

## Ch. 15

# Engine Inspection, Disassembly, and Cylinder Reconditioning

# Working on Engines

Safety glasses on eyes(not head)

Well-lighted area

Oily rags placed in flameproof containers

Mounted on engine stand

Use good judgement when working on engines

# Engine Inspection

Good practice to look for causes of engine problems before removing engine

Disconnect wires

Make flags to identify mating parts/  
wires(3 & 3)

## Engine Disassembly

1. Remove spark plug first, don't touch blades or driven parts until spark removed
2. Remove engine
3. The starter unit can be unbolted (pulley-rope starter)



4. Exhaust manifold and muffler can be taken off next
5. Carburetor and intake manifold pipe can also be removed (take picture of carburetor and linkage locations)
6. Remove tank and disconnect fuel line



# Organizing the Job

Saves time and effort

Set aside in groups

Magneto, flywheel shroud, and starter parts should be in group

Carburetor, fuel tank, and exhaust manifold in another

Outside surfaces should be cleaned

Inside surfaces should be scraped/brushed off before cleaning fluids

## Cylinder Reconditioning



consists of inspection, measurement, reboring,  
and honing of cylinder

# Cylinder Inspection

Piston must be removed from the top of the cylinder in the integral cylinder block

1. remove cylinder head
2. Take crankcase cover off from side.
3. Push piston out of top of cylinder

Inspect cylinder block (areas of scuffing, scoring on walls)

Check for nicks or grooves in gasket surfaces

Examine head bolt holes, spark plug holes for damaged or stripped threads

# Worn Cylinder

Narrow, unworn ridge at top

Bottom of ridge indicates extent of top piston ring travel

Wear will be greatest 90 degrees from crankshaft centerline

Wears out as an oval shape

Gradual taper toward bottom of ring travel

Below ring travel is no wear

# Cylinder Measurement

Finding amount of cylinder taper is crucial for determining cylinder taper

1st. Measure cylinder diameter below ring travel

2nd. Measure it below ring ridge

Difference between two is accurate amount of cylinder taper

Taper measurements should be taken at both parallel and at right angles to the crankshaft to determine greatest amount of wear and out-of-roundness

## Out-of-Roundness

limited to .005" or .006"

After this engine performance is greatly reduced

How to measure cylinder?

Telescoping Gauge

Transfer to

Micrometer or Caliper

# Cylinder Service

Needs are determined by cylinder condition

If bore is not damaged, and taper, out-of-roundness are within specifications, only a light deglazing is needed

Fine emery cloth will work

## Reboring the Cylinder

Chrome-plated aluminum cylinders should be thrown away, replaced with new cylinder

Cast-in sleeve or solid cast iron cylinder's can be rebored to a larger size

## 2 Problems When Reboring

1. Resize and maintain original alignment, while producing a round, straight bore
2. Produce the correct cylinder wall finish

# Reboring

Cylinders rebored in .010" steps

1st time-diameter will be  
increased .010" over standard size

Replace pistons, order .010" over  
standard size to match the new  
cylinder bore

## Boring Machine

electric spindle drives the spindle to rotate the cutter

The feed rate controls the distance the cutter advances into the bore

Boring the cylinder will produce a straight, round bore

Does not produce satisfactory surface finish (leave .0025" of stock for finish honing)

## Honing the Cylinder

Abrasive (finishing) process that removes the boring tool marks and surface fractures

## Honing

Also produces the cylinder wall finish

After re boring and honing, use fine emery cloth to remove any burrs

Apply light coat of SAE 10 oil

