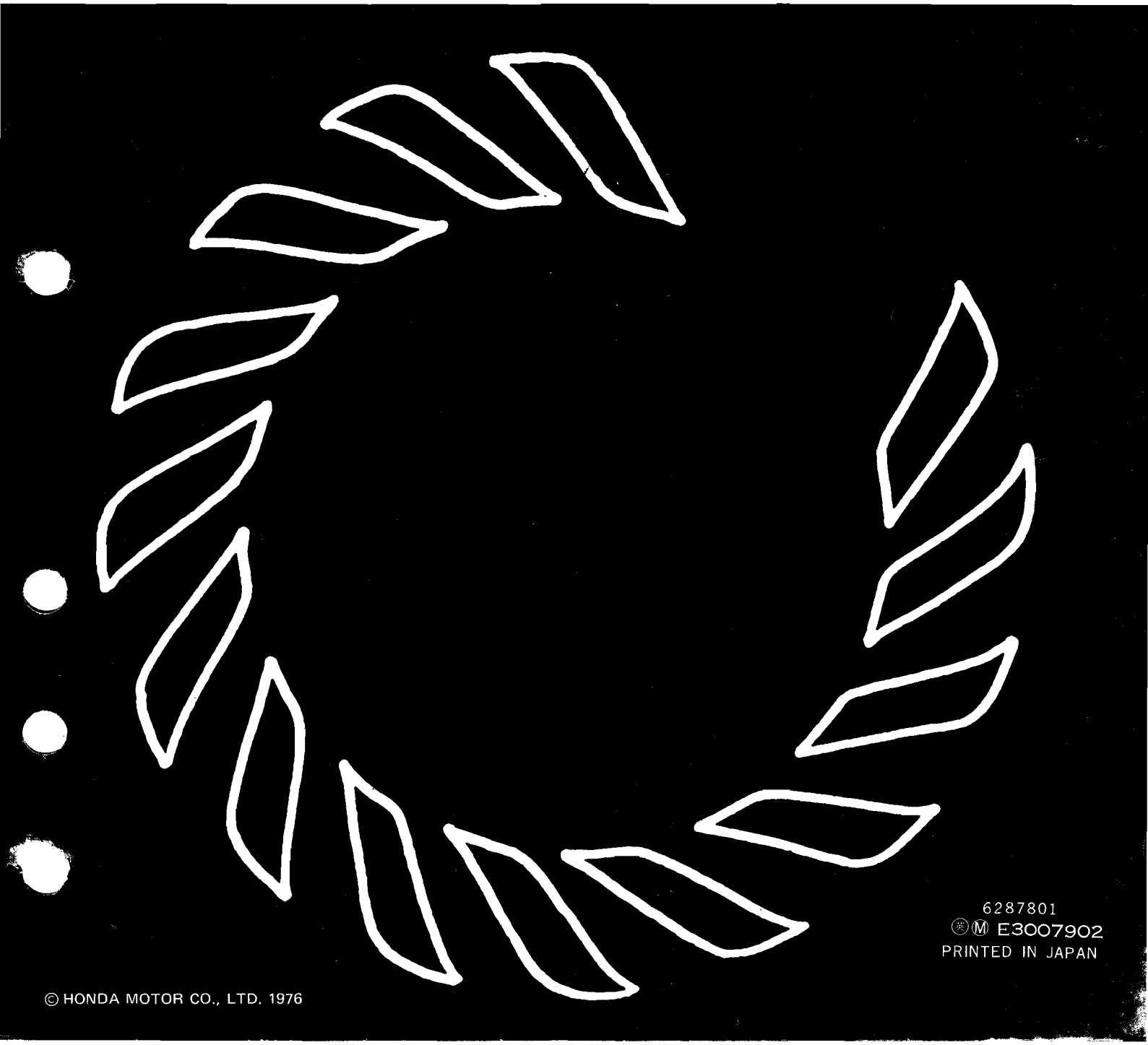
SHOP MANUAL

HONDA GENERAL PURPOSE ENGINE

G35



6287801
Ⓜ E3007902
PRINTED IN JAPAN

FOREWORD

The G35 shop manual employs a new approach to servicing and repair instruction. You will find it much different from other conventional Honda shop manuals, that is, instead of employing step-by-step descriptions of procedures, this make use of the intuitive understanding of illustrations in setting forth procedures. Obvious or commonly known information is excluded as much as possible from the manual and written instructions are made as concise as possible.

With this approach, illustrations and explanations are closely interrelated and reader can grasp meaning rapidly and clearly.

We invite from you any questions or comments concerning this new approach to shop manual preparation.

HONDA MOTOR CO., LTD.
Service Publications Office

Date of Issue: February, 1976

CONTENTS

Date of Issue: November 10, 1975

1. SPECIFICATIONS

2. PERFORMANCE CURVES

3. THREE-DIMENSIONAL DRAWINGS

Date of Issue: November 10, 1975

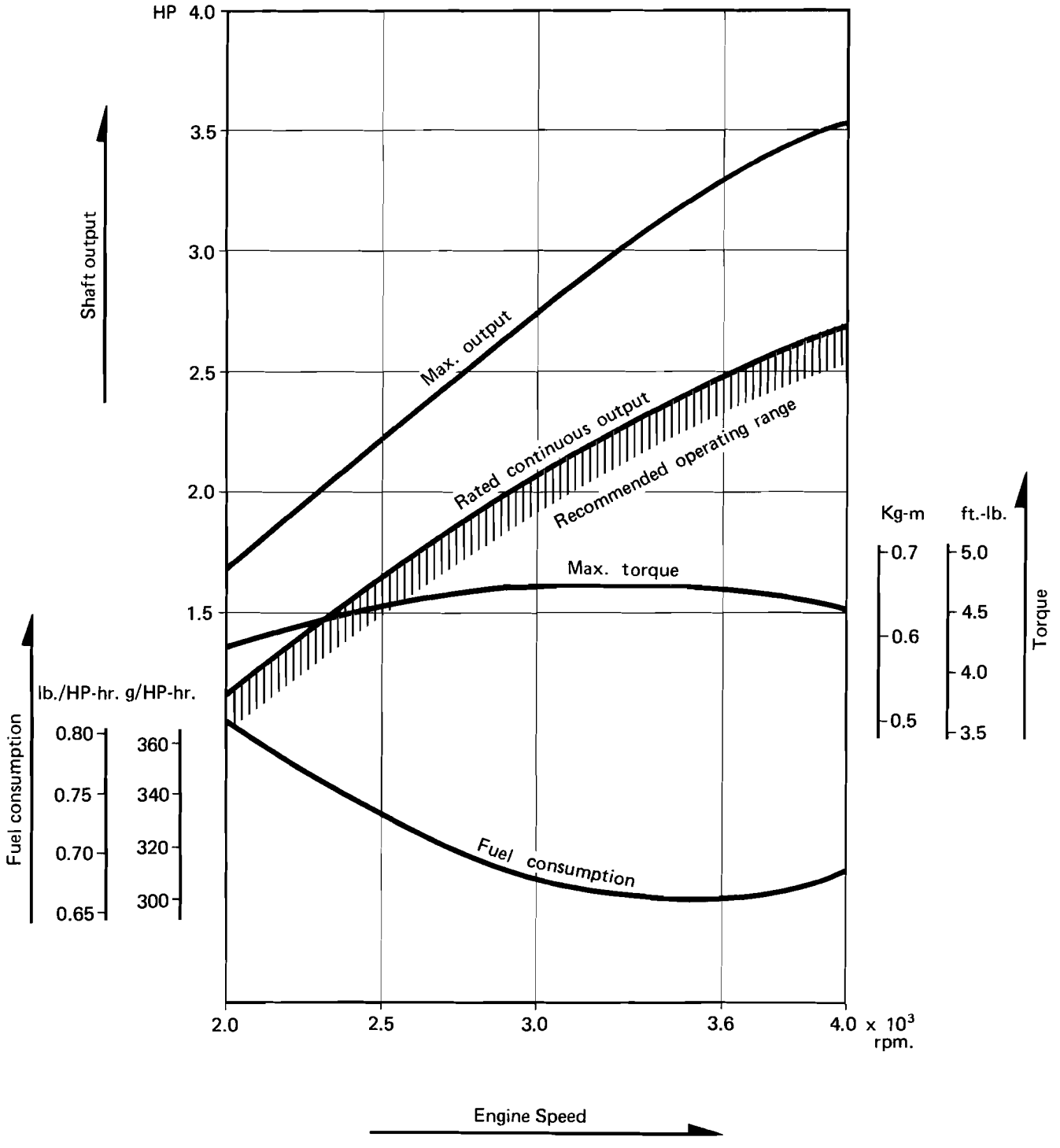
1. SPECIFICATIONS

Item	Specifications
Model	HONDA gasoline engine G35
Type	Single cylinder
Cycles, valve arrangement	4-cycle, side valve type
Total displacement	144 cc (8.79 cu.in.)
Bore and stroke	64 x 45 mm (2.52 x 1.77 in.)
Compression ratio	6.4 : 1
Rated continuous horsepower	2.5 HP/3,600 rpm
Rated maximum horsepower	3.5 HP/4,000 rpm
Maximum torque	0.66 kg-m/3,000 rpm (4.77 ft-lbs/3,000 rpm)
Fuel consumption	310 g/HP-hr (0.68 lb/HP-hr)
Combustion chamber type	L-head Ricardo type
Cooling system	Forced air cooling
Ignition system	High voltage ignition
Ignition timing	20° BTDC, Fixed
Spark plug	BR6HS or B6HS (NGK)
Carburetor	Horizontal butterfly valve
Governor	Centrifugal weight
Air cleaner	Semi-dry type
Lubrication system	Splash system
Oil capacity	0.6ℓ (1.27 US. pt., 1.06 Imp. pt.)
Starting system	Recoil starter or rope starting
Stopping system	Ground switch
Fuel	Automobile gasoline
Fuel tank capacity	2.5ℓ (0.66 US. gal., 0.55 Imp. gal.)
Dry weight	14.0 Kg (30.87 lbs.)

* These specifications may be changed without notice.

Date of Issue: November 10, 1975

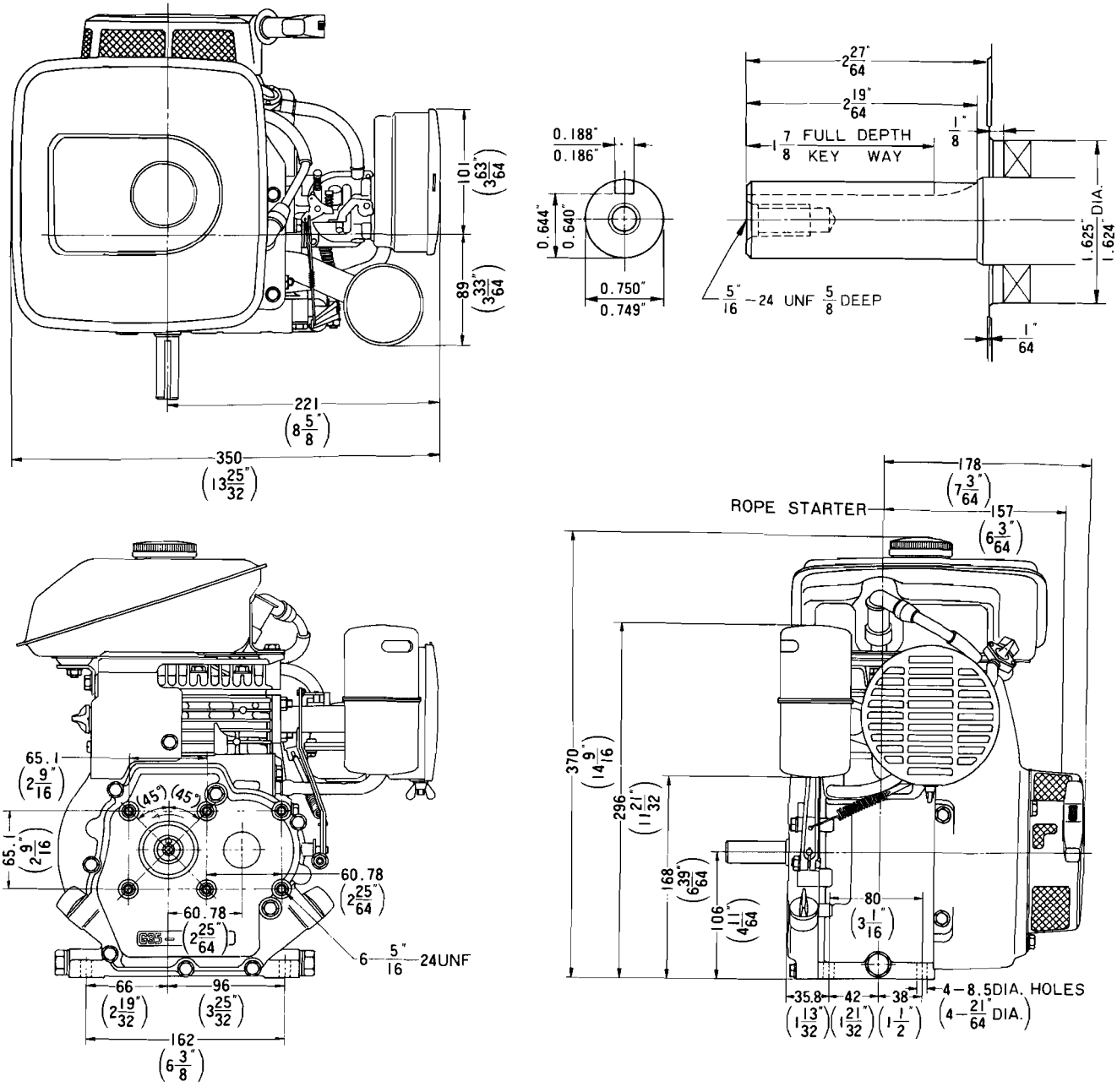
2. PERFORMANCE CURVES



Date of Issue: November 10, 1975

CRANKSHAFT PTO TYPE (Q TYPE)

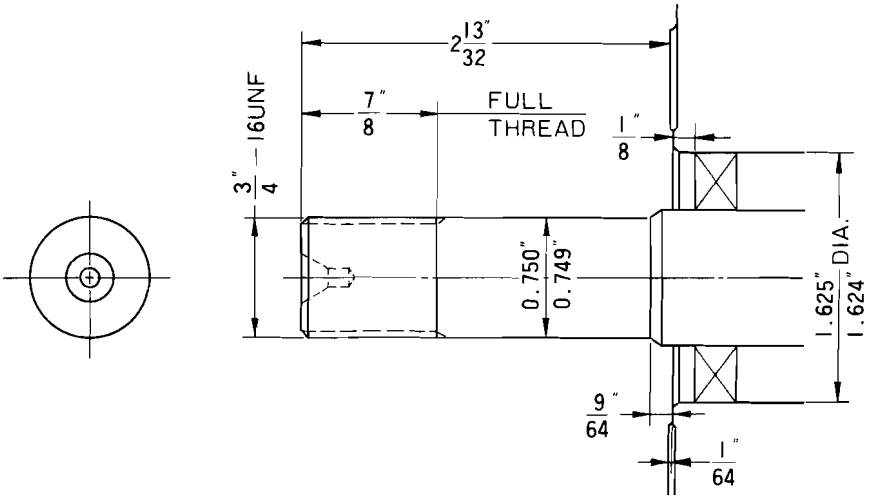
Unit: mm



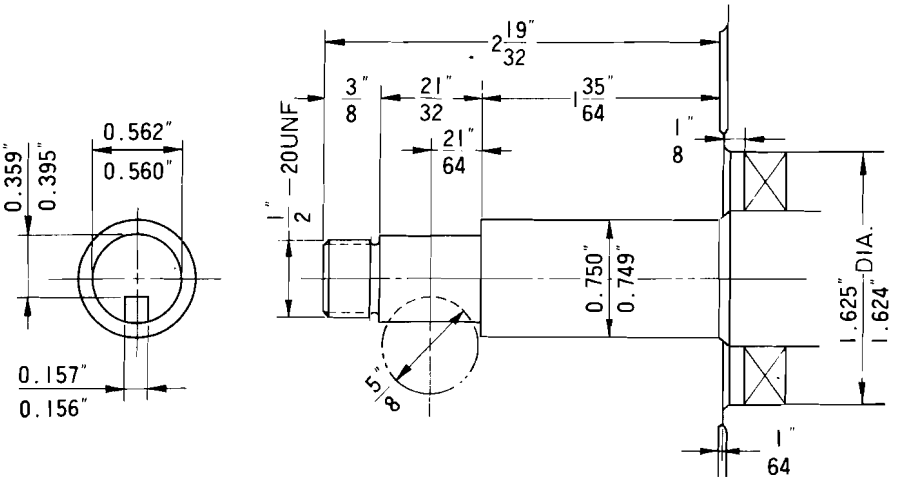
PTO shaft
rpm: 3600 rpm.
Rotating direction: counterclockwise

Date of Issue: November 10, 1975

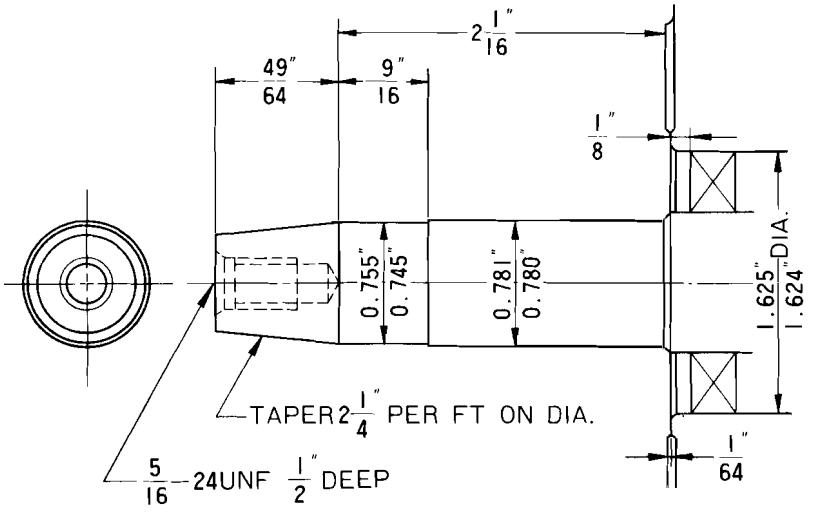
P type



U type

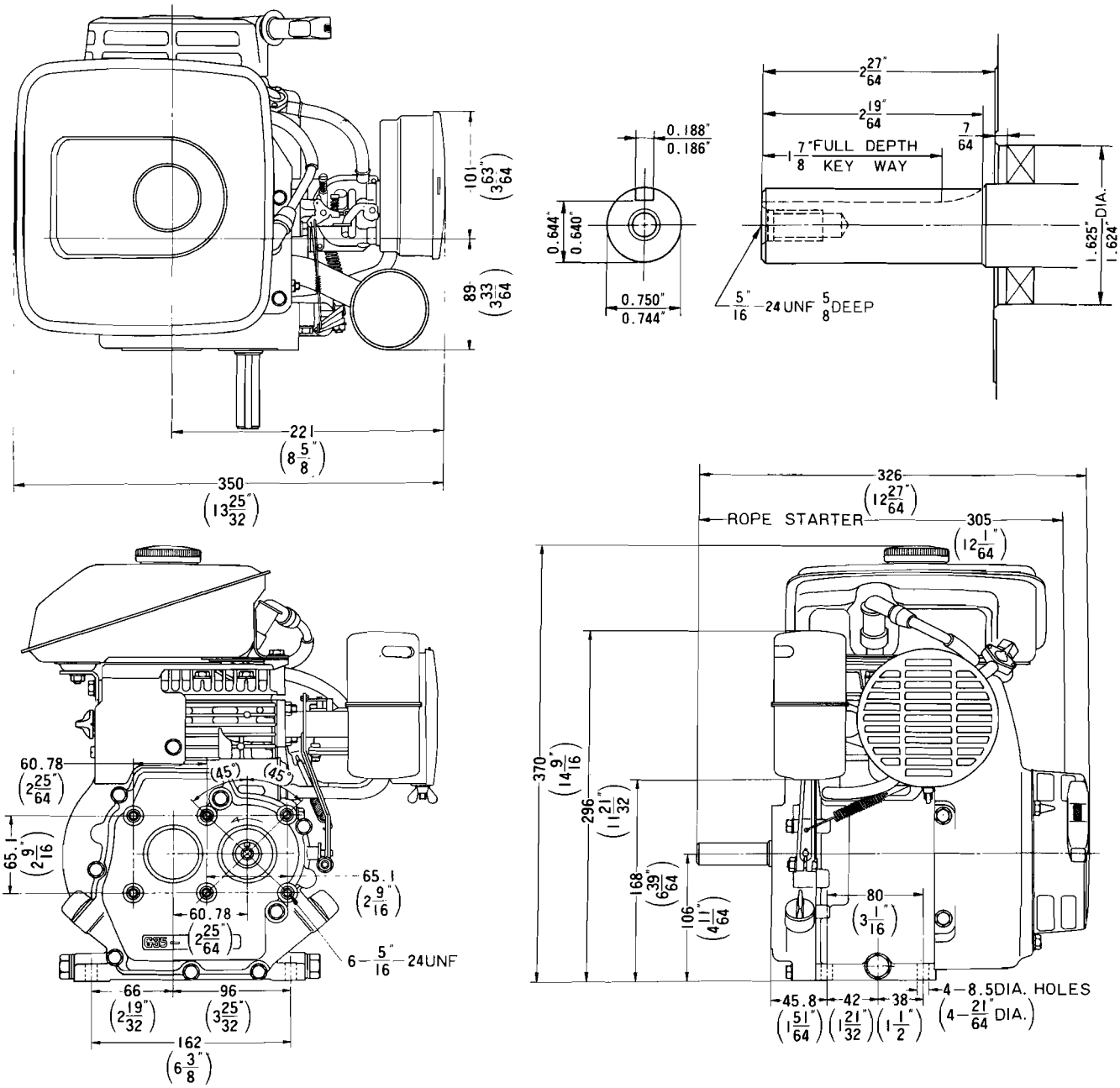


V type



Date of Issue: November 10, 1975

CAMSHAFT PTO TYPE (LD TYPE)



PTO shaft
rpm: 1800 rpm
Rotating direction: counterclockwise

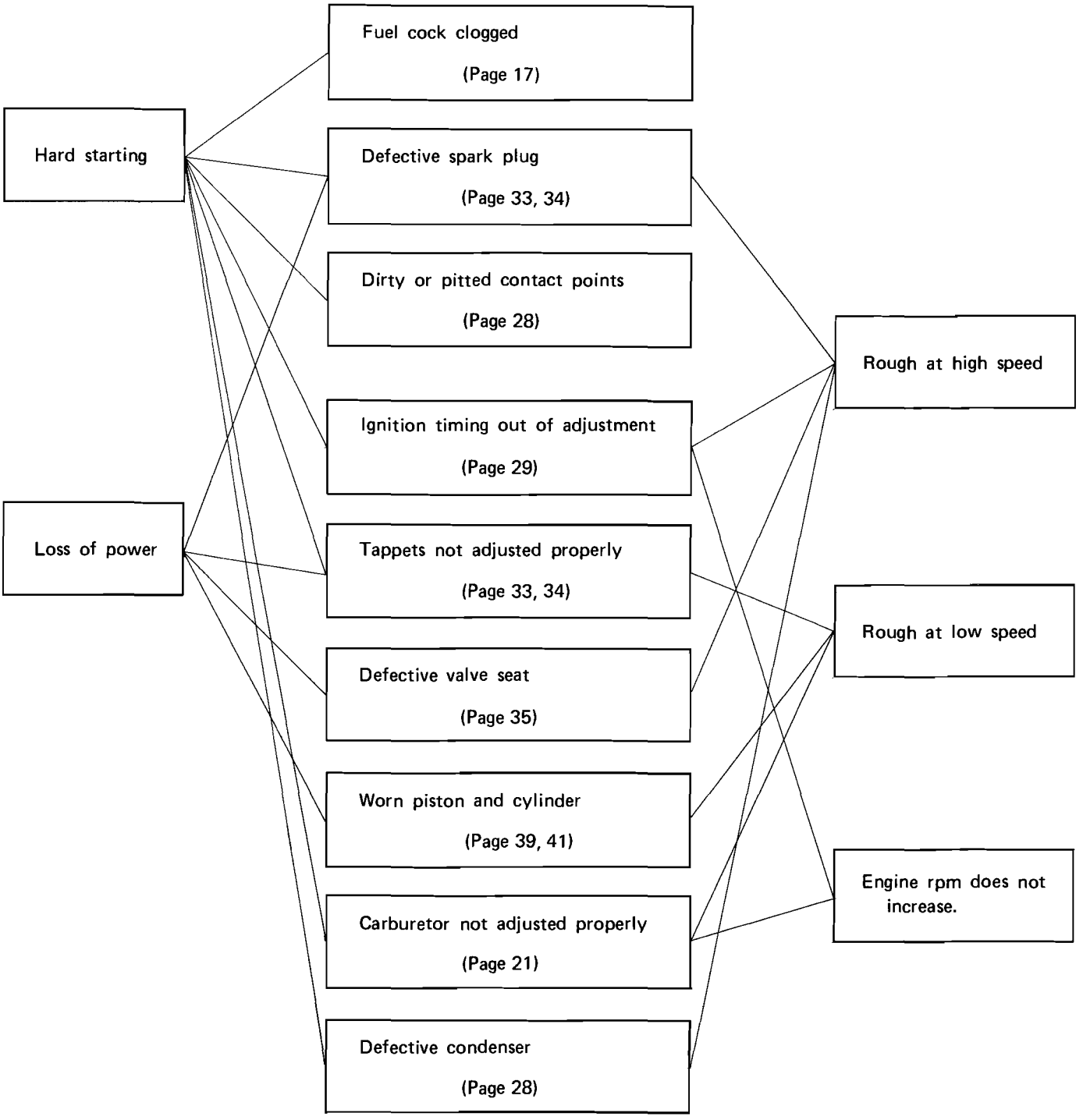
Date of Issue: November 10, 1975

Item \ Inspection interval (hours)	Daily Inspection	First 20 hrs.	Every 50 hrs.	Every 100 hrs.	Every 300 hrs. or Once a year
Check and replenish engine oil	○				
Change engine oil		○		○	
Check air cleaner element	○				
Clean air cleaner			○ *		
Clean fuel strainer				○	
Clean and adjust spark plug				○	
Inspect and adjust ignition timing					○
Inspect and adjust tappet clearance					○
Decarbonize combustion chamber and valves					○
Clean inside of fuel tank					○
Replace fuel tube	Check and renew if necessary.				

* Clean every 10 hrs. or daily when operating under dusty conditions such as threshing, cutting, etc.

Date of Issue: November 10, 1975

C. TROUBLE DIAGNOSIS CHART



Date of Issue: November 10, 1975

D. FIXING METHOD

☆ Service Precautions

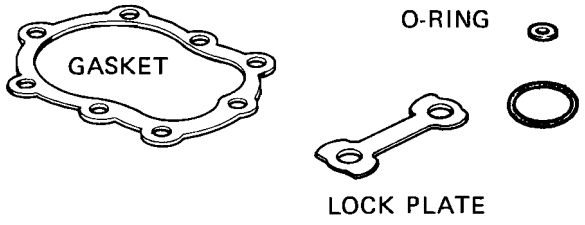
☆ Engine Disassembly Chart

1. Fuel Tank, Muffler and Air Cleaner
2. Carburetor and Governor
3. Recoil Starter and Covers
4. Flywheel and Electrical System
5. Cylinder Head and Valves
6. Crankcase, Piston and Connecting Rod
7. Crankshaft and Camshaft

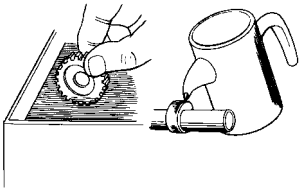
Date of Issue: November 10, 1975

★ SERVICE PRECAUTIONS

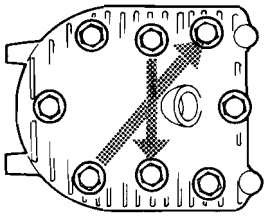
☐ Always replace whenever reassembled.



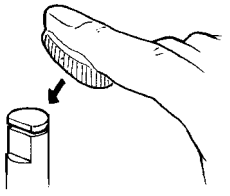
☐ Wash clean parts in/with solvent. Lubricate their sliding surfaces whenever assembled.



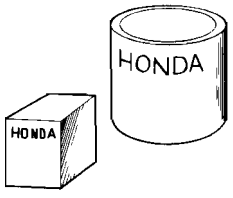
☐ Tighten fasteners, beginning on center or larger dia. bolts to specs, where sequence is not specified, in a X pattern.



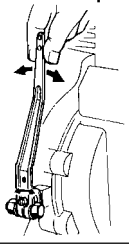
☐ Grease by coasting or filling where specified as such.



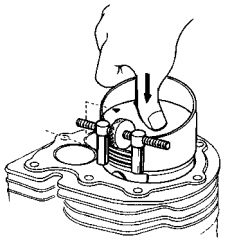
☐ Use HONDA or HONDA recommended parts and lubricants.



☐ After reassembling, check every possible part for proper installation, movement or operation.



☐ Use special tool where so specified.



☐ Always check mutual safety when working with partner.

SYMBOLS

These symbols are used throughout the manual to show specific kinds of operation, sequence of service procedures, etc.

✻ : Indicates items to be performed carefully for safety service or to be read for extended information.

: Indicates warning or important items.

①, ②, ③ ···· : Indicates sequence of service operations.

: Apply oil.

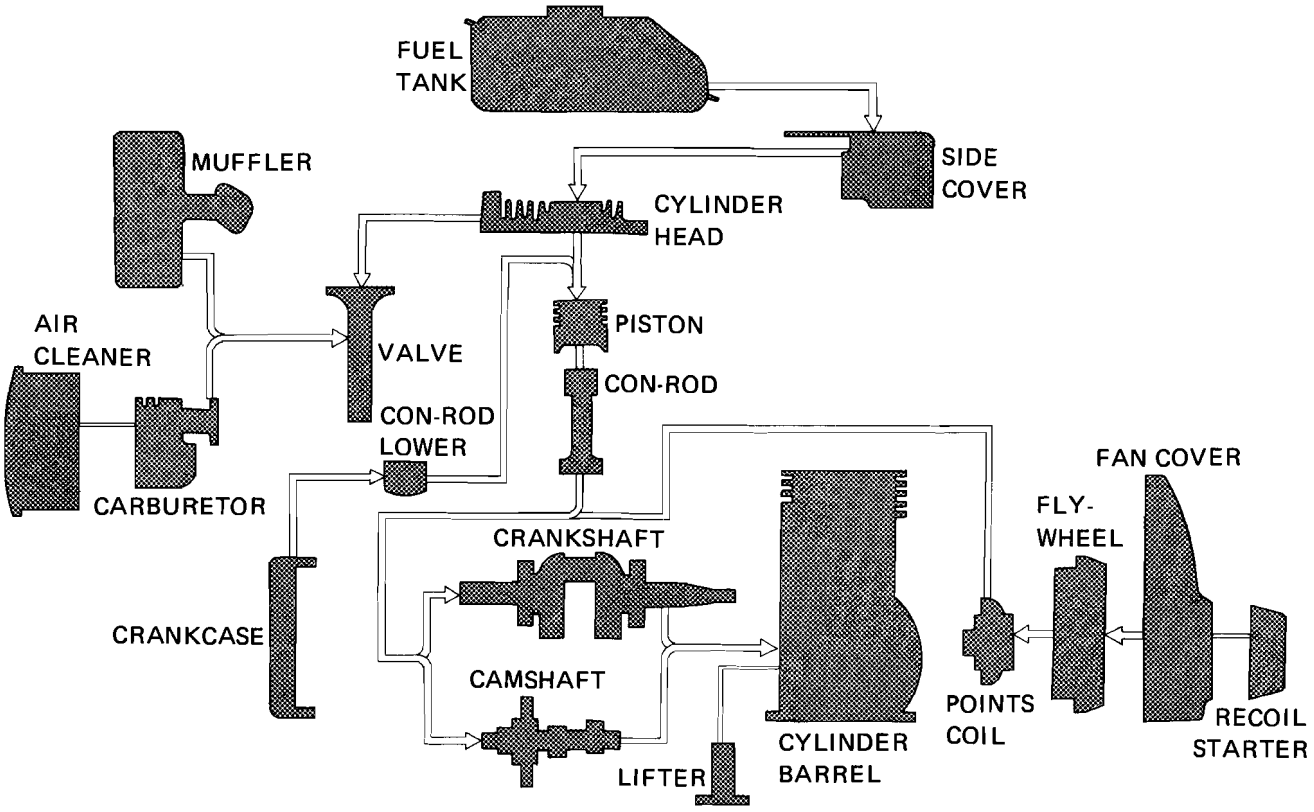
GREASE : Apply grease.

S. TOOL : Use special tool.

Date of Issue: November 10, 1975

★ ENGINE DISASSEMBLY CHART

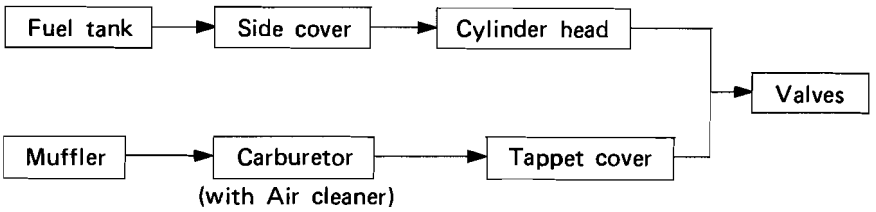
ARROW LINE INDICATES SEQUENCE OF DISASSEMBLY.



< HOW TO USE ABOVE SEQUENCE >

You can disassemble the next parts without disassembling parts each which are connected together by narrow line.

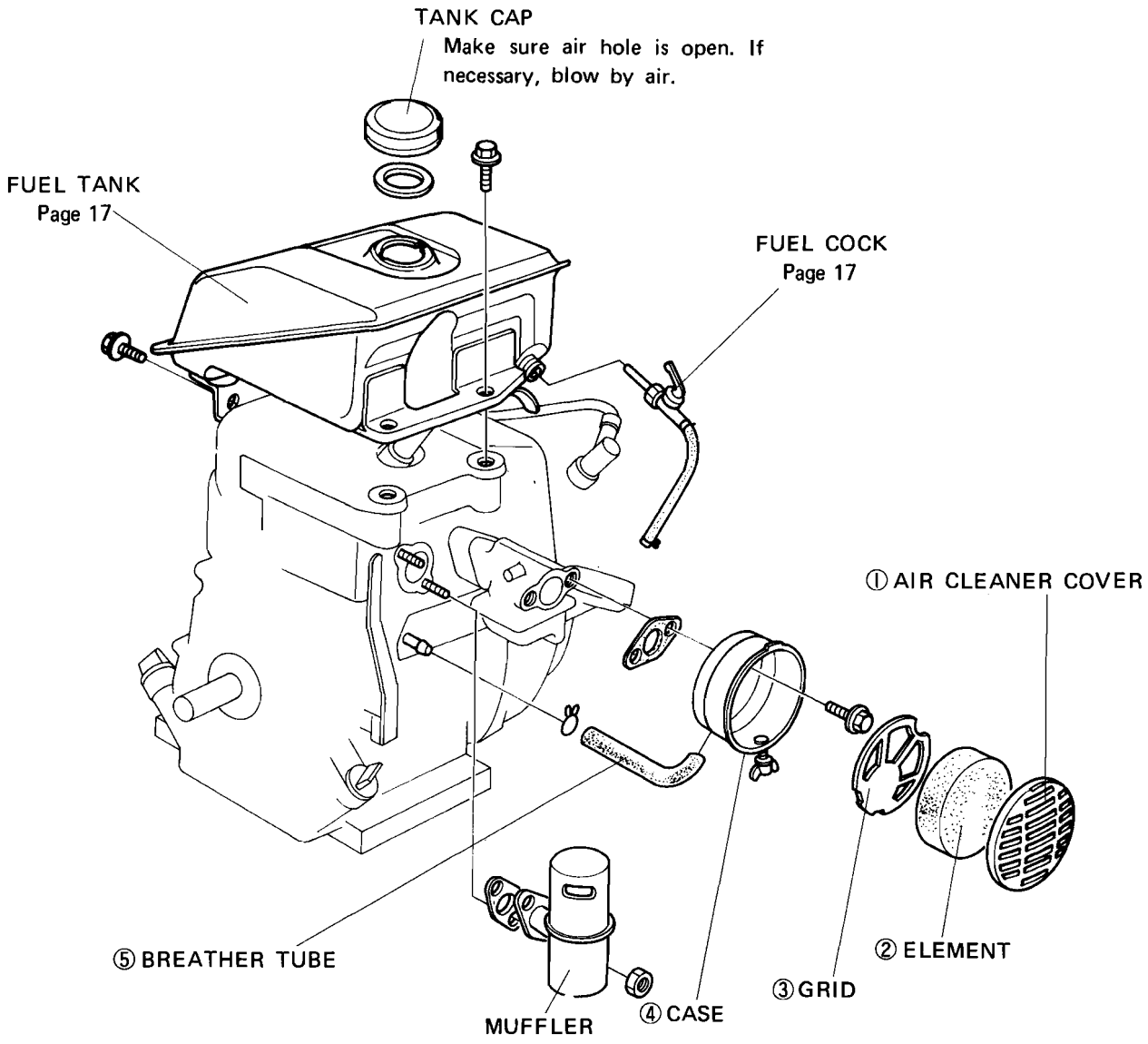
For example: When the valves are replaced.

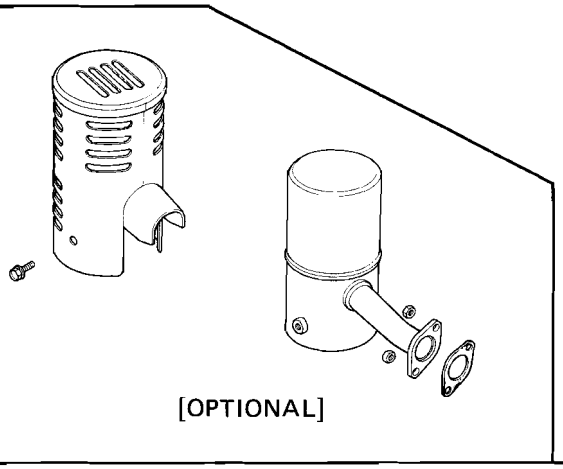


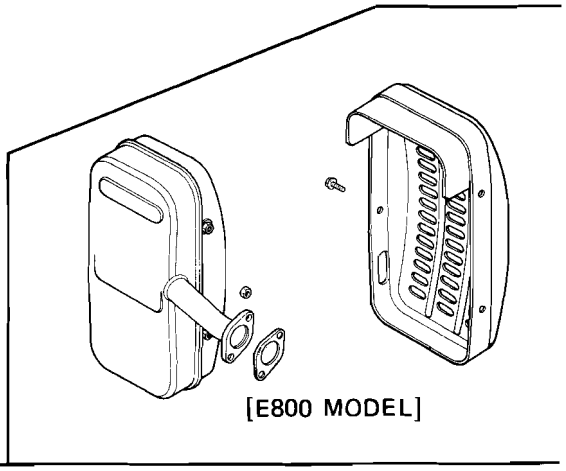
Date of Issue: November 10, 1975

1. FUEL TANK, MUFFLER AIR CLEANER

a. DISASSEMBLY / ASSEMBLY



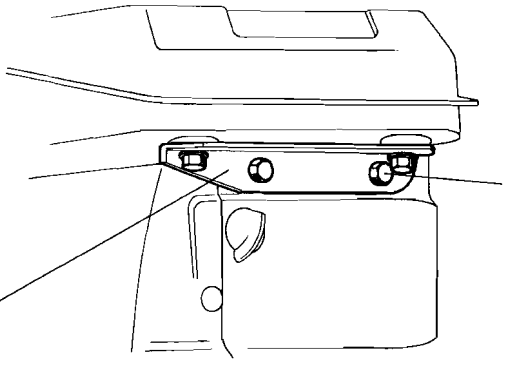

[OPTIONAL]


[E800 MODEL]

Date of Issue: November 10, 1975

<FUEL TANK>

NOTE:
Inspect tank frequently for debris, flush with gasoline if necessary.



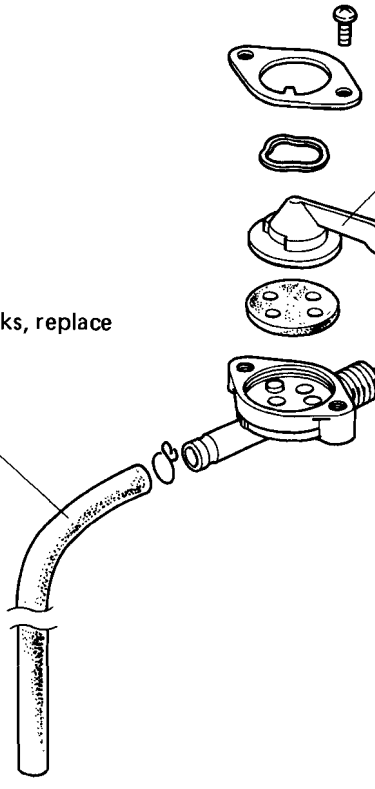
During assembly install four tank mounting bolts loosely, when proper alignment is assured, tighten securely.

Remove with tank.

✱ Do not forget the clamp for the high tension wire.

<FUEL COCK>

Before disassembling, be sure to drain the tank.



FUEL COCK LEVER
Check to be sure it moves freely.

FUEL TUBE
Check for kinks and cracks, replace if necessary.

SCREEN
Check for breakage or clogging.

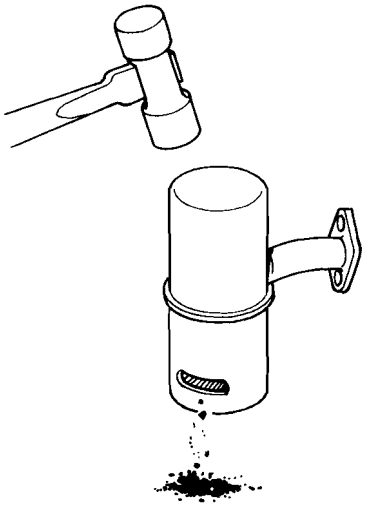
TURN BACKLE NUT
Tighten equally.

✱ After assembling fuel cock, check for leak, and retighten if necessary.

Date of Issue: November 10, 1975

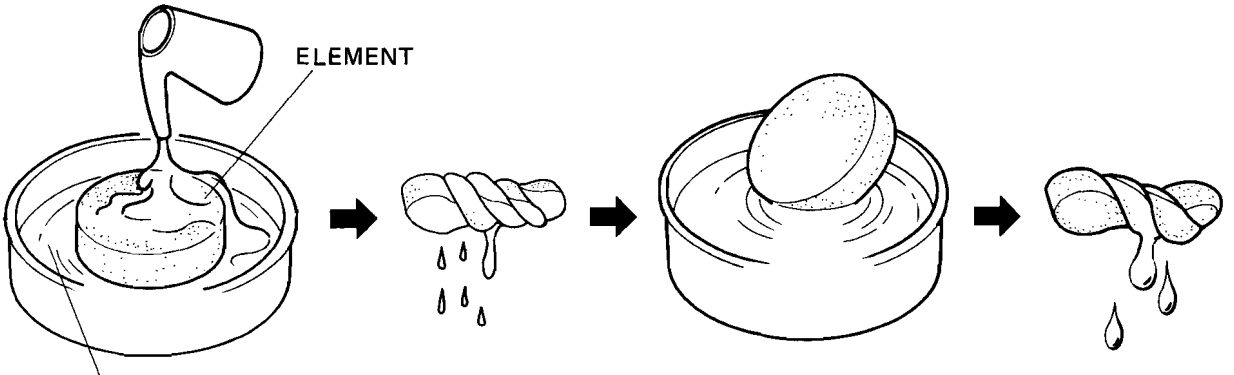
(b) CLEANING

<MUFFLER>



Lightly tap it around with soft hammer to decarbonize.

<AIR CLEANER>

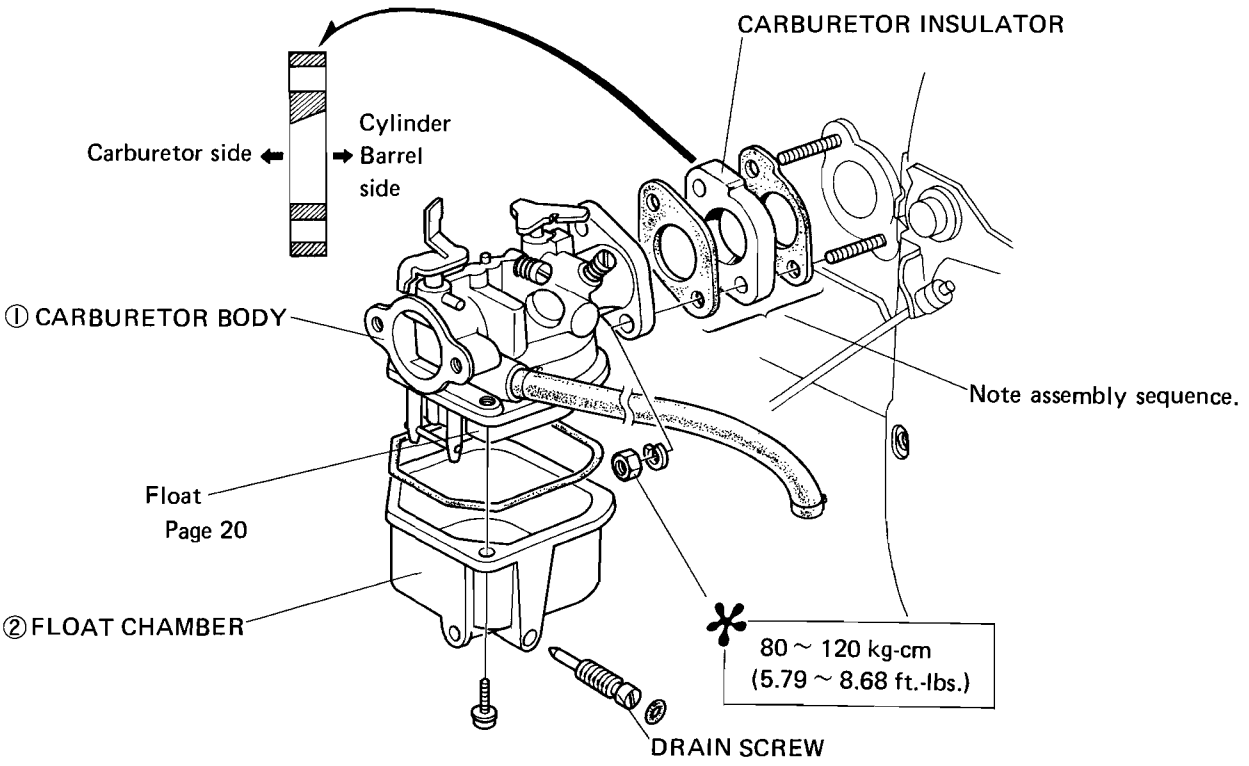


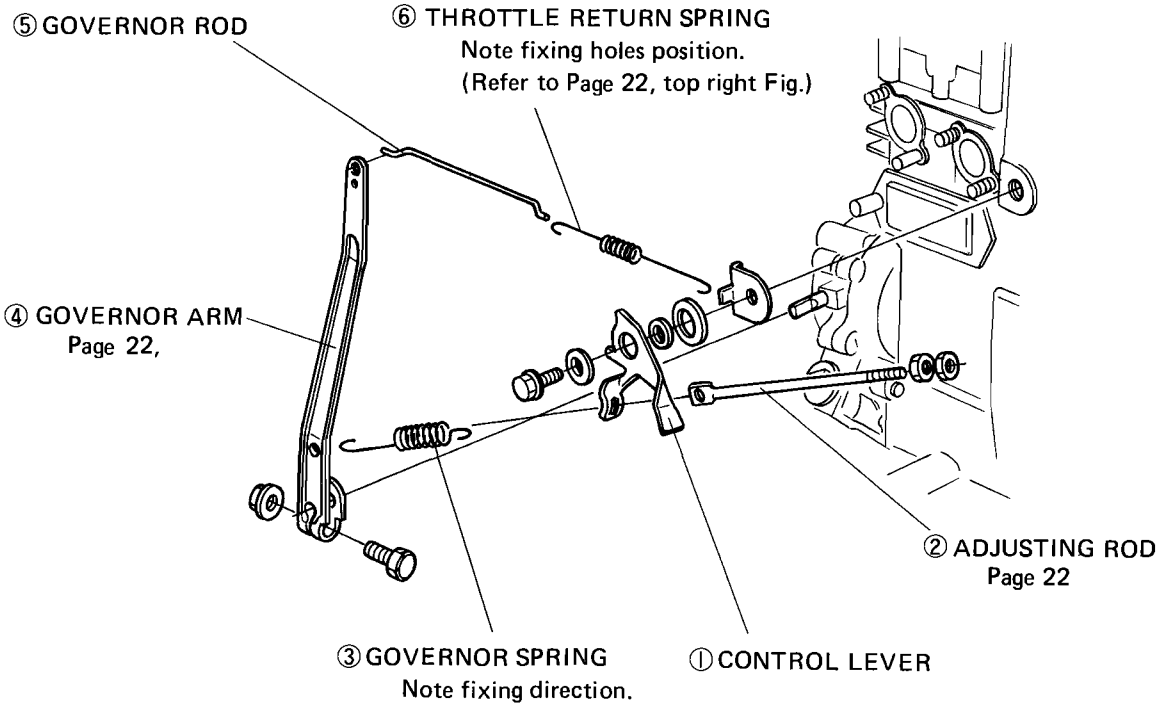
Wash in solvent. Squeeze firmly. Soak in oil/gasoline mixture (gasoline 10 : oil 1) Squeeze firmly.

Date of Issue: November 10, 1975

(a) DISASSEMBLY / ASSEMBLY

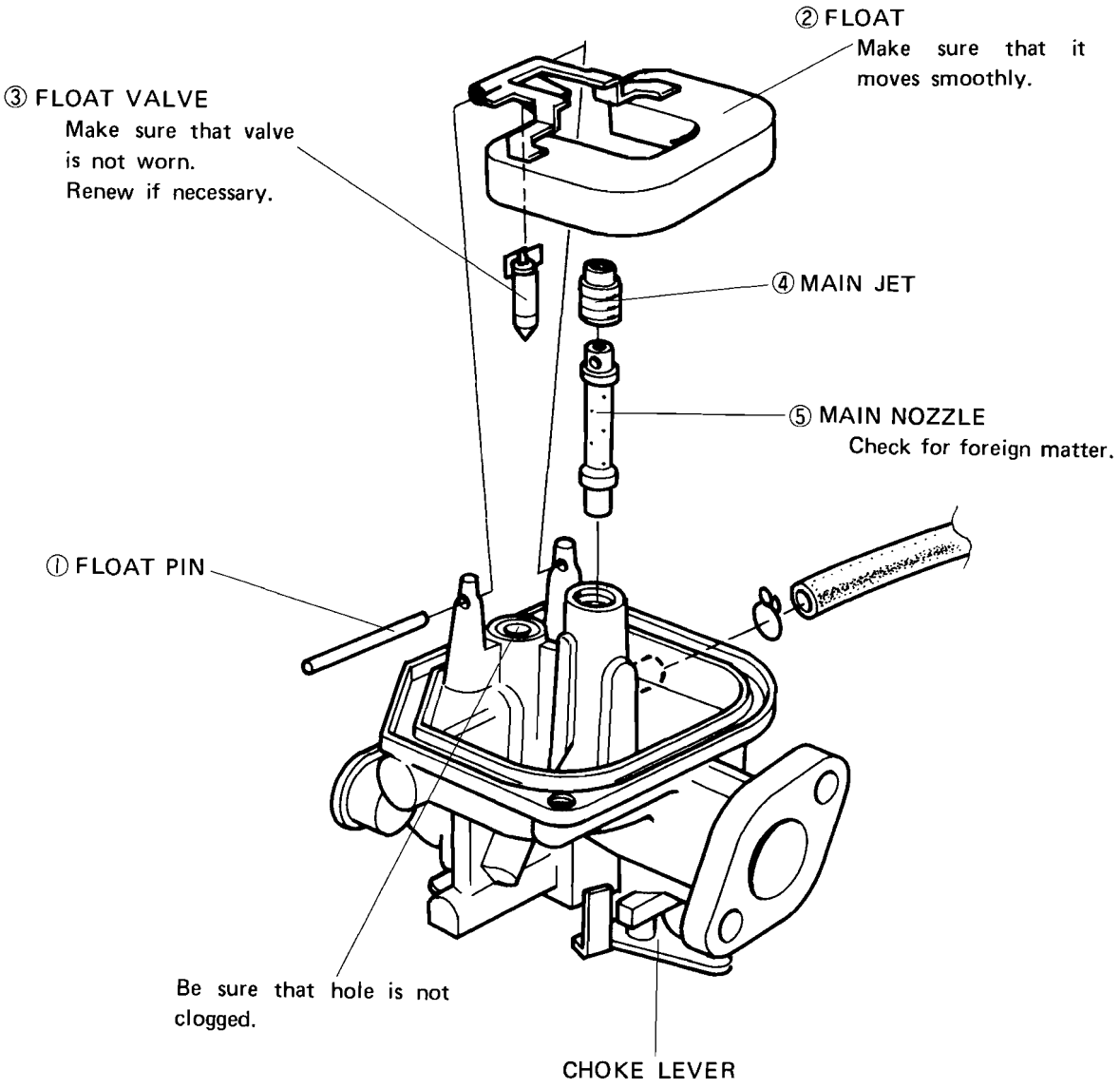
Before disassembly, be sure to drain carburetor.





Date of Issue: November 10, 1975

< FLOAT CHAMBER >

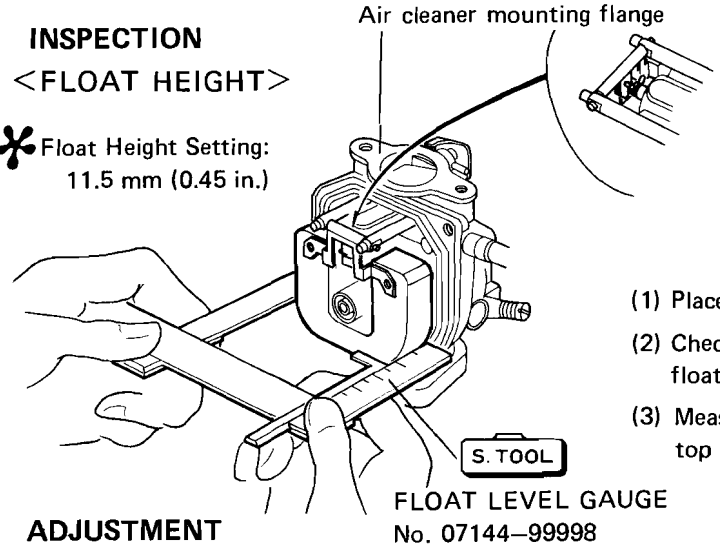


Date of Issue: November 10, 1975

(b) INSPECTION

<FLOAT HEIGHT>

✱ Float Height Setting:
11.5 mm (0.45 in.)



FLOAT LEVEL GAUGE
No. 07144–99998

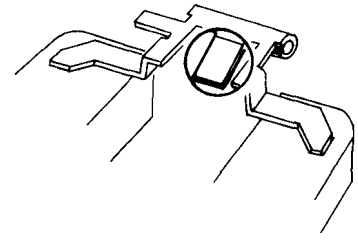
(1) Place carburetor on a level work surface as shown.

(2) Check that float valve is just beginning to contact float arm tab.

(3) Measure distance between carburetor body and top of float.

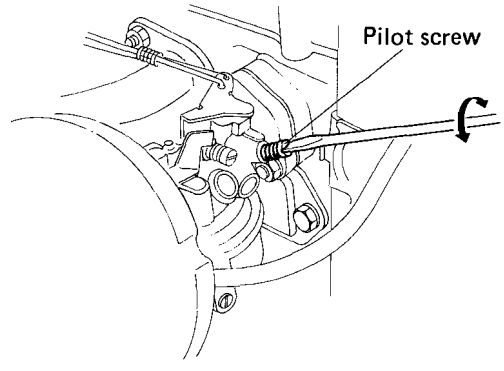
(c) ADJUSTMENT

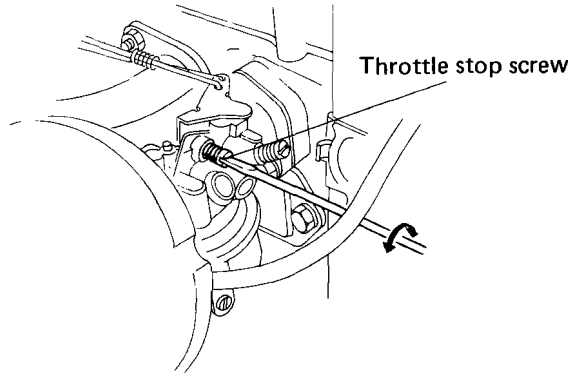
<FLOAT HEIGHT>



✱ Bend float arm tab to adjust height.

<CARBURETOR ADJUSTMENT>





NOTE:
All adjustments must be made at normal operating temperature.

(1) Turn in pilot screw all the way until it bottoms.

(2) Turn out pilot screw 1-3/8 turns.

(3) Start the engine.

(4) Turn throttle stop screw either in or out as necessary until engine idles at 1,400 RPM. Adjust pilot screw for maximum RPM and re-adjust throttle stop screw for 1,400 RPM.

Date of Issue: November 10, 1975

<GOVERNOR AND THROTTLE>

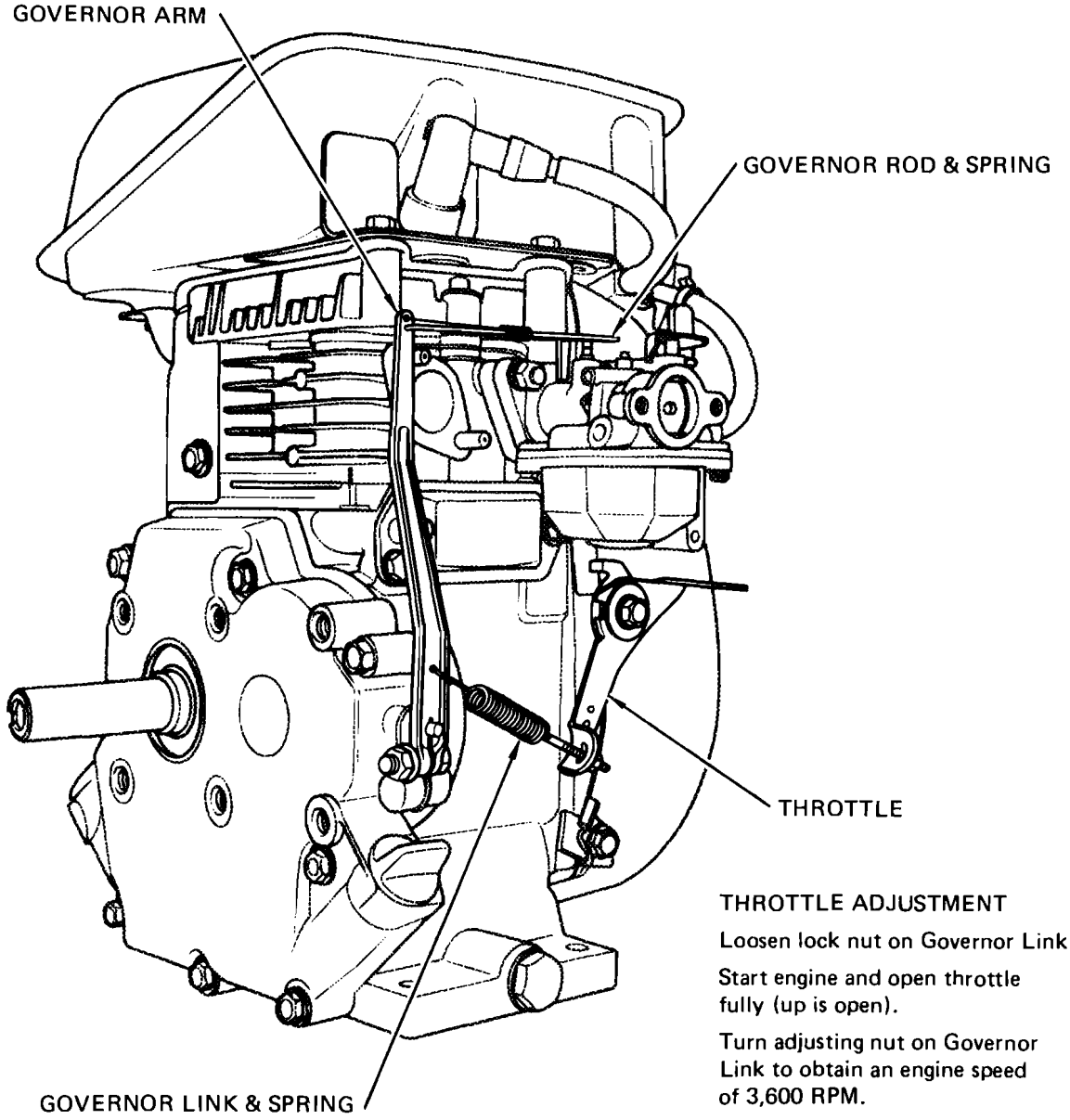
GOVERNOR ADJUSTMENT

Open throttle fully.

Loosen Governor Arm Set Bolt and push Governor Arm towards carburator until it stops.

Turn Governor Arm Pivot clockwise until it stops.

Tighten Governor Arm Set Bolt.



THROTTLE ADJUSTMENT

Loosen lock nut on Governor Link.

Start engine and open throttle fully (up is open).

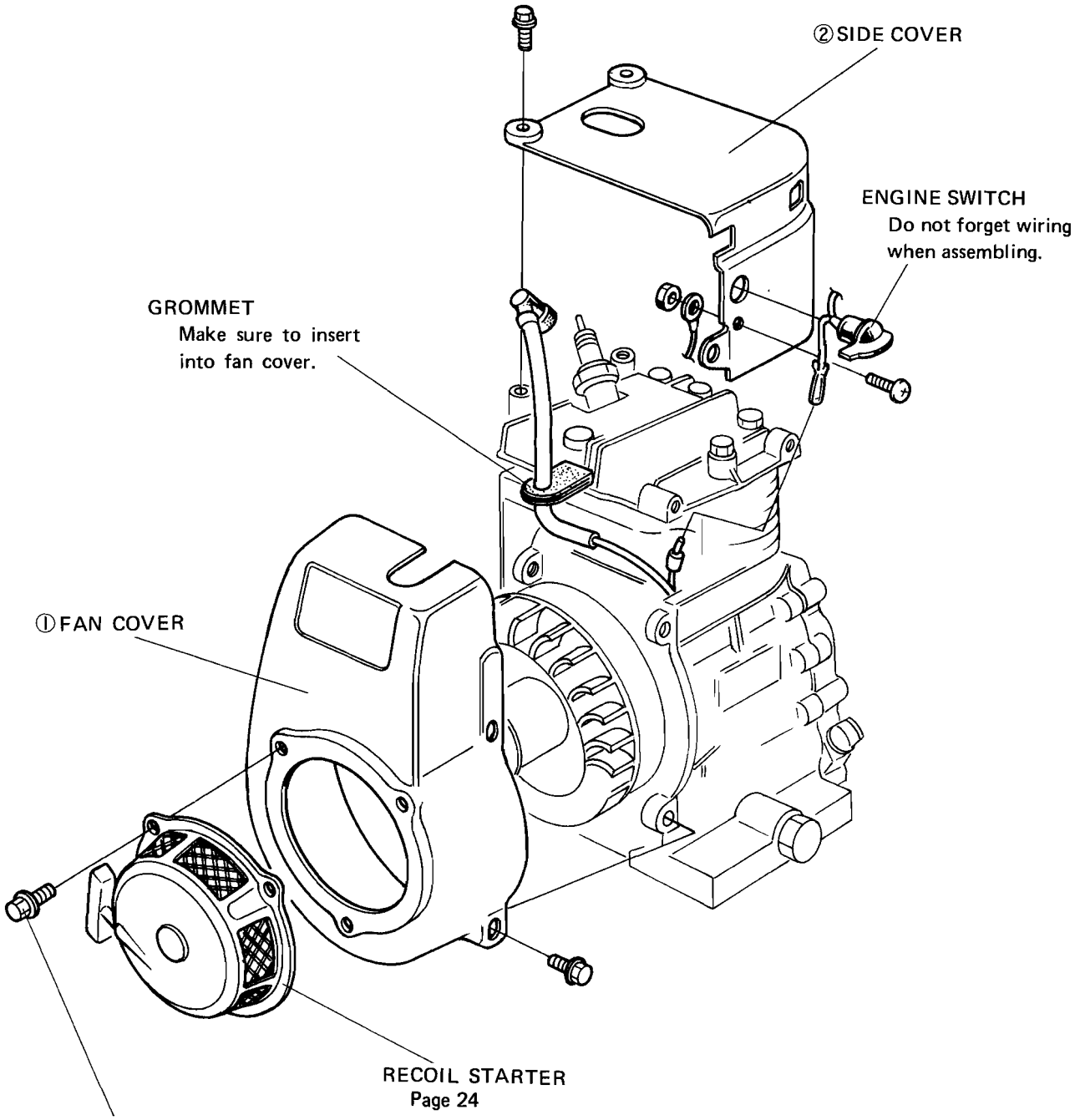
Turn adjusting nut on Governor Link to obtain an engine speed of 3,600 RPM.

Tighten lock nut, being careful to not disturb adjustment.

Date of Issue: November 10, 1975

3. RECOIL STARTER COVERS

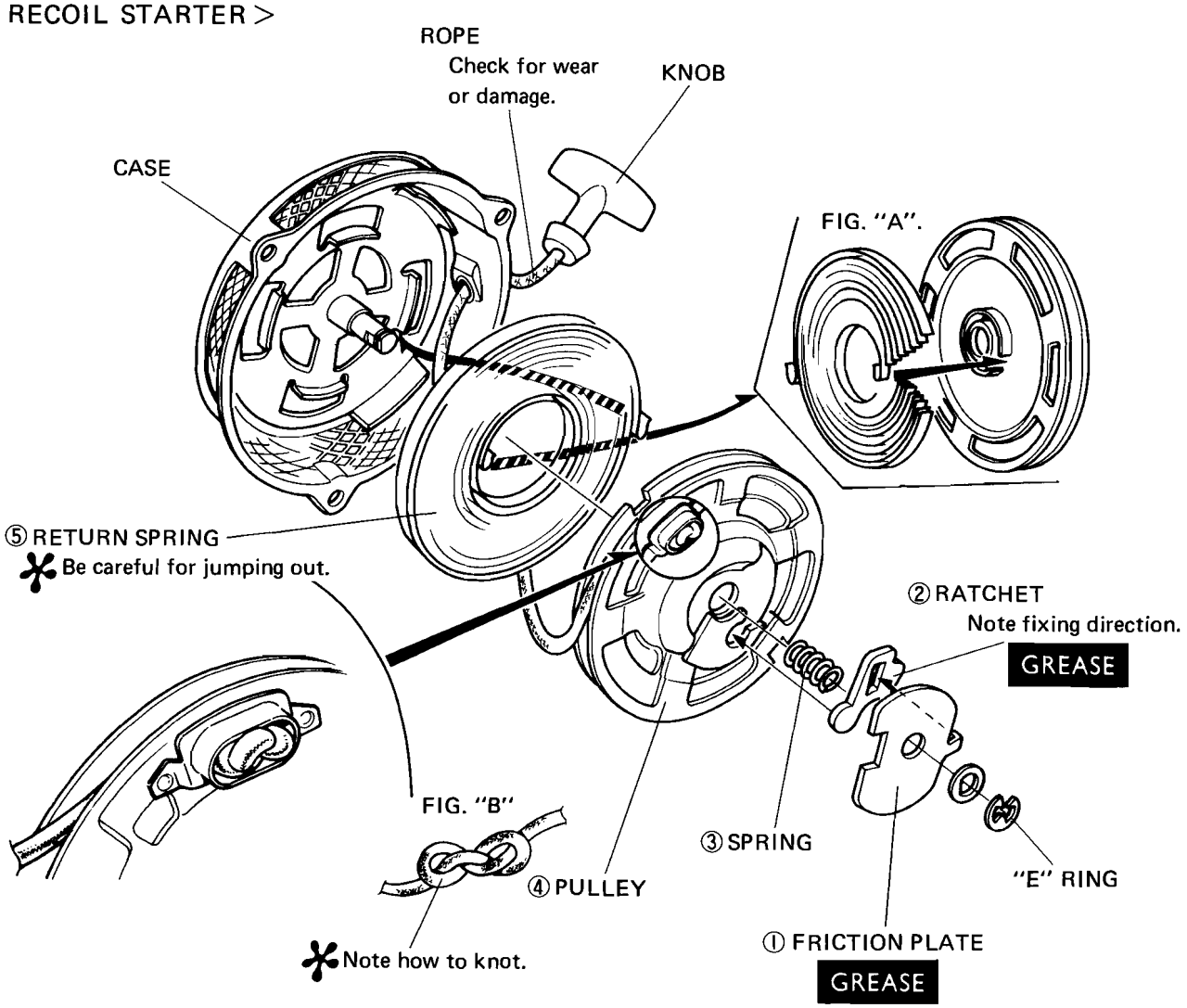
(a) DISASSEMBLY / ASSEMBLY



* If installed by bolts other than specified, noise may be developed.

Date of Issue: November 10, 1975

< RECOIL STARTER >



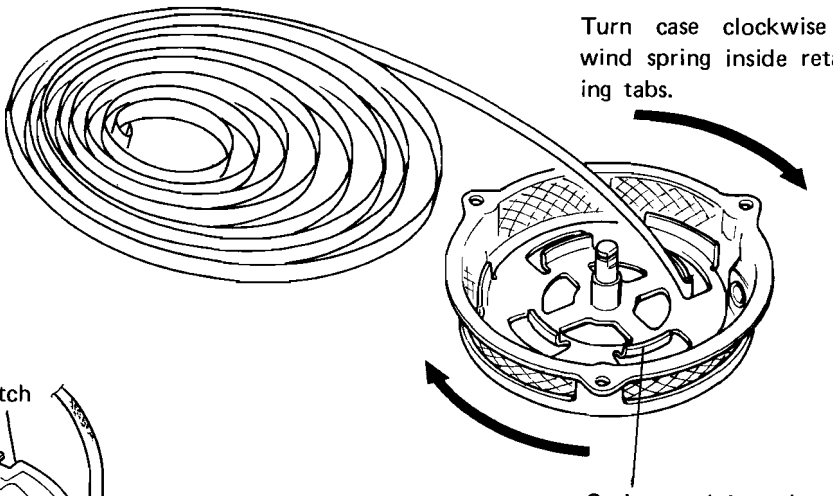
Date of Issue: November 10, 1975

< ASSEMBLY OF RECOIL STARTER >

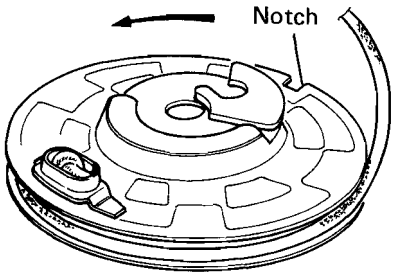
CAUTION:
Protect hand holding spring with a heavy glove.

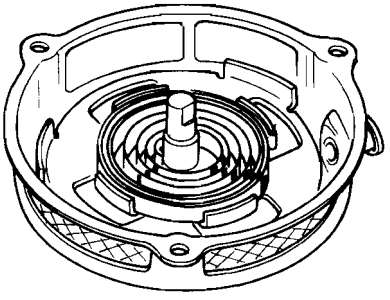
(1) Engage hook on outer end of spring on one of the four retaining tabs inside case.

Turn case clockwise to wind spring inside retaining tabs.



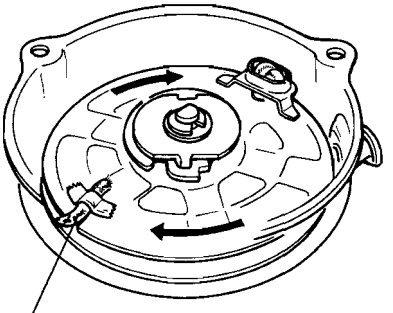
(2) Tie a knot in one end of starter rope and thread free end of rope through the hole on top of the pulley until the knot is pulled up against the hole.
Wind rope counterclockwise around pulley and temporarily secure free end in notch with tape.

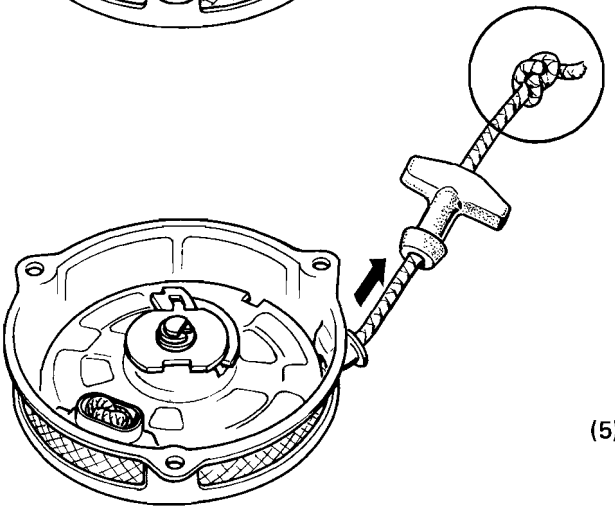




(3) Position pulley inside case, taking care to engage hook on inner end of spring with hook near the center of pulley. (Pulley will not seat fully until the spring is properly engaged with pulley).

(4) Wind spring by turning pulley counterclockwise three turns.



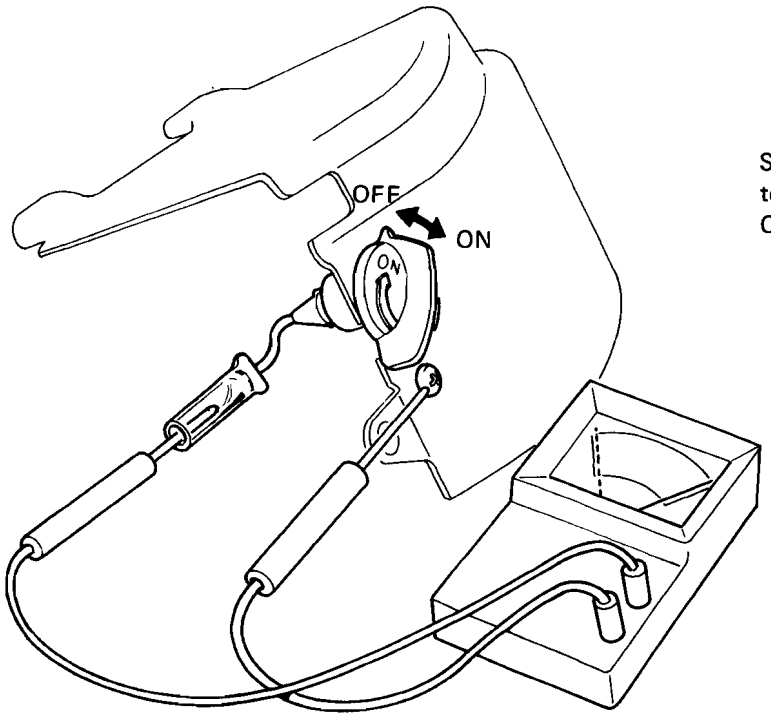


(5) Feed free end of rope through hole in case and through handle. Tie a knot at the end of the rope and seat knot against end of handle.

Date of Issue: November 10, 1975

(b) INSPECTION

< ENGINE SWITCH >

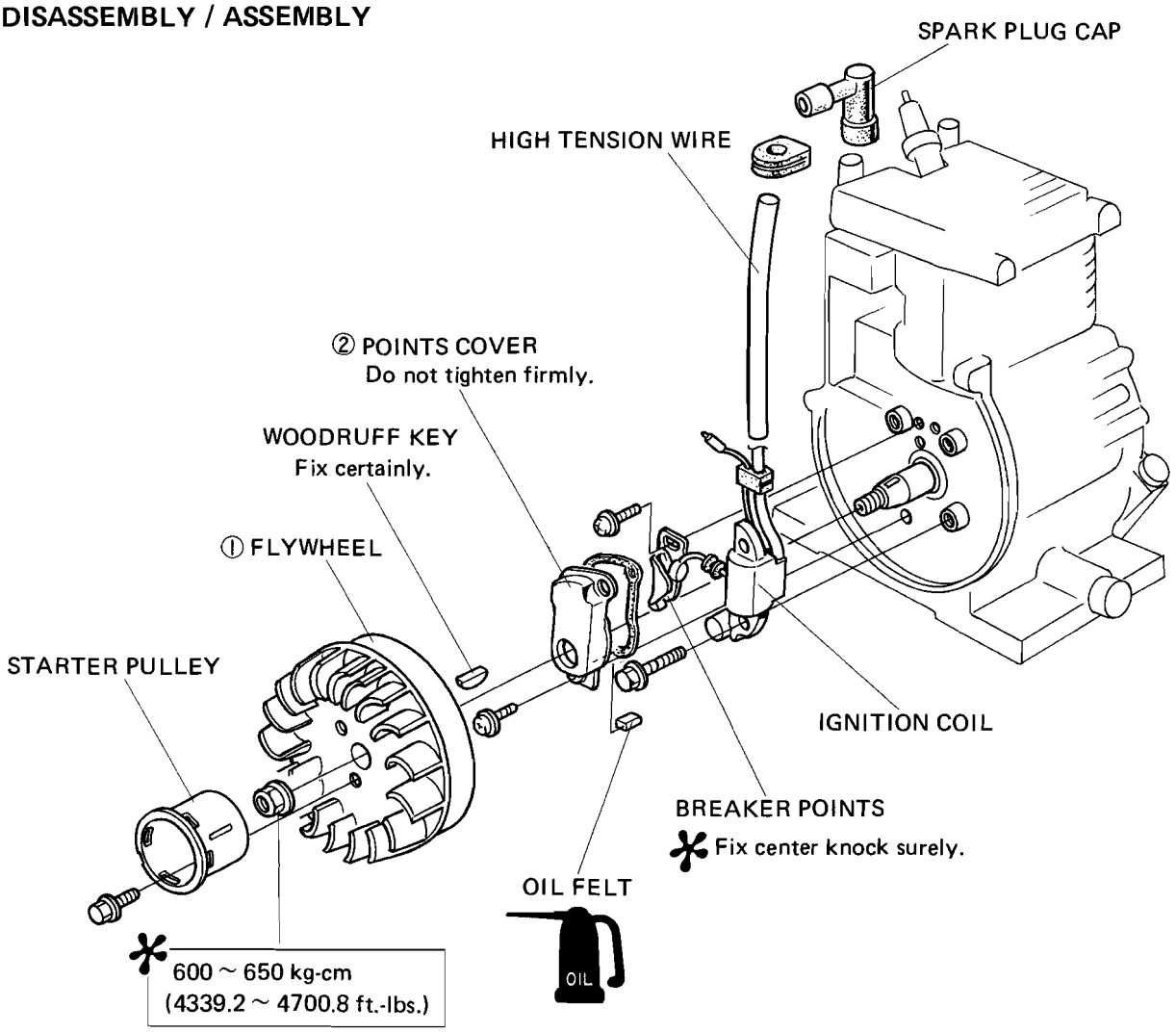


Switch is NORMAL if pointer of tester SWINGS when it is turned ON.

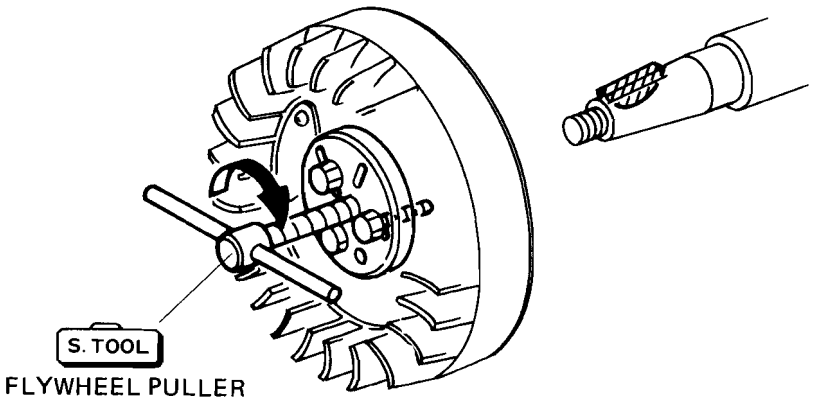
Date of Issue: November 10, 1975

4. FLYWHEEL, IGNITION COIL, BREAKER POINTS

(a) DISASSEMBLY / ASSEMBLY



<FLYWHEEL>



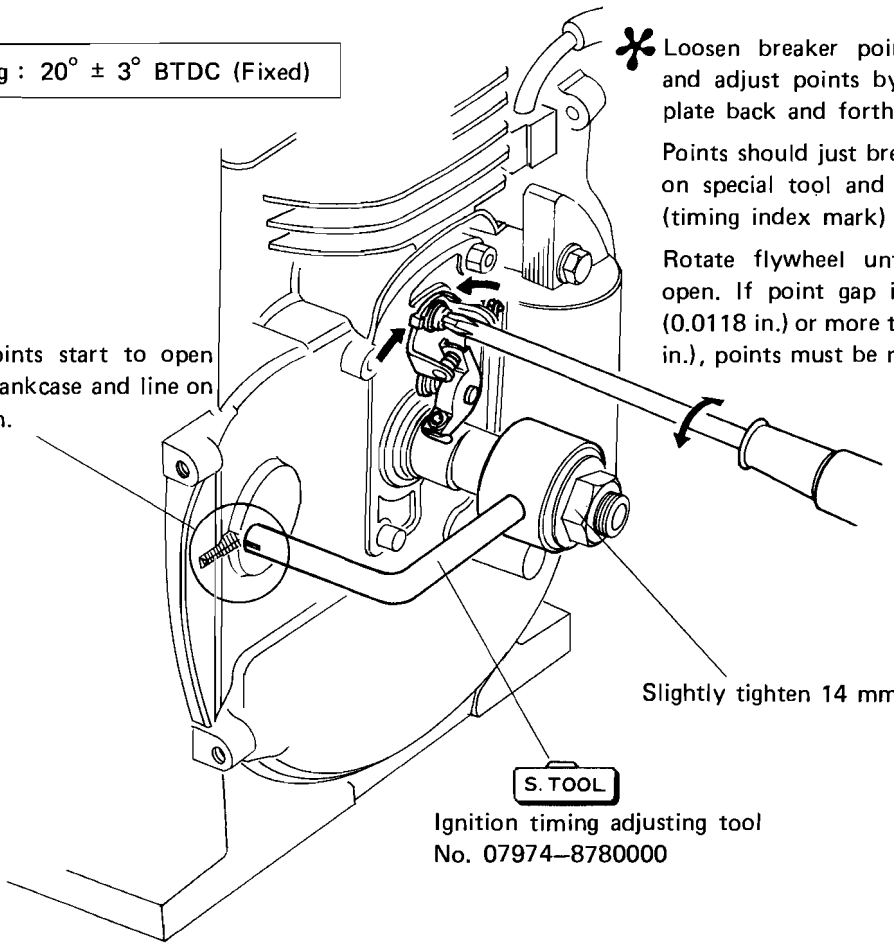
FLYWHEEL PULLER
No. 07935–8050001

Date of Issue: Dec., 1976

(c) ADJUSTMENT

< IGNITION TIMING >

Ignition timing : 20° ± 3° BTDC (Fixed)



✱ Loosen breaker point mounting screw and adjust points by shifting their base plate back and forth with a screwdriver.

Points should just break open when mark on special tool and mark on crankcase (timing index mark) are aligned.

Rotate flywheel until points are fully open. If point gap is less than 0.3 mm (0.0118 in.) or more than 0.4 mm (0.0157 in.), points must be replaced.

✱ Ensure that points start to open when line on crankcase and line on special tool align.

Slightly tighten 14 mm nut.

Ignition timing adjusting tool
No. 07974–8780000

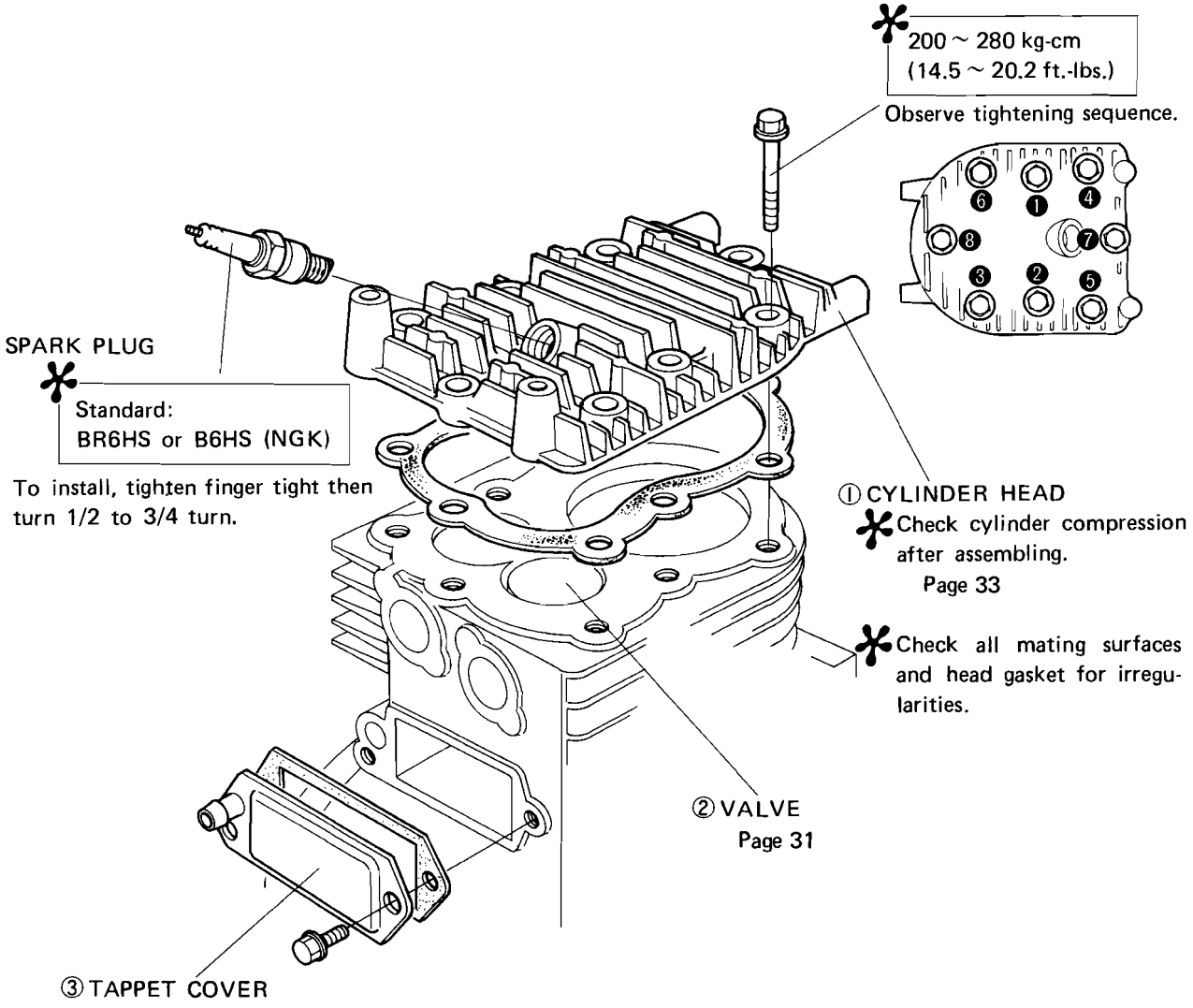
WHEN SPECIAL TOOL IS UNAVAILABLE:

✱ Make sure that points start to open when "F" mark on flywheel and line on crankcase align.

Date of Issue: November 10, 1975

(a) DISASSEMBLY / ASSEMBLY

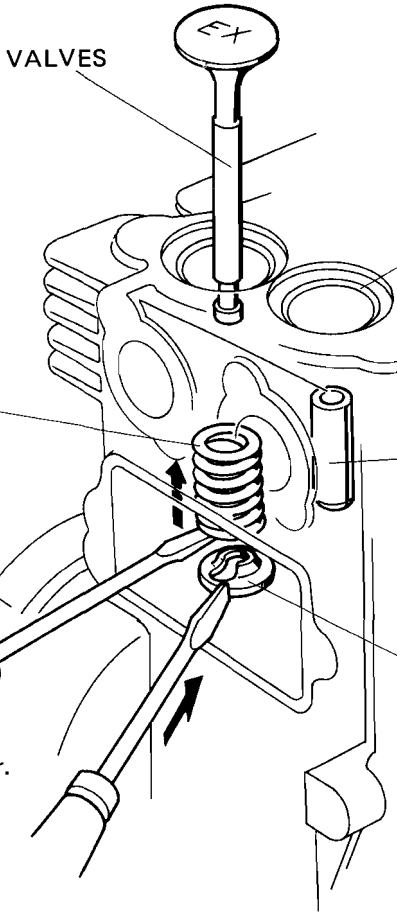
<CYLINDER HEAD/SPARK PLUG/TAPPET COVER>



Date of Issue: November 10, 1975

< VALVES >

NOTE:
During assembly, take care to not mix intake and exhaust valves.

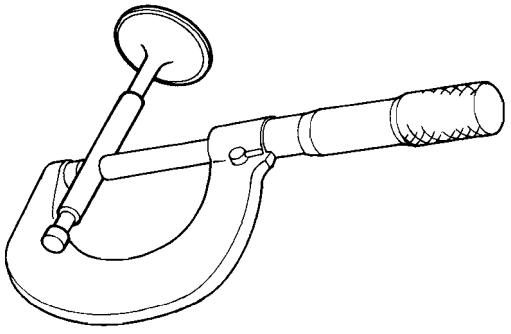


To disassemble:
Locate cutaway in spring retainer and move towards tappet. Raise outside edge of retainer and push inward.

Date of Issue: November 10, 1975

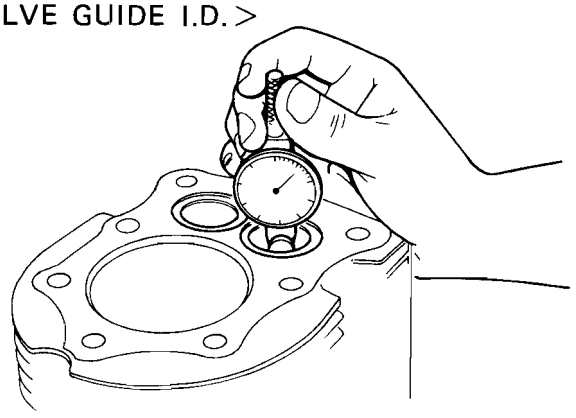
(b) INSPECTION

<VALVE STEM O.D.>



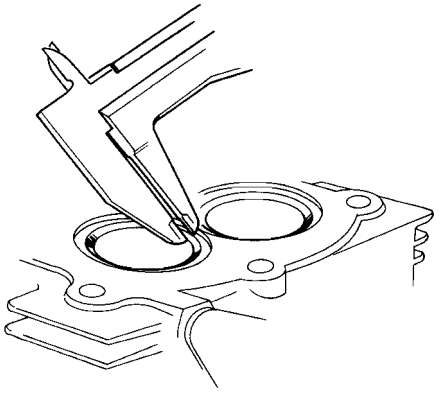
	Standard	Service limit
IN	6.955 mm (0.274 in.)	Replace if under 6.91 mm (0.272 in.)
EX	6.910 mm (0.272 in.)	Replace if under 6.89 mm (0.271 in.)

<VALVE GUIDE I.D.>



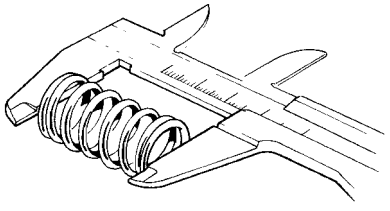
Standard	Service limit
7.015 mm (0.276 in.)	Replace if above 7.065 mm (0.278 in.)

<VALVE SEAT WIDTH>



Standard	Service limit
0.7 mm (0.028 in.)	Replace if above 1.5 mm (0.059 in.)

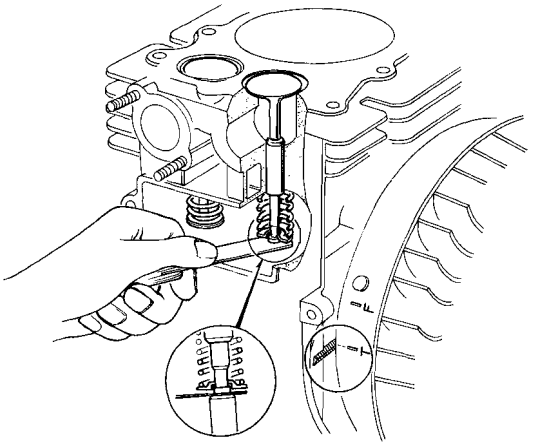
<VALVE SPRING FREE LENGTH>



Standard	Service limit
27.9 mm (1.098 in.)	Replace if under 26.0 mm (1.024 in.)

Date of Issue: November 10, 1975

<TAPPET CLEARANCE>

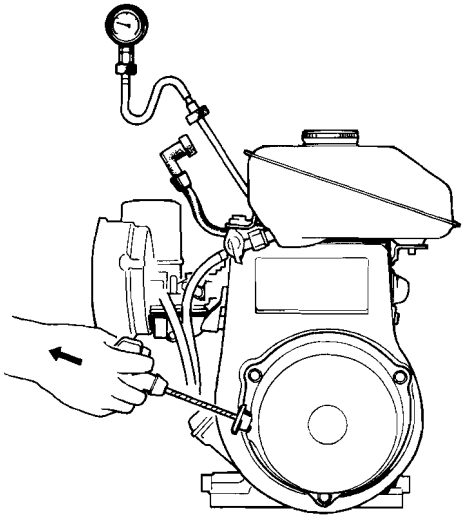


Standard:	0.05 ~ 0.10 mm (0.002 ~ 0.004 in.)

✱ Adjust if out of standard.

✱ Measure at TDC on compression when cold.

<CYLINDER COMPRESSION>



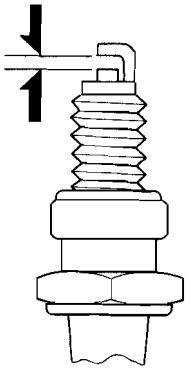
✱ To obtain compression reading, pull vigorously on starter cord 4 to 6 times with throttle and choke fully open.

COMPRESSION: 5.3 kg-cm^2 (75 PSI) ±20%

If compression is low:
Check head gasket, valve seating and rings.

If compression is high:
Check for excessive intake valve clearance or large carbon deposits in combustion chamber.

<SPARK PLUG GAP>

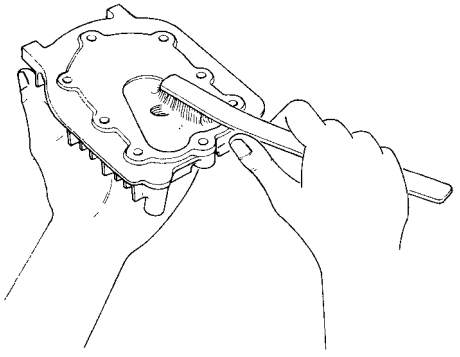


Standard	Service limit
0.7 mm (0.028 in.)	Adjust if above 0.8 mm (0.031 in.)

Date of Issue: November 10, 1975

(c) ADJUSTMENT / REPAIR

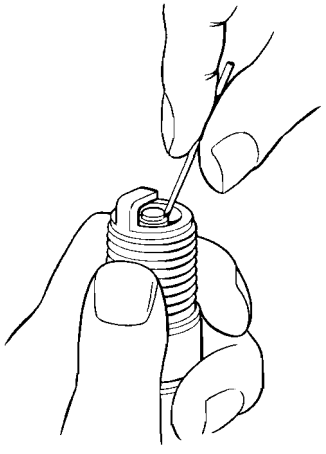
<CYLINDER HEAD CLEANING>



✱ Do not scratch the surface.

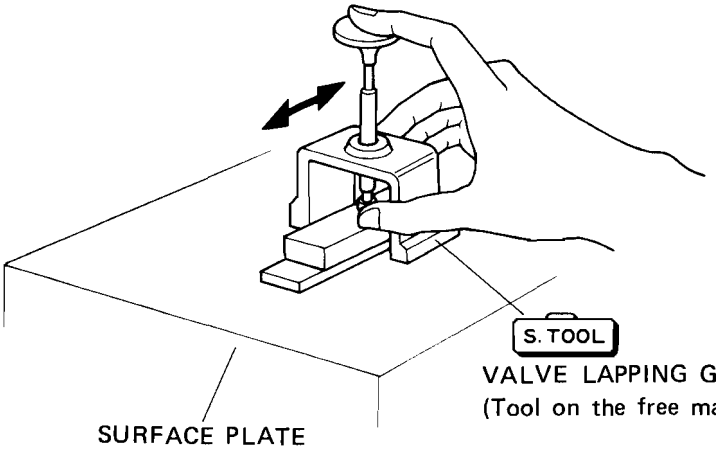
Remove carbon deposits.

<SPARK PLUG CLEANING>



Remove carbon deposits with plug cleaner or wire brush.

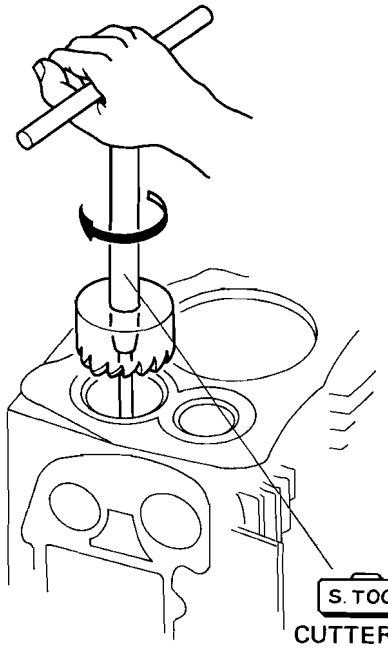
<TAPPET CLEARANCE ADJUSTMENT>



✱ Grind stem end until proper tappet clearance is obtained.
Place valve in GUIDE and slide end over oil stone back and forth.

Date of Issue: November 10, 1975

<VALVE SEAT RESEATING>



CUTTER HOLDER
No. 07981–8050000

(1) Cut off valve seat with 90° cutter.

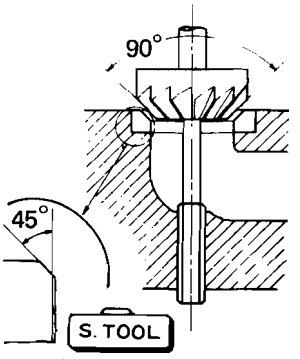
(2) Check valve seat by contacting with a coat of red lead.

(3) Cut off valve seat width and its position with 120° cutter.

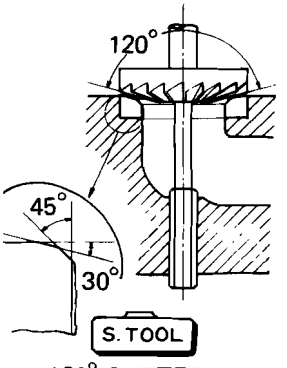
(4) Finish with 90° cutter.

(5) Check valve seat width by contacting with a coat of red lead applied to surface.

(6) Recheck tappet clearance after reseating.

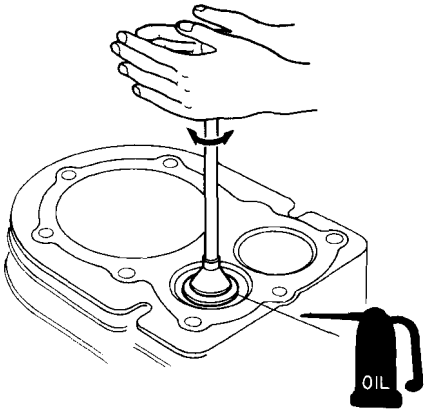


90° CUTTER
No. 07980–8050100

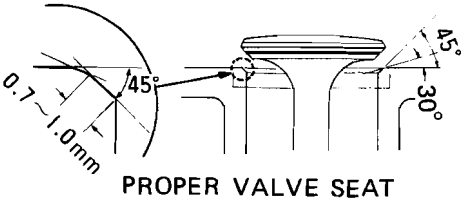


120° CUTTER
No. 07980–0980300

<VALVE LAPPING>



✱ Place valve grinding compound and oil between valve and seat and rotate hand valve lapper against seat until two surfaces are lapped together.
Do not use excessive compound and remove all traces of compound after lapping.



PROPER VALVE SEAT

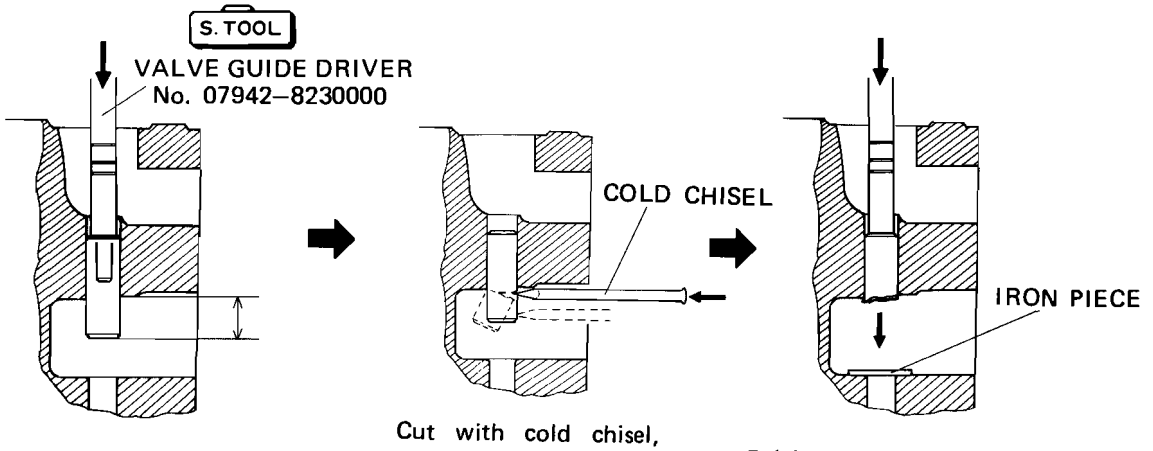
ABNORMAL VALVE SEAT

✱ Recheck tappet clearance after lapping.

Date of Issue: November 10, 1975

<VALVE GUIDE REPLACEMENT>

(REMOVAL)

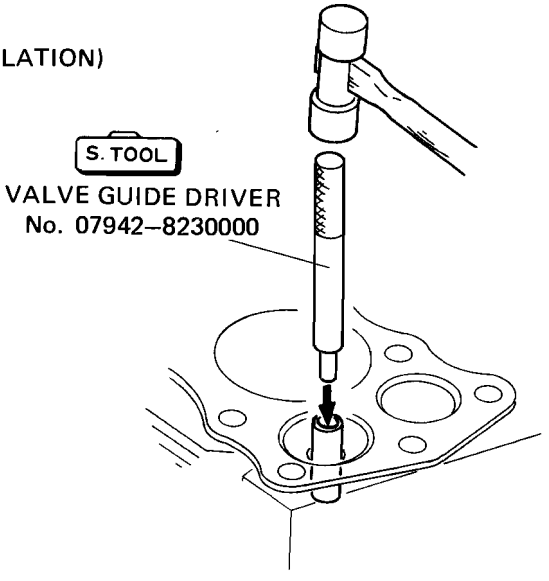


Press about 15 mm (0.591 in.).

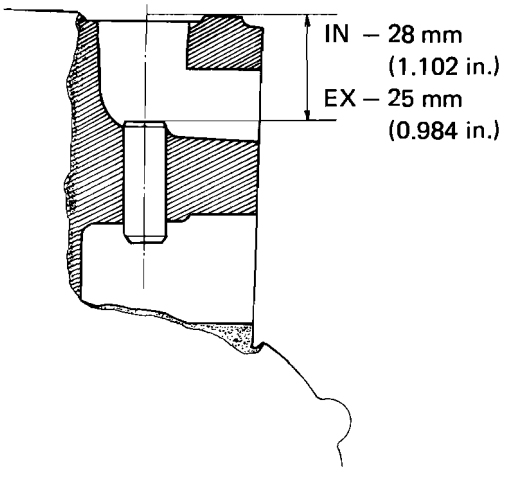
Cut with cold chisel, and then break off.

Driving out remained guide.

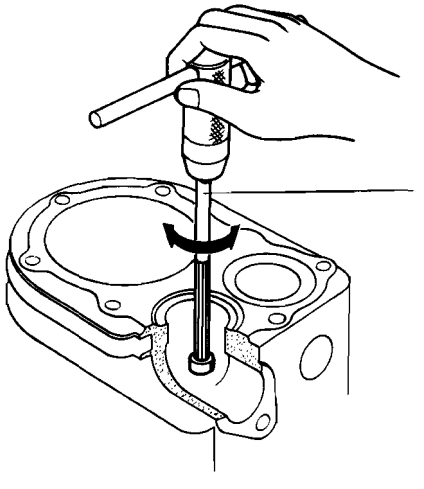
(INSTALLATION)



✱ Driving depth



(REAMING)



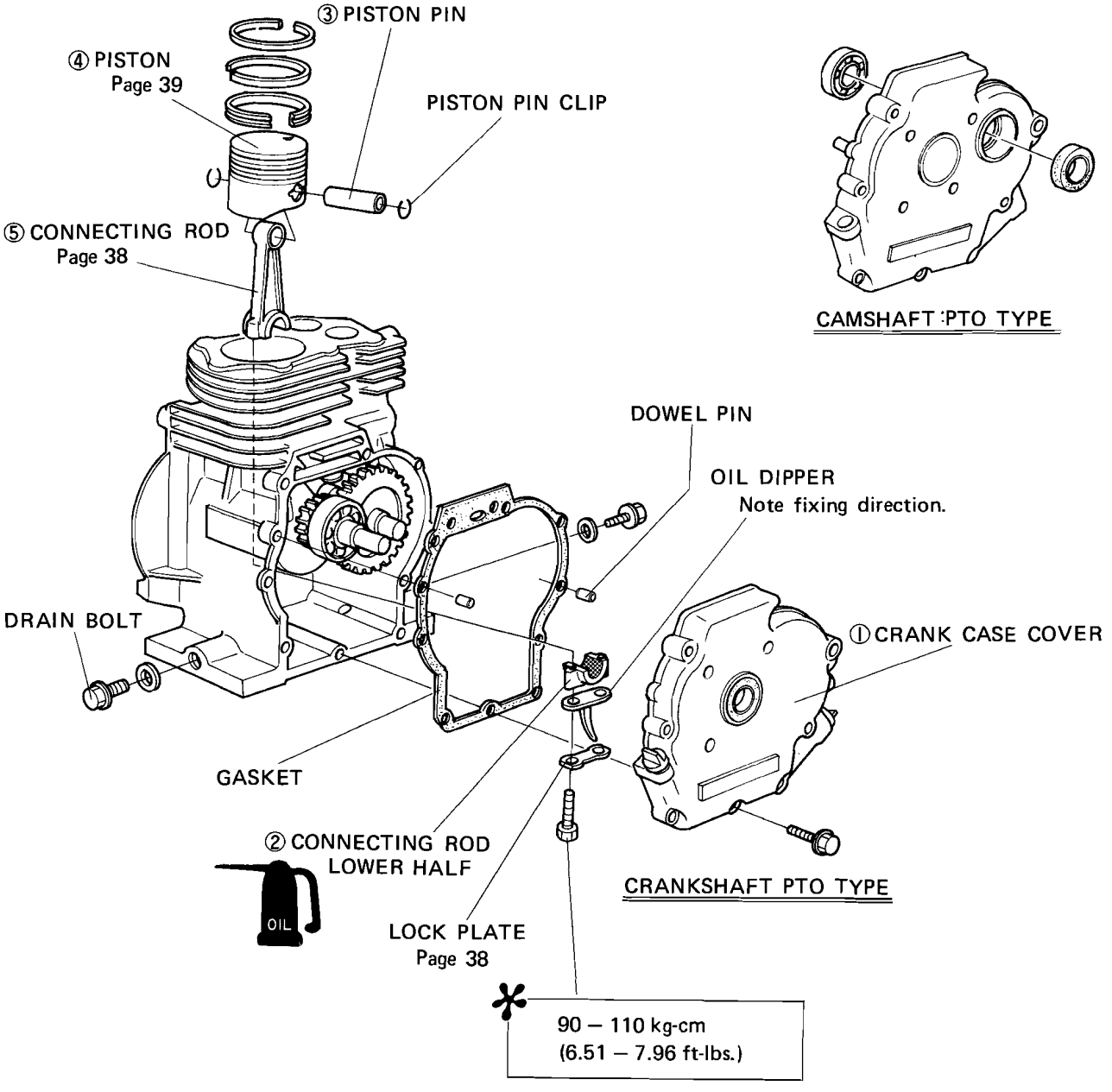
✱ After installation, ream valve guides with valve guide reamer.

S. TOOL
VALVE GUIDE REAMER
No. 07984–5900000

Date of Issue: November 10, 1975

6. CRANKCASE, PISTON CONNECTING ROD

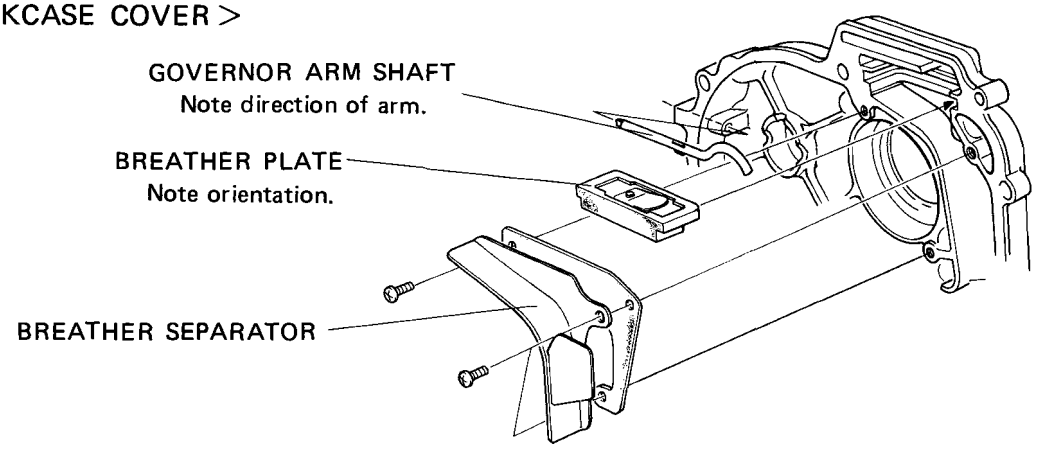
(a) DISASSEMBLY / ASSEMBLY



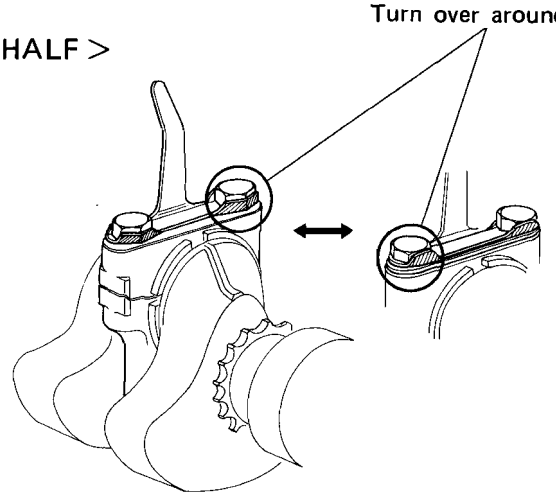
CAMSHAFT :PTO TYPE

Date of Issue: November 10, 1975

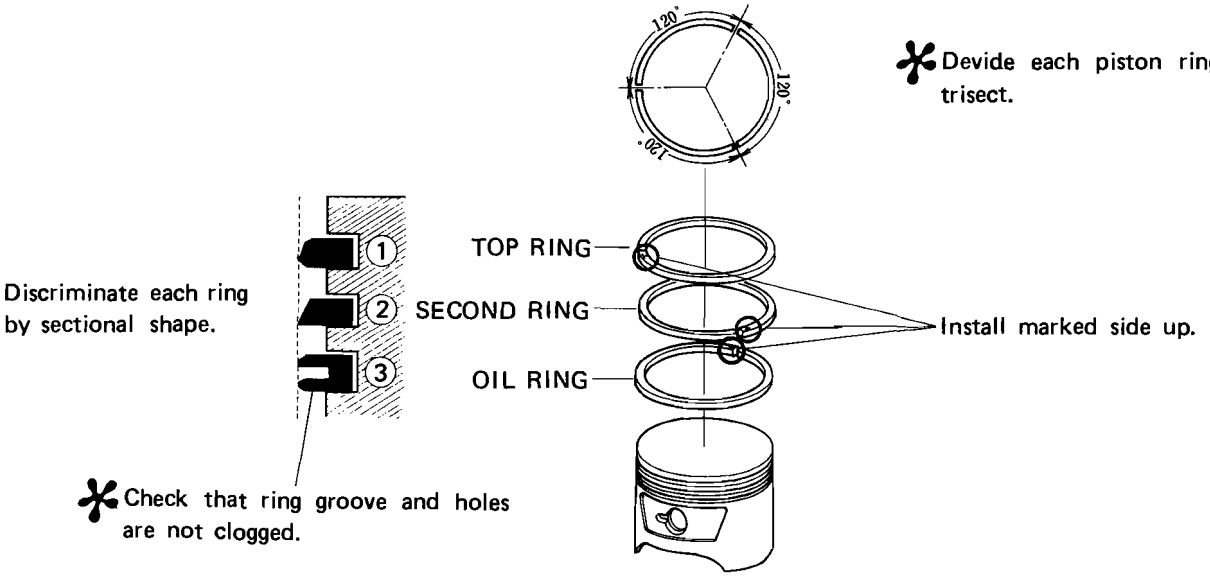
<CRANKCASE COVER>



<CONNECTING ROD LOWER HALF>

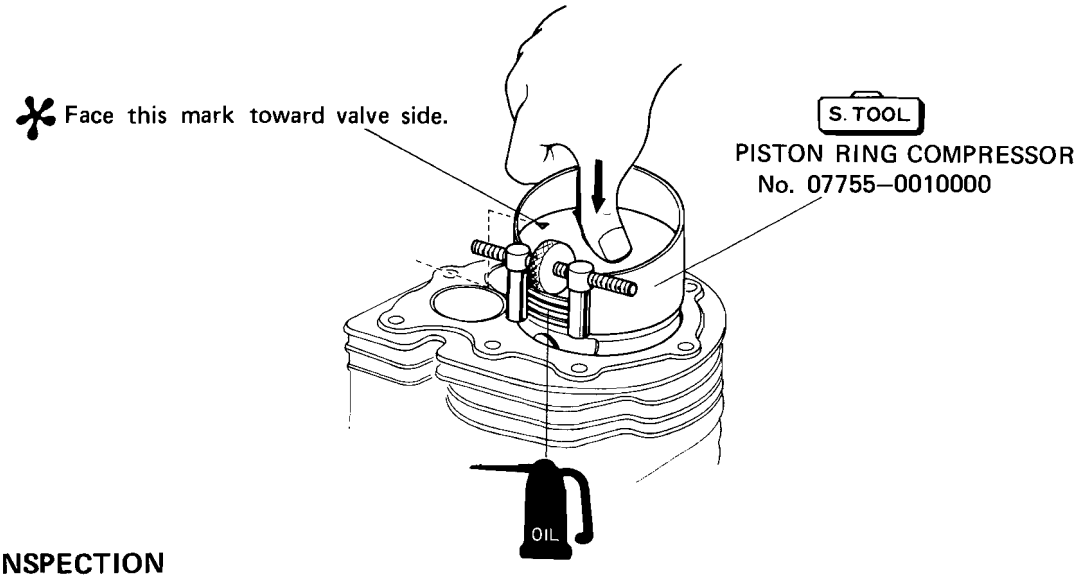


<PISTON RING>



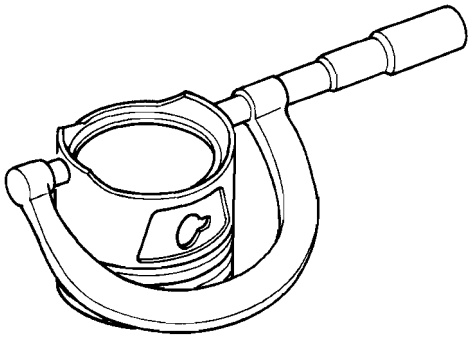
Date of Issue: November 10, 1975

<PISTON>



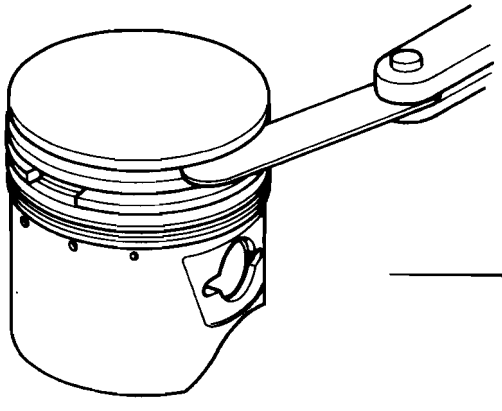
(b) INSPECTION

<PISTON O.D. AT SKIRT>

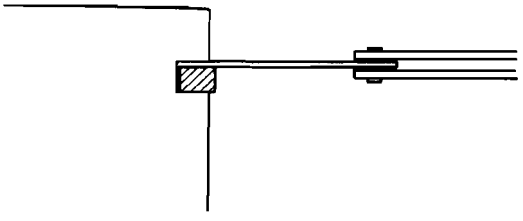


Standard	Service limit
63.96 mm (2.518 in.)	Replace if under 63.7 mm (2.508 in.)

<PISTON O.D. AT SKIRT>



Standard	Service limit
0.03 mm (0.001 in.)	Replace if above 0.1 mm (0.004 in.)

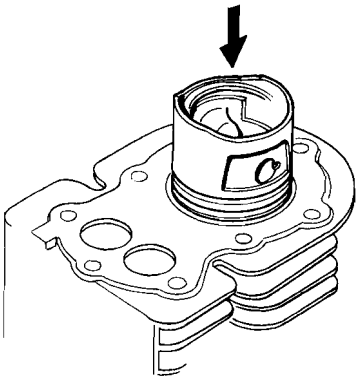


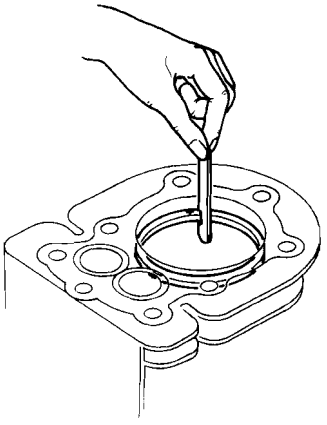
Date of Issue: November 10, 1975

<PISTON RING GAP>

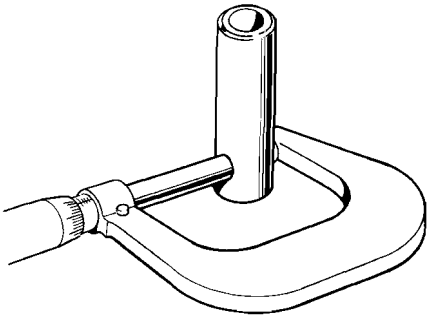
✱ Make use of piston top to press in piston ring.

Standard	Service limit
0.3 mm (0.012 in.)	Replace if above 0.6 mm (0.024 in.)



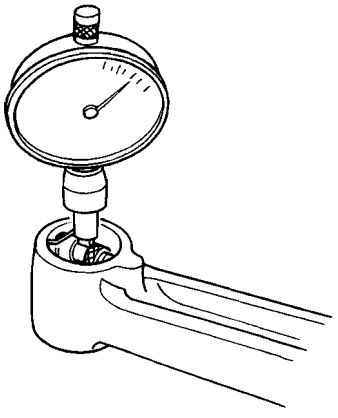


<PISTON PIN O.D.>



Standard	Service limit
15.00 mm (0.591 in.)	Replace if under 14.97 mm (0.589 in.)

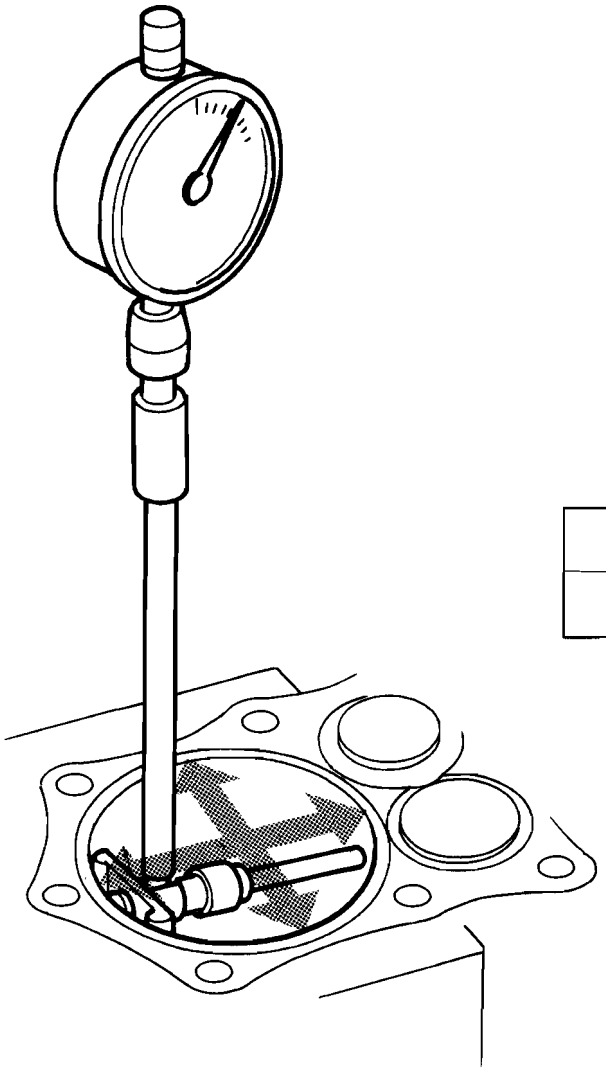
<CONNECTING ROD SMALL END I.D.>



Standard	Service limit
15.005 mm (0.591 in.)	Replace if above 15.05 mm (0.593 in.)

Date of Issue: November 10, 1975

<CYLINDER I.D.>

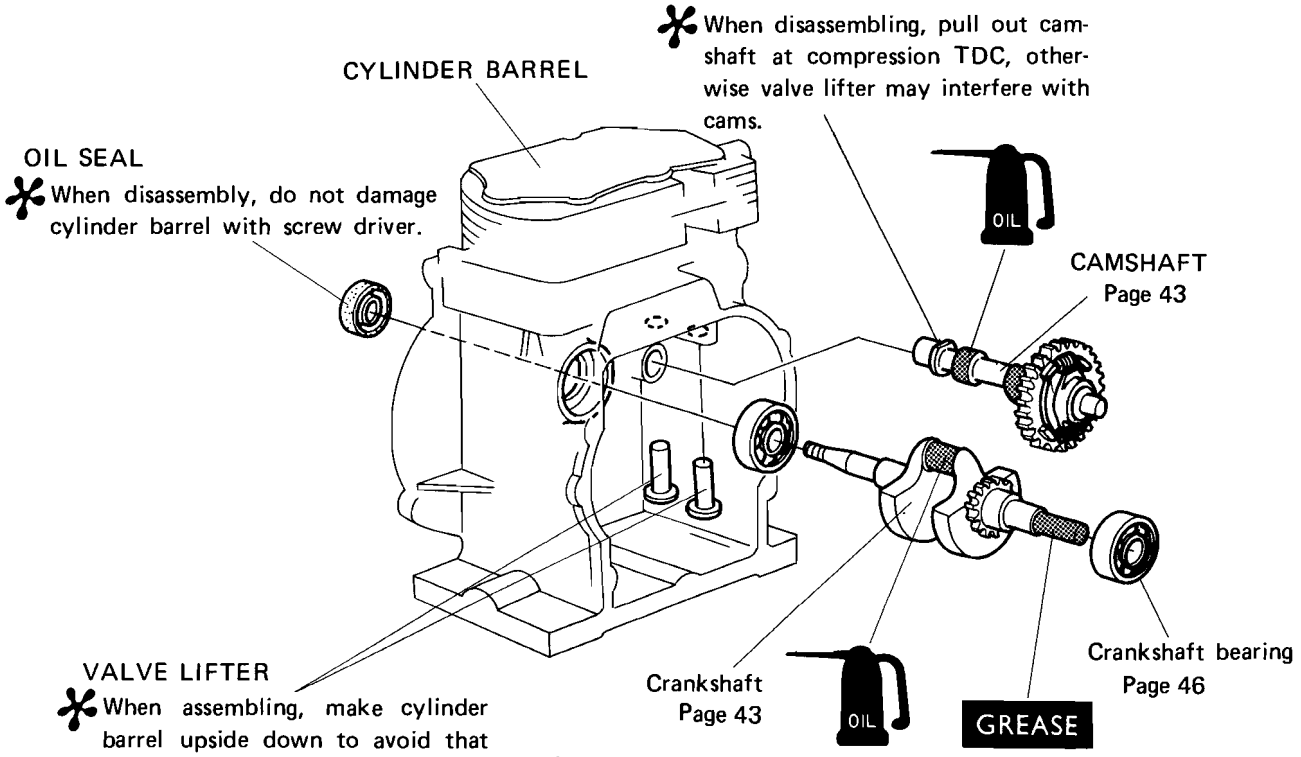


Standard	Service limit
64.0 mm (2.520 in.)	Replace if above 64.1 mm (2.524 in.)

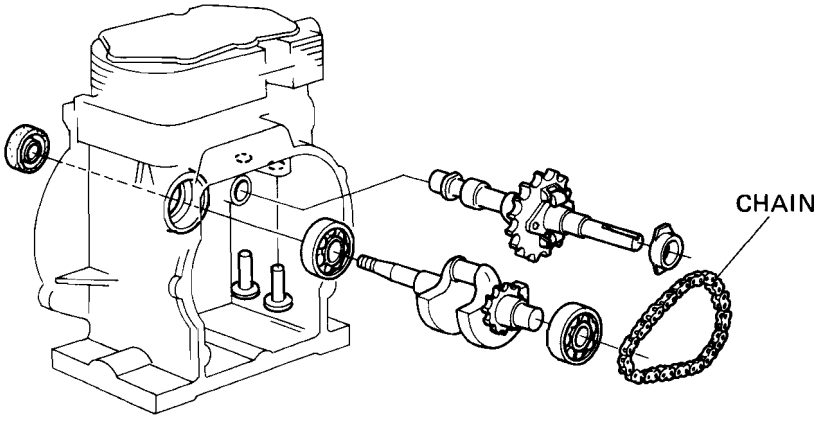
Date of Issue: November 10, 1975

(a) DISASSEMBLY / ASSEMBLY

CRANKSHAFT PTO TYPE

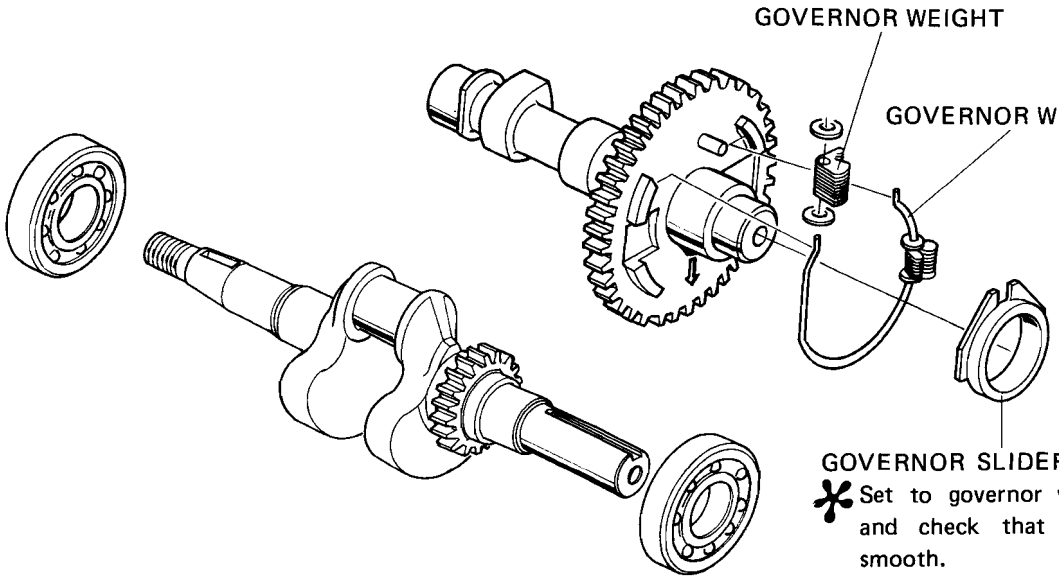


CAMSHAFT PTO TYPE



Date of Issue: November 10, 1975

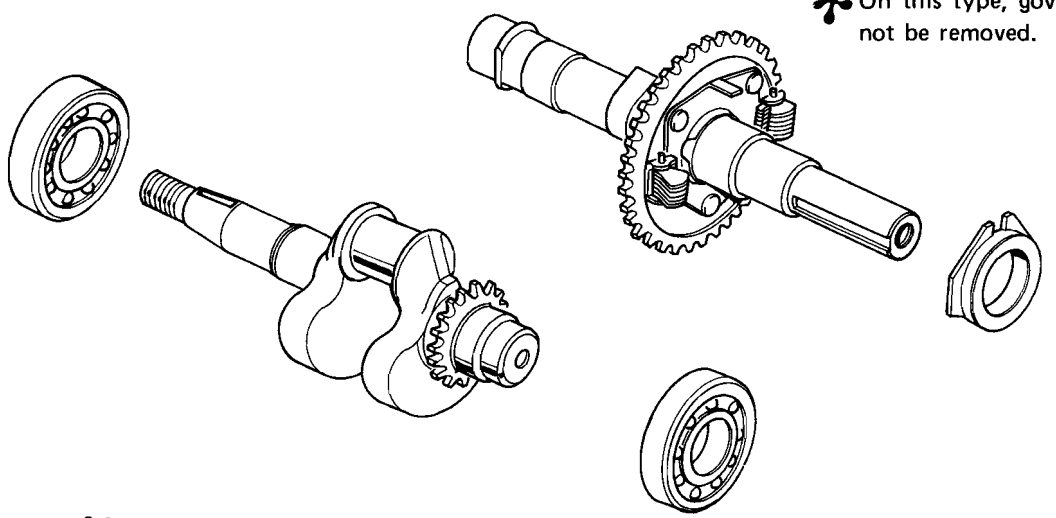
<CRANKSHAFT PTO TYPE>



✱ Set to governor weight correctly, and check that its operation is smooth.

<CAMSHAFT PTO TYPE>

✱ On this type, governor weight can not be removed.

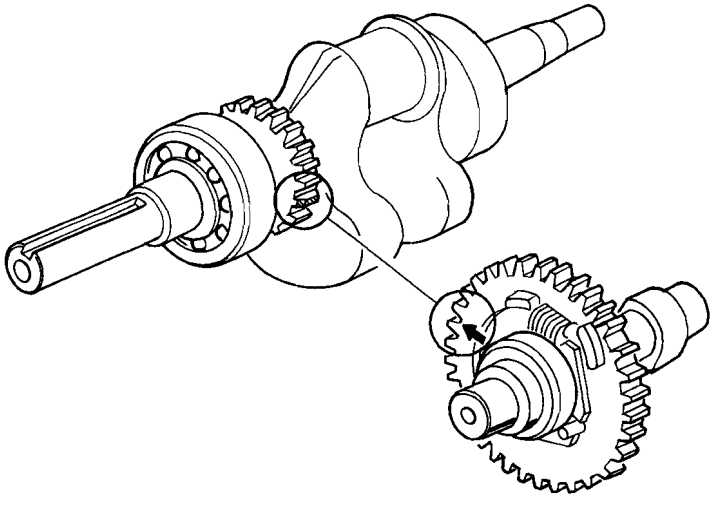


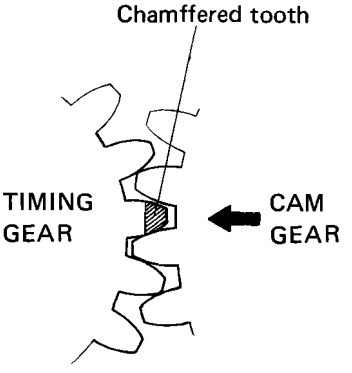
✱ Though "R" type is camshaft PTO type, it is gear driven type and rotating direction is clockwise.

Date of Issue: November 10, 1975

<VALVE TIMING ALIGNMENT>

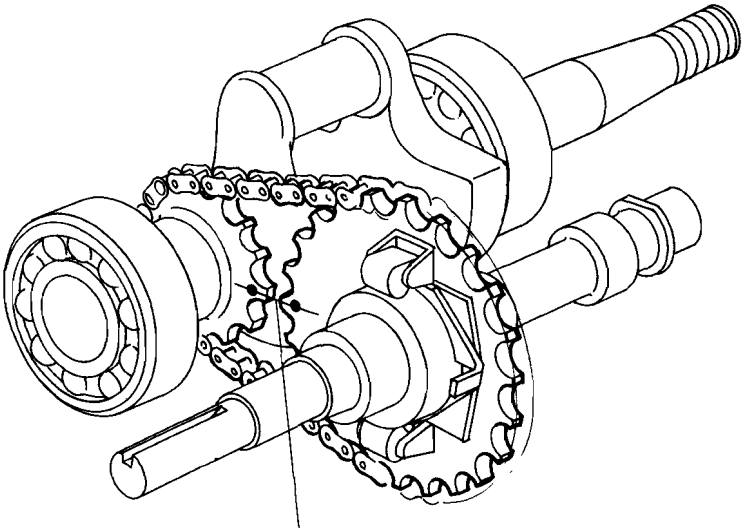
CRANKSHAFT PTO TYPE





✱ Align chamfered tooth to arrow.

CAMSHAFT PTO TYPE

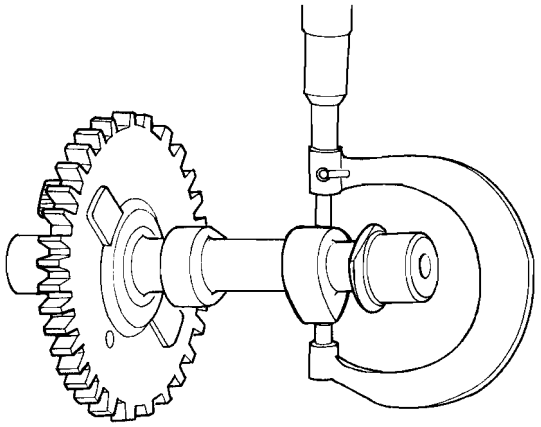


✱ Align pounched marks to each other.

Date of Issue: November 10, 1975

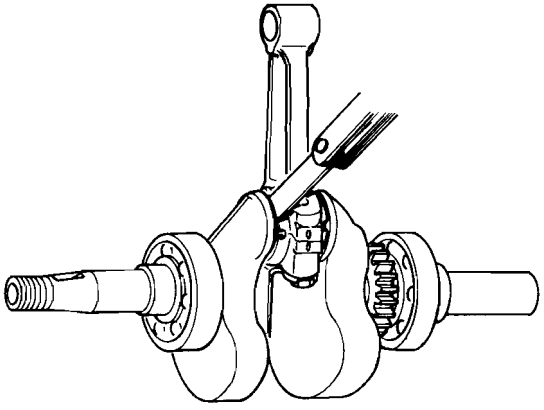
(b) MEASUREMENT

< CAM HEIGHT >



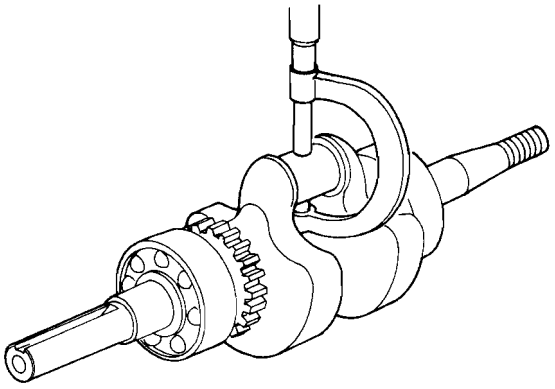
Standard	Service limit
28.1 mm (1.106 in.)	Replace if under 27.6 mm (1.087 in.)

< CONNECTING ROD BIG END AXIAL CLEARANCE >



Standard	Service limit
0.1 mm (0.004 in.)	Replace connecting rod if above 1.0 mm (0.039 in.)

< CRANK PIN O.D. >



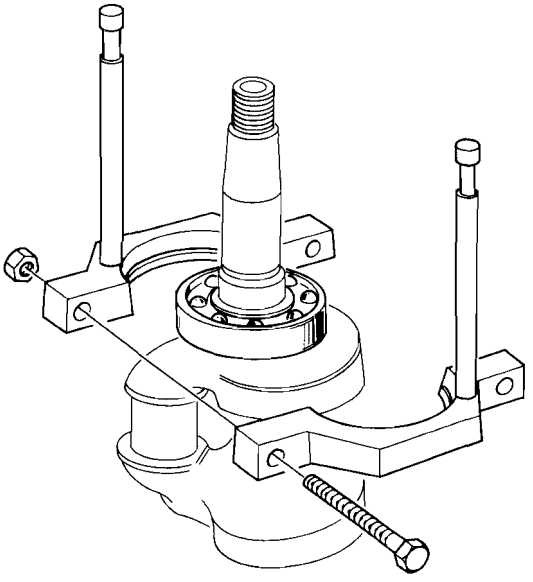
Standard	Service limit
25.980 mm (1.023 in.)	Replace if under 25.7 mm (1.012 in.)

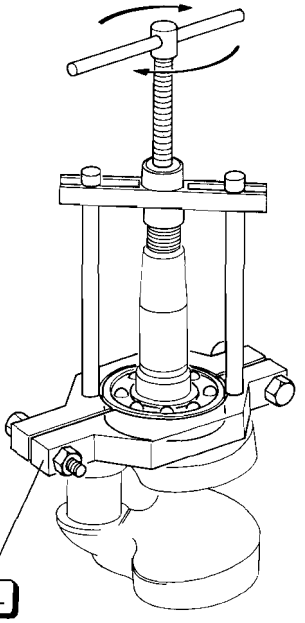
Date of Issue: November 10, 1975

(c) REPAIR

< CRANKSHAFT BEARING REPLACE >

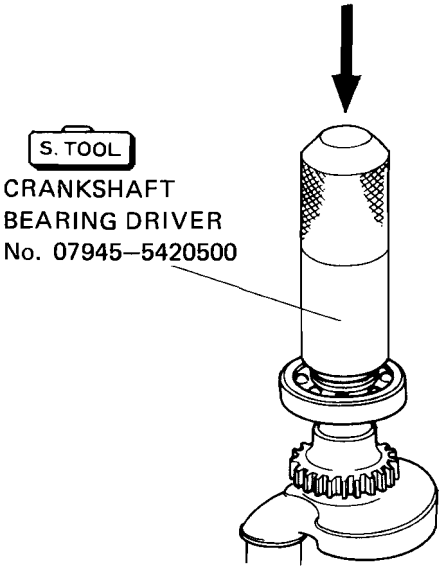
DRIVING OUT





BEARING PULLER
(Tool on the free market)

DRIVING IN



CRANKSHAFT
BEARING DRIVER
No. 07945–5420500

Date of Issue: November 10, 1975

E. SERVICE INFORMATION AND TORQUE TABLE

1. SERVICE INFORMATION

2. TORQUE TABLE

Date of Issue: November 10, 1975

Unit: mm

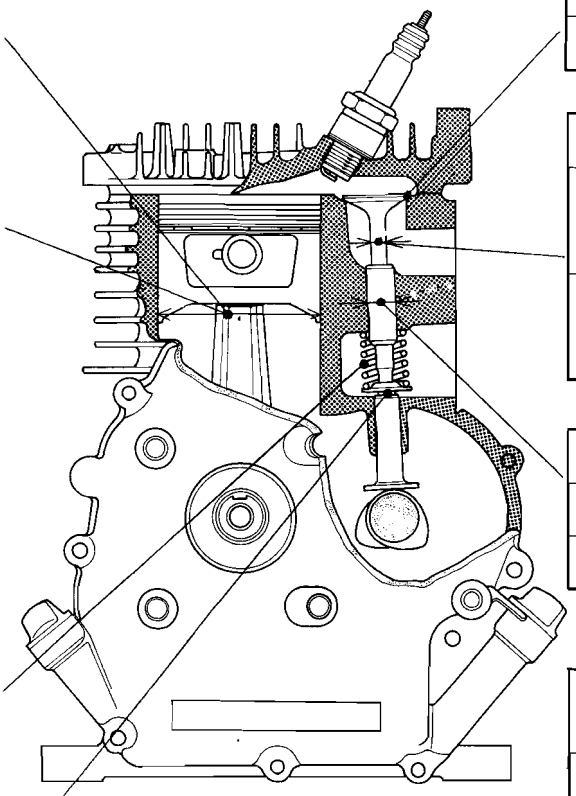
Piston O.D. at skirt	
Standard	63.96 (2.518")
Service Limit	63.7 (2.508")

Cylinder I.D.	
Standard	64.0 (2.5197")
Service Limit	64.1 (2.524")

Clearance between piston and cylinder	
Standard	0.04 (0.002")
Service Limit	0.12 (0.005")

Valve spring free length	
Standard	27.9 (1.098")
Service Limit	26.0 (1.023")

Tappet clearance	
Standard	0.05 – 0.10 (0.002 – 0.004")



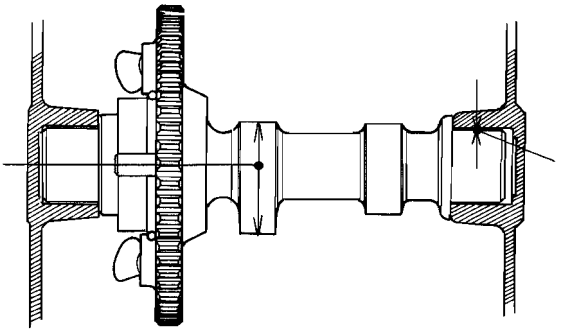
Valve seat width	
Standard	0.7 (0.03")
Service Limit	1.5 (0.06")

Valve stem O.D.		
Standard	IN	6.970 (0.2744")
	EX	6.925 (0.2726")
Service Limit	IN	6.91 (0.2720")
	EX	6.89 (0.2713")

Valve guide I.D.	
Standard	7.0 (0.2756")
Service Limit	7.065 (0.2781")

Clearance between stem and valve guide		
Standard	IN	0.03 (0.001")
	EX	0.075 (0.003")
Service Limit	IN	0.10 (0.004")
	EX	0.12 (0.005")

Cam height	
Standard	17.03 (0.670")
Service Limit	16.5 (0.650")



Clearance between bearing and camshaft	
Standard	0.02 (0.001")
Service Limit	0.1 (0.004")

Date of Issue: November 10, 1975

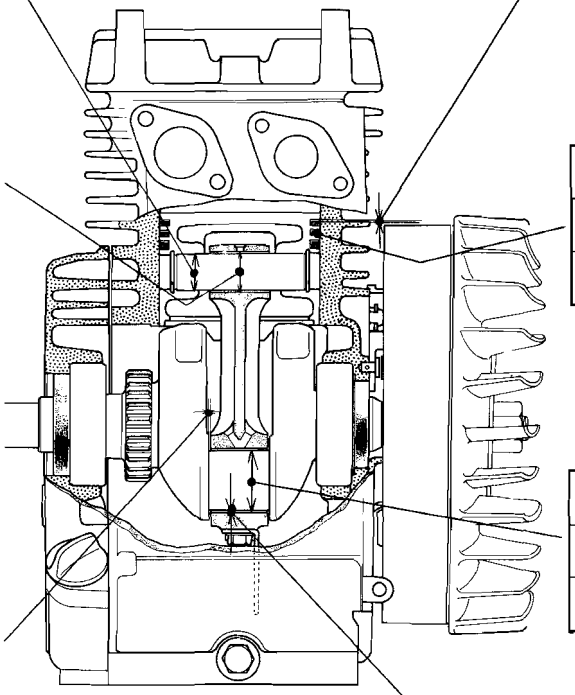
Piston pin O.D.	
Standard	15.0 (0.5906")
Service Limit	14.97 (0.5894")

Connecting rod small end I.D.	
Standard	15.005 (0.5907")
Service Limit	15.05 (0.5925")

Clearance between piston pin and connecting rod	
Standard	0.005 (0.0002")
Service Limit	0.05 (0.0020")

Connecting rod big end axial clearance	
Standard	0.1 (0.004")
Service Limit	1.0 (0.04")

Point gap	
Standard	0.3 – 0.4 (0.012 – 0.016")



Piston ring side clearance	
Standard	0.01 (0.0004")
Service Limit	0.1 (0.0040")

Piston ring gap	
Standard	0.2 (0.008")
Service Limit	0.6 (0.024")

Crankshaft pin O.D.	
Standard	25.980 (1.0228")
Service Limit	25.7 (1.0118")

Connecting rod big end oil clearance	
Standard	0.027 (0.001")
Service Limit	0.1 (0.004")

Date of Issue: November 10, 1975

2. TORQUE TABLE

Carburetor	6 mm nut	80 – 120 Kg-cm (5.79 – 8.68 ft.-lbs.)
Flywheel	14 mm nut	600 – 650 Kg-cm (43.39 – 47.01 ft.-lbs.)
Cylinder Head	8 x 35 mm flange bolt	200 – 280 Kg-cm (14.46 – 20.25 ft.-lbs.)
Connecting Rod	6 x 37 mm bolt	90 – 110 Kg-cm (6.51 – 7.96 ft.-lbs.)

Date of Issue: November 10, 1975

No.	Tool Name	Tool No.
1.	Piston Ring Compressor	07755 – 0010000
2.	Bearing Driver	07945 – 5420500
3.	Valve Guide Driver	07942 – 8230000
4.	Valve Guide Reamer	07984 – 5900000
5.	"F" Mark Guide	07974 – 8780000
6.	Cutter Holder	07981 – 8050000
7.	90° Cutter	07980 – 8050100
8.	120° Cutter	07980 – 0980300
9.	Cutter Case	07797 – 0510100
10.	Flywheel Puller	07935 – 8050001
11.	Tool Case	07797 – 0010400
12.	Special Tool Set (Including all tools from No. 1 to No. 11.)	07900 – 8780000

Date of Issue: November 10, 1975