	D
S		J	
S		O	
I		I	
O		N	
N		T	
		S	

UNIVERSAL JOINTS III

XX	XX	XX	XX	XX	1	XX										
XX	XX	XX	XX	XX		XX										
XX	2		3					4	XX							
XX	XX	XX		XX		XX	XX		XX							
XX	XX	XX		XX		XX	XX		XX							
5				XX		XX	XX		XX							
XX	XX	XX		XX		XX	XX		XX							
XX	XX	XX		XX		XX	XX		XX							
XX	XX	XX		XX	XX	XX	XX		XX							
XX	XX	XX		XX	XX	XX	XX		XX							
XX	XX	XX		XX	XX	XX	XX		XX							
XX		XX														
XX		XX														
XX		XX														
XX		XX														
XX		XX														
XX	6							XX	XX							
XX		XX														
XX		XX														

ACROSS:

2. a hopping of the rear wheels when a vehicle speeds up (2 words)
5. a curved part that makes the spider turn, which turns the driven shaft
6. can be heard

DOWN:

1. ridges on a shaft made to fit into another part
3. action put forth strongly
4. a drive shaft that needs to be balanced (2 words)

UNIVERSAL JOINTS 111

ANSWER KEY

ACROSS:

- 2. WHEELHOP
- 5. YOKE
- 6. AUDIBLE

DOWN:

- 1. SPLINES
- 3. EXERTED
- 4. PROPELLERSHAFT

S
P
W H E E L H O P
X I R
Y O K E N O
R E P
T S E
E L
D L
E
R
S
H
A U D I B L E
F
T

LEARNING WORDS USED IN INSPECTING AND TESTING AUTOMATIC TRANSMISSIONS

INTRODUCTION

Fluid leaks are sometimes very difficult to find and, in many situations, even more difficult to repair. Without fluid pressure, the automatic transmission will not function, and with a slight leak the fluid will soon be gone and the transmission will become lifeless. Knowing where the leak points are and how to repair them becomes the responsibility of the repairman. Many small leaks that are easily repaired will result in many dollars saved for the customer in repair bills. When the transmission fluid level becomes low because of leaks, much damage can be done to the transmission. After the leaks are repaired, a road test should be performed to assure proper function of speed changes and other malfunctions that may cause problems later, such as an improperly adjusted band which will fail when left alone. In this unit you will learn the technical vocabulary related to inspecting and testing automatic transmissions.

PERFORMANCE OBJECTIVES

You will match 13 words used in inspecting and testing automatic transmissions with their definitions. Your teacher will provide a list of words and definitions. You should match at least 10 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

-
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
 4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
 5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another.
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.
-

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

INSPECTING & TESTING AUTOMATIC TRANSMISSIONS

automatic transmission that changes gear ratios automatically

(au to mat ic) ratios automatically

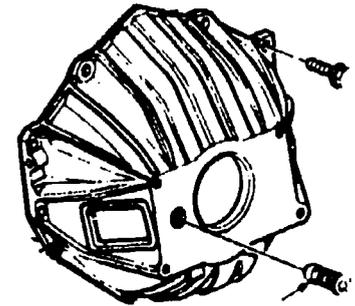
transmission

(trans mis sion)



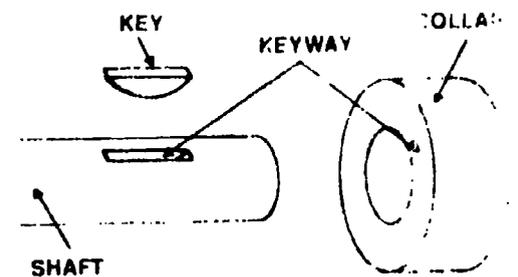
bell housing the housing that joins the transmission (trans mis sion) and engine

(bell hous ing)



detent a device used to fit into a notch that prevents movement

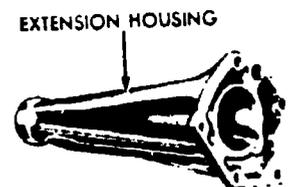
(de tent)



extension a short name for transmission extension

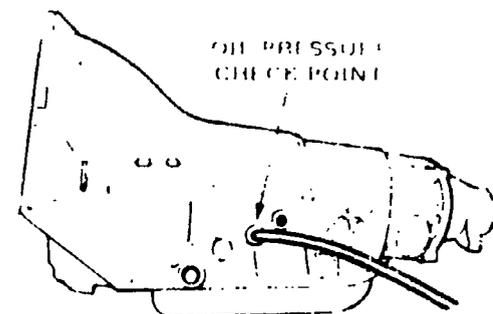
(ex ten sion)

(trans mis sion)



fluid pressure force caused by the hydraulic (hy draul ic) fluid under pump pressure

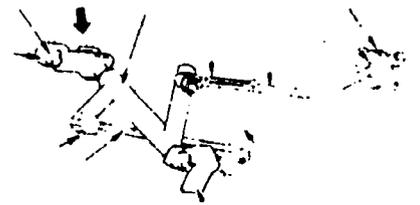
(flu id pres sure)



INSPECTING & TESTING AUTOMATIC TRANSMISSIONS

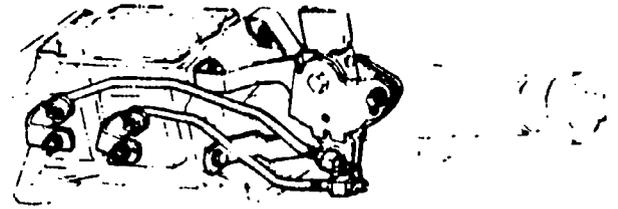
manual
(man u al)
linkage
(link age)

rods that can be moved by the
operator to select gear ratios
or speed



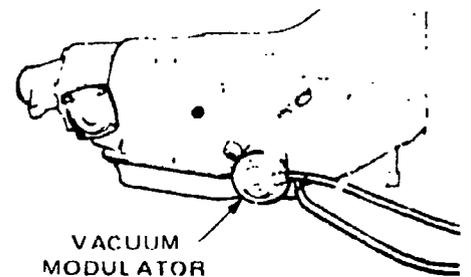
manual
(man u al)
transmission
(trans mis sion)

changing gears by hand



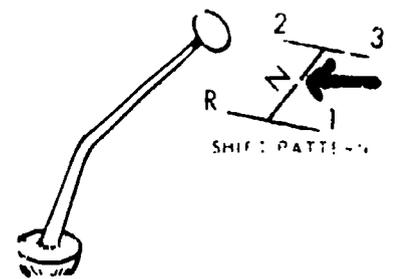
modulator
(mod u la tor)

a unit that controls pressure



neutral
(neu tral)

a position of gears in a
power system when power is
disconnected from the drive train



O-ring
(O ring)

a seal for liquids that is made
like a ring

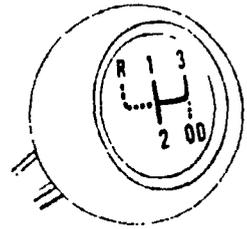


"O" Ring for GM
equalizer tube.

INSPECTING & TESTING AUTOMATIC TRANSMISSIONS

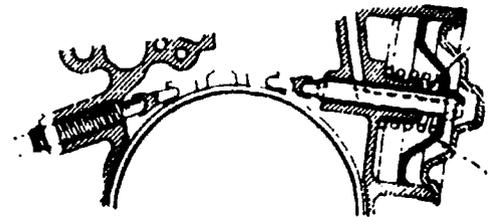
quadrant
(quad rant)

the letters and numbers that
show the gear positions



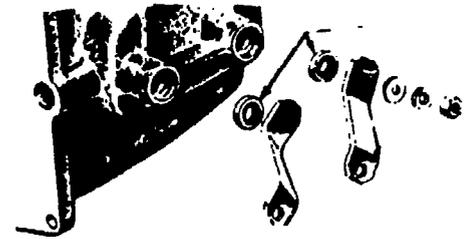
servo
(ser vo)

a device used to push or pull
another part



selector
(se lec tor)
shaft seal
(shaft seal)

the seal of a transmission
(trans mis sion) around the
gear selector shaft



AUTOMATIC TRANSMISSION

S E L E C T O R S H A F T K D C T P W Q W
 P N H X M J P N W P I G Z F R O A C X V T
 R F B E L L H O U S I N G R Q P V I J R C
 T C Q Y X Z C Z N Y Z F Q D A P R B F Y D
 M A N U A L E H O R I N G M K R L N I F P
 M A N U A L L I N K A G E Q U A D R A N T
 J U U P F P I H V J M L B E R E K F X C G
 P V U R G O B P V Z C S R I M B M V I E T
 W Z S E R V O Y D H Y D H B V R M A J Y H
 D E T E N T D I U C U S L F H I Z N Q X Q
 F L U I D P R E S S U R E U C V W I M Y I
 T R A N S M I S S I O N M O D U L A T O R
 O S T M A K I S N O A U T O M A T I C U M
 E X T E N S I O N Y E X C J N U O J V O M
 S H A F T S E A L L D U J D Z H V W D U P

Can you find these words?

SELECTOR SHAFT
 TRANSMISSION
 SHAFT SEAL
 AUTOMATIC
 DETENT

MANUAL LINKAGE
 BELL HOUSING
 MODULATOR
 QUADRANT
 SERVO

FLUID PRESSURE
 EXTENSION
 MANUAL
 O-RING

ACROSS

AUTOMATIC TRANSMISSIONS

T I F Y L A S X O P B Z H H J B O D W S
 R O C G H S S I Q C K Y N D O A R X C G
 A V C U Y D H I Y A U T O M A T I C Y F
 N S X F T B Z P H H M O A O P B N D R U
 S H V L S E R V O O N I S D V W G E X C
 M A N U A L L I N K A G E U Q O R T E R
 I F D I M L P P O K K J L L Z B P E V G
 S T X D R H F S J M I X E A O H E N O Y
 S S D P C O R L F T B X C T U F X T B O
 I E F R C U Y C P T N B T O V K T R R F
 O A L E A S U F U H B Z O R L R E X G P
 N L N S Z I Q G Q U A D R A N T N R R C
 V O Z S D N Y G P I B V S S Q K S V U M
 Q H Z U G G F W H D M R H U F F I M H T
 L A R R A Y S K L O H S A X X W O J W X
 Z M A E Y V Z X N H K I F B X P N E Q Y
 A R M Y F I N T I H A D T W N U E S Y X

Can you find these words?

SELECTOR SHAFT
 TRANSMISSION
 SHAFT SEAL
 AUTOMATIC
 DETENT

MANUAL LINKAGE
 BELL HOUSING
 MODULATOR
 QUADRANT
 SERVO

FLUID PRESSURE
 EXTENSION
 MANUAL
 O-RING

ACROSS/DOWN

AUTOMATIC TRANSMISSIONS

ANSWER KEY

T O
R R
A A U T O M A T I C
N S . F . B O . . N D
. . H . L S E R V O S D . . G E
M A N U A L L I N K A G E U T
I F . I . I L L E
S T . D . H E A . . E N
S S . P . O C T . . X T
I E . R . U T O . . T
O A . F . S O R . . E
N L . S . I . . Q U A D R A N T N
. . . . S . N S S
. . . . U . G H I
. . . . R A O
. . . . E F N
. I

AUTOMATIC TRANSMISSIONS

E I E E S V D X J M N B Q T F Z L C U N C
 E Q P F J X Y S G B R L E C Z L T Y O C P
 A F K A L Y E N A I K P M H Y Z F I I T L
 T Q O E N W I D P B N O Q U U W S D E P B
 V M E Y T R A N S M I S S I O N Q E H B K
 Z O N U O L I F J A G F B V E F G B Q B T
 S D I O A I X L L N K G U T K Q V V U F S
 Y U W U I A V N I U U M X K N D R C A E F
 Q L N I H U Y S G A I E Q P M S C H D A V
 C A I O C T U O G L H D H N V G S T R K G
 M T Y S D O R F U L G D P K B R T Y A H X
 I O Z B H M L X F I A T R R O B J F N Q O
 C R U L B A N F I N T M E T E G R S T Y U
 S C L R O T F Z A K R I C T Q S S V J H L
 S E R V O I B T Y A G E P Y U J S T H L T
 B E C W S C U R S G L T J T Z Q Q U E Z E
 V G O S E Y Q B D E T E N T N L Q J R O D
 N W M V P M S C S H A T Y A W G Z W O E V
 Z V P M D C M A H E S L T I X J Q G D I B

Can you find these words?

SELECTOR SHAFT
 TRANSMISSION
 SHAFT SEAL
 AUTOMATIC
 DETENT

MANUAL LINKAGE
 BELL HOUSING
 MODULATOR
 QUADRANT
 SERVO

FLUID PRESSURE
 EXTENSION
 MANUAL
 O-RING

ACROSS/DOWN/DIAGONAL

AUTOMATIC TRANSMISSIONS

ANSWER KEY

. N .
. G O . .
. N I . . .
. I S
. M . . T R A N S M I S S I O N
. O . . O L . F . A G . . . E . . . Q . T
. D . . A . . . L N . . . T . . . U F .
. U . U . A . . I U . . X A . .
. L N . . U . S . A I E H D . .
. A . . . T U . . L . D S . R . .
M T . S . O . . . L . . P . . R . . A . .
. O . . H M . . . I . . . R O . . . N . .
. R . L . A . . . N . . . T E . . . T . .
. . L . . T F . . K . . C . . S
S E R V O I . T . A . E S
B C . . S G L U
. D E T E N T R . . .
. S . A E
. L

AUTOMATIC TRANSMISSIONS I

XX																				
XX																				
XX	XX	XX	XX	XX	XX	2	XX													
XX	XX	XX	XX	XX	XX		XX													
XX	XX	XX	XX	XX	XX		XX	3	XX											
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX	4	XX	XX	XX	XX	XX
XX	XX	XX	XX	5												XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX		XX											
XX		XX																		
XX																				
XX																				

ACROSS:

DOWN:

5. rods that can be moved to select gear ratios or speed (2 words)

- 2. a short name for transmission extension
- 3. the letters & numbers on the dashboard that show the gear positions
- 4. a device used to push or pull another part

AUTOMATIC TRANSMISSIONS I

ANSWER KEY

ACROSS:

DOWN:

5. MANUALLINKAGE

2. EXTENSION
3. QUADRANT
4. SERVO

E
X
T Q
E U S
M A N U A L L I N K A G E
S D R
I R V
O A O
N N
T

AUTOMATIC TRANSMISSION II

XX	1	XX	XX	XX	XX	XX	XX													
XX		XX	XX	XX	XX	XX	XX													
XX		XX	XX	XX	XX	XX	XX													
XX	2	XX	XX	3	XX	XX	XX		XX	XX	XX	XX	XX	XX						
XX	XX	XX	XX	XX	4											XX	XX	XX	XX	XX
XX		XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX						
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX	5					XX	XX	XX	XX	XX	XX						
XX		XX	XX		XX															
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		

ACROSS:

DOWN:

- | | |
|---|--|
| <p>4. housing that joins the transmission and engine (2 words)</p> <p>5. a seal for liquids that is made from plastic that is like rubber (-)</p> | <p>1. device used to fit into a notched wheel that prevents movement</p> <p>2. force caused by the hydraulic fluid (2 words)</p> <p>3. a unit that controls pressure</p> |
|---|--|

AUTOMATIC TRANSMISSION II

ANSWER KEY

ACROSS:

- 4. BELLHOUSING
- 5. ORING

DOWN:

- 1. DETENT
- 2. FLUIDPRESSURE
- 3. MODULATOR

D
E
T
E
M
F
B E L L H O U S I N G
U D T
I U
D L
P A
R T
E O R I N G
S R
S
U
R
E

LEARNING WORDS USED IN INSPECTING BRAKE PERFORMANCE

INTRODUCTION

The auto mechanic must remember that every time the brake pedal is depressed, the lives of many people depend on his knowledge and skill. The brakes must work correctly each time they are used. The auto mechanic must make each brake inspection a thorough one and perform all service and repair with care and to the highest standards. The mechanic must refuse to perform any "half-way" jobs since, in effect, persons lives are in the mechanic's hands. In this unit you will learn the technical vocabulary related to inspecting brake performance.

PERFORMANCE OBJECTIVES

You will match 19 words used in inspecting brake performance with their definitions. Your teacher will provide a list of words and definitions. You should match at least 15 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

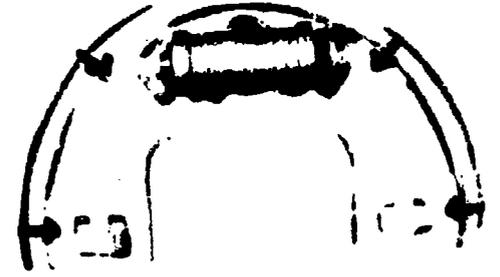
-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

INSPECTING BRAKE PERFORMANCE

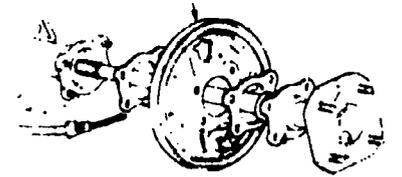
abutments
(a but ments) places where parts are next
to each other or contact



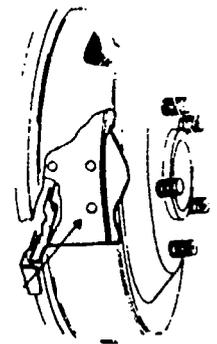
anchor pin
(an chor pin) a steel pin used to hold
brake shoes in place



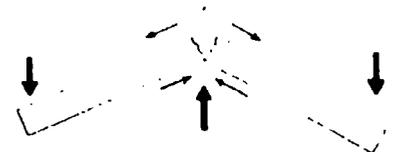
backing plate
(back ing plate) a steel plate that holds
brake shoes, cylinders and
other brake mechanism



brake drum
(brake drum) fastens to the wheel and
rubs the brake shoes to
stop the vehicle



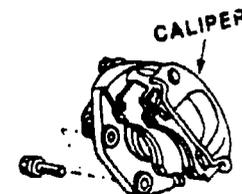
brittleness
(brit tle ness) being easy to break



INSPECTING BRAKE PERFORMANCE

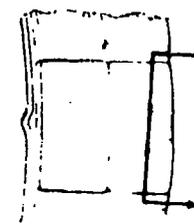
caliper
(cal i per)

contains a hydraulic
(hy draul ic) brake piston and
squeezes lining against rotor



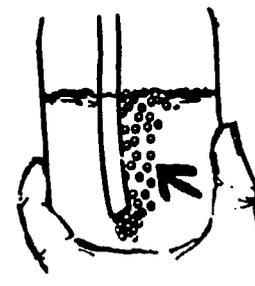
chafe
(chafe)

to wear away by rubbing



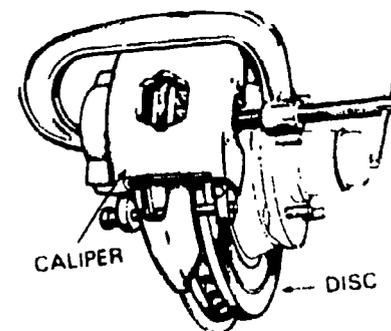
contaminant
(con tam i nant)

something that dirties fluids



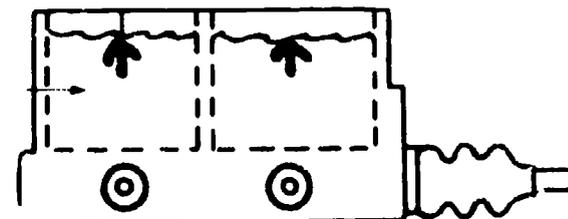
disc brakes
(disc brakes)

1. a plate that turns with the wheel
2. a pad presses against the plate to slow a vehicle



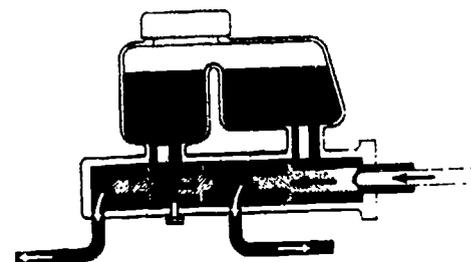
equalize
(e qual ize)

to make the same

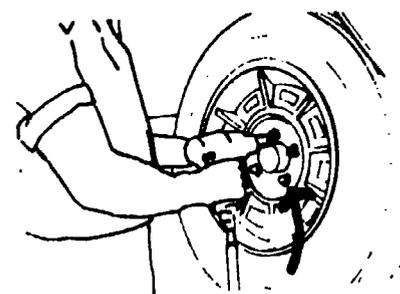


INSPECTING BRAKE PERFORMANCE

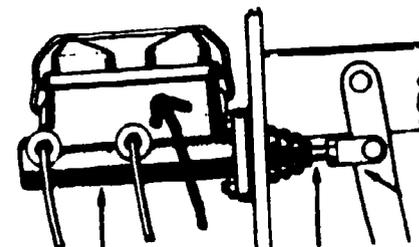
hydraulic brake brakes that use fluid to
(hy drau lic brake) transfer pressure



lug nut holds the wheel on a
(lug nut) vehicle



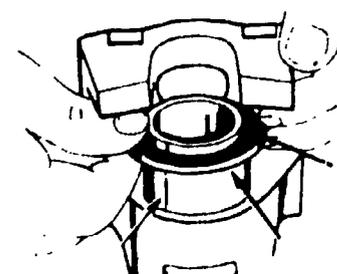
master cylinder contains a piston and is
(mas ter) connected to the brake
cylinder pedal in the hydraulic
(cyl in der) (hy draul ic) brake system



OSHA Occupational Safety and
(OSHA) Health Administration

**ALWAYS
BE
CAREFUL**

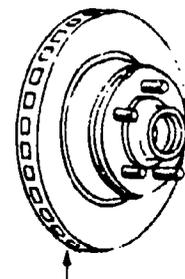
piston a plastic, that is like
(pis ton) rubber, which protects
dust boots the piston of a caliper
(dust boots) (cal i per) from dirt



INSPECTING BRAKE PERFORMANCE

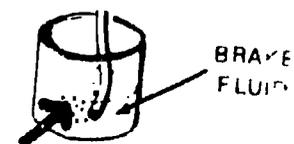
rotor
(ro tor)

turning part of a disc brake
that is fastened to the wheel



sediment
(sed i ment)

the small particles that sink
to the bottom of a liquid



steering
(steer ing)

knuckle
(knuck le)

a part of the steering that
joins the tie rod ends



tire pressure
(tire pres sure)

gauge
(gauge)

a tool that measures the air
pressure (pres sure) in tires



BRAKE PERFORMANCE

S T E E R I N G K N U C K L E W C H A F E
 A N C H O R P I N W Q B P A Q P T W P Y M
 B A C K I N G P L A T E H X S Z Q B B U J
 J O B M O A H J F I S P Q T C F E N G E C
 C O N T A M I N A N T S E D I M E N T T R
 G R V R O Q U B R A K E D R U M D R I H I
 M F F Z X M D V J G R I H X F B A W W H I
 H Y D R A U L I C B R A K E Q Z H K R O M
 P R E S S U R E G A U G E I S H A D T H P
 O T Y M Q J R T H P N E L I A Z T M X V S
 B R I T T L E N E S S E Q U A L I Z E N E
 F P I S T O N D U S T B O O T S R O T O R
 C A L I P E R N Y D A A B M I R M Q D Y V
 M J S Z F S N X M N D W L I A U B Q K F K
 I C I S E O F P E W W I E R L U G N U T P
 A B U T M E N T S Y G X A I M R I X U H A
 I S C O D I E L W I R X K V H X Q M L Z A
 M A S T E R C Y L I N D E R E U T G R W X
 F S X F T T X Y D I S C B R A K E S L P I

Can you find these words?

STEERING KNUCKLE
 HYDRAULIC BRAKE
 BACKING PLATE
 ANCHOR PIN
 EQUALIZE
 ROTOR

PISTON DUST BOOTS
 PRESSURE GAUGE
 CONTAMINANT
 DISC BRAKES
 ABUTMENTS
 CALIPER

MASTER CYLINDER
 BRITTLINESS
 BRAKE DRUM
 SEDIMENT
 LUG NUT
 CHAFE

ACROSS

BRAKE PERFORMANCE

ANSWER KEY

S T E E R I N G K N U C K L E . C H A F E
A N C H O R P I N
B A C K I N G P L A T E
.
C O N T A M I N A N T S E D I M E N T . .
. B R A K E D R U M
.
H Y D R A U L I C B R A K E
P R E S S U R E G A U G E
.
B R I T T L E N E S S E Q U A L I Z E . .
. P I S T O N D U S T B O O T S R O T O R
C A L I P E R
.
. L U G N U T .
A B U T M E N T S
.
M A S T E R C Y L I N D E R
. D I S C B R A K E S . . .

BRAKE PERFORMANCE

A I H O D F N D I T J J N V M V Y L T C Z
 A E U H P D K D S N C L N E Q U A L I Z E
 B A C K I N G P L A T E B R A K E D R U M
 U K Q J S T E E R I N G K N U C K L E D N
 T M A S T E R C Y L I N D E R U P C I Y D
 M L I I O Q E O P Z R F D C Q H E S I G B
 E Y O N N P X G V I D I S C B R A K E S C
 N W H Y D R A U L I C B R A K E V L I K U
 T D I J U E N I G G O T C H A F E R Q G S
 S B E D S S C J T C N U A Z A O K V Q S Y
 R I E B T S H B R I T T L E N E S S I H J
 D M L G B U O X P S A P I C N Q V H W N O
 O R E C O R R G F H M I P V G N M L J J H
 A Y Z L O E P W E A I R E T R T W F F S F
 O Y I F T G I V M U N P R O T O R A Y N W
 G S F D S A N V I A A K K X A A W V C H Y
 N Z L G L U G N U T N E T K K A U V G N N
 T O E O Q G M O R K T K F K Z C L F U M A
 Z K X B S E D I M E N T J F U C B H B V Y

Can you find these words?

STEERING KNUCKLE
 HYDRAULIC BRAKE
 BACKING PLATE
 ANCHOR PIN
 EQUALIZE
 ROTOR

PISTON DUST BOOTS
 PRESSURE GAUGE
 CONTAMINANT
 DISC BRAKES
 ABUTMENTS
 CALIPER

MASTER CYLINDER
 BRITTLINESS
 BRAKE DRUM
 SEDIMENT
 LUG NUT
 CHAFE

ACROSS/DOWN

BRAKE PERFORMANCE

ANSWER KEY

.
A . . . P E Q U A L I Z E
B A C K I N G P L A T E B R A K E D R U M
U . . . S T E E R I N G K N U C K L E . .
T M A S T E R C Y L I N D E R
M . . . O
E . . . N P D I S C B R A K E S .
N . H Y D R A U L I C B R A K E
T . . . U E N . . . O . C H A F E
S . . . S S C . . . N . A
. . . . T S H B R I T T L E N E S S . . .
. . . . B U O . . . A . I
. . . . O R R . . . M . P
. . . . O E P . . . I . E
. . . . T G I . . . N . R O T O R
. . . . S A N . . . A
. . . . L U G N U T N
. G T
. . . . S E D I M E N T

BRAKE PERFORMANCE

I S E D P I S E E I Y W A W N N K V I V C
 B G N U R E A B U I Y G O C A L I P E R Y
 B V P A E H I A U A Z B N O R M S C O T A
 N H F G S E A C B C C C I N Q P T T E M U
 V D Y I S E M K I U T V H T R J O L U Q S
 Q D Z D U Q S I F E T Y T A A R K R W S R
 M X O B R U A N M A R M B M F C D C E Z K
 O I X X E A U G K L S I E I U E O N V T C
 L D C E G L U P B E Q A I N K Z E V F J D
 Z H F P A I X L K I M M K A T L K V T L X
 X K U F U Z F A I S K G R N T S Z Q L P A
 P N P C G E R T K C N B D T Y I T B U F L
 V P H C E B Q E Q I B L I V V F J Q K L U
 V M W C C F A C R T J R B N B G L K H N G
 S C W S Z F A E R L B K A N C H O R P I N
 I A I O X S E D I M E N T K O X G I G P U
 W D M A S T E R C Y L I N D E R X O H X T
 V A P I S T O N D U S T B O O T S F N Y P

Can you find these words?

STEERING KNUCKLE
 HYDRAULIC BRAKE
 BACKING PLATE
 ANCHOR PIN
 EQUALIZE
 ROTOR

PISTON DUST BOOTS
 PRESSURE GAUGE
 CONTAMINANT
 DISC BRAKES
 ABUTMENTS
 CALIPER

MASTER CYLINDER
 BRITTLINESS
 BRAKE DRUM
 SEDIMENT
 LUG NUT
 CHAFE

ACROSS/DOWN/DIAGONAL

BRAKE PERFORMANCE

ANSWER KEY

. . . . P
. . . . R . . B C A L I P E R .
. . . . E . . A O O . .
. H . . S . . C B . . C . N . . . T E M .
. . Y . S E . K . U . . H T . . O L U . S
. . . D U Q . I . . T . . A . R K R . S .
. . . . R U . N . . . M . M F C D . E . .
. . . . E A . G . . S . E I U E . N . . .
. . . . G L U P . E . . . N K . E
. . . . A I . L K . . . K A T L
. . . . U Z . A I . . G R N T S
. . . . G E R T . C N B . T L
. . . . E B . E . I B . I U
. . . . C . . . R . . R G
. . . S . . . E . . B . A N C H O R P I N
. . I . . S E D I M E N T K U
. D M A S T E R C Y L I N D E R T
. . P I S T O N D U S T B O O T S

BRAKE PERFORMANCE I

XX	XX	XX	XX	XX	1			2							XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX											XX	XX	XX	XX	XX	XX
XX		XX																		
XX	3													XX						
XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	4	XX							
XX		XX	XX	XX	XX	XX	5												XX	XX
XX		XX	XX	XX	XX	6	XX		XX	XX	XX		XX							
XX		XX	7								XX		XX							
XX		XX	XX	XX	XX		XX		XX	XX	XX		XX							
XX		XX	XX	XX	XX		XX		XX	XX	XX		XX							
XX		XX	XX	XX	XX		XX		XX	XX	XX		XX							
XX		XX	XX	XX	XX		XX		XX	XX	XX		XX							
XX		XX	XX	XX	XX		XX		XX	XX	XX		XX							
XX		XX	XX	XX	XX		XX	XX	XX	XX	XX		XX							
XX																				
XX																				

ACROSS:

DOWN:

- | | |
|--|--|
| <p>1. a plate that turns with the wheel which then slows a vehicle (2 words)</p> <p>3. being easy to break</p> <p>5. a steel plate that holds brake shoes (2 words)</p> <p>7. to rake the same</p> | <p>2. something that dirties fluids</p> <p>3. a metal tube that fastens to wheel and covers the brake shoes (2 words)</p> <p>4. a steel pin used to hold something in place (2 words)</p> <p>6. squeezes linings against rotor</p> |
|--|--|

BRAKE PERFORMANCE I

ANSWER KEY

ACROSS:

- 1. DISCBRAKES
- 3. BRITTLENESS
- 5. BACKINGPLATE
- 7. EQUALIZE

DOWN:

- 2. CONTAMINANT
- 3. BRAKEDRUM
- 4. ANCHORPIN
- 6. CALIPER

D I S C B R A K E S

O

B R I T T L E N E S S

R T A

A B A C K I N G P L A T E

K C M C

E E Q U A L I Z E H

D L N O

R I A R

U P N P

M E T I

 R N

BRAKE PERFORMANCE II

XX	XX	XX	XX	XX	1	XX													
XX	XX	XX	XX	XX		XX	2	XX											
XX	XX	XX	3	XX		XX		XX											
XX	XX	XX		XX		XX		XX											
XX	XX	XX	4														XX	XX	XX
XX	XX	XX		XX		XX		XX											
XX	XX	XX		XX		XX		XX											
XX	XX	XX		XX		XX	5						XX						
XX	XX	XX		XX		XX		XX											
XX	XX	XX		XX		XX		XX											
XX	XX	XX		XX		XX		XX											
XX	XX	XX		XX		XX		XX											
XX	XX	XX		XX		XX	6					XX							
XX	XX	XX		XX		XX		XX											
XX	XX	XX		XX		XX		XX											
XX	XX	XX		XX	XX	XX		XX											
XX	XX	XX		XX															
XX	XX	XX	7								XX								
XX	XX	XX									XX								

ACROSS:

DOWN:

- | | |
|---|--|
| <p>4. a part of the front suspension that joins the rod ends (2 words)</p> <p>5. a part that holds the wheel on a vehicle (2 words)</p> <p>6. turning part of a disc brake</p> <p>7. the small pieces that sink to the bottom of a liquid</p> | <p>1. main cylinder in the hydraulic brake system that is filled with brake fluid (2 words)</p> <p>2. brakes that use fluid to transfer pressure (2 words)</p> <p>3. a seal which protects the piston of a caliper from dirt (3 words)</p> |
|---|--|

BRAKE PERFORMANCE II

ACROSS:

DOWN:

- 4. STEERINGKNUCKLE
- 5. LUGNUT
- 6. ROTOR
- 7. SEDIMENT

- 1. MASTERCYLINDER
- 2. HYDRAULICBRAKE
- 3. PISTONDUSTBOOTS

M
 A H
 P S Y
 I T D
 S T E E R I N G K N U C K L E
 T R A
 O C U
 N Y L U G N U T
 D L I
 U I C
 S N B
 T D R O T O R
 B E A
 O R K
 O E
 T
 S E D I M E N T

BRAKE PERFORMANCE III

XX																				
XX																				
XX	1	XX	2	XX	3	XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														
XX		XX		XX		XX														

DOWN:

1. places where parts are next to each other
2. to wear away by rubbing
3. Occupational Safety and Health Administration (Abbr.)

BRAKE PERFORMANCE III

ANSWER KEY

DOWN:

- 1. ABUTMENTS**
- 2. CHAFE**
- 3. OSHA**

A C O
B H S
U A H
T F A
M E
E
N
T
S

LEARNING WORDS USED IN SERVICING HYDRAULIC BRAKE SYSTEM

INTRODUCTION

Steel tubing and rubber hoses are used for much of the automobile's brake system. They form the link between the master cylinder and the wheel cylinders or calipers. They transmit the hydraulic pressure developed by the master cylinder to apply the brakes when the operator steps on the pedal. During the replacement of lines and hoses or during a normal hydraulic system service, air is permitted to enter the brake system. In this unit you will learn the technical vocabulary related to servicing hydraulic brake systems.

PERFORMANCE OBJECTIVES

You will match 6 words used in servicing hydraulic brake systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 5 words with their correct definitions.

LEARNING ACTIVITIES

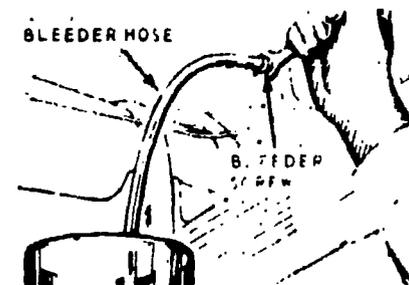
Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

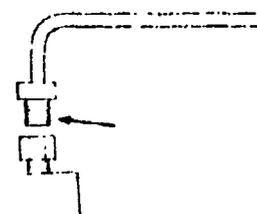
-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

SERVICING HYDRAULIC BRAKE SYSTEM

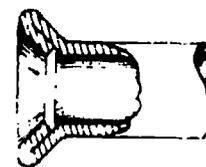
bleeding removing the air from the
 (bleed ing) hydraulic (hy drau lic)
 hydraulic brakes brake system
 (hy drau lic brakes)



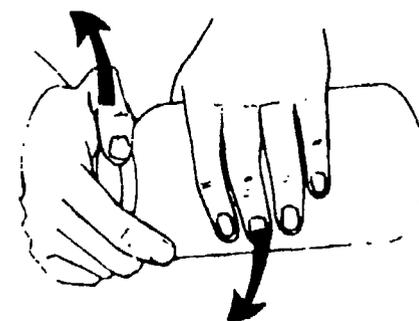
disconnect to separate
 (dis con nect)



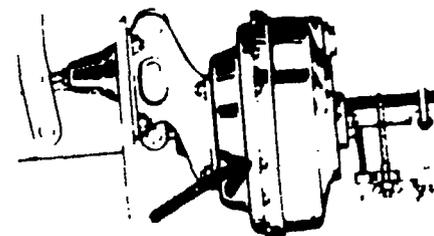
flare to turn out the opening
 (flare)



manually by hand
 (man u al ly)

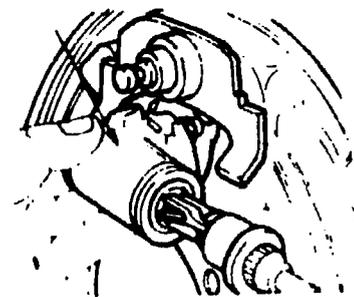


power booster a device that increases power
 (pow er boost er) to a brake master cylinder
 (cyl in der)



SERVICING HYDRAULIC BRAKE SYSTEM

wheel cylinder a part that gets pressure from a
(wheel cyl in der) master cylinder and moves brake
shoes against drums



SERVICING HYDRAULIC BRAKE SYSTEM

Word Find Puzzles for Units AM-24, AM-25, AM-26, and AM-27 have been combined into one group of puzzles and may be found on Pages AM-27-3 to AM-27-5.

Crossword Puzzle for Units AM-24, AM-25, and AM-26 has been made into one puzzle which may be found on Page AM-26-3.

LEARNING WORDS USED TO INSPECT AND REPAIR DRUM BRAKE COMPONENTS

INTRODUCTION

The drum brake is one of the two major types of wheel brakes used on modern passenger cars. The wheel brakes are the most important part of a brake system from the standpoint of service because they contain the lined brake shoes that actually stop the vehicle. The drum brakes on the rear of most vehicles also normally include the additional parts required for parking brakes. At regular intervals it becomes necessary to repair or replace some of the brake components in order to maintain safe, controlled braking action. In this unit you will learn the technical vocabulary related to drum brake components.

PERFORMANCE OBJECTIVES

You will match 7 words used in inspecting and repairing drum brake components with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.
-

INSPECT AND REPAIR DRUM BRAKE COMPONENT

boss
(boss)

a reinforced, heavier area made to give strength to an object



brake lining
(brake lining)

material fastened to brake shoes that increase friction and give longer wear



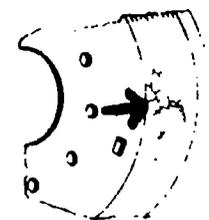
brake shoes
(brake shoes)

a curved metal covered with brake lining that is pressed against the brake drum to slow the wheel



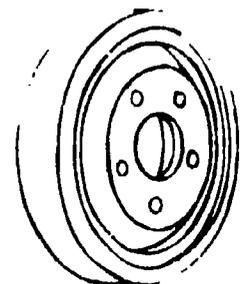
defective
(de fective)

does not operate correctly



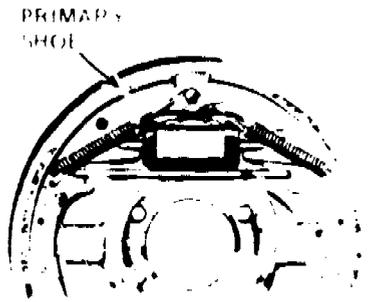
drum brake
(drum brake)

a round drum surface that turns with the wheel and is rubbed by the brake lining

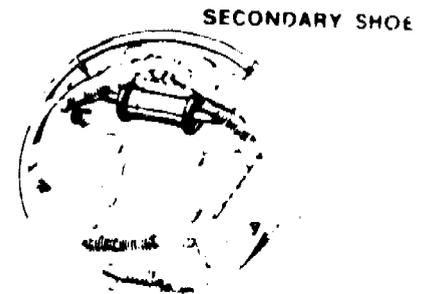


INSPECT AND REPAIR DRUM BRAKE COMPONENT

primary a brake shoe facing the front
 (pri ma ry) of a car
 brake shoe
 (brake shoe)



secondary a brake shoe that faces the
 (sec on dar y) rear of the car
 brake shoe
 (brake shoe)



INSPECT AND REPAIR DRUM BRAKE COMPONENT

Word Find Puzzles for Units AM-24, AM-25, AM-26, and AM-27 have been combined into one group of puzzles and may be found on Pages AM-27-3 to AM-27-5.

Crossword Puzzles for Units AM-24, AM-25, and AM-26 have been made into one puzzle which may be found on Page AM-26-3.

LEARNING WORDS USED IN REPLACING MASTER AND WHEEL CYLINDER

INTRODUCTION

Some shops do not attempt to overhaul wheel and master cylinders. Instead, they install new or rebuilt cylinders obtained from a parts dealer specializing in this work. Periodically, the wheel or master cylinders must be replaced because of fluid leaks when other brake components do not need this service. In this unit you will learn the technical vocabulary related to replacing master and wheel cylinders.

PERFORMANCE OBJECTIVES

You will match 4 words used in replacing master and wheel cylinders with their definitions. Your teacher will provide a list of words and definitions. You should match all the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

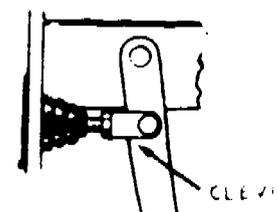
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
 2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
-

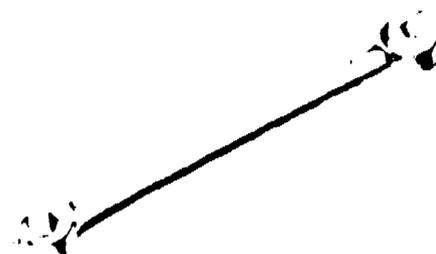
-
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
 4. USE the Answer Key on the back as a self-check.
 5. STUDY the words that were a problem.

REPLACING MASTER AND WHEEL CYLINDER

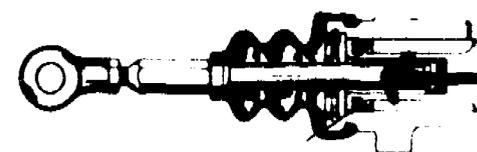
clevis a U-shaped metal piece with
(clev is) holes in each end



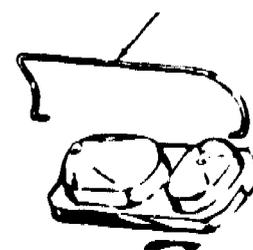
flare-nut wrench a tool used to turn the nut
(flare-nut wrench) that holds joints on tubings



master cylinder a metal rod joined to the
(mas ter cyl in der)brake pedal and is pushed
push rod into the master cylinder
(push rod) piston



retaining clip a wire band used to fasten
(re tain ing clip) parts



REPLACING MASTER AND WHEEL CYLINDERS

Word Find Puzzles for Units
AM-24, AM-25, AM-26, and
AM-27 have been combined
into one group of puzzles
and may be found on Pages
AM-27-3 to AM-27-5.

BRAKE SYSTEM & CYLINDERS

XX	1	XX																		
XX		XX																		
XX	XX	XX	XX	2	3										XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX									
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX									
XX	XX	XX	4											XX						
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX									
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX	XX	XX	7	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX	XX	XX		XX	6	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX		XX		XX	XX	XX	XX	XX						
XX	XX	XX	XX	8														XX	XX	XX
XX	XX	XX	XX	XX		XX		XX		XX	XX	XX	XX	XX						
XX	XX	XX	XX	XX		XX		XX		XX	XX	XX	XX	XX						
XX		XX	XX	XX	XX															
XX		XX	XX	XX	XX															
XX		XX	XX	XX	XX															

ACROSS:

DOWN:

- | | |
|--|---|
| <p>2. material fastened to brake shoes that keeps them from slipping (2 words)</p> <p>4. curved metal block that is pressed against brake drum to slow the wheel (2 words)</p> <p>8. a tool to use with the nut that holds joints on tubings (3 words)</p> | <p>1. to separate</p> <p>3. a metal band to hold parts (2 words)</p> <p>6. by hand</p> <p>7. a round drum surface that turns with the wheel (2 words)</p> |
|--|---|

BRAKE SYSTEM & CYLINDERS

ANSWER KEY

ACROSS:

DOWN:

- 2. BRAKELINING
- 4. BRAKESHOES
- 8. FLARENUTWRENCH

- 1. DISCONNECT
- 3. RETAININGCLIP
- 6. MANUALLY
- 7. DRUMBRAKE

D

B R A K E L I N I N G

E S

T C

B R A K E S H O E S

I N

N N D

I E R

N C U

G T M M

C B A

F L A R E N U T W R E N C H

I A U

P K A

E I

L

Y

LEARNING WORDS USED IN INSPECTING AND REPAIRING DISC BRAKE COMPONENTS

INTRODUCTION

The modern automobile brake system generally incorporates disc brakes for the front wheels and drum-type brakes for the rear wheels. One reason for this is that the weight of the vehicle is thrown forward when brakes are applied and approximately 60 percent of the braking action takes place at the front wheels. Superior braking action results with disc brakes. This is why so many vehicles now use this system. In this unit you will learn the technical vocabulary related to disc brake components.

PERFORMANCE OBJECTIVES

You will match 5 words used in inspecting and repairing disc brake components with their definitions. Your teacher will provide a list of words and definitions. You should match all of the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

BRAKES & CYLINDERS

F L A R E N U T W R E N C H F J U A E I E
 R E T A I N I N G C L I P P U S H R O D S
 S E C O N D A R Y S H O E Q T C T G J B I
 C O T T E R P I N I R S I C R C O I T V M
 R I C S M A N J P O W E R B O O S T E R J
 B R A K E F A D E F O B G E C F Q H P M P
 I S I C E N O S I N D R U M B R A K E S J
 V X J S K Q P R I M A R Y S H O E E E M D
 D E F E C T I V E B Y C U X G N R G K C V
 T I L W H E E L C Y L I N D E R W M K J N
 B R A K E L I N I N G B L E E D I N G Q O
 A S S E M B L E S Y S P U U A J M A O H X
 U I I I B O S S T Q O N I W F P Y J Y Y A
 F D I S C O N N E C T B R A K E S H O E S
 T R C R O C U S C L O T H F L A R E T Z V
 W R C T I V D P R Y K O Y P B M H T Z W W
 V F W M A N U A L L Y D U S T B O O T Q A
 O D E G F I S D S D H S E J Q K D V F W E
 V S K M L Y O B S V C L E V I S Q C Q U D

Can you find these words?

FLARE NUT WRENCH
 WHEEL CYLINDER
 PRIMARY SHOE
 BRAKE SHOES
 BRAKE FADE
 DEFECTIVE
 PUSH RODS
 CLEVIS

RETAINING CLIP
 POWER BOOSTER
 BRAKE LINING
 DISCONNECT
 DUST BOOT
 MANUALLY
 BOSS

SECONDARY SHOE
 CROCUS CLOTH
 COTTER PIN
 DRUM BRAKE
 ASSEMBLE
 BLEEDING
 FLARE

ACROSS

BRAKES & CYLINDERS

ANSWER KEY

F L A R E N U T W R E N C H
R E T A I N I N G C L I P P U S H R O D S
S E C O N D A R Y S H O E
C O T T E R P I N
. P O W E R B O O S T E R .
B R A K E F A D E
. D R U M B R A K E . .
. P R I M A R Y S H O E
D E F E C T I V E
. . . W H E E L C Y L I N D E R
B R A K E L I N I N G B L E E D I N G . .
A S S E M B L E
. B O S S
. D I S C O N N E C T B R A K E S H O E S
. C R O C U S C L O T H F L A R E . . .
.
. M A N U A L L Y D U S T B O O T . .
.
. C L E V I S

BRAKES & CYLINDERS

O G N E Y P O W E R B O O S T E R G R J V
 D B I V D M M H U W F D B A K B Y J V G R
 E U E B R A K E L I N I N G W J V S P N X
 G P W M U D X E T M U F Q E E L W G J O W
 K E M A M U R L K A U L N K L C Q W L W M
 B O S S B S E C O N D A R Y S H O E L T S
 S S I D R T T Y L U U R T K V Y H S I A R
 Q N I Y A B A L Q A E E S B P C M G E L O
 G P W A K O I I C L G N B L U L M X D X B
 K R Q Q E O N N J L R U R E S E I C O W R
 I I Q C D T I D S Y N T A E H V K D B T A
 W M Q U J W N E P E T W K D R I R N K F K
 T A I N D F G R H W M R E I O S U B Y M E
 C R O C U S C L O T H E S N D O K F R Y F
 C Y Y U B V L B J X R N H G S F X J H W A
 E S P T O I I Y D I S C O N N E C T E N D
 U H U Y D B P V Y A Q H E G S Y E L C I E
 C O T T E R P I N K U A S S E M B L E M H
 D E F E C T I V E G V C Q J L V V L H Z T

Can you find these words?

FLARE NUT WRENCH
 WHEEL CYLINDER
 PRIMARY SHOE
 BRAKE SHOES
 BRAKE FADE
 DEFECTIVE
 PUSH RODS
 CLEVIS

RETAINING CUP
 POWER BOOSTER
 BRAKE LINING
 DISCONNECT
 DUST BOOT
 MANUALLY
 BOSS

SECONDARY SHOE
 CROCUS CLOTH
 COTTER PIN
 DRUM BRAKE
 ASSEMBLE
 BLEEDING
 FLARE

ACROSS/DOWN

BRAKES & CYLINDERS

A G Q H I K Y O E B V U Q G V P S B P B H
 O J I E K D F Y W I X M S C L F I E U I B
 P R I M A R Y S H O E Q M K Z Z L G S I N
 S D I S C O N N E C T G A L P G F A H Y X
 Z H I R B R A K E S H O E S R T H C R W D
 T L U N R W C B L N W P N P O Y N E O E M
 Q P H Z A C W X C O C V U O N E I G D F B
 B O A G K A K R Y J F L B B R I Q U S D H
 O W P C E C D D L T X T E W O H F V B E Q
 D E T R F W N R I N S I T V R S D B R F L
 M R O O A Z K U N U U U I Q I Y S S A E K
 M B I C D D A M D E N I C J T S U P K C M
 E O G U E H D B E E S A S S E M B L E T U
 P O Y S C F T R R E T A I N I N G C L I P
 K S E C O N D A R Y S H O E K C M Y I V K
 W T T L N Q L K L I S I C O E N S I N E L
 K E G O I F Q E A S G C O T T E R P I N W
 M R I T Y Q Y T K F C O B L E E D I N G P
 I H P H D N O I D M A N U A L L Y N G G F

Can you find these words?

FLARE NUT WRENCH
 WHEEL CYLINDER
 PRIMARY SHOE
 BRAKE SHOES
 BRAKE FADE
 DEFECTIVE
 PUSH RODS
 CLEVIS

RETAINING CLIP
 POWER BOOSTER
 BRAKE LINING
 DISCONNECT
 DUST BOOT
 MANUALLY
 BOSS

SECONDARY SHOE
 CROCUS CLOTH
 COTTER PIN
 DRUM BRAKE
 ASSEMBLE
 BLEEDING
 FLARE

ACROSS/DOWN/DIAGONAL

BRAKES & CYLINDERS

ANSWER KEY

. P
. W F . . U
P R I M A R Y S H O E L . S
. D I S C O N N E C T A H
. . . . B R A K E S H O E S . T . C R
. . . . R . . . L O . N . O F
. P . . A . . . C . C . . O . E . . D
. O . . K . . . Y . . L B B R S D
. W . C E . . D L . . T E W O . . . B E
. E . R F . . R I . S . T V . S . . R F
. R . O A . . U N U . U . . I . S . A E
. B . C D . . M D . N S . . K C
. O . U E . . B E E . A S S E M B L E T
. O . S . . . R R E T A I N I N G C L I P
. S E C O N D A R Y S H O E I V
. T . L . . L K E
. E . O . F . E . . . C O T T E R P I N
. R . T B L E E D I N G
. . . H M A N U A L L Y . G

BRAKES & CYLINDERS I

XX	1									XX	XX	XX	XX							
XX										XX	XX	XX	XX							
XX		XX																		
XX		XX																		
XX	3								XX	XX	XX	XX	XX							
XX		XX																		
XX	4							XX	XX	XX	XX	XX	XX							
XX		XX																		
XX	XX	XX	5								XX									
XX		XX																		
XX		XX																		

ACROSS:

DOWN:

1. a metal strip with ends that can turn outward after it is put into something (2 words)
 3. a metal rod joined to the brake pedal that is pushed into the master cylinder (2 words)
 4. a U-shaped metal piece with holes in each end
 5. a rubber ring that keeps dirt out of the disc brake piston (2 words)
1. a very fine cloth used to polish (2 words)

BRAKES & CYLINDERS I

ANSWER KEY

ACROSS:

- 1. COTTERPIN
- 3. PUSHRODS
- 4. CLEVIS
- 5. DUSTBOOT

DOWN:

- 1. CROCUSCLOTH

C O T T E R P I N

R

O

C

P U S H R O D S

S

C L E V I S

L

D U S T B O O T

T

H

BRAKES & CYLINDERS II

XX	1	XX																		
XX		XX																		
XX		XX																		
XX	2							3		XX	XX	XX	XX	XX						
XX		XX	XX	XX		XX	XX		XX	XX	XX	XX	XX	XX						
XX	XX	XX	XX	XX	4							XX		XX						
XX		XX	XX	XX		XX	XX		XX	XX	XX	XX	XX	XX						
XX		XX	XX		XX	XX	XX	XX	XX	XX										
XX		XX	XX		XX	XX	XX	XX	XX	XX										
XX		XX	XX		XX	XX	XX	XX	XX	XX										
XX		XX	XX		XX	XX	XX	XX	XX	XX										
XX		XX	XX		XX	XX	XX	XX	XX	XX										
XX		XX	XX		XX	XX	XX	XX	XX	XX										
XX	5					XX														
XX		XX																		

ACROSS:

DOWN:

- | | |
|---|---|
| <p>2. the brakes not working well because of increased heat (2 words)</p> <p>4. to put together</p> <p>5. to turn out on the open end</p> | <p>1. part that gets pressure from master cylinder & puts brake shoes to the drums (2 words)</p> <p>2. a larger area made to give strength to an object</p> <p>3. something wrong with a part</p> |
|---|---|

BRAKES & CYLINDERS II

ANSWER KEY

ACROSS:

- 2. BRAKEFADE
- 4. ASSEMBLE
- 5. FLARE

DOWN:

- 1. WHEELCYLINDER
- 2. BOSS
- 3. DEFECTIVE

W
H
B R A K E F A D E
O E E
A S S E M B L E F
S C E
Y C
L T
I I
N V
D E
F L A R E
R

LEARNING WORDS USED IN REPLACING SHOCK ABSORBERS

INTRODUCTION

Absorbing shock is primarily a function of the springs that attach the suspension to the frame or chassis of the car. The shock absorbers control the bounce action of the springs in order to produce a smooth, controlled and safe ride. In this unit you will learn the technical vocabulary related to replacing shock absorbers.

PERFORMANCE OBJECTIVES

You will match 10 words used in replacing shock absorbers with their definitions. Your teacher will provide a list of words and definitions. You should match at least 8 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. CCVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

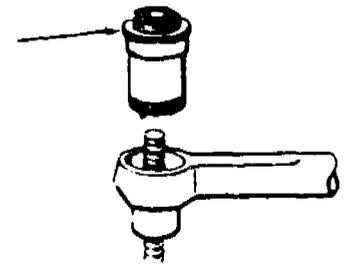
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

REPLACING SHOCK ABSORBERS

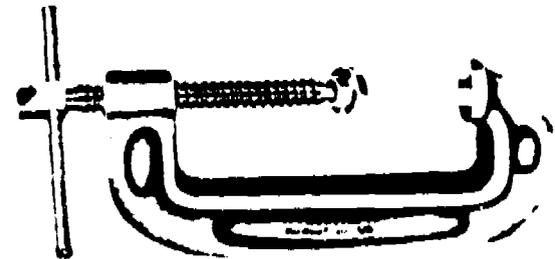
bushing
(bush ing)

a soft, porous, one-piece
bearing for a shaft



C-clamp
(C-clamp)

a metal tool shaped like a
C that holds an object



drift pin punch
(drift pin punch)

a long, tapered tool used to
take out a drift pin



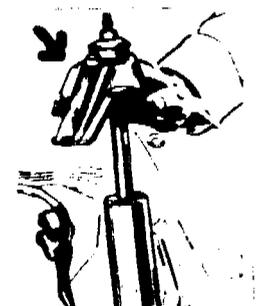
hex
(hex)

an object or an opening that
has six sides



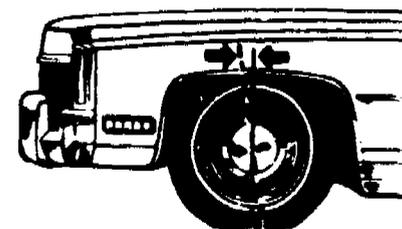
mounts
(mounts)

parts on which the shock
absorber fastens

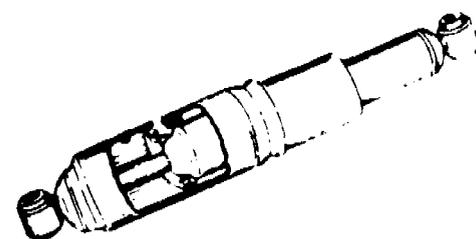


REPLACING SHOCK ABSORBERS

oscillation
(os cil la tion) to swing or move back and forth in a steady motion



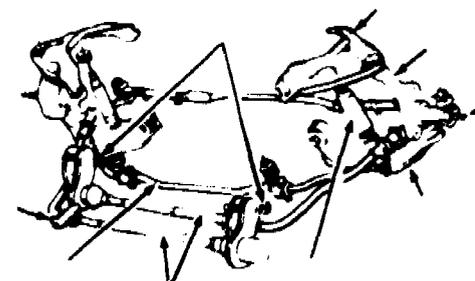
shock absorber
(shock ab sorb er) a device that softens sudden shocks to the suspension



sleeve
(sleeve) a machine part that is like a tube and fits over another



suspension
(sus pen sion) springs and other supporting parts that give the vehicle a smooth ride



vertical
(ver ti cal) straight up from bottom to top



SHOCK ABSORBERS

S H O C K A B S O R B E R Z T N V W H T E
 P H I W E C A Z Y V H G I E J O N U L C L
 A A T W E Q D E R E I Y M L W V S N Q H N
 Q D T D V T F I Q N B D O V E R T I C L E
 B R D N N O C Y B H E X Z I D T J K H H O
 T S V N X H B S B T K S Z A V U H K M V J
 L S O E H V T Y Y A J F H A B I P F E J M
 F K P P C K M V W I J H D Z N K A W R R V
 Y C P U Y P W S P G F K N Y J H K P C K N
 M L C Y Q M J V Q D I B F B R S H F P J L
 Y J Y Q Z C X X S L E E V E T W V M D X X
 U W C C L A M P X P M U I D C P W W J N O
 C L R O R R T U N P S H J F W J M W O O A
 D R I F T P I N P U N C H N S Z V U C F U
 P L P M S K H K D S K B K O L C H J B F L
 O S C I L L A T I O N M O U N T S Z M L Z
 X S R C M N W I L W X S N U Q E Y Q J C B
 S P V C S L X B I B U S H I N G L T T O B

Can you find these words?

SHOCK ABSORBER
VERTICLE
MOUNTS

DRIFT PIN PUNCH
BUSHING
C-CLAMP

OSCILLATION
SLEVE
HEX

ACROSS

SHOCK ABSORBERS

I A X I M Z P S L E D R S S Z P Y
 K M E R O N Q Y A N L Z R N Z R P
 N T X P U L Z T L T N F E N A A P
 E N B X N J A W B P B U S H I N G
 D R I F T P I N P U N C H A C B L
 L P V O S C I L L A T I O N Q R P
 Z F I G L Z K V E R T I C L E F W
 M R P H E X D U U V N O K W N E A
 E P J Q E T L S F C C L A M P C U
 Q K Y M V M J I H L L V B Y H G Z
 Y F A W E O F M U Z G U S X S J N
 P X G R I O M W X Q X K O W U R K
 B Y T Q Y P P I C H U V R L L N S
 W Q U P E K U R K M K C B N Q N P
 N Q Q A R B I B A E H V E G M G E
 I E X G C S S H H H U M R C M N W

Can you find these words?

SHOCK ABSORBER
VERTICLE
MOUNTS

DRIFT PIN PUNCH
BUSHING
C-CLAMP

OSCILLATION
SLEEVE
HEX

ACROSS/DOWN

SHOCK ABSORBERS

ANSWER KEY

. . . . M
. . . . O
. . . . U
. . . . N B U S H I N G
D R I F T P I N P U N C H
. . . . O S C I L L A T I O N . . .
. . . . L . . V E R T I C L E . .
. . . . H E X K
. . . . E C C L A M P . .
. . . . V B
. . . . E S
. O
. R
. B
. L
. R

SHOCK ABSORBERS

C C L A M P H D Y H Y K C B T J O N D
 G C Z K O A A R E R Y H F O I C X M M
 W S H B U S H I N G K G A I H O H T W
 Z N V D N I M F I C R Q X P K N F H F
 Y G M O T K D T I V E Q D O O W J D Z
 O Q X B S F Y P V E T Q G I R F Z Q G
 W A R X N Y M I V P H S T K C N A B C
 A U F N K M K N V Z A A T X B W Y F J
 B H Q D N W W P B H L T U A W L O C I
 C R Z I H R B U Y L V M O K O G Q T C
 G J R P T U H N I Q O E O D R P T L Q
 L A A N C P C C O O L M U F G Y M L R
 M I O Y B X S H O C K A B S O R B E R
 Z M X O N O P L I X A T L E G G Q V Y
 W I D M Y R L T E V I U D X J U P U T
 U D J S N C R H Q E H D Z J H D Z V K
 P Y Z R H E V B Q C V I J K T W K U N
 Q J Z P V U U R E X V E L M P N C G W

Can you find these words?

SHOCK ABSORBER
VERTICLE
MOUNTS

DRIFT PIN PUNCH
BUSHING
C-CLAMP

OSCILLATION
SLEEVE
HEX

ACROSS/DOWN/DIAGONAL

SHOCK ABSORBERS

ANSWER KEY

C C L A M P . D
. . . . O . . R
. . . B U S H I N G
. . . N . . F N . . .
. . . T . . T O
. . . S . . P I
. I T
. N . . . A
. P . . L
. U . L
. N I . . E
. C . . L
. S H O C K A B S O R B E R
. O . L I X
. T E
. R H . E
. E V
. . . . V E

SHOCK ABSORBERS I

XX	XX	1	XX														
XX	XX		XX														
XX	XX		XX														
XX	XX		XX														
XX	XX		XX														
XX	XX		XX														
XX	XX		XX	XX	XX	2	XX										
XX	XX		XX	XX	XX		XX										
XX	XX		XX	XX	XX	3						XX	XX	XX	XX	XX	XX
XX	XX		XX	XX	XX		XX										
XX	XX		XX	XX	XX		XX	XX	XX	XX	4	XX	XX	XX	XX	XX	XX
XX	XX		XX	XX	XX		XX	XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	5												XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX		XX	XX	XX	XX	XX
XX	XX	6								XX	XX		XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	7			XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX										

ACROSS:

DOWN:

- | | |
|--|---|
| <p>3. a metal tool shaped like a C that holds an object to a table (-)</p> <p>5. a device that softens sudden shocks (2 words)</p> <p>6. straight up from bottom to top</p> <p>7. an object or an opening that has six sides</p> | <p>1. a tool used to take out a drift pin (3 words)</p> <p>2. to swing or move back and forth</p> <p>4. a machine part that is like a tube and fits over another part</p> |
|--|---|

SHOCK ABSORBERS I

ANSWER KEY

ACROSS:

- 3. CCLAMP
- 5. SHOCKABSORBERS
- 6. VERTICLE
- 7. HEX

DOWN:

- 1. DRIFTPINPUNCH
- 2. OSCILLATION
- 4. SLEEVE

D
 R
 I
 F
 T
 P
 I O
 N S
 P C C L A M P
 U I
 N L S
 C L L
 S H O C K A B S O R B E R
 T E
 V E R T I C L E V
 O H E X
 N

SHOCK ABSORBERS II

XX																				
XX																				
XX	1				2		XX													
XX																				
XX	3	XX	XX		XX															
XX		XX	XX		XX															
XX	4							XX												
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	5			XX														
XX																				
XX																				

ACROSS:

DOWN:

- | | |
|---|---|
| <p>1. a machine part that is like a tube and fits over another part</p> <p>4. a one-piece bearing for a shaft</p> <p>5. an object or opening that has six sides</p> | <p>2. straight up from bottom to top</p> <p>3. parts that hold the shock absorber</p> |
|---|---|

SHOCK ABSORBERS II

ANSWER KEY

ACROSS:

- 1. SLEEVE
- 4. BUSHING
- 5. HEX

DOWN:

- 2. VERTICLE
- 3. MOUNTS

S L E E V E

E

M R

O T

B U S H I N G

N C

T L

S H E X

LEARNING WORDS USED IN SERVICING MANUAL STEERING GEAR

INTRODUCTION

The steering gear is designed so the front wheels may be turned easily in either direction. Servicing the steering system, whether manual or power, is very important. Worn or loose steering gear parts will cause the vehicle to wander or weave on the road. Steering gears are mounted in a housing which is attached to the frame of the vehicle. In this unit you will learn the technical vocabulary related to servicing manual steering gear.

PERFORMANCE OBJECTIVES

You will match 4 words used in servicing manual steer gear with their definitions. Your teacher will provide a list of words and definitions. You should match all the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.
-

SERVICING MANUAL STEERING GEAR

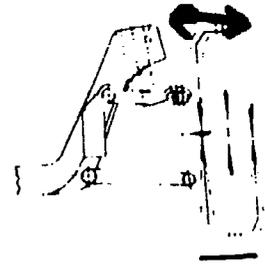
cross shaft
(cross shaft)

a shaft that meshes with the
steering shaft worm



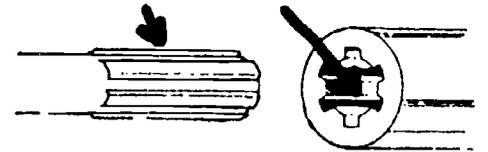
shimmy
(shim my)

front wheels shaking from
side to side



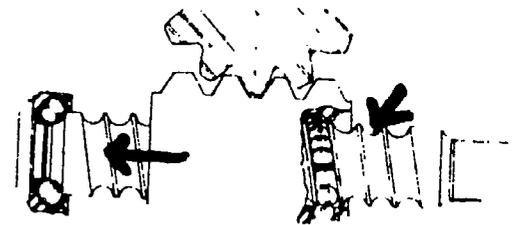
spline
(spline)

ridges on a shaft made to fit
into grooves on another part



worm gear
(worm gear)

meshing of a screw thread
and gear assembly



SERVICING MANUAL STEERING GEAR

Word Find and Crossword
Puzzles for Units AM-29 and
AM-30 have been combined
into one group of puzzles
and may be found on Pages
AM-30-3 to AM-30-6.

LEARNING WORDS USED IN INSPECTING LIGHTING SYSTEM

INTRODUCTION

There are times when the mechanic will be required to check the lighting system of an automobile. This may be during a routine inspection or when the vehicle is brought in for the required state inspection sticker. The lighting system must function properly for the safety of the vehicle operator and others who are either walking or driving along the roadway. In this unit you will learn the technical vocabulary related to inspecting the lighting system.

PERFORMANCE OBJECTIVES

You will match 17 words used in inspecting lighting systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 13 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

-
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

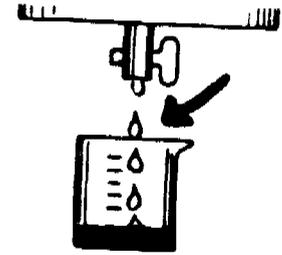
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

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REPLACING POWER STEERING PUMPS AND COMPONENTS

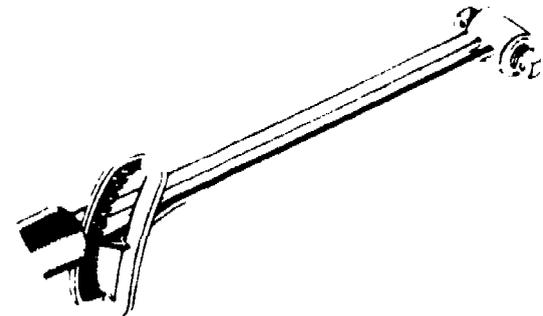
seepage
(seep age)

a slow leak



torque wrench
(torque wrench)

a tool used to tighten a nut
or bolt to certain limits of
tension



MANUAL & POWER STEERING

T O R Q U E W R E N C H S H I M M Y A
 J N H J G M F J P S R Q P V L U D S Y
 A L Y L V L W V J E G M C J N V L A E
 A L I G N M E N T I S T I A O W P L Q
 V D X E S Z K J S F H D D I V K X I S
 C R O S S S H A F T J C B U S H I N G
 L I N K A G E S H V R T U V K Z R R M
 J E X N Y X G Q B A A U F V U H A X A
 P Z N J F L G C H A S S I S Z Y T P M
 O Z D F E U M Z A Z P A Q L A H T A M
 U O Y B O O I K H T P J F K U O V E R
 F A C W F Q R P S W V H A D M F X T E
 H O I S T Y R E V N J A D I B V N Z J
 C R O C U S C L O T H I N G C Z U O X Q
 J F L A N G E V S O W J S Z L H U P H
 D A X S Y X N W V S P L I N E Y I V O
 J C O M P O N E N T S X N W M T S V I
 O Y P X W O R M G E A R S E E P A G E

Can you find these words?

TORQUE WRENCH
 CROSS SHAFT
 CHASSIS
 SEEPAGE
 SHIMMY

CROCUS CLOTH
 ALIGNMENT
 LINKAGE
 FLANGE
 HOIST

COMPONENTS
 WORM GEAR
 BUSHING
 SPLINE

ACROSS

MANUAL & POWER STEERING

ANSWER KEY

T O R Q U E W R E N C H S H I M M Y .
.
.
A L I G N M E N T
.
C R O S S S H A F T . . B U S H I N G
L I N K A G E
.
.
C H A S S I S
.
.
H O I S T
C R O C U S C L O T H
. F L A N G E
.
S P L I N E
. C O M P O N E N T S
. . . . W O R M G E A R S E E P A G E

MANUAL & POWER STEERING

Q W N Y A C C K G A N O S B D H B
 J Y H G H P I S P L I N E Q V D X
 F S X F S C H I N I G I Q B O R N
 L K K C E C D F M G E U I W O K D
 Q H D C J H N L I N T C D J L C I
 A U T Q V Z U A J M Q K F S D N E
 C N T G W G Q N J E S F L K Q X L
 N Y E U S A L G X N K Q Q N E B I
 F C O M P O N E N T S K V T Y P N
 C R O S S S H A F T R F U W M A T
 W O R M G E A R S J S J I U M X N
 C C H A S S I S V U C I H I T R Z
 P U E A N D M I Z E B E M L Y L K
 W S O G Z O K I V E U Z U V P T X
 I C K P L T P E G H S E E P A G E
 T L I N K A G E Z S H I M M Y O A
 D O N G Z B E U H O I S T S I H A
 U T O R Q U E W R E N C H I I A K
 F H F Q B V W H G F G H W J I B B

Can you find these words?

TORQUE WRENCH
 CROSS SHAFT
 CHASSIS
 SEEPAGE
 SHIMMY

CROCUS CLOTH
 ALIGNMENT
 LINKAGE
 FLANGE
 HOIST

COMPONENTS
 WORM GEAR
 BUSHING
 SPLINE

ACROSS/DOWN

MANUAL & POWER STEERING

ANSWER KEY

. A
. S P L I N E
. I
. F . G
. L . N
. A . M
. N . E
. G . N
. C O M P O N E N T S
C R O S S S H A F T
W O R M G E A R
. C H A S S I S
. U B
. S U
. C S E E P A G E
. L I N K A G E . S H I M M Y . .
. O H O I S T
. T O R Q U E W R E N C H
. H G

MANUAL & POWER STEERING

V Z E P V U F J C F X R H C D P A T C L Z
 F J G Z G A Y U H E X E Z H H L F D D I N
 K F X Y S E B E C W O R M G E A R T I Q Z
 M S E O Y Y G C T B A M U B H L S D N H A
 F H E F L L B P F T B S U S T I U S G B E
 Y X W E F I W L W O H U S C O G F D I Z F
 G C O M P O N E N T S S S H X N R L E S S
 K P N Z K A F K O K O C R H N M Z E I I E
 O J C Z K L G L A R E R W Q I E G L T L G
 C A K M O O C E C G Z Z Q A U N T I F X B
 G S V X M S P L I N E Y I U A T G Z Y I I
 P L X A U W H Q C K E M G L E V W Y K J A
 P Z D C J S P I L W C C F K O W E R E G U
 F G O V E P H A M J B A J I M A R B L K Q
 V R L Y N V C C Y M F F Y Z Z T O E Y S S
 C P G T T J Q R A B Y Z D Z T Q N T N Z O
 N O S Y I N K D Q X P Y X M A U C F B C V
 S L Y Y U R L D Z N X F H S S G O H A J H

Can you find these words?

TORQUE WRENCH
 CROSS SHAFT
 CHASSIS
 SEEPAGE
 SHIMMY

CROCUS CLOTH
 ALIGNMENT
 LINKAGE
 FLANGE
 HOIST

COMPONENTS
 WORM GEAR
 BUSHING
 SPLINE

ACROSS/DOWN/DIAGONAL

MANUAL & POWER STEERING

ANSWER KEY

. C . . . T . . .
. H . F
. W O R M G E A R T . . .
. S H L S
. . E . L B . . S . I . S . . .
. . . E . I H U S . O G . . I . .
. C O M P O N E N T S S S H . N . . . S .
. A . K O . O . . H . M . E . . .
. G L A R . R . . I E G
. C E C G . . Q . . N
. S P L I N E . . U A T G
. U . H L E
. . . C I F . . W
. . O M R
. R M E
C Y N
. C
. H

MANUAL & POWER STEERING

XX																					
XX	XX	XX	1	XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX	2							XX											
XX	XX	XX		XX	3						XX	XX	XX	XX	XX						
XX	XX	XX		XX		XX															
XX	XX	XX		XX		XX															
XX	XX	XX		XX		XX															
XX	XX	XX		XX		XX															
XX	XX	XX		XX		XX															
XX	XX	XX	4													XX	XX	XX	XX	XX	XX
XX																					
XX																					

ACROSS:

DOWN:

- 2. a slow leak
- 3. front wheels shaking from side to side
- 4. a tool used to tighten a nut or bolt to certain limits (2 words)

- 1. a shaft that works with steering shaft worm (2 words)
- 3. ridges on a shaft made to fit into another part

MANUAL POWER STEERING

ANSWER KEY

ACROSS:

- 2. SEEPAGE
- 3. SHIMMY
- 4. TORQUEWRENCH

DOWN:

- 1. CROSSSHAFT
- 3. SPLINE

C

R

O

S E E P A G E

S

S H I M M Y

S

P

H

L

A

I

F

N

T O R Q U E W R E N C H

LEARNING WORDS USED IN REPLACING POWER STEERING PUMPS AND COMPONENTS

INTRODUCTION

The location of faulty steering problems is frequently found to be in areas other than the steering gear or pump. Areas of the steering system, as indicated in previous units, which can be easily checked and quickly corrected without disassembly and major overhaul of components should be checked first. Conditions such as hard or loose steering, road shock, or vibrations are not always due to the steering gear or pump but are often related to low tire pressure and front-end alignment. These factors should always be checked first and corrected before adjustments and disassembly of the power steering gear or pump is attempted. In this unit you will learn the technical vocabulary related to power steering pumps and components.

PERFORMANCE OBJECTIVES

You will match 2 words used in replacing power steering pumps and components with their definitions. Your teacher will provide a list of words and definitions. You should match both of the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

-
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
 5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

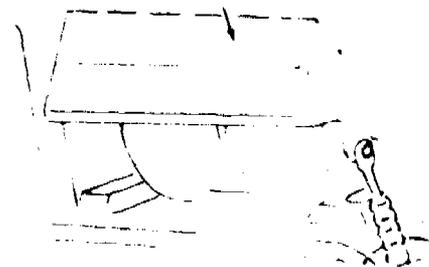
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

LIGHTING SYSTEM

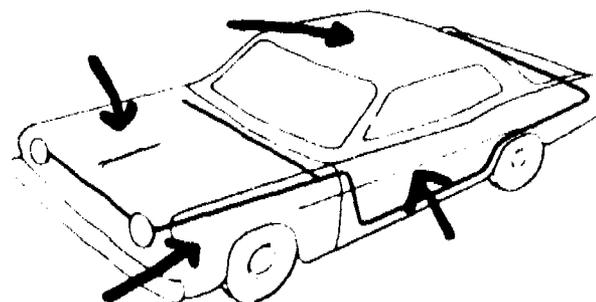
concealed
(con cealed)

hidden



exterior
(ex ter ior)

outside



malfunction
(mal func tion)

not working correctly

temporarily
(tem po rar i ly)

for a short time

visually
(vi su al ly)

inspect
(in spect)

look carefully

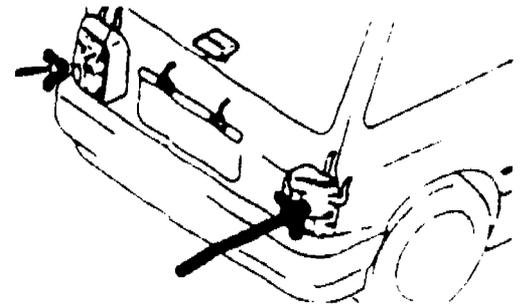


LIGHTING SYSTEM

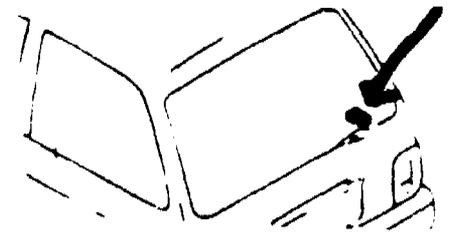
lighting system all the parts that make the
(light ing sys tem) lights work

back-up lights white lights at the rear of a
(back-up lights) vehicle that are on when it is
in reverse

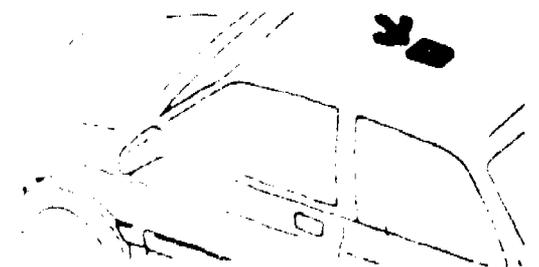
brake lights red lights at the rear of a
(brake lights) vehicle that come on when the
brakes are applied



clearance lights lights that mark the
(clear ance lights) outside edges of the vehicle



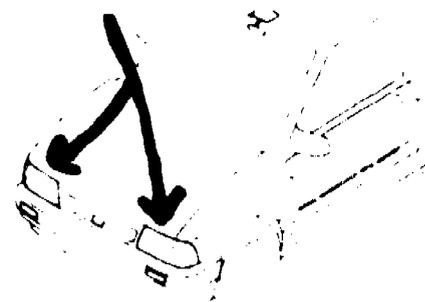
courtesy lights lights inside a vehicle
(cour te sy lights) that are on when a door is
opened



LIGHTING SYSTEM

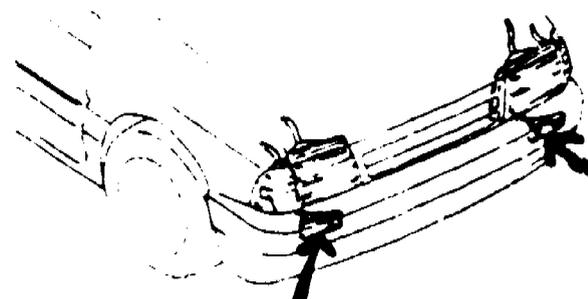
headlights
(head lights)

main driving lights on
the front of a vehicle



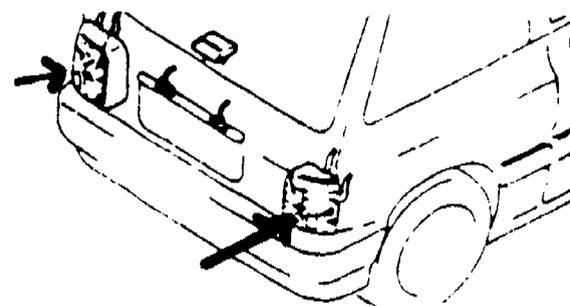
parking lights
(park ing lights)

small yellow lights at the
front of a vehicle



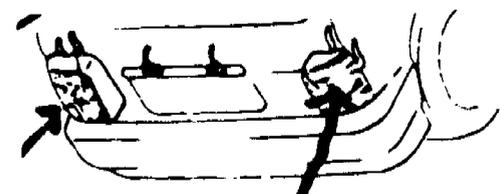
tail lights
(tail lights)

red lights at the rear of a
vehicle that are on when the
headlights are turned on



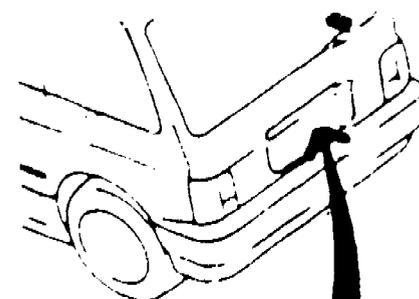
turn signal
(turn sig nal
lights
(lights)

lights on the right and left
side of the vehicle, in front
and in back, that show which
way the driver will turn



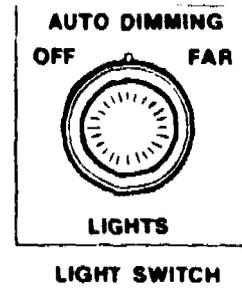
license plate
(li cense plate
lights
(lights)

small white lights that shine
on the license plate

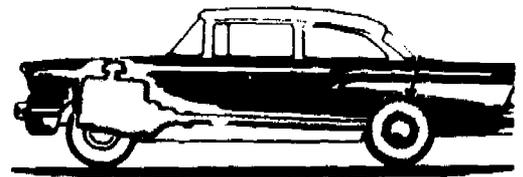


LIGHTING SYSTEM

control switch the knob or button that
(con trol swich) turns on the lights



vehicle something that carries people
(ve hi cle) (like a car, truck or van)



LIGHTING SYSTEM

M A L F U N C T I O N T U R N S I G N A L
 D V O P A W B A C K U P U A Y W A V D U I
 Y B D N Z V C Z Z S V P R S U Q R J J V O
 V M N X X Y X W J I M U R C R Y K P G J V
 K M P X U R E I Z A T A R Y V A M W I O P
 C L E A R A N C E Q Y V U B J I K G V M K
 C R N K X F J Q Q T D V L W M E I F G N D
 I I Z Q S I J G X O A Y J R Q R Y Q I X C
 C S Z D J I Y Z P A R K I N G H J Z S C C
 B K S Z M H F R K W Y N D A H M Q X H E Y
 Q W Q B V M E A H K P F J F L D I X H I F
 E I X R Y R J F L P U X M L S E Z U T B D
 C O U R T E S Y E X T E R I O R H U D T J
 V E H I C L E U A M O W L X Q Y K Z N X H
 F K U N G Y M S A U E M W Y A S O O W X V
 O B H W V W E W U V T S T B R D W L O F E
 H E A D L I G H T S V L T X T G R Z A U X
 D A J Z U H B U Z D J S J M S J L O J X J
 C C Q Q X S G V X F A G B R A K E L M G R

Can you find these words?

MALFUNCTION
 CLEARANCE
 VEHICLE
 BRAKE

TURN SIGNAL
 COURTESY
 PARKING

HEADLIGHTS
 EXTERIOR
 BACK-UP

ACROSS

LIGHTING SYSTEM

ANSWER KEY

M A L F U N C T I O N T U R N S I G N A L

. B A C K U P

.

.

.

C L E A R A N C E

.

.

. P A R K I N G

.

.

.

C O U R T E S Y E X T E R I O R

V E H I C L E

.

.

H E A D L I G H T S

.

. B R A K E

LIGHTING SYSTEM

B A C K U P Y M A K F C Q G E
 R Q U G M A M K E Q Z B I M M
 A E X T E R I O R K P L X E P
 K U Z U V K H X T V N D V K I
 E R G R H I R C O U R T E S Y
 Z M L N E N E L W E F Q H K Z
 W E V S H G N E I P N O I G L
 P C X I E T M A U V Z U C N K
 F X R G A V P R H K V E L I E
 E V N N D V I A N O T K E D J
 Y M M A L F U N C T I O N G E
 S B G L I Z B C N G E M O Y H
 O M I Q G P S E Y E E T G F A
 G V O D H T G R A O E P I J W
 E P M N T P Q J D S D W F X G
 F F P N S X H R K M K Q W P M

Can you find these words?

MALFUNCTION
 CLEARANCE
 VEHICLE
 BRAKE

TURN SIGNAL
 COURTESY
 PARKING

HEADLIGHTS
 EXTERIOR
 BACK-UP

ACROSS/DOWN

LIGHTING SYSTEM

ANSWER KEY

B A C K U P
R A
A E X T E R I O R
K . . U . K V . .
E . . R . I . C O U R T E S Y
. . . N . N . L H . .
. . . S H G . E I . .
. . . I E . . A C . .
. . . G A . . R L . .
. . . N D . . A E . .
. . M A L F U N C T I O N . .
. . . L I . . C
. . . . G . . E
. . . . H
. . . . T
. . . . S

LIGHTING SYSTEM

Q J K Z X I O Y R V Q L N T A O K L I G
 C Y O G T T S J S U Y C M X Z A N J H O
 T F M E F E K G W R X L V U T L W N A D
 H B O G T M A S O K P V M K O Z G J D V
 O Z B R A K E I X Q K N X G X T B T R P
 B M U R B A R K F M T D S Q F K K J W F
 A O C Z V E Q G A K E L N Q V J H S B W
 C L A M T W D C D I E J Z T X I D D P N
 K L H X M A N K U I U R V L D V B K O G
 U V E H I C L E P R M O W Y U W C I Y T
 P H A A R B Y N R R C U L H P Q T C H R
 C D D S R P Q I L U I M V F L C N H W G
 D W L T U A O U E Q M U R V N M W I T L
 D H I J B R N T O P W L W U J U N L R N
 Q N G Z A K L C Z H E T F U R O R F U V
 Y D H Y U I K U E N E L R X W I B R G T
 Z E T U R N S I G N A L R S G I B C E N
 T R S M D G R H U M V R Q U L Y Z A L W

Can you find these words?

MALFUNCTION
 CLEARANCE
 VEHICLE
 BRAKE

TURN SIGNAL
 COURTESY
 PARKING

HEADLIGHTS
 EXTERIOR
 BACK-UP

ACROSS/DOWN/DIAGONAL

LIGHTING SYSTEM

ANSWER KEY

. Y
. S
. E . . . R
. T . . . O
. . B R A K E I
B . U . . . R
A O . . . E
C . . . T N
K L H X O .
U V E H I C L E I . .
P . A A T . . .
. . D . R P C . . .
. . L . . A N
. . I . . R N U
. . G . . K . C F
. . H . . I . . E . . L
. . T U R N S I G N A L
. . S . . G . . . M

LIGHTING SYSTEM I

XX XX	1										2		XX XX							
XX XX		XX XX		XX XX																
XX XX		XX XX		XX XX																
XX XX		XX XX		XX XX																
XX XX		XX XX	3									XX XX	XX XX							
XX XX		XX XX		XX XX																
XX XX		XX XX	4										XX XX							
XX XX		XX XX		XX XX																
XX XX		XX XX	XX XX	XX XX	5												XX XX	XX XX	XX XX	XX XX
XX XX		XX XX		XX XX																
XX XX		XX XX		XX XX																
XX XX																				

ACROSS:

DOWN:

1. white lights at rear of vehicle that are on when it is in reverse (-) (2 words)
3. hidden
4. red lights at rear of vehicle that are on when headlights are turned on (2 words)
5. main driving lights on front of a vehicle

1. red lights at rear of vehicle that come on when brakes are touched (2 words)
2. for a short time

LIGHTING SYSTEM I

ANSWER KEY

ACROSS:

- 1. BACKUPLIGHTS
- 3. CONCEALED
- 4. TAILLIGHTS
- 5. HEADLIGHTS

DOWN:

- 1. BRAKELIGHTS
- 2. TEMPORARILY

B A C K U P L I G H T S

R

E

A

M

K

P

E

C O N C E A L E D

L

R

I

T A I L L I G H T S

G

R

H

H E A D L I G H T S

T

L

S

Y

LIGHTING SYSTEM II

XX																			
XX	1	XX	XX	XX	XX	XX	XX												
XX	XX	XX	XX	2													XX	XX	XX
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX							
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX							
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX							
XX	XX	XX	XX		XX	XX	XX	3	XX	XX	4	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX		XX	XX	XX		XX	XX		XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX		XX	XX	XX		XX	XX		XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX		XX	XX	XX		XX	XX		XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX		XX	XX	XX		XX	XX		XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	5														XX	XX	XX
XX	XX	XX	XX		XX	XX	XX		XX	XX		XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX		XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX							
XX	XX	XX	XX		XX														
XX	XX	XX	XX		XX														

ACROSS:

DOWN:

- 2. the lights inside a vehicle that are on when a door is opened (2 words)
- 5. look carefully (2 words)

- 1. all the parts that make the lights work (2 words)
- 2. knob or button that turns the lights on (2 words)
- 3. something that carries people outside
- 4. outside

LIGHTING SYSTEM II

ANSWER KEY

ACROSS:

DOWN:

- 2. COURTESYLIGHTS
- 5. VISUALLYINSPECT

- 1. LIGHTINGSYSTEM
- 2. CONTROLSWITCHES
- 3. VEHICLE
- 4. EXTERIOR

L

C O U R T E S Y L I G H T S

O G

N H

T T

R V E I

O E X N

L H T G

S I E S

W C R Y

V I S U A L L Y I N S P E C T

T E O T

C R E

H M

E

S

LIGHTING SYSTEM III

XX	XX	XX	1	XX																	
XX	XX	XX		XX																	
XX	2											XX	3	XX							
XX	XX													XX							
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX		XX																	
XX	XX	XX	5																	XX	XX
XX	XX	XX																		XX	XX

ACROSS:

DOWN:

- 2. not working
- 4. small yellow lights at front of vehicle (2 words)
- 5. lights on side of vehicle, in front & back, that show which way driver will turn
- 1. lights on outside edges of the vehicle (2 words)
- 3. outside

LIGHTING SYSTEM III

ACROSS:

DOWN:

- 2. MALFUNCTION
- 4. PARKINGLIGHTS
- 5. TURNSIGNALLIGHTS

- 1. CLEARANCELIGHT
- 3. EXTERIOR

C

M A L F U N C T I O N E

E X

P A R K I N G L I G H T S

R E

A R

N I

C O

E R

L

I

G

H

T U R N S I G N A L L I G H T S

LEARNING WORDS USED IN SERVICING LIGHTING SYSTEMS

INTRODUCTION

Many states have laws requiring an automobile owner to either obtain a certificate of proof that his headlights have been properly aimed by a professional mechanic, or to have his headlights checked and aimed by state-licensed inspectors. Headlight aim should be checked regularly to prevent blinding oncoming drivers during nighttime driving and to provide maximum visibility for the vehicle operator. In this unit you will learn the technical vocabulary related to repairing and replacing components and flasher units.

PERFORMANCE OBJECTIVES

You will match 10 words used in servicing lighting systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 8 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

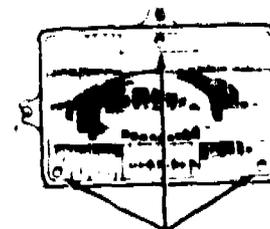
-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

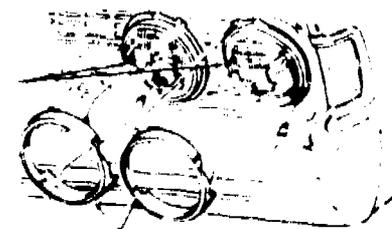
1. USE this activity after the vocabulary words in one unit have been learned.
 2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
 3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
 4. USE the Answer Key on the back as a self-check.
 5. STUDY the words that were a problem.
-

LIGHTING SYSTEM

head lamp lenses glass that covers headlights
 (head lamp lens es)

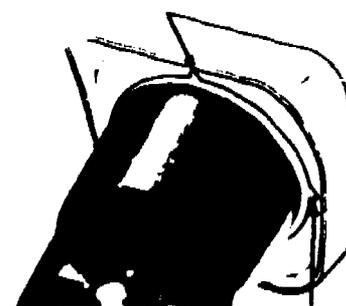


bezels trim rings around headlights
 (bez els)



headlight aimer a device that shows where
 (head light aim er) the headlights point

mechanical-type attach to the headlight lens
 (me chan i cal-type)
 aimers
 (aim ers)



visibility how well an object can be seen
 (vis i bil i ty)

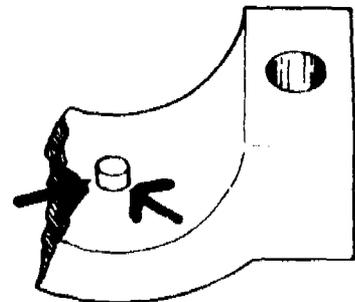
LIGHTING SYSTEM

equalize to make the same
 (e qual ize)

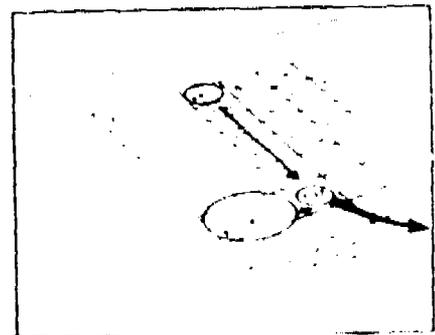
maximum greatest
 (max i mum)

obstructing blocking; in the way
 (ob struct ing)

protruding sticking out
 (pro trud ing)



specification a detailed plan for
 (spec i fi ca tion) measurements



SERVICING LIGHTING SYSTEM

H E A D L I G H T A I M E R C Y X F Z S A
 Y S B H I O J Z J E E Y D M T T B U X H L
 G Z C X D H E A D L A M P L E N S E S F W
 B E Z E L S U G Z I X Q J G R X K O T K L
 J K M Z S K N J T Q Q M O B F R F K C P M
 I V I S L C P B V S P W R S A V M R D J N
 O G K I R O N A A K E V B W J F I H N E S
 P C U B X T R S P K R Z K O M G L F G L D
 S W L T W H X O D K K I X P M I T N T I L
 G E Q U A L I Z E I S N G K R S F K E R R
 E P U U D Q A I S I D E O S P I I I K Y P
 R V L L P B K D B F X O P R T O Y P J M U
 A U E H F B P D C V J L X N L R Q P R C V
 V Y N B P B J V I S I B I L I T Y Y C R U
 L N R P J F Z M Y H T H H K C Y M J G T O
 J M T U F O W E S F H L Z W X I A Y Q P H
 J D H I U S B F J U G A M X D Y N R S N O
 Q M P A R Y C C W V G M L M F A C J A H T
 X R Q R X T E T W U D A M F M A X I M U M

Can you find these words?

HEADLIGHT AIMER
EQUALIZE

HEADLAMP LENSES
BEZELS

VISIBILITY
MAXIMUM

ACROSS

SERVICING LIGHTING SYSTEM

A G L Y M M G I C G A N Q B E Z E L S N
 O Z V K H R Z A A O K M I Q A E I U O P
 Q C N A Y Z M A G O N A Y R P N V L I V
 I E I S O C E M B H P X R R H H K T W L
 L Q Y R P W H E A D L I G H T A I M E R
 Q U R B F E E U Y Y G M W D N J K J W V
 Z A Z C S A A E C Y L U Q K T O N A I G
 L L W U W O D P V V U M Y D S P L K I P
 V I S I B I L I T Y E H L V V A X C I O
 N Z Z S N Z A I Y U N J D S O L V W P R
 G E G Y H I M O G V Y Y E X U F C L Y K
 N B J K C Z P X Q N F S D U H M U E U O
 P H J J M W L K I K W L Q G M J U F X A
 L G T M P A E A O W S U T X T O U A K W
 V V Y P Q T N W F U D R V H X E O S Z N
 S P N W F Z S C K E P D V S D D W C U V
 G W P U D U E B I I T U N M D X L P L V
 M Q U G H R S U R A O O B Z V S U E D T

Can you find these words?

HEADLIGHT AIMER
EQUALIZE

HEADLAMP LENSES
BEZELS

VISIBILITY
MAXIMUM

ACROSS/DOWN

SERVICING LIGHTING SYSTEM

ANSWER KEY

. B E Z E L S .
. M
. A
. E E X
. Q H E A D L I G H T A I M E R
. U E M
. A A U
. L D M
V I S I B I L I T Y
. Z A
. E M
. P
. L
. E
. N
. S
. E
. S

SERVICING LIGHTING SYSTEM

M S Q A X C U J E O U A P I A U M L
 K P W C W A T I S E S S Z Q A Y W H
 P B Y Q H X I J X L O P N L T O K M
 J M O X I S Z V A D G R R I N Y I N
 L U K F H E A D L A M P L E N S E S
 T U X Q E A O S A R K I O Q C C M M
 W M I S A Q V Y J Q B G C A H S C J
 W H A L D S U M W I Q U Z F E O D M
 D H P X L P L A S E E C F M G L F P
 W O K E I X J I L X W M F V M P M P
 T S Z T G M V D U I B U V E F D F C
 S E X V H D U B G N Z N O C F I K H
 B T D T T H C M Y J R E Q D S F R M
 D F R I A Y T Z T Q O W Z C S N X D
 V S F T I Z L C V J M L T W J O Z Q
 T Y N H M I D J B L T V P V W Z U E
 R P J K E V F M N J A C L K Z M S N
 Z R L G R M H V E N W J R F K I J P

Can you find these words?

HEADLIGHT AIMER
EQUALIZE

HEADLAMP LENSES
BEZELS

VISIBILITY
MAXIMUM

ACROSS/DOWN/DIAGONAL

SERVICING LIGHTING SYSTEM

ANSWER KEY

.
. Y . . .
. T . . .
. I
. . . H E A D L A M P L E N S E S
. . . . E I
. M . . A Q B
. . A . D S U . . I
. . . X L . . A S
. . . E I . . I L
. . Z . G M V . . I
. E . . H . U . . . Z
B . . . T . . M . . . E
. . . . A
. . . . I
. . . . M
. . . . E
. . . . R

SERVICING LIGHTING SYSTEM I

XX																				
XX	1	XX																		
XX	3	XX	XX	XX		XX	XX	XX	XX	XX	XX									
XX	XX	XX	XX	4								XX		XX	XX	XX	XX	XX	XX	
XX		XX	XX	XX		XX	XX	XX	XX	XX	XX									
XX		XX	XX	XX		XX	XX	XX	XX	XX	XX									
XX	5										XX	XX								
XX	6						XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX	
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX																				

ACROSS:

DOWN:

- 4. to make the same
- 5. blocking; in the way
- 6. rolled edge of metal that holds glass

- 1. greatest
- 3. degree of being seen

SERVICING LIGHTING SYSTEM I

ANSWER KEY

ACROSS:

DOWN:

- 4. EQUALIZE
- 5. OBSTRUCTING
- 6. BEZELS

- 1. MAXIMUM
- 3. VISIBILITY

M
 V A
 E Q U A L I Z E X
 S I
 I M
 O B S T R U C T I N G
 B E Z E L S I M
 L
 I
 T
 Y

SERVICING LIGHTING SYSTEM II

XX																				
XX																				
XX	XX	XX	1														XX	XX	XX	XX
XX	XX	XX															XX	XX	XX	XX
XX																				
XX																				
XX																				
XX	XX	XX	2														XX	XX	XX	XX
XX	XX	XX															XX	XX	XX	XX
XX																				
XX																				

ACROSS:

1. a detailed plan for measurements
2. sticking out

SERVICING LIGHTING SYSTEM II

ACROSS:

1. SPECIFICATIONS
2. PROTRUDING

S P E C I F I C A T I O N S

P R O T R U D I N G

LEARNING WORDS USED IN REPAIRING & REPLACING COMPONENTS & FLASHER UNITS

INTRODUCTION

The automobile lighting system, because of its importance for nighttime driving, has been engineered, designed, and constructed to give very reliable, trouble-free service. The system will seldom fail completely but will require an occasional bulb replacement or a turn signal light flasher replacement. One or more bulbs may fail to light because of a ground, open, or short circuit which may be the result of a pinched, stretched, or chafed insulated wire or wire harness. When this condition does occur, the mechanic must have the knowledge necessary to trace the circuits to find the problem and then to replace or repair the system to comply with the manufacturer's high standards of safety. In this unit you will learn the technical vocabulary related to servicing lighting systems.

PERFORMANCE OBJECTIVES

You will match 15 words used in repairing and replacing components and flasher units with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

-
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
 5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
-

-
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

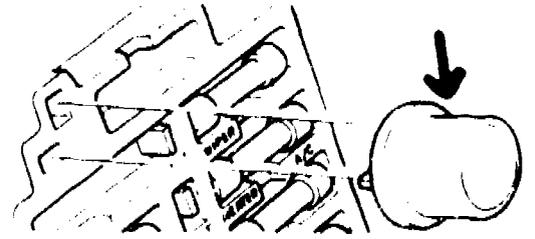
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
 2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
 3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
 4. USE the Answer Key on the back as a self-check.
 5. STUDY the words that were a problem.
-

REPAIRING & REPLACING COMPONENTS & FLASHER UNITS

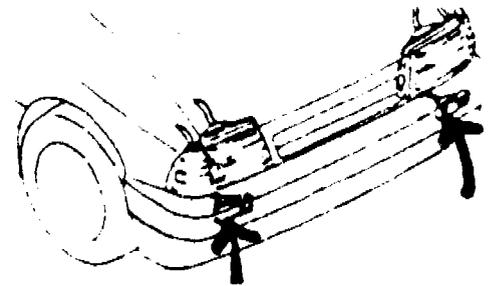
flasher
(flash er)

a circuit breaker that makes
turn signals flash or blink



directional
(di rec tion al)
flasher lights
(flash er lights)

lights that show right or
left turns

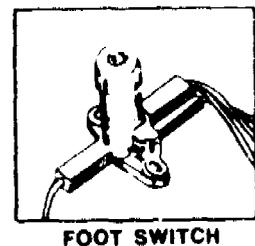


emergency
(e mer gen cy)
flasher lights
(flash er lights)

two front and two rear lights
that a driver uses to signal
that the vehicle has a problem

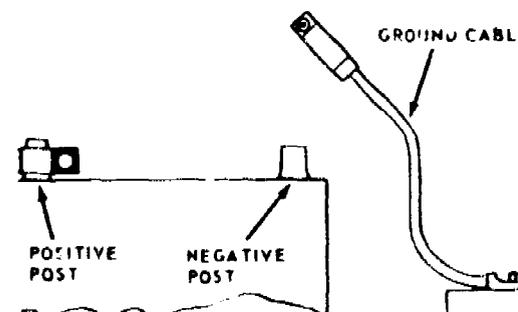
dimmer switch
(dim mer switch)

electric switch that controls
the head lights from high to
low beam



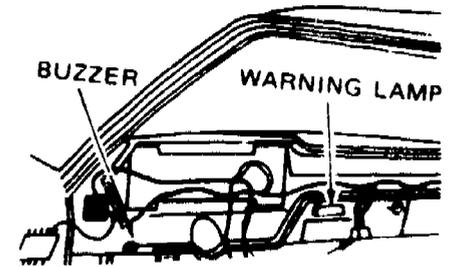
ground circuit
(ground cir cuit)

the cable that is fastened to
the body of the vehicle and
the metal parts of the vehicle



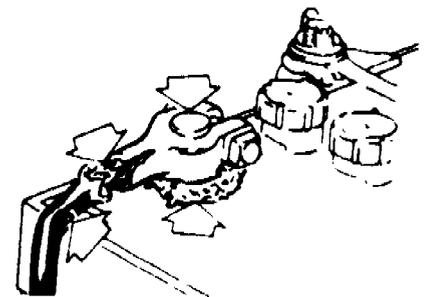
REPAIRING & REPLACING COMPONENTS & FLASHER UNITS

component a part of a system
 (com po nent)

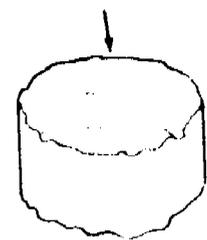


defective not working right
 (de fec tive)

corrosion rusting or wearing away of metal
 (cor ro sion)



chafe to wear away by rubbing
 (chafe)

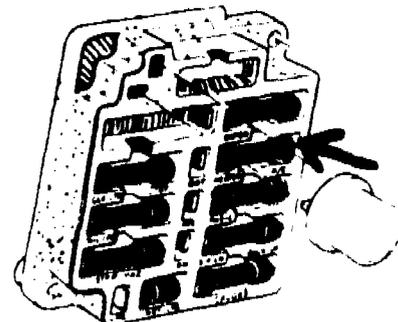


inoperative not working
 (in op era tive)

REPAIRING & REPLACING COMPONENTS & FLASHER UNITS

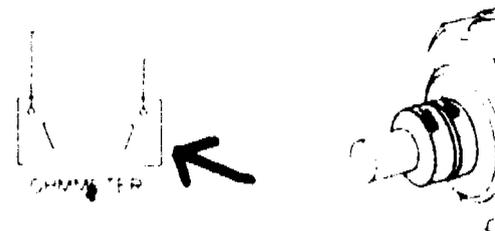
fuse box
(fuse box)

a case that holds fuses to the automobile electric circuits



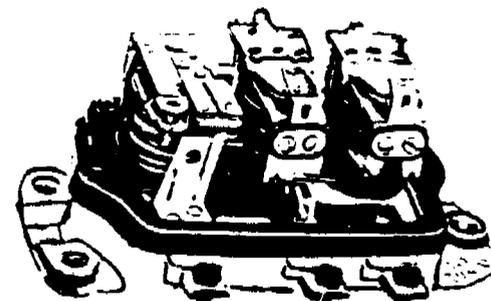
ohmmeter
(ohm me ter)

used to measure the amount of resistance in an electrical outlet



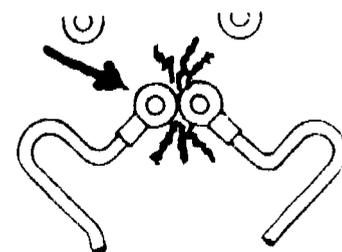
voltage regulator
(volt age)
regulator
(reg u la tor)

used to control generator voltage and current output



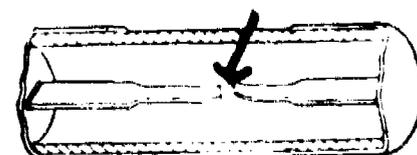
short circuit
(short cir cuit)

when a hot wire of an electrical system is grounded accidentally



open circuit
(o pen cir cuit)

a circuit which is broken so there is an opening and no current can flow



COMPONENTS & FLASHER UNIT

G R O U N D C I R C U I T K Y T J Z S Z Y
 X S Q X M G H Z S S M H A Z H U V C D Z A
 S K Y I Z D D K P X X X M V I H D Y C R W
 M I J D C O D E F E C T I V E M M K P S S
 J Z Y S N X F X U I C B S E C F T K R B M
 F U S E B O X Z C H A F E T D S J W J U K
 F L A S H E R H H J N T Z Q V V D L M F U
 N K M N A D M F Z Q O L L N V T H G G E T
 D J O P E N C I R C U I T V W I L U X E Z
 O H M M E T E R L L J T S Y K O H Z D C I
 X R E Y B X Q T H C O M P O N E N T B D W
 J P J P H L H M Z I D E N I M S U C Z S E
 T Q S J F Q U Q D N Y R T D I M B X U X M
 G O E W D X H E G W K Z L Q K B Y L Q Q V
 L E R K C P U K Z O A Z M K V Z U A T N Z
 S H O R T C I R C U I T C O R R O S I O N
 D I M M E R S W I T C H N Z Q F Z Q V M J

Can you find these words?

GROUND CIRCUIT
 OPEN CIRCUIT
 COMPONENT
 FLASHER

SHORT CIRCUIT
 DEFECTIVE
 OHMMETER
 CHAFE

DIMMER SWITCH
 CORROSION
 FUSE BOX

ACROSS

COMPONENTS & FLASHER UNIT

ANSWER KEY

G R O U N D C I R C U I T
.
.
.
.
D E F E C T I V E
.
.
F U S E B O X . C H A F E
F L A S H E R
.
.
.
O P E N C I R C U I T
O H M M E T E R
.
.
.
.
.
C O M P O N E N T
.
.
.
.
S H O R T C I R C U I T C O R R O S I O N
D I M M E R S W I T C H



COMPONENTS & FLASHER UNIT

B X V O I D C Z L Y N T L I Y Q H S S
 O N Q K Z I O S X M O V A F Q F T X F
 C S H O H M M E T E R L V S N O U K W
 T Q V U T M P M T H R S A N Z W W B Q
 D G F U S E B O X I P V Q X B J F O X
 M F L C W R S C G R P I A N Q D D L R
 C H A F E F H O R T C I R C U I T M V
 Y B S D U W N R O P E N C I R C U I T
 R Y H J C I K R U Q X Q K Z H X D U R
 Z C E Q J T U O N Q Q S F R Y T K Y V
 S Y R V S C J S D E F E C T I V E E W
 B W M I P H M I C O M P O N E N T J L
 A Q V F K B R O I G U X Z A G D G C X
 Y O C S E X Z N R X D B F C W P L X O
 K P W E O I S Y C V T F X D K B R O N
 J E Q S R A J M U F U Z O N M O L Q Y
 A M X U L F Z A I T U X M P K F G W B
 G C D K H A Z L T H Y C T T U S Q Y P

Can you find these words?

GROUND CIRCUIT
 OPEN CIRCUIT
 COMPONENT
 FLASHER

SHORT CIRCUIT
 DEFECTIVE
 OHMMETER
 CHAFE

DIMMER SWITCH
 CORROSION
 FUSE BOX

ACROSS/DOWN

COMPONENTS & FLASHER UNIT

ANSWER KEY

. D
. I
. . . O H M M E T E R
. M
. . F U S E B O X
. . L . . R . C G
C H A F E S H O R T C I R C U I T . .
. . S . . W . R O P E N C I R C U I T
. . H . . I . R U
. . E . . T . O N
. . R . . C . S D E F E C T I V E . .
. H . I C O M P O N E N T . .
. O I
. N R
. C
. U
. I
. T

COMPONENTS & FLASHER UNIT

Q D S J I U X X G D H P T B I N H M
 U Y M Y B O M N Q L I T V E O U M R
 C Y I Q B P R H V M L K Y I W G R V
 I Z P E G E S T C N E C S H D T S Y
 U T S G H N C H Q T L O K M V P A V
 H U W S V C O U O G R H L H A A C Q
 F C A W D I M M L R S W I T C H C Y
 E L F Y E R P S O O T W T U G N K H
 F U A R F O C Q U H C K X M Z M V
 L I O B E U N P I N I M I C S W H D
 K F S S C I E S M D J X M R K Y G Y
 H R Y T T T N Y J C H A F E C Q J Y
 X E N R I V T A J I H J X A T U M J
 W F J F V G M K M R T F L L X E I F
 G C X G E R U L X C H F H Z M X R T
 H M E U G U K M Z U I A O N V M O Y
 D S H D V Q A R I I A P N I P L P H
 K N B S C L R C T T E Y B A G P B V

Can you find these words?

GROUND CIRCUIT
 OPEN CIRCUIT
 COMPONENT
 FLASHER

SHORT CIRCUIT
 DEFECTIVE
 OHMMETER
 CHAFE

DIMMER SWITCH
 CORROSION
 FUSE BOX

ACROSS/DOWN/DIAGONAL

COMPONENTS & FLASHER UNIT

ANSWER KEY

. X N . .
. O O . . .
. . . . B P R I
. . . . E . E S S
. . S . H N C H . . . O
. U . S . C O . O G R
F . A . D I M M E R S W I T C H . .
. L . . E R P . O O T
F . . . F C O C . U H C
. . . . E U N . . N . M I
. . . . C I E . . D . . M R
. . . . T T N . . C H A F E C . . .
. . . . I . T . . I T U . .
. . . . V R E I .
. . . . E C R T
. U
. I
. T

FLASHER UNITS I

XX																				
XX	1	XX																		
XX	XX	XX	XX	2												XX	XX	XX	XX	XX
XX		XX																		
XX		XX																		
XX	3									XX										
XX		XX	4		5		6					XX	XX	XX						
XX		XX		XX		XX		XX												
XX		XX		XX		XX		XX												
XX		XX		XX		XX		XX												
XX		XX		XX		XX		XX												
XX		XX		XX		XX		XX												
XX		XX		XX		XX		XX												
XX		XX		XX																
XX		XX		XX																
XX																				
XX																				

ACROSS:

DOWN:

- 2. electric unit that controls the dimmer lights (2 words)
- 3. rusting or wearing away of metal
- 4. not working right

- 1. the cable that is fastened to the body of the vehicle (2 words)
- 3. a part of a system
- 5. a circuit breaker that makes turn signals flash or blink
- 6. to heat or wear away by rubbing

FLASHER UNITS I

ANSWER KEY

ACROSS:

DOWN:

- 2. DIMMERSWITCH
- 3. CORROSION
- 4. DEFECTIVE

- 1. GROUND CIRCUIT
- 3. COMPONENT
- 5. FLASHER
- 6. CHAFE

G

D I M M E R S W I T C H

O

U

C O R R O S I O N

O D E F E C T I V E

M C L H

P I A A

O R S F

N C H E

E U E

N I R

T T

FLASHER UNITS II

XX																				
XX																				
XX	XX	XX	XX	XX	XX	1		2										XX	XX	XX
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX	4										XX	XX	XX							
XX	5								XX											
XX		XX																		
XX		XX																		
XX	6							XX												
XX		XX																		
XX		XX																		
XX		XX																		
XX																				

ACROSS:

DOWN:

1. a hot wire of an electric system that is grounded (2 words)
2. a circuit which is broken so there is an opening & no current can flow (2 words)
4. not working
5. used to measure amount of resistance in a given unit or circuit
6. a case that holds fuses (2 words)

FLASHER UNITS II

ANSWER KEY

ACROSS:

- 1. SHORTCIRCUIT
- 4. INOPERATIVE
- 5. OHMMETER
- 6. FUSEBOX

DOWN:

- 2. OPENCIRCUIT

S H O R T C I R C U I T

P

E

N

C

I N O P E R A T I V E

O H M M E T E R

C

F U S E B O X

I

T

LEARNING WORDS USED IN SERVICING ASSEMBLY FUSE BOX

INTRODUCTION

The function of fuses is to protect devices from being ruined in case the current flows at a rate that is too high. The metal strip in the fuse will melt opening the circuit and stopping the flow of current. In this unit you will learn the technical vocabulary related to an assembly fuse box.

PERFORMANCE OBJECTIVES

You will match 10 words used in servicing assembly fuse boxes with their definitions. Your teacher will provide a list of words and definitions. You should match at least 8 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

-
6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

-
4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

ASSEMBLY FUSE BOX

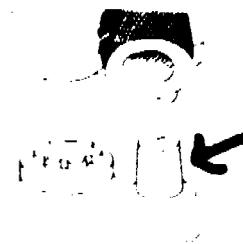
battery
(bat ter y)
ground cable
(ground ca ble)

wire that joins the battery
to the metal of the vehicle



battery post
(bat ter y post)

round lead post sticking up
from the battery to fasten
cables on

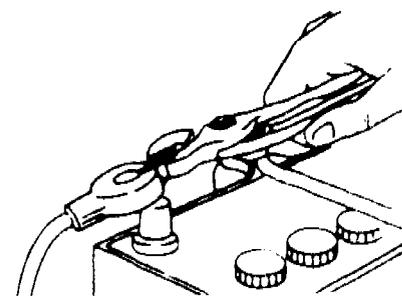


consistently
(con sis tent ly)

always behaving the same way

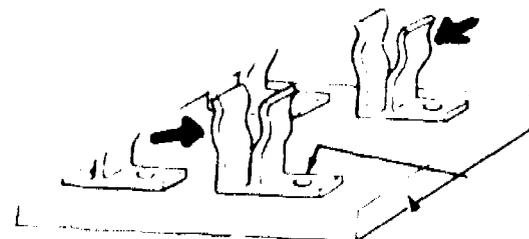
disconnect
(dis con nect)

to uncouple or separate



fuse retaining
(fuse re tain ing)
spring clips
(spring clips)

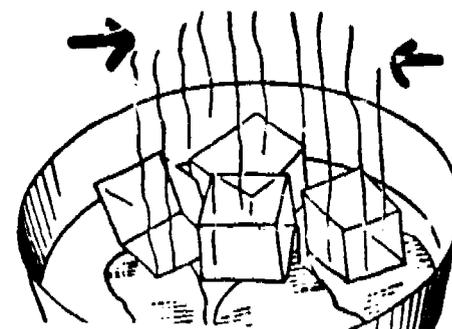
metal clamps in a fuse box



ASSEMBLY FUSE BOX

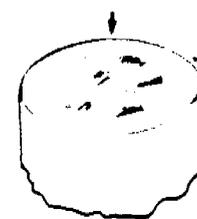
humidity
(hu mid i ty)

moisture in the air



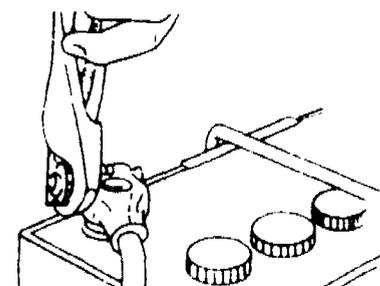
oxidize
(ox i dize)

the joining of metal with



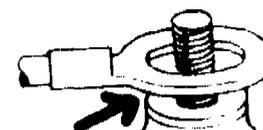
reconnect
(re con nect)

to join together

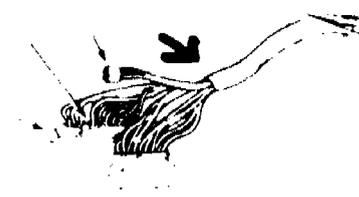


terminal
(ter mi nal)

connecting point in electrical
circuit (usually where wire
connects to component)



wiring harness
(wir ing harn ess) a bundle of wires wrapped
with a covering



ASSEMBLY FUSE BOX

W I R I N G H A R N E S S M N W H U Q Y R
 E T G B L U J B F E R P F H W W R C W I Q
 N Q R G M R E C O N N E C T B N C T P Y G
 H U M I D I T Y O X I D I Z E W O Q X N D
 O M B J S S F Z T N Y E G H M P D K D P C
 Q S T O G I H O X T E R M I N A L J E V J
 Z W W W A A E T O T I E Y V K I N T U E L
 F Q Z U H D A Y A Z X M W U Z P U Z L D Y
 T K T K P A T N D C D M Y D G O F O E M M
 Z C G K X R G R U F I R Q V C O L M V W G
 T X L R O S B D B K F A J K S J F B H L I
 P B I D G I J R Z A H Y N E L E A Y X J K
 W D X W V A W T C N D L T S Z V L W F C C
 U B A Y V V L D I S C O N N E C T N I P Q
 D E V Z U K A Z U D V U J X K W E F V J G
 W K Q G L Y M N Q E O G T P J S T O P V R
 S L Y N M M I E K Z M C L G Y N H F B D H
 Q E J J U I W K Q D Q O K E K D V U S T U
 Y R D U Z M C F Y A B A T T E R Y P O S T

Can you find these words?

WIRING HARNESS
 RECONNECT
 OXIDIZE

BATTERY POST
 TERMINAL

DISCONNECT
 HUMIDITY

ACROSS

ASSEMBLY FUSE BOX

Y J J U L C J R M K T I N Q U T Z I M C R
 O D F Q C D T E C G Z X S O S X W I T W R
 Y Y O K P R Z C X Z K K E O X Y A X J B U
 Y T I Q P I D O W C G Z P L T A I Z U L J
 F M D H D G G N F I L Y S T Q X E F H B Y
 C W P I E P H N M A R D D N J P X W Z B G
 T Z X S X P D E S E L I X V B A L L G H V
 K O S B D Q N C T B M S N L C G M S A W S
 N V O T F W R T J U B C D G B H X I L Z U
 T E R M I N A L H U B O J K H X I I K P Q
 F W E B K I I H Z N C E A A V T L V S
 U T N X F J J A G O I N I Q R P R K R J B
 N C C S M G T G L K N E J Z I P N N B X Q
 G W T R L Y D G V Q X C Y Z Y I U M E E H
 J M C F A A O V P W C T P F M H C J G S I
 B U I H J A I F K M E B E S M S K G E V S

Can you find these words?

WIRING HARNESS
 RECONNECT
 OXIDIZE

BATTERY POST
 TERMINAL

DISCONNECT
 HUMIDITY

ACROSS/DOWN/DIAGONAL

ASSEMBLY FUSE BOX

ANSWER KEY

. R T
. E S
. Z C O . Y
. I . O W P . T
. D . . N . I . Y . I
. I N . . R D D
. . X E . E . I
. O C T . M S N
. T . U . C . G
T E R M I N A L H . . O . . H
. B N A
. N R
. E N
. C E
. T S
. S



ASSEMBLY FUSE BOX

1	XX	XX	XX	XX	XX	XX	2	XX	XX	3		4						XX	XX	XX
	XX	XX	XX	XX	XX	XX		XX	XX	XX	XX		XX							
	XX	XX	XX	XX	XX	XX		XX	XX	XX	XX		XX							
	XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	5						XX	XX	
6										XX	XX		XX							
	XX	XX	XX	XX	XX	XX		XX	XX	XX	XX		XX							
	XX	XX	XX	XX	XX	XX		XX	XX	XX	XX		XX							
	XX	XX	XX	XX	XX	XX		XX	XX	XX	XX		XX							
XX	XX	XX	XX	XX	XX	7												XX	XX	XX
XX		XX																		
XX		XX																		
XX																				

ACROSS:

DOWN:

- 3. connecting point in electrical circuit
- 5. the joining of metal with air to make rust
- 6. to shut off
- 7. regularly

- 1. moisture in the air
- 2. round lead post sticking up from battery to fasten cables on (2 words)
- 4. to join together

ASSEMBLY FUSE BOX

ANSWER KEY

ACROSS:

DOWN:

- 3. TERMINAL
- 5. OXIDIZE
- 6. DISCONNECT
- 7. CONSISTENTLY

- 1. HUMIDITY
- 2. BATTERYPOST
- 4. RECONNECT

H	B	T E R M I N A L
U	A	E
M	T	C
I	T	O X I D I Z E
D I S C O N N E C T	N	
I	R	N
T	Y	E
Y	P	C
	C O N S I S T E N T L Y	
	S	
	T	

LEARNING WORDS USED TO ANALYZE FUEL SYSTEMS

INTRODUCTION

In order to perform his/her job effectively, the mechanic must learn to recognize trouble that may develop in the automotive fuel system. Hard starting, missing, stalling, poor acceleration, poor performance or loss of power are but a few symptoms either totally, or in part, attributable to fuel system problems. The fuel system will usually be among the last systems worked on except when a problem points directly to this area. In this unit you will learn the technical vocabulary related to fuel systems.

PERFORMANCE OBJECTIVES

You will match 26 words used to analyze fuel systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 21 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

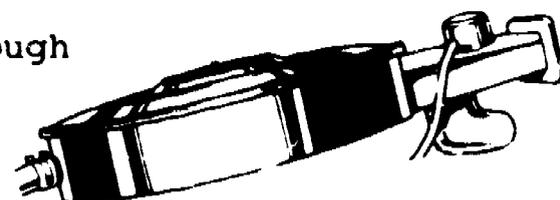
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

FUEL SYSTEM

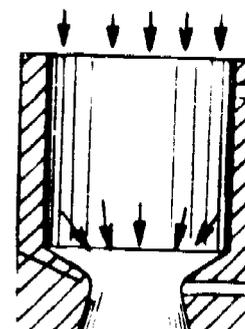
air cleaner
(air clean er)

a device that air moves through
to take out dust and dirt



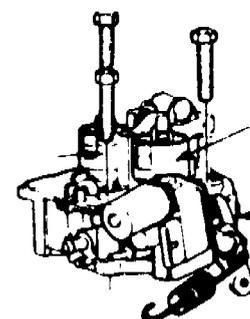
air horn
(air horn)

the top part of the carburetor
where air passes through



carburetor
(car bu ret or)

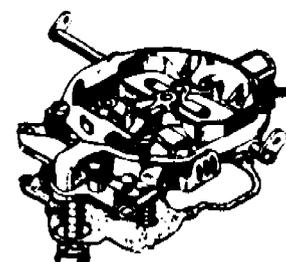
a device that mixes air and
fuel together for the engine



carburetor
(car bu ret or)

the top cover of the
carburetor bowl

bowl cover
(bowl cov er)



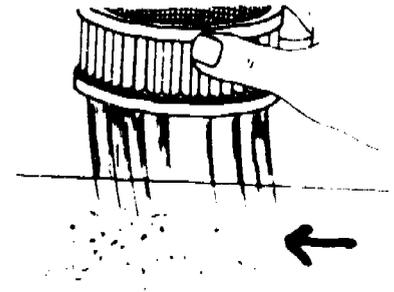
compressed air
(com pressed air)

air that has been pressed
into a smaller space

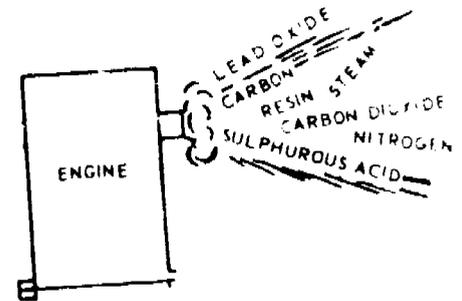


FUEL SYSTEM

contamination unwanted material that
(con tam i na tion) becomes mixed in



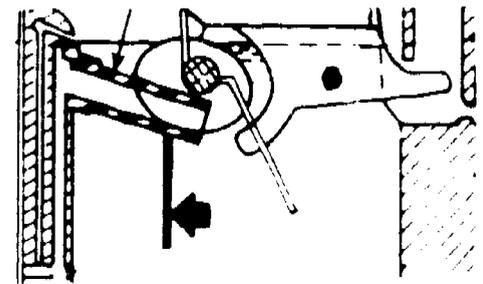
emission the small particles left over
(e mis sion) from the burning fuel that
are exhausted into the air



fire a device that puts out fire
(fire)
extinguisher
(ex tin guisher)



float baffle thin plates in the float bowl
(float baf fle) that keep fuel from sloshing
back and forth

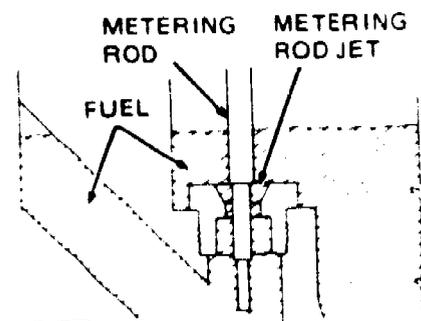


fuel pump a device that moves fuel from
(fuel pump) the gas tank to the carburetor

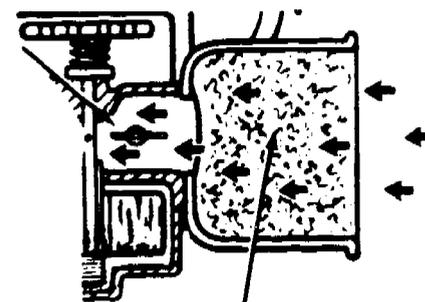


FUEL SYSTEM

metering rod
(me ter ing rod) a rod that moves to change the opening through the carburetor jet



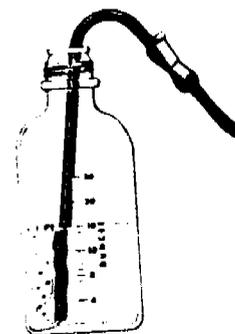
purge
(purge) to take out unwanted things



rollover check
(roll o ver check) a device that keeps fuel from flowing to the engine if the vehicle rolls over

valve
(valve)

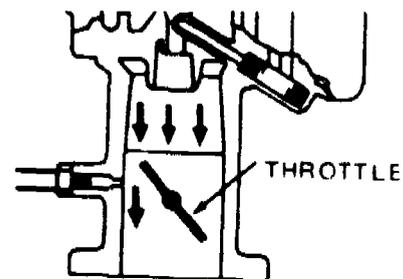
syphon
(sy phon) to drain fluid out through a tube



tachometer
(ta chom eter) a device used to show the speed of an engine in Revolutions Per Minute (RPM)

FUEL SYSTEM

throttle plate controls air flow in the
(throt tle plate) carburetor



vacuum hose the hose that connects to the
(vac u um hose) intake manifold which contains
the vacuum

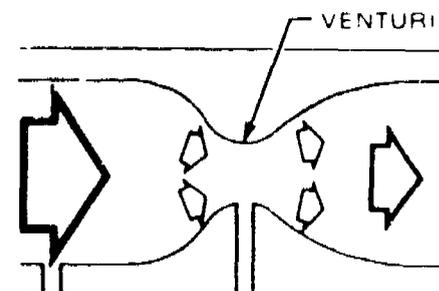


transducer a device that controls the
(trans duc er) flow of vacuum by electricity

ventilation the moving and changing of air
(ven ti la tion)



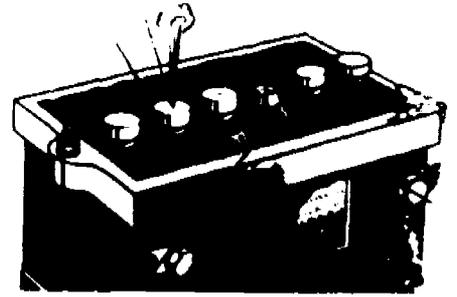
venturi the hourglass shaped throat
(ven tu ri) of the carburetor



FUEL SYSTEM

volatile
(vol a tile)

a liquid that changes to a
gas or vapor easily



FUEL SYSTEM

C O M P R E S S E D A I R V O L A T I L E
 F U E L P U M P S Y P H O N C O R Y J A U
 U X F G O N B U Y M E R C P T C L U N P
 R I T T R A N S D U C E R I S O E T I R Z
 F U E L S Y S T E M G A U G E W I R E Y B
 W O T R Z Q M L I C I S P N W R L K X L F
 F V F C A R B U R E T O R T C C D G I W Y
 U V O W C L H B Z F Y W T E E O V J Z Y X
 A I R C L E A N E R G K V T O N K L F D G
 G V O G M C O N T A M I N A T I O N Y A B
 G R O M M E T Q N V K O L G O J Z V Q Z B
 K A I R H O R N G L F T A C H O M E T E R
 C C M E T E R I N G R O D V K J K L U R S
 E M I S S I O N V A P G G D E O S Z S D Y
 Z C V N Q P N I Q T J J P C X F H P E G B
 O G X O J U N E Z N U Y H B O O X O M T T
 Z O B S F L O A T B A F F L E D L F P U W

Can you find these words?

COMPRESSED AIR
 FLOAT BAFFLE
 CARBURETOR
 GAUGE WIRE
 EMISSION
 SYPHON

CONTAMINATION
 AIR CLEANER
 TRANSDUCER
 FUEL PUMP
 GROMMET

METERING ROD
 TACHOMETER
 FUEL SYSTEM
 VOLATILE
 AIR HORN

ACROSS

FUEL SYSTEM

ANSWER KEY

COMPRESSED AIR VOLATILE
FUEL PUMP SYPHON
.
. . . TRANSDUCER
FUEL SYSTEM GAUGE WIRE . .
.
. . . CARBURETOR
.
AIR CLEANER
. CONTAMINATION . . .
GROMMET
. AIR HORN . . . TACHOMETER
. . METERING ROD
EMISSION
.
.
. . . . FLOAT BAFFLE

FUEL SYSTEM

T C E X F U E L P U M P D N V A C O I O A
 F L O A T B A F F L E S H J C A M Y D T G
 U K D Z G R O M M E T V I C Z X A W H S P
 E U W A F A I R C L E A N E R X S C E Q N
 L X V Y C J I T D M R G S H H K P J J B B
 S Y P S H R R B A N I T C W S W D N W W L
 Y F S J F C K U C O N T A M I N A T I O N
 S C I E U C K U O L G A R D A Y P X G F V
 T K W H C Z M W M O R C B J L X R U A P I
 E M I S S I O N P N O H U U H C Q C U P W
 M Q I Y Z D K A R C D O R I X D W I G A G
 H X I P L A X M E W V M E W D D D R E I O
 Z T R H J W O H S T O E T I N D N U W R L
 N D P O J M N V S S L T O I S L U J I H L
 V K D N W O S H E Y A E R I Z F M U R O K
 S R D T Q E D P D H T R A N S D U C E R X
 O F M E H C V M A I I N A O V K O S F N E
 C F L F P H R Z I Z L Y W J K Q K O J K N
 W V Y N X X B O R T E S P E O A U G T A S

Can you find these words?

COMPRESSED AIR
 FLOAT BAFFLE
 CARBURETOR
 GAUGE WIRE
 EMISSION
 SYPHON

CONTAMINATION
 AIR CLEANER
 TRANSDUCER
 FUEL PUMP
 GROMMET

METERING ROD
 TACHOMETER
 FUEL SYSTEM
 VOLATILE
 AIR HORN

ACROSS/DOWN

FUEL SYSTEM

ANSWER KEY

. . . . F U E L P U M P
F L O A T B A F F L E
U G R O M M E T
E A I R C L E A N E R
L R
S I . C
Y C O N T A M I N A T I O N
S O . G A R G . .
T M . R C B A . .
E M I S S I O N P . O H U U . .
M . . Y R . D O R G A .
. . . . P E . V M E E I .
. . . . H S . O E T W R .
. . . . O S . L T O I H .
. . . . N E . A E R R O .
. D . T R A N S D U C E R .
. A . I N .
. I . L
. R . E

FUEL SYSTEM

L I V N N R X Y E I F L V N O H W X Z M J
 B Q A S M M L C X E I D A X S Y K C S J R
 Q T U I S C I W N O O T J N Y J F X S D V
 B S A I I R A A Q C V N D U E L G P Q C P
 L P V C F U E L P U M P K D X K Q F V O X
 V L F W H L Y S O X I E G A U R N S Q P U
 A O C L C O Y F O M A I R K E R F X G N N
 H J L R O O M H U W B R C C Q F N M X N F
 B W I A N A M E T E R I N G R O D F O J X
 B A C I T D T P T F L Q L Q H O R I A H G
 N Z L R A I W B R E S S M P P Y S G U W U
 S P A H M I L E A E R I Y Y C S G A M Y B
 W W F O I J U E N F S S I S I W R U D O T
 F X D R N T L Z S N F S B M T U O G Y W T
 C C U N A G W N D T K L E X W E M E I P V
 A I B C T Q U L U R O J E D C Y M W S B C
 Y G M W I D E R C T P V T H A B E I O S V
 G A E O O U H O E K I D Q N M I T R I E C
 R N D V N Y G K R Q X C A R B U R E T O R

Can you find these words?

COMPRESSED AIR
 FLOAT BAFFLE
 CARBURETOR
 GAUGE WIRE
 EMISSION
 SYPHON

CONTAMINATION
 AIR CLEANER
 TRANSDUCER
 FUEL PUMP
 GROMMET

METERING ROD
 TACHOMETER
 FUEL SYSTEM
 VOLATILE
 AIR HORN

ACROSS/DOWN/DIAGONAL

FUEL SYSTEM

ANSWER KEY

. R

. E

. T N

. . A A

. . . C F U E L P U M P

V . F . H L

. O . L C O . F

. . L R O O M . U N . . N .

. . I A N A M E T E R I N G R O D . O . .

. A . I T . T P T . L . . . H . . I . . .

. . . R A I . B R E . S . P . . S G . . .

. . . H M . L . A E R . Y . . S G A . . .

. . . O I . . E N F S S . S I . R U . . .

. . . R N . . . S . F S . M T . O G . . .

. . . N A . . . D . . L E . . E M E . . .

. . . . T . . . U . . . E D . . M W . . .

. . . . I . . . C A . E I . . .

. . . . O . . . E I T R . . .

. . . . N . . . R . . C A R B U R E T O R

FUEL SYSTEM I

XX	XX	XX	XX	XX	1													XX	XX	XX
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	2										XX						
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	3										XX						
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX	XX	4	XX											
XX	XX	XX	5							XX										
XX	XX	XX	XX	XX		XX	XX		XX											
XX	XX	XX	XX	XX		XX	XX		XX											
XX		XX																		
XX		XX																		
XX		XX																		

ACROSS:

DOWN:

1. air that has been pressed into a smaller space (2 words)
2. a device that mixes air and fuel together for the engine
3. a device that air moves through to take out dust & dirt (2 words)
5. the small particles left over from burning fuel that are sent into the air

1. unwanted material that becomes mixed in
4. the top part of the place where air passes through the carburetor (2 words)

FUEL SYSTEM I

ANSWER KEY

ACROSS:

- 1. COMPRESSED AIR
- 2. CARBURETOR
- 3. AIR CLEANER
- 5. EMISSION

DOWN:

- 1. CONTAMINATION
- 4. AIRHORN

C O M P R E S S E D A I R

O

N

T

C A R B U R E T O R

M

A I R C L E A N E R

N

A

T A

E M I S S I O N

O R

N H

O

R

N

FUEL SYSTEM II

XX																				
XX																				
XX	1	XX																		
XX		XX																		
XX	3	XX		XX																
XX		XX		XX																
XX	4									XX	XX	XX	XX							
XX		XX		XX																
XX		XX		XX																
XX		XX		XX																
XX		XX		XX																
XX		XX		XX																
XX		XX		XX																
XX		XX																		
XX		XX																		
XX	XX	XX	6								XX									
XX																				
XX																				

ACROSS:

DOWN:

- | | | | |
|----|--|----|--|
| 4. | all the parts that move the fuel through the vehicle (2 words) | 1. | a device that sends fuel from the gas tank to the carburetor (2 words) |
| 6. | a hole through which something is passed | 3. | the wire that joins the gas tank float to the gauge |

FUEL SYSTEM II

ANSWER KEY

ACROSS:

- 4. FUELSYSTEM
- 6. GROMMET

DOWN:

- 1. FUELPUMP
- 3. GAUGEWIRE

F

G U

A E

F U E L S Y S T E M

G P

E U

W M

I P

R

G R O M M E T

FUEL SYSTEM III

XX																					
XX																					
XX	XX	XX	XX	XX	1	XX															
XX	XX	XX	XX	XX		XX	XX	XX	XX	3	XX										
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX										
XX	XX	XX	XX	4											XX						
XX	XX	XX	XX	XX		XX	XX	XX	XX		XX										
XX	XX	XX	XX	XX		XX															
XX	XX	XX	XX	XX		XX															
XX	XX	XX	XX	XX		XX															
XX	XX	XX	5					XX													
XX																					

ACROSS:

DOWN:

- 4. a rod that moves to to change the opening through the carburetor jet (2 words)
- 5. to take out unwanted things

- 1. inside
- 3. a part that joins one thing to another

FUEL SYSTEM III

ACROSS:

DOWN:

- 4. METERINGROD
- 5. PURGE

- 1. INTERIOR
- 3. LINK

I
N L
T I
M E T E R I N G R O D
R K
I
O
P U R G E

FUEL SYSTEM IV

XX	1	XX	XX	XX	XX	XX	2	XX	XX											
XX		XX	XX	XX	XX	XX		XX	XX											
XX	3				4						XX									
XX		XX		XX		XX	XX	XX		XX	XX									
XX		XX		XX		XX	XX	XX		XX	XX									
XX		XX		XX		XX	XX	XX		XX	XX									
XX		XX		XX		XX	XX	XX		XX	XX									
XX		XX		XX		XX	XX	XX		XX	XX									
XX		XX		XX		XX	XX	XX		XX	XX									
XX		XX		XX		XX	XX	XX		XX	XX									
XX	XX	XX	5										XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX										XX		XX	XX	XX	XX	XX	XX
XX		XX		XX	XX	XX	XX	XX		XX	XX									
XX		XX		XX	XX	XX	XX	XX		XX	XX									
XX		XX		XX	XX															
XX		XX		XX	XX															
XX																				
XX																				

ACROSS:

3. a device that controls vacuum by electricity
5. a liquid that changes to vapor easily

DOWN:

1. the hose that takes the air out of a space (2 words)
2. the moving and changing of air
3. a device used to show the speed of an engine in Revolutions Per Minute
4. to drain fluid out through a tube

LEARNING WORDS USED IN INSPECTING EXHAUST EMISSION CONTROL SYSTEM (SPARK CONTROL)

INTRODUCTION

Another part of the emission control system is the spark control system. This device has control over the distributor vacuum advance to either retard or advance the engine timing to improve combustion and reduce the formation of oxides of nitrogen (NOx) and hydrocarbons. The unit consists of a solenoid valve which is controlled electrically by a transmission switch. The spark control system may also have a coolant temperature override switch for cold starting and drive-ability and a hot override switch which allows full engine vacuum to the distributor vacuum advance during prolonged idle conditions where the engine is likely to overheat. In this unit you will learn the technical vocabulary related to exhaust emission control system.

PERFORMANCE OBJECTIVES

You will match 22 words used in inspecting exhaust emission control systems (spark control) with their definitions. Your teacher will provide a list of words and definitions. You should match at least 18 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

-
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
 5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another.
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

-
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

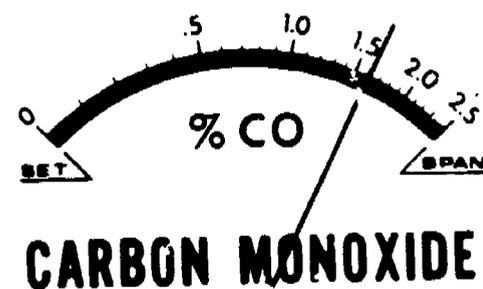
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

EXHAUST EMISSION CONTROL SYSTEM

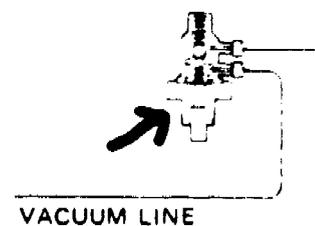
CO
(CO)

Carbon Monoxide -- a pollutant
contained in engine exhaust gas



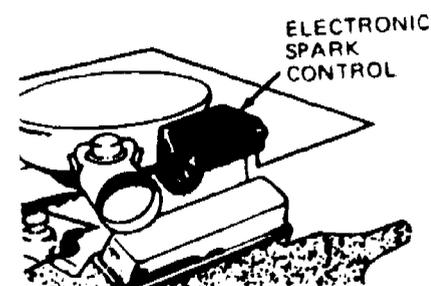
CTO
(CTO)

Cold Temperature Override -- a
thermal vacuum switch which
controls vacuum to other components



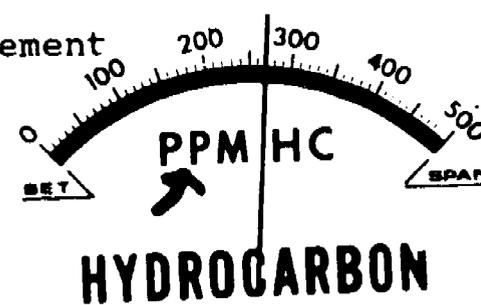
ESC
(ESC)

Electronic Spark Control --
system to retard spark advance
controlled electronically



ppm
(ppm)

Particles Per Million -- measurement
of pollutants being exhausted
from the engine



RPM
(RPM)

Revolutions Per Million

EXHAUST EMISSION CONTROL SYSTEM

TCS
(TCS)

Transmission Control System --
assists in controlling pollutants
exhausted from the engine

TRANSMISSION
SWITCH

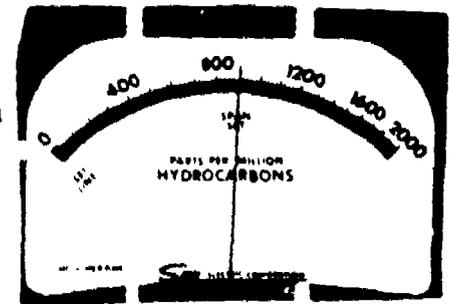
TRS
(TRS)

Transmission Regulated Spark --
distributor vacuum advance
regulated by the transmission

TRANSMISSION
SWITCH

hydrocarbons (HC)
(hy dro car bons)
(HC)

mixture of hydrogen and carbon
that makes up gasoline

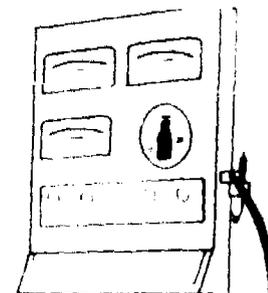


emission
(e mis sion)
control system
(con trol sys tem)

parts of fuel system that
keep fuel vapors from going
into the air

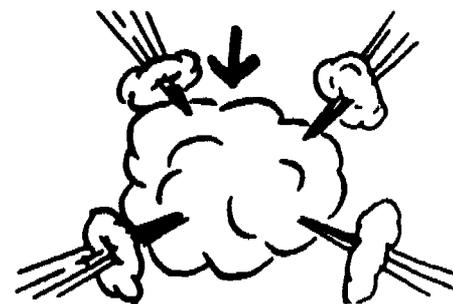
emissions
(e mis sions)
analyzer
(an a lyz er)

a device used to measure
emissions

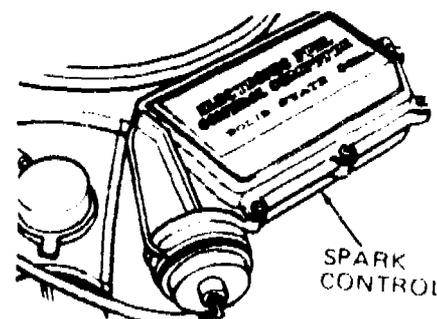


EXHAUST EMISSION CONTROL SYSTEM

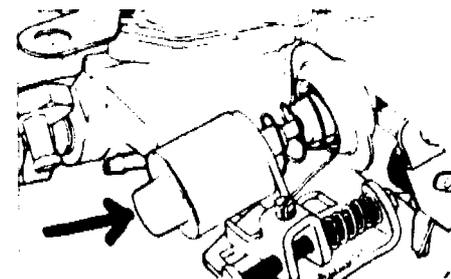
combustion
(com bus tion) rapid burning of air and fuel in the combustion chamber



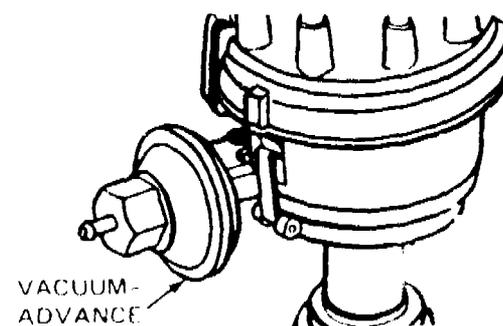
spark control
(spark con trol) system
(sys tem) a device used to control emissions



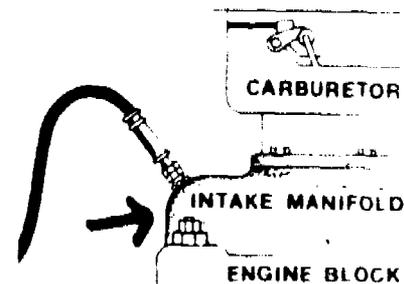
deceleration
(de cel er a tion) valve
(valve) a device that controls the slowing of the throttle to idle speed



distributor
(dis tri bu tor) vacuum advance
(vac u um ad vance) advances the time of the ignition spark to give better gas economy at cruising speed

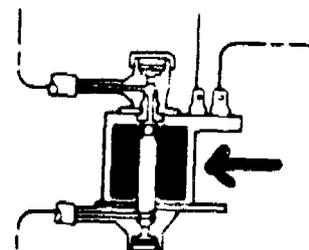


manifold
(man i fold) vacuum
(vac u um) vacuum in the intake manifold made by the pistons on the intake stroke

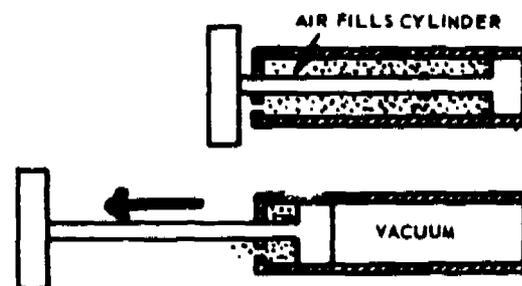


EXHAUST EMISSION CONTROL SYSTEM

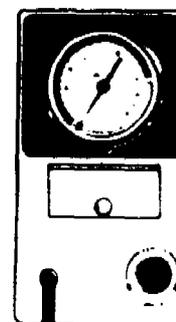
solenoid valve a valve controlled by
 (so le noid valve) electricity



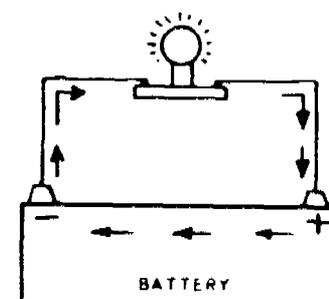
vacuum less than atmospheric
 (vac u u m) pressure



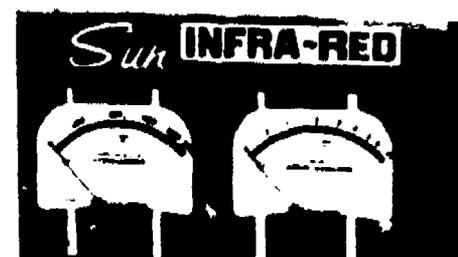
vacuum gauge a tool used to measure vacuum
 (vac u um gauge)



energized charged with energy
 (en er gized)



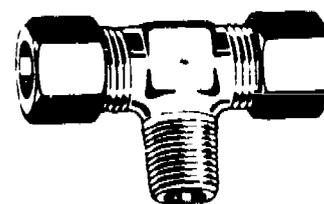
infra-red a device used to measure
 (in fra-red) fuel emissions that go into
 exhaust analyzer the air from the exhaust
 (ex haust an a lyz er)



EXHAUST EMISSION CONTROL SYSTEM

oxides of nitrogen from the air joined
(ox ides of) with oxygen
nitrogen (NO_x)
(ni tro gen (NO_x))

tees a pipe fitting shaped like
(tees) a tee



EXHAUST EMISSION CONTROL

M A N I F O L D V A C U U M M Y C Y L D
 C O M B U S T I O N W I S O I M B S P Y
 A C S W E P T J M Q C T C S B Q D H L E
 S T G U W H M C S W O C C B S T X Y Q I
 U G J D S I C M A E O E R R P M B K P Z
 D K Q J Y S G K I N E T I S O C T O F J
 L V C R E J A B Q F V I D M C L H V V V
 W B T O A T E N U Q H O M P X C P D E D
 B E V Q G J L D Z N W L X U O D Z A I J
 D L G K D N C O X K A H L T F F G B T I
 P P M P B S B Q U Q Q F D J U D S C L Q
 D E C E L E R A T I O N H Q J W W D Y F
 L X H I R M Q S O L E N O I D V A L V E
 I S R O W W L E P A D I T V A C U U M D
 H Y D R O C A R B O N S T E E S Z U A R
 V A C U U M G A U G E B N R A T R A Z C
 C D L V D D N L X Y G S T R S D W J G S

Can you find these words?

MANIFOLD VACUUM
 HYDROCARBONS
 COMBUSTION
 TEES
 TRS

DECELERATION
 RPM
 CTO
 TCS
 CO

SOLENOID VALVE
 VACUUM GAUGE
 VACUUM
 PPM

ACROSS

EXHAUST EMISSION CONTROL

ANSWER KEY

M A N I F O L D V A C U U M
C O M B U S T I O N
. T C S
.
. R P M
. C T O
.
.
. C O
P P M
D E C E L E R A T I O N
. S O L E N O I D V A L V E
. V A C U U M .
H Y D R O C A R B O N S T E E S
V A C U U M G A U G E
. T R S

EXHAUST EMISSION CONTROL

X K L B G S A B W X F R P K P S J V G K Y
 Q G I W Y D T O R B K K P W C H U F D I I
 U R T N O S X V A C U U M G A U G E K K D
 J S O H O O E S L D P L A T E L Y S G I F
 H T Y Y T L Q Y Z G Z E N D W H T K B D W
 Q X D D I E O S E I T S I B P S T R S C S
 F S N R A N Y Q J B R T F Y P A C C J T X
 U R T O I O Z P F D P C O M B U S T I O N
 D I E C G I Y E D E C F L E R A T I O N S
 Z A S A A D J C Y U J O D B P H X L Q H P
 Q A J R P V A C U U M D V X M H G S U M O
 Y J A B D A F U T Z V G A S E K B T O Z E
 U J C O K L P A D D A K C Q W B Q U X Y W
 V Y O N E V L V Y C I H U M K J B A I V F
 T E E S F E S D H W T A U P W M E C Y K K
 P B T Z J Z N E H S G R M J T H Z P Z O Z

Can you find these words?

MANIFOLD VACUUM
 HYDROCARBONS
 COMBUSTION
 TEES
 TRS

DECELERATION
 RPM
 CTO
 TCS
 CO

SOLENOID VALVE
 VACUUM GAUGE
 VACUUM
 PPM

ACROSS/DOWN

EXHAUST EMISSION CONTROL

ANSWER KEY

. P
. P
. S . V A C U U M G A U G E . . .
. . . H . O P L A T E
. . . Y . L N
. . . D . E I . . . T R S C .
. . . R . N F . . . C . . T .
. . . O . O C O M B U S T I O N
. . . C . I . . D E C E L E R A T I O N .
. . . A . D D . P
. . . R . V A C U U M . V . M
. . . B . A A
. . . O . L C
. . . N . V U
T E E S . E U
. M

EXHAUST EMISSION CONTROL

V V K Z F F S N M L E B S M K E O N R Q Y
T A F S O R B T Y X I J J I Z F T F B S R
D E C E L E R A T I O N P A R X L Q S S W
X D E U I D P U I V A T T X J P E Q I T N
B P R S U P M S I Q R L C U I R S S O T A
L V R A P M P C O M B U S T I O N W Q Z Y
Z T A M Z Q S G I L I X N A O X U H I M F
V T E C J F S C I O E E W S W W X D J U X
K O P P U O T T L A V N N G M C U V D O B
K R E N A U B E O B K O O J S V S Z A J T
H S S C P P M W O Z B L Q I H I C F U M J
R K I F D R Q G I R J Y I K D R M K K Q V
J Q P I N G O M A N I F O L D V A C U U M
Z R F U Y A I C O U L C A W I N A Q J C Z
P A K Y V G O N E W G I L Q O O V L Y L N
T P W P S R G Z K M A E T S I E A M V R F
E D O J D H G N W E W E X Z L K E P F E O
G Y M Y S Q P O A T K V H Z Y D Y T L S V
V B H R Y E H B V Z J F M B H Z E V M Q H

Can you find these words?

MANIFOLD VACUUM
HYDROCARBONS
COMBUSTION
TEES
TRS

DECELERATION
RPM
CTO
TCS
CO

SOLENOID VALVE
VACUUM GAUGE
VACUUM
PPM

ACROSS/DOWN/DIAGONAL

EMISSION CONTROL SYSTEM I

XX	1	2		XX	XX	XX														
XX	XY	XX	XX	XX				XX	XX	XX										
XX	3	XX	XX	4	XX	XX	XX		XX	XX	XX	XX								
XX		XX	XX		XX	XX	XX		XX	XX	XX	XX								
XX	XX	XX	XX	XX	5												XX	XX	XX	XX
XX		XX	XX		XX															
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX	6			XX																
XX		XX																		
XX		XX																		
XX		XX																		
XX	7		XX																	
XX		XX																		
XX																				

ACROSS:

DOWN:

- | | |
|-----------------------------------|--|
| 1. Cold Temperature Override | 2. Transmission Control System |
| 5. mixture of hydrogen and carbon | 3. a fast chemical reaction between air and fuel that makes heat |
| 6. Electronic Spark Control | 4. Transmission Regulated Spark |
| 7. carbon monoxide | |

EMISSION CONTROL SYSTEM II

XX	XX	XX	XX	XX	1	XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX	2	XX												
XX	XX	XX	XX	XX		XX		XX	3	XX										
4	XX	5	XX	XX		XX		XX		XX										
	XX		XX	XX		XX	6			XX										
	XX		XX	XX		XX		XX												
	XX		XX	7														XX	XX	XX
	XX	XX	XX	XX		XX		XX												
	XX	XX	XX	XX		XX		XX												
XX	XX	XX	XX	XX		XX		XX												
XX																				

ACROSS:

DOWN:

- 6. Revolutions Per Minute
- 7. vacuum in the intake manifold made by the cylinders (2 words)

- 1. a valve controlled by electricity (2 words)
- 2. charged with energy
- 3. Parts Per Million
- 4. no air or other things
- 5. T-shaped plugs

EMISSION CONTROL SYSTEM II

ACROSS:

DOWN:

- 6. RPM
- 7. MANIFOLDVACUUM

- 1. SOLENOIDVALVE
- 2. ENERGIZED
- 3. PPM
- 4. VACUUM
- 5. TEES

S
O
L
E
N
E
O N P
V T I E P
A E D R P M
C E V G
U S M A N I F O L D V A C U U M
U L Z
M V E
E D

LEARNING WORDS USED IN MAINTAINING MANIFOLD HEAT CONTROLS

INTRODUCTION

The manifold heat control valve or restriction is a device which directs hot exhaust gases around or through a passage in the intake manifold at the base of the carburetor during cold engine start or operation. Most heat control valves are either a part of the exhaust manifold or are a separate unit fastened between the exhaust manifold and the exhaust pipe for the engine. The unit consists of an off-center valve plate, shaft, counterweight, and a thermostatic spring. In this unit you will learn the technical vocabulary related to manifold heat controls.

PERFORMANCE OBJECTIVES

You will match 14 words used in maintaining manifold heat controls with their definitions. Your teacher will provide a list of words and definitions. You should match at least 11 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

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-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

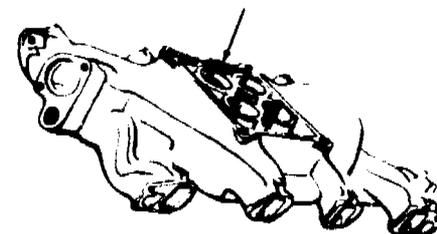
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

MANIFOLD HEAT CONTROLS

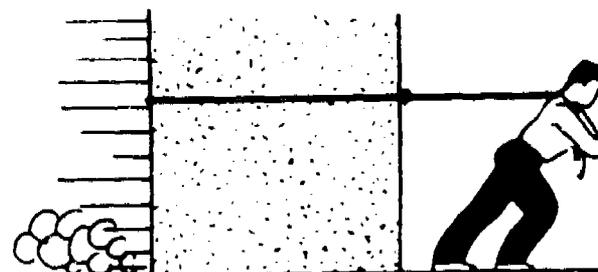
exhaust
(ex haust)
manifold
(man i fold)
a unit that collects the
exhaust from the cylinders
and send it out the exhaust
pipe



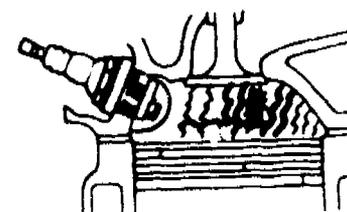
intake
(in take)
manifold
(man i fold)
distributes the fuel mixture
from the carburetor into the
intake valves



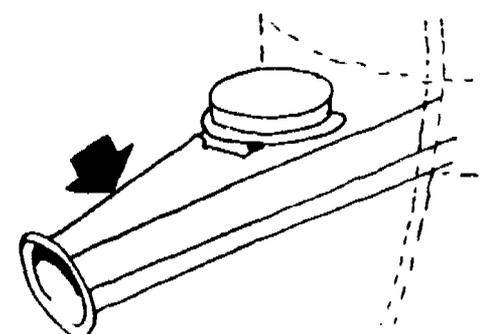
accelerate
(ac cel er ate)
to increase the speed



detonation
(de ton a tion)
uncontrolled burning in
the cylinder



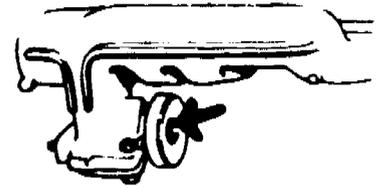
snorkel
(snork el)
a long intake tube on the
air cleaner



MANIFOLD HEAT CONTROLS

heat raiser
(heat rais er)
valve
(valve)

a valve in the exhaust
manifold that directs heat
to the intake manifold



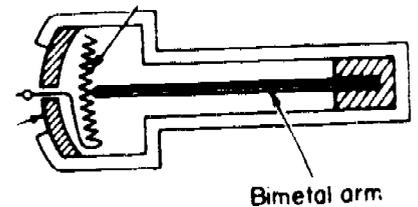
aerosol
(aer o sol)

a gas under pressure in
a spray can



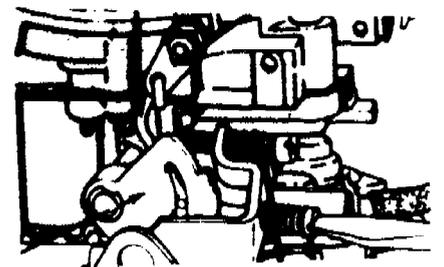
bimetallic
(bi me tal lic)

two metals welded together
that change with temperature



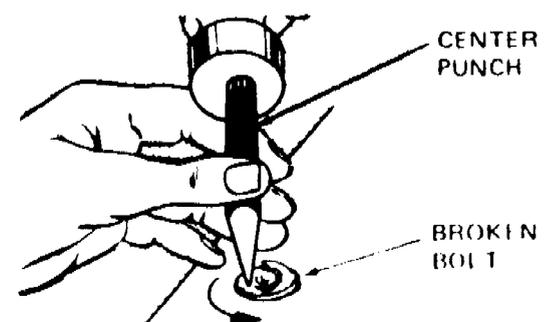
counterweight
(count er weight)

weight put on the carburetor
shaft to control the movement



frozen
(froz en)

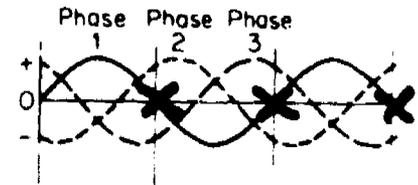
stuck



MANIFOLD HEAT CONTROLS

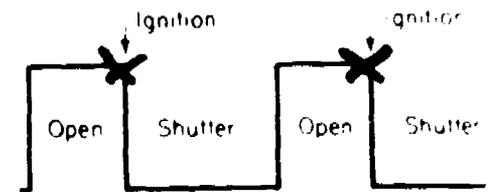
interval
(in ter val)

time between events



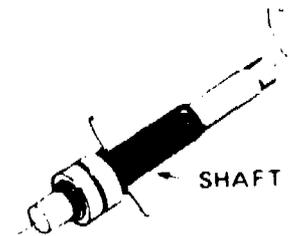
periodic
(per i od ic)

taking place at regular
times



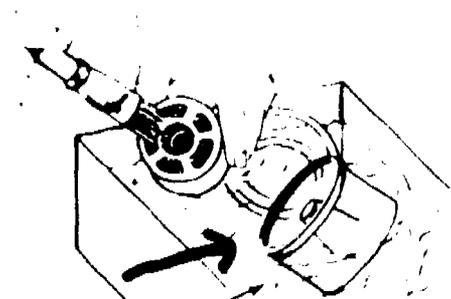
shaft
(shaft)

long rod that supports
a turning part



solvent
(sol vent)

a liquid that can
dissolve something



MANIFOLD HEAT CONTROLS

H E A T R A I S E R V A L V E F R O Z E N
 C O U N T E R W E I G H T S O L V E N T P
 X C X I N T E R V A L I S E L R F T I R A
 A L S X A F F H Q S Y J S N D C T T F Q J
 R F T A A Q B H N Q G Y O C U U O K W V G
 F T B R C G H T B I M E T A L L I C Z W J
 E D I K N R K P C Z J Q E R R I L H H X G
 W D E T O N A T I O N T R V I X X I N F V
 V F B I J O J V K P G A X S H A F T M P N
 T U B A C C E L E R A T E S X T J X B U D
 W W P W X Y E Q E Z W Z E Y E E A K O E V
 J Q E R O P E R I O D I C S N O R K E L G
 E X H A U S T M A N I F O L D A N O H U L
 Y O P V G V J I N T A K E M A N I F O L D
 K E T G K U L O B Y D W J C N Y A O O J D
 Y R T Q K L U F Y Y F R T I E M X N Y I X
 C S S S Y A X C F Q U K C H G G R Q R U R
 A E R O S O L G F Q I Y J R U O C V B G U

Can you find these words?

HEAT RAISER VALVE
 COUNTERWEIGHT
 ACCELERATE
 SOLVENT
 FROZEN

EXHAUST MANIFOLD
 DETONATION
 PERIODIC
 SNORKEL
 SHAFT

INTAKE MANIFOLD
 BIMETALLIC
 INTERVAL
 AEROSOL

ACROSS

MANIFOLD HEAT CONTROLS

ANSWER KEY

H E A T R A I S E R V A L F R O Z E N
C O U N T E R W E I G H T C O N V E N T .
. . . I N T E R V A L
.
.
. B I M E T A L L I C . . .
.
. D E T O N A T I O N
. S H A F T . . .
. . . A C C E L E R A T E
.
. P E R I O D I C S N O R K E L .
E X H A U S T M A N I F O L D
. I N T A K E M A N I F O L D
.
.
.
A E R O S O L

MANIFOLD HEAT CONTROLS

V Q B X A C I M P S H A F T E S K C N G L
 Q S G A O Z G U B I M E T A L L I C Q P K
 H M D B C P T K S N C R E M B C K U F G V
 W I A Q H G T P V T O O X Y P E Q L C M R
 Z Q R B U W E X H A U S T M A N I F O L D
 O W B Q U N A M E K N O B R L B Q T G B Q
 Z Q K Y Q B Y Z A E T L A Q S L J V N S Z
 A B V F E C Z S T M E V Z L P E Q J Y S Y
 R W G R R U K S R A R B U D G P E T F O M
 Y P N A H P F T A N W P N C S I Q T X N S
 I V Z P R G D K I I E N S Y I Y K T U I S
 I N T E R V A L S F I C O S K Y E T C P Y
 Y E C R F L T P E O G P L N W N R N C J Y
 V P Q I L D T C R L H S V O N A Y M B U O
 O A T O T R F D V D T P E R S B P R V Y I
 U E R D E T O N A T I O N K U P E I P B N
 S J G I A C C E L E R A T E Z W E H C G X
 B A D C Y C P S V I W X P L G S O P B V L
 D C T E F R O Z E N F K E P N T J Q E Z Z

Can you find these words?

HEAT RAISER VALVE
 COUNTERWEIGHT
 ACCELERATE
 SOLVENT
 FROZEN

EXHAUST MANIFOLD
 DETONATION
 PERIODIC
 SNORKEL
 SHAFT

INTAKE MANIFOLD
 BIMETALLIC
 INTERVAL
 AEROSOL

ACROSS/DOWN

MANIFOLD HEAT CONTROLS

ANSWER KEY

. S H A F T
. B I M E T A L L I C
. N C R
. T O O
. E X H A U S T M A N I F O L D
. E K N O
. A E T L
. T M E
. R A R
. A N W
. . . P I I E . S
I N T E R V A L S F I . O S
. . . R E O G . L N
. . . I R L H . V O
. . . O V D T . E R
. . . D E T O N A T I O N K
. . . I A C C E L E R A T E
. . . C V L
. . . . F R O Z E N

MANIFOLD HEAT CONTROLS

J S I I K B A D L F Z P R P V A V C X R D
 C O U N T E R W E I G H T Q F U A H M O C
 F L H T T X C T N H B D R N G P M W V K Q
 P V C E E A A D O A V A P I V S J D J W M
 W E B R J X K P E R I O D I C A S G C Y H
 I N T V W H H E A T R A I S E R V A L V E
 F T G A Q L F A M B O B C H N K B X V Q W
 C D C L Z L P E U A G N Q C S O Y J H T T
 W X M X Z T L R I S N B A R E H R B D T L
 S Y I A A B V O P U T I T T S L A K N D R
 E S I L B F O S U F Z M F B I D E F E Q D
 I B Z V D P Q O U P B E A O A O U R T L E
 Y U Y L N P H L H L S T I N L R N O A R N
 N T X I U Z I B O D N A M X I D J Z U T R
 X L K S Y B L Z L J T L B Y O F F E D K E
 Y B K T G F A M I P H L N T J D O N G A C
 F U U M T Y L X Z V P I V O Z W O L H W U
 H H G W S P I Z H X S C F C I C Z I D R Q

Can you find these words?

HEAT RAISER VALVE	EXHAUST MANIFOLD	INTAKE MANIFOLD
COUNTEPWEIGHT	DETONATION	BIMETALLIC
ACCELERATE	PERIODIC	INTERVAL
SOLVENT	SNORKEL	AEROSOL
FROZEN	SHAFT	

ACROSS/DOWN/DIAGONAL

MANIFOLD HEAT CONTROLS

ANSWER KEY

. S I I

C O U N T E R W E I G H T

. L . T T

. V . E E A . D

. E . R . X K P E R I O D I C

. N . V . . H E A T R A I S E R V A L V E

. T . A . . . A M . O . C . N

. . . L . . . E U A . N . C S O

. R . S N B A . E H R

. O . . T I . T . L A K

. S . . . M F . I . E F E

. O . . . E A O . O . R T L

. L . . . T . N L . N O A

. A . . I D . Z . T

. L . . . F . E . . E

. L O N

. I L

. C D

MANIFOLD HEAT CONTROLS I

XX	XX	XX	XX	XX	1	XX															
XX	XX	XX	XX	XX		XX															
XX	XX	XX	2	XX		XX															
XX	XX	XX		XX		XX															
XX	XX	XX	3															XX	XX	XX	XX
XX	XX	XX		XX		XX															
XX	XX	XX		XX		XX	XX	4	XX												
XX	XX	XX		XX	5												XX	XX	XX	XX	XX
XX	XX	XX		XX		XX	XX		XX												
XX	XX	XX		XX		XX	XX		XX												
XX	XX	XX		XX		XX	XX	6									XX	XX	XX	XX	XX
XX	XX	XX		XX		XX	XX		XX												
XX	XX	XX		XX	XX	XX	XX		XX												
XX	XX	XX		XX	XX	XX	XX		XX												

ACROSS:

3. tubes that distribute the air and fuel mixture from the carburetor to the intake valve (2 words)
5. to increase the speed of something
6. a long rod that supports a turning point

DOWN:

1. uncontrolled burning in the cylinder
2. two metals that change as temperature changes
4. a gas under pressure in a spray can

MANIFOLD HEAT CONTROLS I

ANSWER KEY

ACROSS:

- 3. INTAKEMANIFOLD
- 5. ACCELERATE
- 6. SNORKEL

DOWN:

- 1. DETONATION
- 2. BIMETALLIC
- 4. AEROSOL

D
B E
I N T A K E M A N I F O L D
M O
E N A
T A C C E L E R A T E
A T R
L I O
L O S N O R K E L
I N O
C L

MANIFOLD HEAT CONTROLS II

XX																				
XX																				
XX	XX	XX	XX	1	XX															
XX	XX	XX	XX		XX															
XX	2									XX										
XX	XX	XX	XX		XX															
XX	XX	XX	XX		XX	XX	XX	XX	3	XX										
XX	XX	XX	XX		XX	XX	4							XX						
XX	XX	XX	XX		XX	XX	XX	XX		XX										
XX	XX	XX	XX		XX	XX	XX	XX		XX										
XX	XX	XX	XX	5													XX	XX	XX	XX
XX		XX																		
XX	XX	XX	XX	XX	6					XX										
XX																				
XX																				

ACROSS:

DOWN:

- 2. time between events
- 4. stuck
- 5. weights put on the carburetor to control movement of a shaft
- 6. long rod that supports a turning part

- 1. taking place at regular times
- 3. a liquid that dissolves something

MANIFOLD HEAT CONTROLS II

ANSWER KEY

ACROSS:

- 2. INTERVAL
- 4. FROZEN
- 5. COUNTERWEIGHT
- 6. SHAFT

DOWN:

- 1. PERIODIC
- 3. SOLVENT

 P ↑

I N T E R V A L

 R

 I S

 O F R O Z E N

 D L

 I V

C O U N T E R W E I G H T

 N

 S H A F T

LEARNING WORDS USED IN CLEANING AND FLUSHING A COOLING SYSTEM

INTRODUCTION

A rusty appearance and a foaming condition of the coolant in a modern automobile engine are generally indications of a cooling system problem which must be corrected before serious damage results. In a previous unit you learned how to use the Stant or similar tester to make a cooling system pressure test to determine any possible external leaks in the system. In this unit you will learn the technical vocabulary related to cleaning and flushing a cooling system.

PERFORMANCE OBJECTIVES

You will match 16 words used in cleaning and flushing cooling systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 13 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

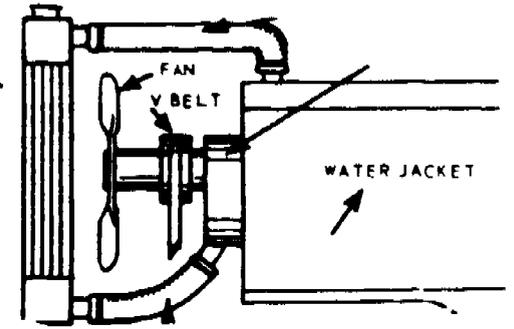
-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

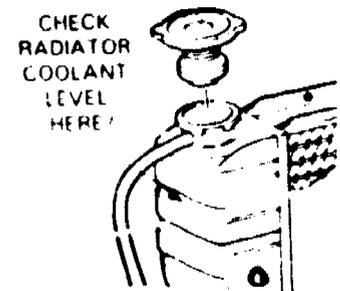
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

COOLING SYSTEM

cooling system all the parts, along with air
(cool ing sys tem) and water, used to remove
heat from the engine



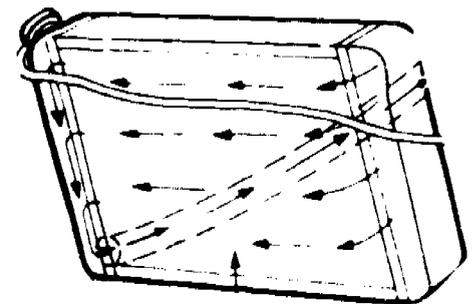
coolant liquid used for cooling
(cool ant)



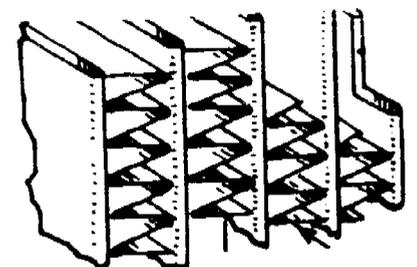
antifreeze liquid added to coolant
(an ti freeze) to prevent freezing in
cold weather



radiator a device used to transfer
(ra di at or) heat from engine coolant
to the air

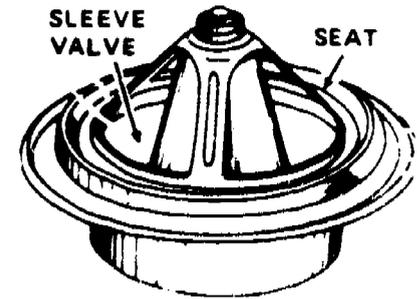


radiator fins thin metal surface used to
(ra di at or fins) radiate heat from metal to air

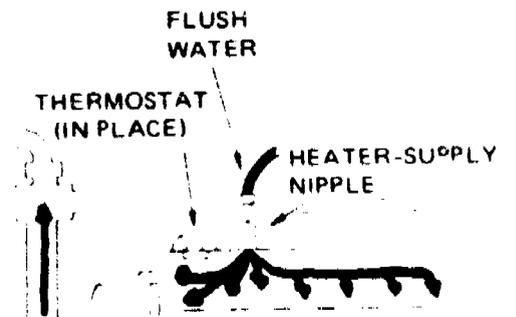


COOLING SYSTEM

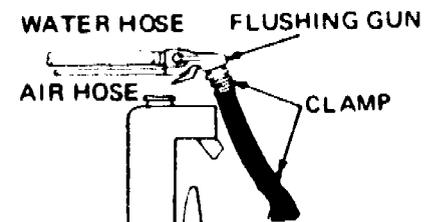
thermostat
(therm o stat)
a device that is used to control the flow of coolant to regulate the temperature



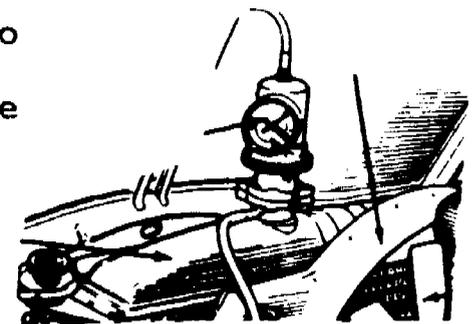
flush
(flush)
to clean with a strong flow of water



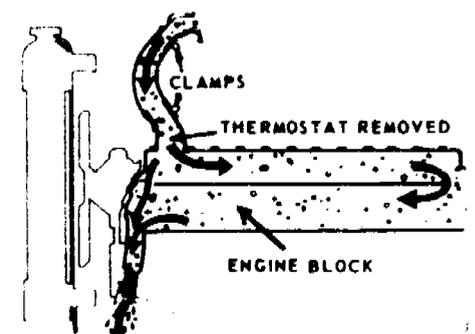
flushing gun cone
(flush ing gun cone) flush radiator



pressure
(pres sure)
flushing
(flush ing)
using an air pressure gun to increase water moving in the radiator



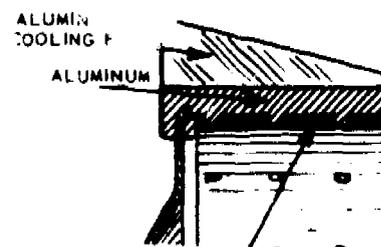
reverse
(re verse)
flushing
(flush ing)
flushing in the opposite direction of normal coolant flow



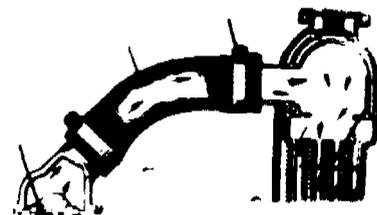
COOLING SYSTEM

operating working
 (op er at ing)

aluminum a soft metal
 (al u min um)



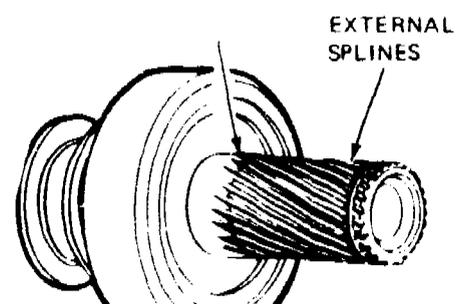
engine inlet a hose that goes into the
 (en gine in let) water pump to the engine
 hose
 (hose)



excessive too much
 (ex cess ive)



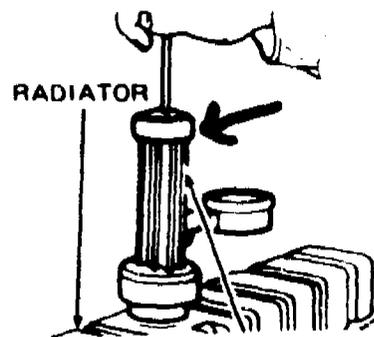
external outside
 (ex tern al)



COOLING SYSTEM

stant tester
(stant tes ter)

a device used to pressure
test a cooling system for
leaks



COOLING SYSTEM

R E V E R S E F L U S H I N G G K K U I O
 E N G I N E I N L E T H O S E J N Y B Z A
 T H E R M O S T A T R A D I A T O R L L R
 A L U M I N U M D L A G B F J L S Z K F
 A G V D M C S T A N T U F S Z L U R Y X I
 Y S S Y J N L Q E X C E S S I V E X G B Z
 C O O L A N T G Z V D F Q N Y C L M R B K
 F V X I F I O J L A R R Y J N R S V X U T
 L Y D Z O M P J Q L U X G U W E L M W J I
 I S O D I A W Y G H S O E P C J I U I S B
 C O O L I N G S Y S T E M A A R R Y C Y K
 H P W L P D U M U U Z T H Z F K O O J
 E O Z C D C Y R U I D R A Q R K P E K P X
 V I E F H N W G O G N S Z F L F E S W S I
 A Q L G A Q S V Z M F D D X D Y I J M L L
 I A Z N A N T I F R E E Z E B I Q A T X B
 O P E R A T I N G B U Y Y H D D K C D L I
 F L U S H X F L U S H I N G G U N C O N E
 R A D I A T O R F I N S A X D O M B N U S

Can you find these words?

REVERSE FLUSHING
 THERMOSTAT
 EXCESSIVE
 COOLANT
 STANT

FLUSHING GUN CONE
 COOLING SYSTEM
 ANTIFREEZE
 RADIATOR
 FLUSH

ENGINE INLET HOSE
 RADIATOR FINS
 OPERATING
 ALUMINUM

ACROSS

COOLING SYSTEM

ANSWER KEY

REVERSE FLUSHING
ENGINE INLET HOSE
THERMOSTAT RADIATOR . . .
ALUMINUM
. STANT
. EXCESSIVE
COOLANT
.
.
.
COOLING SYSTEM
.
.
.
.
. ANTI FREEZE
OPERATING
FLUSH . FLUSHING GUN CONE
RADIATOR FINS

COOLING SYSTEM

V I Q K N Z Z N I C Y Y L Y R P Y X A J
 F L U S H I N G G U N C O N E G G K X I
 F N E X C E S S I V E K F O V L C Y J X
 V C R K O E N G I N E I N L E T H O S E
 K Y S H O X Z D L C W W D U R H S O D S
 R K O S L E I B A E I W H O S E I S R G
 I R A D I A T O R F I N S P E R A A H I
 R G L A N T I F R E E Z E E F M H Q I V
 H V U G G D M F A A N T Z R L O X Z R X
 Y T M S S W B D S T B I A U S Q A P O
 M C I L Y C D G I S T A N T S T O H W O
 J B N F S X S J A P S G I I H A T W P V
 O Q U S T A R Y T F X F I N I T T J R K
 O N M I E O C O O L A N T G N I S O F N
 W X T H M P G I R U C E K Q G K O Q H P
 K T T N W J U H A S P D K G P U H H X U
 C I L S Q R M M D H E G M W A W X W S V

Can you find these words?

REVERSE FLUSHING
 THERMOSTAT
 EXCESSIVE
 COOLANT
 STANT

FLUSHING GUN CONE
 COOLING SYSTEM
 ANTIFREEZE
 RADIATOR
 FLUSH

ENGINE INLET HOSE
 RADIATOR FINS
 OPERATING
 ALUMINUM

ACROSS/DOWN

COOLING SYSTEM

ANSWER KEY

. R
F L U S H I N G G U N C O N E
. . E X C E S S I V E . . . V
. . . . O E N G I N E I N L E T H O S E
. . . . O R H
. . . . L O S E
. R A D I A T O R F I N S P E R
. . L A N T I F R E E Z E F M
. . U . G . . . A R L O
. . M . S . . . D A U S
. . I . Y . . . I S T A N T S T
. . N . S . . . A I H A
. . U . T . . . T F . . . N I T
. . M . E . C O O L A N T G N
. . . . M . . . R U G
. S
. H

COOLING SYSTEM

O K F W H P P H H P M K I N S T N C X U C
 U R X P R U S S L M L M C U C Q E Q U A I
 Q R Y E D A U C U C N H A X C Q L D Z N F
 U N R E V L B N E O Q V X Y O P R V J A B
 K A R Z F U I V W O G G D H O E T S E O C
 U X W G L M I Q K L X Q V W L N V S N D Q
 Q I B Y U S J R G I G V N H A C O K B K Y
 T O S L S V L A A N Z I C T N H P Q B U J
 Q I A E H Y O D X G I V S R T V U Y K D K
 G D C N I D P I U S X T H E R M O S T A T
 Z X H H N X E A W Y F N L Z H U E Q L C W
 E T U R G W R T E S A N T I F R E E Z E C
 H S X A G L A O D T I C Q Z D S W M S K B
 T K W D U O T R I E O S I C A I Y O S D I
 U N M I N X I F N M X N Z Z V L K L U Z D
 S B G A C B N I G J E S S K I B L F T V E
 Z K S T O E G N C W P L X W M Q K A J O L
 Z H Y O N N Q S U F E R J X K A G X K K D
 M J E R E V E R S E F L U S H I N G C T I

Can you find these words?

REVERSE FLUSHING
 THERMOSTAT
 EXCESSIVE
 COOLANT
 STANT

FLUSHING GUN CONE
 COOLING SYSTEM
 ANTIFREEZE
 RADIATOR
 FLUSH

ENGINE INLET HOSE
 RADIATOR FINS
 OPERATING
 ALUMINUM

ACROSS/DOWN/DIAGONAL

COOLING SYSTEM

ANSWER KEY

. H
. S . M
. U . U C C
. L . N E O O
. F . I V . O O . T
. L M I . . L L N . S
. U S . R . I A . O
. L S . . A . N T N H
. A E H . O D . G . . S . T
. C . I . P I . S . T H E R M O S T A T
. X . . N . E A . Y . . L
E R G . R T . S A N T I F R E E Z E .
. A G . A O . T I
. D U . T R . E
. I N . I F N M
. A C . N I
. T O . G N
. O N N . S
. R E V E R S E F L U S H I N G

FLUSHING COOLING SYSTEM I

XX	XX	XX	XX	XX	XX	1		2								XX	XX	XX	XX	XX
XX		XX																		
XX		XX																		
XX	3								4				XX							
XX		XX		XX	XX	XX	XX													
XX		XX		XX	XX	XX	XX													
XX	XX	5								XX	XX	XX	XX	XX	XX		XX	XX	XX	XX
XX		XX		XX	XX	XX	XX													
XX		XX		XX	XX	XX	XX													
XX	XX	6							XX		XX	XX	XX	XX						
XX		XX																		
XX		XX																		
XX																				
XX																				

ACROSS:

DOWN:

1. liquid added to cooling system to keep coolant from freezing in cold weather
2. a device that is used to control the flow of coolant as the temperature changes
3. thin metal surface used to transfer heat between metal and air (2 words)
4. to clean with a strong flow of water
5. a device used to transfer heat from engine coolant to the air
6. liquid used for cooling

FLUSHING COOLING SYSTEM I

ANSWER KEY

ACROSS:

DOWN:

- | | | | |
|----|--------------|----|------------|
| 1. | ANTIFREEZE | 2. | THERMOSTAT |
| 3. | RADIATORFINS | 4. | FLUSH |
| 5. | RADIATOR | | |
| 6. | COOLANT | | |

A N T I F R E E Z E

H

E

R A D I A T O R F I N S

M

L

R A D I A T O R

U

S

S

C O O L A N T

H

A

T

FLUSHING COOLING SYSTEM II

XX																				
XX																				
XX	2									XX	XX	XX	XX	XX						
XX								XX	XX	XX	XX	XX	XX							
XX																				
XX																				
XX	XX	XX	3		4									XX	XX	XX	XX	XX	XX	
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX	5								XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX		XX	6							XX						
XX	XX	XX	XX	XX		XX														
XX																				
XX																				

ACROSS:

DOWN:

- 2. too much
- 3. working
- 5. a soft metal
- 6. a device used to test pressure

- 4. outside

FLUSHING COOLING SYSTEM II

ANSWER KEY

ACROSS:

- 2. EXCESSIVE
- 3. OPERATING
- 5. ALUMINUM
- 6. STANT

DOWN:

- 4. EXTERNAL

F X C E S S I V E

O P E R A T I N G

X

T A L U M I N U M

E

R

N

A S T A N T

L

LEARNING WORDS USED IN REMOVING ENGINE AND REPLACING MOUNTS

INTRODUCTION

Although the automobile engine is within an area which is considered to be "sprung weight," road shock and vibrations, unless dampened additionally, may cause metal strain and fatigue within many parts of the engine accessories and mounting points, causing them to break, with resulting damage to other components of the vehicle. To prevent or reduce metal fatigue and breakage, motor mounts are installed on the engine at three locations. The mountings generally consist of heavy gauge pressed steel fasteners separated by a thick layer of rubber or neoprene moulding the metal parts together into a three-layer sandwich. When motor mounts break or become too pliable, the engine can twist within the engine compartment during acceleration, and may cause damage to other areas. In this unit you will learn the technical vocabulary related to removing engine and replacing mounts.

PERFORMANCE OBJECTIVES

You will match 11 words used in removing engines and replacing mounts with their definitions. Your teacher will provide a list of words and definitions. You should match at least 9 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

-
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
 5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
-

-
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

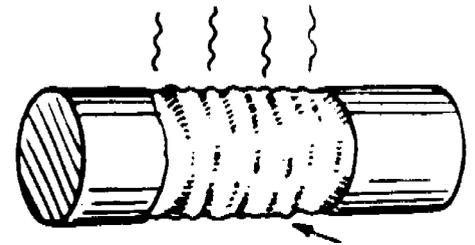
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
 2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
 3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
 4. USE the Answer Key on the back as a self-check.
 5. STUDY the words that were a problem.
-

REMOVING ENGINE AND REPLACING MOUNTS

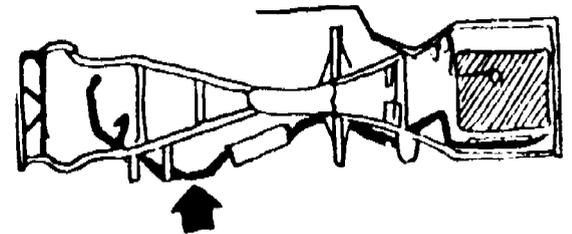
chafe marks
(chafe marks)

signs that heat or wearing
away have removed the finish



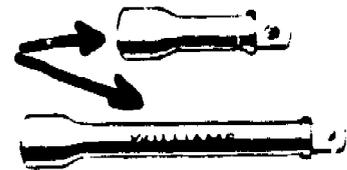
exhaust pipe
(ex haust pipe)

the pipe that joins the
exhaust manifold to the
muffler



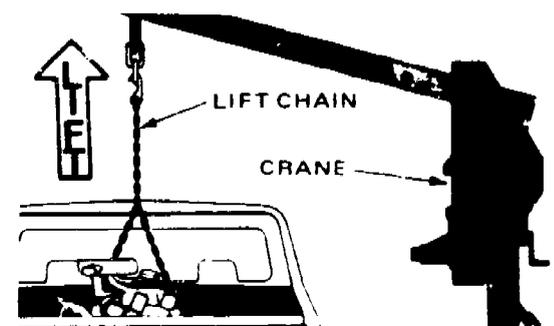
extension
(ex ten tion)

an added part



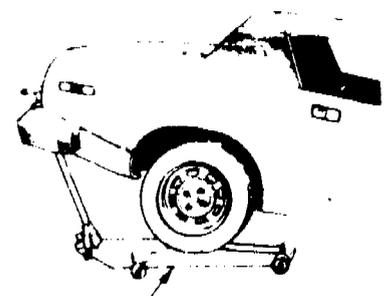
hoist
(hoist)

a device used to lift
heavy things



hydraulic jack
(hy draul ic jack)

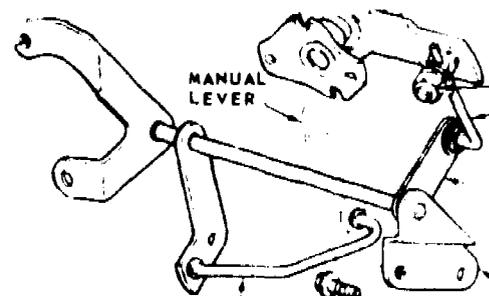
a device for lifting that
works by liquid under
pressure



REMOVING ENGINE AND REPLACING MOUNTS

linkages
(link ag es)

rods that transfer movement
from one unit to another



metal fatigue
(met al fa tigue)

the breaking down of metal due
to strong motion, twisting, or
bending



motor mounts
(mo tor mounts)

parts that hold the motor in
place and cushion vibration



neoprene
(ne o prene)

a plastic that is like rubber



torque
(torque)

the amount of tightness

specifications
(spec i fi ca tions)



REMOVE ENGINE

H Y D R A U L I C J A C K V J K X A L S M
 K B M Z I O E I T K O W P M C X F Q R J H
 R I U M H E S O D U J W L J A R S E K Q R
 Y J M O T O R M O U N T S Y U Q J P X S Z
 N E O P R E N E L I N K A G E S J S L M Y
 V I B R A T I O N E X T E N S I O N E Q S
 G R P I J L V J Q I R T O P K N T V U I Q
 F S G I G U I D S M E T A L F A T I G U E
 B A I H J C L F E D R N V B W G O P K T R
 I H F K D J P X S U L C S M E A D N E D A
 E X H A U S T P I P E T E Y E M J A U A B
 E D J U H W G S M Y P P A Q K E V Y Y Z S
 J U R K P S L T E V F K O P M I N M K V O
 C S E S J W H R K R F F V I I D S P R D A
 U P D M L A U H U O D M S O Q C W H B J P
 W M C H S V T P U G P X I N O T Z T Q Q Z
 Y N I W Q P G Z B Y I N L N Q L Y V G D K
 J L Q Y H X F Y Z C X P A G G U X N L G Y
 C H A F E M A R K S I D O W O D I N T B P

Can you find these words?

HYDRAULIC JACK	METAL FATIGUE	MOTOR MOUNTS
EXHAUST PIPE	CHAFE MARKS	VIBRATION
EXTENSION	NEOPRENE	LINKAGE

ACROSS

REMOVE ENGINE

ANSWER KEY

H Y D R A U L I C J A C K
.
.
.
M O T O R M O U N T S
N E O P R E N E L I N K A G E S
V I B R A T I O N E X T E N S I O N
.
.
M E T A L F A T I G U E
.
.
E X H A U S T P I P E
.
.
.
.
.
.
.
.
.
.
.
.
C H A F E M A R K S

REMOVE ENGINE

P R L P Q U H M K Y S Z L E X P C K
 H Y M U X F V L H X S L I B X K W Y
 B D H E M X W H K I G T N M E T M N
 Z X I I D Z X S A U Z U K G M K S C
 X H B W L F E W M S X N A Q L G K H
 T N R X R H M B Q R N S G N O E X A
 W T E D T V O M T J Z T E B L I M F
 J R U L K L T E X H A U S T P I P E
 Z F R Z T C O T F Z V X H E A L H M
 M V C H Y D R A U L I C J A C K V A
 H N M I W D M L P C B Y W Q B C C R
 N L L I V Q O F V H R T X G Y H K K
 G P Z O M A U A M E A Q N G V K L S
 C X L I S M N T Q N T W N B F J V Q
 T K Z I L M T I A L I Z V M D A A R
 H F G A O I S G E O O U Z L G J T K
 V D L M R Q S U P J N J V W S B T C
 N E O P R E N E X T E N S I O N Z R

Can you find these words?

HYDRAULIC JACK
 EXHAUST PIPE
 EXTENSION

METAL FATIGUE
 CHAFE MARKS
 NEOPRENE

MOTOR MOUNTS
 VIBRATION
 LINKAGE

ACROSS/DOWN

REMOVE ENGINE

ANSWER KEY

. L
 I
 N
 K C
 A H
 M G A
 O M E F
 T E X H A U S T P I P E
 O T . . V M
 . . . H Y D R A U L I C J A C K . A
 M L . . B R
 O F . . R K
 U A . . A S
 N T . . T
 T I . . I
 S G . . O
 U . . N
 N E O P R E N E X T E N S I O N . .

REMOVE ENGINE

N U X S A G S C Y N L G D I L J V
 E X H A U S T P I P E Q W O B J G
 O L Z Y V L M O T O R M O U N . S
 P U C K D Z E X T E N S I O N V M
 R V D H F R T X X V N P C S I Z G
 E J Y B C H A F E M A R K S W H E
 N J D W J O L U K T D T X N P P M
 E R W Q G B F W L V N G J R A D C
 W S R B N C A I L I N K A G E S X
 C S Q L Y D T I W B C L Y N M I P
 A W J T H D I O U R W J O J M D A
 H I I P Z M G O A A Y A A J B J O
 N X I P M B U O N T K G R C T J R
 J F E G K Z E Z U I B Z E T K W R
 D X J X E M L Q X O J C K S Z E G
 Z P W U Q G K Z J N R Y E Q X S K

Can you find these words?

HYDRAULIC JACK
 EXHAUST PIPE
 EXTENSION

METAL FATIGUE
 CHAFE MARKS
 NEOPRENE

MOTOR MOUNTS
 VIBRATION
 LINKAGE

ACROSS/DOWN

REMOVE ENGINE

ANSWER KEY

N
E X H A U S T P I P E
O . . Y . . M O T O R M O U N T S
P . . . D . E X T E N S I O N . .
R R T
E . . . C H A F E M A R K S . . .
N L U
E F . L V
. A . L I N K A G E S .
. T . . B C
. I . . R . J
. G . . A . . A
. U . . T . . . C
. E . . I K . . .
. O
. N

ENGINE AND MOUNTS I

XX																				
XX																				
XX	XX	XX	XX	XX	XX	1					2					XX	XX	XX	XX	XX
XX																				
XX																				
XX																				
XX	XX	XX	XX	XX	XX	3								XX						
XX																				
XX	XX	XX	XX	XX	XX	4								XX						
XX																				
XX																				
XX																				
XX																				
XX																				
XX																				
XX																				

ACROSS:

DOWN:

1. signs that heat or wearing away have removed the finish
3. rods that can transfer movement from one unit to another
4. an added part.

2. the pipe that joins the exhaust manifold to the muffler (2 words)

ENGINE AND MOUNTS I

ANSWER KEY

ACROSS:

1. CHAFEMARKS
3. LINKAGES
4. EXTENSION
5. FUELPUMP

DOWN:

2. EXHAUSTPIPE

C H A F E M A R K S

X

H

L I N K A G E S

U

E X T E N S I O N

T

P

I

P

E

ENGINE AND MOUNTS II

XX	1											XX	XX	XX						
XX												XX	XX	XX						
XX		XX																		
XX		XX	XX	2	XX															
XX	XX	XX	3														XX	XX	XX	XX
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX	4								XX	XX	XX						
XX		XX	XX									XX	XX	XX						
XX		XX																		

ACROSS:

- parts that hold the motor in place (2 words)
- a device for lifting that works by liquid under pressure (2 words)
- a plastic that is like rubber

DOWN:

- the breaking down of metal due to strong motion, twisting, or bending (2 words)
- moving back and forth

ENGINES AND MOUNTS II

ANSWER KEY

ACROSS:

- 1. MOTORMOUNTS
- 3. HYDRAULICJACK
- 4. NEOPRENE

DOWN:

- 1. METALFATIGUE
- 2. VIBRATION

M O T O R M O U N T S

E

T V

H Y D R A U L I C J A C K

L B

F R

A A

T T

I I

G O

U N E O P R E N E

E

LEARNING WORDS USED IN CLEANING ENGINES

INTRODUCTION

Whenever an engine is removed from a vehicle for an overhaul or other corrective service, it is desirable to clean the engine with a steam cleaner or some other pressurized cleaner designed for this purpose. A clean engine placed upon a work bench or attached to an engine stand assures the mechanic of a clean work area which prevents time-consuming clean-up during servicing. A clean engine and work area also reduce the possibility of contaminating replacement parts with dirt and grime which could cause premature failure of an otherwise good overhaul job. In this unit you will learn the technical vocabulary related to cleaning engines.

PERFORMANCE OBJECTIVES

You will match 11 words used in cleaning engines with their definitions. Your teacher will provide a list of words and definitions. You should match at least 9 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

CLEANING ENGINES

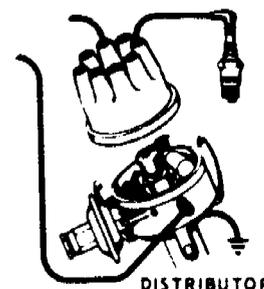
caustic
(caustic)

a fluid that will burn your
eyes and skin



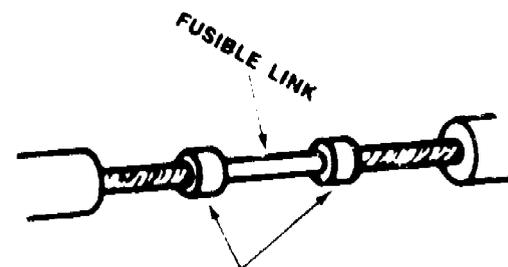
distributor
(dis trib u tor)

a device that makes or breaks
the ignition primary circuit
and directs the high voltage
to the spark plugs



fusible links
(fusible links)

a fuse wire used to protect
the main wiring from shorts
or grounds



lacquer
(lacquer)

body paint that dries fast

low flash point
(low flash point)

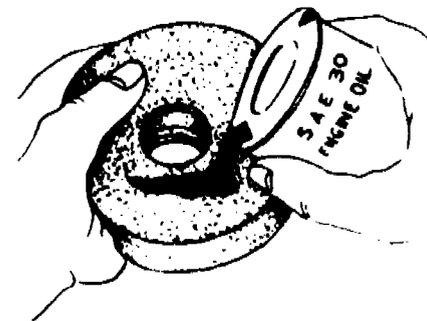
begins to burn at a
low temperature



CLEANING ENGINES

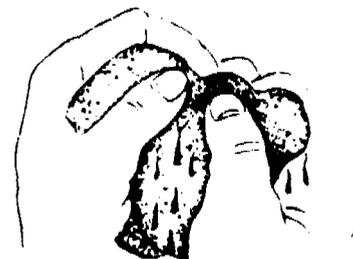
lubricant
(lu bri cant)

something (like oil and grease)
used between two moving parts
to decrease fric' ion



saturated
(sat u rat ed)

soaked with liquid

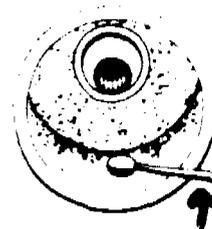


steam cleaner
(steam clean er)

a machine used to clean
large parts by using steam
and detergent

swab
(swab)

cotton or cloth on the
end of a small stick



toxic
(tox ic)

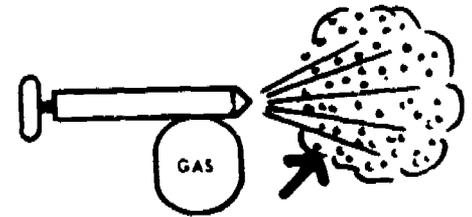
poisonous



CLEANING ENGINES

vapor
(vap or)

the gas form of a liquid
or solid (like steam)



CLEANING ENGINES

L O W F L A S H P O I N T R P J A
 T T O X I C P B N U P I N D I D P
 S A T U R A T E D S W A B Z B E U
 T K I P X S H Q A B N Y T W Y B H
 A Y E O E N U R Y Z G M M P D X G
 T Q A S S E A C P L W Y S G L R E
 E Y G A F P K X F F B A A J Y B H
 I S L D I E K S S D T X G I S G M
 N K H G G Q B N I N P L O O G F L
 Q J F U S I B L E L I N K S G T I
 L U B R I C A N T R P X W A J M G
 S T E A M C L E A N E R X N D F Y
 R X C S Z A M Y V X D L S F T K X
 E H H B F Y L F L A C Q U E R N R
 N Q N E F R Z U B V A P O R V E D
 Q Z B N T X Z Y N A D N B S M Z L
 X F K T V G D I S T R I B U T O R
 C O M J G Y N I J Y C A U S T I C

Can you find these words?

LOW FLASH POINT
 DISTRIBUTOR
 LUBRICANT
 VAPOR

STEAM CLEANER
 LACQUER
 TOXIC
 SWAB

FUSIBLE LINKS
 SATURATED
 CAUSTIC

ACROSS

CLEANING ENGINES

W R K S O W N L R K A L Y X U V N W F B L
 F H U K G E H M V K W U B V Y Y M Q O Z D
 S H A W F P P R T A K B G T W B S F K A I
 Q H W A T G L U O T Z R K B P D J W G E U
 T V R S B A S D X H Y I U U Z F H U G Q E
 C T T J D Q W N I F N C F C G Y K C Q U R
 L D L S T E A M C L E A N E R J R S K M A
 D I S T R I B U T O R N X G A U I R F E Z
 L U M J G J B B L W C T B D M N P Z M V C
 L K H S K M O I D F U S I B L E L I N K S
 U A R M K H Y D I L I S E N A I W O D C A
 I Y O Y R P L V L A C Q U E R O F J U U T
 W E B G R P C A U S T I C B L Z K B Q N U
 D N T L T Y L P M H M H Z F J S B P T C R
 U J K G R A Z O E P A L W W D R F Z K B A
 U Y R Y K R P R U O O X Y A R Q T A D S T
 Z Z Y P V Q T E Q I E N O X Z U T A O T E
 P T V F Q S T S C N H L Z H Q D B M Z R D
 M O D F C V T D B T E V C F P E V A Z B V

Can you find these words?

LOW FLASH POINT
 DISTRIBUTOR
 LUBRICANT
 VAPOR

STEAM CLEANER
 LACQUER
 TOXIC
 SWAB

FUSIBLE LINKS
 SATURATED
 CAUSTIC

ACROSS/DOWN

CLEANING ENGINES

ANSWER KEY

. L
. U
. T . . B
. O . . R
. S . X . . I
. W . I . . C
. . . S T E A M C L E A N E R
D I S T R I B U T O R N
. W . T
. F U S I B L E L I N K S
. L A
. V L A C Q U E R T
. C A U S T I C U
. P . H R
. O . P A
. R . O T
. I E
. N D
. T

CLEANING ENGINES

E O F U S I B L E L I N K S A U D T G
 D N V C T C P T K G E V W R D Z D V Q
 D K Q R E J K B J C S P O F V C Q M Z
 C C H Y A L Q A N Y A L V H W A I X T
 W C I X M N S N Y V D U Q P F C P N R
 H W D I C G X G T A L X S R J C A O V
 D L J Y L Y V X P X P V R T R C T S R
 W A K R E O I T R H I J C E I U F M P
 C Z T L A D W T S A E P U R B C Z U R
 O Z V I N U G F S S B Q B I D D U O A
 F C D J E V Z K L W C U R Z G V M U K
 K L A I R E B Q K A L T I W N D O E I
 R N Y A A Z Z F L B S V O H T R T M W
 Q F Q I J F J V Z I G H H X A E G F V
 S A T U R A T E D N D X P B I I U D R
 O U K L Y D J F I R Q W S O H C B W Z
 C V N Z D A L R W U P G A W I U Y C W
 V O E B A L P F W F J D O J V N Z M H
 R Y Z H U N P R D V H M M Z I F T L Z

Can you find these words?

LOW FLASH POINT
 DISTRIBUTOR
 LUBRICANT
 VAPOR

STEAM CLEANER
 LACQUER
 TOXIC
 SWAB

FUSIBLE LINKS
 SATURATED
 CAUSTIC

ACROSS/DOWN/DIAGONAL

CLEANING ENGINES

ANSWER KEY

. . F U S I B L E L I N K S
. . . . T
. . . . E C V
. . . . A A A . . T
. . . . M U P N R
. . . . C S . . . A O .
. . . . L T R C T . R
. . . . E O E I U . . .
. . . . A W U R B C . . .
. . . . N . . F . S . Q B I
. . . . E . . . L W C U R
. . . . R A L T
. L B S . O
. I . H . X
S A T U R A T E D . . . P . I
. O . C
. I
. N
. T

CLEANING ENGINES I

XX	1										XX	XX	XX	XX	XX						
XX											XX	XX	XX	XX	XX						
XX	XX	XX	XX	XX	XX	3	XX														
XX	XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX	XX	4													XX	XX	XX
XX	XX	XX	5	XX	XX		XX														
XX	XX	XX		XX	XX		XX														
XX	XX	6									XX										
XX	XX	XX		XX	XX		XX														
XX	XX	XX		XX	XX		XX														
XX	XX	XX		XX	XX		XX														
XX	XX	XX		XX	XX		XX														
XX	XX	XX	XX	XX	XX		XX														
XX	XX	XX	XX	XX	XX		XX														

ACROSS:

DOWN:

- | | | | |
|----|---|----|--|
| 1. | soaked with liquid | 3. | device that makes or breaks ignition circuit & directs high voltage to the spark plugs |
| 4. | a machine used to clean large parts by using steam and soap (2 words) | 5. | a fluid that will burn your eyes and skin |
| 6. | something (like oil & grease) used between two moving parts | | |

CLEANING ENGINES I

ANSWER KEY

ACROSS:

- 1. SATURATED
- 4. STEAMCLEANER
- 6. LUBRICANT

DOWN:

- 3. DISTRIBUTOR
- 5. CAUSTIC

S A T U R A T E D
D
I
S T E A M C L E A N E R
C T
A R
L U B R I C A N T
S B
T U
I T
C O
R

CLEANING ENGINES II

XX	XX	XX	1	XX	XX	2	XX														
XX	XX	XX		XX	XX		XX														
XX	XX	XX		XX	XX		XX														
XX	XX	XX		XX	XX		XX														
XX	XX	XX		XX	XX		XX	4	XX	XX	XX	XX	XX	XX	5	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX	6													XX	XX	XX
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX							
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX							
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX							
XX	XX	XX	XX	XX	XX		XX		XX	XX	XX	XX	XX	XX							

ACROSS:

DOWN:

- 3. body paint that dries fast
- 6. begins to burn at a low temperature (3 words)

- 1. the gas form of a liquid or solid (like steam)
- 2. a fuse wire used to protect the main wiring harness from shorts & grounds (2 words)
- 4. a small cloth on the end of a stick
- 5. poisonous

CLEANING ENGINES II

ANSWER KEY

ACROSS:

- 3. LACQUER
- 6. LOWFLASHPOINT

DOWN:

- 1. VAPOR
- 2. FUSIBLELINKS
- 4. SWAB
- 5. TOXIC

V F
L A C Q U E R
P S
O I
R B S T
L O W F L A S H P O I N T
E A X
L B I
I C
N
K
S

LEARNING WORDS USED IN DISASSEMBLING ENGINES

INTRODUCTION

Although many automotive repair shops do not make a practice of completely overhauling engines today, the mechanic must still know how to disassemble an engine and how to replace component parts even though he may not have to perform a complete engine overhaul. In small rural communities, the mechanic will be required to perform complete engine overhaul service since there are no large volume jobbers in the area. In this unit you will learn the technical vocabulary related to disassembling engines.

PERFORMANCE OBJECTIVES

You will match 26 words used in disassembling engines with their definitions. Your teacher will provide a list of words and definitions. You should match at least 20 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

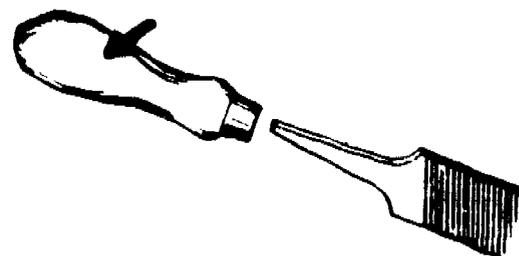
-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

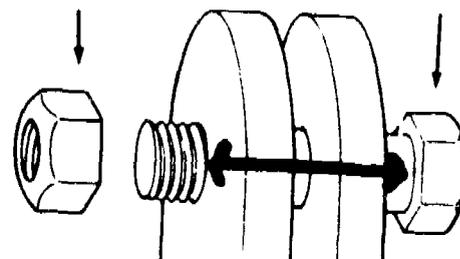
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

DISASSEMBLING ENGINE

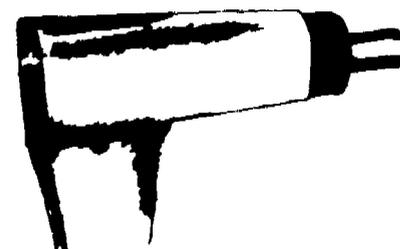
accessory something added to a device
 (ac ces sor y) that makes it more usable



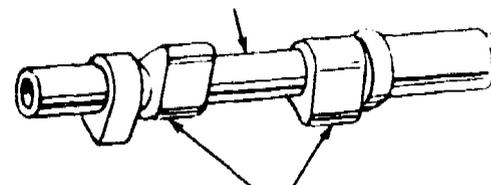
alignment the state of being in
 (a lign ment) a true line



air impact wrench a tool that works by air
 (air im pact wrench) pressure to run nuts and
 bolts on and off



camshaft a shaft with lobes used
 (cam shaft) to open the valves

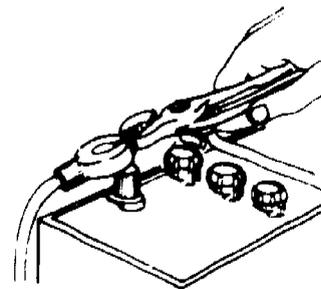


cylinder heads the part used to cover the
 (cyl in der heads) tops of cylinders and forms
 the combustion chamber

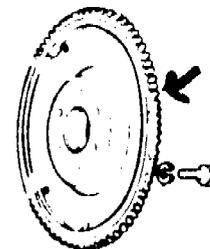


DISASSEMBLING ENGINE

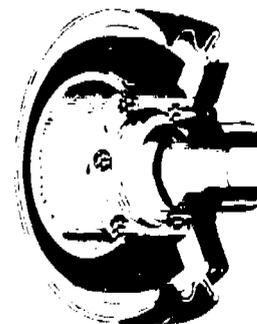
disassemble to take apart
 (dis as sem ble)



flywheel rotating meta. wheel
 (fly wheel) attached to the crankshaft
 that aids in smoothing out
 power surges



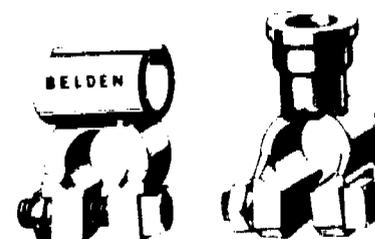
harmonic a device that is used to
 (har mon ic) dampen twisting motion
 balancer from power strokes of an
 (bal an cer) engine



horizontal straight line running
 (hor i zont al) left to right



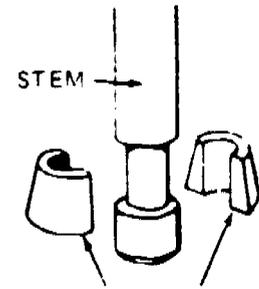
interchanged one thing taking the
 (in ter changed) place of another thing



DISASSEMBLING ENGINES

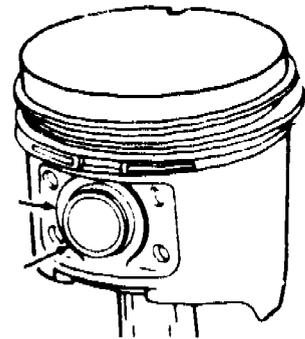
keepers
(keep ers)

a device used to keep
valve springs in place



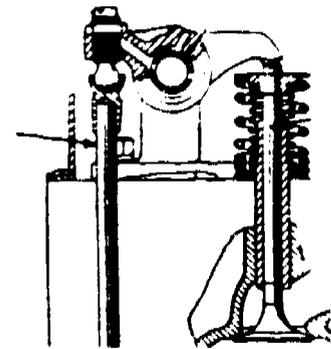
pistons
(pis tons)

round castings attached to
connecting rods that slide
up and down in the cylinders



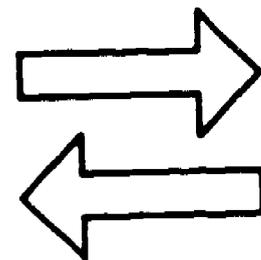
push rods
(push rods)

rods that join the valve
lifter to the rocker arm



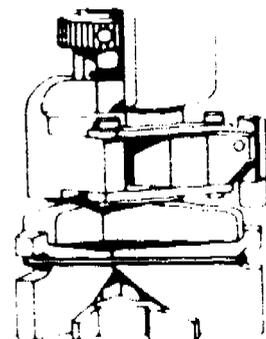
reverse
(re verse)

in the opposite direction



ridge reamer
(ridge ream er)

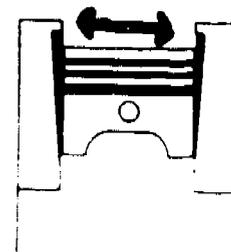
a tool used to remove the
ring ridge formed by wear
at the top of the cylinder



DISASSEMBLING ENGINE

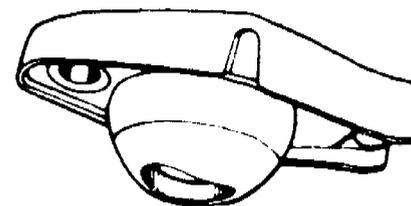
ring ridge
(ring ridge)

formed at the top of a
cylinder as it is worn away

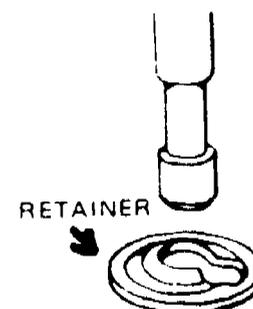


rocker arm
(rock er arm)

part used to change upward
motion of push rods into an
opening motion of valve stem

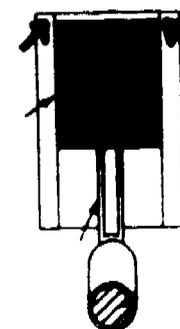


spring retainers devices for holding springs
(spring re tain ers) in place

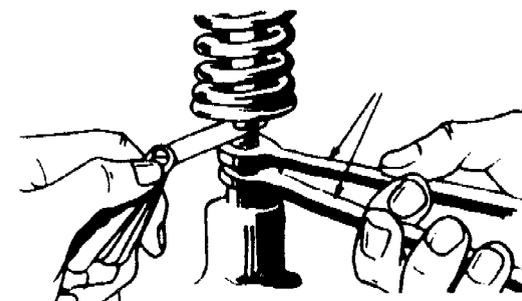


TDC
(TDC)

Top Dead Center
upper limit of piston travel



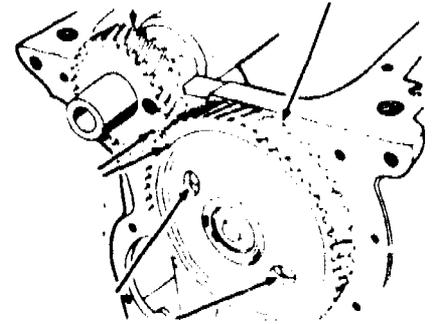
adjustable tappets screws used to change the
(tap pets) clearance between valve stem
and lifter or rocker arm



DISASSEMBLING ENGINES

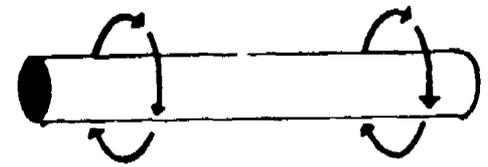
timing gears
 (tim ing gears)

the gears attached to the
 camshaft and the crankshaft
 to drive the camshaft



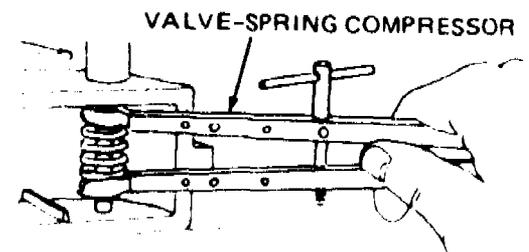
torque
 (torque)

turning or twisting force



valve spring
 (valve spring)
 compressor
 (com pres sor)

a device that is used to
 remove valve-springs



vertical
 (vert i cal)

up and down



DISASSEMBLING ENGINE

C D O S A T I E N V A M S O E E W U G R D
 A C C E S S O R Y P U S H R O D S J S W D
 S P R I N G R E T A I N E R S C H D U H C
 C A M S H A F T K E E P E R S O X E S W L
 T I M I N G G E A R T D C D P I B B S Y V
 V Q J Y N E O C J H O R I Z O N T A L V F
 Q K G F L Y W H E E L L G M F K O V R J B
 G A N C F G V E R T I C A L E B W A F F V
 S E A I R I M P A C T W R E N C H Z V L F
 P I S T O N S W D E L B Q P W S R M J O I
 W C E I L I V F O L W A W N X H P P M V D
 L L P A L J A O A V Q R Y B F L E A U K O
 H Y K Y T L Q Q B R O C K E R A R M H B R
 R I D G E R E A M E R I N G R I D G E O Y
 D I S A S S E M B L E R E V E R S E N G C
 P Z S E P O V X C Y L I N D E R H E A D S
 O T O R Q U E H D A L I G N M E N T D Y L
 I C I S G E N D I S K X Y H T A P P E T S
 L G N L I N T E R C H A N G E D T I J U O

Can you find these words?

CYLINDER HEADS
 DISASSEMBLE
 ROCKER ARM
 ACCESSORY
 FLYWHEEL
 REVERSE
 TORQUE
 TDC

SPRING RETAINERS
 INTERCHANGED
 TIMING GEAR
 RING RIDGE
 VERTICAL
 CAMSHAFT
 PISTONS
 DISK

AIR IMPACT WRENCH
 RIDGE REAMER
 HORIZONTAL
 ALIGNMENT
 PUSH RODS
 TAPPETS
 KEEPERS

ACROSS

DISASSEMBLING ENGINE

ANSWER KEY

.
A C C E S S O R Y P U S H R O D S
S P R I N G R E T A I N E R S
C A M S H A F T K E E P E R S
T I M I N G G E A R T D C
. H O R I Z O N T A L . .
. . . F L Y W H E E L
. V E R T I C A L
. . A I R I M P A C T W R E N C H
P I S T O N S
.
.
. R O C K E R A R M . . .
R I D G E R E A M E R I N G R I D G E . .
D I S A S S E M B L E R E V E R S E . . .
. C Y L I N D E R H E A D S
. T O R Q U E . . A L I G N M E N T . . .
. D I S K . . . T A P P E T S
. . . . I N T E R C H A N G E D

DISASSEMBLING ENGINE

I N T E R C H A N G E D G Y G W N V F T N
 J F D N Z U D I S C C A M S H A F T F F H
 R O C K E R A R M R Y X K X V I E P S K R
 I N G E E E P I V R L G F K P R R F M T R
 N F F T G M U M E I I H V N J V M K K O A
 G V G K A T S P R I N G R E T A I N E R S
 R G W P W C H A T I D H O R I Z O N T A L
 I U X H H X R C I R E D O W O W M T I P C
 D B Z S L O O T C Q R I D G E R E A M E R
 G X X H W J D W A E H S I H O X P P I S Y
 E V D I D P S R L Q E A F B X B O P N E L
 G V P J B S K E W Z A S T O R Q U E G T Y
 A L I G N M E N T T D S E Q V E S T G J P
 I S S P W H E C O I S E R E V E R S E R L
 M L T C U M P H U S J M U M Q L Y F A E D
 W I O W Y B E V V P N B A Y G N C S R C C
 F N N Q C K R Y S I F L Y W H E E L R G B
 K J S H L G S A V I D E K R B V T R H R Q
 M Q A C C E S S O R Y U V V D O V S J Z R

Can you find these words?

CYLINDER HEADS
 DISASSEMBLE
 ROCKER ARM
 ACCESSORY
 FLYWHEEL
 REVERSE
 TORQUE
 TDC

SPRING RETAINERS
 INTERCHANGED
 TIMING GEAR
 RING RIDGE
 VERTICAL
 CAMSHAFT
 PISTONS
 DISK

AIR IMPACT WRENCH
 RIDGE REAMER
 HORIZONTAL
 ALIGNMENT
 PUSH RODS
 TAPPETS
 KEEPERS

ACROSS / DOWN

DISASSEMBLING ENGINE

ANSWER KEY

I N T E R C H A N G E D
. . D . . . D I S C C A M S H A F T . . .
R O C K E R A R M . Y
I P I V . L
N U M E . I
G S P R I N G R E T A I N E R S
R H A T . D H O R I Z O N T A L
I R C I . E D T I . .
D O T C . R I D G E R E A M E R
G D W A . H S P I . .
E S R L . E A P N . .
. . P . . . K E . . A S T O R Q U E G . .
A L I G N M E N T . D S T G . .
. . S . . . E C . . S E R E V E R S E . .
. . T . . . P H . . . M A . .
. . O . . . E B R . .
. . N . . . R . . . F L Y W H E E L . . .
. . S . . . S E
. . A C C E S S O R Y

DISASSEMBLING ENGINE

X I I S O Y J C C M Z X Z M M E G Y C X X
 C R R N M I I C L Q L C N G V B M D C F E
 A B P I T L F L Y W H E E L Q F T R Z V P
 M H A I N E U I W L V R L V J F A K Q A U
 S P R I N G R E T A I N E R S B P T U C S
 H N X I R V R C W K T N U V C S P R Y C H
 A S P I F I A I H R R I D G E R E A M E R
 F Y C A D Q M W D A O F D E L R T Q E S O
 T P D T L W G P P G N C R M R R S H A S D
 P K H I I I I S A I E G N T H H U E S O S
 L V G I S M G H T C P C E E O W E K B R W
 V V Q I Z A I N V K T I C D R R K A H Y A
 X A K D U A S N M E T W S Z I A Q E D C C
 D P S I I R I S G E R R R T Z C R U T S A
 Y Y K W E S G E E G N T K E O O S M E F R
 F W D P I U K H J M E T I Y N N V V I K A
 F N E O M Z S R R E B A A C T C S Q P Z D
 P E O I E E G X B G F L R I A N H R B Y A
 K L G O I S D H O U C N E E L L M Z Y E A

Can you find these words?

CYLINDER HEADS
 DISASSEMBLE
 ROCKER ARM
 ACCESSORY
 FLYWHEEL
 REVERSE
 TORQUE
 TDC

SPRING RETAINERS
 INTERCHANGED
 TIMING GEAR
 RING RIDGE
 VERTICAL
 CAMSHAFT
 PISTONS
 DISK

AIR IMPACT WRENCH
 RIDGE REAMER
 HORIZONTAL
 ALIGNMENT
 PUSH RODS
 TAPPETS
 KEEPERS

ACROSS/DOWN/DIAGONAL

DISASSEMBLING ENGINE

ANSWER KEY

. . I C . .
 C . R N . . . C D . . .
 A . . I T . F L Y W H E E L . . T . . . P
 M . A . N E . . . L . R A . . A U
 S P R I N G R E T A I N E R S . P . . C S
 H . . . R . R C . . . N . V . . P . . C H
 A I . I H R R I D G E R E A M E R
 F . . A . . M . D A O . . E . R T . . S O
 T . D T L . . P . G N C . . R . S . . S D
 . . . I I I . . A . E G K T H H . E . O S
 S M G . . C P . E E O . E . . R .
 A I N V . T I . D R R . A . Y .
 . . . D . . S N M E . W S . I A Q . D . .
 I R . S G E R . R T Z . R U . S .
 E S . . E G N T . E O . . M E . .
 . . . P . . K . . M E T I . N N
 . . E B A . C T C S
 . E L R . A . H
 K E . L L

DISASSEMBLING ENGINE I

XX	XX	XX	XX	1	XX	2								XX						
XX	XX	XX	XX		XX		XX													
XX	XX	XX	3											XX						
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX	XX	XX	XX	5	XX	XX		XX							
XX	XX	XX	XX		XX	XX	XX	XX		XX	XX		XX							
XX	6									XX	XX		XX							
XX	XX	XX	XX		XX	XX	XX	XX		XX	XX		XX							
XX	XX	XX	XX		XX	XX	XX	XX		XX	XX		XX							
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX	XX		XX															
XX		XX																		

ACROSS:

DOWN:

- 2. a shaft with lobes used to open the valves
- 3. to take apart
- 6. something added on to a device to make it more useable

- 1. the state of being in a true line
- 2. the part used to cover the tops of cylinders (2 words)
- 5. a wheel attached to the crankshaft that rotates and is used to reduce speed variaton

DISASSEMBLING ENGINE I

ANSWER KEY

ACROSS:

DOWN:

- 2. CAMSHAFT
- 3. DISASSEMBLE
- 6. ACCESSORY

- 1. ALIGNMENT
- 2. CYLINDERHEADS
- 5. FLYWHEEL

A		C	A	M	S	H	A	F	T	
L		Y								
D	I	S	A	S	S	E	M	B	L	E
G									I	
N		F							N	
M		L							D	
A	C	C	E	S	S	O	R	Y	E	
N		W							R	
T		H							H	
		E							E	
		E							A	
		L							D	
									S	

DISASSEMBLING ENGINE II

XX	1			2							XX	XX	XX	XX						
XX											XX	XX	XX	XX						
XX		XX																		
XX		XX																		
XX	3									XX	XX	XX	XX	XX						
XX	XX	XX	XX	XX	XX		XX	XX	XX		XX									
XX	XX	XX	XX	XX	XX		XX	XX	XX		XX									
XX	XX	XX	XX	XX	XX		XX	XX	XX		XX									
XX	XX	XX	XX	XX	XX		XX	XX	XX		XX									
XX	XX	XX	XX	XX	XX		XX	XX	XX		XX									
XX	XX	XX	XX	XX	XX		XX	XX	4							XX	XX	XX	XX	XX
XX		XX																		
XX		XX																		

ACROSS:

DOWN:

1. from left to right
2. one thing taking the place of another thing
3. rods that join the valve lifter to the rocker arm (2 words)
3. round plugs, open at one end, that slide up and down cylinders
4. a device used to keep valve springs in place

DISASSEMBLING ENGINE II

ANSWER KEY

ACROSS:

- 1. HORIZONTAL
- 3. PUSHRODS
- 4. KEEPERS

DOWN:

- 2. INTERCHANGED
- 3. PISTONS

H O R I Z O N T A L

N

T

E

P U S H R O D S

I C

S H

T A

O N

N G

S K E E P E R S

D

DISASSEMBLING ENGINE III

XX	1	XX	2	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX						
XX		XX		X''	XX																
XX	XX	XX	XX	XX	3												XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX		XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX										

ACROSS:

3. a tool used to remove
cylinder ring ridge
(2 words)

DOWN:

1. Top Dead Center
2. in opposite direction
3. build-up formed at top of
cylinder as it is worn away
by piston ring (2 words)

DISASSEMBLING ENGINE III

ANSWER KEY

ACROSS:

3. RIDGEREAMER

DOWN:

- 1. TDC
- 2. REVERSE
- 3. RINGRIDGE

T R
R I D G E R E A M E R
I C V
N E
G R
R S
I E
D
C
E

DISASSEMBLING ENGINE IV

XX																				
XX																				
XX	XX	XX	XX	XX	1	XX														
XX	XX	XX	XX	XX		XX	XX	2	XX	XX	XX	XX	XX	3	XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX		XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX		XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX		XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	5								XX	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX		XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	XX	XX	XX	XX		XX	XX		XX	XX	XX	XX	XX		XX	XX	XX	XX	XX	XX
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX																				
XX																				

ACROSS:

5. up and down

DOWN:

1. screws used to change the distance between valve stem and lifter or rocker arm
2. the gear joined to camshaft and the crankshaft to drive the camshaft (2 words)
3. turning or twisting

DISASSEMBLING ENGINE IV

ANSWER KEY

ACROSS:

5. VERTICAL

DOWN:

- 1. TAPPETS
- 2. TIMINGGEAR
- 3. TORQUE

T		
A	T	T
P	I	O
P	M	R
V	E	R
T	I	C
S	A	L
	Q	
	U	
	E	
	G	
	E	
	A	
	R	

LEARNING WORDS USED IN TESTING AND ADJUSTING MANUAL TRANSMISSIONS

INTRODUCTION

There are many different manual transmissions and shifting mechanisms. Each make and model vehicle may have different shifting mechanisms and transmissions of 3, 4, and 5 speed design. Often the same make and model vehicle will have more than one transmission option available. The experienced mechanic must be able to identify and locate proper service specifications and test and adjust each type of design. In this unit you will learn the technical vocabulary related to testing and adjusting manual transmissions.

PERFORMANCE OBJECTIVES

You will match 8 words used in testing and adjusting manual transmissions with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

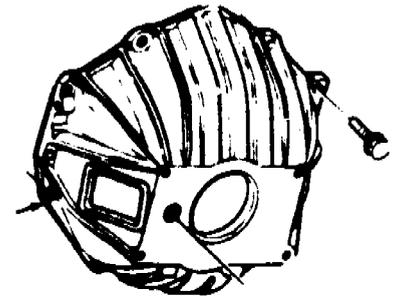
-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

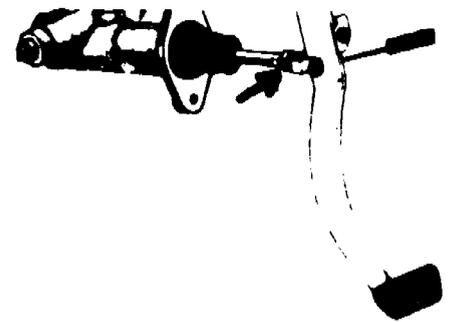
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

TESTING AND ADJUSTING MANUAL TRANSMISSIONS

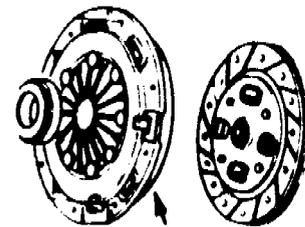
bell housing
(bell hous ing)
a connection from trans-
mission to engine that
covers the clutch



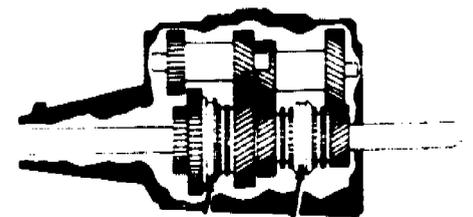
clevis
(clev is)
a U-shaped metal fastener
with holes in each end



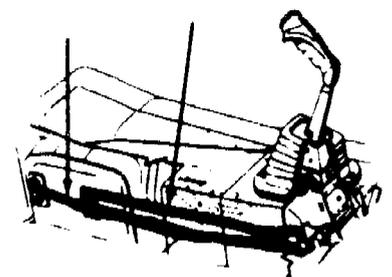
clutch
(clutch)
a device used to connect
or disconnect the flow of
power from the engine to
the transmission



manual
(man u al)
transmission
(trans mis sion)
requires changing gears
by hand

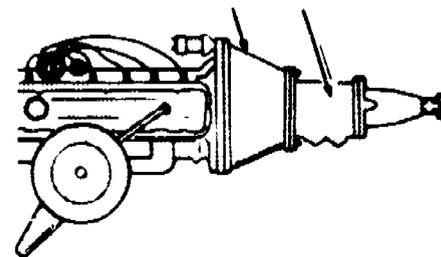


shift rods
(shift rods)
links between gear shift
lever and transmission



TESTING AND ADJUSTING MANUAL TRANSMISSIONS

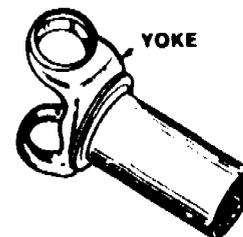
transmission
(trans mis sion) a device that provides
different gear ratios
between the engine and
the driving wheels



transmission
(trans mis sion) rubber cushioned metal
plates that hold the
transmission in place
mounts
(mounts)



yoke
(yoke) the parts that allow you
to attach the drive shaft
to the transmission and
differential



MANUAL TRANSMISSIONS

T R A N S M I S S I O N O N T R I A H P
 E B R X Q I I U I S W S H I F T R O D S
 G F R W J E Z Y O K E U E P T N A X F L
 O C B Q Y W O V R H F U I E Q A E V C I
 Q N E B D A I L V O O S Y P R N H W N K
 Z H K S U Y N J F W M K S B S O T X Q Y
 C L U T C H L D F C G X U A F D Y T C G
 C B E L L H O U S I N G I I R E X S P V
 E K B V P V Q N E T D T D B K M R Q A W
 O T X N G W S I M Q B V B Y X U U J O L
 E I R F D C J W O Q B K H K O R O N Q X
 H W T T S T Y I N A V W X X R O M E H E
 K Y F P V C O D W M R P W I A F N Y S T
 P K K X G H E M K A P D F O H M S H Y Z
 U P X R F Y Z N P L E U R A I H X X F H
 P L C L E V I S Q R K H J T C V M E F Y

Can you find these words?

TRANSMISSION
CLUTCH

BELL HOUSING
CLEVIS

SHIFT RODS
YOKE

ACROSS

MANUAL TRANSMISSIONS

P S N B P S H I F T R O D S
 K C V V J B R B T R U T R S
 J L C L K V W P V A B T P R
 B E L L H O U S I N G G K L
 T V U T S I Y Z P S T O N Z
 Z I T C Z Q O R L M E O J C
 X S C D H N S K X I Y T A S
 B E H T X P I T C S W I L Z
 B F F P T A F I Q S G N Q B
 O Q H B N J V H J I G F V X
 Q S H M L M Z O Y O K E U Y
 U O E H T Z A T Q N V I Y Q

Can you find these words?

TRANSMISSION
CLUTCH

BELL HOUSING
CLEVIS

SHIFT RODS
YOKE

ACROSS/DOWN

MANUAL TRANSMISSIONS

ANSWER KEY

. S H I F T R O D S
. C R
. L C A
B E L L H O U S I N G . . .
. V U S
. I T M
. S C I
. . H S
. S
. I
. Y C K E . .
. N

MANUAL TRANSMISSIONS

T H D H D W T V T I A P L D W Q Y N
 E D R U Y Y T S S R U R J A N R O O
 L A N I M Z K F W O C Z Z V L I K P
 B L F O T I K D D J L O F M S S E F
 V A Y E E B L H Y W E M R S K W A J
 X S X S I K E N Q U V G I P J I E B
 W P T C P L A F Q H I M V C Z Q Z T
 Q C C S H F V K N R S Y V I V W V H
 B E L L H O U S I N G X H G J C E N
 E X P U N I R A A T C E O Z L A P K
 E U A P T X F R V D G G D I W P T V
 H E S K A C T T R N D D C P Z J P F
 B F N U I O H M R N B Q X X R A T T
 H V O B H S V J N O F Q S T E E C H
 K C U U P V X G W Q D C P R V F B F
 W H U N C J Z N S R S S W Q O Q D U

Can you find these words?

TRANSMISSION
CLUTCH

BELL HOUSING
CLEVIS

SHIFT RODS
YOKE

ACROSS/DOWN/DIAGONAL

MANUAL TRANSMISSIONS

ANSWER KEY

. Y N
. O .
. C I K .
. L S . E .
. E . . S
. V . I
. I M
. C . S S
B E L L H O U S I N G
. . . U . I . . A
. . . . T . F R
. C T T
. H . R
. O
. D
. S

MANUAL TRANSMISSIONS

XX																					
XX																					
XX	1	XX																			
XX		XX																			
XX	2							XX													
XX		XX																			
XX	XX	XX	XX	XX	3	XX	XX		XX												
XX	XX	XX	XX	XX		XX	XX		XX												
XX	XX	XX	XX	XX		XX	XX		XX												
XX	XX	XX	4						XX												
XX		XX																			
XX	XX	XX	XX	XX	5												XX	XX	XX	XX	XX
XX		XX																			
XX																					

ACROSS:

DOWN:

- 2. device used to connect or disconnect flow of power from engine to transmission
- 4. a U-shaped metal piece with holes in each end
- 5. device that provides different gear ratios between engine and driving wheel

- 1. a connection from transmission to engine (2 words)
- 3. the parts that allow you to attach the drive train together

MANUAL TRANSMISSIONS

ANSWER KEY

ACROSS:

- 2. CLUTCH
- 4. CLEVIS
- 5. TRANSMISSION

DOWN:

- 1. BELLHOUSING
- 3. YOKE

B

E

C L U T C H

L

Y K

O O

K U

C L E V I S

I

T R A N S M I S S I O N

G

LEARNING WORDS USED IN REPLACING MANUAL TRANSMISSIONS

INTRODUCTION

With the advent of government regulations that specify a minimum number of miles per gallon, automobile manufacturers, in an effort to meet the miles per gallon requirement, are installing more manual transmissions in late model automobiles. A mechanic must be able to service these transmissions. In this unit you will learn the technical vocabulary related to replacing manual transmissions.

PERFORMANCE OBJECTIVES

You will match 7 words used in replacing manual transmissions with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

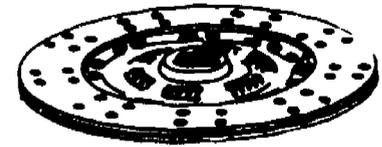
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

REPLACING MANUAL TRANSMISSIONS

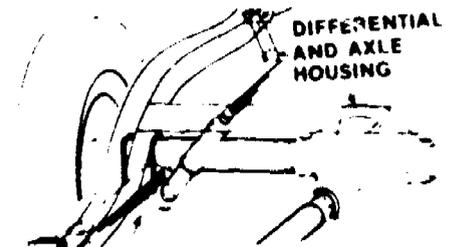
clutch disc
(clutch disc)

the friction disc part of a clutch assembly that is squeezed between the flywheel and the clutch pressure plate



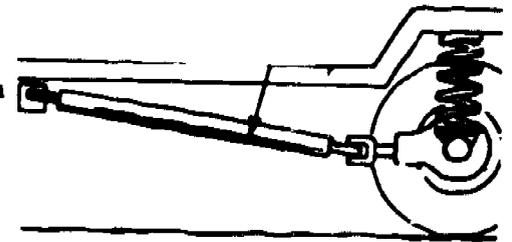
differential
(dif fer en tial)

a unit that will drive both rear axles at the same time but at different speeds



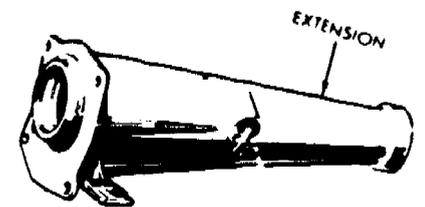
drive shaft
(drive shaft)

a shaft that joins transmission output shaft to differential pinion shaft



extension
(ex ten sion)

an addition added to something to increase its length



flywheel housing
(fly wheel hous ing)

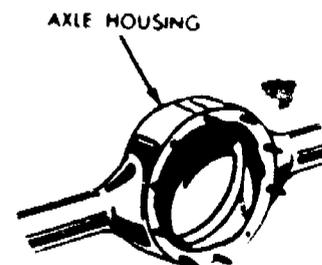
the covering for the flywheel



REPLACING MANUAL TRANSMISSIONS

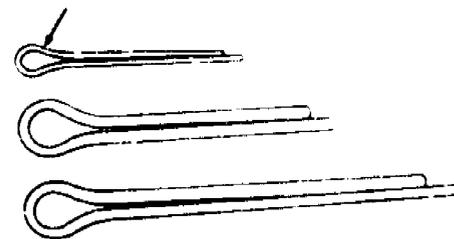
housing
'hous ing)

cover for mechanical parts



minimum
(min i mum)

the least



REPLACE TRANSMISSIONS

F L Y W H E E L H O U S I N G U L J E N L
 N Y X B U V M Z L H Y M J Z P V Z B N K J
 V I Z P C V Y Y U G I D O D Q Z Z A F A Q
 Y E C L U T C H D I S C C A U T B M S R E
 I S I E M W I O P G J A P Z A K Z X O U Y
 Y X X B S Y T B D U N N F S D N T Q A Q V
 V Y A T Z U F H V B A D N O I R H S F N Z
 P T M X N Z J L R C R C N V C W J J L W B
 T B B I H K X I W A B S E B W Q B X I J W
 U H X W K I E D R I V E S H A F T G B R F
 D I F F E R E N T I A L A J W X P B T D J
 A R B X M Z V O K X Z Z B S A X P K Z Y A
 V I Q B Y H J I E O F I S E D I S I P W O
 P H E G N Y M V B F T M I N I M U M U E X
 M A A H O U S I N G O H Q Q U F Q M A L E
 W E U X D H N U V R F N J Q T Y M J O S V
 S P T A R U C M A S W W O O J W X U M X P
 Z O F E X T E N S I O N K K X F S B N M W

Can you find these?

FLYWHEEL HOUSING
 DRIVE SHAFT
 EXTENSION

CLUTCH DISC
 MINIMUM

DIFFERENTIAL
 HOUSING

ACROSS

REPLACE TRANSMISSIONS

E U U H L N L N C W O O I S T Y O N U V
 X G I B P W V L W T V B Y D N L Z J T K
 T E I D O S E L W I D I W F I Q W Y E V
 E J D I F F E R E N T I A L V Z V D I Y
 N G R B M S E I Q S J E E Y J B Z Y S F
 S I I E N W O D I N S M L W W N N U V L
 I Q V G F F L A C L U T C H D I S C D V
 O U E L G P Q S V W L L S E N F Z K L A
 N Z S D Q G S K J Y M N A E N W Y A E T
 N Z H A J J D L N C B T I L B Q Z P Y G
 I J A P K F Q Q O L V G O H O U S I N G
 G B F U R S V R E T I I T O M L J H H B
 O W T I J U U W M I N I M U M I M K T K
 Q F B V A E C M P G R P U S C Z V H S R
 X U V D F H K I V P R S A I V B V T S K
 D D O Y S Y L R J M E M M N K T F D E C
 D N S S J L Z M I F M A H G N N F X S Q

Can you find these?

FLYWHEEL HOUSING
 DRIVE SHAFT
 EXTENSION

CLUTCH DISC
 MINIMUM

DIFFERENTIAL
 HOUSING

ACROSS/DOWN

REPLACE TRANSMISSIONS

ANSWER KEY

E
X
T F
E . D I F F E R E N T I A L
N . R Y
S . I W
I . V C L U T C H D I S C . .
O . E E
N . S E
. . H L
. . A H O U S I N G
. . F O
. . T M I N I M U M
. S
. I
. N
. G

REPLACE TRANSMISSIONS

Y A L Z S I Q O D F N G W R L P P P G F
 C Z S C Y I Q A J G G M H N X Y U F F C
 Z J V E T W J J I O P H V V N E Q W V K
 U L P H K Q S G X X G J S O L J Y O Q G
 M R C Q M P P K Q B N A H A B A A C Y O
 A L U U V L Q O O B F Y I D U Y X C N N
 M S Z U X W W C U C I T I M X F M E V Z
 Q M Z B U I H F S Q N J T C F H H L T B
 M B L A C I C I F E Q D A I C H I I E A
 C S N T M I D E R T G B T F N H R J U G
 C J Z J A H G E N N L F Z W G C R T N A
 O B V J C I F W I P A E A U W F M I R Z
 O T S T B F L Y W H E E L H O U S I N G
 M F U H I A D A S S X S K W M U N X E Y
 X L O D Q W Q E X T E N S I O N S A Q D
 C Y C U O Y V W X R U G N H J E S K A M
 X Q S Y H I K G U O O I I E W T H Z U V
 E Q O W R V S K V Y M T W Z X W J P I L
 Q J R D L Q E Y I X L H B I S R E K F D

Can you find these?

FLYWHEEL HOUSING
 DRIVE SHAFT
 EXTENSION

CLUTCH DISC
 MINIMUM

DIFFERENTIAL
 HOUSING

ACROSS/DOWN/DIAGONAL

REPLACE TRANSMISSIONS

ANSWER KEY

.

 L
 A
 I
 C . T
 S . N
 I . E
 D . R . . . T G
 H . E . . . F N .
 C . F . . . A M I . .
 . . . T . F L Y W H E E L H O U S I N G
 . . U . I . . . S M U
 . L . D . . . E X T E N S I O N
 C V N H
 I I
 R M
 . . . D

REPLACING MANUAL TRANSMISSIONS

XX																				
XX																				
XX	1				2								XX							
XX													XX							
XX		XX	XX	XX		XX														
XX		XX	XX	XX		XX														
XX	4											XX		XX						
XX		XX	XX	XX		XX														
XX		XX	XX	XX		XX														
XX		XX	5							XX	XX	XX	XX							
XX		XX	XX	XX		XX														
XX		XX	XX	XX		XX														
XX	6								XX	XX	XX	XX	XX							
XX		XX	XX	XX		XX														
XX		XX	XX	XX		XX														
XX		XX																		
XX		XX																		
XX																				
XX																				

ACROSS:

1. a unit that will drive both rear axles at the same time
4. part of clutch assembly that is between the flywheel and clutch pressure plate (2 words)
5. the least
6. container or cover for mechanical parts

DOWN:

1. shaft that joins transmission output shaft to differential pinion shaft (2 words)
2. an addition added to something to increase its length

REPLACING MANUAL TRANSMISSION

ACROSS:

- 1. DIFFERENTIAL
- 4. CLUTCHDISC
- 5. MINIMUM
- 6. HOUSING

DOWN:

- 1. DRIVESHAFT
- 2. EXTENSION

D I F F E R E N T I A L
R X
C L U T C H D I S C T
V E
E M I N I M U M
S S
H O U S I N G
A O
F N
T

LEARNING WORDS USED IN SERVICING SPEEDOMETERS

INTRODUCTION

Speedometer cables break as a result of age, lack of lubrication or because the cable housing has sharp bends. Noisy and erratic speedometer operation can result from lack of lubrication. Speedometer drive gears may strip their teeth and/or break because of the above problems. Repair and service of speedometer drive mechanisms is a frequently required job for an auto mechanic. In this unit you will learn the technical vocabulary related to servicing speedometers.

PERFORMANCE OBJECTIVES

You will match 13 words used in servicing speedometers with their definitions. Your teacher will provide a list of words and definitions. You should match at least 10 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

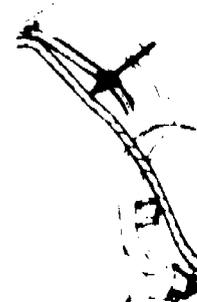
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

SPEEDOMETERS

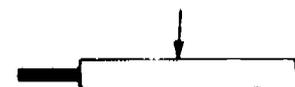
speedometer
 (speed om e ter)
 cable
 (ca ble)

the cable that connects the
 speedometer in the dash with
 the speedometer drive pinion



speedometer
 (speed om e ter)
 cable housing
 (ca ble hous ing)

the covering for the
 speedometer cable



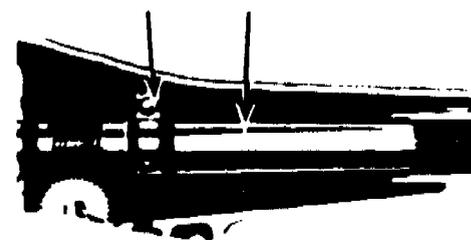
speedometer
 (speed om e ter)
 drive pinion
 (drive pin ion)

a gear that is turned
 by the transmission
 output shaft



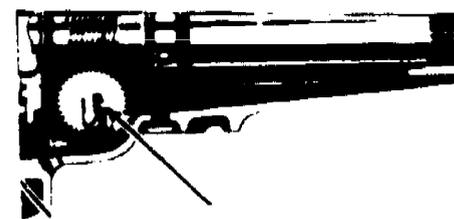
transmission
 (trans mis sion)
 output shaft
 (out put sh aft)

the shaft from the
 transmission that connects
 with the yoke that turns
 the drive shaft



pinion
 (pin ion)

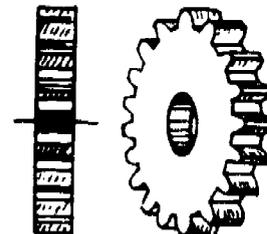
small gear



SPEEDOMETERS

cog wheel
(cog wheel)

a wheel with grooved
teeth



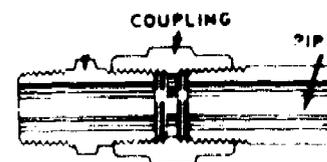
adapter
(a dap ter)

a device used to join
two parts to allow
them to work together



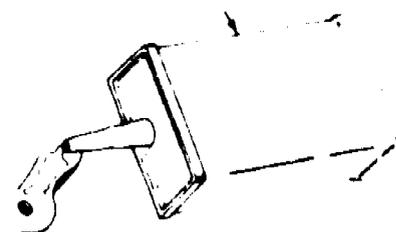
ferrule
(fer rule)

a metal ring or cap
used to fasten a tubing



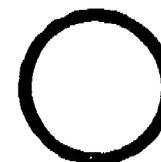
graphite grease
(graph ite grease)

a lubricant used on
the speedometer cable



O-ring
(O-ring)

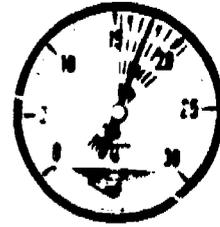
an O-shaped part used
to seal fluid



SPEEDOMETERS

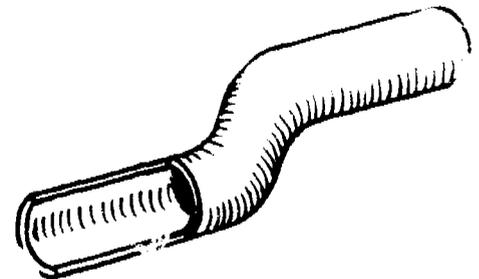
erratic
(er rat ic)

not constant



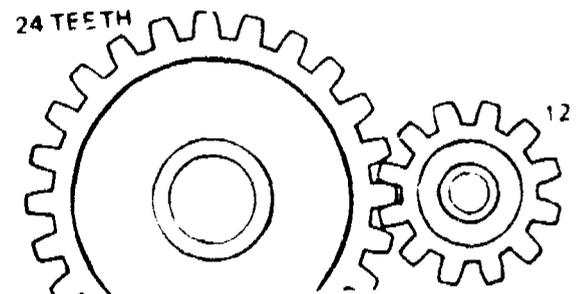
flexible
(flex i ble)

able to bend without
breaking



ratio
(ra tio)

the relationship between
objects given in numbers



SPEEDOMETERS

G R A P H I T E G R E A S E W P V
 F L E X I B L E P I N I O N H T V
 N N K H S L J S C O G W H E E L S
 C O W O P G Z U I T A D A P T E R
 F E R R U L E G E N K C B W K U M
 N G E M T W C H T E V L Q T K C P
 N G M K T M M P U O A Y E M X G O
 S O Z L R N U M Z H X Y D G Z F V
 P T Y O M H D F M L U K Z Z I J B
 S P E E D O M E T E R C M B X X I
 N B L Y W C S D H J H X G G I Q W
 E R R A T I C O R I N G T U E P G
 G D R A T I O K H A H D F L G C L

Can you find these words?

GRAPHITE GREASE
 COG WHEEL
 ADAPTER
 O-RING

SPEEDOMETER
 FERRULE
 PINION

FLEXIBLE
 ERRATIC
 RATIO

ACROSS

SPEEDOMETERS

ANSWER KEY

G R A P H I T E G R E A S E . . .
F L E X I B L E P I N I O N . . .
. C O G W H E E L .
. A D A P T E R
F E R R U L E
.
.
.
.
S P E E D O M E T E R
.
E R R A T I C O R I N G
. . R A T I O

SPEEDOMETERS

H W X R N X J Z X R K B P K W J
 S F T B W Y K Q N A G H Q B Z K
 C S H H O R D X R T Q T E G X R
 G D Z L H I H R W I R I P F Y S
 A S K Y R X Z O C O G W H E E L
 S P E E D O M E T E R L R S X M
 T Y Y M B D Z A E X A A L K R V
 L R Z U R R Z L U A P I N I O N
 N U N I R H X T B Z H T S X R P
 V A Y W B R F L E X I B L E I K
 B N S G M Q E R R A T I C Q N N
 B W S S U V R H N D E V H J G Q
 K U J G S T R Y Z A G U T I K G
 K G P B Z U U X F P R D Z D I P
 V G U N U J L R I T E J K Q S Q
 P F M T P N E E E E A D R E E V
 C A B P Q C X T E R S N I H E A
 L U D X D P N W B T E E P H S F

Can you find these words?

GRAPHITE GREASE
 COG WHEEL
 ADAPTER
 O-RING

SPEEDOMETER
 FERRULE
 PINION

FLEXIBLE
 ERRATIC
 RATIO

ACROSS/DOWN

SPEEDOMETERS

ANSWER KEY

. R
. A
. T
. I
. C O G W H E E L
S P E E D O M E T E R
. A
. P I N I O N
. H . . . R .
. F L E X I B L E I .
. E R R A T I C . N .
. R . . D E . . . G .
. R . . A G
. U . . P R
. L . . T E
. E . . E A
. R S
. E

SPEEDOMETERS

E Z S A F J X W N H U L Q Q D C G M T C D
 R P W N L F Q K A Y R J M B E R R A T I C
 V U Y B A O G Q O R E U O S H E A W D Y Q
 N H G R O F J X Y V X S B O T Q P I T J L
 G K S A X B G L H T J F F E M N H I Z N Y
 Z C P T D M I Q O I J E M X T N I J D X H
 E R E I E A S E M F Z O B H N R T R S D K
 G W H O O K P V M R D S H S N B E W M P E
 I K K G U G M T K E W C P A V E G K F Q Y
 H N D E K A F L E X I B L E M H R U X N E
 J K I M F A E P P R A F C K O P E T T H J
 O R D K D E S M I N F X C S Q P A C I W K
 L F E J H A R G Y N E P R J U I S F B S L
 Z T C W V Y R R I G I N N I U G E T R P U
 Q S G F B L R Q U R Q O G M E S W L M R U
 T O R I N G H K X L D O N S I G H Q S M V
 C Z Q Q M D T L S N E B L E Y Z Y F T W R

Can you find these words?

GRAPHITE GREASE
 COG WHEEL
 ADAPTER
 O-RING

SPEEDOMETER
 FERRULE
 PINION

FLEXIBLE
 ERRATIC
 RATIO

ACROSS/DOWN/DIAGONAL

SPEEDOMETERS

ANSWER KEY

. G
. E R R A T I C
. E A
. . . R T . P
. . . A E . . H
. . . T D M . . . I
. . . I . A O T
. . . O . . P . . . D E
. T . E G
. F L E X I B L E . . R
. . . . F . E P E
. E S . I A
. . . . H . R . . N S
. . . W . . . R . . I E
. . G U . . O
. O R I N G . . . L . . N
C E

SERVICING SPEEDOMETERS

XX	XX	XX	XX	1						2	XX									
XX	XX	XX	XX								XX									
XX	3					XX	XX	XX	XX	XX	XX									
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX																		
XX		XX	XX	4	XX															
XX		XX	XX		XX															
XX	5								XX	XX	XX	XX								
XX		XX	XX	XX		XX														
XX		XX	XX	XX		XX														
XX	XX	XX	6								XX	XX	XX		XX	XX	XX	XX	XX	XX
XX	7					XX														
XX		XX	XX	XX		XX														
XX		XX																		
XX		XX																		
XX		XX																		

ACROSS:

DOWN:

- | | | | |
|----|---|----|---|
| 1. | not constant | 2. | a wheel with grooved teeth (2 words) |
| 3. | an O-shaped part used to seal fluid (-) | 4. | small gear |
| 5. | able to bend without breaking | 5. | a metal ring or cap used to fasten a tubing |
| 6. | a device used to join two parts to allow them to work | | |
| 7. | the relationship between objects given in numbers | | |

SERVICING SPEEDOMETERS

ANSWER KEY

ACROSS:

- 1. ERRATIC
- 3. ORING
- 5. FLEXIBLE
- 6. ADAPTER
- 7. RATIO

DOWN:

- 2. COGWHEEL
- 4. PINION
- 5. FERRULE

E R R A T I C

O R I N G

G

W

H

E

E P

F L E X I B L E

E N

A D A P T E R I

R A T I O

U N

L

E

LEARNING WORDS USED IN SERVICING PARKING BRAKES

INTRODUCTION

All modern automobiles are equipped with a parking brake. These parking brakes are relatively maintenance-free except for routine adjustments or replacement of the brake linings and/or replacing or freeing oxidized flexible wire cables and conduits. Periodically, due to driving conditions or mishaps, the cables or linkage must be replaced. In this unit you will learn the technical vocabulary related to servicing parking brakes.

PERFORMANCE OBJECTIVES

You will match 17 words used in servicing parking brakes with their definitions. Your teacher will provide a list of words and definitions. You should match at least 14 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

-
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
 6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
-

-
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
 4. USE the Answer Key on the back of the activity page when needed.

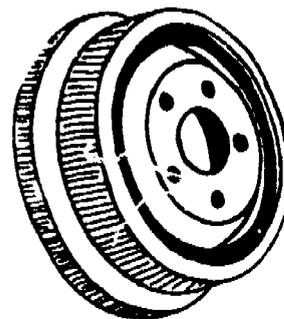
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

PARKING BRAKES

brake drum
(brake drum)

a metal cylinder that bolts
to the wheel and covers the
brake shoes



parking brake
(park ing brake)
lever
(le ver)

the handle worked by hand
to hold the vehicle while
parked



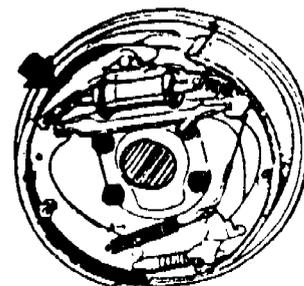
brake shoe
(brake shoe)

a curved metal block that
presses against the brake
drum to slow the wheel



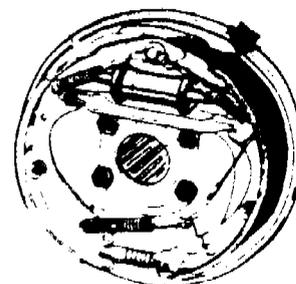
primary brake
(pri mar y brake)
shoe
(shoe)

the brake shoe installed
facing the front of the
vehicle



secondary
(sec ond ar y)
brake shoe
(brake shoe)

the brake shoe installed
facing the rear of the
vehicle



PARKING BRAKES

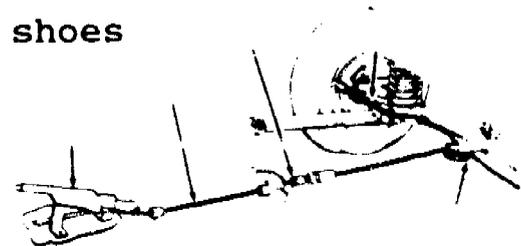
brake bands
(brake bands)

a band that circles around
the outside of a brake drum



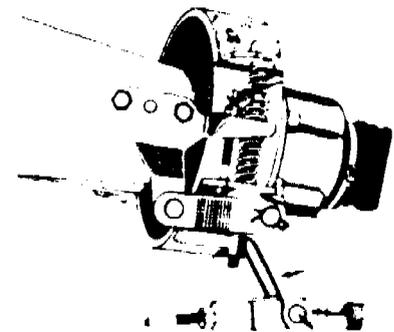
parking brake
(park ing brake)
linkages
(link a ges)

joins handle and brake shoes



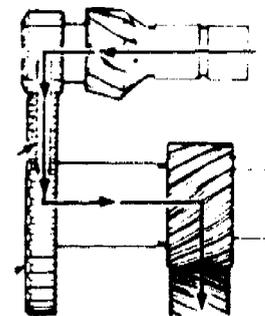
drive line
(drive line)
parking brakes
(park ing brakes)

parking brake on drive shaft



engage
(en gage)

to mesh together to work



actuated
(ac tu ated)

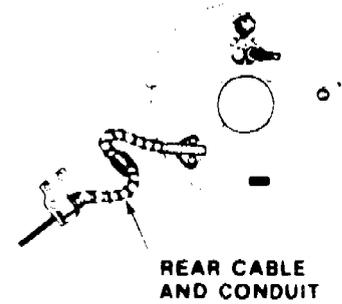
put into motion



PARKING BRAKES

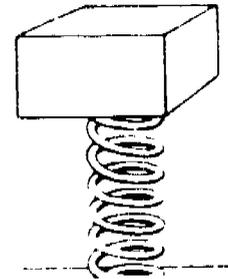
conduits
(con duits)

flexible tubing covers for
the parking brake cables



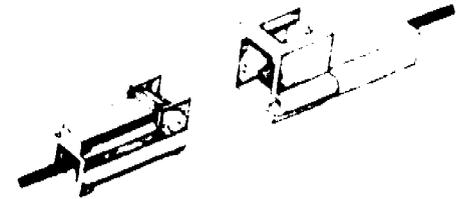
compress
(com press)

to apply pressure to make
something smaller



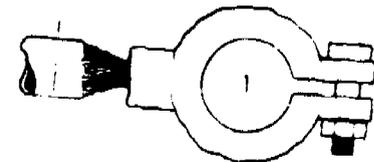
disconnect
(dis con nect)

to unplug or separate



frayed
(frayed)

worn out on the edges



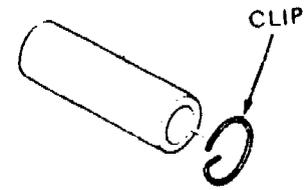
oxidized wire
(ox i dized wire)

wire that is rusty or
scaled

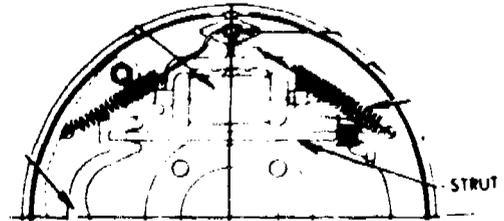


PARKING BRAKES

retaining clip a metal band that is
(re tain ing clip) used to hold parts



strut a type of rod or bar
(strut) that braces



PARKING BRAKES

R E T A I N I N G C L I P N T W F Z N F E
 E F W R I S I D W L I N W W T J E X G I U
 B R A K E S H O E U C E F A R F S P U Z N
 T W J P K U A B R A K E L E V E R Q D V Q
 K F U H H P P W R A T U O V L L T D N B M
 B R A K E D R U M E N G A G E U W X D Z V
 S A G X C B Q F K X I U G U C E A J N X N
 F C I L L V Y T I A U G A X O G O P B Y Z
 Z G K I O W Y N Z X V C A I F M S X K H I
 A C T U A T E D K W M D X T K M U O J Z G
 G B L X S T N W B W N V S T R U T Z U X Y
 G S X W G N T K W O Z U F C H D R Z V W W
 V N Q M L E U G S G G Q I C C N D U I T S
 T N J D I S C O N N E C T F R A Y E D U X
 C Q B W R L N I J O E V Z W B C L V G B D
 T U H R L C E S P B R A K E B A N D S P Q
 O X I D I Z E D W I R E H L F N D K P U S
 B V I O X T M M D N E C U C O M P R E S S

Can you find these words?

RETAINING CLIP
 BRAKE LEVER
 BRAKE SHOE
 COMPRESS
 ENGAGE

OXIDIZED WIRE
 BRAKE BANDS
 BRAKE DRUM
 ACTUATED

DISCONNECT
 CONDUITS
 FRAYED
 STRUT

ACROSS

PARKING BRAKES

ANSWER KEY

R E T A I N I N G C L I P
.
.
B R A K E S H O E
.
.
B R A K E L E V E R
.
.
B R A K E D R U M E N G A G E
.
.
.
A C T U A T E D
.
.
S T R U T
.
.
C O N D U I T S
. . . D I S C O N N E C T F R A Y E D . .
.
.
B R A K E B A N D S . .
O X I D I Z E D W I R E
.
.
C O M P R E S S

PARKING BRAKFS

X V B I M T I J B Y A T F W Z E
 Y V A O Y V P Y R P L X A E U Q
 A H D X D D X K A K B I C B G U
 P K Z I W U C Z K Z T < M O L C
 R R P D D I S I E E L W I S E O
 V K B I I R K N S D C Q B K Q M
 Y R B Z S Z N A H D C R Y U C P
 W D H E C W B E O M Y U Y O O R
 S O H D O B G F E A L Q F I N E
 A S Y W N U B R A K E B A N D S
 X U Z I N B R A K E D R U M U S
 O W S R E T A I N I N G C L I P
 V V W E C A K N W O J J B B T D
 S T R U T N E N G A G E J J S E
 A P E L X R L Q W Y K F N I B K
 A C T U A T E D V T L P Z K L U
 M P A L Q Z V V L X P O G Z N K
 K G F R A Y E D M T M X N C Z C
 X B J S U O R B V D D T G E V E

Can you find these words?

RETAINING CLIP
 BRAKE LEVER
 BRAKE SHOE
 COMPRESS
 ENGAGE

OXIDIZED WIRE
 BRAKE BANDS
 BRAKE DRUM
 ACTUATED

DISCONNECT
 CONDUITS
 FRAYED
 STRUT

ACROSS/DOWN

PARKING BRAKES

ANSWER KEY

. B
. . . Q R
. . . X A
. . . I K C
. . . D D . . . E O
. . . I I . . . S M
. . . Z S . . . H C P
. . . E C . . . O O R
. . . D O . . . E N E
. . . W N . B R A K E B A N D S
. . . I N B R A K E D R U M U S
. . . R E T A I N I N G C L I P
. . . E C . K T .
S T R U T . E N G A G E . . S .
. L
A C T U A T E D
. V
. . F R A Y E D
. R

PARKING BRAKES

Z B L V U N V S B S W F G Z R S V E P N P
F P R E A O T S N A T P L V O V S C Z I G
P D R D D I S C O N N E C T I Y S Z L T F
U I N L U E T G X E Q B U R R N Y C I C G
H P L D R V R W I S I X E Q E I G S J K Z
Q X N P A L U D D P L V X O A N D C A T W
G O M W X G T N I A E P R K I E M W B Q F
C O Z R V U A K Z L X W Y N T S Z S Q T G
C V H R S B I F E F H Z I A X I G C F C K
G O G O E U H K D I S A U Q C I S B D M M
Q G K K B D A V W B T T E B D W A L H X A
E M A G E R J I I E C J T S T U D G D P G
S R B Y B W A B R A K E S H O E C A A G M
B F A Q W I L K E Y S P Z C K G W C T F E
L R G X I I J Y E V I J V P B O O R R M W
F A P G W I N B N D N X O R D Z L M J Y I
G O Q T O Q U V C S R G D U F R K J W R E
T E R G E N G A G E G U E M B P U H T T D
A J O K Y Q K W V M O W M N E K C B Y U N

Can you find these words?

RETAINING CLIP
BRAKE LEVER
BRAKE SHOE
COMPRESS
ENGAGE

OXIDIZED WIRE
BRAKE BANDS
BRAKE DRUM
ACTUATED

DISCONNECT
CONDUITS
FRAYED
STRUT

ACROSS/DOWN/DIAGONAL

PARKING BRAKES

ANSWER KEY

. S P
. T S I .
. D I S C O N N E C T L . .
. U E T . X R C . . .
. D R . R . I S . . E G
. N P . . U . D . . V N D
. O M T N I . E I E
C O A . E L N T
C B . . E I A
. E K D A U
. K B D A . W . T T
. A . E R I E C
. R . Y B . A B R A K E S H O E
B . A K E
. R E
F D
. R
. E N G A G E . U
. M



PARKING BRAKES I

XX																				
XX																				
XX	1									XX	XX	XX								
XX										XX	XX	XX								
XX		XX																		
XX	XX	XX	XX	XX	XX	2							XX							
XX	XX	XX	XX	XX	XX								XX							
XX		XX																		
XX	XX	XX	XX	3									XX							
XX	XX	XX	XX		XX	XX	XX	XX		XX										
XX	XX	XX	XX		XX	XX	XX	XX		XX										
XX	XX	XX	XX		XX	XX	XX	XX		XX										
XX	XX	XX	XX		XX	XX	XX	XX		XX										
XX	XX	XX	XX		XX															
XX	XX	4								XX										
XX	XX									XX										
XX	XX	XX	XX		XX															
XX	XX	XX	XX		XX															

ACROSS:

1. a metal cylinder that bolts to the wheel and covers the brake shoes (2 words)
2. mesh together to work
3. to apply pressure to make something smaller
4. put into motion

DOWN:

1. a curved metal block that presses against the brake drum to slow the wheel (2 words)
3. flexible tubing covers for parking brake cables

PARKING BRAKES I

ANSWER KEY

ACROSS:

- 1. BRAKEDRUM
- 2. ENGAGE
- 3. COMPRESS
- 4. ACTUATED

DOWN:

- 1. BRAKESHOE
- 3. CONDUITS

B R A K E D R U M

R

E N G A G E

K

C O M P R E S S

O S

N H

D O

U E

I

A C T U A T E D

S

PARKING BRAKES II

XX																				
XX																				
XX	XX	XX	XX	1	XX															
XX	XX	XX	XX		XX	2	XX													
XX	XX	XX	XX		XX		XX													
XX	XX	XX	XX		XX		XX	XX	3	XX										
XX	XX	XX	XX		XX		XX	4						XX						
XX	XX	XX	XX		XX		XX	XX		XX										
XX	XX	XX	XX		XX		XX	XX		XX										
XX	XX	XX	XX		XX		XX	XX		XX										
XX	XX	XX	XX		XX		XX	XX		XX										
XX	XX	XX	XX		XX		XX	XX		XX										
XX	XX	XX	XX		XX		XX	XX		XX										
XX	XX	XX	XX		XX		XX	XX		XX										
XX	XX	XX	XX		XX		XX	XX		XX										
XX	XX	XX	XX	5													XX	XX	XX	XX
XX	XX	XX	XX		XX	XX	XX	XX		XX										
XX	6					XX														
XX																				

ACROSS:

DOWN:

- 4. worn out on the edges
- 5. a metal band that is used to hold parts (2 words)
- 6. a type of rod or bar

- 1. wire that is rusty or scaled (2 words)
- 2. to unplug or separate
- 3. a band that circles around a brake drum (2 words)

PARKING BRAKES II

ANSWER KEY

ACROSS:

- 4. FRAYED
- 5. RETAININGCLIP
- 6. STRUT

DOWN:

- 1. OXIDIZEDWIRE
- 2. DISCONNECT
- 3. BRAKEBANDS

O
 X D
 I I
 D S B
 I C F R A Y E D
 Z O A
 E N K
 D N E
 W E B
 I C A
 R E T A I N I N G C L I P
 E D
 S T R U T

LEARNING WORDS USED IN REPAIRING AIR CONDITIONING CONTROLS

INTRODUCTION

There are times when the mechanic will be required to repair air conditioning controls, especially in the warm months of the year when units are being used more frequently. In this unit you will learn the technical vocabulary related to repairing air conditioning controls.

PERFORMANCE OBJECTIVES

You will match 14 words used in repairing air conditioning controls with their definitions. Your teacher will provide a list of words and definitions. You should match at least 11 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

-
6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

-
4. USE the Answer Key on the back of the activity page when needed.

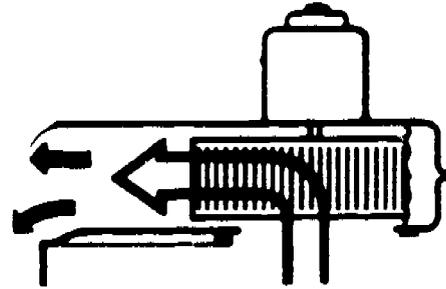
CROSSWORD

1. USE this activity after the vocabulary words in this unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

AIR CONDITIONING CONTROLS

deflected
(de flect ed)

curved, changed, or bent
from the original shape



diverted
(di vert ed)

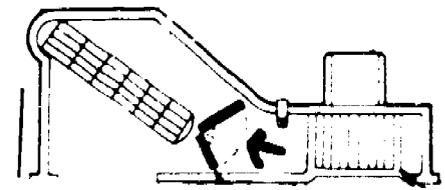
turned aside



double action
(dou ble ac tion)

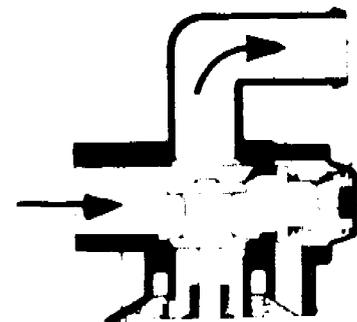
controls air flow between
several ducts

vacuum door
(vac u um door)



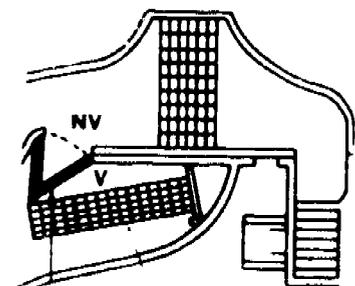
heater control
(heat er con trol)
valve
(valve)

valve that controls the
flow of coolant through
the heater core



mode doors
(mode doors)

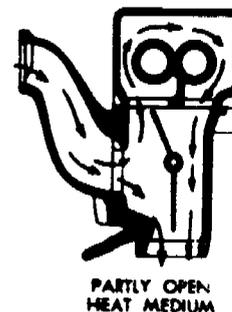
valve that selects between
heater and air conditioning



AIR CONDITIONING CONTROLS

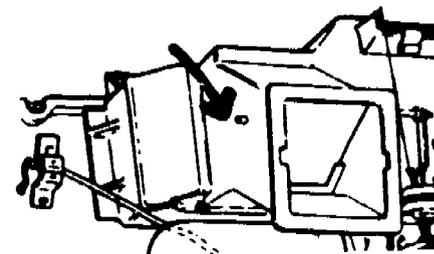
partial
(par tial)

not complete



plenum
(ple num)

a chamber that collects
air under pressure inside
vehicle duct



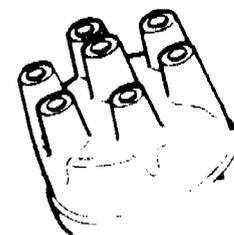
pneumatic
(pneu mat ic)

operated by air



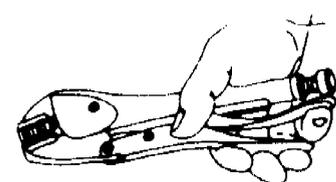
ports
(ports)

small openings in engine
manifold and heads



posi-grip
(pos i-grip)

positive grip or sure grip

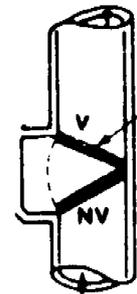


AIR CONDITIONING CONTROLS

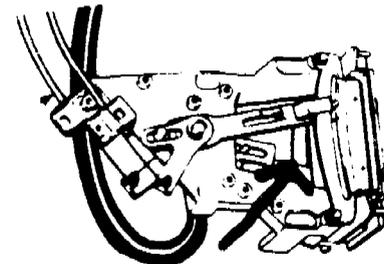
refrigerant a liquid that turns into
 (re frig er ant) vapor at a low temperature



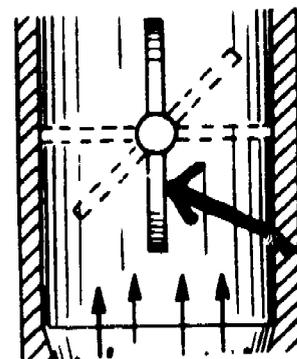
temperature door controls air flow in ducts
 (tem per a ture door)



vacuum control controls the opening and
 (vac u um con trol) closing of the doors
 device
 (de vice)



valve a device that will open
 (valve) or close an opening



AIR CONDITIONING CONTROLS

T E M P E R A T U R E D O O R I G I F E
 L C K L X J D K N N P T F K S X M S Q I
 T H Z S Z Q F V A L V E W O H S S I F Q
 J S Y D D R O C F X D E N F R W J O U O
 D I V E R T E D R F U N G J P R X S Z W
 R E F R I G E R A N T F S T S J V T N L
 V A C U U M P O T L Y L D S F I D K R D
 M O D E D O O R S O C U C X P Y K H S F
 P N E U M A T I C V K T C M P L E N U M
 I Q H T Z P A G C W D J F R P H J N U T
 C Y C G M O B U C X V M P O R T S H W X
 U B A V K Y S V E H C Z B G Y Q D H E X
 Y W P P R H J V Z Q S N B T O B L A K R
 M M S U M I V P O S I G R I P X I P B
 A A I N U I J Y D N N J P P S S V A F X
 J N Q U L C Y I B A N R U F K B Q C H A
 V Y C O Z J P X W H E H N J P W B M P K
 T U V D X P U L I R X L H O P H B Y C E
 O D E F L E C T E D P A R T I A L L K C

Can you find these words?

TEMPERATURE DOOR
 PNEUMATIC
 POSI-GRIP
 PLENUM

REFRIGERANT
 MODE DOORS
 DIVERTED
 VALVE

VACUUM POT
 DEFLECTED
 PARTIAL
 PORTS

ACROSS

AIR CONDITIONING CONTROLS

A P L U K N W S Z R L G M K Y Z K Z C
 B N I F Z P D I V E R T E D G Z Y Q W
 R E F R I G E R A N T W < X M L S R F
 L U G D E F L E C T E D N E X P U I S
 W M L O S T B E U J M O D E D O O R S
 O A V Q V Z J Y U T P O S I G R I P D
 P T A H C G C V M V E N B L P T C L H
 C I H I C Y X H P A R T I A L S A N Z
 Y C X X X A R D O L A M P E E N F Z H
 W C O A H N U P T V T T G L N K E N I
 J T D M C C I Y P E U A Z O U C X C P
 B M S L J Q V L J K R H D A M Y M A D
 U K G V V J W K X D E D C O P R Q G H
 C U U G E R W X M L D O Y L R C U U J
 S X Z F W X I M U C O X E J C A Z E D
 L N G F Q Q K L X Q O L O L D T P Q X
 A P V W R D L G C F R Q H K I V R D U

Can you find these words?

TEMPERATURE	DOOR	REFRIGERANT	VACUUM POT
PNEUMATIC		MODE DOORS	DEFLECTED
POSI-GRIP		DIVERTED	PARTIAL
PLENUM		VALVE	PORTS

ACROSS/DOWN

AIR CONDITIONING CONTROLS

ANSWER KEY

. P

. N D I V E R T E D

R E F R I G E R A N T

. U . D E F L E C T E D . . . P . . .

. M U . M O D E D O O R S

. A U . P O S I G R I P .

. T M V E . . . P T . . .

. I P A R T I A L S . . .

. C O L A . . . E . . .

. T V T . . . N . . .

. E U . . . U . . .

. R . . . M . . .

. E

. D

. O

. O

. R

AIR CONDITIONING CONTROLS

S E Z W Q B G G P U J D A U R S H I G Z K
 F K J P K E N I J A C Y U O Q F A C S C Q
 A D D I V E R T E D C P H D N H V C U Y N
 M W J L G G E B P E A G F T S A E B Q U K
 M E A M I A F H T I A L O T M K O H S C Q
 W V W S X V R I F A O P R M D P J U Z K L
 D U O G H K I T R M M O D E D O O R S L J
 X P I Y F B G M T U P W T B W J L J W R L
 T P O I H E E H U E C C A I G A N E Q P A
 K S S E Y M R C N Y E Y S G C T G G N B F
 X X R I Y V A E C L K E K M I C W N X Q H
 O I M Y L V N I F V M N S M Q S G L K O S
 V J F I J R T E M P E R A T U R E D O O R
 Q U F T J A D U D L W C E Y B U L B P X Q
 T E T M M H N J C N I O X Z A R A G W L B
 V R L U K E K H W E T A D V T O O N C Y S
 P Z E E L B T G Z M A W H I M N C S L Q P
 F N G P N F E B L Z F T R I I V Q O N A C
 P A R T I A L P W D E S N I D U C X G K D

Can you find these words?

TEMPERATURE	DOOR	REFRIGERANT	VACUUM POT
PNEUMATIC		MODE DOORS	DEFLECTED
POSI-GRIP		DIVERTED	PARTIAL
PLENUM		VALVE	PORTS

ACROSS/DOWN/DIAGONAL

AIR CONDITIONING CONTROLS

ANSWER KEY

. P
. E . I
. . D I V E R T E D
. . . L . G E T S
. . A . I . F O T
. V . S . . R P R . D
. . O . . . I . . . M O D E D O O R S . .
. P G . . U P . T
. E . U . . C
. R C . . E
. A . C L
. V N I F
. T E M P E R A T U R E D O O R
. A D U
. . . . M . N
. . . U . E
. . E . L
. N . P
P A R T I A L

AIR CONDITIONING I

XX																				
XX																				
XX	1	XX	2						XX	XX	XX									
XX							XX	XX	XX											
XX	3	XX	XX		XX			XX												
XX		XX	XX		XX			XX												
XX		XX	XX		XX			XX												
XX	XX	XX	XX	XX	XX	4										XX	XX	XX	XX	XX
XX		XX	XX		XX			XX												
XX		XX	XX		XX			XX												
XX		XX	XX		XX			XX												
XX		XX	XX		XX			XX												
XX	XX	XX	XX	5					XX		XX									
XX		XX																		
XX		XX																		
XX																				
XX																				

ACROSS:

DOWN:

- | | |
|--|---|
| <p>2. a chamber that collects air or gas under pressure inside vehicle duct</p> <p>4. curved, changed, or bent</p> <p>5. openings in the engine manifold and heads</p> | <p>1. changed or turned aside</p> <p>2. not completed</p> <p>3. operated by air</p> |
|--|---|

AIR CONDITIONING I

ANSWER KEY

ACROSS:

DOWN:

- 2. PLENUM
- 4. DEFLECTED
- 5. PORTS

- 1. DIVERTED
- 2. PARTIAL
- 3. PNEUMATIC

D P L E N U M

P I A

N V R

D E F L E C T E D

U R I

M T A

A E L

P O R T S D

I

C

678

AIR CONDITIONING II

XX	XX	1		2				XX													
XX	XX							XX													
XX	XX	XX	XX		XX																
XX	XX	XX	XX		XX																
XX	XX	XX	XX		XX																
XX	3								XX												
XX	XX	XX	XX		XX																
XX	XX	XX	XX		XX	XX	XX	4	XX												
XX	XX	XX	XX		XX	XX	XX		XX												
XX	XX	XX	XX		XX	XX	XX		XX												
XX	XX	XX	XX		XX	XX	XX		XX												
XX	XX	XX	XX		XX	XX	XX		XX												
XX	XX	XX	XX	5																XX	XX
XX	XX	XX	XX																	XX	XX

ACROSS:

DOWN:

- | | |
|---|---|
| <p>1. openings in engine manifold and heads</p> <p>3. POSITIVE grip or sure grip (-)</p> <p>5. controls air flow in ducts (2 words)</p> | <p>2. a liquid that turns into vapor at a low temperature</p> <p>4. a device that will open or close an opening</p> |
|---|---|

AIR CONDITIONING II

ANSWER KEY

ACROSS:

- 1. PORTS
- 3. POSIGRIP
- 5. TEMPERATUREDOOR

DOWN:

- 2. REFRIGERANT
- 4. VALVE

P O R T S

E

F

R

P O S I G R I P

G

E V

R A

A L

N V

T E M P E R A T U R E D O O R

LEARNING WORDS USED IN REPLACING HEATER CORE AND HOSES

INTRODUCTION

There are times when the mechanic will be required to replace heater cores and hoses, especially during the cold months when heaters are used more often. In this unit you will learn the technical vocabulary related to replacing heater cores and hoses.

PERFORMANCE OBJECTIVES

You will match 8 words used in replacing heater cores and hoses with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

-
6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
 7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
 8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
 9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
 10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
 11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
 12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
 13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
 2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
 3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
-

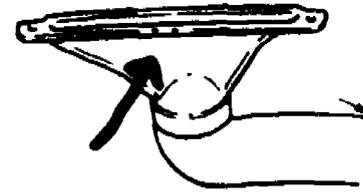
-
4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

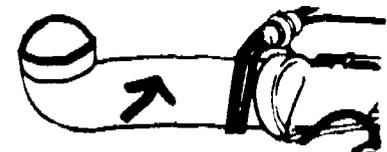
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

HEATER CORE AND HOSES

defroster hose hose that brings air to
(de frost er hose) the windshield vents



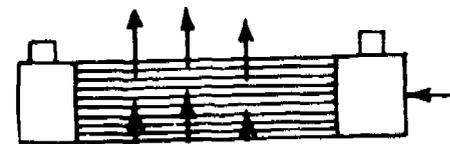
duct large tube that carries
(duct) air



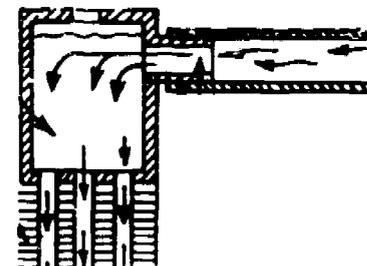
fins the plates on the outside
(fins) of the heater core to
transfer heat to the air



heater core unit through which hot
(heat er core) water flows

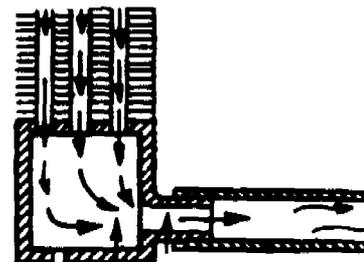


inlet tube brings hot water into
(in let tubes) heater core



HEATER CORE AND HOSES

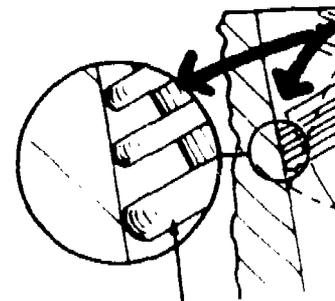
outlet tubes
(out let tubes) brings water back to
the cooling system



solder
(sol der) to join metal with soft
metal alloy that melts at
a low temperature



vicinity
(vi cin i ty) within a specified area
or location



HEATER CORE AND HOSES

D E F R O S T E R H O S E L E D
 S K P N Z K S F X U K P O R E N
 Z Z Q I I F I N S Z K L C E I J
 E A W Q T E Z L T L G C A K M O
 O V V I C I N I T Y L T I F X B
 G S V X M U B B C I M Y I F E T
 L I N L E T T U B E S I Q C K E
 M G D Q V W Y K J A P Z D X J S
 P S L W C C M K O A E R E G U F
 G F V E P H A Y J B A J I M A W
 B L K D U C T Y N V C C Y W F F
 O U T L E T T U B E S G T T J Q
 R A B W Z D Z T Q N T K Z O N O
 S Y I N K D Q X P Y X M A U C F
 B O V S L Y Y U R L D Z N X F H
 S S G O H A J Q V Q G K Y I D P
 O V T K X S W U Z F Y D I N O M
 W J I S Q F V H F R A P Y O E P
 H E A T E R C O R E S O L D E R

Can you find these words?

DEFROSTER HOSE
 HEATER CORE
 FINS

OUTLET TUBES
 VICINITY
 DUCT

INLET TUBES
 SOLDER

ACROSS

HEATER CORE AND HOSES

ANSWER KEY

D E F R O S T E R H O S E . . .

.

. F I N S

.

. . V I C I N I T Y

.

. I N L E T T U B E S

.

.

.

. . . D U C T

O U T L E T T U B E S

.

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H E A T E R C O R E S O L D E R

HEATER CORE AND HOSES

L W R D F B W L V Y B J D L R R C
 Q F V B S M O F I N S T Y U Z F E
 G M O T E V L Y C U S W X T V E I
 G U Y W J G B O I E C B T I X C M
 W J E P E C S E N T J U D N P N M
 Z A A I I E P D I T D U H O F U X
 A T I P Q B O U T L E T T U B E S
 V R H B K U Y C Y Y F E Y C K Q J
 B Z V Q Z C D T W T R Z I R M Z U
 X D I G H R J C C Y O J R Q N Y N
 B I N L E T T U B E S L W K L H Q
 N Q X I A R U J S O T P F F W U W
 K D Q Q T K K H R V E L G Q H O M
 S O L D E R I G S E R L G N W F H
 V W N G R D S A F Z H N W Z O S F
 Z G S G C U D M B B O U C S A L J
 H Z N S O Z H L S Q S O Y D T E G
 C S C D R V H Q P E E W O Y R H I
 F K Q D E Y N E X I L Y S S U N R

Can you find these words?

DEFROSTER HOSE
 HEATER CORE
 FINS

OUTLET TUBES
 VICINITY
 DUCT

INLET TUBES
 SOLDER

ACROSS/DOWN

HEATER CORE AND HOSES

ANSWER KEY

. V
. F I N S
. C
. I
. N
. D I . D
. O U T L E T T U B E S
. C Y . F
. T . . R
. . . . H O
. I N L E T T U B E S
. . . . A T
. . . . T E
S O L D E R R
. . . . R H
. . . . C O
. . . . O S
. . . . R E
. . . . E

HEATER CORE AND HOSES

K B D T L W P C U G K O K S I O I S
 L Q R W A S O N N Q Z O Y B S C E O
 H E A T E R C O R E E A Y U T B P H
 P O Q X Z A R D U D X G B C U E X M
 Y R W T B F Z Y A T I I U T X I W Z
 N N Y D F P A Q L R L D T H O E Z J
 G W Q T B T M S O L D E R X I H Z V
 X P I E U V P K I R L F T R V T H L
 J P L H V X K P V N H R I T I S E I
 Z Q S K I Z P F I N S O X B U D P G
 N Z R Z Y A R T C D N S O T O B X R
 J U T I J X Y T I Y S T J X S P E W
 U N J B F X B M N Y K E H M J I C S
 C H F Q J K P J I O P R F C U M Q U
 S U O Q R U B W T U K H Z Q P G X F
 H N L J N H B N Y I L O K V Z J S T
 A E E U U Y T H N X G S T F K K D H
 K J Z F N O N X W W I E V H J L M X

Can you find these words?

DEFROSTER HOSE
 HEATER CORE
 FINS

OUTLET TUBES
 VICINITY
 DUCT

INLET TUBES
 SOLDER

ACROSS/DOWN/DIAGONAL

HEATER CORE AND HOSES

ANSWER KEY

. S
. E .
H E A T E R C O R E T B . .
. U C U . . .
. T . . U T
. L D T
. S O L D E R
. L F T
. V N . R . T
. F I N S O . . U
. C . . S . . . B . . .
. I . . T E . .
. N . . E S
. I . . R
. T . . H
. Y . . O
. S
. E

HEATER CORE AND HOSES

XX																				
XX																				
XX	1	XX	XX	XX	XX	XX	2	XX												
XX		XX	XX	XX	XX	XX		XX												
XX	3										XX		XX							
XX																				
XX		XX	XX	XX	XX	XX		XX	XX	XX	XX		XX							
XX		XX	XX	XX	XX	XX		XX	XX	5	XX		XX							
XX		XX	XX	XX	XX	XX		XX	XX		XX		XX							
XX		XX	XX	XX	XX	6													XX	XX
XX		XX	XX	XX	XX	XX		XX	XX		XX									
XX		XX	XX	XX	XX	XX		XX	XX		XX									
XX		XX	XX	XX	XX	XX		XX	XX		XX									
XX		XX	XX	XX	XX	XX		XX	XX		XX									
XX		XX	XX		XX															
XX		XX																		
XX		XX																		
XX																				
XX																				

ACROSS:

DOWN:

- 3. lets hot water in (2 words)
- 6. joins duct work to wind shield duct (2 words)

- 1. within a specified area or location
- 2. lets water out to the cooling system (2 words)
- 4. vent
- 5. to join or patch with soft metal

HEATER CORE AND HOSES

ANSWER KEY

ACROSS:

- 3. INLETTUBES
- 6. DEFROSTERHOSE

DOWN:

- 1. VICINITY
- 2. OUTLETTUBES
- 4. DUCT
- 5. SOLDER

V O

I N L E T T U B E S D

C T U

I L S C

N D E F R O S T E R H O S E

I T L

T T D

Y U E

 B R

 E

 S