

# INDEX

## 73-20-00

### 360 SERIES ENGINES

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**INTENTIONALLY  
LEFT  
BLANK**

**FUEL PUMP ASSEMBLIES P/N 638157-2 & 646759-2****01-01. GENERAL**

A. Part number 646759 replaces part numbers 638157, 634541 and 629373. New part number indicates addition of retaining ring to adjustable orifice or replacement of by-pass valve with adjustable orifice.

**01-02. DISASSEMBLY.**

A. Place pump in suitable fixture and remove all lockwire; and fittings if necessary. Refer to exploded view (Figure 20-01) and proceed as follows: Loosen screw (31) to relieve pressure on relief valve spring (30). Remove four bolts (34), washers (33) and separate parts (1 through 13) from vapor separator body (14).

B. Disassembly of the basic pump should be accomplished in the following manner: Remove the adapter (1) and insulator (3) from the basic pump. Remove seal (2) from adapter (1) and bushing (4) from insulator (3). Hold pump body (6) firmly in palm of hand, end plate (12) down, and apply pressure to drive end of shaft (10) forcing end plate (12), end plate seal (13), blades (11) and shaft (10) from pump body. Remove seal (5) and discard. It is important to note the liner position relative to the rotation marking found on the top surface of the liner. It must be installed with the proper marking (C or CC) in the up position.

**CAUTION . . .** Do not disassemble liner (9), plate (8) or pin (7) from pump body unless inspection indicates damage or excessive wear. If these parts are to be removed, place the pump body in a dry oven at 400° F. for 10 to 15 minutes to expand the aluminum body. The liner (9), plate (8) and pin (7) may then be removed by carefully bumping body.

C. Separate cover assembly (22) from vapor separator body (14). Remove screw (31) from cover (22), pin (26) and collar (25) and remove collar (25), teflon washer (24) and "O" ring (23) from shaft (18). Remove shaft (18) from cover (22) and "O" ring (21) from shaft. At this point the ball check in the mixture control shaft shall be checked for leakage. If no leakage is observed, further disassembly of the mixture control shaft (18) is not required. If leakage is observed, continue as follows: Ball (19) and pin (20) must be

removed from shaft (18). This is best accomplished by placing shaft (18) in a vee block in such a position to allow the ball (19) to be driven against pin (20) bending it and allowing ball (19) to fall through shaft (18). A precision ground 1/16" punch should be used for this operation and care exercised. Very light pressure is required to bend pin (20). It is now possible to lightly drive pin (20) into bore of mixture shaft (18) for removal.

D. Remove diaphragm (28) and plunger (27) from vapor separator relief valve body (14). Now remove screws (47 and 48), cover (46) and gasket (44). Remove ejector (45) from vapor separator cover.

E. Remove plug (41), spring (40), and ball (39) from body (14). Remove retaining ring (38), adjusting needle (36), "O" ring (37) and plug (35) from body. Place (14) in suitable fixture and, with a long reach internal puller, remove insert (16). Remove "O" rings (17) from insert (16). This completes disassembly.

**01-03. REASSEMBLY.**

A. Reassemble basic pump (5 through 13) in reverse order of disassembly. Refer to Figure 20-01 and install new seal (5) in body (6). Install pin (7), plate (8) and liner (9) in body (6). Be sure liner is installed with proper rotation lettering visible. Use light machine oil to lubricate shaft (10) and install in pump. Install blades (11) in position and lubricate lightly. Install plate (12) and seal (13) to complete basic pump assembly. Install seal (2) in adapter (1). Install bushing (4) and insulator (3) on pump assembly and insert into adapter assembly.

**NOTE . . .** To assist in assembly of the basic pump and vapor separator and relief valve section, it is suggested that two bolts approximately 3-1/2 inches long to be used as line up guides. They can be made of used bolts P/N 628321A3.72 with heads removed.

B. If insert (16) was removed at disassembly, install new "O" ring (17) on insert (16). Use a small amount of Parker "O" Lube on all "O" rings at assembly to insure ease of assembly and

eliminate rolled rings. Press insert (16) into separator mixture control body (14) being careful to align inlet and outlet openings. Press insert (16) into body flush with surface. If new insert (16) is to be installed, proceed as follows: Install "O" rings (17) on insert (16) and lightly lubricate. Press insert (16) into body (14) until flush with surface. Using a suitable holding fixture and .125" drill bit, center drill in fuel outlet fitting boss and drill through insert (16) and body (14) until drill bit visibly enters relief valve area. Ream insert (16) using a .50" ream to remove any burrs and improve shaft installation. Using a small amount of lapping compound, lap plunger (27) to seat in body (14) for 100% contact. When this has been accomplished wash parts thoroughly.

C. Install jet plug (35), "O" ring (37) and adjusting needle (36) in body (14). Secure with retaining ring (38). Insert new ball (39) in bypass opening and peen lightly to seat. Install new spring (40) and plug (41). Apply a thin coat of Loctite 242 to threads of vapor separator cover screws (47) and (48). Place gasket (44) and cover (46) on body and secure with screws (47) and (48). Install ejector (45) in cover (46).

D. If mixture shaft (18) has been completely disassembled, install new ball (19) and peen lightly to seat. Install pin (20) and stake sufficiently to eliminate the possibility of the pin backing out and scoring bore of insert (16).

Install "O" ring (21) on mixture shaft (18) and install shaft in cover (22). Install washers (23), (24) and collar (25). Install pin (26) and swage both ends.

E. Install lapped plunger (27) in body (14). Place diaphragm (28), plate (29), spring (30) and plate (29) in this order.

F. Install adjusting screw (31) in cover (22). Turn in sufficiently so screw will protrude, in cover, a distance equal to depression in top plate (29). This will assure proper alignment of these parts.

G. Assemble cover and mixture shaft assembly to body (14). Place Belleville washers (33) on bolts (34) and install through stacked parts. Tighten sufficiently to hold parts alignment until four bolts are in place. Torque bolts (34) to  $30 \pm 1$  inch pounds.

**CAUTION . . .** Belleville washers (33) are special and must be installed with concave surfaces facing each other. Should it be necessary to remove these washers once they have been torqued, they must be replaced.

H. Install fittings as required. Leak test and calibrate according to instructions and calibration data in the Fuel Pump Calibration Section. Lockwire after calibration to complete overhaul.

| FIG &<br>INDEX | PART<br>NUMBER | 1 2 3 4 5 | DESCRIPTION                                | QTY. | USABLE ON<br>CODE |
|----------------|----------------|-----------|--|------|-------------------|
| 20-01-         | 638157-2       | ①         | Fuel Pump and Vapor Separator Assembly . . | NS   | A                 |
|                | 646759-2       | ①         | Fuel Pump and Vapor Separator Assembly . . | NS   | B                 |
| -1             | 630166         | ②         | Adapter, Fuel Pump. . . . .                | 1    |                   |
| -2             | 628178         | ③         | Seal, Fuel Pump . . . . .                  | 1    |                   |
| -3             | 632816         | ④         | Insulator, Fuel Pump . . . . .             | 1    |                   |
| -4             | 632741         | ⑤         | Bushing . . . . .                          | 1    |                   |
| -5             | 636293         | ⑥         | Seal, Shaft . . . . .                      | 1    | A                 |
| -5             | 646181         | ⑦         | Seal, Shaft . . . . .                      | 1    | B                 |
| -6             | 643694         |           | Body Assembly, Fuel Pump . . . . .         | 1    | A                 |
| -6             | 646182-1       |           | Body Assembly, Fuel Pump . . . . .         | 1    | B                 |
| -7             | 643853         |           | Pin, Liner Locator . . . . .               | 1    |                   |
| -8             | 635548         | ⑧⑨        | Plate, Thrust . . . . .                    | 1    | A                 |
| -8             | 646177         | ⑩⑪        | Plate, Thrust . . . . .                    | 1    | B                 |
| -9             | 643697         |           | Liner, Fuel Pump . . . . .                 | 1    | A                 |
| -9             | 646178         |           | Liner, Fuel Pump . . . . .                 | 1    | B                 |
| -10            | 643689         |           | Shaft, Fuel Pump . . . . .                 | 1    | A                 |
| -10            | 646176         |           | Shaft, Fuel Pump . . . . .                 | 1    | B                 |
| -11            | 635549         |           | Blade, Fuel Pump . . . . .                 | 2    |                   |
| -12            | 643690         |           | Plate, End . . . . .                       | 1    | A                 |
| -12            | 646180         |           | Plate, End . . . . .                       | 1    | B                 |
| -13            | 630979-14      | ⑫         | Seal, End Plate . . . . .                  | 1    |                   |
| -14            | 634530         |           | Vapor Separator and Relief Valve Housing . | 1    |                   |
| -15            | 630383-2       |           | Pin, Mixture Stop . . . . .                | 1    |                   |
| -16            | 630213         |           | Insert, Mixture Control . . . . .          | 1    |                   |
| -17            | MS9021-016     | ⑬         | "O" Ring, Mixture Insert . . . . .         | 2    |                   |
|                | 646654-1       |           | Shaft Assembly . . . . .                   | 1    |                   |
| -18            | 630214         |           | Shaft, Mixture Control . . . . .           | 1    |                   |
| -19            | 628249-3       |           | Ball, Mixture Control Shaft . . . . .      | 1    |                   |
| -20            | 626844         |           | Pin, Mixture Control Shaft . . . . .       | 1    |                   |
| -21            | 630979-11      | ⑭         | "O" Ring, Mixture Control . . . . .        | 1    |                   |
| -22            | 630494         |           | Cover Assembly, Relief Valve . . . . .     | 1    |                   |
| -23            | 625457-1       | ⑮         | Washer, Mixture Control . . . . .          | 1    |                   |
| -24            | 635835-1       |           | Washer, Teflon . . . . .                   | 2    |                   |
| -25            | 630215         |           | Collar, Mixture Control . . . . .          | 1    |                   |
| -26            | 626813         |           | Pin, Mixture Control . . . . .             | 1    |                   |
| -27            | 628333         |           | Plunger, Relief Valve . . . . .            | 1    |                   |
| -28            | 642644         | ⑯         | Diaphragm, Relief Valve . . . . .          | 1    |                   |
| -29            | 637784         |           | Plate . . . . .                            | 2    |                   |
| -30            | 628311         | ⑰         | Spring, Relief Valve . . . . .             | 1    |                   |
| -31            | 621883         | ⑱         | Screw, Relief Valve Adjusting . . . . .    | 1    |                   |
| -32            | AN121501       |           | Nut . . . . .                              | 1    |                   |
| -33            | 646448-1       |           | Washer, Belleville . . . . .               | 8    |                   |
| -34            | 628321A3.72    |           | Bolt . . . . .                             | 4    |                   |
| -35            | 637864         |           | Plug, Assembly, Jet By-Pass . . . . .      | 1    |                   |
| -36            | No Number      |           | Needle, Adjusting . . . . .                | NS   |                   |
| -37            | AN123956       | ⑲         | Seal, "O" Ring . . . . .                   | 1    |                   |
| -38            | 637861         |           | Ring, Retaining . . . . .                  | 1    |                   |
| -39            | 628249-7       | ⑳         | Ball, By-Pass Valve . . . . .              | 1    |                   |
| -40            | 630167         | ㉑         | Spring, By-Pass Valve . . . . .            | 1    |                   |
| -41            | 629974         |           | Plug, By-Pass Valve . . . . .              | 1    |                   |

| FIG &<br>INDEX | PART<br>NUMBER | 1 2 3 4 5 | DESCRIPTION                        | QTY. | USABLE ON<br>CODE |
|----------------|----------------|-----------|------------------------------------|------|-------------------|
| -42            | 640797         | .         | Plate, Name . . . . .              | 1    |                   |
|                |                |           | ATTACHING PARTS                    |      |                   |
| -43            | 24764          | .         | Screw, Drive . . . . .             | 2    |                   |
|                |                |           | * * * *                            |      |                   |
| -44            | 625548         | ③ .       | Gasket, Cover . . . . .            | 1    |                   |
| -45            | 625901         | .         | Ejector, Vapor Separator . . . . . | 1    |                   |
| -46            | 625900         | .         | Cover, Vapor Separator . . . . .   | 1    |                   |
|                |                |           | ATTACHING PARTS                    |      |                   |
| -47            | AN500A8-12     | .         | Screw, Cover. . . . .              | 2    |                   |
| -48            | AN500A8-7      | .         | Screw, Cover. . . . .              | 2    |                   |

**NOTES:**

- ① This assembly NOT available as replacement part. For correct service part number, see appropriate Service Parts Catalog.
- ② Insulator and bushing was one (1) piece construction. Old adapter without counterbore cannot be used with new insulator and bushing.
- ③ 100% Replacement parts.
- ④ May be turned over and reused if not worn from previous overhaul.

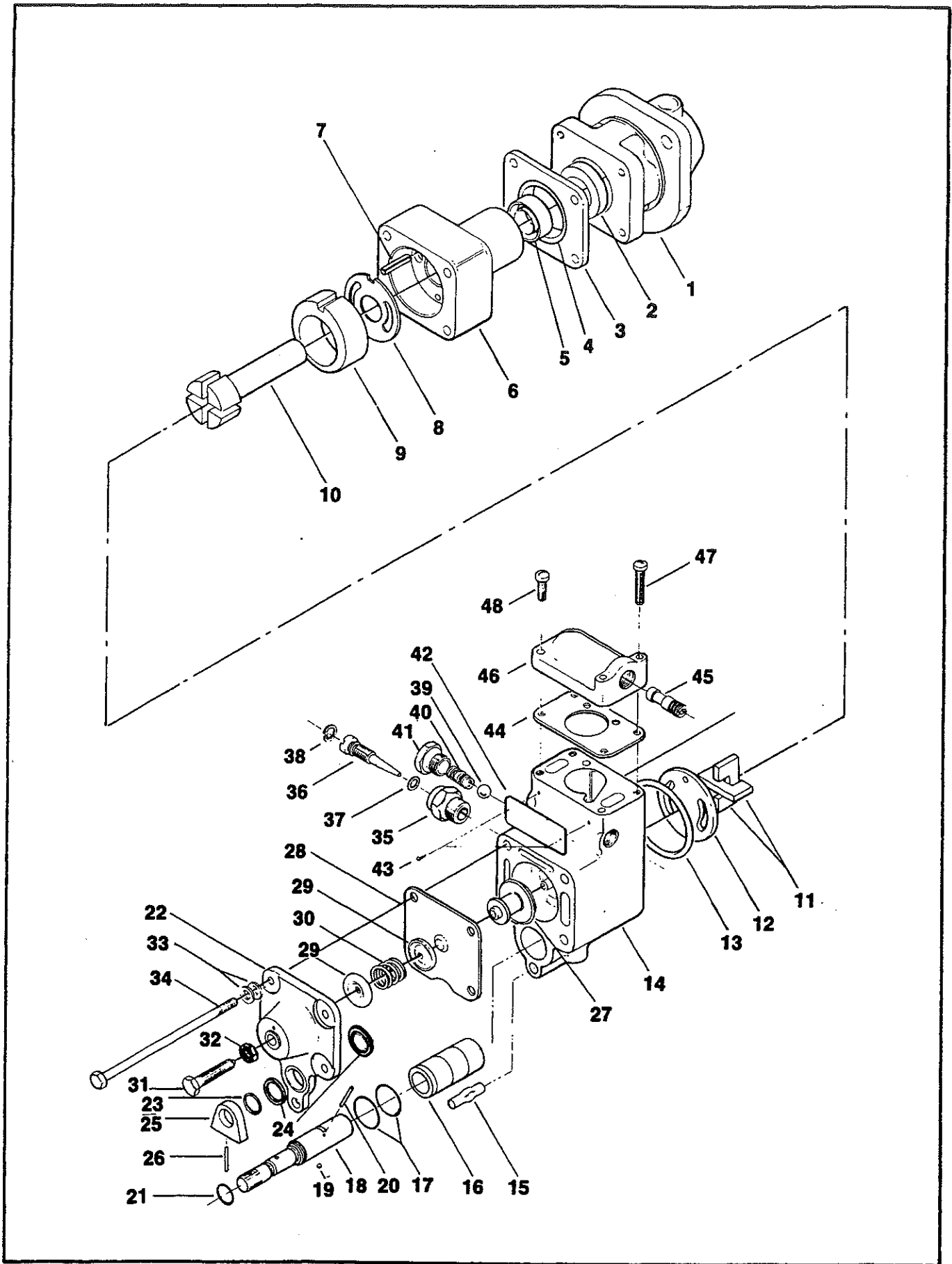


FIGURE 20-01. FUEL PUMP ASSEMBLY