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20 AMP REGULATED ALTERNATOR

The 20 amp regulated alternator system provides AC current through two output leads to the regulator-rectifier. The regulator-rectifier converts the AC current to DC, and regulates the current to the battery. The charging rate will vary with engine RPM and temperature.

The stator, regulator-rectifier and flywheel are NOT interchangeable with any other alternator system.

WHEN CHECKING THE ALTERNATOR COMPONENTS, MAKE THE TESTS IN THE FOLLOWING SEQUENCE:

ALTERNATOR OUTPUT TEST:

Temporarily, disconnect stator wire harness from regulator-rectifier.

1. Insert RED test lead into $v\Omega\rightarrow+$ receptacle in meter.
2. Insert BLACK test lead into **COM** receptacle in meter.
3. Rotate selector to $v\sim$ (AC volts) position.

! CAUTION: ATTACH METER TEST LEADS TO AC OUTPUT TERMINALS (WHITE WIRES) BEFORE STARTING ENGINE. IF STATOR IS GROUNDED (DEFECTIVE), AND METER TEST LEADS CONTACT CENTER DC OUTPUT PIN, ARCING MAY OCCUR WHICH MAY DAMAGE WIRING.



Figure 7-1. Testing AC Output

4. Attach RED and BLACK test lead probes to AC output terminals (white wires), as shown in Figure. 7-1. (Meter test clip leads may be attached to either AC output terminal.)
5. With the engine running at 3600 RPM output should be no less than:

26 Volts - 20 Amp System

6. If no or low output is found. check for bare wires or any other obvious defects. If "shorted" leads are not visible, replace the stator.

TESTING DC OUTPUT CHARGING WIRE:

A simple test may be performed to test the DC output charging wire circuit. If a problem exists in the wiring it can be corrected before testing regulator-rectifier.

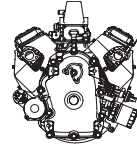
Leave stator wire harness disconnected from regulator-rectifier.

Equipment keyswitch must be in OFF position.

1. Insert RED test lead into $v\Omega\rightarrow+$ receptacle in meter.
2. Insert BLACK test lead into **COM** receptacle in meter.
3. Rotate selector to $v\sim$ (DC volts) position.
4. Attach RED test lead probe to DC output wire terminal, Figure 7-2.
5. Attach BLACK test lead probe to negative battery terminal.
6. Turn equipment keyswitch to ON position. Meter should display battery voltage.
7. If meter does not display battery voltage, check for blown fuse or broken or shorted wires.



Figure 7-2. Testing DC Output Wire



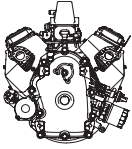
TESTING REGULATOR-RECTIFIER:

1. Using a digital multimeter, test the battery voltage while the engine is NOT running.
2. With the charging system properly connected, start the engine.
3. Bring the engine up to normal operating speed and test the battery voltage again.
4. If the battery voltage while the engine is running is greater than when the engine is stopped, the charging system is working.

Note: With the engine running, the battery voltage should be at least 13 Volts.

BATTERIES

Note: See Section 6 for battery size and cable selection information.



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DESCRIPTION

The Generac GTV-990/760 OHVI V-twins use a full pressure lubrication system with an oil filter. The gerotor type oil pump draws oil from a screened oil pickup in the sump and pumps the oil through the oil filter.

The filtered oil flows through an oil galley in the sump and is distributed to the main bearings, connecting rod bearings and camshaft bearings. Engine oil pressure will vary with oil viscosity, ambient air temperature differences, operating temperatures and engine load. Follow the oil recommendation on page 8-2 of this section.

Oil Pressure - @ 70° F (21 ° C):

15 - 50 psi (1.0 - 3.5 Bar)

A pressure relief valve limits the maximum oil pressure in the system.

PROTECTION SYSTEMS

LOW OIL PRESSURE SWITCH:

The engine is equipped with a low oil pressure sensor that closes the circuit between the terminals when the oil pressure drops below 8 psi. If one terminal is connected to the ignition kill wire and the other terminal is connected to ground, the engine will shut down on low oil pressure. If the engine shuts down by itself and the fuel tank has enough gasoline, check the engine oil level.

A delay built into the shutdown system on some engine applications allows oil pressure to build during starting. The delay allows the engine to run for about 10 seconds before sensing oil pressure. If the system senses low oil pressure during operation, the engine shuts down. The engine will not continue to run until 8 psi of oil pressure is reached. If you try to restart the engine within (five) 5 seconds after it shuts down, the engine may NOT start. The system needs 10 seconds to reset.

NOTE: If you restart engine after a shutdown and have not corrected the low oil pressure, the engine may run for about 10 seconds as described above, and then it will stop.

HIGH TEMPERATURE SWITCH (OPTIONAL):

This switch's (not shown) contacts close if the temperature should exceed approximately 140° C (284° F), initiating an engine shutdown. In certain applications, the equipment will automatically restart and the LED will reset once the temperature has returned to a safe operating level.

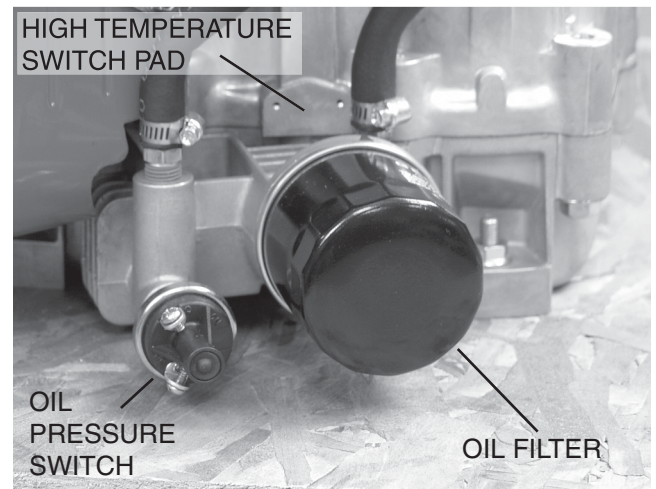


Figure 8-1. Engine Protective Devices

CHECKING THE ENGINE OIL LEVEL

The oil capacity of the GTV-990/760 OHVI engine is approximately 2 quarts. To check the engine oil level, proceed as follows:

1. Remove the dipstick and wipe it dry with a clean cloth.
2. Install the dipstick completely; then remove it again. The oil level should be at the dipstick "Full" mark. If necessary, add oil until the "Full" mark is reached. DO NOT FILL ABOVE THE "FULL" MARK.

! Never operate the engine with the oil level below the "Add" mark on the dipstick. Doing this could damage the engine.

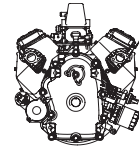


Figure 8-2. Location of Oil Fill/Check

CHANGING THE ENGINE OIL AND FILTER

RECOMMENDED OIL TYPE:

Using the proper type and weight of oil in the crankcase is extremely important. Check the oil before each use and change the oil regularly. Failure to use the correct oil, or using dirty oil, can cause premature engine wear and failure.

Use only high quality detergent oil rated with API service classification SF, SG or SH. The recommended oil weights include the following:

- During summer months: SAE 30. An acceptable substitute is SAE 10W-30. After first oil change, synthetic oil is acceptable.
- During winter months: SAE 5W-30, Synthetic 5W-20 or 5W-30. DO NOT USE SAE 10W-40.

	← Synthetic 5W-20, 5W-30			→ 10W-30, SAE 30			
F	-20	0	20	40	60	80	100
C	-30	-20	-10	10	20	30	40
Temperature Range of Expected Use							

The crankcase oil capacity is about 2030 ml (2.1 qt.) with the oil filter. Without the filter, the oil capacity is 1750 ml (1.8 qt.). Use no special additives. Make sure that the unit is level when filling with oil. DO NOT OVERFILL.

⚠ Any attempt to crank or start the engine before it has been properly serviced with the recommended oil may result in an engine failure.

OIL CHANGE PROCEDURE:

Your engine is equipped with an oil filter. Change the oil and filter after the first eight (8) hours of operation. Change the oil and oil filter every 100 hours thereafter. If you are using this engine under dirty or dusty conditions, or in extremely hot weather, change the oil more often.

Use the following instructions to change the oil while the engine is still warm:

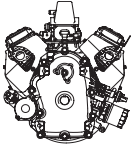
1. Clean the area around the oil drain plug, remove the plug and drain the oil completely into a suitable container (Figure 8-3).
2. When the oil is drained, install and tighten the oil drain plug.



Figure 8-3. Oil Drain Location



Figure 8-4. Removal of Oil Filter



3. When changing the oil filter, use the following instructions:
 - A) Locate oil filter (Figure 8-4).
 - B) Place a suitable container beneath the oil filter and turn the filter counterclockwise to remove the filter.
 - C) Coat the gasket of a new filter with engine oil. Turn the new filter clockwise until the gasket contacts the filter adapter, then tighten an additional 3/4 turn.
4. Remove the oil fill cap and insert a clean funnel into the oil fill opening. Fill the crankcase with the recommended oil until the oil level is at the full point on the dipstick. Approximately 2030 ml (2.1 qt.) are required when changing the oil and oil filter. POUR SLOWLY.
5. When the crankcase is filled to the proper level, install the oil fill cap. Start engine to fill oil filter, recheck/correct oil level.

OIL COOLER:

Some engines are equipped with an oil cooler. The oil cooler is mounted on the blower housing. Forced air from the flywheel fan flows through the oil cooler fins dissipating heat from the engine oil.

The oil cooler fins should be cleaned every 100 hours and checked periodically for debris and cleaned with compressed air or a soft bristle brush.

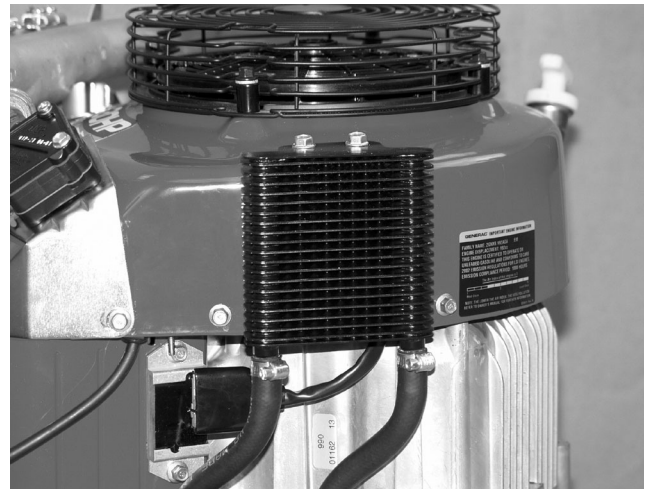
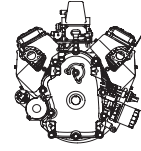
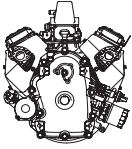


Figure 8-5. Oil Cooler

NOTES



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ENGINE DISASSEMBLY

Drain oil, remove oil filter and remove engine from equipment. Remove spark plugs. Remove flywheel, disconnect stop switch wires at armatures and remove armatures (see Section 2). Remove cylinder heads (see Section 5).

1. Remove the following parts (Figure 9-1):
 - a. Breather Assembly
 - b. Alternator
 - c. Backplate
 - d. Starter Motor
2. Remove crankcase cover/sump.
 - a. Discard gasket and O-ring.

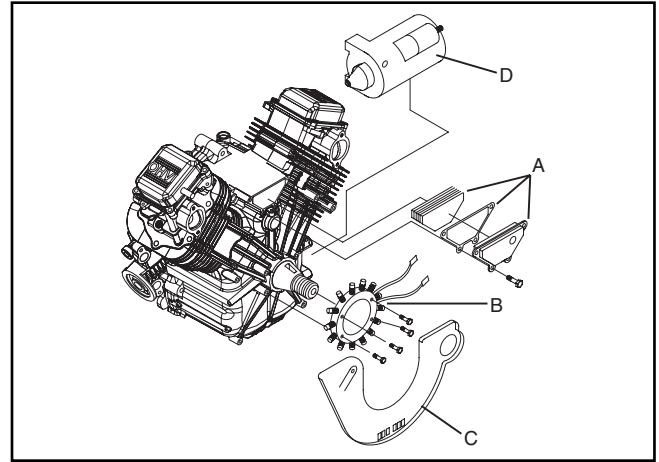


Figure 9-1. Remove Alternator, Backplate, Starter Motor

- 9 Fan Retainer
- 10 Fan
- 11 Flywheel
- 12 Alternator/ Lighting Coil
- 13 Backing Plate
- 14 Ignition Coils
- 15 Breather
- 16 Starter
- 17 Cylinder Heads
- 18 Push Rods
- 19 Sump
- 20 Cam Shaft
- 21 Piston Assemblies
- 22 Crankshaft

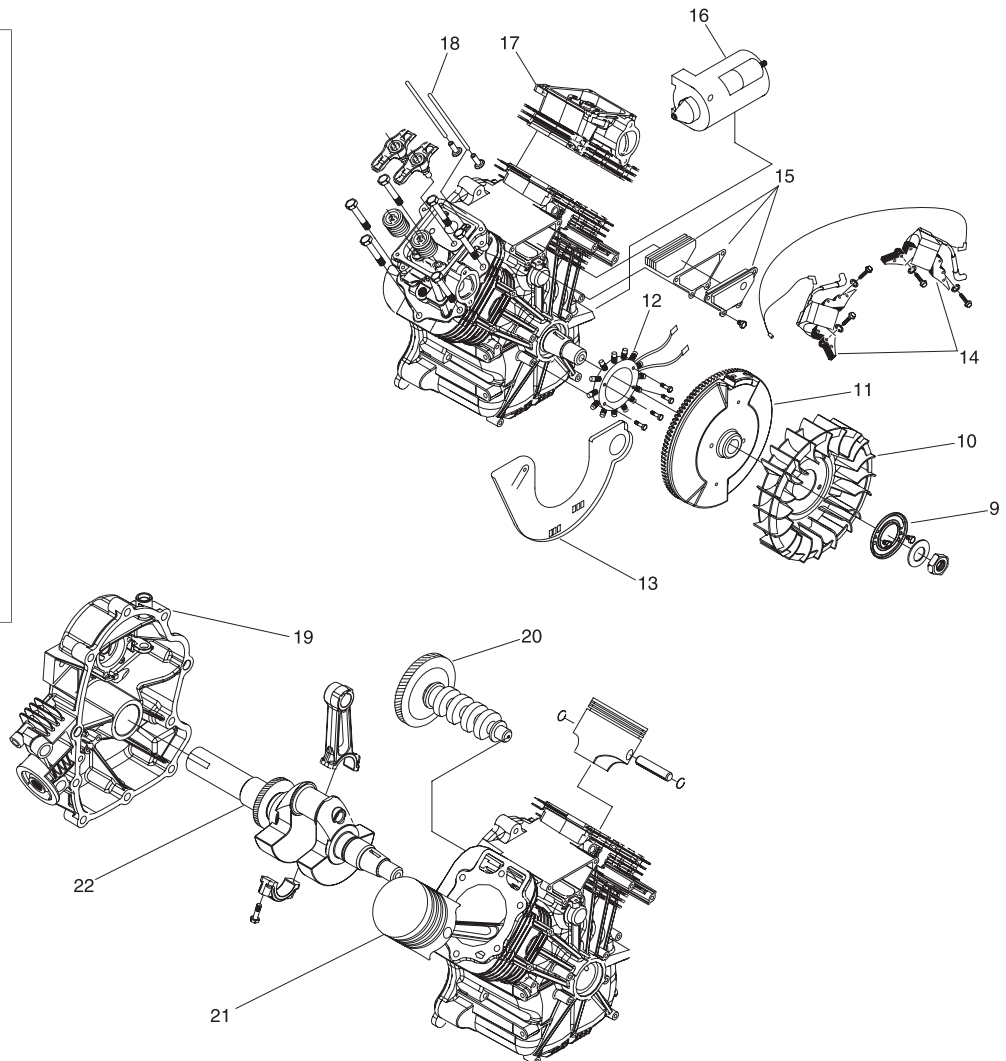
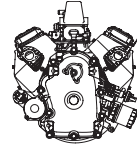


Figure 9-2.

SECTION 9: ENGINE DISASSEMBLY



3. Rotate crankshaft and camshaft until timing marks align and remove camshaft (Figure 9-3).

Note: If necessary, place the engine flywheel side down to prevent tappets from catching on the camshaft.

- a. Remove tappets.

Note: Remove any carbon or ridge at the top of the cylinder bores to prevent breaking rings when removing piston and connecting rod assemblies.

4. Remove No. 2 connecting rod cap and push connecting rod and piston assembly out of cylinder (Figure 9-4).

- a. Reassemble cap to rod to prevent interchanging.

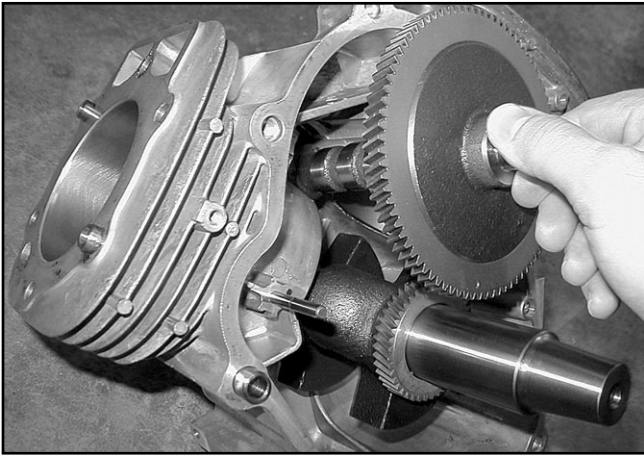


Figure 9-3. Remove Camshaft

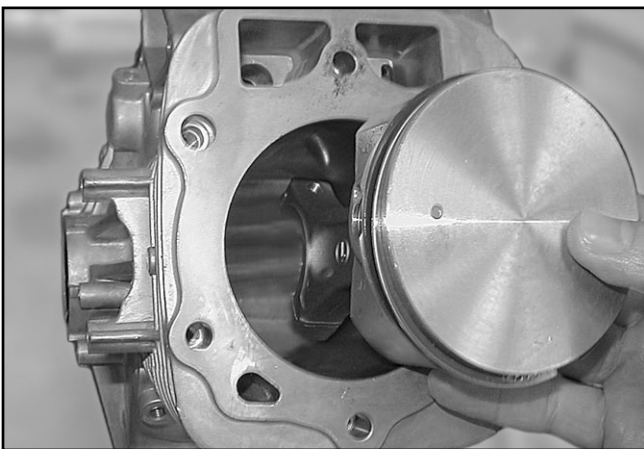


Figure 9-4. Remove Pistons and Connecting Rods

5. Repeat for remaining cylinder.
6. Remove crankshaft (Figure 9-5).

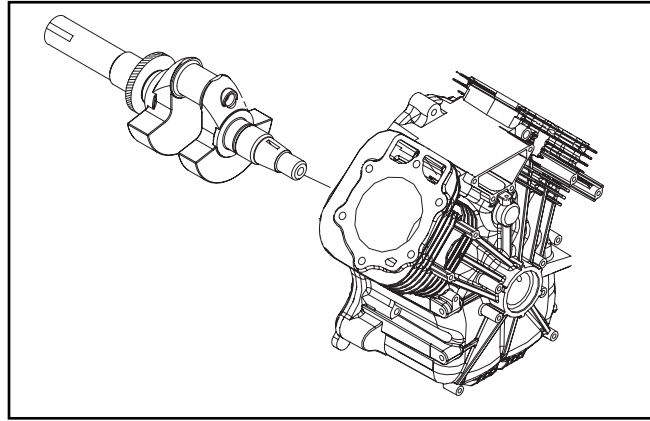


Figure 9-5. Remove Crankshaft

7. Remove oil pump from crankcase cover.

Note: Clean all surfaces of gasket material. Remove oil seals and thoroughly clean components in solvent. Organize components, keeping parts which are assemblies together.

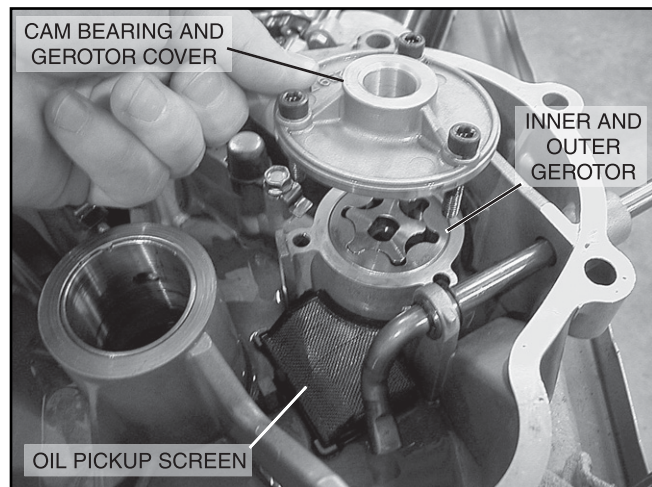
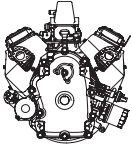


Figure 9-6. Remove Oil Pump



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CHECK CRANKCASE

Check crankcase for cracks, stripped threads or broken fins. Check cylinder bores for damage or scoring.

1. Check cylinder head mounting surface for distortion with a straight edge, Figure 10-1.

If mounting surfaces are distorted more than 0.1 mm (.004"), the crankcase must be replaced.

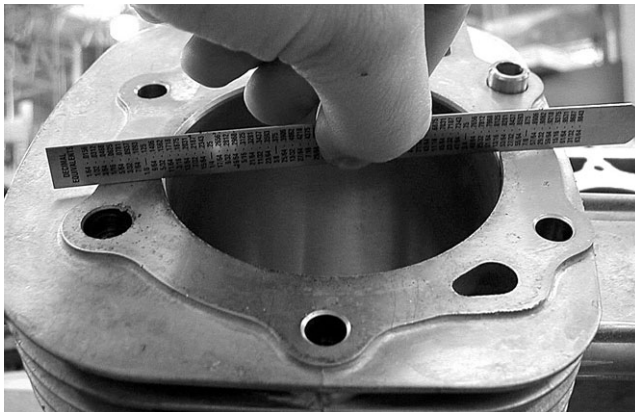


Figure 10-1. Checking Cylinder Head Mounting Surface

2. Check cylinder bores for wear using telescoping gauge and dial caliper.

Standard Bore Size: 90.00-90.025 mm (3.543-3.544")

- a. Measure cylinder bore in 6 points at right angles as shown, Figures 10-2 and 10-3.
- b. If cylinder bore is worn more than 0.075 mm (.003") or more than 0.035 mm (.0015") out of round, it must be replaced.

NOTE: If cylinder bores are within specification and show no signs of scoring or other damage, new piston rings may be installed providing the cylinder bores are reconditioned using a rigid hone with finishing stones, to restore the proper cross hatch angle in the cylinder bores. The proper cylinder cross hatch ensures proper lubrication and piston ring break in.

Refer to "Cylinder Finish (Cross Hatch)" below for correct procedure for installing cross hatch.

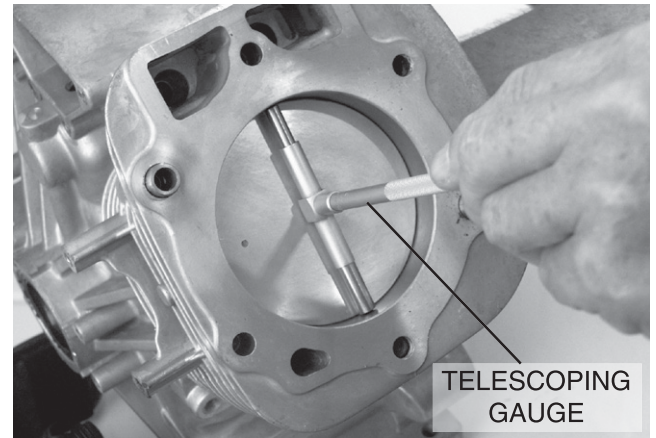


Figure 10-2. Check Cylinder Bore

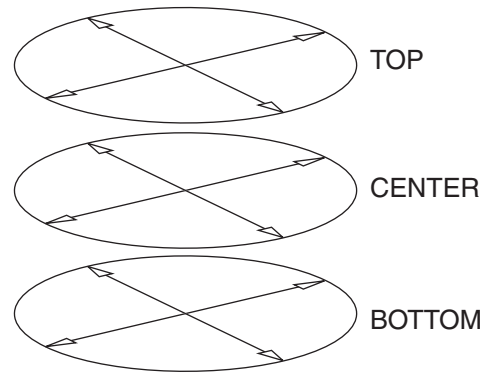


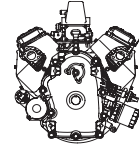
Figure 10-3. Measure at Six Points

RESIZING:

Note: Oversize kits are NOT available. DO NOT bore cylinder.

CYLINDER FINISH (CROSS HATCH):

Finishing stones are used when reconditioning a cylinder bore. The finishing stones will produce the correct cross hatch necessary for proper lubrication. The correct cross hatch angle is approximately 45 degrees, Figure 10-4.



It is recommended that the cylinder bores be reconditioned to restore the cross hatch when new piston rings are to be installed in a cylinder that is within specification. Be careful not to hone oversize or it will be necessary to replace the crankcase.

Honing is done with a variable speed 1/2", portable drill and a honing fixture. See Page 10-5 for dimensions to make a honing fixture. Use two crankcase cover mounting screws to fasten the crankcase to the honing fixture, Figure 10-5.

Clamp honing fixture and crankcase securely in a vise at a convenient work height.

Place hone in middle of cylinder bore. Tighten adjusting knob with finger until stones fit snugly against cylinder wall. DO NOT FORCE. Cut a wood block and place inside cylinder to prevent hone from extending further than 3/4" to 1" (19 mm to 25 mm) below cylinder bore. Place hone drive shaft in chuck of portable drill and tighten. Be sure that cylinder and hone are centered and aligned with the drill spindle.

NOTE: To produce the proper cross hatch finish use a drill speed of approximately 200 RPM and 40-60 Hatch strokes per minute. Lubricate hone liberally to prevent build up on finishing stones.

NOTE: Automatic transmission fluid is an acceptable honing oil. Another acceptable honing oil can be made by mixing 4 parts No. 30 weight oil with 1 part kerosene.

with hot running water. Repeat washing and rinsing until all traces of honing grit are gone.

Honing grit is highly abrasive and will cause rapid wear to all of the internal components of the engine unless it is completely removed.

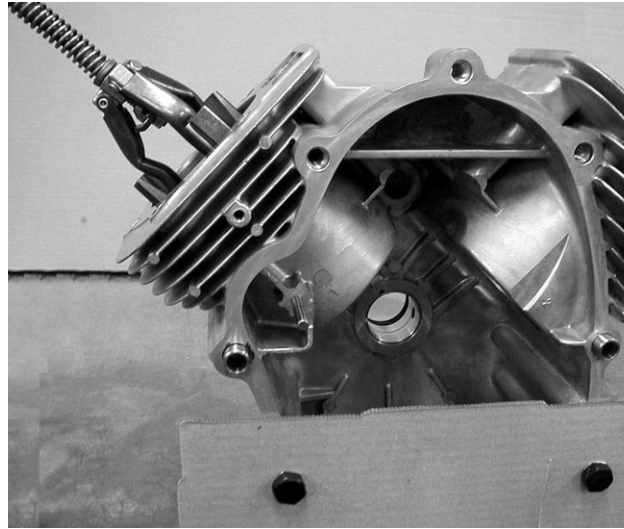


Figure 10-5. Honing Cylinders

NOTE: When cylinder and crankcase have been thoroughly cleaned, use a clean white rag or napkin and wipe the cylinder bore. If honing grit is present it will appear as a gray residue on rag. If any honing grit is evident, re-wash and rinse entire cylinder and crankcase and check again. When there is no trace of honing grit on rag, the cylinder is properly cleaned. Then oil cylinder bore to prevent rusting.

BEARINGS

CHECK MAG BEARING:

Check magneto bearing for damage. Damaged bearings must be replaced. If not damaged, check for wear using a telescoping gauge and caliper (see Figure 10-6). Measure at several locations. If the measured diameter is larger than 38.25 mm (1.506"), the bearing must be replaced.

The diameter of the crankshaft may also make it necessary to replace the bearing. See Section 11 for the crankshaft measurement details.

REMOVE MAG BEARING:

1. Remove seal.
2. Place crankcase flat upon a press and remove bearing using a bushing driver (Figure 10-7).

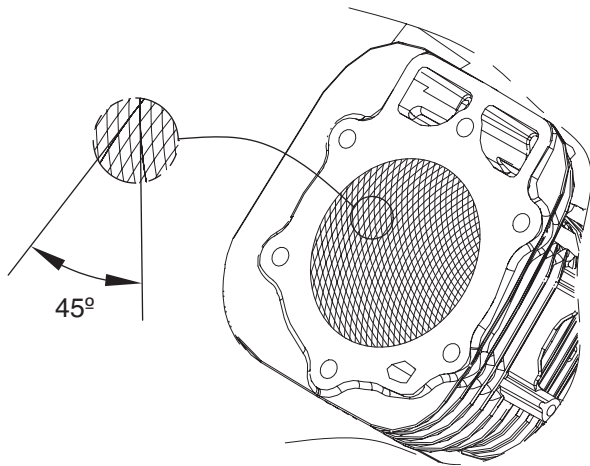


Figure 10-4. Cylinder Cross

CLEANING:

IT IS MOST IMPORTANT THAT THE ENTIRE CYLINDER AND CRANKCASE BE THOROUGHLY CLEANED AFTER HONING.

First wash the cylinder and crankcase carefully in a solvent such as kerosene or commercial solvent. Then thoroughly wash cylinder and crankcase using a stiff brush with soap and hot water. Rinse thoroughly

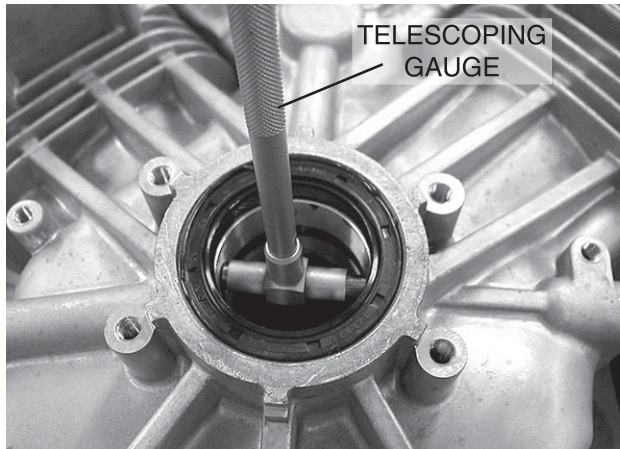
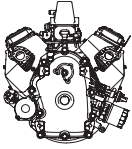


Figure 10-6. Check Mag Bearing

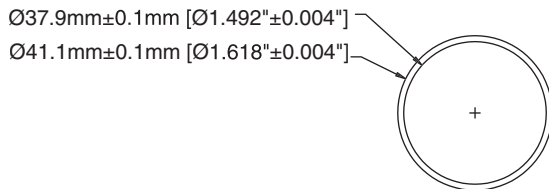
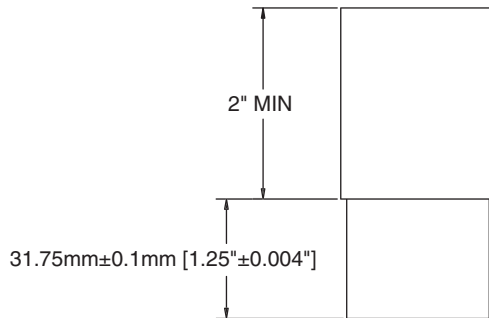


Figure 10-7. Mag Bearing Driver

INSTALL MAG BEARING:

1. Place Crankcase on a press, seal side down.
 - a. Make sure that the crankcase is supported by the seal boss.
2. Set the new bearing in the crankcase with the notch up and the oil holes lined up with the passages in the crankcase.
3. Carefully slide the bushing driver into the bearing and press the bearing in until it is 0.25-1.27mm (.01-.05") below the surface.
4. Remove any material left in the oil passage.
5. Install new oil seal with sealing lip facing in.
 - a. Press oil seal until flush with crankcase.

CHECK PTO BEARING

The PTO bearing must be replaced if it is damaged or if it measures larger than 42.25mm (1.663") in diameter (see Figure 10-8).

The diameter of the crankshaft may also make it necessary to replace the bearing. See Section 11 for the crankshaft measurement details.

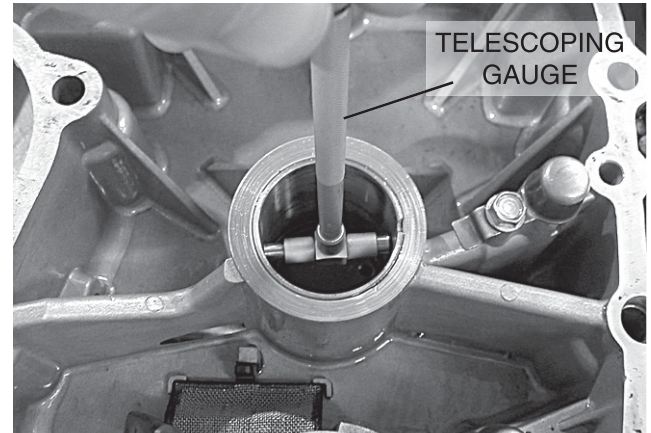


Figure 10-8. Check PTO Bearing

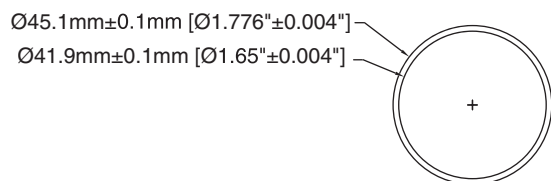
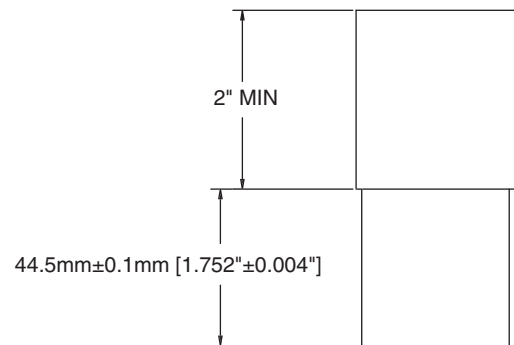
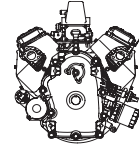


Figure 10-9. PTO Bearing Driver

REMOVE/INSTALL PTO BEARING:

The removal and installation procedure for the PTO bearing is the same as for the mag bearing. See Figure 10-9 for the bearing driver used in this procedure.



INSTALL PTO OIL SEAL:

Install a new PTO oil seal and press it in until it is 1.5mm (1/16") below the mounting surface.

CHECK CAMSHAFT BEARINGS

Use a telescoping gauge and caliper to check camshaft bearings. If camshaft bearings are worn, crankcase or crankcase cover must be replaced. (For vertical shaft engines, the rotor cover must be replaced).

Mag Bearing Reject Dimension: 20.06mm (.790")

PTO Bearing Reject Dimension: 18.06mm (.711")

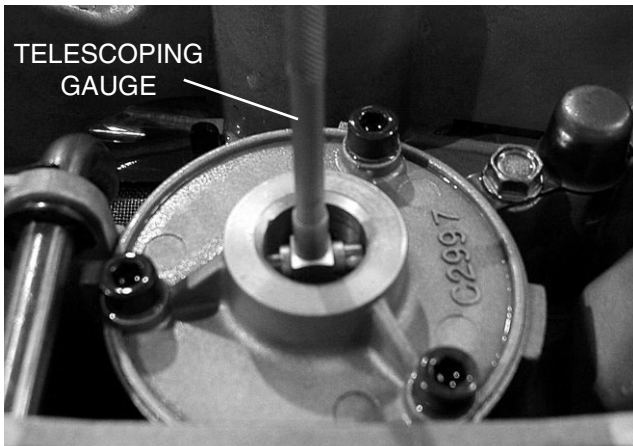


Figure 10-10. Checking PTO Side Camshaft Bearing

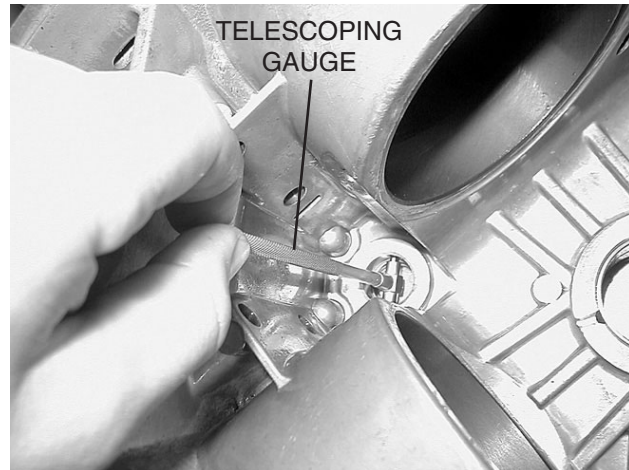


Figure 10-11. Checking Mag Side Camshaft Bearing

OIL SEALS:

Always install new oil seals whenever engine is disassembled for major servicing or when repairing bearings. Lubricate sealing edge of oil seal with clean engine oil before assembly. Always use the correct seal protector to prevent damaging oil seal.

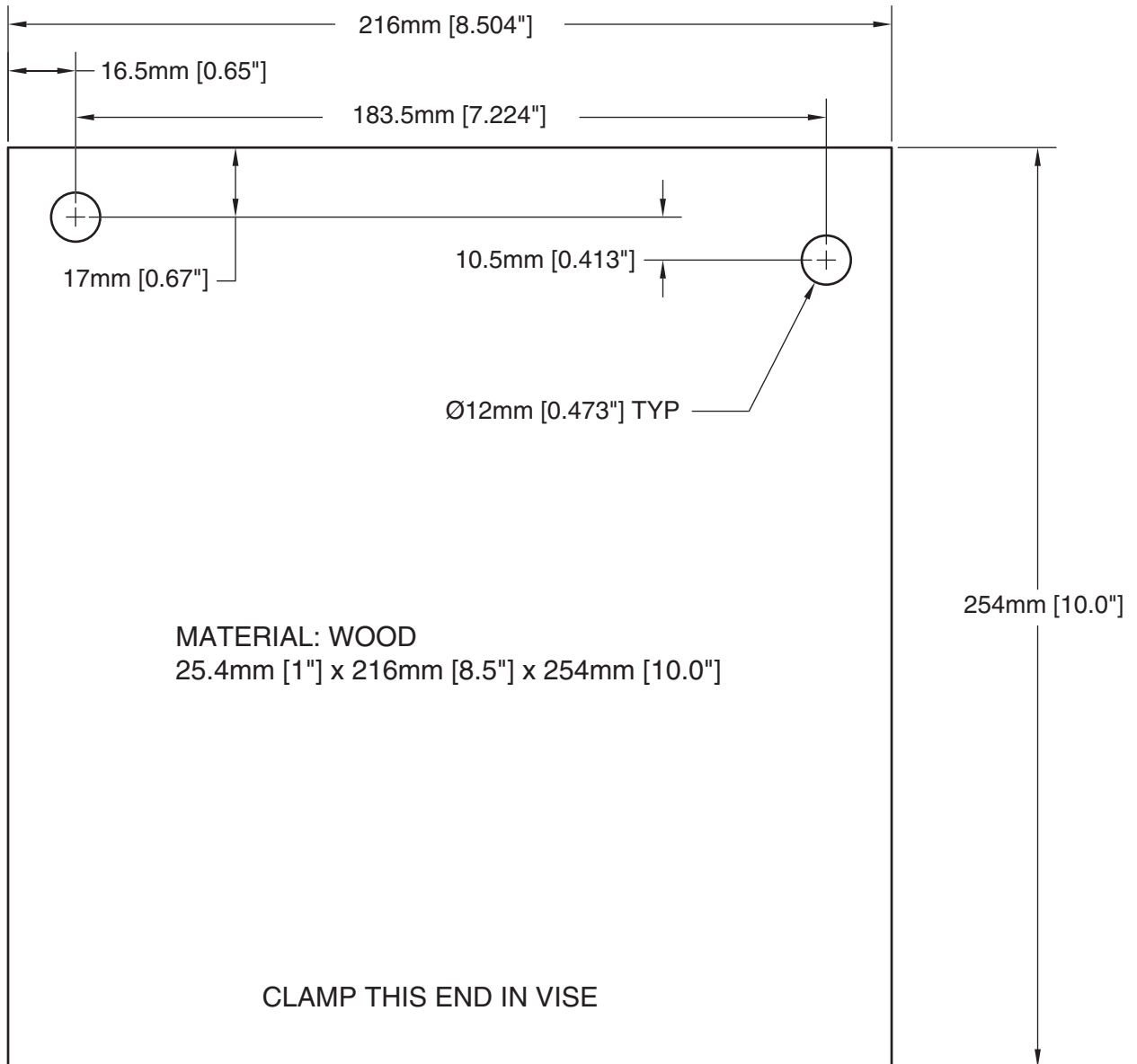
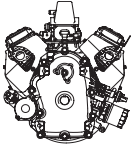
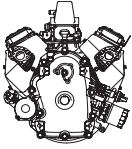


Figure 10-12. Honing Fixture



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CHECK CRANKSHAFT:

Inspect crankshaft threads, keyways and timing gear for damage or wear. If threads, keyways or timing gear are damaged or worn, replace crankshaft. Check journals for scoring. If journals are scored, replace crankshaft. Check journals for wear. See crankshaft reject sizes.

Crankshaft Reject Sizes

Model Series	PTO Journal	Mag. Journal	Crankpin Journal
ALL	41.85 mm (1.648")	37.85 mm (1.490")	38.96 mm (1.534")

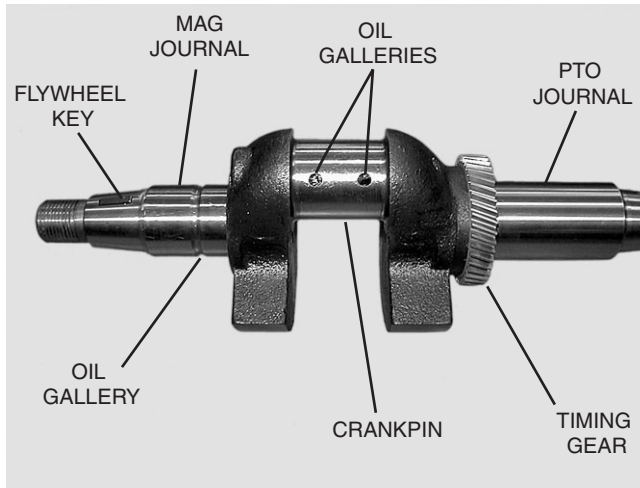


Figure 11-1. Check Crankshaft

CHECK CAMSHAFT:

Inspect gear teeth, lobes and journals for wear and nicks, Figure 11-2. Camshaft journal and lobe reject sizes are shown below. Replace cam gear if not to specification.

Camshaft Reject Size

PTO Journal	Mag Journal	Intake Lobes	Exhaust lobes
17.93 mm (0.705")	19.93 mm (0.784")	31.02 mm (1.221")	31.02 mm (1.221")

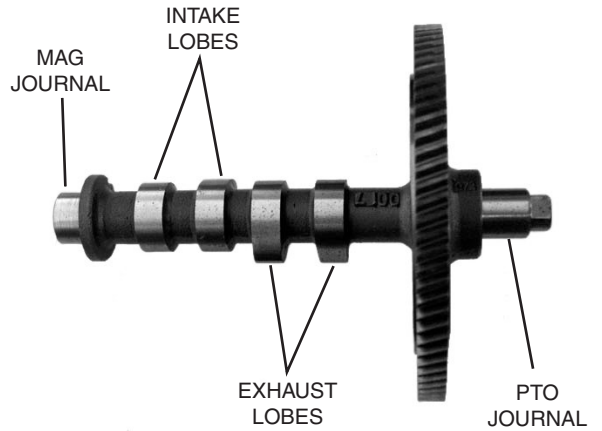
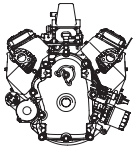


Figure 11-2. Check Camshaft



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ASSEMBLE PISTON AND CONNECTING ROD	12-2
ASSEMBLE PISTON RINGS TO PISTON	12-3

GENERAL INFORMATION

It is recommended that new piston rings be installed whenever the engine is disassembled for major servicing or overhaul, providing that cylinder bores are within specification.

Remove any carbon or ridge at the top of the cylinder bore. This will prevent breaking the rings when removing the piston and connecting rod from the engine. Remove the connecting rod cap. Push the piston and connecting rod out through the top of the cylinder.

Measure cylinder bores before checking pistons and rings. See Section 10. If cylinder bores are out of tolerance, it will not be necessary to check pistons and rings since a new crankcase and piston assemblies will be used.

If the cylinder bore is more than .075 mm (.003") oversize, or .035 mm (.0015") out of round, it must be replaced.

DISASSEMBLE PISTON AND CONNECTING ROD

1. Remove piston rings using ring expander.
 - a. Then remove oil ring.

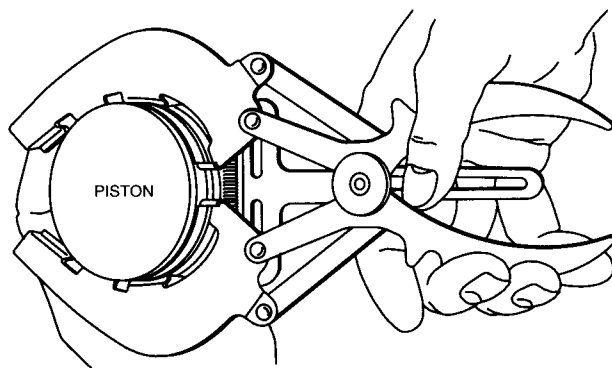


Figure 12-1. Remove Rings

2. Disassemble piston from connecting rod, Figure 12-2.
 - a. Remove piston pin locks.
 - b. Piston pin is a slip fit in piston and connecting rod.

Keep pistons and connecting rods together as an assembly. Do not mix.

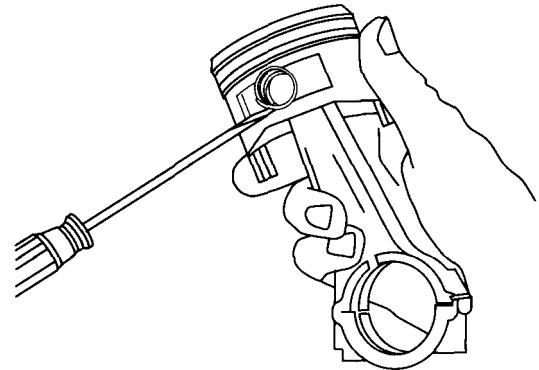


Figure 12-2. Remove Piston Pin Locks

CHECKING PISTON AND RINGS

If the cylinder is not going to be replaced and the piston shows no signs of scoring, the piston should be checked. Carefully remove carbon from ring grooves.

1. Check side clearance of ring grooves using new rings, Figure 12-3. If a 0.10mm (.004") feeler gauge for the compression rings or 0.20mm (.008") for the oil ring can be inserted, the ring groove is worn. The piston must be replaced.

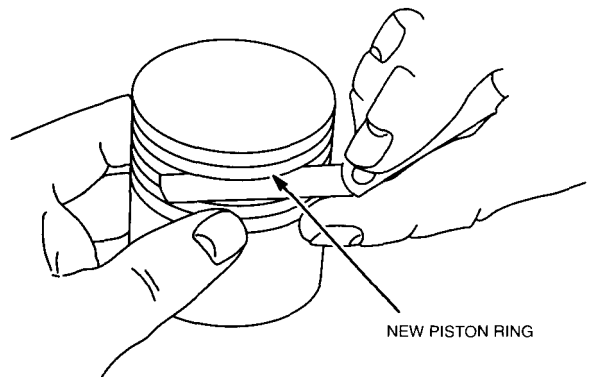


Figure 12-3. Check Ring Grooves

2. Check ring end gap, Figure 12-4.
 - a. Clean carbon from end of rings and insert approximately 1" (25 mm) into cylinder.

Reject Dimension (compression rings): 0.51mm (.020")
Reject Dimension (oil rings): 1.15mm (.045")

3. Check piston pin bore, Figure 12-5.
 - a. Replace if greater than 20.03mm (.7886") or if it is .01mm (.0005") out of round.

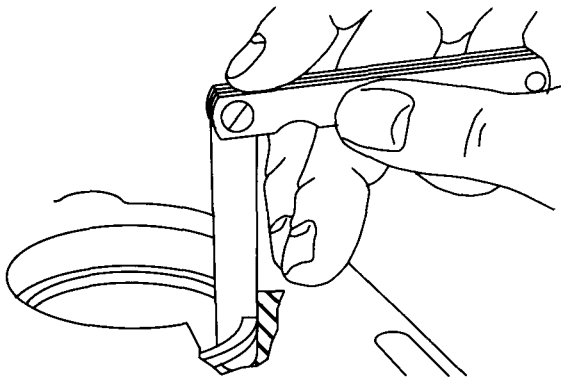
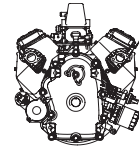


Figure 12-4. Checking Ring End Gap

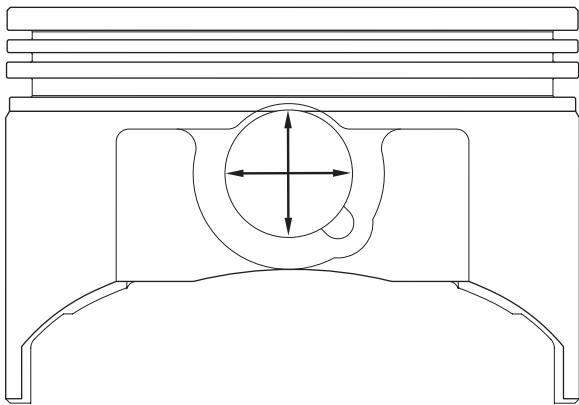


Figure 12-5. Check Piston Pin Bore

CHECKING PISTON PIN AND CONNECTING ROD

1. Check piston pin, Figure 12-6.
 - a. Replace if less than 19.97mm (.7862") or if it is .01mm (.0005") out of round.
2. Check connecting rod bearings.

Note: If crankpin bearing is scored or worn the connecting rod must be replaced.

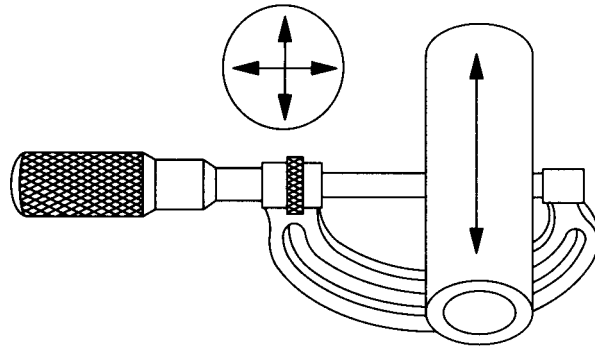


Figure 12-6. Check Piston Pin

CONNECTING ROD REJECT SIZE

Crankpin Bearing	Piston Pin Bearing
39.09mm (1.539")	20.05mm (.7894")

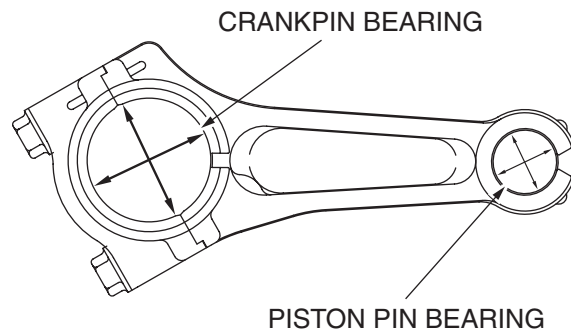


Figure 12-7. Check Rod Bearings

ASSEMBLE PISTON AND CONNECTING ROD

Lubricate parts with engine oil and assemble #1 piston and connecting rod, Figure 12-8.

1. Notch or casting mark on piston must be on flywheel side.
2. Number "1" on connecting rod must face PTO side (opposite notch or casting mark on piston).
 - a. Install piston pin locks with needle nose pliers.

Lubricate parts with engine oil and assemble #2 piston and connecting rod, Figure 12-9.

1. Notch or casting mark on piston must be on flywheel side.
2. Number "2" on connecting rod must face PTO side (opposite notch or casting mark on piston).
 - a. Install piston pin locks with needle nose pliers.

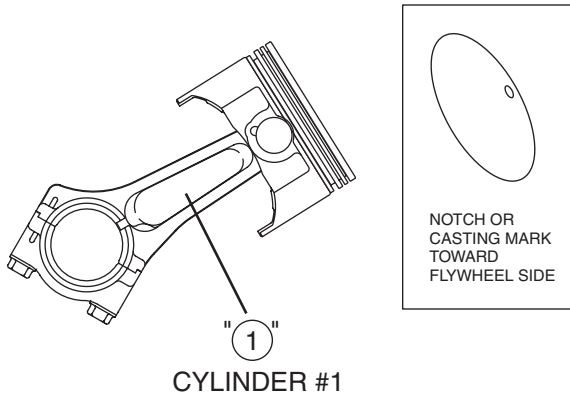
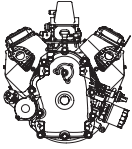


Figure 12-8. Assemble #1 Rod And Piston

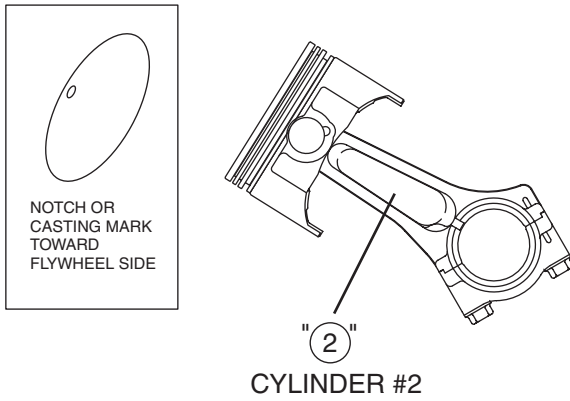


Figure 12-9. Assemble #2 Rod And Piston

ASSEMBLE PISTON RINGS TO PISTON

Install piston rings using ring expander when installing center and top compression rings.

1. Install oil ring expander.
 - a. Install lower scraper ring.
 - a. Install upper scraper ring.
2. Install center compression ring with chamfer up.
3. Install top compression ring.

Note: Top compression ring may be installed with either side up.

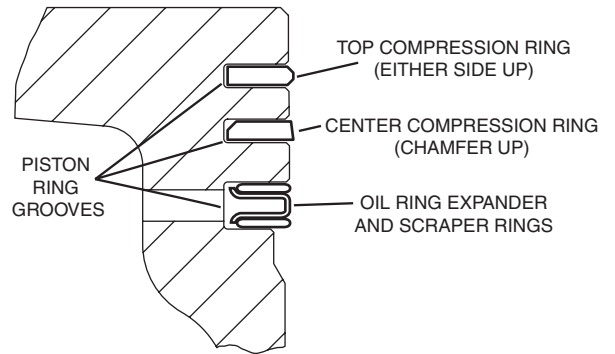
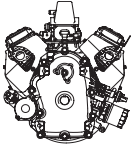


Figure 12-10. Piston Ring Installation



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ADJUST IGNITION COIL AIR GAP	13-4
INSTALL CYLINDER HEADS	13-4
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GENERAL ASSEMBLY	13.5
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INSTALL CRANKSHAFT

Lubricate mag bearing and lips of oil seal with engine oil and install crankshaft.

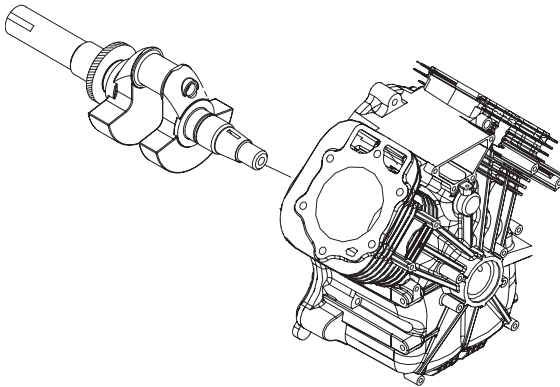


Figure 13-1. Installing Crankshaft

INSTALL PISTON AND CONNECTING ROD

Note: Install #1 piston and connecting rod first.

1. Oil piston rings, piston skirt, and compress rings with Ring Compressor, Figure 13-2.
 - a. Rotate the top two compression rings so that the ring end gaps are on opposite sides of the piston.
 - b. Place piston and ring compressor upside down on bench with projections on compressor facing up.
 - c. Tighten ring compressor evenly until rings are fully compressed.
 - d. Then loosen ring compressor very slightly so that compressor can be rotated on piston skirt while holding connecting rod, Figure 13-2.
 - e. Remove connecting rod cap.



Figure 13-2. Compressing Rings

2. Lubricate cylinder bores and crankpin and rotate crankshaft until it is at bottom of stroke.
3. Install #1 piston with notch or casting mark towards flywheel side, Figure 13-3.
 - a. Push piston down by hand until connecting rod is seated on crankpin.

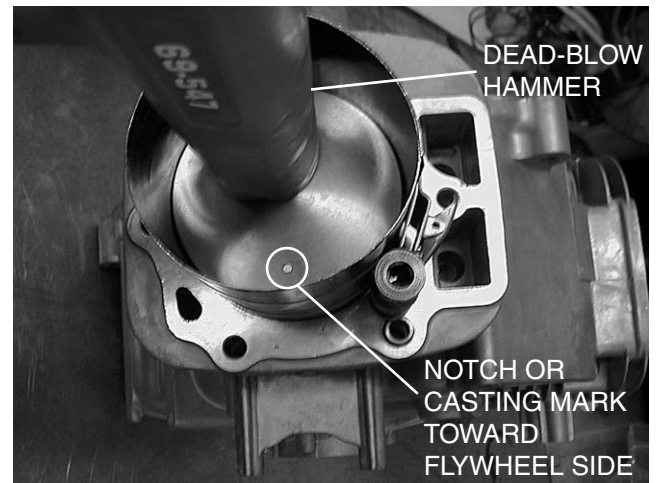


Figure 13-3. Installing Piston And Connecting Rod

4. Assemble connecting rod cap to rod with match marks aligned, Figure 13-4.
 - a. Torque screws to 24.4 Nm (18 ft. lbs.).

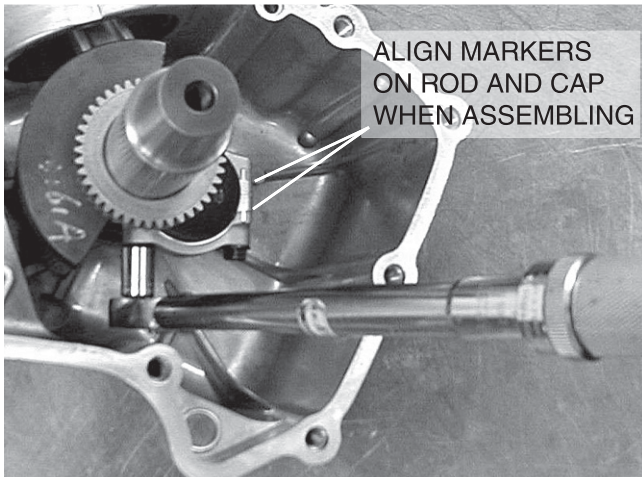
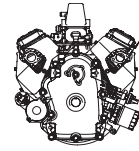


Figure 13-4. Torque Connecting Rods

5. Rotate crankshaft two revolutions to check for binding. Rod should also be free to move sideways on crankpin.

Repeat Steps 1-5 for #2 cylinder.

Note: The number 1 on #1 connecting rod and the number 2 on #2 connecting rod must be facing PTO side.

Important: Failure to use a torque wrench can result in loose connecting rod screws causing breakage or tight connecting rod screws causing scoring.

INSTALL CAMSHAFT

Lubricate tappets, cam shaft journals and lobes with engine oil.

1. Install tappets.
2. Align timing marks on cam shaft and crankshaft gear and install cam shaft, Figure 13-5.
3. Assemble governor spool to governor shaft.
 - a. Make sure that spool engages flyweights.
 - b. Install new "O"-ring in crankcase.



Figure 13-5. Installing Camshaft

INSTALL OIL PUMP

1. Lubricate gerotor and set in place.
2. Install oil pump cover.
3. Torque screws to 12.2 Nm (9 ft. lbs.).

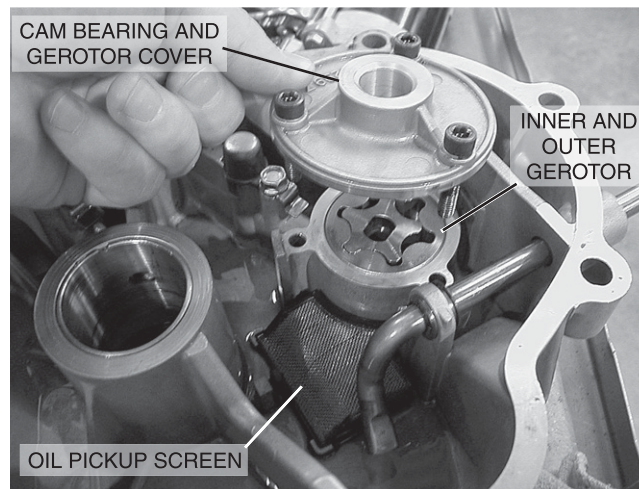


Figure 13-6. Installing Oil Pump

INSTALL CRANKCASE COVER

Lubricate PTO and cam gear bearing.

1. Rotate governor shaft so that the paddle rests against the cover, Figure 13-7.

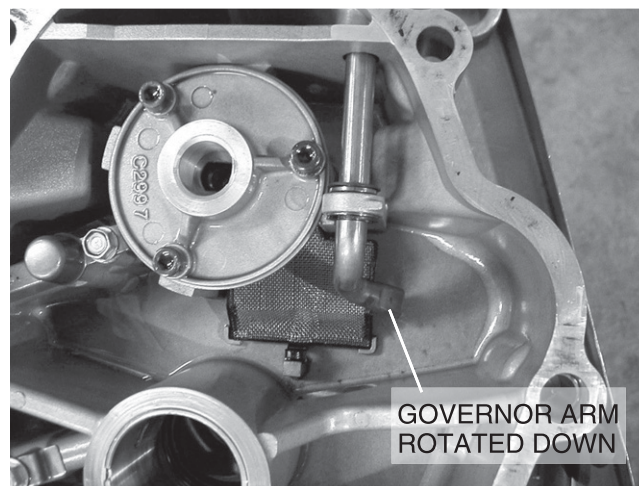
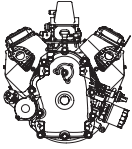


Figure 13-7. Rotating Governor Shaft

2. Install crankcase cover with new gasket.

Note: If the oil pump drive is not aligned, the cover will not slide completely on. Turning the crankshaft may align the oil pump drive.

3. Install governor support bracket.



- a. The allen head crankcase bolt will need to be backed off.
4. Torque screws in sequence shown to 47.5 Nm (35 ft. lbs.), Figure 13-8.
5. Check crankshaft end play. If less than 0.05mm (.002") there may be an assembly problem.

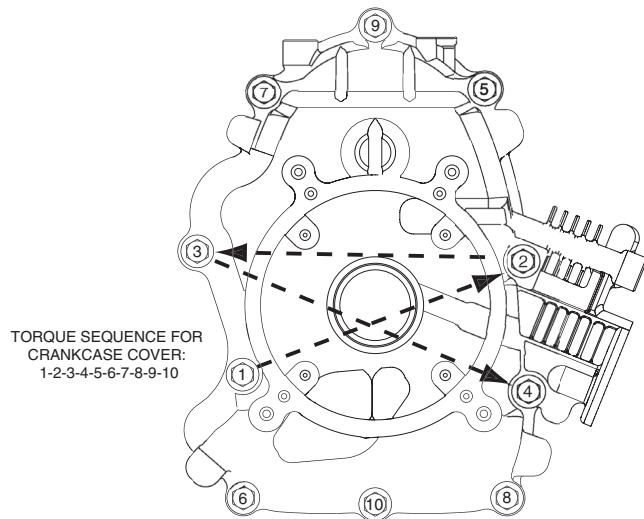


Figure 13-8

INSTALL ALTERNATOR AND IGNITION COILS

1. Install alternator, Figure 13-9.
 - a. Torque screws to 12.2 Nm (9 ft. lbs.).

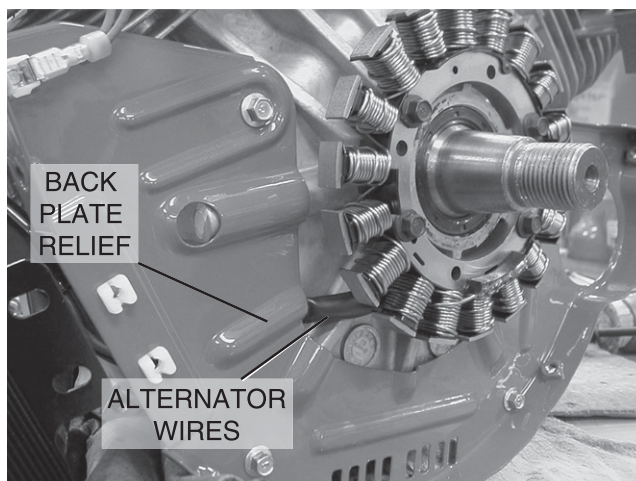


Figure 13-9. Install Alternator

2. Install back plate.
 - a. Torque screws to 10 Nm (7.4 ft. lbs.).

Important: Route alternator wires through relief in back plate. DO NOT pinch wires.

3. Install starter motor.
 - a. Torque screws to 24.4 Nm (18 ft. lbs.).
4. Assemble ignition coils to engine, Figure 13-10.
 - a. Mounting holes in coil are slotted. Push coil away from flywheel as far as possible and tighten one screw to hold coil in place.
5. Repeat for second coil.

Note: The side shown in Figure 13-10 must face up on both coils or the engine will not function properly.

6. Install ground wire onto tab terminal on ignition coils.

Important: Make sure wires are routed over coil mounting posts.

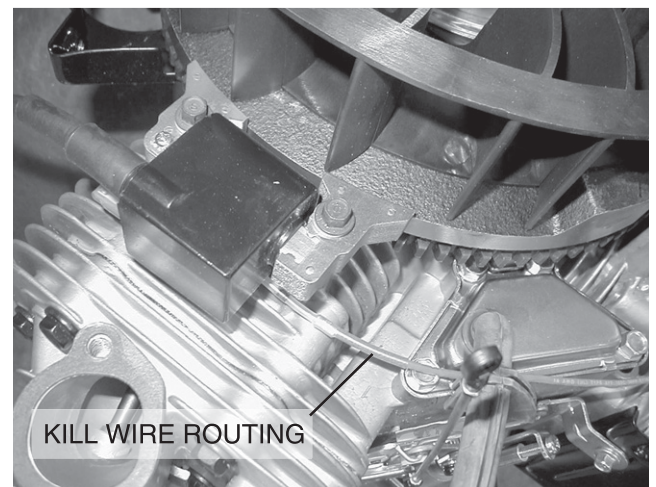


Figure 13-10. Install Coils

INSTALL BREATHER

1. Insert breather material.
2. Install breather assembly and gasket.
3. Torque bolts to 6.8 Nm (5 ft. lbs.).

INSTALL FLYWHEEL

Important: Clean flywheel and crankshaft taper removing all oil, dirt or grease.

1. Insert flywheel key into crankshaft.
2. Assemble flywheel to crankshaft.
3. Install washer and flywheel nut.
4. Torque flywheel nut to 204 Nm (150 ft. lbs.), Figure 13-11.

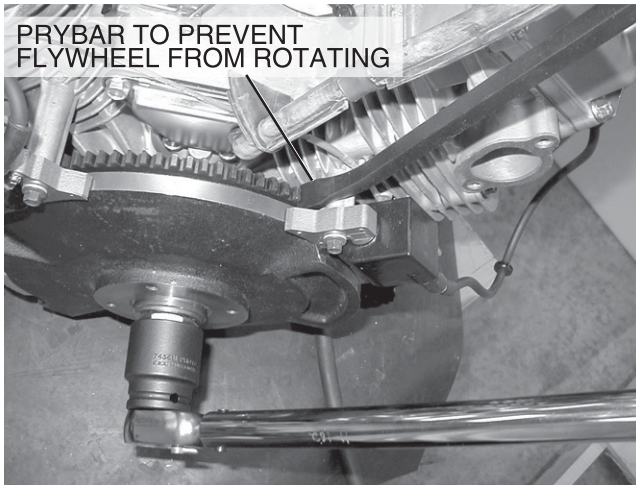
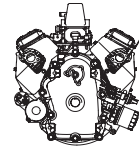


Figure 13-11. Torque Flywheel Nut

ADJUST IGNITION COIL AIR GAP

1. Rotate flywheel until magnet is under coil laminations.
2. Place 0.20-.30mm (.008"-.012") thickness gauge between magnet and coil laminations, Figure 13-12.

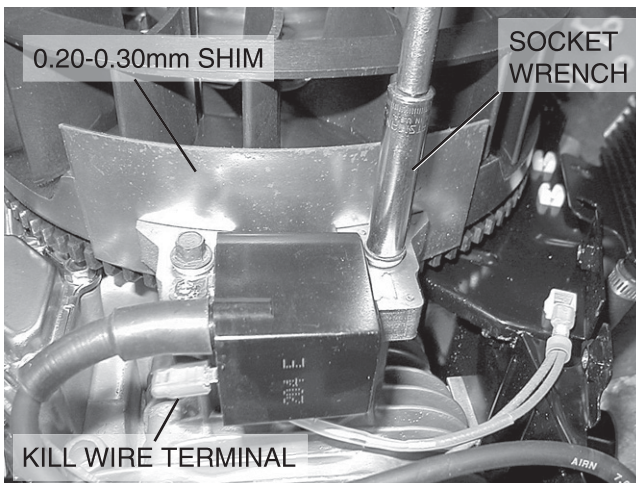


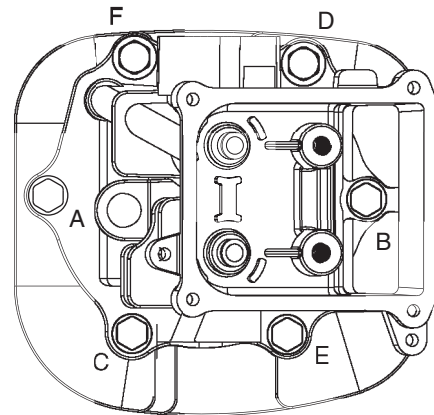
Figure 13-12. Adjust Air Gap

3. Loosen mounting screw so magnet will pull coil down against thickness gauge.
 - a. Torque screws to 12.2 Nm (9 ft. lbs.).
4. Rotate flywheel to remove thickness gauge.
5. Repeat for second coil.

INSTALL CYLINDER HEADS

1. Install cylinder head with new gasket.
2. Lubricate threads of head bolts with oil.

- a. Torque head bolts in sequence shown (Figure 13-13) to 29.9 Nm (22 ft. lbs.).
3. Insert push rods into recess in tappets.



TORQUE SEQUENCE FOR HEADS:

A-B-C-D-E-F

Figure 13-13. Install Cylinder Head

INSTALL ROCKER ARMS

1. Lubricate rocker arms and ball studs with clean engine oil.
2. Assemble ball studs, rocker arms, jam nuts and guide plates to cylinder head, Figure 13-14.
 - a. Make sure that the push rods are in the proper location on the tappets and the rocker arms.

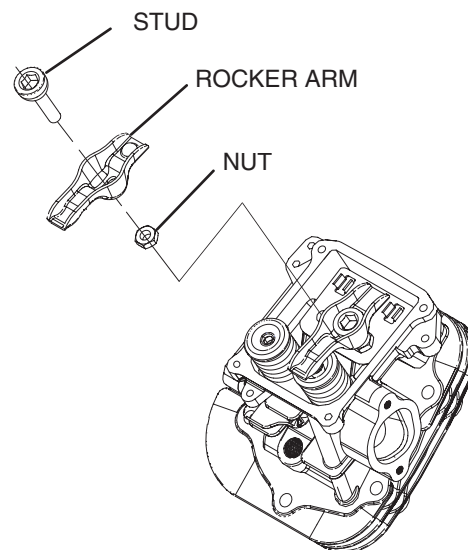
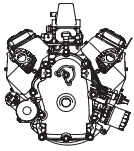


Figure 13-14. Install Rocker Arms



ADJUST VALVE CLEARANCE

1. Set No. 1 cylinder at TDC (Top Dead Center), compression stroke.
 - a. Adjust rocker arms and check clearance, Figure 13-15.

Valve Clearance (cold) IN and EX 0.076mm (.003")

- b. Torque ball studs and jam nuts to 19 Nm (14 ft. lbs.).
2. Repeat for No. 2 cylinder.

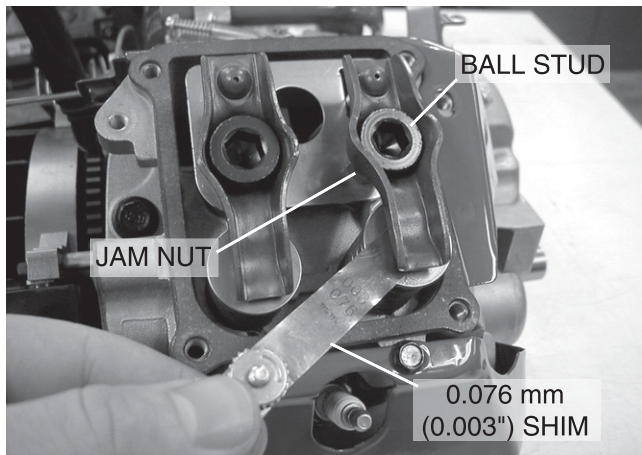


Figure 13-15. Adjust Valve Clearance

3. Install valve covers with new gaskets, Figure 13-16
 - a. Torque bolts to 6.8 Nm (5 ft. lbs.).



Figure 13-16. Install Valve Covers

GENERAL ASSEMBLY

1. Install cylinder shields (wrappers).
 - a. Torque M5 screws to 2.8 Nm (25 in. lbs.).
 - b. Torque M6 screws to 4.5 Nm (40 in. lbs.).
 - c. Connect ignition ground wire to ignition kill terminal in backing plate.

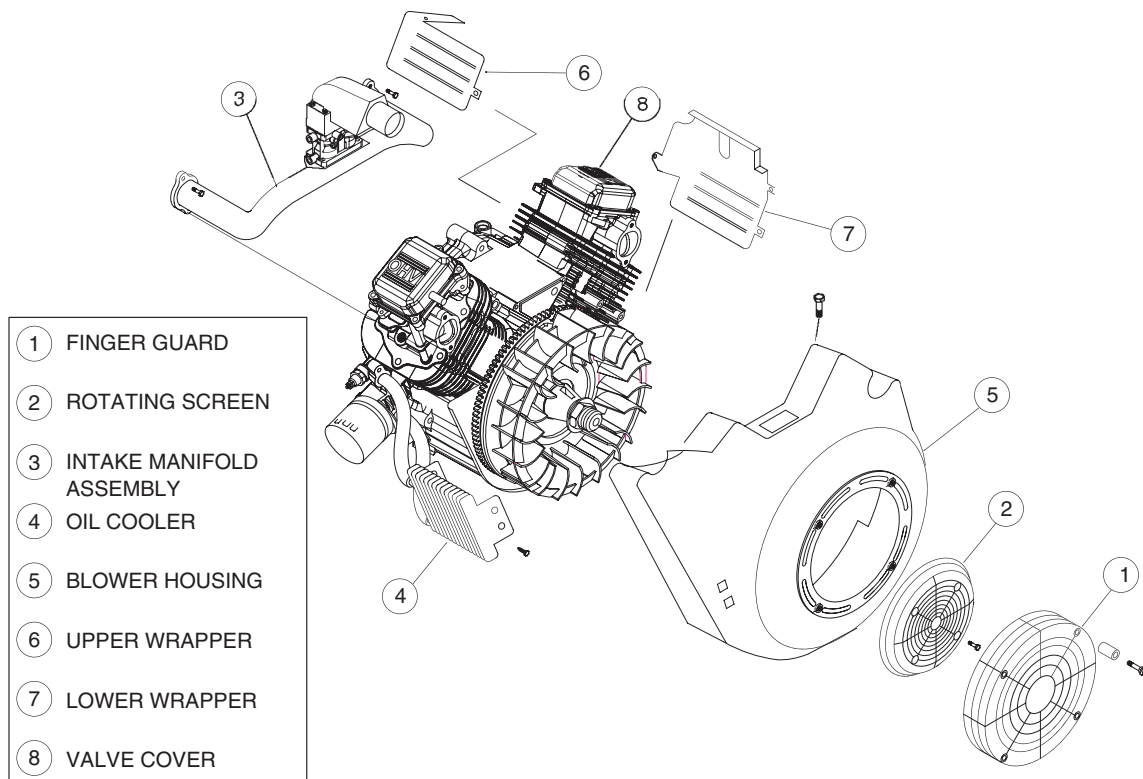
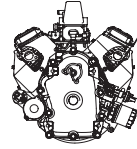


Figure 13-17. Install Blower Housing



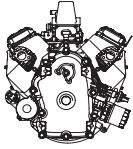
2. Assemble governor lever to governor arm. DO NOT tighten at this time.
3. Install speed adjust assembly.
 - a. Torque screws to 6.0 Nm (53 in. lbs.).
4. Install exhaust.
 - a. Torque screws to 19 Nm (14 ft. lbs.).
5. Install fan and retaining ring.
 - a. Torque screws to 21.7 Nm (16 ft. lbs.).
6. Install blower housing.
 - a. Torque screws to 4.5 Nm (40 in. lbs.).
7. Install rotating screen.
 - a. Torque screws to 1.9 Nm (17 in. lbs.).
8. Install intake manifold assembly.
 - a. Torque bolts to 19 Nm (14 ft. lbs.).
9. Install finger guard.
 - a. If engine is equipped with hex head screws, torque screws to 4.5 Nm (40 in. lbs.).
 - b. If engine is equipped with finger screws, tighten screws by hand to approximately 1.3 Nm (12 in. lbs.).
10. Connect governor linkage and speed control linkage.
11. Install spark plugs.
 - a. Torque spark plugs to 19 Nm (14 ft. lbs.).

ADJUST GOVERNOR

Note: Refer to Section 4, Page 4-2 for Static Governor Adjustment.

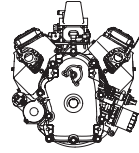


WARNING: BEFORE STARTING OR RUNNING ENGINE, static adjustment of the governor must be completed! Failure to make the static adjustments first could result in engine overspeeding which may result in engine damage, property damage or personal injury.



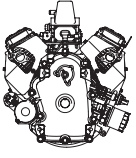
STANDARD AND REJECT DIMENSIONS		
DESCRIPTION	STANDARD DIMENSION	REJECT DIMENSION
<u>CYLINDER:</u>		
Bore	90.00 – 90.025 mm (3.543" – 3.544")	90.10 mm (3.547")
Out of Round		0.035 mm (.0015")
Main Bearing	38.044 – 38.099 mm (1.498" – 1.5")	38.25 mm (1.506")
Cam Bearing	20.00 – 20.03mm (.787" – .789")	20.06 mm (.790")
<u>CYLINDER HEAD:</u>		
Valve Guide	7.005 – 7.020 mm (.2758" – .2764")	7.06 mm (0.278")
Valve Stem	6.945 – 6.98 mm (.2734" – .2748")	6.9 mm (0.272")
<u>CRANKCASE COVER:</u>		
Main Bearing	42.044 – 42.099 mm (1.6553" – 1.6574")	42.25 mm (1.663")
Cam Bearing	18.0 – 18.025 mm (.7087" – .7096")	18.06 mm (.711")
<u>CRANKSHAFT:</u>		
Crankpin	38.99 – 39.01 mm (1.535" – 1.536")	38.96 mm (1.534")
Magneto Journal	38.00 – 38.012 mm (1.496" – 1.4965")	37.85 mm (1.490")
PTO Journal	42.00 – 42.012 mm (1.6535" – 1.654")	41.85 mm (1.648")
<u>CAMSHAFT:</u>		
Magneto Journal	19.959 – 19.98 mm (.7858" – .7866")	19.93 mm (.784")
PTO Journal	17.964 – 17.982 mm (.7072" – .708")	17.93 mm (.705")
Lobes	31.239 – 31.479 mm (1.2299" – 1.2393")	31.02 mm (1.221")
<u>CONNECTING ROD:</u>		
Crankpin Bearing	39.06 – 39.07 mm (1.5378" – 1.5382")	39.09 mm (1.539")
Piston Pin Bearing	20.02 – 20.03 mm (.7882" – .7886")	20.05 mm (.7894")
<u>PISTON PIN:</u>		
Diameter	19.984 – 19.995 mm (.7868" – .7872")	19.97 mm (.7862")
Out of Round		0.01 mm (.0005")
<u>PISTON PIN BEARING (PISTON):</u>		
Bore	20.00 – 20.02 mm (.7874" – .7882")	20.03 mm (.7886")
Out of Round		0.01 mm (.0005")
<u>PISTON RINGS:</u>		
End Gap – Top & Center	0.25 – 0.5 mm (.0098" – .0197")	0.75 mm (.0295")
End Gap – Oil	0.38 – 1.15 mm (.015" – .045")	1.5 mm (.059")
Ring Side Clearance – Top & Center	0.04 – 0.09 mm (.0016" – .0035")	0.10 mm (.004")
Ring Side Clearance – Oil	0.012 – 0.18 mm (.0005" – .007")	0.20 mm (.008")

COMMON SPECIFICATIONS	
Armature Air Gap	.008" – .012" (0.20 – 0.30 mm)
Crankshaft End Play	.002" – .015" (0.05 – 0.40 mm)
Spark Plug Gap	.030" (0.76 mm)
Valve Clearance (Cold)	
– Intake	.002" – .004" (0.05 – 0.1 mm)
– Exhaust	.002" – .004" (0.05 – 0.1 mm)



TORQUE SPECIFICATIONS

Alternator (to cylinder)	10.0 Nm (7.4 ft. lbs.)
Air Cleaner Support Bracket	5.4 Nm (48 in. lbs.)
Armature	10.0 Nm (7.4 ft. lbs.)
Back Plate	4.5 Nm (40 in. lbs.)
Blower Housing	4.5 Nm (40 in. lbs.)
Breather	4.5 Nm (40 in. lbs.)
Carburetor (to manifold)	5.4 Nm (48 in. lbs.)
Connecting Rod	24.4 Nm (18 ft. lbs.)
Crankcase Cover	47.5 Nm (35 ft. lbs.)
Cylinder Head Bolts	29.9 Nm (22 ft. lbs.)
Cylinder Wrappers:	
– M5 bolt	2.8 Nm (25 in. lbs.)
– M6 bolt	4.5 Nm (40 in. lbs.)
Exhaust Manifold	19 Nm (14 ft. lbs.)
Fan Retainer	21.7 Nm (192 in. lbs.)
Finger Guard:	
– Hex Head Screws	4.5 Nm (40 in. lbs.)
– Finger Screws	1.3 Nm (12 in. lbs.) (Approximately)
Flywheel Nut	204 Nm (150 ft. lbs.)
Governor Lever (clinching screw)	11.3 Nm (100 in. lbs.)
Intake Manifold	19 Nm (14 ft. lbs.)
Oil Pump	12.2 Nm (9 ft. lbs.)
Rocker Arm Jam Nut	19 Nm (14 ft. lbs.)
Rotating Screen Screws	1.9 Nm (17 in. lbs.)
Spark Plug	19 Nm (14 ft. lbs.)
Starter Motor	24.4 Nm (18 ft. lbs.)
Valve Cover	6.8 Nm (5 ft. lbs.)





Parts Listing for Following Models

GTV 990 - 30 HORSEPOWER

0046290EVT

0046291EVT

0046292EVT

0048610EVT

0048060EVT

GTV 760 - 26 HORSEPOWER

0048580EVT

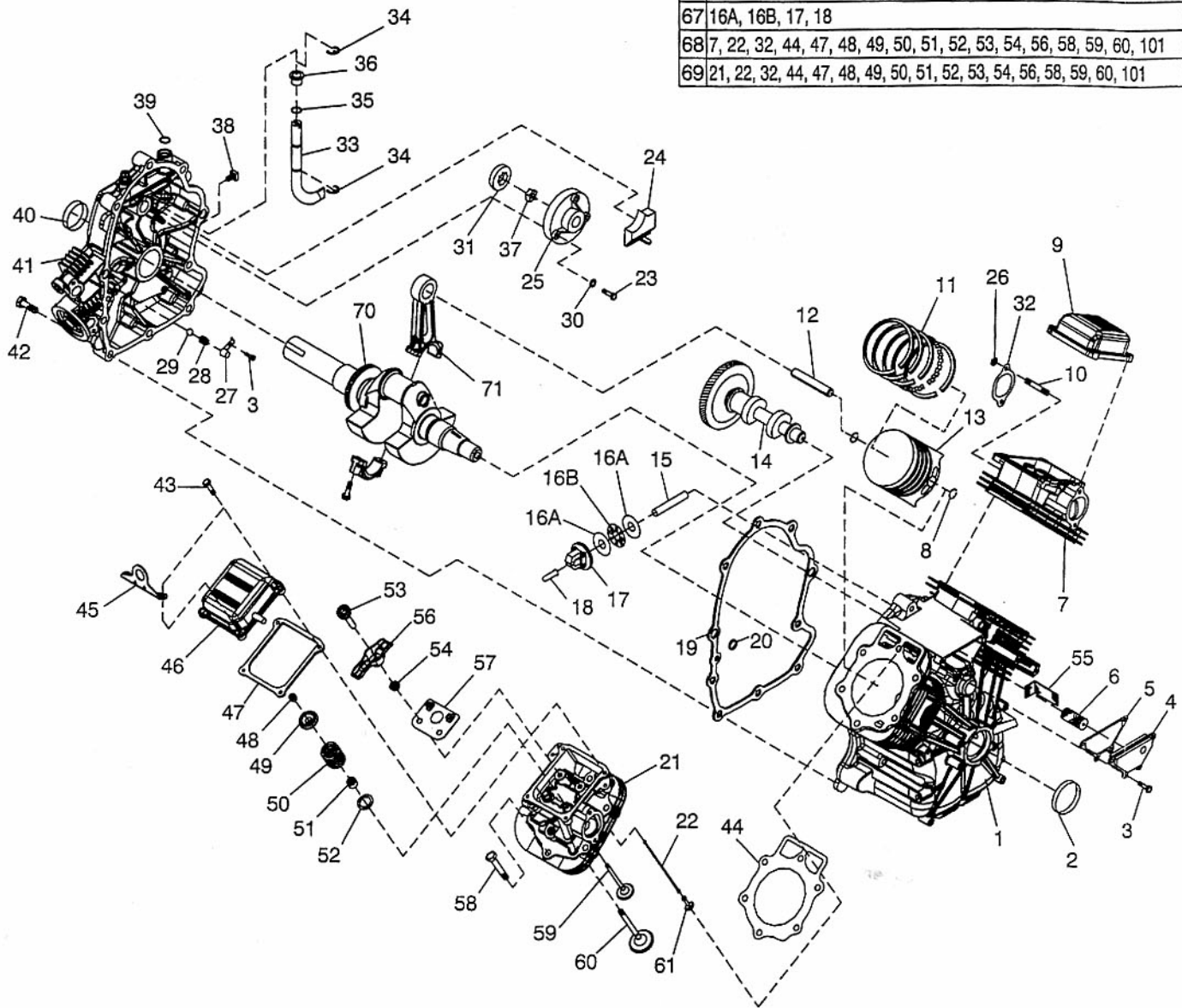
0047170EVT

0047171EVT



0E3480

62	27, 28, 29
63	3, 33, 34, 35, 36, 40, 62
64	2, 5, 19, 20, 32, 39, 40, 44, 47, 101, 148, 165, 167
65	8, 11, 12, 13
66	4, 5, 6, 55
67	16A, 16B, 17, 18
68	7, 22, 32, 44, 47, 48, 49, 50, 51, 52, 53, 54, 56, 58, 59, 60, 101
69	21, 22, 32, 44, 47, 48, 49, 50, 51, 52, 53, 54, 56, 58, 59, 60, 101



USE THIS VIEW FOR THE FOLLOWING ENGINES: □

0048060 - ENGINE, GTV-990 □

0048570 - ENGINE, GTV-760 □

0048580 - ENGINE, GTV-760

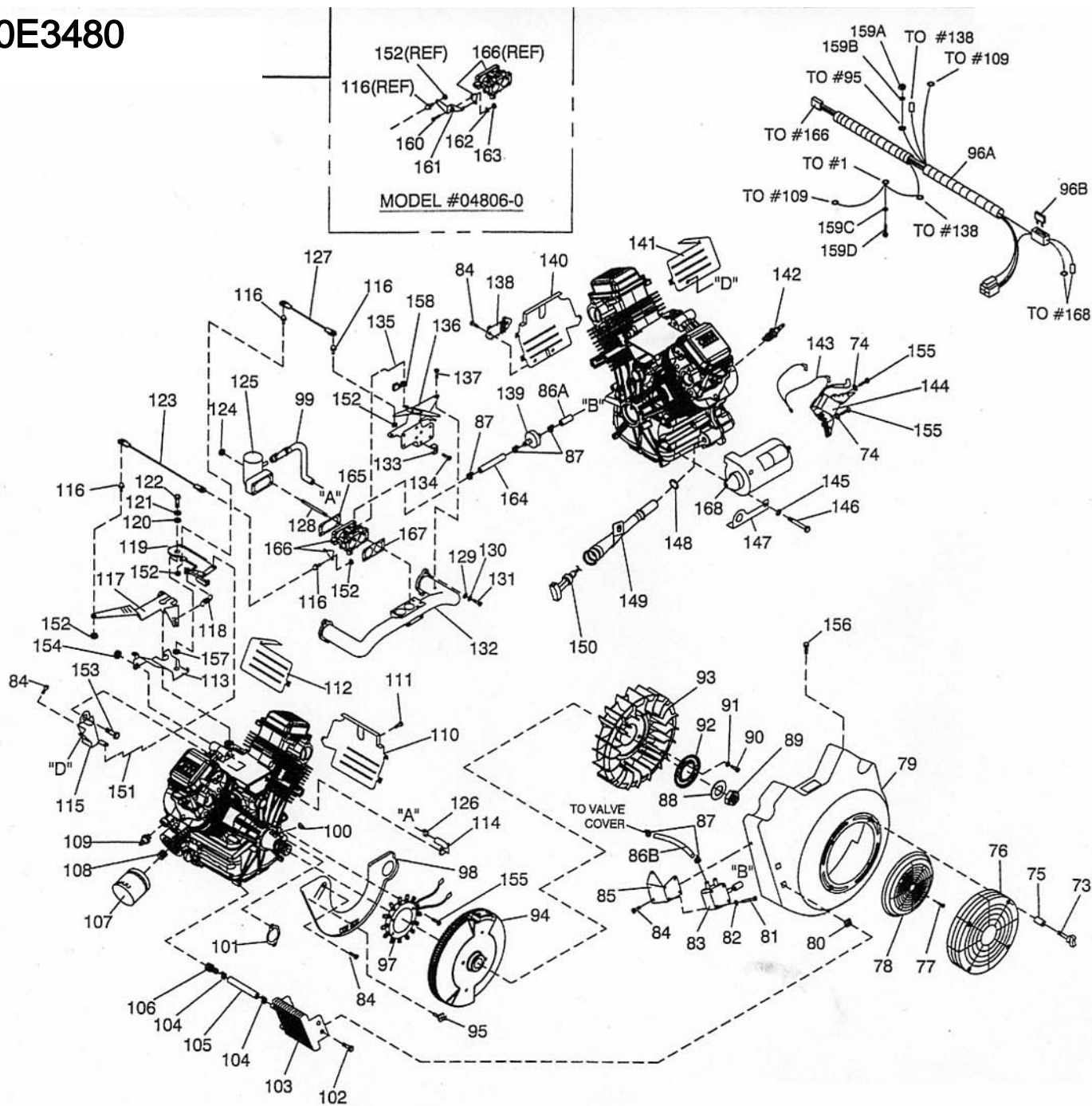
ITEM	PART #	QTY.	DESCRIPTION
1	0C5730B	1	ASSY,CRANKCASE VS WISLEEVE
2	0C3008	1	SEAL, 38 I.D. CRANKSHAFT
3	090388	6	SCREW, TAPTITE M6-1.0 X 12 YC
4	0C5372	1	ASSEMBLY, BREATHER
5	0C3005	1	GASKET, BREATHER COVER
6	0E3372A	1	SEPARATOR, OIL BREATHER GTV
7	0D8067A	1	ASSEMBLY, HEAD #1
8	071983	4	RETAINER, PISTON PIN 20
9	0C2981C	1	ROCKER, COVER NO OIL FILL
10	045761A	4	STUD M8-1.25/10MM X 30 G5 ZINC
11	021533	2	SET, PISTON RING 90MM
14	0D4041	1	ASSEMBLY, CAMSHAFT & GEAR
15	0C2983	1	SHAFT, GOVERNOR
16A	0C2985A	2	ROLLER BEARING, GOVERNOR PLATE
16B	0C2985B	1	ROLLER BEARING, GOVERNOR
17	0E2743	1	ASSEMBLY,GOVERNOR GEAR
18	0A7811	1	SPOOL, GOVERNOR MACHINED
19	0C2977	1	GASKET, CRANK CASE
20	0C5943	1	SEAL, OIL PASSAGE
21	0D8067B	1	ASSEMBLY, HEAD #2
22	0D9853D	4	PUSHROD, 147
23	021374	3	SCREW SHC M6-1.0 X 30 G8.8
24	0C2994	1	SCREEN, OIL PICKUP
25	0C2997	1	COVER, GEROTOR
26	052858	4	NUT LOCK FL M8-1.25
27	0C3011	2	COVER, OIL RELIEF
28	0C3009	2	SPRING, OIL RELIEF
29	0C3010	2	BALL, 1/20 OIL RELIEF
30	093873	3	WASHER, LOCK RIB M6
31	0C2996	1	GEROTOR, OUTER
32	0C4138	2	GASKET, EXHAUST
33	0D1667	1	ARM, GOVERNOR
34	0C2991	2	E-RING, GOVERNOR ARM
35	0C2988	1	THRUST WASHER, GOVERNOR
36	0C2992	1	BUSHING, GOVERNOR LOWER
37	0C2995	1	GEROTOR, INNER
38	0D4788	1	PLUG, DRAIN
39	0C2993	1	SEAL, GOVERNOR SHAFT
40	0C3007	1	SEAL, 42 I.D. CRANKSHAFT
41	0C5732	1	ASSEMBLY, SUMP WITH SLEEVE
42	0C3006	9	SCREW, HHFC M10-1.5 X 55
43	080318	8	SCREW HHFC M6-1.0 X 25
44	0C2978	2	GASKET, HEAD
45	0C8808	1	HOOK, LIFTING
46	0D7477A	1	ASSEMBLY, ROCKER COVER W/ BARB FOR PULSE
47	0C2979	2	GASKET, VALVE COVER
48	086515	8	KEEPER, VALVE SPRING
49	0D2274	4	RETAINER, VALVE SPRING
50	0D3867	4	SPRING, VALVE
51	078672	2	SEAL, VALVE STEM D7
52	0C5371	4	WASHER, VALVE SPRING
53	072694	4	STUD, ROCKER ARM PIVOT
54	0D3998	4	NUT, HEX M8-1.0 G8 YEL CHR
55	0E3273	1	SCREEN C'CASE BREATHER GTV
56	0D5313	4	ROCKER ARM
57	0D6024	2	PLATE, PUSH ROD GUIDE
58	0C2976	12	SCREW HHFC M8-1.25 X 65
59	086516	2	VALVE, EXHAUST
60	0C2229	2	VALVE, INTAKE
61	083897	4	TAPPET, SOLID
62	0D4015	1	KIT, OIL RELIEF
63	0D9419	1	KIT, SUMP
64	0D9422	1	KIT, GASKET
65	0E4354	1	KIT, PISTON & RINGS GT760/GT990
66	0E4355	1	KIT, BREATHER ASSY GT760/GT990
67	0D4013	1	KIT, GOVERNOR ASSEMBLY
68	0D8675A	1	KIT, HEAD ASSEMBLY CYLINDER 1
69	0D8675B	1	KIT, HEAD ASSEMBLY CYLINDER 2

ITEM	PART #	QTY.	DESCRIPTION
			<u>MODEL #04806-0</u>
12	0E1466	2	PIN PISTON 20 DIA X 48 LONG
13	0E2950	2	PISTON, 8.5:1 90MM DIA (LOW COMP.)
70	0E4357H	1	ASSY,C'SHFT&GEAR L&G 100MM
71	0E3223	2	CONROD
			<u>MODEL #04857-0</u>
12	0E1466	2	PIN PISTON 20 DIA X 48 LONG
13	0E2985	2	PISTON, 9.5:1 90MM DIA (HIGH COMP.)
70	0E4356J	1	ASSY,C'SHFT&GEAR L&G 100MM
71	0E3222	2	CONROD
			<u>MODEL #04858-0</u>
12	071980	2	PIN PISTON 20 DIA
13	0C5848	2	PISTON, 9.5:1 90MM DIA (HIGH COMP.)
70	0D4122J	1	ASSY,C'SHFT&GEAR L&G 100MM
71	0D3961	2	CONROD

USE THIS VIEW FOR THE FOLLOWING MODELS:

- 0048060 - ENGINE, GTV-990
- 0048570 - ENGINE, GTV-760
- 0048580 - ENGINE, GTV-760

0E3480



USE THIS VIEW FOR THE FOLLOWING MODLES: □
0048060 - ENGINE, GTV-990 □
0048570 - ENGINE, GTV-760 □
0048580 - ENGINE, GTV-760

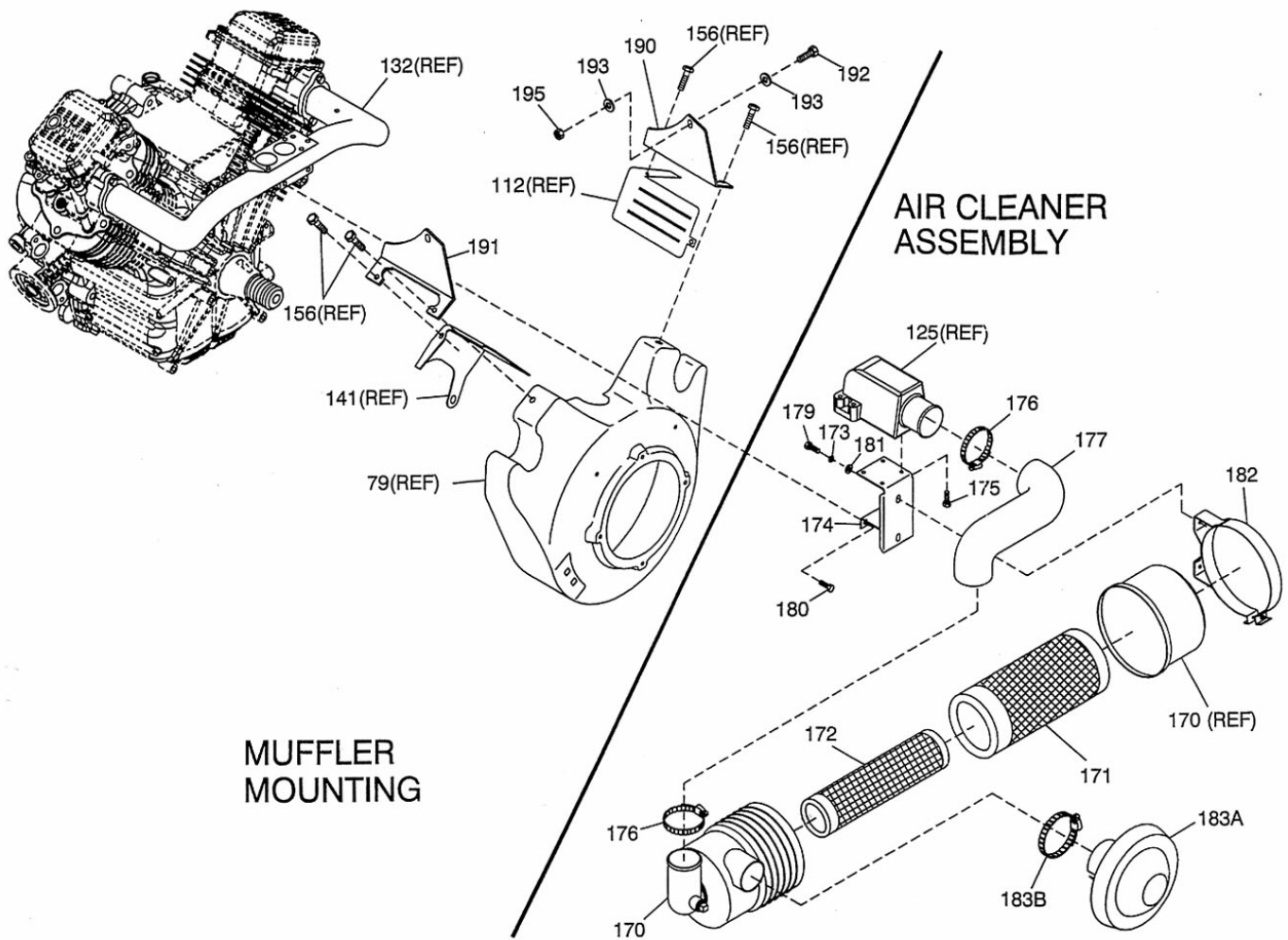
ITEM	PART #	QTY.	DESCRIPTION
73	0C5136	4	KNOB AIR CLEANER
74	022097	4	WASHER, LOCK M6-1/4"
75	0E3146	4	SPACER, ROTATING SCREEN GUARD
76	0D7815A	1	GUARD, ROTATING SCREEN
77	0D7115	4	SCREW, #10 SHEET METAL
78	0D9684A	1	SCREEN, ROTATING
79	0E4046E	1	HOUSING, BLOWER VERTICAL L&G
80	0C9763	4	NUT, GROMMET 1/4 PLUG
81	0D6142	2	SCREW PPHM M4-0.7 X 40
82	022264	2	WASHER, LOCK M4
83	0C4147	1	PUMP, IMPULSE
84	045756	23	SCREW TAPTITE M6-1.0X 10 YELLOW CHROME
85	0D6027	1	BRACKET, FUEL PUMP
85A	030340G	1	HOSE 1/2" ID X 2" LONG
86B	030340P	1	HOSE 1/2" ID X 7" LONG
87	048031C	6	CLAMP HOSE BAND 1/4
88	0C3033	1	WASHER, M24
89	0C3034	1	NUT, HEX M24
90	048571	2	SCREW HHC M8-1.25 X 10 G8.8
91	0A5992	2	WASHER SHAKEPROOF INT M8 SS
92	0C3032	1	PLATE, FAN
93	0C3031	1	FAN, NYLON
94	0C9182	1	FLYWHEEL ASSEMBLY W/ L.C. MAGNETS
95	085011	1	INSULATOR ASSEMBLY IGNITION
96A	0E5212	1	VS WIRE HARNESS
96B	0E5276	1	30 AMP FUSE
97	0A1336E	1	ASSEMBLY, STATOR W/ LUGS
98	0C3016A	1	PLATE, BACKING GT990 WITH OIL COOL
99	0E4845	1	ASSY, BREATHER TUBE GTV
100	082774	1	KEY, WOODRUFF 4 X 19D
101	0C3043	2	GASKET, MANIFOLD / PORT
102	0C9764	4	PLASTITE, 1/4-15 X 3/4
103	0C3026	1	COOLER, OIL
104	0C7649	4	CLAMP HOSE .38 - .87
105	0C9806	2	HOSE, 3/8" I.D. X 6" LONG
106	035461A	2	BARBED STR 1/4NPT X 3/8 WITH VIBRA SEAL
107	070185	1	FILTER, OIL D 69 X 64 LONG
108	0C7292	1	NIPPLE, 3/4"-16 UNF
109	0C3025	1	SWITCH, OIL PRESS
110	0C3019	1	WRAPPER, LOWER CYLINDER 1
111	0E5153	2	SCREW THTT #10-24 X 3/8"
112	0C3018	1	WRAPPER, UPPER CYLINDER 1
113	0D3868	1	BRACKET, SUPPORT-GOVERNOR ADJUST
114	0E4804	1	HOSE, BLOWER HSG TO BREATHER
115	0E0553	1	ASSY, IDLE SPEED SUPPORT BRACKET
116	0D6342	4	STUD, BALL M3-0.5
117	0E0552	1	ASSY, GOVERNOR LEVER
118	0E1150	1	SPRING, GOVERNOR
119	0D9884	1	ASSY, IDLE SPEED ADJUST W/ GROMMET
120	0D3876	1	WASHER, FLAT M5
121	049226	1	WASHER, LOCK M5
122	045770	1	SCREW, HHC M5-0.8 X 10
123	0D6257	1	ROD, GOVERNOR
124	052857	4	NUT LOCK FLANGE M6-1,0
125	0D3959A	1	ADAPTOR, CARB-AIRBOX, M6 BOSSES
126	048031N	1	HOSE CLAMP, BAND 12mm I.D.
127	0D9999	1	ASSEMBLY, IDLE SPEED ADJUSTMENT ROD
128	0D6021	4	STUD, METRIC
129	070008	4	WASHER, FLAT M8
130	070006	4	WASHER, LOCK M8
131	049821	4	SCREW, SHC M8-1.25 X 30

ITEM	PART #	QTY.	DESCRIPTION
132	0E3052	1	MANIFOLD, INTAKE VERT 2BBL CARB
133	0E4190	4	CLAMP, 3/16" COATED CABLE
134	091526	4	SCREW, PPHM M5-0.8 X 12
135	0D8559	1	ROD, CHOKE
136	0D7237	1	ASSY, BELDEN BRACKET W/ BELLCRANK
137	0E5139	3	SCREW HHFC M6-1.0 X 8mm
138	0A2702	1	REGULATOR, 20 AMP
139	0D6313	1	FILTER, FUEL
140	0D1142B	1	WRAPPER, LOWER CYLINDER 2
141	0D1143	1	WRAPPER, UPPER CYLINDER 2
142	072347	2	SPARKPLUG
143	0C3053	1	ASSEMBLY, GROUND WIRE
144	0C3052	2	ASSEMBLY, IGNITION COIL
145	022129	2	WASHER, LOCK M8-5/16
146	061906	2	SCREW, HHC M8-1.25 X 85 G8.8
147	0D6026	1	LIFT HOOK, STARTER
148	090072	1	O-RING, OIL CLR
149	0D6655	1	TUBE, DIPSTICK
150	0C8434C	1	ASSEMBLY, DIPSTICK W/ HANDLE
151	0D9863	1	ROD, IDLE ADJUSTMENT
152	0D9784	4	NUT, LOCK HEX M3-0.5
153	0E0486	1	SCREW, SHC M10-1.5 X 75 G10.9
154	0E5343	1	NUT, LOCK FL-SERRATED M10-1.5
155	092079	8	SCREW, TAPTITE M6-1.0 X 25
156	0E1552	4	SCREW, FHHC M6-1.0 X 12 W/M5 HEX
157	0E5113	1	WASHER NYLON 0.375" I.D.
158	0D1366	1	BUSHING, GOVERNOR ROD
159A	022471	1	NUT HEX #8-32
159B	022264	1	WASHER LOCK #8-M4
159C	043182	1	WASHER LOCK M3
159D	0C1085	1	SCREW PPHM M3-0.5 X 8
			<u>MODEL #04806-0</u>
160	036933	1	SCREW, PPHM #10-32 X 3/8"
161	0D6311	1	BRACKET, THROTTLE
162	022152	1	WASHER, LOCK #10
163	022158	1	NUT, HEX #10-32
164	030340L	1	HOSE 1/2" ID X 11" LONG
165	0D4026	1	GASKET, ARBX TO SPCR/CARB
166	0E3291	1	CARBURETOR DENI GTV990
167	0D4023	1	GASKET, MANIFOLD TO CARB
168	0E4271	1	STARTER, DELCO REMY SD80
			<u>MODELS #04857-0 & #04858-0</u>
164	030340N	1	HOSE 1/2" ID X 8.5" LONG
165	0D4024	1	GASKET, CARB TO SPACER
166	0E1357	1	CARBURETOR
167	0D5282	1	GASKET, MANIFOLD TO CARB
168	0C3017	1	STARTER, V-TWIN ENGINE

USE THIS VIEW FOR THE FOLLOWING MODELS:

- 0048060 - ENGINE, GTV-990
- 0048570 - ENGINE, GTV-760
- 0048580 - ENGINE, GTV-760

0E3480



MUFFLER MOUNTING

AIR CLEANER ASSEMBLY

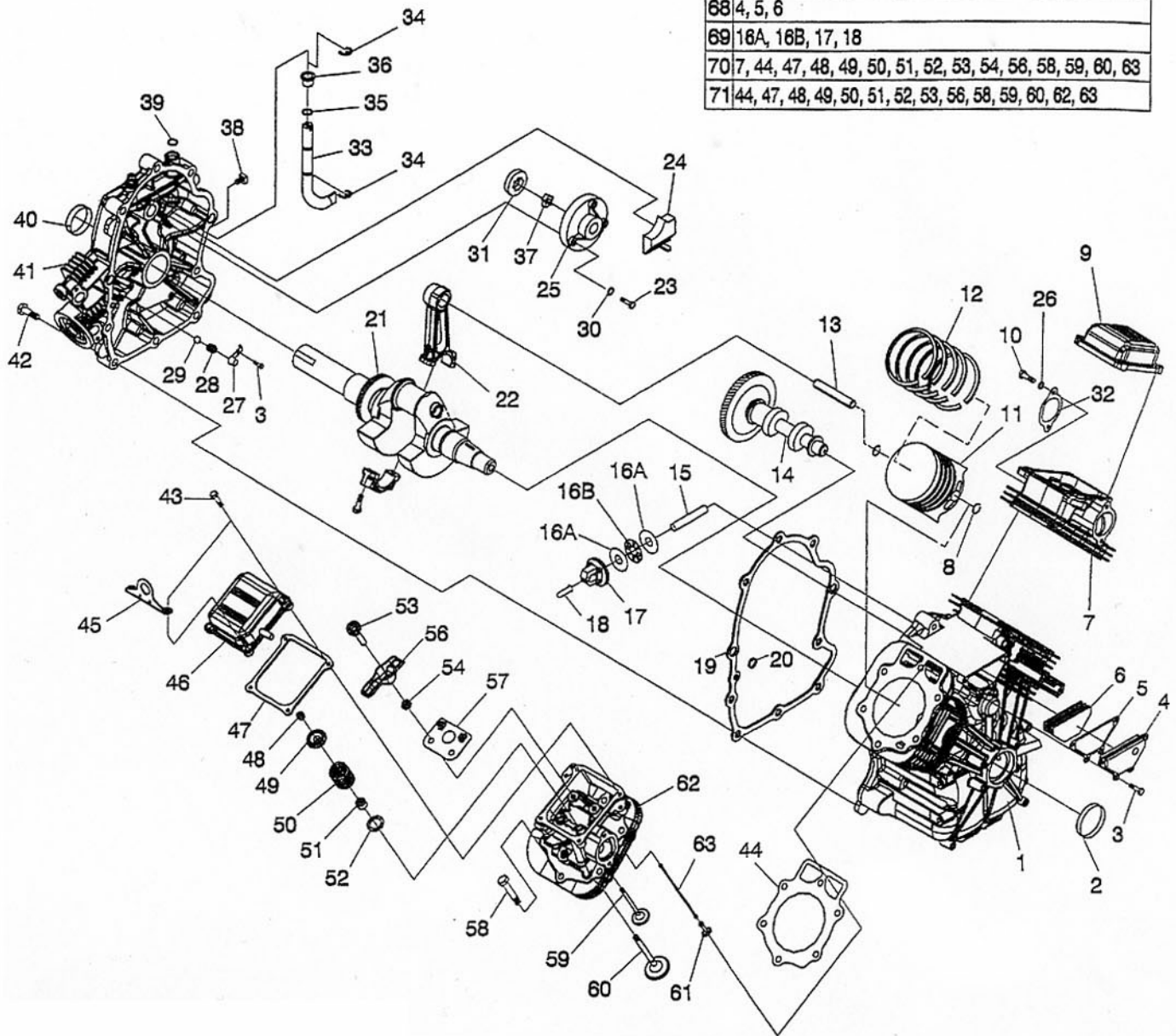
ITEM	PART #	QTY.	DESCRIPTION
AIR CLEANER ASSEMBLY			
170	0E3655	1	CLEANER,AIR DONALDSON W/SFTY FLT
171	0E3557	1	FILTER, AIR PRIMARY DONALDSON
172	0E3656	1	FILTER, AIR SAFETY DONALDSON
173	022129	2	WASHER LOCK M8-5/16
174	0E2990	1	BRKT, AIR CLEANER SUPPORT GTV
175	0E1644	4	SCREW BHSC M6-1.0 X 12 SS
176	0E1680	2	CLAMP HOSE #32 1.563-2.500
177	0E4326	1	HOSE AIR CLEANER GTV
179	042907	2	SCREW HHC M8-1.25 X 16 G8.8
180	0D6147	2	SCREW HHFC M6-1.0 X 10 G8.8
181	022145	2	WASHER FLAT 5/16-M8 ZINC
182	0E1091	1	ASSY, BAND MOUNT AIR CLEANER
183A	0E0136A	1	HOOD, INLET DONALDSON #H001377
183B	0E0136B	1	CLAMP, HOSE DONALDSON #P148058
MUFFLER MOUNTING			
190	0E3502A	1	SUPPORT, MUFFLER RH
191	0E3502B	1	SUPPORT, MUFFLER LH
192	039253	2	SCREW HHC M8-1.25 X 20 G8.8
193	022145	4	WASHER FLAT 5/16-M8 ZINC
195	067989	2	NUT LOCK FL M8-1.25 YEL CHR

USE THIS VIEW FOR THE FOLLOWING MODELS:

- 0048060 - ENGINE, GTV-990
- 0048570 - ENGINE, GTV-760
- 0048580 - ENGINE, GTV-760

0D9411

64	27, 28, 29
65	3, 33, 34, 35, 36, 40, 64
66	2, 5, 19, 20, 32, 39, 40, 44, 47, 101, 129, 135, 157
67	8, 11, 12, 13
68	4, 5, 6
69	16A, 16B, 17, 18
70	7, 44, 47, 48, 49, 50, 51, 52, 53, 54, 56, 58, 59, 60, 63
71	44, 47, 48, 49, 50, 51, 52, 53, 56, 58, 59, 60, 62, 63



USE THIS VIEW FOR THE FOLLOWING MODELS:

0046290EVT - ENGINE, GTV-990

0046291EVT - ENGINE, GTV-990

0047170EVT - ENGINE, GTV-760

0047970EVT - ENGINE, GTV-990 1-1/8 SHAFT

0462910SRV - ENGINE, GTV-990 SERVICE

0D9411

ITEM	PART #	QTY.	DESCRIPTION
1	0C5730	1	ASSEMBLY, CRANKCASE HOUSING WITH SLEEVE
2	0C3008	1	SEAL, 38 I.D. CRANKSHAFT
3	090388	6	SCREW, TAPTITE M6-1.0 X 12 YC
4	0C5372	1	ASSEMBLY, BREATHER
5	0C3005	1	GASKET, BREATHER COVER
6	0E1684	3	SEPARATOR, OIL BREATHER
7	0D8067A	1	ASSEMBLY, HEAD #1
8	071983	4	RETAINER, PISTON PIN 20
9	0C2981C	1	ROCKER, COVER NO OIL FILL
10	0C8565	4	SCREW, SHCS M8-1.25 X 18
11	0C2967	2	PISTON, LC (GT-990)
	0C5848	2	PISTON, HC (GT-760)
12	021533	2	SET, PISTON RING 90MM
13	071980	2	PIN PISTON D20
14	0D4041	1	ASSEMBLY, CAMSHAFT & GEAR
15	0C2983	1	SHAFT, GOVERNOR
16A	0C2985A	2	ROLLER BEARING, GOVERNOR PLATE
16B	0C2985B	1	ROLLER BEARING, GOVERNOR
17	0E2743	1	ASSEMBLY, GOVERNOR GEAR
18	0A7811	1	SPOOL, GOVERNOR MACHINED
19	0C2977	1	GASKET, CRANK CASE
20	0C5943	1	SEAL, OIL PASSAGE
21	0D4040B	1	ASSEMBLY, CRANKSHAFT VERTICAL LAWN & GARDEN (GT-990)
	0D4122F	1	ASSEMBLY, CRANKSHAFT VERTICAL LAWN & GARDEN (GT-760)
22	0C2969	2	ASSEMBLY, CONNECTING ROD (GT-990)
	0D3961	2	ASSEMBLY, CONNECTING ROD (GT-760)
23	021374	3	SCREW SHC M6-1.0 X 30 G8.8
24	0C2994	1	SCREEN, OIL PICKUP
25	0C2997	1	COVER, GEROTOR
26	022129	4	WASHER, LOCK M8
27	0C3011	2	COVER, OIL RELIEF
28	0C3009	2	SPRING, OIL RELIEF
29	0C3010	2	BALL, 1/2D OIL RELIEF
30	093873	3	WASHER, LOCK RIB M6
31	0C2996	1	GEROTOR, OUTER
32	0C4138	2	GASKET, EXHAUST
33	0D1667	1	ARM, GOVERNOR
34	0C2991	2	E-RING, GOVERNOR ARM
35	0C2988	1	THRUST WASHER, GOVERNOR
36	0C2992	1	BUSHING, GOVERNOR LOWER
37	0C2995	1	GEROTOR, INNER
38	0D4788	1	PLUG, DRAIN
39	0C2993	1	SEAL, GOVERNOR SHAFT
40	0C3007	1	SEAL, 42 I.D. CRANKSHAFT
41	0C5732	1	ASSEMBLY, SUMP WITH SLEEVE
42	0C3006	9	SCREW, HHFC M10-1.5 X 55
43	080318	8	SCREW HHFC M6-1.0 X 25
44	0C2978	2	GASKET, HEAD
45	0C8808	1	HOOK, LIFTING
46	0D7477A	1	ASSEMBLY, ROCKER COVER W/ BARB FOR PULSE
47	0C2979	2	GASKET, VALVE COVER
48	086515	8	KEEPER, VALVE SPRING
49	0D2274	4	RETAINER, VALVE SPRING
50	0D3867	4	SPRING, VALVE
51	078672	2	SEAL, VALVE STEM D7
52	0C5371	4	WASHER, VALVE SPRING
53	072694	4	STUD, ROCKER ARM PIVOT

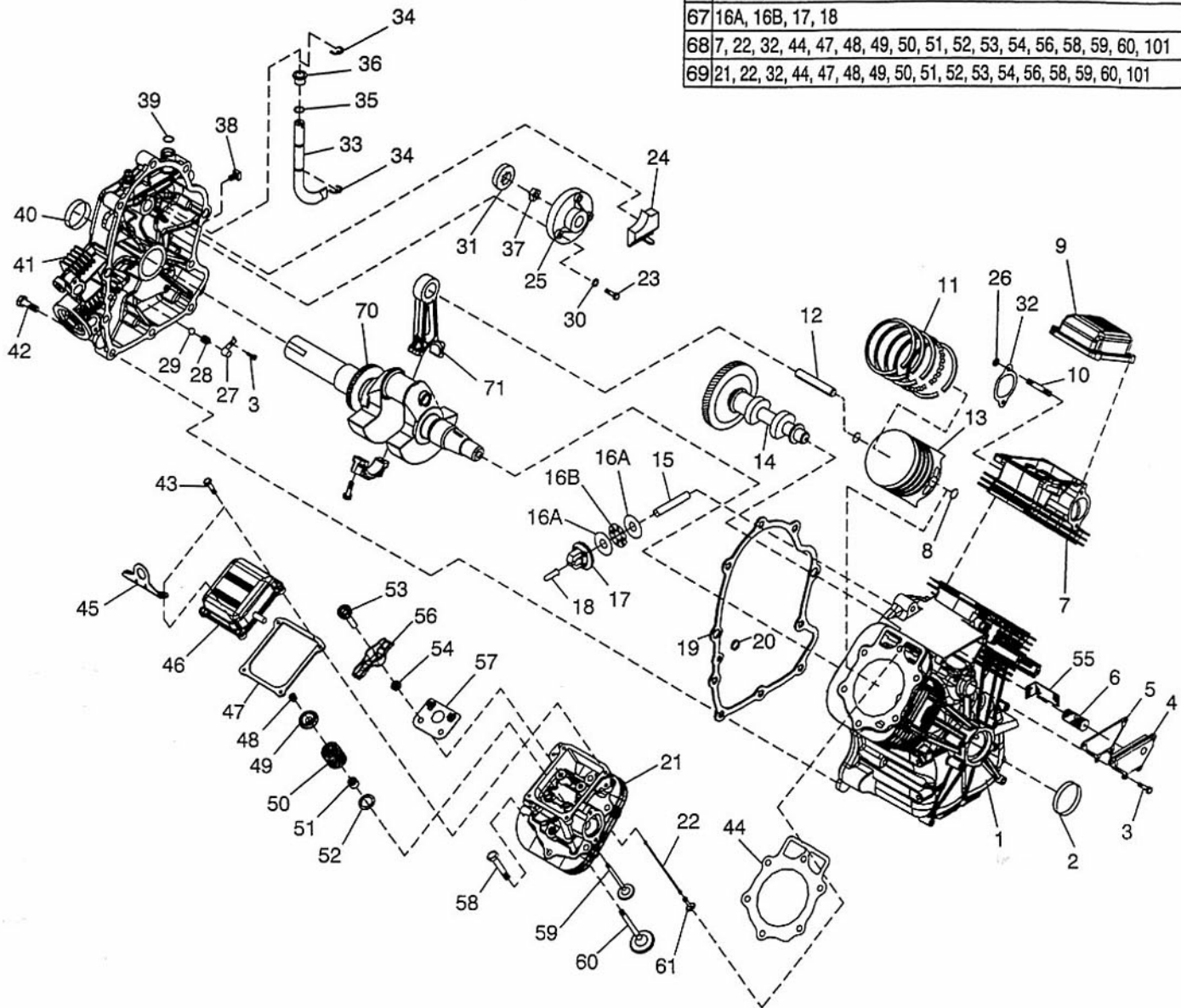
ITEM	PART #	QTY.	DESCRIPTION
54	0D3998	4	NUT, HEX M8-1.0 G8 YEL CHR
56	0D5313	4	ROCKER ARM
57	0D6024	2	PLATE, PUSH ROD GUIDE
58	0C2976	12	SCREW HHFC M8-1.25 X 65
59	086516	2	VALVE, EXHAUST
60	0C2229	2	VALVE, INTAKE
61	083697	4	TAPPET, SOLID
62	0D8067B	1	ASSEMBLY, HEAD #2
63	0D9853D	4	PUSHROD, 147
64	0D4015	1	KIT OIL RELIEF
65	0D9419	1	KIT SUMP
66	0D9422	1	KIT GASKET
67	0D6007	1	KIT PISTON & RINGS
68	0D4012	1	KIT BREATHER ASSEMBLY
69	0D4013	1	KIT GOVERNOR ASSEMBLY
70	0D8675A	1	KIT HEAD ASSEMBLY CYLINDER 1
71	0D8675B	1	KIT HEAD ASSEMBLY CYLINDER 2

USE THIS VIEW FOR THE FOLLOWING MODELS:

0046290EVT - ENGINE, GTV-990
 0046291EVT - ENGINE, GTV-990
 0047170EVT - ENGINE, GTV-760
 0047970EVT - ENGINE, GTV-990 1-1/8 SHFT
 0462910SRV - ENGINE, GTV-990 SERVICE

CE4328

62	27, 28, 29
63	3, 33, 34, 35, 36, 40, 62
64	2, 5, 19, 20, 32, 39, 40, 44, 47, 101, 148, 165, 167
65	8, 11, 12, 13
66	4, 5, 6, 55
67	16A, 16B, 17, 18
68	7, 22, 32, 44, 47, 48, 49, 50, 51, 52, 53, 54, 56, 58, 59, 60, 101
69	21, 22, 32, 44, 47, 48, 49, 50, 51, 52, 53, 54, 56, 58, 59, 60, 101



USE THIS VIEW FOR THE FOLLOWING MODELS: □

0046292 - ENGINE, GTV-990 □

0047171 - ENGINE, GTV-760 □

0047971 - ENGINE, GTV-990 1-1/8 SHAFT □

0048610 - ENGINE, GTV-990 □

0048620 - ENGINE, GTV-760

CE4328

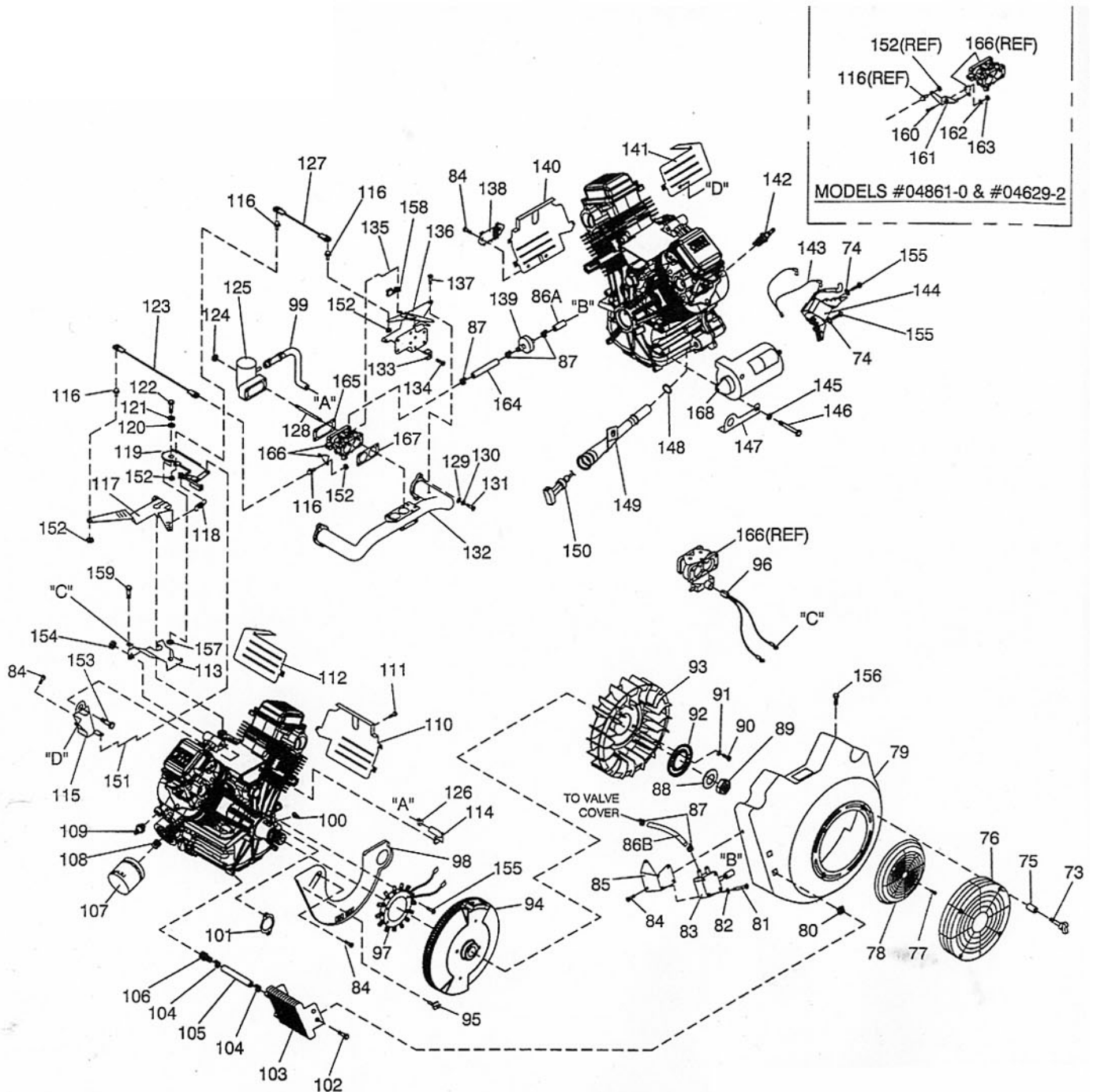
ITEM	PART #	QTY.	DESCRIPTION
1	0C5730B	1	ASSY,CRANKCASE VS W/SLEEVE
2	0C3008	1	SEAL, 38 I.D. CRANKSHAFT
3	090388	5	SCREW, TAPTITE M6-1.0 X 12 YC
4	0C5372	1	ASSEMBLY, BREATHER
5	0C3005	1	GASKET, BREATHER COVER
6	0E3372A	1	SEPARATOR, OIL BREATHER GTV
7	0D8067A	1	ASSEMBLY, HEAD #1
8	071983	4	RETAINER, PISTON PIN 20
9	0C2981C	1	ROCKER, COVER NO OIL FILL
10	045761A	4	STUD M8-1.25/10MM X 30 G5 ZINC
11	021533	2	SET, PISTON RING 90MM
14	0D4041	1	ASSEMBLY, CAMSHAFT & GEAR
15	0C2983	1	SHAFT, GOVERNOR
16A	0C2985A	2	ROLLER BEARING, GOVERNOR PLATE
16B	0C2985B	1	ROLLER BEARING, GOVERNOR
17	0E2743	1	ASSEMBLY,GOVERNOR GEAR
18	0A7811	1	SPOOL, GOVERNOR MACHINED
19	0C2977	1	GASKET, CRANK CASE
20	0C5943	1	SEAL, OIL PASSAGE
21	0D8067B	1	ASSEMBLY, HEAD #2
22	0D9853D	4	PUSHROD, 147
23	021374	3	SCREW SHC M6-1.0 X 30 G8.8
24	0C2994	1	SCREEN, OIL PICKUP
25	0C2997	1	COVER, GEROTOR
26	052858	4	NUT LOCK FL M8-1.25
27	0C3011	2	COVER, OIL RELIEF
28	0C3009	2	SPRING, OIL RELIEF
29	0C3010	2	BALL, 1/20 OIL RELIEF
30	093873	3	WASHER, LOCK RIB M6
31	0C2996	1	GEROTOR, OUTER
32	0C4138	2	GASKET, EXHAUST
33	0D1667	1	ARM, GOVERNOR
34	0C2991	2	E-RING, GOVERNOR ARM
35	0C2988	1	THRUST WASHER, GOVERNOR
36	0C2992	1	BUSHING, GOVERNOR LOWER
37	0C2995	1	GEROTOR, INNER
38	0D4788	1	PLUG, DRAIN
39	0C2993	1	SEAL, GOVERNOR SHAFT
40	0C3007	1	SEAL, 42 I.D. CRANKSHAFT
41	0C5732	1	ASSEMBLY, SUMP WITH SLEEVE
42	0C3006	9	SCREW, HHFC M10-1.5 X 55
43	080318	8	SCREW HHFC M6-1.0 X 25
44	0C2978	2	GASKET, HEAD
45	0C8808	1	HOOK, LIFTING
46	0D7477A	1	ASSEMBLY, ROCKER COVER W/ BARB FOR PULSE
47	0C2979	2	GASKET, VALVE COVER
48	086515	8	KEEPER, VALVE SPRING
49	0D2274	4	RETAINER, VALVE SPRING
50	0D3867	4	SPRING, VALVE
51	078672	2	SEAL, VALVE STEM D7
52	0C5371	4	WASHER, VALVE SPRING
53	072694	4	STUD, ROCKER ARM PIVOT
54	0D3998	4	NUT, HEX M8-1.0 G8 YEL CHR
55	0E3273	1	SCREEN C'CASE BREATHER GTV
56	0D5313	4	ROCKER ARM
57	0D6024	2	PLATE, PUSH ROD GUIDE
58	0C2976	12	SCREW HHFC M8-1.25 X 65
59	086516	2	VALVE, EXHAUST
60	0C2229	2	VALVE, INTAKE
61	083897	4	TAPPET, SOLID
62	0D4015	1	KIT, OIL RELIEF
63	0D9419	1	KIT, SUMP
64	0D9422	1	KIT, GASKET
65	0E4354	1	KIT, PISTON & RINGS GT760/GT990
66	0E4355	1	KIT, BREATHER ASSY GT760/GT990
67	0D4013	1	KIT, GOVERNOR ASSEMBLY
68	0D8575A	1	KIT, HEAD ASSEMBLY CYLINDER 1
69	0D8575B	1	KIT, HEAD ASSEMBLY CYLINDER 2

ITEM	PART #	QTY.	DESCRIPTION
12	0E1466	2	PIN PISTON 20 DIA X 48 LONG
13	0E2950	2	PISTON, 8.5:1 90MM DIA (LOW COMP.)
70	0E4357B	1	ASSY,C'SHFT&GEAR L&G
71	0E3223	2	CONROD
<u>MODEL #04861-0</u>			
12	0E1466	2	PIN PISTON 20 DIA X 48 LONG
13	0E2985	2	PISTON, 9.5:1 90MM DIA (HIGH COMP.)
70	0E4356F	1	ASSY,C'SHFT&GEAR L&G
71	0E3222	2	CONROD
<u>MODEL #04862-0</u>			
12	071980	2	PIN PISTON 20 DIA
13	0C5848	2	PISTON, 9.5:1 90MM DIA (HIGH COMP.)
70	0D4122F	1	ASSY,C'SHFT&GEAR L&G
71	0D3961	2	CONROD
<u>MODEL #04717-1</u>			
12	071980	2	PIN PISTON 20 DIA
13	0C2967	2	PISTON, 8.5:1 90MM DIA (LOW COMP.)
70	0D4040B	1	ASSY,C'SHFT&GEAR L&G
71	0C2969	2	CONROD
<u>MODEL #04629-2</u>			

USE THIS VIEW FOR THE FOLLOWING MODELS:

0046292 - ENGINE, GTV-990
 0047171 - ENGINE, GTV-760
 0047971 - ENGINE, GTV-990 1-1/8 SHFT
 0048610 - ENGINE, GTV-990
 0048620 - ENGINE, GTV-760

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USE THIS VIEW FOR THE FOLLOWING MODELS: □

0046292 - ENGINE, GTV-990 □

0047171 - ENGINE, GTV-760 □

0047971 - ENGINE, GTV-990 1-1/8 SHAFT □

0048610 - ENGINE, GTV-990 □

0048620 - ENGINE, GTV-760

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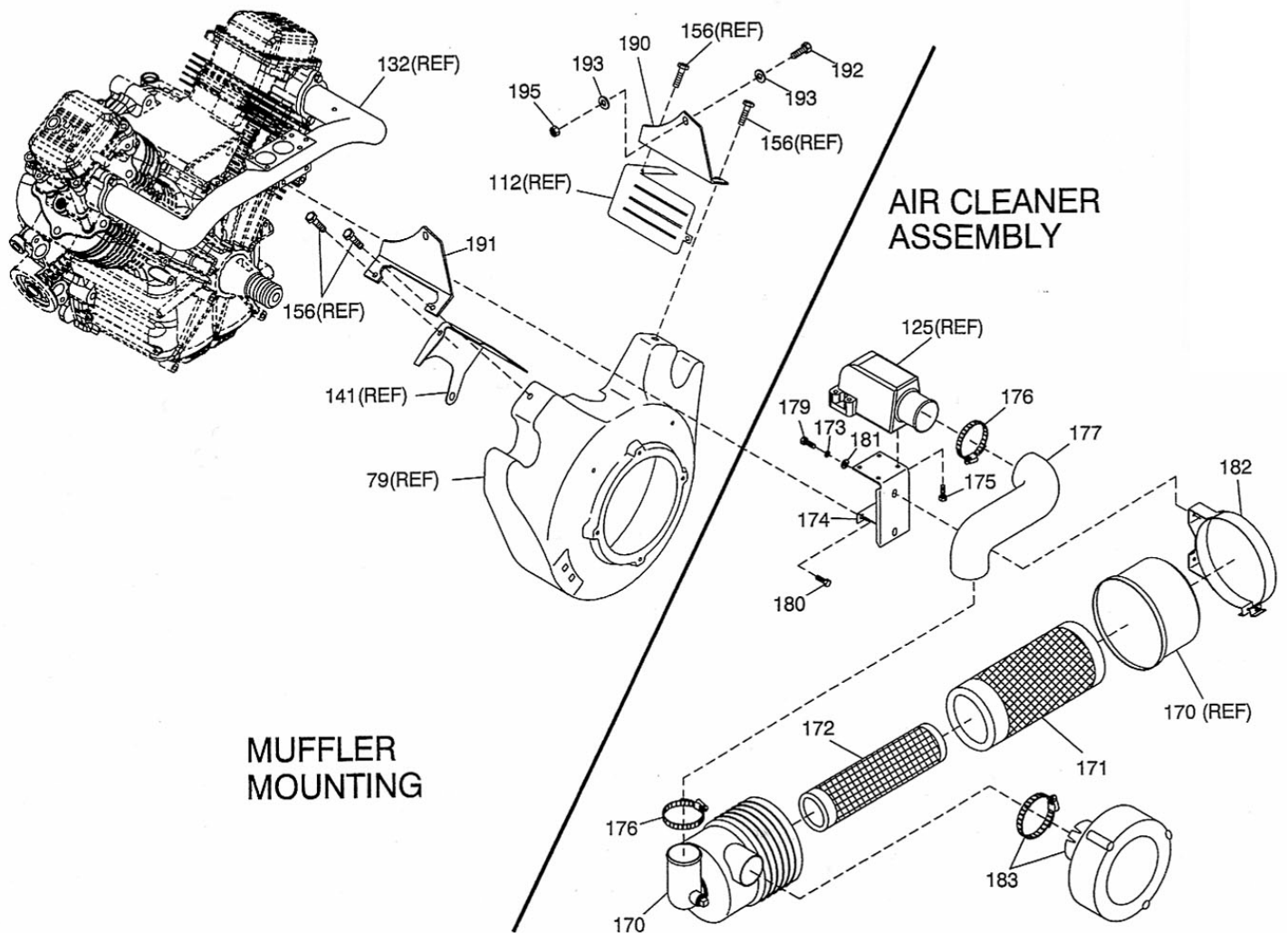
ITEM	PART #	QTY.	DESCRIPTION
73	0C5136	4	KNOB AIR CLEANER
74	022097	4	WASHER, LOCK M6-1/4"
75	0E3146	4	SPACER, ROTATING SCREEN GUARD
76	0D7815A	1	GUARD, ROTATING SCREEN
77	0D7115	4	SCREW, #10 SHEET METAL
78	0D9684A	1	SCREEN, ROTATING
79	0E4046E	1	HOUSING, BLOWER VERTICAL L&G
80	0C9763	4	NUT, GROMMET 1/4 PLUG
81	0D6142	2	SCREW PPHM M4-0.7 X 40
82	022264	2	WASHER, LOCK M4
83	0C4147	1	PUMP, IMPULSE
84	045756	23	SCREW TAPTITE M6-1.0X 10 YELLOW CHROME
85	0D6027	1	BRACKET, FUEL PUMP
86A	030340G	1	HOSE 1/2" ID X 2" LONG
86B	030340P	1	HOSE 1/2" ID X 7" LONG
87	048031C	6	CLAMP HOSE BAND 1/4
88	0C3033	1	WASHER, M24
89	0C3034	1	NUT, HEX M24
90	048571	2	SCREW HHC M8-1.25 X 10 G8.8
91	0A5992	2	WASHER SHAKEPROOF INT M8 SS
92	0C3032	1	PLATE, FAN
93	0C3031	1	FAN, NYLON
94	0C9182	1	FLYWHEEL ASSEMBLY W/ L.C. MAGNETS
95	085011	1	INSULATOR ASSEMBLY IGNITION
96	0E1325	1	WIRE HARNESS, FUEL SHUTOFF
97	0A1336E	1	ASSEMBLY, STATOR W/ LUGS
98	0C3016A	1	PLATE, BACKING GT990 WITH OIL COOL
99	0E4845	1	ASSY, BREATHER TUBE GTV
100	082774	1	KEY, WOODRUFF 4 X 19D
101	0C3043	2	GASKET, MANIFOLD / PORT
102	0C9764	4	PLASTITE, 1/4-15 X 3/4
103	0C3026	1	COOLER, OIL
104	0C7649	4	CLAMP HOSE .38 - .87
105	0C9806	2	HOSE, 3/8" I.D. X 6" LONG
106	035461A	2	BARBED STR 1/4NPT X 3/8 WITH VIBRA SEAL
107	070185	1	FILTER, OIL D 69 X 64 LONG
108	0C7292	1	NIPPLE, 3/4"-16 UNF
109	0C3025	1	SWITCH, OIL PRESS
110	0C3019	1	WRAPPER, LOWER CYLINDER 1
111	0E5153	2	SCREW THTT #10-24 X 3/8"
112	0C3018	1	WRAPPER, UPPER CYLINDER 1
113	0D3868	1	BRACKET, SUPPORT-GOVERNOR ADJUST
114	0E4804	1	HOSE, BLOWER HSG TO BREATHER
115	0E0553	1	ASSY, IDLE SPEED SUPPORT BRACKET
116	0D6342	4	STUD, BALL M3-0.5
117	0E0552	1	ASSY, GOVERNOR LEVER
118	0E1150	1	SPRING, GOVERNOR
119	0D9884	1	ASSY, IDLE SPEED ADJUST W/ GROMMET
120	0D3876	1	WASHER, FLAT M5
121	049226	1	WASHER, LOCK M5
122	045770	1	SCREW, HHC M5-0.8 X 10
123	0D6257	1	ROD, GOVERNOR
124	052857	4	NUT LOCK FLANGE M6-1.0
125	0D3959A	1	ADAPTOR, CARB-AIRBOX, M6 BOSSES
126	048031N	1	HOSE CLAMP, BAND 12mm I.D.
127	0D9999	1	ASSEMBLY, IDLE SPEED ADJUSTMENT ROD
128	0D6021	4	STUD, METRIC
129	070008	4	WASHER, FLAT M8
130	070006	4	WASHER, LOCK M8
131	049821	4	SCREW, SHC M8-1.25 X 30
132	0E3052	1	MANIFOLD, INTAKE VERT 2BBL CARB

ITEM	PART #	QTY.	DESCRIPTION
133	0E4190	4	CLAMP, 3/16" COATED CABLE
134	091526	4	SCREW, PPHM M5-0.8 X 12
135	0D8559	1	ROD, CHOKE
136	0D7237	1	ASSY, BELDEN BRACKET W/ BELLCRANK
137	0E5139	3	SCREW HHFC M6-1.0 X 8mm
138	0A2702	1	REGULATOR, 20 AMP
139	0D6313	1	FILTER, FUEL
140	0D1142B	1	WRAPPER, LOWER CYLINDER 2
141	0D1143	1	WRAPPER, UPPER CYLINDER 2
142	072347	2	SPARKPLUG
143	0C3053	1	ASSEMBLY, GROUND WIRE
144	0C3052	2	ASSEMBLY, IGNITION COIL
145	022129	2	WASHER, LOCK M8-5/16
146	061906	2	SCREW, HHC M8-1.25 X 85 G8.8
147	0D6026	1	LIFT HOOK, STARTER
148	090072	1	O-RING, OIL CLR
149	0D6655	1	TUBE, DIPSTICK
150	0C8434C	1	ASSEMBLY, DIPSTICK W/ HANDLE
151	0D9863	1	ROD, IDLE ADJUSTMENT
152	0D9784	4	NUT, LOCK HEX M3-0.5
153	0E0486	1	SCREW, SHC M10-1.5 X 75 G10.9
154	0E5343	1	NUT, LOCK FL-SERRATED M10-1.5
155	092079	8	SCREW, TAPTITE M6-1.0 X 25
156	0E1552	4	SCREW, FHHC M6-1.0 X 12 W/M5 HEX
157	0E5113	1	WASHER NYLON 0.375" I.D.
158	0D1366	1	BUSHING, GOVERNOR ROD
159	066476	1	SCREW, HHSW M6-1.0 X 12
<u>MODELS #04861-0 & 04629-2</u>			
160	036933	1	SCREW, PPHM #10-32 X 3/8"
161	0D6311	1	BRACKET, THROTTLE
162	022152	1	WASHER, LOCK #10
163	022158	1	NUT, HEX #10-32
164	030340L	1	HOSE 1/2" ID X 11" LONG
165	0D4026	1	GASKET, ARBX TO SPCR/CARB
166	0E3291	1	CARBURETOR DENI
167	0D4023	1	GASKET, MANIFOLD TO CARB
168	0E4271	1	STARTER, DELCO REMY SD80
<u>MODELS #04862-0 & #04717-1</u>			
164	030340N	1	HOSE 1/2" ID X 8.5" LONG
165	0D4024	1	GASKET, CARB TO SPACER
166	0E1357	1	CARBURETOR
167	0D5282	1	GASKET, MANIFOLD TO CARB
168	0C3017	1	STARTER, V-TWIN ENGINE

USE THIS VIEW FOR THE FOLLOWING MODELS:

- 0046292 - ENGINE, GTV-990
- 0047171 - ENGINE, GTV-760
- 0047971 - ENGINE, GTV-990 1-1/8 SHFT
- 0048610 - ENGINE, GTV-990
- 0048620 - ENGINE, GTV-760

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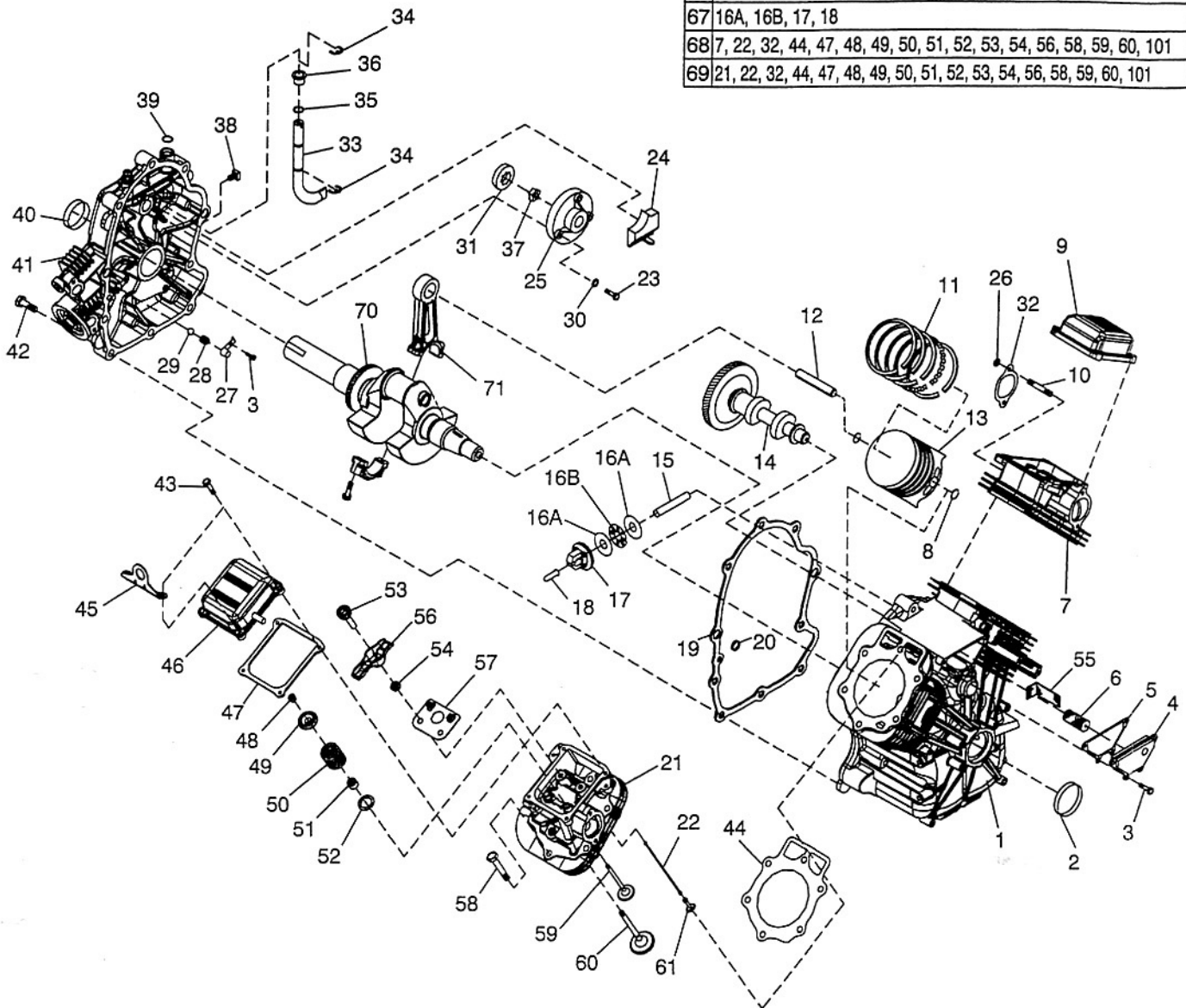
ITEM	PART #	QTY.	DESCRIPTION
AIR CLEANER ASSEMBLY			
170	0E3655	1	CLEANER,AIR DONALDSON W/SFTY FLT
171	0E3557	1	FILTER, AIR PRIMARY DONALDSON
172	0E3656	1	FILTER, AIR SAFETY DONALDSON
173	022129	2	WASHER LOCK M8-5/16
174	0E2990	1	BRKT, AIR CLEANER SUPPORT GTV
175	0E1644	4	SCREW BHSC M6-1.0 X 12 SS
176	0E1680	2	CLAMP HOSE #32 1.563-2.500
177	0E4326	1	HOSE AIR CLEANER GTV
179	042907	2	SCREW HHC M8-1.25 X 16 G8.8
180	0D6147	2	SCREW HHFC M6-1.0 X 10 G8.8
181	022145	2	WASHER FLAT 5/16-M8 ZINC
182	0E1091	1	ASSY, BAND MOUNT AIR CLEANER
183	0E4714	1	PRECLEANER, AIR INTAKE GTV
MUFFLER MOUNTING			
190	0E3502A	1	SUPPORT, MUFFLER RH
191	0E3502B	1	SUPPORT, MUFFLER LH
192	039253	2	SCREW HHC M8-1.25 X 20 G8.8
193	022145	4	WASHER FLAT 5/16-M8 ZINC
195	067989	2	NUT, LOCK FL M8-1.25 YEL CHR

USE THIS VIEW FOR THE FOLLOWING MODELS:

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- 0047171 - ENGINE, GTV-760
- 0047971 - ENGINE, GTV-990 1-1/8 SHFT
- 0048610 - ENGINE, GTV-990
- 0048620 - ENGINE, GTV-760

0E4328

62	27, 28, 29
63	3, 33, 34, 35, 36, 40, 62
64	2, 5, 19, 20, 32, 39, 40, 44, 47, 101, 148, 165, 167
65	8, 11, 12, 13
66	4, 5, 6, 55
67	16A, 16B, 17, 18
68	7, 22, 32, 44, 47, 48, 49, 50, 51, 52, 53, 54, 56, 58, 59, 60, 101
69	21, 22, 32, 44, 47, 48, 49, 50, 51, 52, 53, 54, 56, 58, 59, 60, 101



USE THIS VIEW FOR THE FOLLOWING MODELS: □

- 0046292 - ENGINE, GTV-990 □
- 0047171 - ENGINE, GTV-760 □
- 0047971 - ENGINE, GTV-990 1-1/8 SHAFT □
- 0048610 - ENGINE, GTV-990 □
- 0048620 - ENGINE, GTV-760 □
- 0049820 - ENGINE, GTV-990

ITEM	PART #	QTY.	DESCRIPTION
1	0C5730B	1	ASSY,CRANKCASE VS W/SLEEVE
2	0C3006	1	SEAL, 38 I.D. CRANKSHAFT
3	090388	6	SCREW, TAPTITE M6-1.0 X 12 YC
4	0C5372	1	ASSEMBLY, BREATHER
5	0C3005	1	GASKET, BREATHER COVER
6	0E3372A	1	SEPARATOR, OIL BREATHER GTV
7	0D8067A	1	ASSEMBLY, HEAD #1
8	071983	4	RETAINER, PISTON PIN 20
9	0C2981C	1	ROCKER, COVER NO OIL FILL
10	045761A	4	STUD M8-1.25/10MM X 30 G5 ZINC
11	021533	2	SET, PISTON RING 90MM
14	0D4041	1	ASSEMBLY, CAMSHAFT & GEAR
15	0C2983	1	SHAFT, GOVERNOR
16A	0C2985A	2	ROLLER BEARING, GOVERNOR PLATE
16B	0C2985B	1	ROLLER BEARING, GOVERNOR
17	0E2743	1	ASSEMBLY, GOVERNOR GEAR
18	0A7811	1	SPOOL, GOVERNOR MACHINED
19	0C2977	1	GASKET, CRANK CASE
20	0C5943	1	SEAL, OIL PASSAGE
21	0D8067B	1	ASSEMBLY, HEAD #2
22	0D9853D	4	PUSHROD, 147
23	021374	3	SCREW SHC M6-1.0 X 30 G8.8
24	0C2994	1	SCREEN, OIL PICKUP
25	0C2997	1	COVER, GEROTOR
26	052858	4	NUT LOCK FL M8-1.25
27	0C3011	2	COVER, OIL RELIEF
28	0C3009	2	SPRING, OIL RELIEF
29	0C3010	2	BALL, 1/2" OIL RELIEF
30	093873	3	WASHER, LOCK RIB M6
31	0C2996	1	GEROTOR, OUTER
32	0C4138	2	GASKET, EXHAUST
33	0D1667	1	ARM, GOVERNOR
34	0C2991	2	E-RING, GOVERNOR ARM
35	0C2988	1	THRUST WASHER, GOVERNOR
36	0C2992	1	BUSHING, GOVERNOR LOWER
37	0C2995	1	GEROTOR, INNER
38	0D4788	1	PLUG, DRAIN
39	0C2993	1	SEAL, GOVERNOR SHAFT
40	0C3007	1	SEAL, 42 I.D. CRANKSHAFT
41	0C5732	1	ASSEMBLY, SUMP WITH SLEEVE
42	0C3006	9	SCREW, HHFC M10-1.5 X 55
43	080318	8	SCREW HHFC M6-1.0 X 25
44	0C2978	2	GASKET, HEAD
45	0C8808	1	HOOK, LIFTING
46	0D7477A	1	ASSEMBLY, ROCKER COVER W/ BARB FOR PULSE
47	0C2979	2	GASKET, VALVE COVER
48	086515	8	KEEPER, VALVE SPRING
49	0D2274	4	RETAINER, VALVE SPRING
50	0D3867	4	SPRING, VALVE
51	078672	2	SEAL, VALVE STEM D7
52	0C5371	4	WASHER, VALVE SPRING
53	072694	4	STUD, ROCKER ARM PIVOT
54	0D3998	4	NUT, HEX M8-1.0 G8 YEL CHR
55	0E3273	1	SCREEN C'CASE BREATHER GTV
56	0D5313	4	ROCKER ARM
57	0D8024	2	PLATE, PUSH ROD GUIDE
58	0C2976	12	SCREW HHFC M8-1.25 X 65
59	086516	2	VALVE, EXHAUST
60	0C2229	2	VALVE, INTAKE
61	083897	4	TAPPET, SOLID
62	0D4015	1	KIT, OIL RELIEF
63	0D9419	1	KIT, SUMP
64	0D9422	1	KIT, GASKET
65	0E4354	1	KIT, PISTON & RINGS GT760/GT990
66	0E4355	1	KIT, BREATHER ASSY GT760/GT990
67	0D4013	1	KIT, GOVERNOR ASSEMBLY
68	0D8675A	1	KIT, HEAD ASSEMBLY CYLINDER 1
69	0D8675B	1	KIT, HEAD ASSEMBLY CYLINDER 2

ITEM	PART #	QTY.	DESCRIPTION
			MODEL #04861-0, #04982-0
12	0E1466	2	PIN PISTON 20 DIA X 48 LONG
13	0E2950	2	PISTON, 8.5:1 90MM DIA (LOW COMP.)
70	0E4357B	1	ASSY,C'SHFT&GEAR L&G
71	0E3223	2	CONROD
			MODEL #04862-0
12	0E1466	2	PIN PISTON 20 DIA X 48 LONG
13	0E2985	2	PISTON, 9.5:1 90MM DIA (HIGH COMP.)
70	0E4356F	1	ASSY,C'SHFT&GEAR L&G
71	0E3222	2	CONROD
			MODEL #04717-1
12	071980	2	PIN PISTON 20 DIA
13	0C5848	2	PISTON, 9.5:1 90MM DIA (HIGH COMP.)
70	0D4122F	1	ASSY,C'SHFT&GEAR L&G
71	0D3961	2	CONROD
			MODEL #04629-2
12	071980	2	PIN PISTON 20 DIA
13	0C2967	2	PISTON, 8.5:1 90MM DIA (LOW COMP.)
70	0D4040B	1	ASSY,C'SHFT&GEAR L&G
71	0C2969	2	CONROD

USE THIS VIEW FOR THE FOLLOWING MODELS:

0046292 - ENGINE, GTV-990
0047171 - ENGINE, GTV-760
0047971 - ENGINE, GTV-990 1-1/8 SHFT
0048610 - ENGINE, GTV-990
0048620 - ENGINE, GTV-760
0049820 - ENGINE, GTV-990