Preventative Maintenance & Troubleshooting

Chapter #13

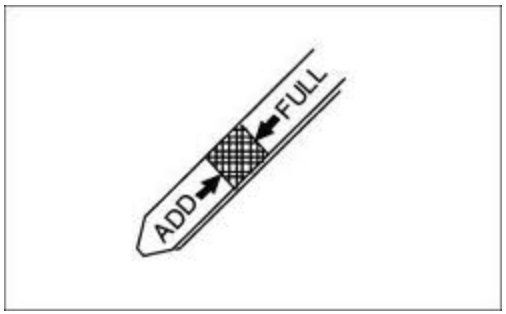
Preventative maintenance

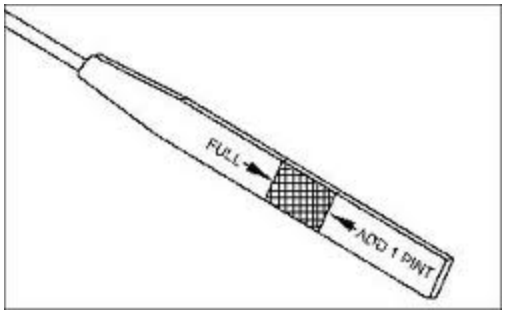
- Engine cleaning
  - Remove shroud
  - Dirt and oil will insulate crankcase and prevent heat transfer

Checking Engine Oil Level and Condition

- Do not overfill
- If level drops at an excess rate

  Find out why
- Change every 10-50 hrs., check service info





Changing Oil

- Use evacuator

- Drain oil, Change filter (if applicable) oiling O-ring, refill, run engine for a minute, recheck level… easy…

- Lubricating Cables and Linkage

- $7.00 TOOL

- Spark Plug Service

Material covered in a previous chapter

Air Cleaner Service

- Paper unit – replace
- Foam unit -
  - Wash unit in liquid detergent
  - Wrap in cloth and squeeze dry
  - Saturate in clean oil
  - Squeeze out excess oil

Crankcase Breather Service

- Remove, inspect, & clean
- Replaced damaged gasket
  - If needed

Muffler

- 1/3 heat transferred by exhaust
- Replace if needed
- Do not modify

Battery Service

- Clean terminal and cable ends
- Check fluid level – add distilled water (if needed)
- Check capacity/condition/life

Pressurized Liquid Cooling System Service

- ❑50/50 – coolant/water(distilled)
- ❑Change every 2-3 years, check service info
- ❑Check strength with a hydrometer

Storing engine

- Thorough cleaning
- Fog engine or put several teaspoons of oil (Marvels) in cylinder
- Fuel – stabilizer or drain, run dry of fuel
- Change oil
- Throttle off & choke closed
- Clean or replace plug
- Clean air filter
- Outboard make sure all water is removed from engine or it may freeze and crack casting
- Change gear lube

Check Easiest Things First

- Proper carburetion
- Proper ignition
- Adequate lubrication
- Sufficient cooling
- Proper Compression – 30-45 psi for starting & min. 90 psi for efficient operation and sufficient power

Check RPM

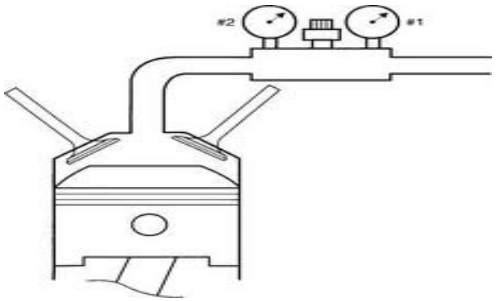
- Mechanical tachometer
- Digital tachometer
- Optical

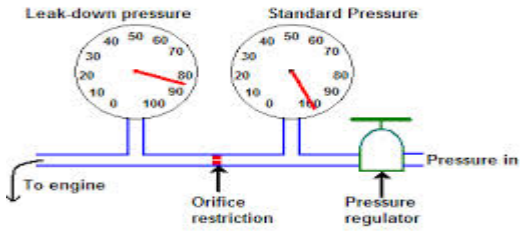
Testing Compression

- Engine must be warm
- Open choke and throttle wide open
- Remove air cleaner
- Remove plug and insert compression gauge
- Crank engine as fast as possible, a minimum of four revolutions

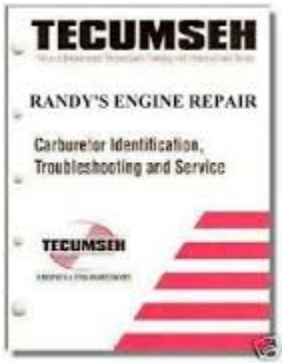
Leak-down Test

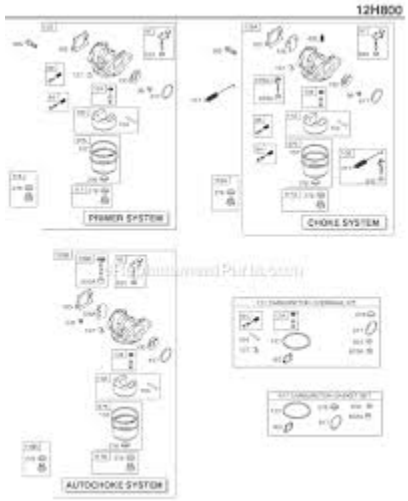
- Warm engine
- Remove plug, piston TDC compression stroke, both valves closed
- Install holding fixture, prevent crank from turning
- Install adapted in plug hole
- Shop air at least 90lbs
- Adjust regulator gauge to 80lbs
- Cylinder pressure gauge reads 60lbs or above = OK
- Listening for sound of escape air can pinpoint problem area





Service Information





Engine Identification

- Vertical or Horizontal crankshaft
- # cylinders
- Model #
- Serial #
- Manual or electric start
- Carb type

Engine Troubleshooting Chart

- Textbook pages 259 – 261
  - Tables 13-31thru 13-33

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