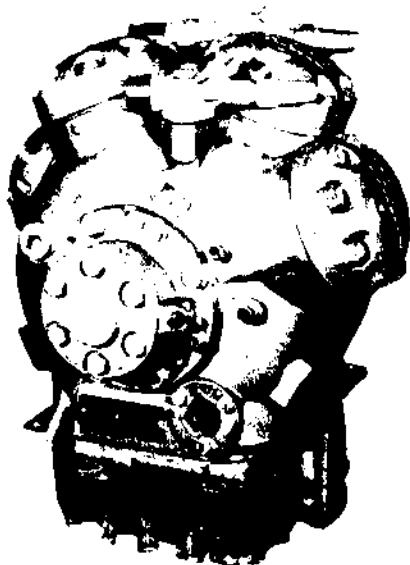


Since The Trane Company has a policy of continuous product improvement, it reserves the right to change specifications and design without notice.

SEPTEMBER, 1972
SUPERSEDES GCOM-M-1
OCTOBER, 1971



MODEL G ALUMINUM RECIPROCATING COMPRESSORS

2, 3 AND 4 CYLINDERS

GENERAL INFORMATION

Pump down the system and close the compressor suction and discharge service valves before opening the Model G compressor. Drain the crankcase oil if the compressor is to be completely overhauled or if the repairs require the removal of the bottom handhole cover.

Most of the parts are removable for inspection or disassembly and repair with the compressor setting on the mounting base. However, major repairs or complete overhaul may best be made by removing the mounting bolts,

pressure connections and crankshaft drive and setting the compressor on a workbench or table.

Standard stock replacement parts are used to repair the compressor. As parts are removed and when reassembling or rebuilding the machine:

1. Coat each part with oil as it is removed to prevent rusting.
2. Before installing, clean each part with a refrigerant parts cleaner.
3. Inspect each part for nicks, burrs, wear, breakage or evidence of copperplating. As a guide for parts replacement Table 1, Page 2, lists tolerances and wear limits.

TABLE 1. Recommended Wear Limits and Tolerances

PART NAME	ORIGINAL SPECIFICATION	RECOMMENDED LIMIT	RECOMMENDED MAXIMUM OIL CLEARANCE
Main Bearings	1.7500 — 1.7505	1.7525	.0055
Crank Shaft — Mains	1.7485 — 1.7480	1.7465	
Conrod — Crankpin	1.5000 — 1.5005	1.5030	.007
Crankshaft — Crankpin	1.4985 — 1.4980	1.4955	
Piston Pin	.7497 — .7495	.7490	.0011
Conrod — Pin Bore	.7500 — .7505	.7510	
Cylinder Liner	2.1250 — 2.1255	2.1270	.0065
Piston (Perpendicular to Centerline of Pin Bore)	2.1210 — 2.1205	2.1190	
Piston Rings (Gap in 2.1250 Ga.)	.003 — .008	(.030 Compression Rings)	
Valves (All)	Valves are .026" — .028" thick—should be replaced when seat groove wear depth exceeds .010" (.016" thinnest section).		
Valve Springs (All)	Whenever compressor is disassembled for servicing, valve springs should be replaced where they have operated in excess of 5000 hours on R-12 or 3000 hours on R-22.		
Shaft Seal	Replace when leaking or when compressor is overhauled.		

Note 1. The above recommended wear rates are for individual parts. For mating parts the maximum recommended oil clearance should predominate. In most cases, this means that each mating part should not be at the recommended limit.

Note 2. The above recommended limits are listed as good practice for normal service rebuilding of compressors which will be reliable when returned to service. It is not necessary to rebuild a compressor when these limits are anticipated.

TABLE 2. Model G Compressor Bolt Torques

ITEM	TORQUE- FOOT POUNDS	ITEM	TORQUE- FOOT POUNDS
Cylinder Head Bolts— $\frac{3}{8}$ "— $16 \times \frac{3}{4}$ "	20	Distributor Cover Bolts— $\frac{3}{8}$ "— $16 \times \frac{1}{4}$ "	20
Discharge Valve Bolts	28	Connecting Rod Bolts	5
Handhold Cover Bolts— $\frac{3}{8}$ "— $16 \times \frac{3}{4}$ "	20	Seal Cover Bolts— $\frac{3}{8}$ "— $16 \times \frac{3}{4}$ "	20
$\frac{3}{8}$ "— $16 \times \frac{1}{4}$ "	20	Pump-End Bearing Head Bolts— $\frac{3}{8}$ "— 16×1 "	23
$\frac{3}{8}$ "— $16 \times \frac{1}{2}$ "	20		
Suction Service Valve Bolts		Discharge Service Valve Bolts	
2 Cylinder Compressor— $\frac{3}{8}$ "— 16×2 "	20	2 Cylinder Compressor— $\frac{5}{16}$ "— $18 \times \frac{1}{2}$ "	12
3 And 4 Cylinder Compressor— $\frac{1}{2}$ "— 13×2 "	45	3 And 4 Cylinder Compressor— $\frac{3}{8}$ "— 16×2 "	20

TABLE 3. Spring Dimensions

ITEM	ORIGINAL SPECIFICATION
SAFETY HEAD SPRINGS	1.613 — 1.573
UNLOADER LIFT PIN SPRINGS	.300 — .310
SUCTION SENSING SPRING*	1.095 — 1.080

*Marked With a "Green" dot for R-22 and "Black" for R-12.

TABLE 4. General Data

COMPRESSOR	BORE	STROKE	VALVE CONNECTION SIZES		OIL CHARGE	RECOMMENDED OILS	OPERATING SPEED
			DISCHARGE	SUCTION			
2 Cylinder	$2\frac{1}{8}$	$1\frac{3}{4}$	$\frac{5}{8}$ " ODS	$1\frac{1}{8}$ " ODS	4.7 Pts	*1. Texaco Capella "E" 2. Virginia 300	Variable 3600 RPM Maximum
3 Cylinder	$2\frac{1}{8}$	$1\frac{3}{4}$	$\frac{3}{4}$ " ODS	$1\frac{3}{8}$ " ODS	5.3 Pts		
4 Cylinder	$2\frac{1}{8}$	$1\frac{3}{4}$	$\frac{7}{8}$ " ODS	$1\frac{3}{8}$ " ODS	7.6 Pts		

*Bus Application Only

- Use new gaskets and "O" rings when reassembling the compressor.
- Lubricate all parts, particularly the bearing surfaces, before reinstalling. This will enable the compressor to run without seizure when it is first started up and before oil pressure is built up.

Always use a torque wrench when tightening bolts or screws. Improper tightening can cause premature wear, stripping of threads or even failure of a part. Table 2, Page 2, lists the torques to be followed for the Model G Compressor.

CYLINDER HEAD

TO REMOVE:

Loosen and remove all but two cylinder head bolts (on opposite sides) as shown in Figure 1. Alternately loosen the last two bolts to relieve the tension of the safety head springs (Figure 2). When the last two bolts are turned all the way out, the springs will be fully extended. Remove the cylinder head (Figure 3) and spring (Figure 4) from the housing.

At times the cylinder head may stick to the housing because of the gasket seal. If this occurs, tap around the edge of the cylinder head with a lead or rawhide hammer. Be sure to do this before disengaging the last two bolts.

INSPECTION:

Examine the cylinder head and housing sealing surfaces for general appearance. They should be smooth, flat and contain no grooves or nicks.

Replace the safety head spring if the length is less than the dimensions listed in Table 3, or if there is evidence of severe overheating.



FIGURE 1

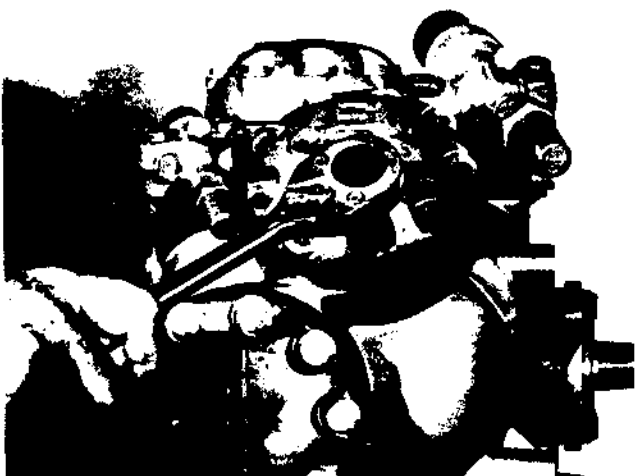


FIGURE 2

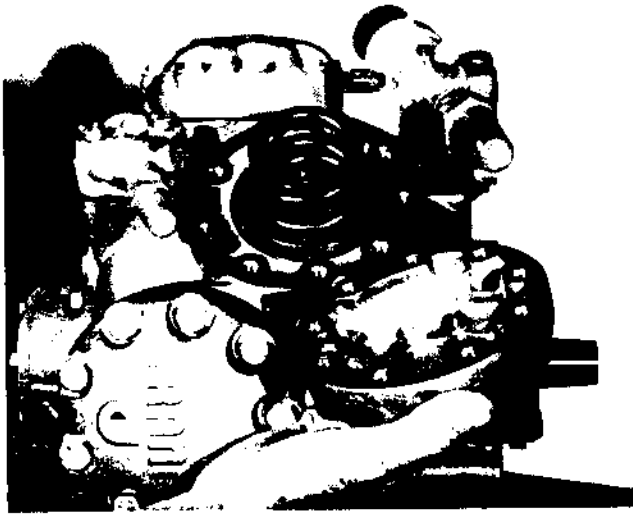


FIGURE 3

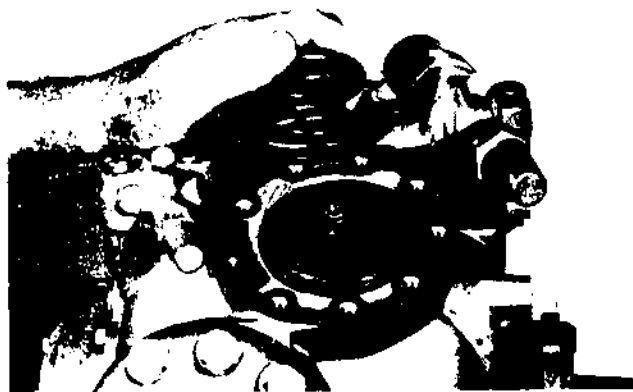


FIGURE 4

TO INSTALL:

Center the safety head spring on the discharge valve assembly (Figure 4). Insert two bolts and washers (on opposite sides) in the cylinder head, oil the head gasket with clean compressor oil and place on the head using the bolts as a guide.

Place the head, gasket, bolt and washer assembly over the cylinder and start the bolts (two or three turns). Inspect the safety head spring to be sure it is positioned properly.

Tighten both head bolts alternately to draw the head down evenly. Insert and tighten the remaining bolts and

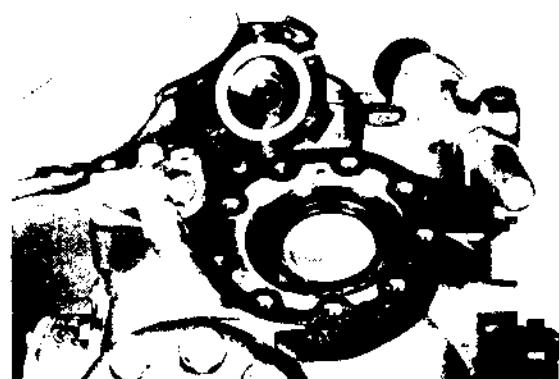


FIGURE 5

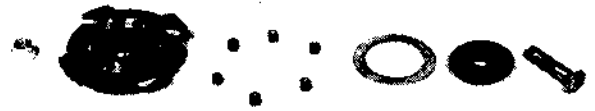


FIGURE 6

washers. Tighten all head bolts to the proper torque.

TORQUE – 20 foot pounds.

NOTE: Be sure to use the washers, as the steel bolts may damage the aluminum head.

DISCHARGE VALVE

TO REMOVE:

After the cylinder head and spring have been removed, lift the discharge valve assembly out of the cylinder (Figure 5) and disassemble for inspection or replacement of parts (Figure 6).

INSPECTION:

Valves are to be replaced when there is evidence of copperplating, liquid slugging or when wear approaches the limits listed in Table 1. Whenever the compressor is opened for servicing, replace the valve springs if they have operated in excess of the hours listed below:

3,000 Hours—Refrigerant-22

5,000 Hours—Refrigerant-12

TO ASSEMBLE DISCHARGE VALVE:

Place the valve springs in the cage (Figure 7) and lay the valve ring over the top of the springs (Figure 8). Insert the

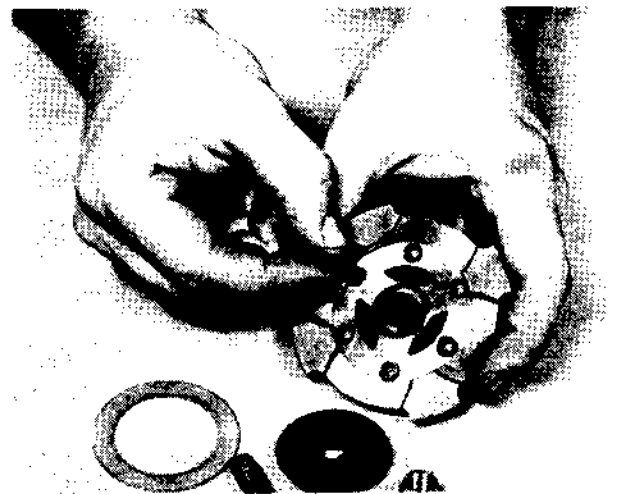


FIGURE 7

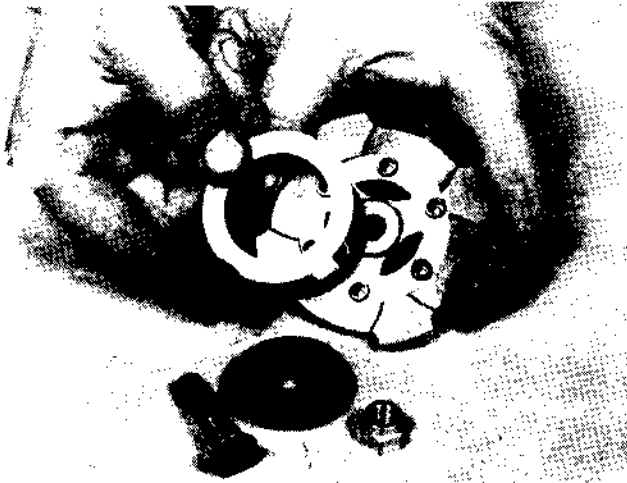


FIGURE 8



FIGURE 9

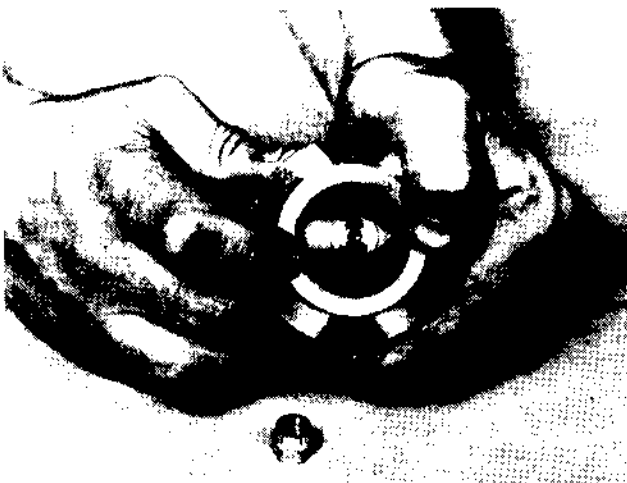


FIGURE 10

valve seat and bolt (Figure 9).

Work the valve ring up and down to make sure it is free to move (Figure 10).

Attach lock nut (Figure 11) and tighten to the required torque. Recheck valve ring movement.

TORQUE—28 foot pounds.



FIGURE 11

CYLINDER LINER

TO REMOVE:

Remove the cylinder head, safety head spring and discharge valve assembly.

The suction valve plate, which is attached to the top of the liner, is tapered in toward the top. A metal puller block may be made to fit inside the liner as shown in Figure 12.

Rotate the crankshaft until the piston head is about two inches below the top surface of the suction valve plate. Place the puller block in the cylinder so that the tapered ends engage the suction valve taper (Figure 12). Rotate the crankshaft to drive the piston head up against the puller block, forcing the liner and suction valve out of the housing. (Figure 13).

After the suction valve "O" ring has cleared the housing, pull the assembly out by hand (Figure 14).

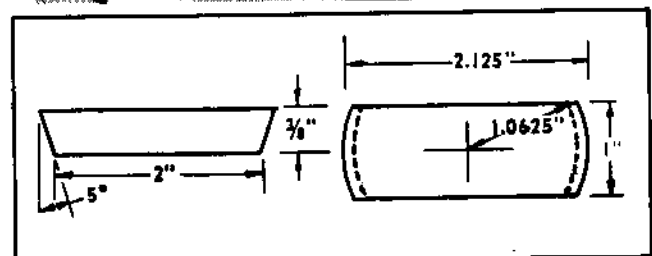
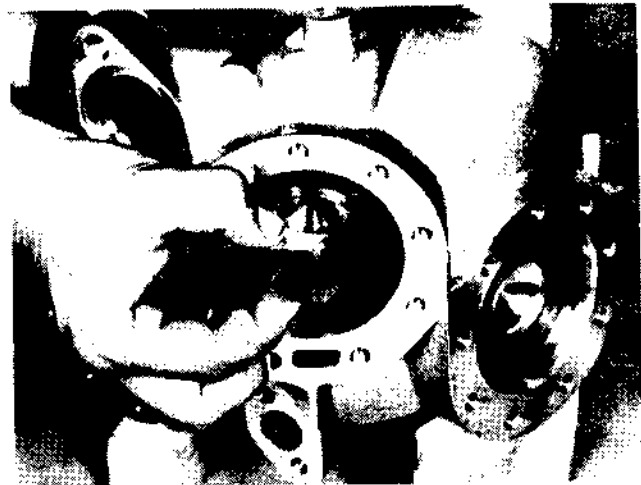


FIGURE 12



FIGURE 8



FIGURE 9

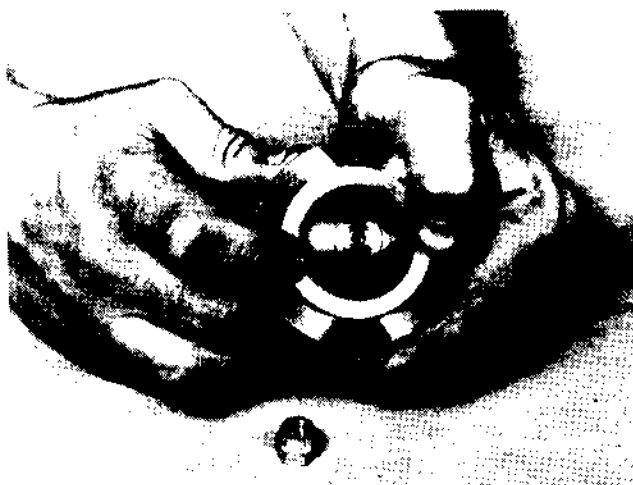


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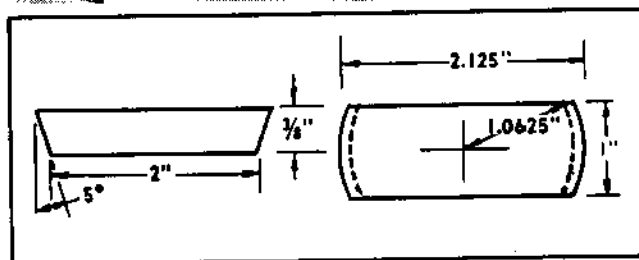
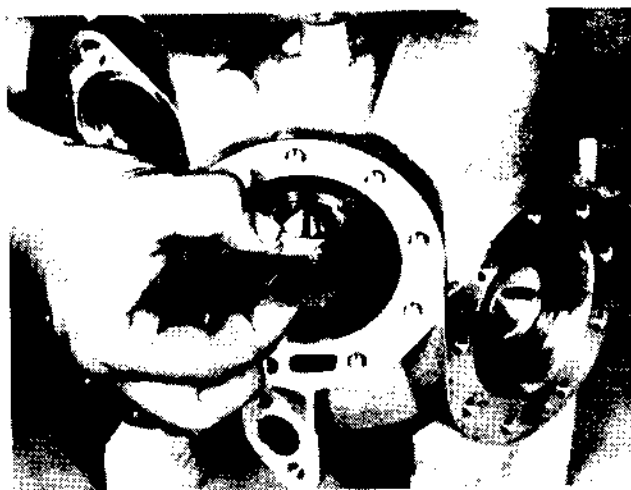


FIGURE 12

INSPECTION:

Replace the liner if there is evidence of excessive wear or scoring on the inside wall. See Table 1, for wear limits.

TO INSTALL:

The bottom inside edge of the liner is tapered for entry of the piston head rings. Before placing the liner over the piston, rotate the piston rings to place the ring gaps opposite each other.

Rotate the crankshaft to place the piston head at the top of its stroke. Guide the piston to prevent ring damage.

Place the liner down over the top of the piston head. Reach underneath the liner and with a rocking motion, push the liner down over the piston and at the same time guide the rings into the liner. After both rings are within the liner, push the liner and suction valve assembly all the way down into the housing.

SUCTION VALVE

TO REMOVE:

The suction valve assembly is secured to the liner by three 120° retainers. Invert the liner and valve assembly and use a screwdriver to pry the retainers loose (Figure 15).

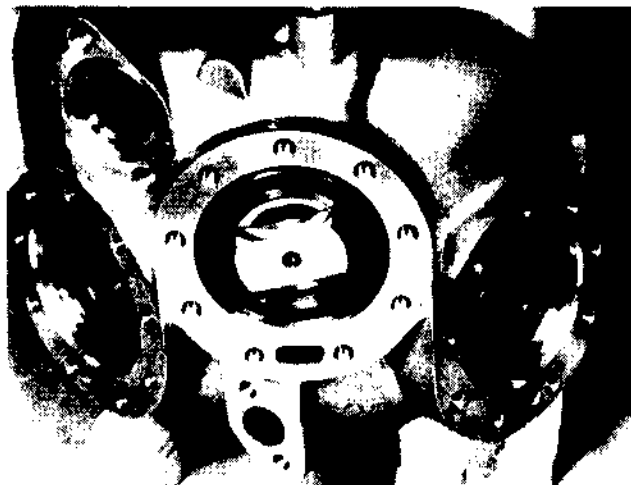


FIGURE 13



FIGURE 14

Do not move the liner around on top of the valve assembly.

Lift the liner away from the valve assembly (Figure 16) and remove the suction valve (Figure 17), valve springs (Figure 18) and valve "O" ring (Figure 19).

INSPECTION:

Replace the valve if there is evidence of copperplating or if the valve does not meet the wear tolerances given in Table 1. If the compressor has operated in excess of the hours listed below, replace the valve springs.

3,000 Hours—Refrigerant-22

5,000 Hours—Refrigerant-12

TO ASSEMBLE:

Place the "O" ring on the valve plate (Figure 19). Set the springs in the valve plate (Figure 18) and the suction valve over the springs (Figure 17).

Set the liner down over the suction valve assembly (Figure 16) and attach with the three 120° retainers. Work the suction valve to make sure it is not restricted or pinched within the assembly (Figure 20).



FIGURE 15



FIGURE 16



FIGURE 17



FIGURE 20

TO REMOVE:

Work the take-up ring off the bottom of the liner (Figure 21). Remove the lift pins and springs (Figure 22).

INSPECTION:

Table 3 lists the lift spring dimensions. Replace the springs if they are less than the length listed.

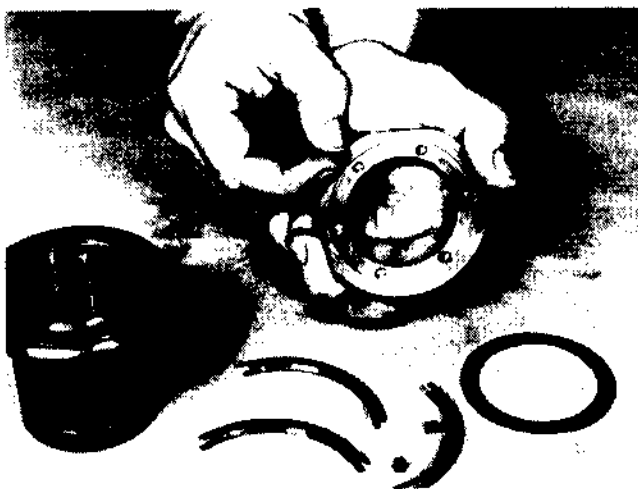


FIGURE 18



FIGURE 21



FIGURE 19



FIGURE 22

TAKE-UP RING AND LIFT PINS

The cylinders which have unloaders include a take-up ring, lift pins and springs attached to the liner. When the liner is pulled, the take-up ring and lift pin assembly will also be removed.

TO ASSEMBLE:

Insert the lift pins and springs (Figure 22). Push the take-up ring down over the liner to rest on the pins. Work the ring and pin assembly up and down to be sure it is free to move and can raise and lower the suction valve.

CYLINDER UNLOADER

The unloader assembly is held within the cylinder by a retaining ring. See Figure 23.

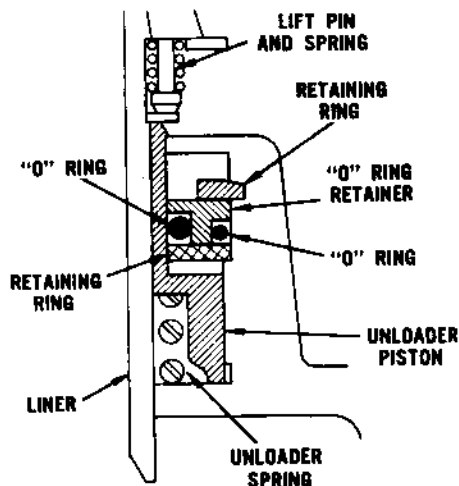


FIGURE 23

TO REMOVE:

Remove the liner and suction valve assembly (See "Liner, To Remove").

Reach inside the cylinder with a snap ring pliers and remove the retaining snap ring. Pull the unloader assembly out of the cylinder.

Remove the "O" ring retainer, steel ring and "O" rings from the unloader pistons (Figures 24 and 25).

NOTE: If the unloader assembly sticks in the compressor housing, a jet of low pressure air directed into the oil line which supplies the unloader at the handhole cover access port will move the assembly out of the cylinder. Hold one hand over the cylinder opening to catch the unloader as it leaves the cylinder.

INSPECTION:

Replace parts which may show excessive wear.

TO ASSEMBLE:

Assemble the steel ring, "O" rings and "O" ring retainer. Slide this assembly down over the unloader piston (Figure 24) and place the completed assembly in the cylinder. Fasten in place with the retaining snap ring.

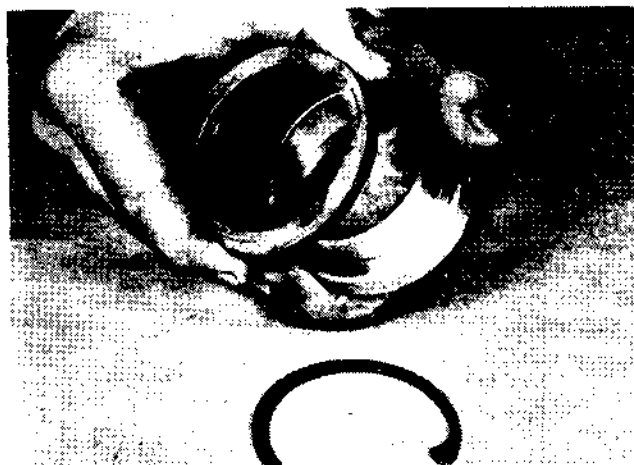


FIGURE 24

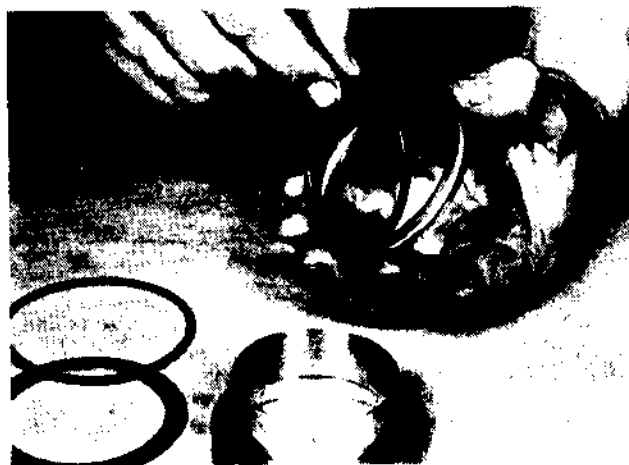


FIGURE 25

SUCTION STRAINER

The suction strainer screen is located directly beneath the suction service valve. To inspect, clean or replace, remove the suction service valve and lift the strainer screen out of the housing (Figure 26).



FIGURE 26

HANDHOLE COVER

The handhole cover, on the bottom of the compressor, contains the capacity control actuator which is an integral part of the cover. The actuator is not a serviceable or replaceable item except for the pressure sensing parts (See Compressor Parts List).

Figures 27 and 28 illustrate the handhole cover.

CAUTION: Do not attempt to adjust the orifice screw and nut on the actuator bracket assembly. These parts have been factory set to control the orifice opening of the capacity control. If the setting is changed, it will be necessary to replace the handhole cover assembly.

TO REMOVE HANDHOLE COVER:

Before removing the handhole cover, drain the crankcase oil by opening the oil charging valve.

Loosen and remove the cover mounting bolts. Tap around the edge of the cover to help break the gasket seal.

TO DISASSEMBLE CAPACITY CONTROL ACTUATOR

See Figure 29.

Remove the distributor cover mounting screws and lift the cover off the handhole cover. It may be necessary to jar the cover to break the gasket seal.

Withdraw the "O" ring, bellows, bellows plug, spring and sleeve.

INSPECTION

Clean or replace parts as necessary. The spring will be marked green for Refrigerant-22 and black for Refrigerant-12. Table 3 lists spring length.

Remove the oil strainer screen and clean with a refrigerant parts cleaner.

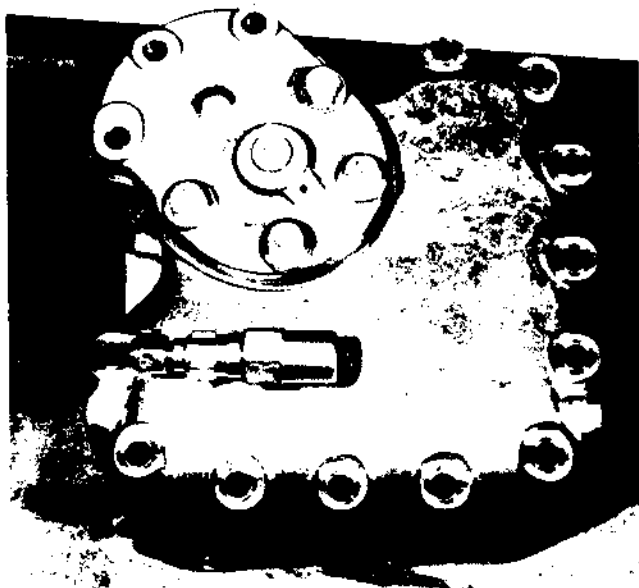


FIGURE 27

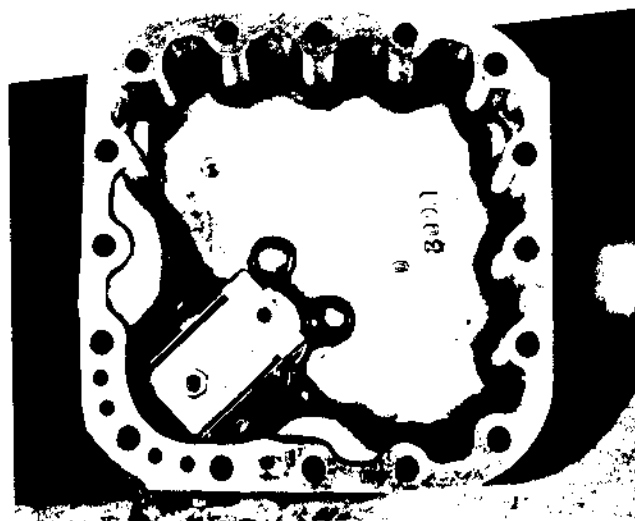


FIGURE 28

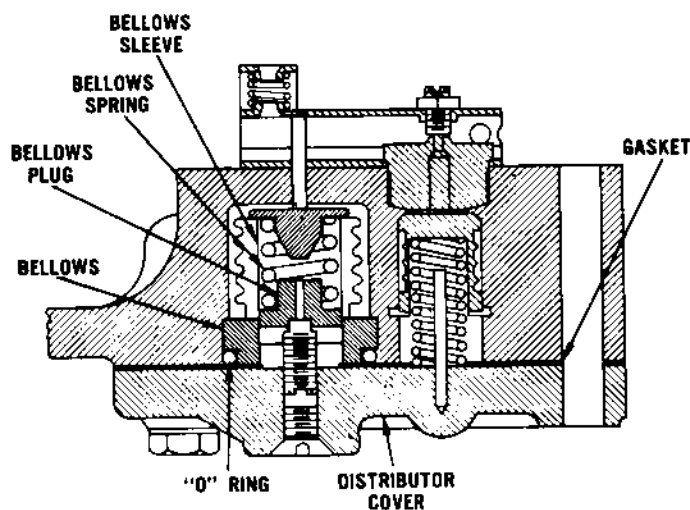


FIGURE 29

TO ASSEMBLE:

Place the bellows, sleeve, spring and bellows plug in the handhole cover and set the "O" ring over the bellows as shown in Figure 29.

Press the oil strainer screen into place.

Attach the distributor cover with the four screws and tighten to the required torque.

TORQUE—20 foot pounds.

Oil the handhole cover gasket with clean compressor oil. Place the oiled gasket and handhole cover assembly against the housing. Insert the mounting bolts, drawing them up hand tight. Tighten all bolts to the required torque.

TORQUE—20 foot pounds.

OIL STRAINER

TO REMOVE:

Remove the handhole cover assembly (See "Handhole Cover, To Remove")

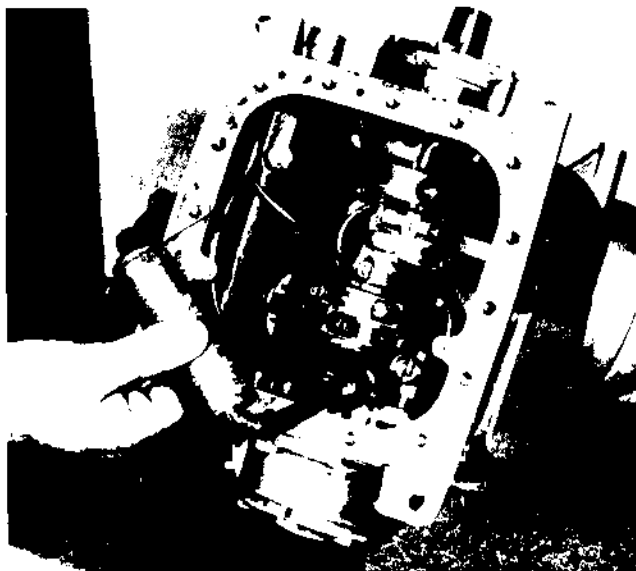


FIGURE 30

Unfasten the oil supply line tube (compression fitting). Lift the strainer out of the housing (Figure 30).

TO INSTALL:

Set the oil strainer in place and tighten the oil supply line compression fitting.

CONNECTING ROD AND PISTON

Remove the cylinder liner (See "Cylinder Liner, To Remove") and the oil strainer (See "Oil Strainer, To Remove").

Rotate the crankshaft until the connecting rod bolts are accessible through the handhole cover opening.

Open the tabs of the connecting rod bolt keepers (Figure 31) and remove the bolts. After the rod bolts and cap have been removed, pull the rod and piston head assembly out through the top of the cylinder.

Two snap rings hold the wrist pin in place. Remove the snap rings and drive the wrist pin out of the head and rod using a wood block or brass driving rod. Do not nick or damage the piston, rings or distort the wrist pin hole.



FIGURE 31

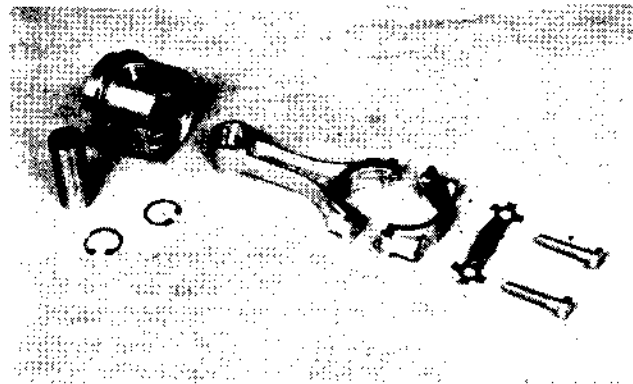


FIGURE 32

Figure 32 illustrates the disassembled piston, rod, cap and wrist pin.

INSPECTION

Follow the wear limits listed in Table 1 for the connecting rod and wrist pin (check both sides of the piston pin and crankpin bore). Replace if there is evidence of grooving or copperplating on the bearing surfaces. Check the oil control holes in the piston head to be sure they are open.

TO INSTALL:

Clean the bearing surfaces of the connecting rod and crankshaft. Lubricate these surfaces with clean compressor oil.

Place the connecting rod in the piston and drive (soft mallet and brass driving rod) the wrist pin into position. Fasten the wrist pin in place with the two snap rings.

Each connecting rod and cap assembly has two match marks which identify them as a unit. The cap and rod also has a chamfer which matches the filler on the crankshaft journal. When assembling the rod and cap to the crankshaft, be sure the match marks are on the same side and chamfer matches the filler.

Install the unloader assembly, if this cylinder has an unloader (See "Cylinder Unloader, To Install").

Invert the cylinder liner and suction valve assembly on a soft surface. Stagger the piston ring gaps.



FIGURE 33

Work the piston head and piston rings down into the cylinder liner with a rocking motion. The inside edge of the liner skirt is tapered to assist the entry of the piston and rings. See Figure 33. After both rings have entered the liner, push the piston down into the liner until the top of the piston is even with the top of the suction valve plate.

Rotate the crankshaft until the journal is in position below the cylinder opening. Turn the connecting rod so the chamfer will match the crankshaft fillet and push the liner and connecting rod assembly down into the cylinder (See Figure 34). Guide the rod by reaching through the handhole cover opening and make sure it seats properly on the crankshaft. Press the liner and suction valve assembly all the way into the cylinder opening.

Place the rod cap in position (chamfer to fillet) and attach with the rod bolts and rod bolt keeper.

CAUTION: Use new keepers.

Tighten the rod bolts to the required torque and bend the tabs of the keeper to prevent the bolt from turning loose.

TORQUE -5 foot pounds.

NOTE: After connecting rod bolts have been tightened to the required torque, rotate the crankshaft to be sure the rod turns freely. Repeat as each rod is installed.



FIGURE 34

PISTON RINGS

TO REMOVE:

Carefully work the rings out of their grooves and off the piston. Care should be used as the rings can be easily broken.

INSPECTION:

The ring grooves must be clean and not contain burrs. Roll the back edge of the rings in the grooves to make sure they fit freely (Figure 35).

Table 1 lists piston ring gap and recommended limits.

TO INSTALL:

Always replace rings as a set. A set consists of two compression rings.

Work the rings down over the top of the piston-beveled edge toward the top of the piston (Figure 36). Use care to prevent breaking the rings.



FIGURE 35

SHAFT SEAL

When removing or reinstalling the seal assembly, be careful not to let the bearing head assembly move out of the housing. If the bearing head moves outward, a thrust bearing may drop out of location and lock the crankshaft when the seal assembly is reinstalled.

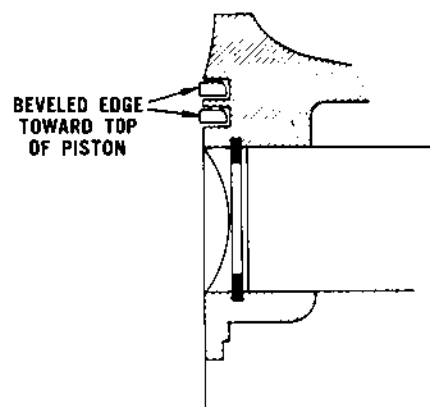


FIGURE 36



FIGURE 37

TO REMOVE:

Loosen and remove all but two (on opposite sides) seal cover bolts. Alternately loosen the last two bolts (Figure 37). The seal cover will be forced away from the housing by the shaft seal spring. If the cover does not follow the bolts, tap the cover with a rawhide mallet to help it break loose.

After the cover and "O" ring have been removed (Figure 38), remove the carbon nose ring and shaft seal spring assembly (Figure 39).

CAUTION: Use extreme care in handling the carbon nose ring — it can be damaged or broken very easily.

Work the neoprene bellows assembly off the end of the shaft using two screwdrivers as shown in Figure 40.

CAUTION: Be careful not to scratch the crankshaft.

INSPECTION:

Replace the seal assembly if there is evidence of leaking or whenever rebuilding the compressor. Clean the carbon nose ring with parts cleaner and examine for damage. The crankshaft (where the seal assembly is mounted) must be clean and smooth without nicks or burrs.



FIGURE 38



FIGURE 39

TO INSTALL:

Lubricate the seal bellows and crankshaft with clean compressor oil. Slide the seal spring assembly onto the end of the crankshaft as far as it will go (Figure 39).

We the carbon nose ring with clean compressor oil and fit into the spring assembly ring retainer.

NOTE: The notches in the carbon nose ring must be aligned with the tabs on the retaining ring.

Clean the face of the seal cover and the housing where the seal cover mounts. Lubricate the cover "O" ring and place the seal cover and its "O" ring over the crankshaft and against the carbon nose ring. Push the seal cover and assembly into the compressor until the cover contacts the bearing head mounting flange. Insert two bolts on opposite sides (Figure 37) and tighten hand tight.

Insert and tighten the remaining bolts. Tighten all bolts to the required torque.

TORQUE—20 foot pounds.



FIGURE 40

SEAL-END BEARING HEAD

TO REMOVE:

Remove the shaft seal (see "Shaft Seal, To Remove").

Insert two seal cover screws in the two jack-screw holes provided in the flange of the bearing head (Figure 41).



FIGURE 41

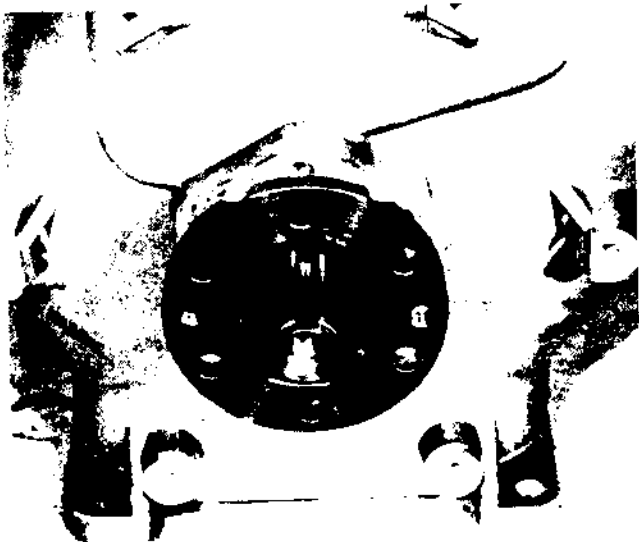


FIGURE 42

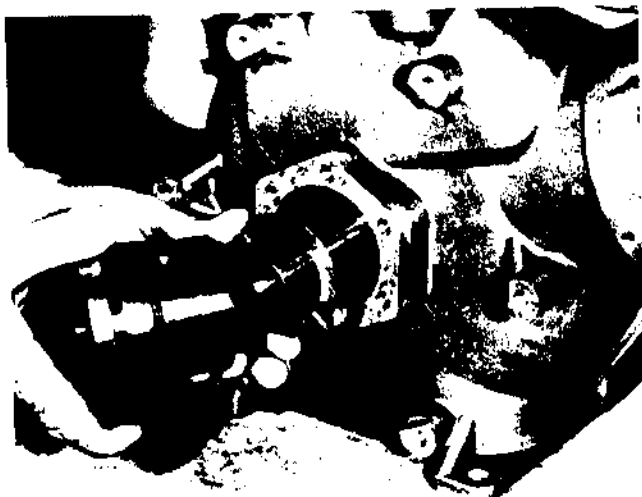


FIGURE 43



FIGURE 44

Tighten the screws alternately and evenly to force the bearing head out of the housing (Figure 42). After the bearing head "O" ring has cleared the housing, pull the bearing out of the housing by hand (Figure 43). Remove

the thrust bearing from inside the housing if it does not come out with the bearing head.

INSPECTION:

Examine all bearing surfaces for grooves, nicks or burrs. If necessary, clean the bearing head oil passages. Measure and follow the wear limits given in Table 1.

TO INSTALL:

Using a clean refrigerant oil, lubricate the bearing surfaces of the crankshaft, bearing head, and bearing head "O" ring. Run a bead of oil on the thrust washer end of the bearing head (Figure 44). Place the thrust washer into proper position on the bearing head.

Slide the bearing head into the housing. The bearing head flange hole with two notches at either side must be at top center as shown in Figure 42.

PUMP-END BEARING HEAD ASSEMBLY

When removing only the pump-end bearing head, lock the crankshaft in the full seal end position to prevent the thrustwasher from dropping out of position. If the thrustwasher drops out of position, the crankshaft will become

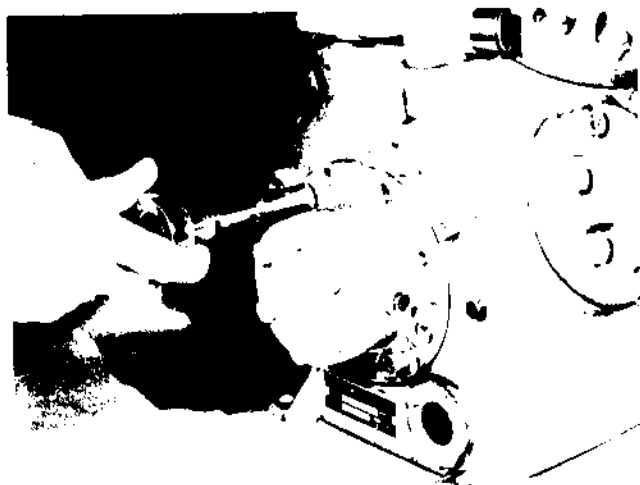


FIGURE 45

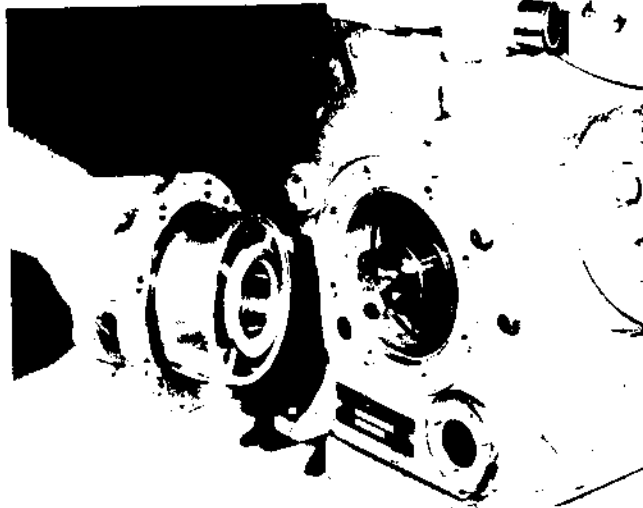


FIGURE 46

locked as the bearing head is reinstalled. To hold the crankshaft tight against the seal end bearing, one of two methods are recommended:

1. Use a 1½" close pipe nipple over the seal end of the crankshaft, draw the crankshaft tight against the seal end bearing with the crankshaft coupling retaining washer and bolt.
2. Shim between the housing and drive coupling to bring the crankshaft tight against the seal end bearing.

TO REMOVE BEARING HEAD ASSEMBLY:

Remove the bearing head screws and washers.

Jack-screw holes are provided in the bearing head flange. Insert two bearing head screws in these holes and tighten to force the bearing head away from the housing (Figure 45). Pull the bearing head out of the housing (Figure 46).

Remove the bearing head "O" rings.

INSPECTION:

Examine the bearing surfaces for grooving, nicks, or burrs. If necessary, clean the oil passages.

Measure and follow the wear limits given in Table 1.

TO INSTALL BEARING HEAD:

Clean and lubricate the bearing surfaces of the crankshaft and bearing head.

Insert one bearing head "O" ring inside the housing and place the other "O" ring on the bearing head, next to the flange. Slide the bearing head into the housing, insert all bearing head screws and tighten them to the required torque.

TORQUE—23 foot pounds.

NOTE: The notch in the bearing head flange must be at top center when reinstalling the bearing head.

CRANKSHAFT

TO REMOVE

Remove the piston and connecting rod assemblies (see "Connecting Rod and Piston, To Remove").

Remove the shaft seal (see "Shaft Seal, To Remove").

Remove the pump-end bearing head assembly (see "Pump-End Bearing Head Assembly, To Remove").

The crankshaft is removed through the pump-end and head opening. Grip the crankshaft at the end and through the handhole opening, slide the crankshaft out of the seal end bearing (Figure 47) and out of the housing.

INSPECTION:

Examine the crankshaft journals, bearing surfaces and seal end bearing for damage or copperplating. Measure and follow the wear tolerances given in Table 1. Remove the magnetic plug and check the oil galleries for contaminants (4 cylinder compressors only).

TO INSTALL:

Clean and lubricate with clean compressor oil all bearing surfaces on the crankshaft and both end bearings.

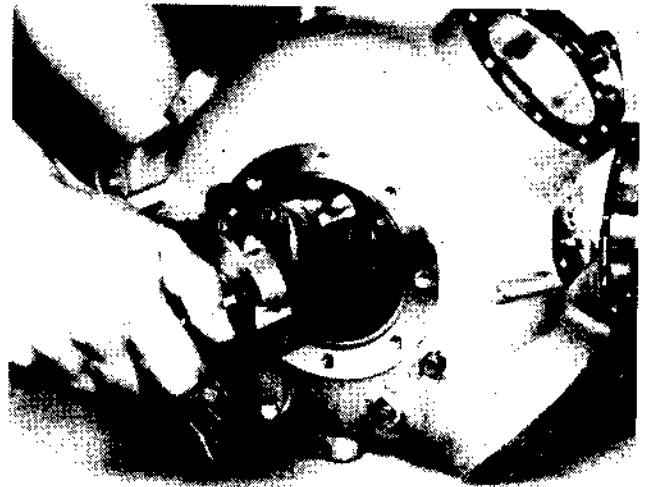


FIGURE 47

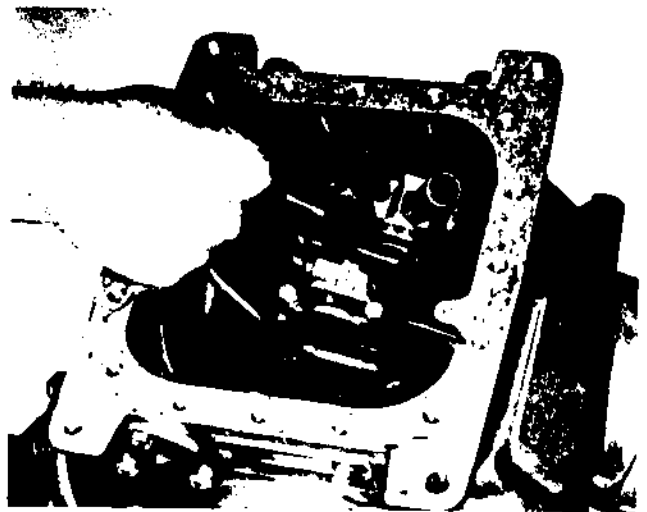


FIGURE 48

Guide the crankshaft into the housing and into the seal end bearing. Reach through the handhole opening to support the weight of the crankshaft.

Install the pump-end bearing (see "Pump-End Bearing Assembly, To Install"), and check crankshaft end play with a feeler gauge (Figure 48). Be sure to torque the bearing head mounting screws before checking end-play.

With a feeler gauge, measure the clearance between the shoulders of the crankshaft and both end bearings. Measure around the crankshaft at several points to account for any burrs which may be present.

END PLAY CLEARANCE—.006 MIN. TO .012 MAX.

OIL RELIEF VALVE AND CHECK VALVES

As shown in Figure 31, the Model "G" compressor has two oil orifice check valves in the lower two banks of cylinders and an oil relief valve at the seal end of the housing. These valves may be removed and cleaned or replaced as necessary.