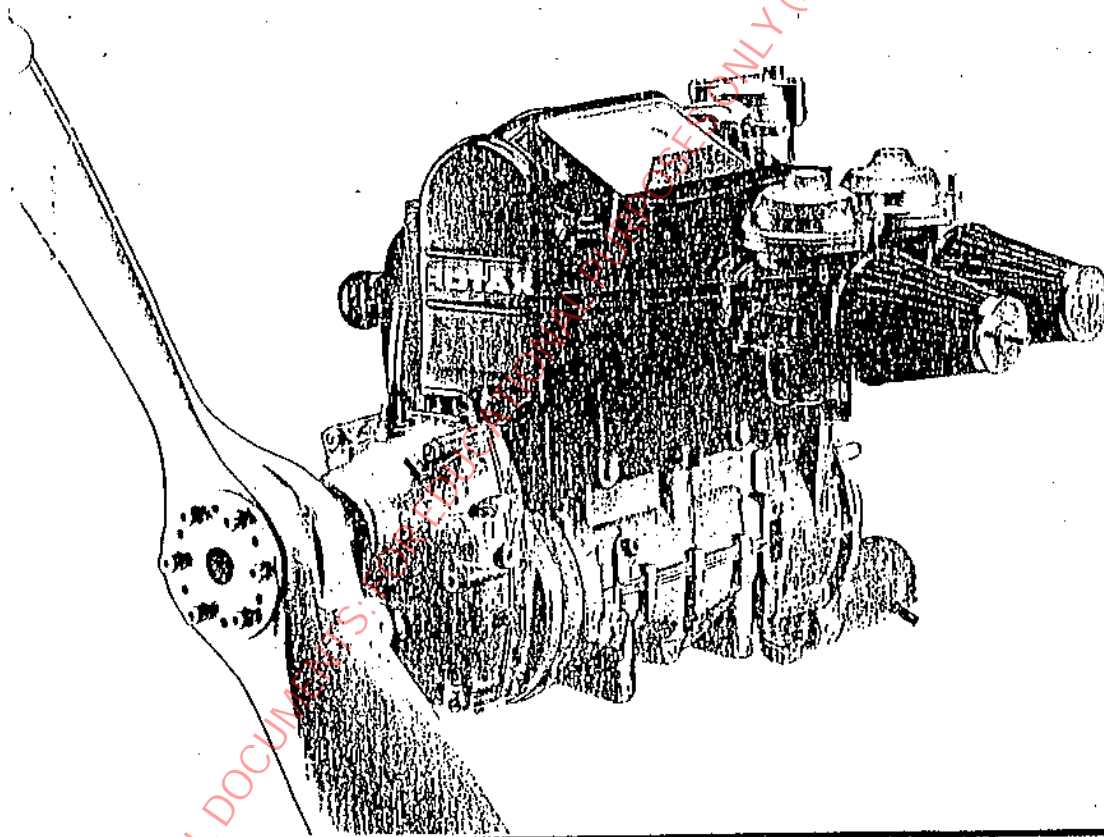


REPAIR
MANUAL FOR
ROTAX - ENGINE
TYPE 508 UL



HISTORICAL DOCUMENTS

ONLY (Engine number in production, information may be outdated!)

- | | |
|---|---|
| 1. Oil return line | 18. Elastic stop nut M10 x 1.5 |
| 2. Clamp | 19. Muffler |
| 3. Rotax engine 508 | 20. Push nut (2) |
| 4. Stud M10 x 42/22.5 (4) | 21. Cup (4) |
| 5. Distance sleeve (4) | 22. Spring (4) |
| 6. Medium strength threadlocker Loctite 242 | 23. Cup (4) |
| 7. Oil outlet line | 24. Exhaust grommet |
| 8. Elastic stop nut M6 | 25. Bushing (2) |
| 9. Ground cable | 26. Muffler clamp (2) |
| 10. Tooth washer | 27. Hexagonal head screw M8 x 1.25 x 80 |
| 11. Bolt M6 x 20 | 28. Clamp (3) |
| 12. Engine bracket | 29. Hose |
| 13. Flat washer 10.5 mm x 21 x 2 (4) | 30. Male ball joint |
| 14. Lock washer 10 mm | 31. Connector pipe |
| 15. Nut M10 | 32. Spring (4) |
| 16. Rubber mount (4) | 33. Elbow |
| 17. Washer (4) | |

REMOVAL FROM CRAFT

Remove or disconnect the following then lift engine from craft.

- ground cable from battery then from engine bracket
- muffler, connector pipe and elbow
- console and intake panels
- impulse line, carburetor from its flange
- disconnect starter wires
- disconnect wires from magneto, oil pressure and temperature switches
- disconnect oil return line and plug it
- disconnect oil outlet line from engine and plug both fitting and hose
- unscrew nuts retaining engine support to frame
- remove engine from right hand side

ASSEMBLY

4,6,12,15, Stud, threadlocker, engine bracket & nut

Install engine on its bracket with intake manifold on same side of ground cable fixing hole.

Apply medium strength threadlocker Loctite 242 on stud nuts then torque to 35 N•m (26 lbf•ft).

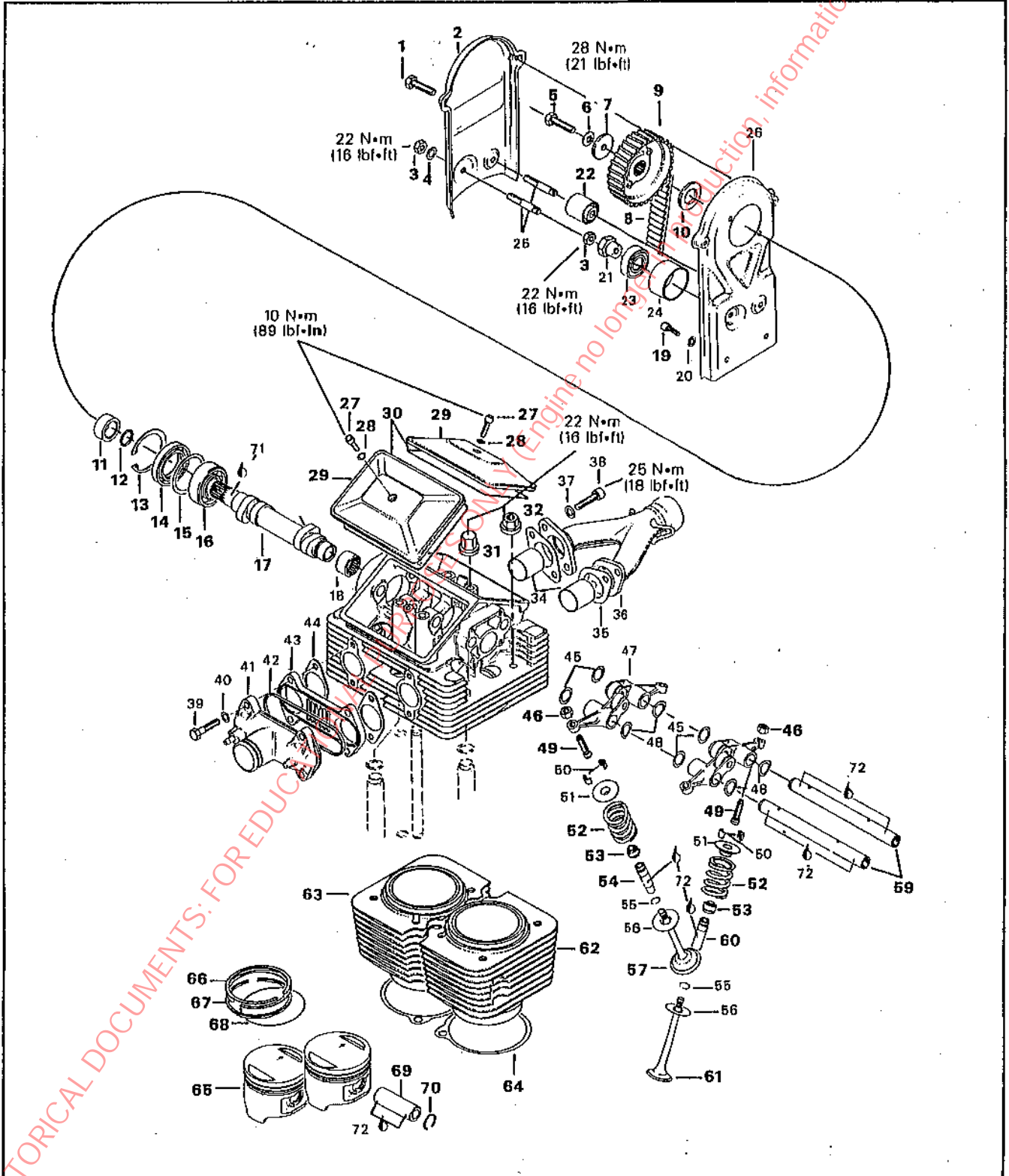
Torque nuts retaining engine support to 38 N•m (28 lbf•ft).

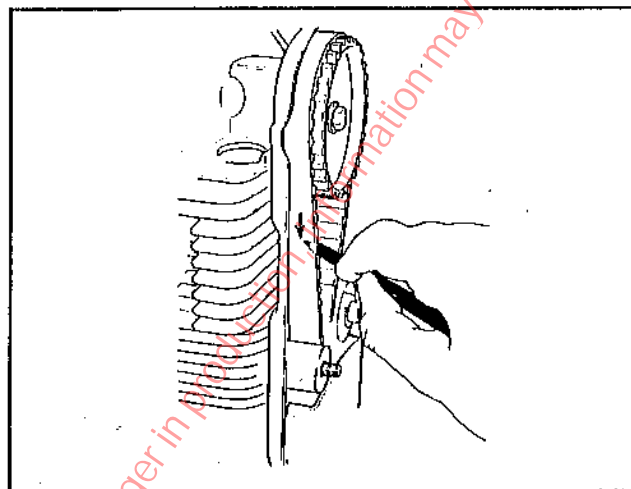
INSTALLATION ON CRAFT

To install engine on craft, reverse removal procedure. However, pay attention to the following:

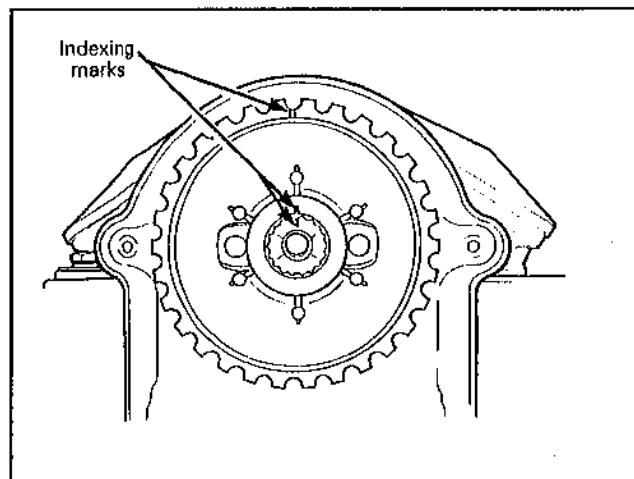
- Check tightness of engine mount nuts.
- Check pulley alignment and drive belt tension.
- Should a slight exhaust leak be experienced at muffler ball joint, Dow corning sealer #763 RTV can be used. However after some hours of use, carbon deposits should seal joint.

TOP END





Remove guide pulley then slip timing belt off timing pulley. If too tight slacken (clockwise) tensioner eccentric after unlocking hexagonal nut. Remove timing pulley, note indexing marks. Remove thrust washer. Unscrew socket head screws retaining timing belt housing to cylinder head.



Remove both cylinder cowls.

27,28,29,31,32, Screw, gasket ring, valve cover & nut

Remove valve covers. Unscrew all cylinder nuts then lift cylinder head.

1,2,3,4, Taptite screw, timing belt cover, nut & lock washer

Unfasten timing belt cover.

5,6,7,8,9,10,19,22, Screw, spring washer, washer, thrust washer, timing belt, timing pulley, tensioner eccentric, socket head screw & guide pulley

Remove screw, spring washer and washer.

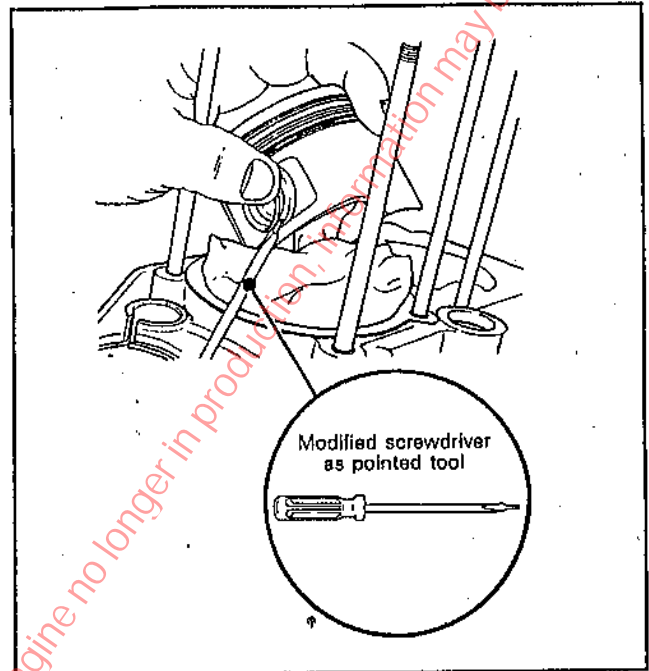
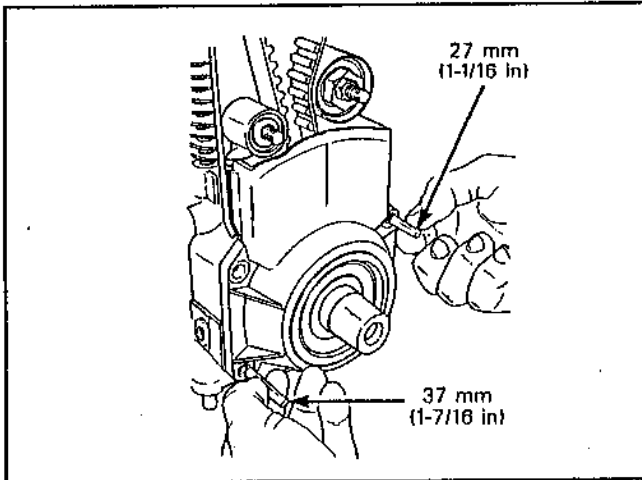
Mark timing belt direction of rotation.

HISTORICAL DOCUMENTS FOR EDUCATIONAL PURPOSES ONLY (Engineering information may be outdated!)

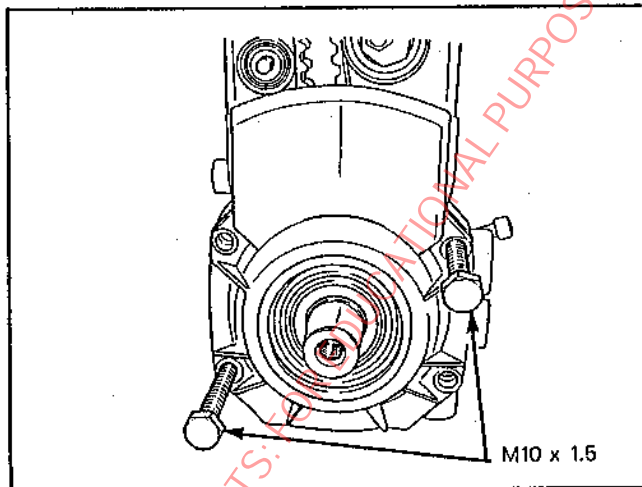
65,69,70, Piston, piston pin & circlip

To gain access to circlip, remove either fan housing (see section 02-13 "Cooling system") or timing belt housing. To remove timing belt housing:

- remove four screws on PTO side bearing housing and insert two pins as illustrated.

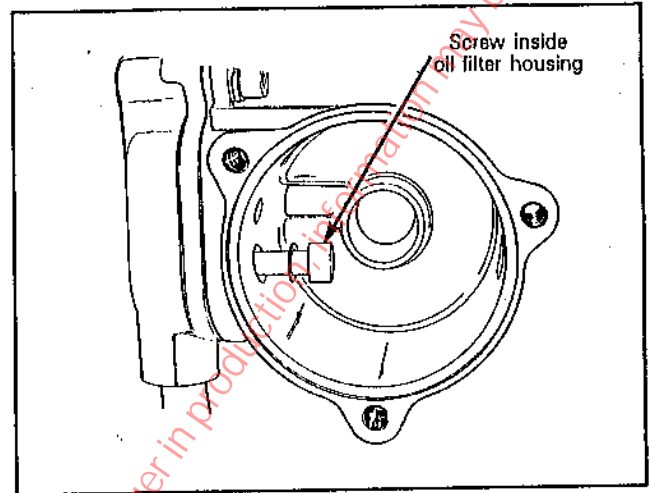


Turn two M10 x 1.5 screws alternately to remove bearing housing.



Remove timing belt housing. Place a clean cloth over crankcase then with a pointed tool inserted in piston notch, remove circlip from piston.

HISTORICAL DOCUMENTS: FOR INFORMATIONAL PURPOSES ONLY (Engine no longer in production. Information may be outdated!)



CLEANING

Discard all gaskets and O-rings.

Clean all metal components in a non-ferrous metal cleaner.

Scrape off carbon formation from cylinder head using a wire brush. Remove carbon on piston dome using a wooden spatula.

○ NOTE : An arrow on piston dome pointing exhaust side must be visible after cleaning.

Clean piston ring grooves with a groove cleaner or a piece of broken ring.

DISASSEMBLY

IMPORTANT : All parts must be reinstalled in their original location.

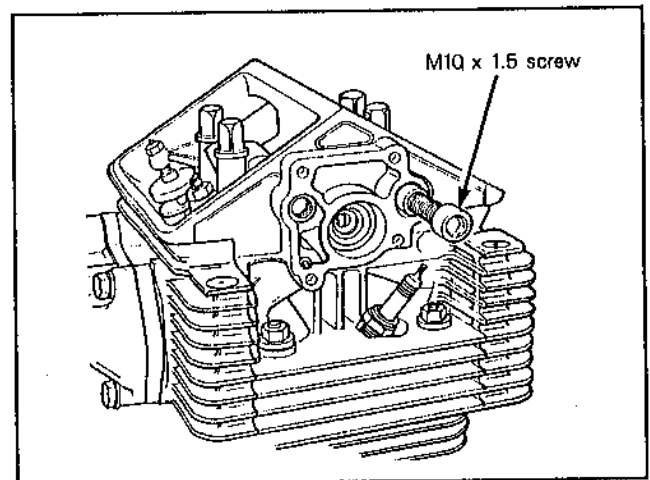
Remove four screws retaining oil filter housing and oil pump housing. One screw is located inside oil filter housing.

46,49, Nut & adjustment screw

Unlock nut then turn adjustment screw out for each valve to remove any tension on rocker shaft.

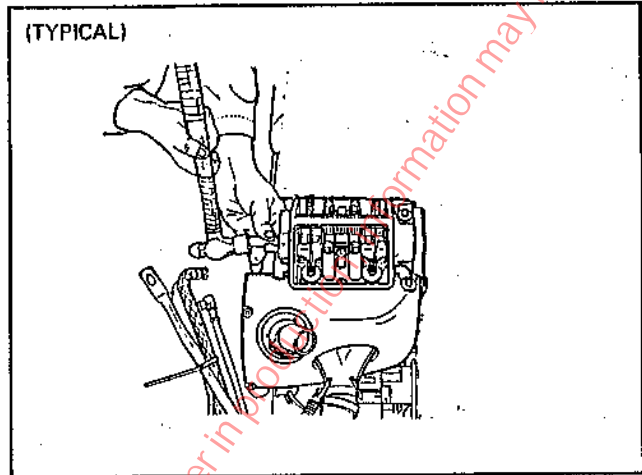
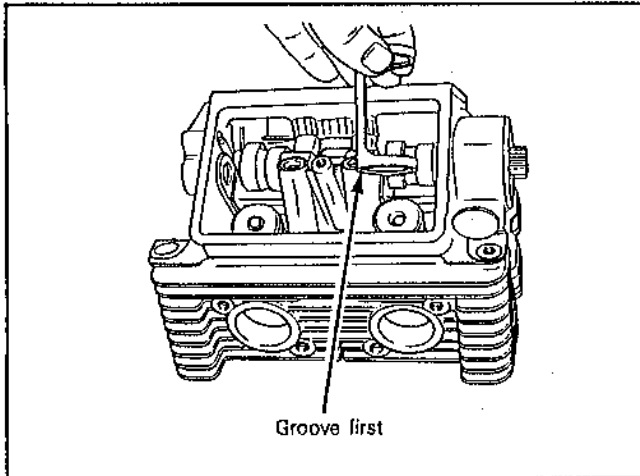
47,58,59, Rocker arm & rocker shaft

Extract rocker shaft using a M10 x 1.5 screw. Remove rocker arm and note position of all parts including wave washers for assembly.



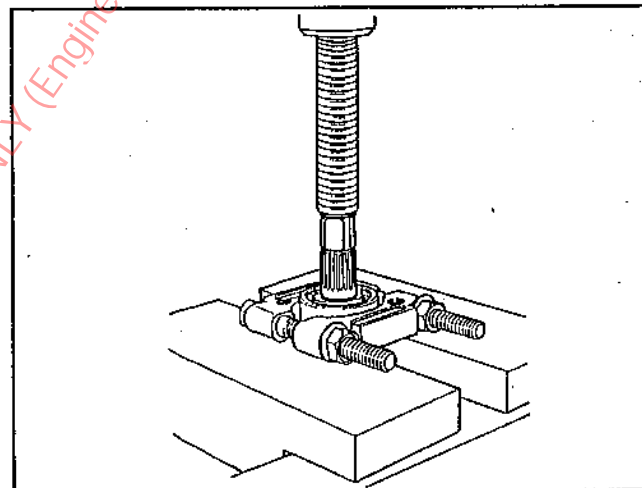
50,51,52,57,61, Valve cotter, valve spring retainer, valve spring & valve

Install valve spring pusher Part # 276 470 with its groove first on valve retainer and compress spring with a C-clamp spring compressor such as Snap-On YA4430.



16, Ball bearing

Press camshaft out of bearing.



53,54,60, Valve stem seal, valve guide

Do not remove valve guide unless necessary. To remove, use an appropriate pusher to drive valve guide out of cylinder head working from combustion chamber side. Valve stem seal will come with guide.

To replace valve stem seal, pry it from valve guide end.

11,12,13,14,15,17, Distance sleeve, o-ring, snap ring, oil seal, shim & camshaft

Remove distance sleeve, o-ring then snap-ring.

Tap on camshaft end on oil pump side using a punch of same diameter. Ball bearing and oil seal will go out with camshaft.

HISTORICAL DOCUMENTS: FOR EDUCATIONAL PURPOSES ONLY (Engine no longer in production. Information may be outdated!)

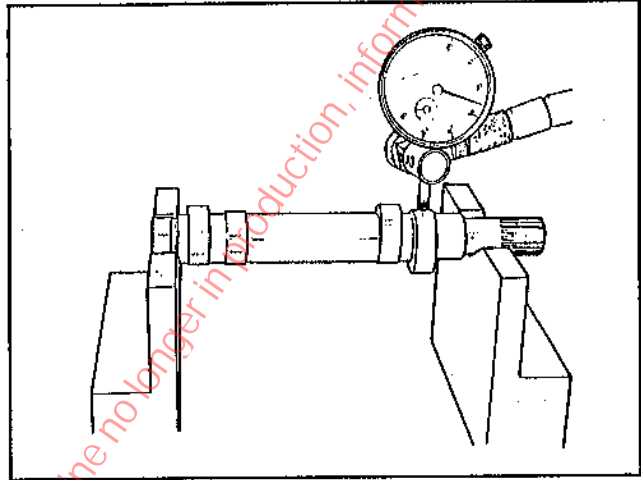
INSPECTION

Inspection of engine top end should include the following measurements :

MEASUREMENTS		TOLERANCES mm (in)		WEAR LIMIT mm (in)
		NEW PARTS		
		(Min.)	(Max.)	
Camshaft lobe lift		5.734 (.226)	5.934 (.234)	—
Valve spring length		36.6 mm (1.441 in)		—
Valve stem / valve guide clearance	EX.	0.036 (.0014)	0.063 (.0025)	0.6 (.020)
	IN.	0.026 (.0010)	0.053 (.0021)	
Valve face contact width	EX.	1.5 (.059)	2.0 (.079)	—
	IN.	1.0 (.039)	1.5 (.059)	
Rocker arm inside dia.		14.05 (.5531)	14.068 (.5539)	—
Rocker arm shaft dia.		14.001 (.5512)	14.012 (.5517)	—
Cylinder head warpage		—	—	0.03 (.0012)
Cylinder diameter		71.0 (2.7953)	71.02 (2.7961)	71.10 (2.7992)
Cylinder taper		—	—	0.05 (.002)
Cylinder out of round		—	—	0.04 (.0016)
Piston / cylinder clearance		0.03 (.0012)	0.04 (.0016)	0.1 (.004)
Piston diameter	Red	70.96 (2.7937)	70.97 (2.7941)	70.90 (2.7913)
	Green	70.97 (2.7941)	70.98 (2.7945)	
Ring / groove clearance	1 st & 2 nd	0.03 (.0012)	0.05 (.0020)	—
	3 rd	0.01 (.0001)	0.03 (.0012)	
	1 st 2 nd 3 rd	0.3 (.012)	0.5 (.020)	

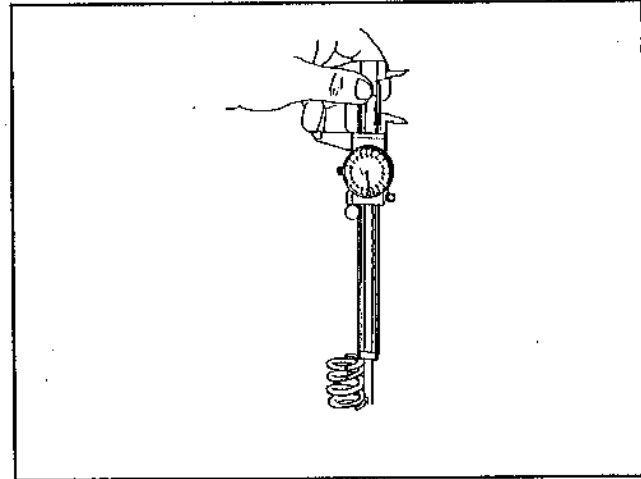
17, Camshaft

Check lobes for scratch and measure lift, it should be 5.734-5.934 mm (.226-.234 in) either on exhaust and intake.



52, Valve spring

Check spring length, it should be 36.6 mm (1.441 in).

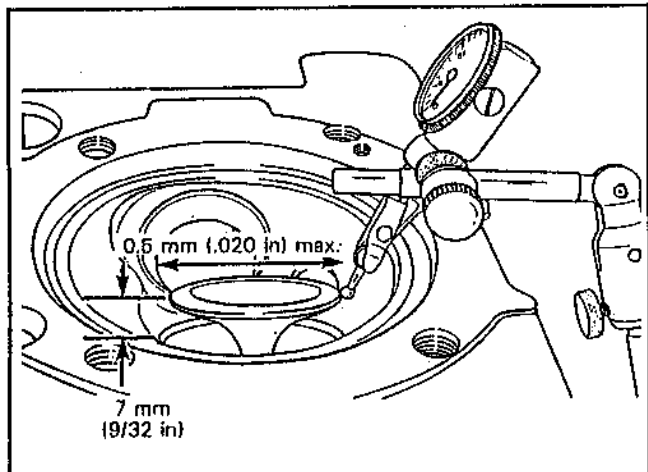


Spring rate is 50 N/mm (285 lbf/in).

HISTORICAL DOCUMENTS FOR EDUCATIONAL PURPOSES ONLY (Engine no longer in production, information may be outdated!)

54,57,60,61, Valve guide & valve

Check valve stem/guide clearance. With valve 7 mm (9/32 in) open, move valve in direction of largest clearance. Service limit is 0.5 mm (.020 in) measured at valve head.



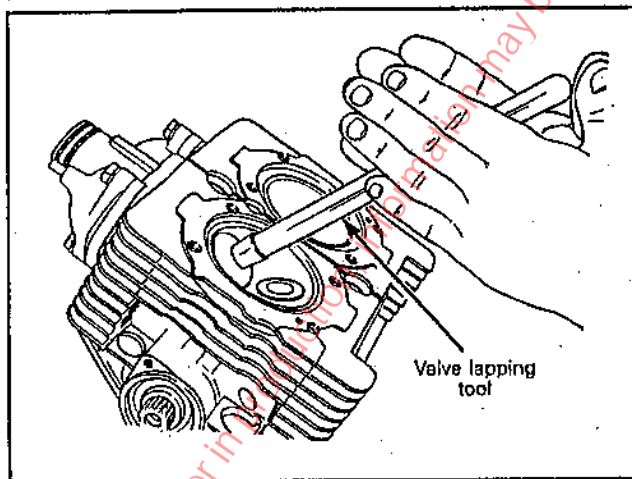
Using an appropriate hole gauge and a micrometer compare valve stem diameter and valve guide inside diameter.

VALVE STEM DIAMETER mm (in)		VALVE GUIDE INSIDE DIA. mm (in)
EXHAUST	INTAKE	EXHAUST & INTAKE
6.955-6.970 (.2738-.2744)	6.965-6.980 (.2742-.2748)	7.006-7.018 (.2758-.2763)

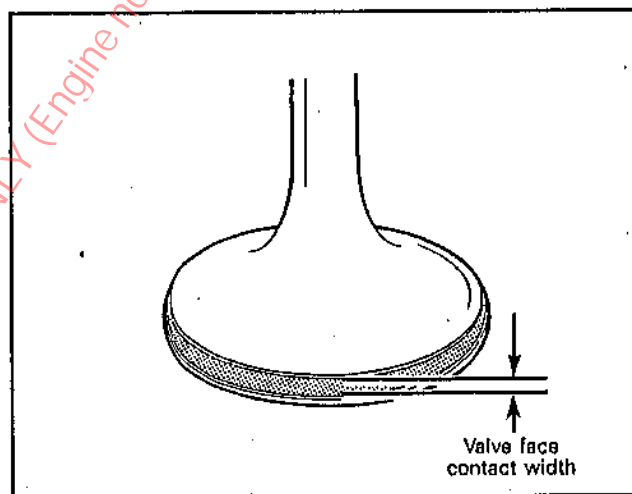
VALVE/GUIDE CLEARANCE mm (in)		
NEW PARTS		SERVICE LIMIT
EXHAUST	INTAKE	EXHAUST & INTAKE
0.036-0.063 (.0014-.0025)	0.026-0.053 (.0010-.0021)	0.5 (.020)

Valve face and seat

Apply some lapping compound to valve face and work valve on its seat with a lapping tool.



Measure valve face contact width. Note location of contact area, it should be in center of valve face.



VALVE FACE CONTACT WIDTH mm (in)	
EXHAUST	INTAKE
1.5-2.0 (.059-.079)	1.0-1.5 (.039-.059)

Refacing valves and valve seats

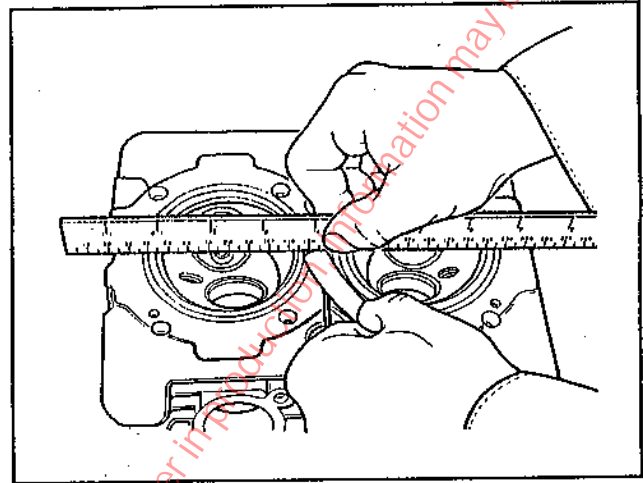
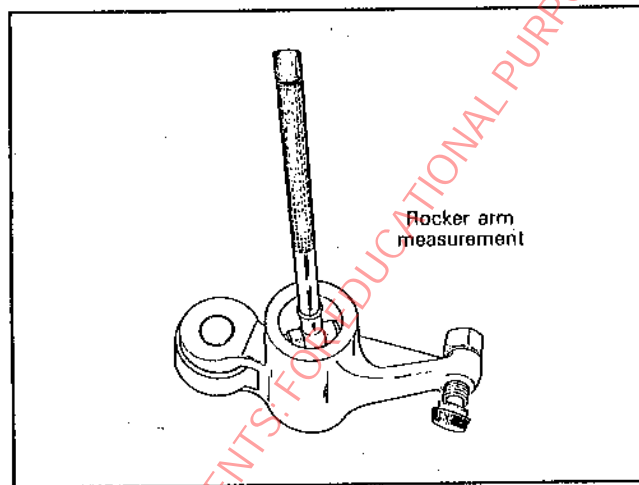
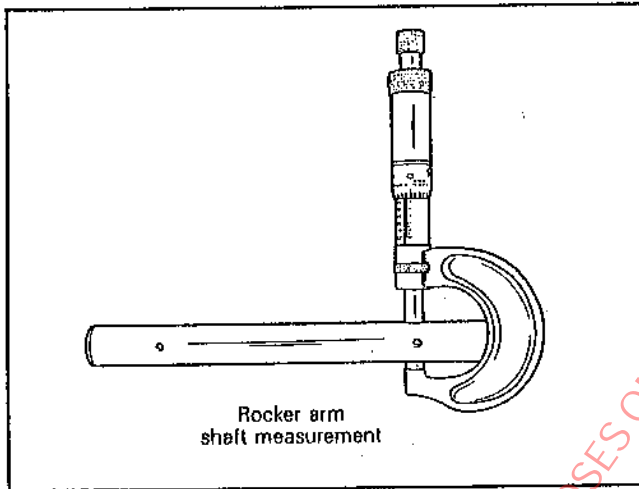
Refer to a specialized shop for refacing. Exhaust and intake valve seats and valve faces have a 45° angle. Measure valve margin after valves are refaced. Valves with less than 0.75 mm (.030 in) margin must be replaced.

HISTORICAL DOCUMENTS: FOR EDUCATIONAL PURPOSES ONLY (Engine no longer in production - may be outdated!)

47,58,59, Rocker arm & rocker arm shaft

Check for scored friction surfaces, if so, replace parts. Fit parts together and check for excessive play. Exact clearance can be determined by measuring both parts.

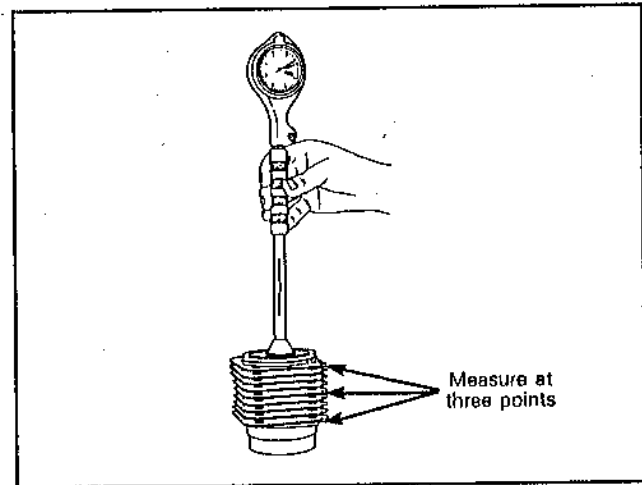
ROCKER ARM SHAFT OUSIDE DIAMETER mm (In)	ROCKER ARM INSIDE DIAMETER mm (In)	CLEARANCE mm (In)
14.001-14.012 (.5512-.5517)	14.05-14.068 (.5531-.5539)	0.038-0.067 (.0015-.0026)



62,63, Cylinder

Cylinder taper

Measure cylinder diameter 16 mm (5/8 in) from top of cylinder then half-way through and finally at bottom. Difference between measurements should not exceed 0.05 mm (.002 in). If so, replace cylinder.



Cylinder out of round

Measure cylinder diameter in piston axis direction 16 mm (5/8 in) from top of cylinder. Take an other measurement 90° from first one and compare. Difference between measurements should not exceed 0.04 mm (.0016 in). If so, replace cylinder.

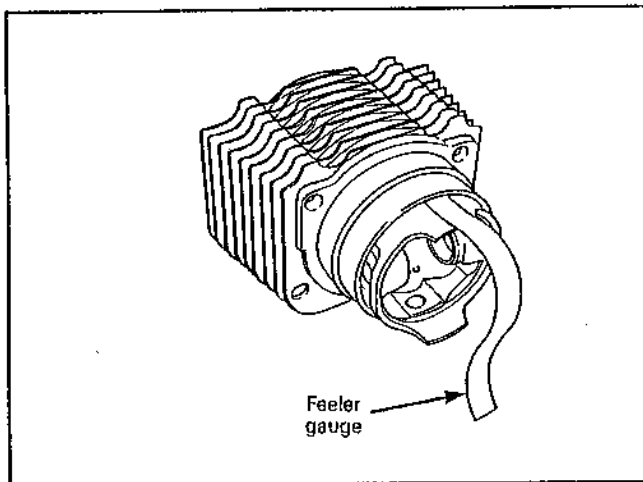
33, Cylinder head

Check for crack between valve seats, if so, replace cylinder head.

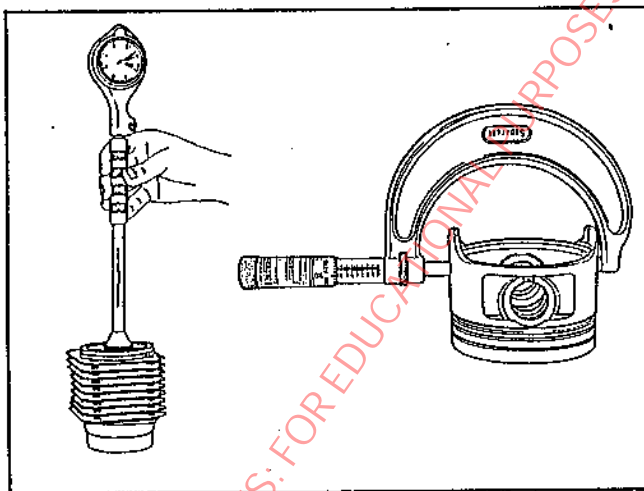
Maximum cylinder head warpage is 0.03 mm (.0012 in).

Piston/cylinder clearance

Clearance can be quickly checked with a long feeler gauge. Insert feeler gauge in cylinder then slide piston (without rings) into cylinder. When fitting new parts clearance is 0.03-0.04 mm (.0012-.0016 in). Wear limit is 0.1 mm (.004 in).



To accurately determine piston/cylinder clearance, measure piston at 12 mm (15/32 in) above skirt end. Measure cylinder 16 mm (5/8 in) from top.

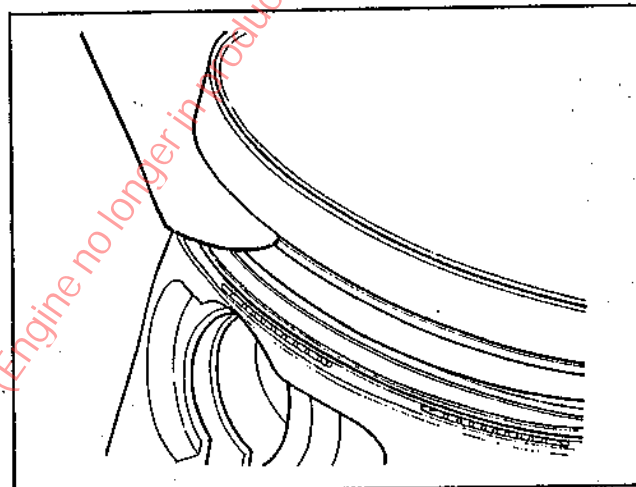


Difference between these two measurements should be within specified tolerance.

Ring/piston groove clearance

Using a feeler gauge measure each ring/piston groove clearance.

RING/PISTON GROOVE CLEARANCE mm (in)		
Ring	(Min.)	(Max.)
1 st & 2 nd	0.03 (.0012)	0.05 (.0020)
3 rd	0.01 (.0004)	0.03 (.0012)



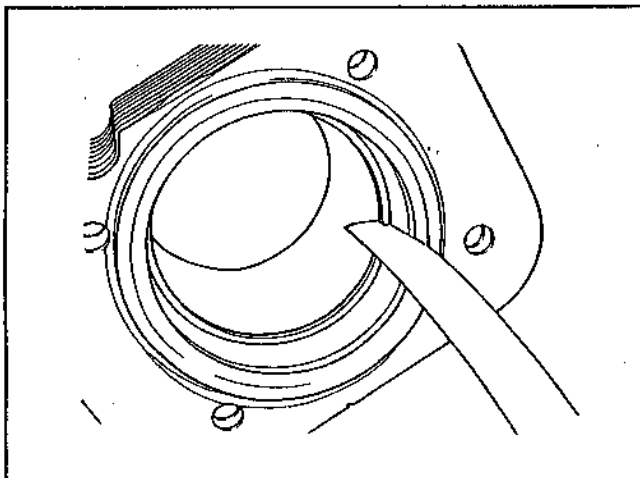
If out of tolerance replace ring(s) and/or piston.

Ring end gap

Position ring about 50 mm (2 in) from top of cylinder in which it is to be fitted.

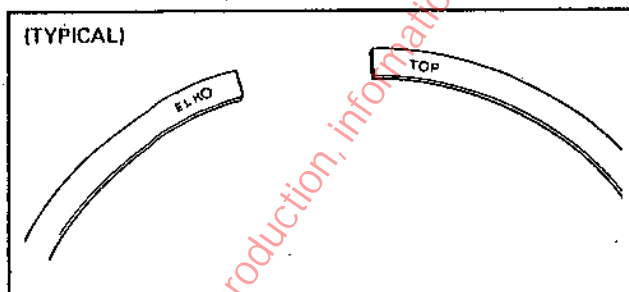
NOTE: An inverted piston can be used to push rings to insure positioning rings squarely in cylinder bore before measuring.

HISTORICAL DOCUMENTS: FOR EDUCATIONAL PURPOSES ONLY (Engine no longer in production information may be outdated!)



66,67,68, Ring

Install all rings on piston with writing facing top of piston.



Stagger piston ring end gaps as illustrated.

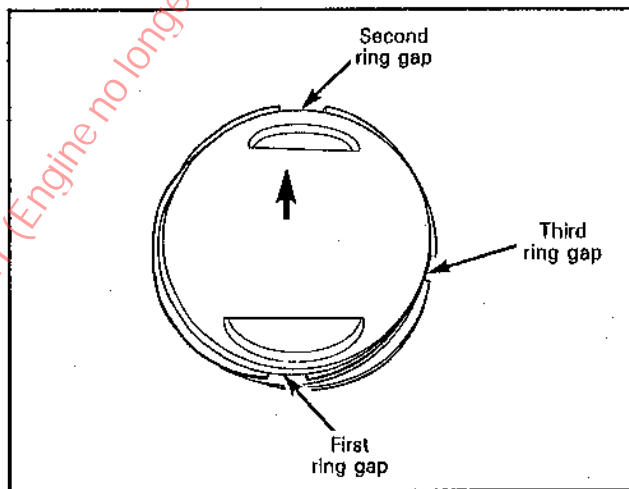
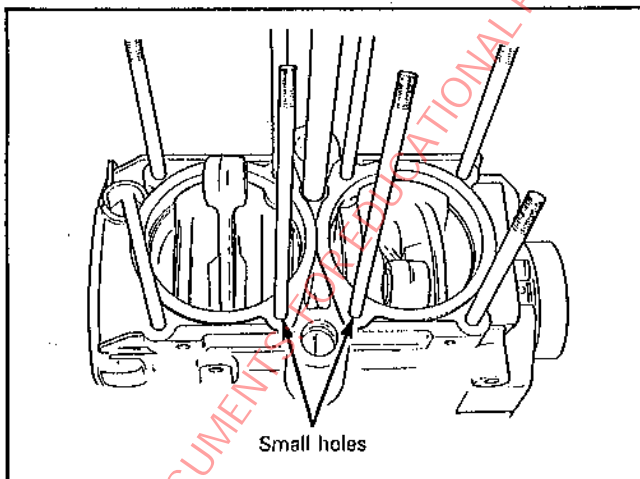
RING END GAP mm (In)			
Ring	NEW PARTS		WEAR LIMIT
	(Min.)	(Max.)	
1 st , 2 nd & 3 rd	0.3 (.012)	0.5 (.020)	1.0 (.039)

ASSEMBLY

Assembly is essentially the reverse of disassembly procedure. However pay particular attention to the following.

64,Gasket

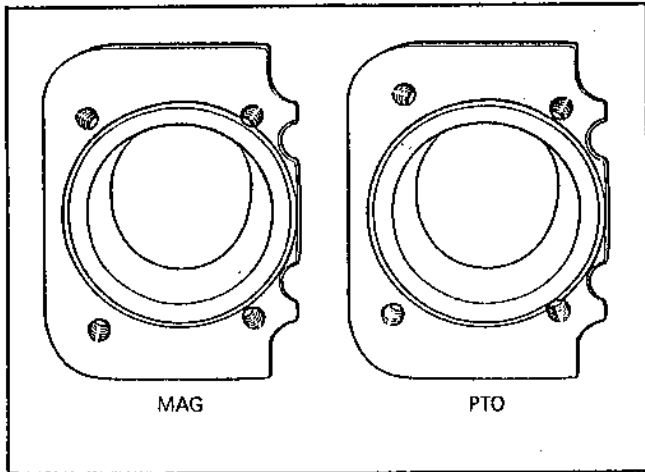
Position gaskets with their small holes inwards.



62,63, Cylinder

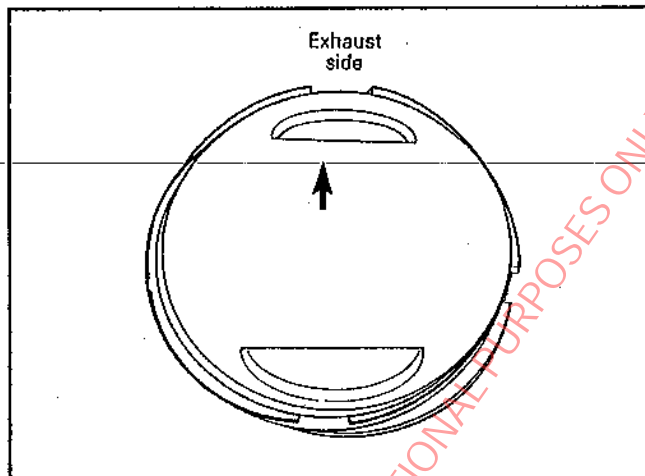
Identify cylinders. Difference between MAG and PTO cylinder is position of stud holes related to cylinder bore.

HISTORICAL DOCUMENT - INTENTIONAL PURPOSE ONLY (Engine no longer in production, information may be outdated!)



65, Piston

Install piston with arrow on piston pointing exhaust side.

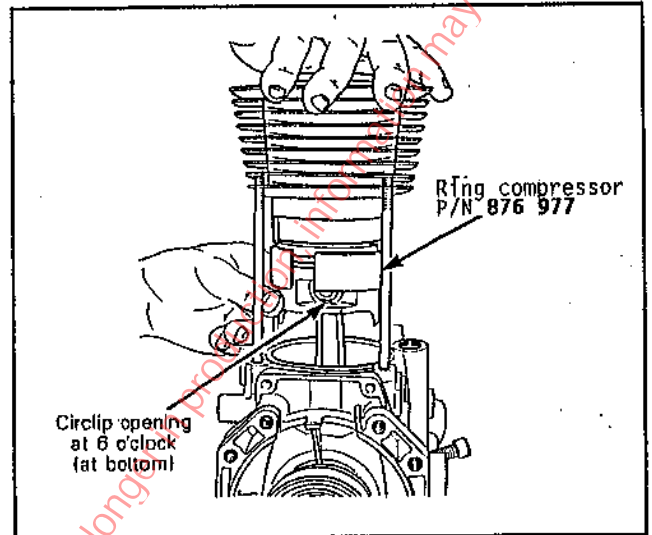


70, Circlip

▼ **CAUTION:** To minimize the effect of acceleration force on circlips, install them so that their openings are located at 6 o'clock (at bottom).

▼ **CAUTION:** Always use new circlips. At installation, take care not to deform them. Overstressed circlips will come loose and will damage engine. Circlips must not move freely after installation, replace if circlip rotates after installation.

Lubricate rings with motor oil. Use ring compressor Part # 876 977 to easily install of cylinder.



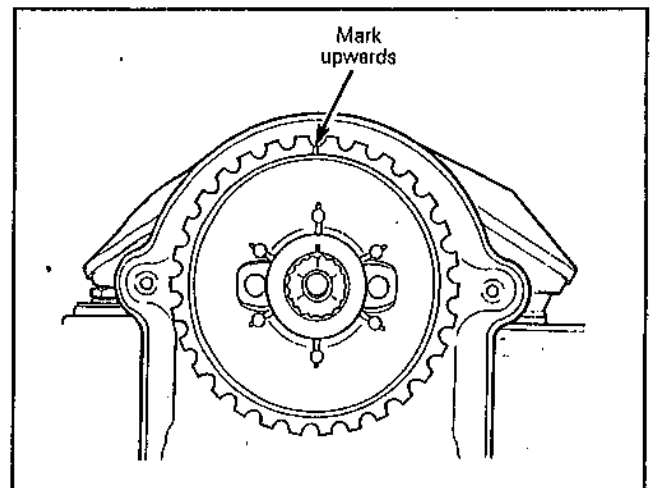
54,60, Valve guide

Apply Molykote G - N to valve guide then drive it into cylinder head from camshaft side until its circlip seats in cylinder head groove.

New valve guide must be reamed to fit valve. Use a 7 mm (.0275 in) reamer such as Dormer 1683.

31,32,33, Collar hex. nut, cap nut & cylinder head

Temporary install timing pulley to turn camshaft until mark is upwards.



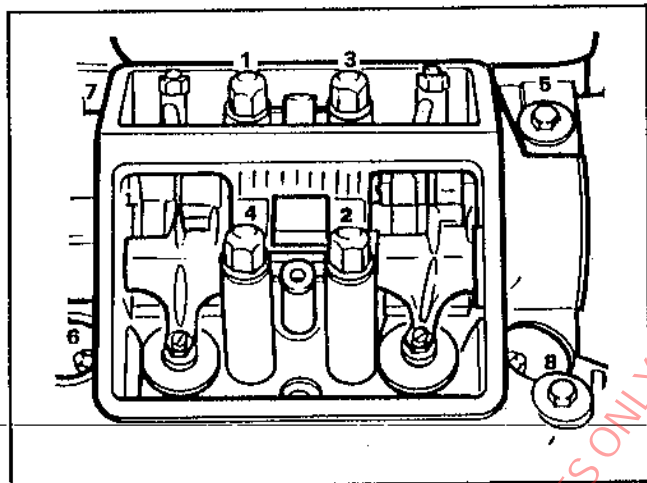
HISTORICAL DOCUMENT - EDUCATIONAL PURPOSES ONLY (Engine long life - 300000 km - may be outdated!)

CAUTION: Do not turn camshaft when cylinder head is installed on engine. Otherwise valves may contact pistons.

Lock crankshaft with PTO piston at TDC using fixation screw Part # 241 965.

Coat O-rings of oil return tubes with Silastic RTV 732. Install cylinder head on studs making sure oil return tubes are well inserted.

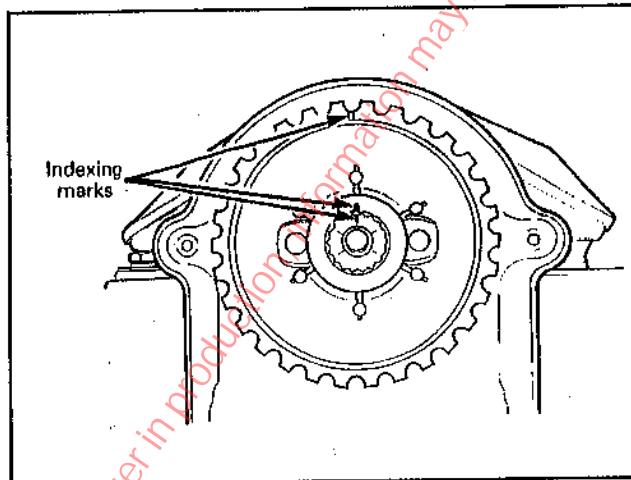
Torque cylinder head nuts to 22 N•m (16 lbf•ft) in the following sequence.



ADJUSTMENT

8, Timing belt

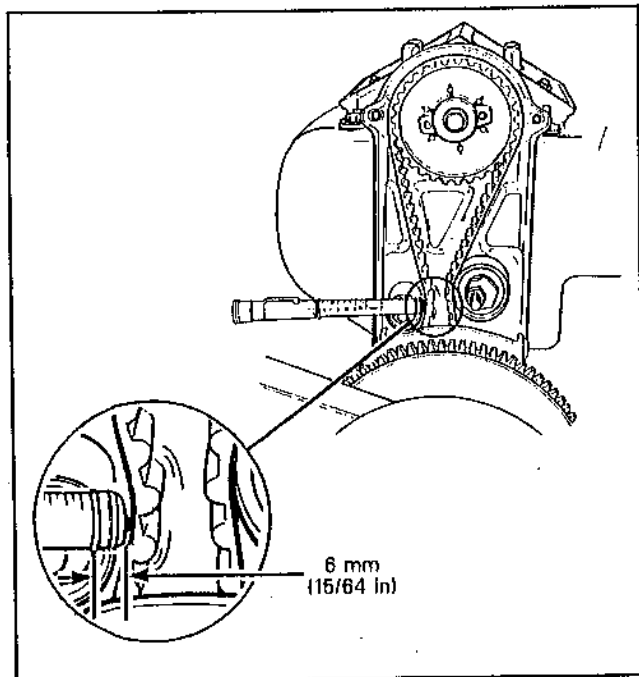
Install belt pulley with its mark corresponding with camshaft mark which already show upwards. With crankshaft already locked with fixation screw (PTO piston at TDC), install timing belt. Torque belt pulley screw to 28 N•m (21 lbf•ft).



NOTE: If camshaft or crankshaft has to be turned before timing belt installation, completely slacken valve adjustment screw to avoid valve contacting piston dome.

3,21,24, Nut, tensioner excentric & guide pulley

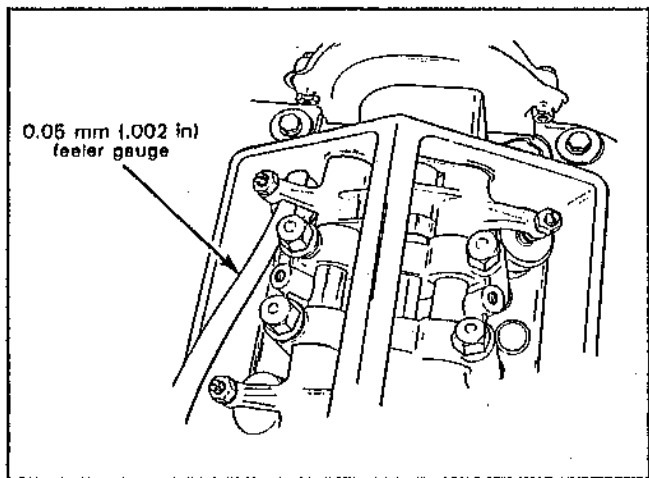
Turn tensioner excentric as far to the left to obtain a gap of 6 mm (15/64 in) between belt and guide pulley when applying a force of 20 N (4.5 lb). Torque nut to 22 N•m (16 lbf•ft).



HISTORICAL DOCUMENTS: FOR EDUCATIONAL PURPOSES ONLY (English language may be outdated!)

46,49, Nut & adjustment screw

With belt pulley mark showing downwards, adjust PTO side valves clearance to 0.05 mm (.002 in) by turning in or out adjustment screw. Clearance is measure at valve stem end and adjustment screw. Tighten lock nut and recheck valve clearance.

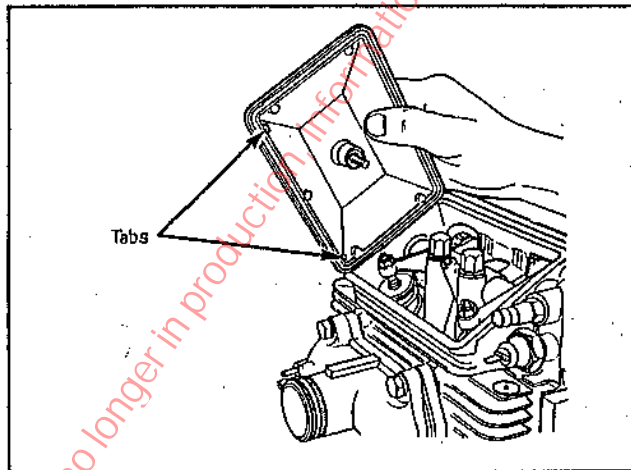


Rotate engine counter-clockwise 180°, camshaft will rotate 90° ready for adjusting MAG side valves clearance.

○ NOTE : PTO piston is at TDC on compression stroke when belt pulley mark shows downwards. MAG piston is at TDC on compression stroke when belt pulley mark is at 3 o'clock position.

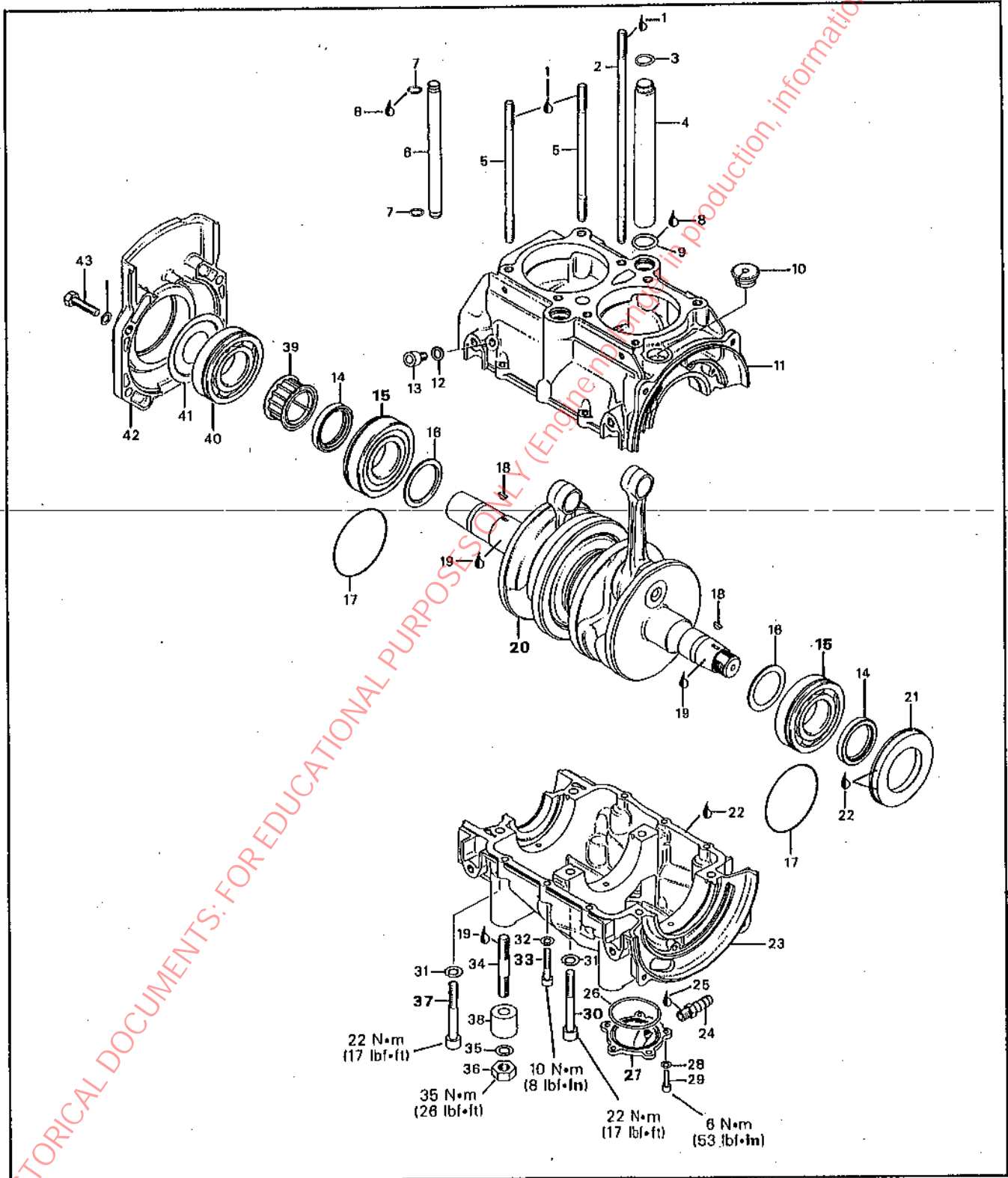
29, Valve cover

Install valve covers with their tabs towards bottom.



HISTORICAL DOCUMENTS: FOR EDUCATIONAL PURPOSES ONLY (Engine no longer in production, information may be outdated!)

BOTTOM END



1. Molykote G-N
2. Stud M8 x 235 (4)
3. O-ring (2)
4. Return tube (2)
5. Stud M8 x 150 (2)
6. Oil pressure tube
7. O-ring (2)
8. Silastic RTV 732
9. O-ring (2)
10. Cable grommet
11. Upper crankcase half
12. Gasket ring
13. Hexagonal socket head screw M8 x 12
14. Oil seal (2)
15. Ball bearing 6207 (2)
16. Distance shim 1.6 mm (2)
17. O-ring (2)
18. Woodruff key (2)
19. Medium strength threadlocker. Loctite 242
20. Crankshaft ass'y
21. Oil seal holder
22. Paste gasket Loctite 515

23. Lower crankcase half
24. Nipple
25. High temp. threadlocker Loctite 620
26. O-ring
27. Return oil cover
28. Lock washer (5)
29. Hexagonal socket head screw M5 x 16 (5)
30. Hexagonal socket head screw M8 x 65 (2)
31. Lock washer 8 mm (6)
32. Lock washer 6 mm (6)
33. Hexagonal socket head screw M6 x 30 (6)
34. Stud M10 x 29/20 (4)
35. Lock washer 10 mm (4)
36. Hexagonal nut M10 (4)
37. Hexagonal socket head screw M8 x 60 (4)
38. Distance sleeve (4)
39. Timing pulley 15 c
40. Ball bearing 6306
41. Cover disc
42. Bearing housing
43. Screw M8 x 30 (4)

○ NOTE: Engine must be removed from chassis to perform the following procedures.

CLEANING

Discard all oil seals, gaskets and O-rings.

Clean all metal components in a non-ferrous metal cleaner.

Remove old paste gasket from crankcase mating surfaces with sealant stripper

▼ CAUTION: Never use a sharp object to scrape away old paste gasket as score marks incurred are detrimental to crankcase sealing.

DISASSEMBLY

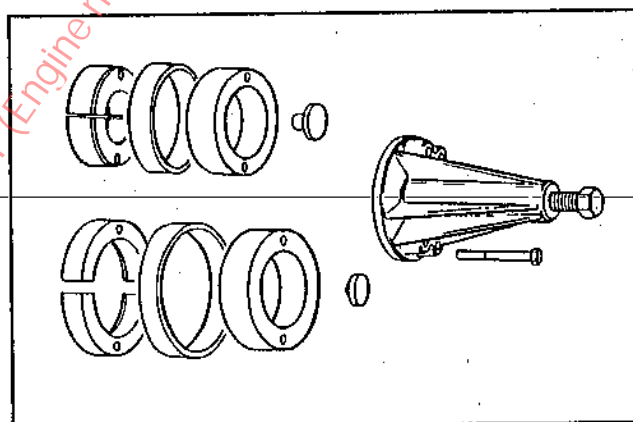
General

Remove top end as described above.

To remove magneto, refer to section 02-11 "Magneto".

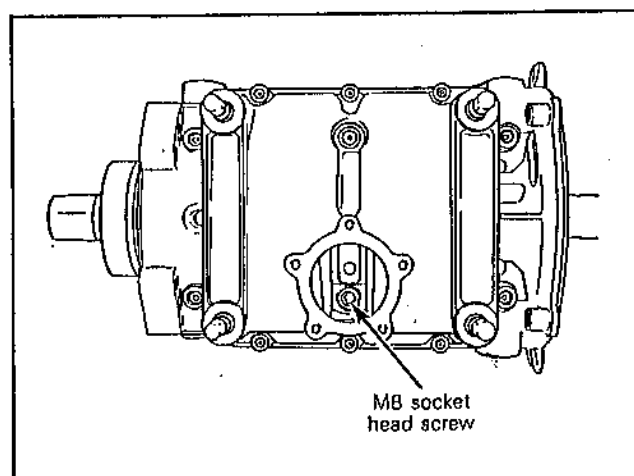
15, Ball bearing

To remove bearings from crankshaft, use a protective cap and special puller, as illustrated (see "Tools" section).



27,30, Return oil cover & socket head screw

Remove return oil cover to gain access to M8 socket head screw.



M8 socket head screw

HISTORICAL DOCUMENTS - FOR EDUCATIONAL PURPOSES ONLY (Engine no longer in production, information may be outdated!)

INSPECTION

The inspection of the engine bottom end must include the following measurements :

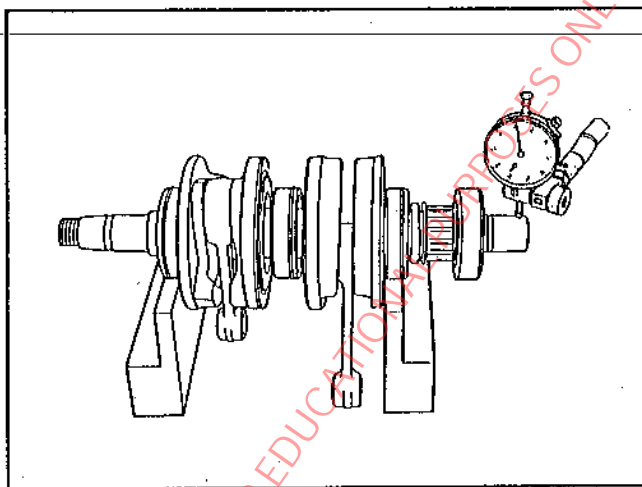
MEASUREMENTS	TOLERANCES		WEAR LIMIT
	FITTING NEW PARTS (Min.)	(Max.)	
Crankshaft deflection	—	—	0.05 mm (0.002 in)
Connecting rod big end axial play	0.6 mm (.024 in)	0.88 mm (.035 in)	1.50 mm (.059 in)

20, Crankshaft

Deflection

Crankshaft deflection is measured at each end with a dial indicator.

First, check deflection with bearings installed. If deflection exceeds the specified tolerance, it can either be ball bearing wear or bent crankshaft. Remove crankshaft bearings and rechecked deflection.

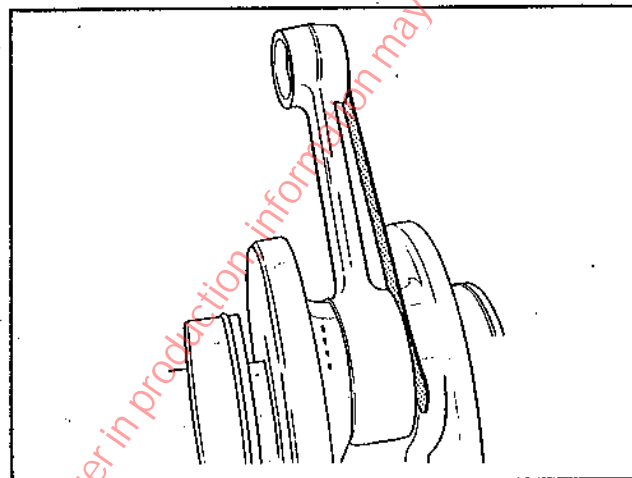


NOTE : Crankshaft deflection can not be correctly measured between centers of a lathe.

If deflection exceeds the specified tolerance, crankshaft should be repaired or replaced.

Connecting rod big end axial play

Using a feeler gauge, measure distance between thrust washer and crankshaft counterweight. If the distance exceeds specified tolerance, repair or replace crankshaft.

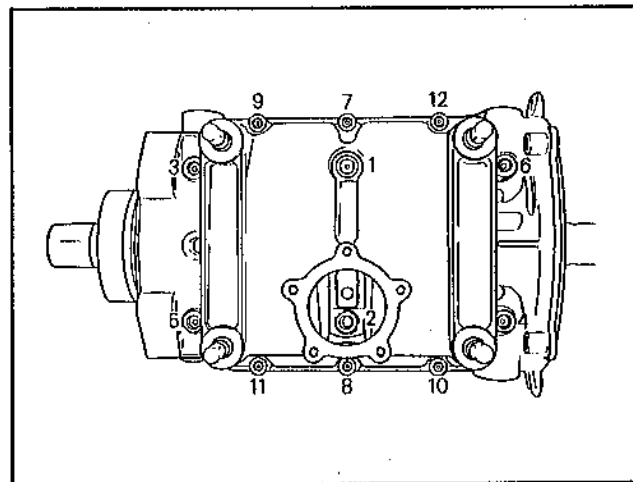


ASSEMBLY

Assembly is essentially the reverse of disassembly procedure. However pay particular attention to the following.

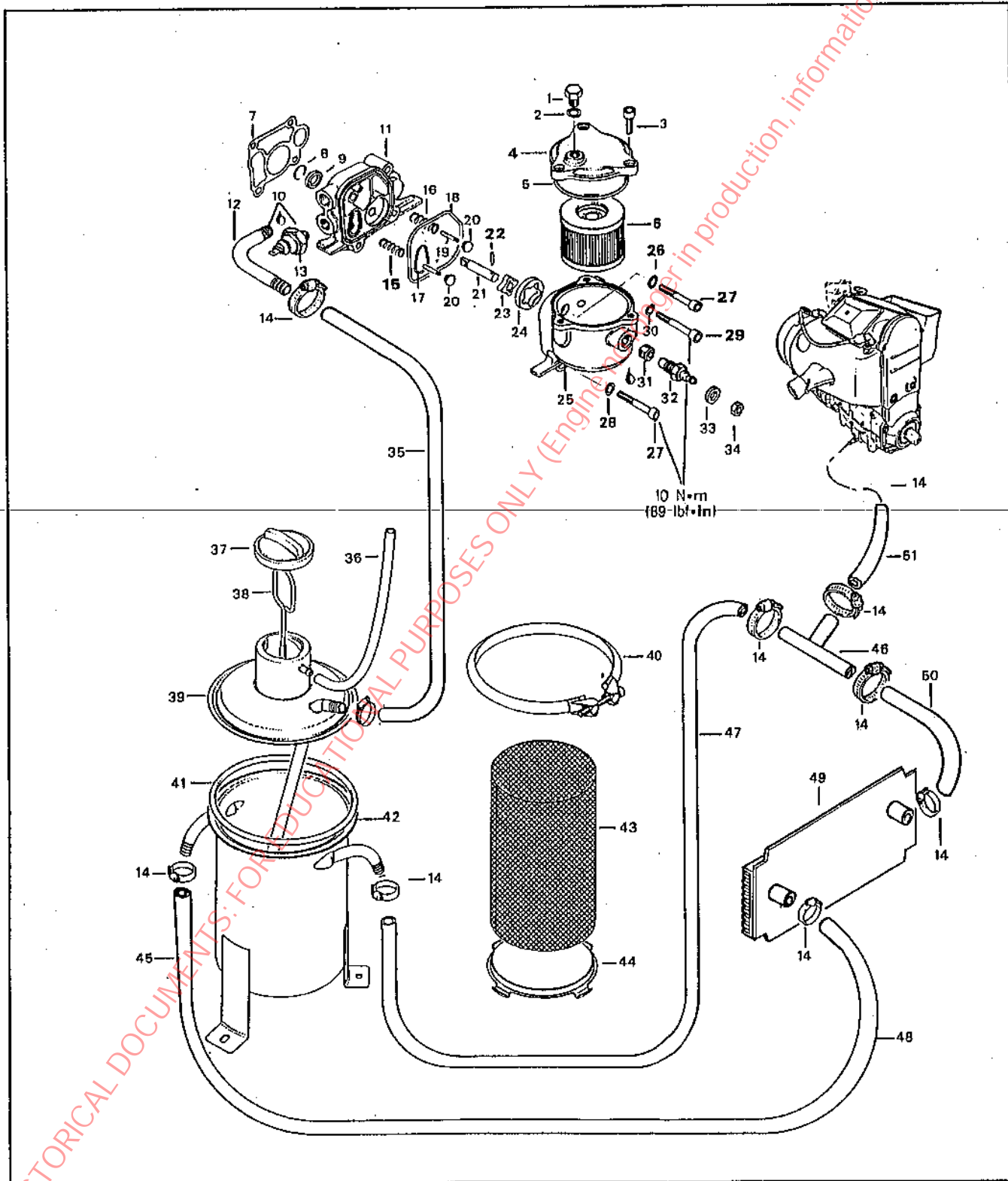
30,33,37, Socket head screw

Torque screws 1 to 6 to 22 N•m (17 lbf•ft) and screws 7 to 12 to 10 N•m (89 lbf•in) in following sequence.



HISTORICAL DOCUMENTS FOR EDUCATIONAL PURPOSES ONLY (Engine number in production information may be outdated!)

LUBRICATION SYSTEM



HISTORICAL DOCUMENTS: FOR REPRODUCTION PURPOSES ONLY (Engine repair manual in production, information may be outdated!)

1. Bleeder screw M8 x 9
2. Gasket ring
3. Socket head screw M6 x 30
4. Oil filter cover
5. O-ring
6. Oil filter
7. Gasket
8. Retaining ring
9. Oil seal 8 x 14 x 4
10. High temperature threadlocker - Loctite 620
11. Oil pump housing
12. Angular tube M12 x 1.5
13. Oil pressure switch M10 x 1
14. Clamp ()
15. Compression spring 13.0
16. Compression spring
17. O-ring
18. O-ring
19. Valve pin (2)
20. Pressure retaining valve
21. Pump shaft
22. Needle pin
23. Pressure inner rotor
24. Pressure outer rotor
25. Oil filter housing
26. Friction washer 6 mm
27. Socket head screw M6 x 40
28. Lock washer (3)
29. Socket head screw M6 x 45 (2)
30. Adaptor
31. Pipe sealant Loctite 592
32. High temperature switch
33. Lock washer
34. Nut
35. Inlet tube
36. Vent tube
37. Oil tank cap
38. Oil dipstick
39. Oil tank cover
40. Clamp
41. O-ring
42. Oil tank
43. Baffle insert
44. Partition
45. Oil tank inlet tube
46. Thermostat
47. By-pass tube
48. Oil tank inlet tube
49. Radiator
50. Radiator inlet tube
51. Engine return tube

TECHNICAL DATA

Oil system capacity :
2.5 L (2.2 imp. quarts - 2.64 US quarts)
Oil pump pressure :
100-150 kPa (14.5-21.8 PSI) at 6000 RPM and oil temperature 140°C (284°F)
Oil pump delivery capacity :
1 L/min. at 6000 RPM

○ NOTE: The following procedures can be done without removing the engine from chassis.

REMOVAL

Without removing engine from chassis

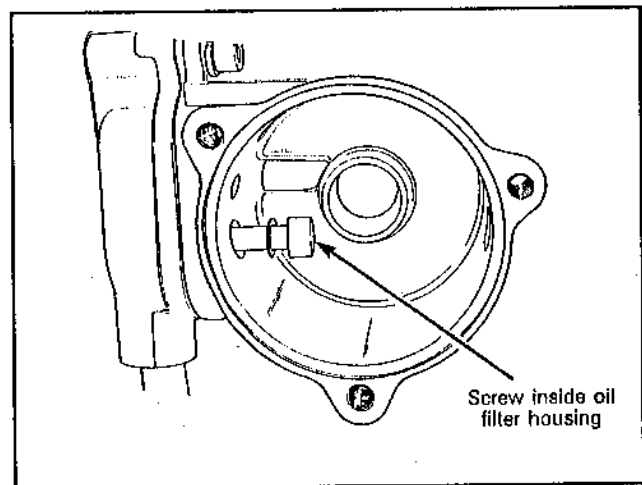
Fan housing has to be removed to gain access to lower rear screw of oil filter housing. To do so, remove fan guard, rewind starter, v-belt pulley, flywheel (refer to "CDI magneto" sub-section 02-11 for proper installation) then move fan housing aside.

4,6, Oil filter cover & oil filter

Remove oil filter cover and oil filter then siphon oil from oil filter housing.

26,27,29, Friction washer 6 mm & screw

Remove four screws retaining oil filter housing and oil pump housing. One screw is located inside oil filter housing.



DISASSEMBLY

21,22, Pump shaft & needle pin

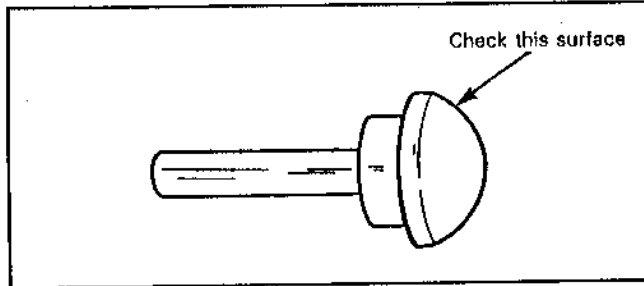
Needle pin is not press fit thus take care not to lose it.

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INSPECTION

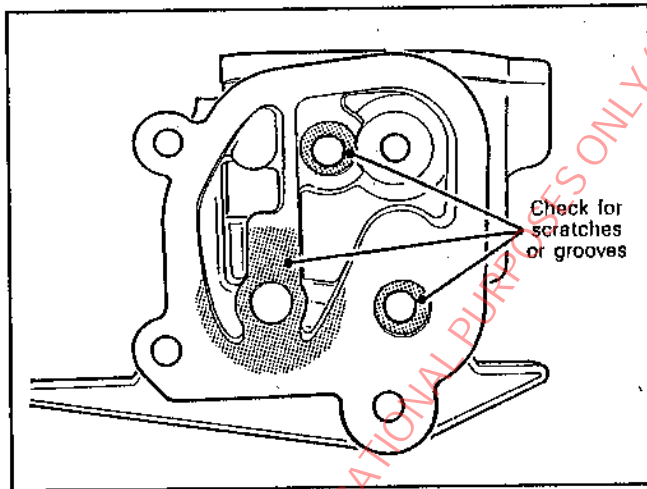
20, Pressure retaining valve

Check for grooved or scored surface, if so, replace.



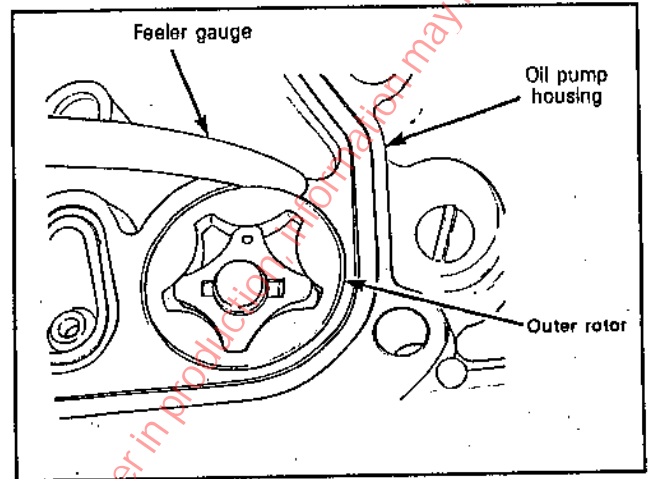
25, Oil filter housing

Pressure retaining valve seating surfaces and oil pump mating surface should be smooth. Replace oil filter housing if surfaces are scratched or grooved.



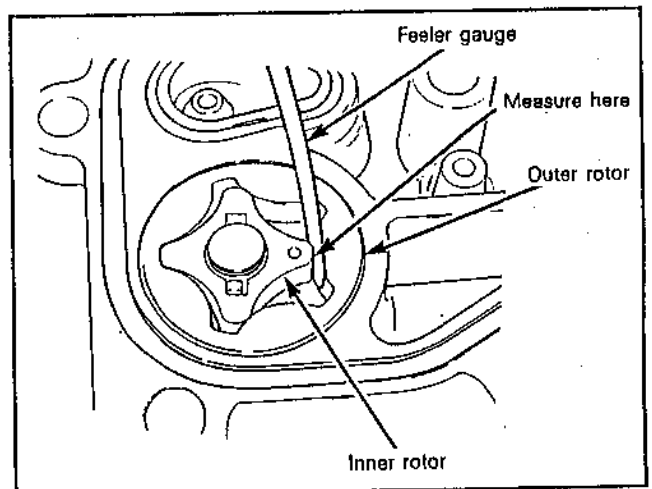
11,24, Oil pump housing & pressure outer rotor

Measure clearance between outer rotor and oil pump housing. If measurement is not between 0.11 and 0.19 mm (.0043 and .0075 in), replace oil pump housing.



23,24, Pressure inner rotor & pressure outer rotor

If tip clearance between inner rotor and outer rotor is not between 0.01 and 0.10 mm (.0004 and .0039 in), replace inner and outer rotor.



HISTORICAL DOCUMENT FOR EDUCATIONAL PURPOSES ONLY (Engine number in photographs may be outdated!)

ASSEMBLY

15,16, Spring

▼ **CAUTION:** Do not mismatch pressure valve springs. Spring #15 is the softest.

Stifest spring goes on left hand valve which is the oil pressure relief valve. Softest spring goes on oil passage to cylinder head. It prevents oil filter housing from draining when engine is stopped.

27,29, Screw

Torque screws in a crisscross sequence to 10 N•m (89 lbf•in).

OIL CHANGE

Siphon oil from oil tank or remove oil tank. Remove baffle insert and clean interior of oil tank.

Oil replenish

Install a new oil filter and refill oil filter housing with low temperature 4-stroke motor oil

Refill oil tank up to upper mark on dipstick. Start engine and open bleeder screw until oil begins to flow.

HISTORICAL DOCUMENTS FOR EDUCATIONAL PURPOSES ONLY (Engine no longer in production, information may be outdated!)