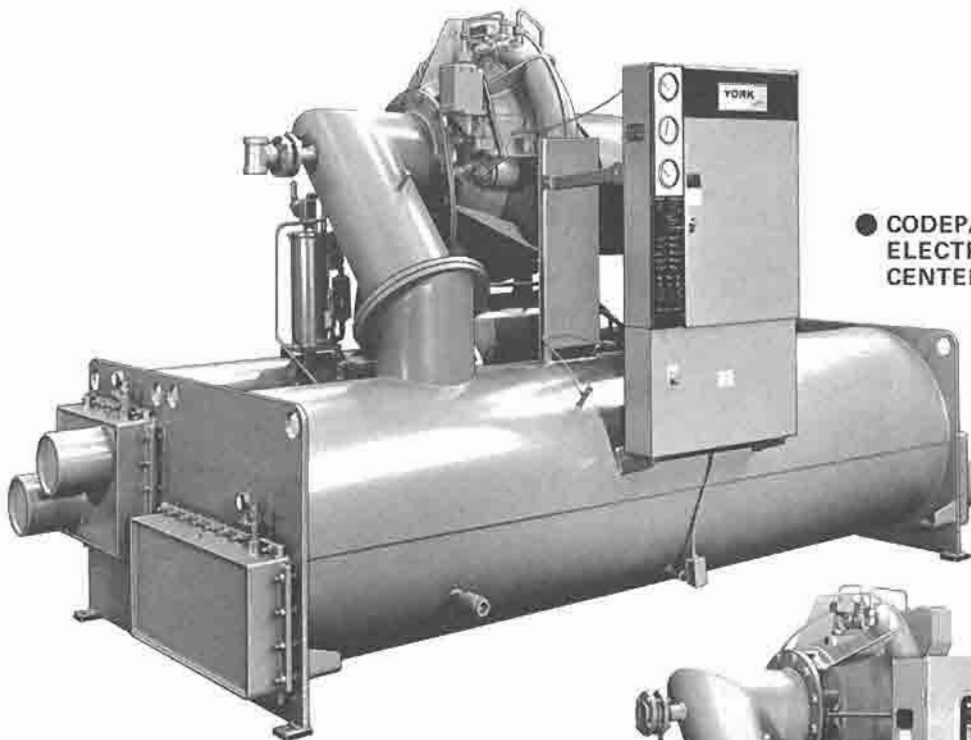
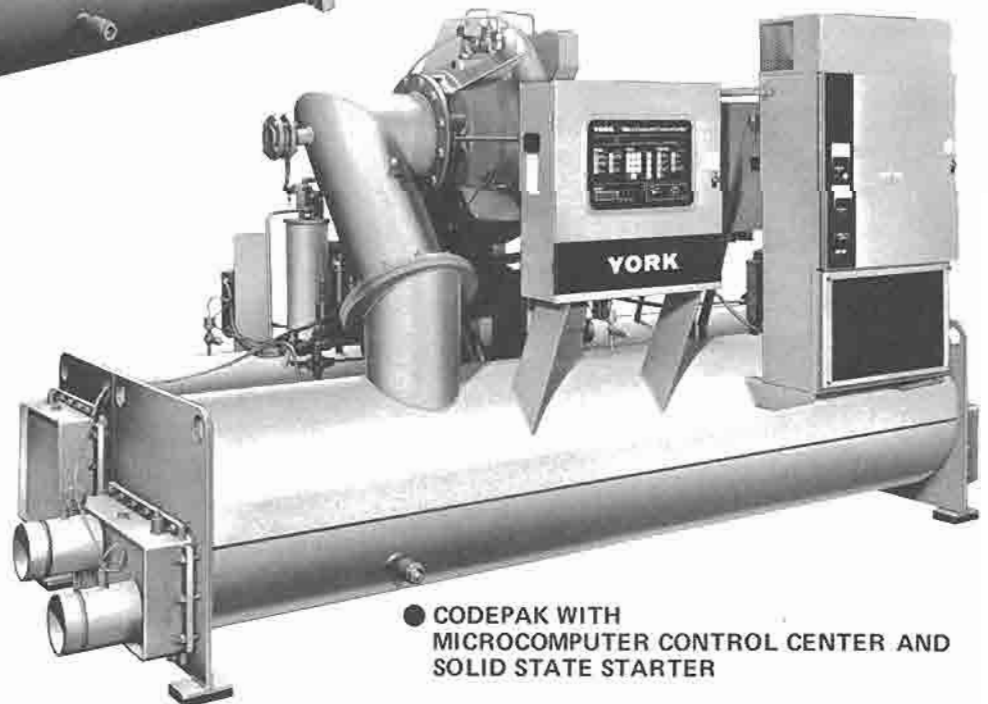


**MODEL YT A1 A1 B1 THRU YT F3 S3 C2 [STYLE A, C & D]  
INCLUDES COMPRESSOR MODELS YTJ 67, 76, 85 & 95  
AND MODELS YDTJ 67, 76, 85, AND 95  
150 THRU 400 TONS**



● CODEPAK WITH  
ELECTRONIC CONTROL  
CENTER



● CODEPAK WITH  
MICROCOMPUTER CONTROL CENTER AND  
SOLID STATE STARTER

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## COUPLING ASSEMBLY COMPRESSOR MODEL YDTJ (See Form 160.45-M1.4).

## INTRODUCTION

The purpose for the manual is to instruct air conditioning service technicians in methods of service, compressor overhaul, replacement of parts and system care. Generally, this manual is confidential unless the customer has accepted the responsibility to perform the necessary service to maintain the operating efficiency of the system.

*This manual should be used in conjunction with the following YORK publications.*

### DESCRIPTION

- Electronic Control Center Instruction
- Electronic Control Center Wiring Diagram
- Solid State Starter Instructions
- Operating and Maintenance Instructions
- Renewal Parts

## SERVICE COMPRESSOR OVERHAUL

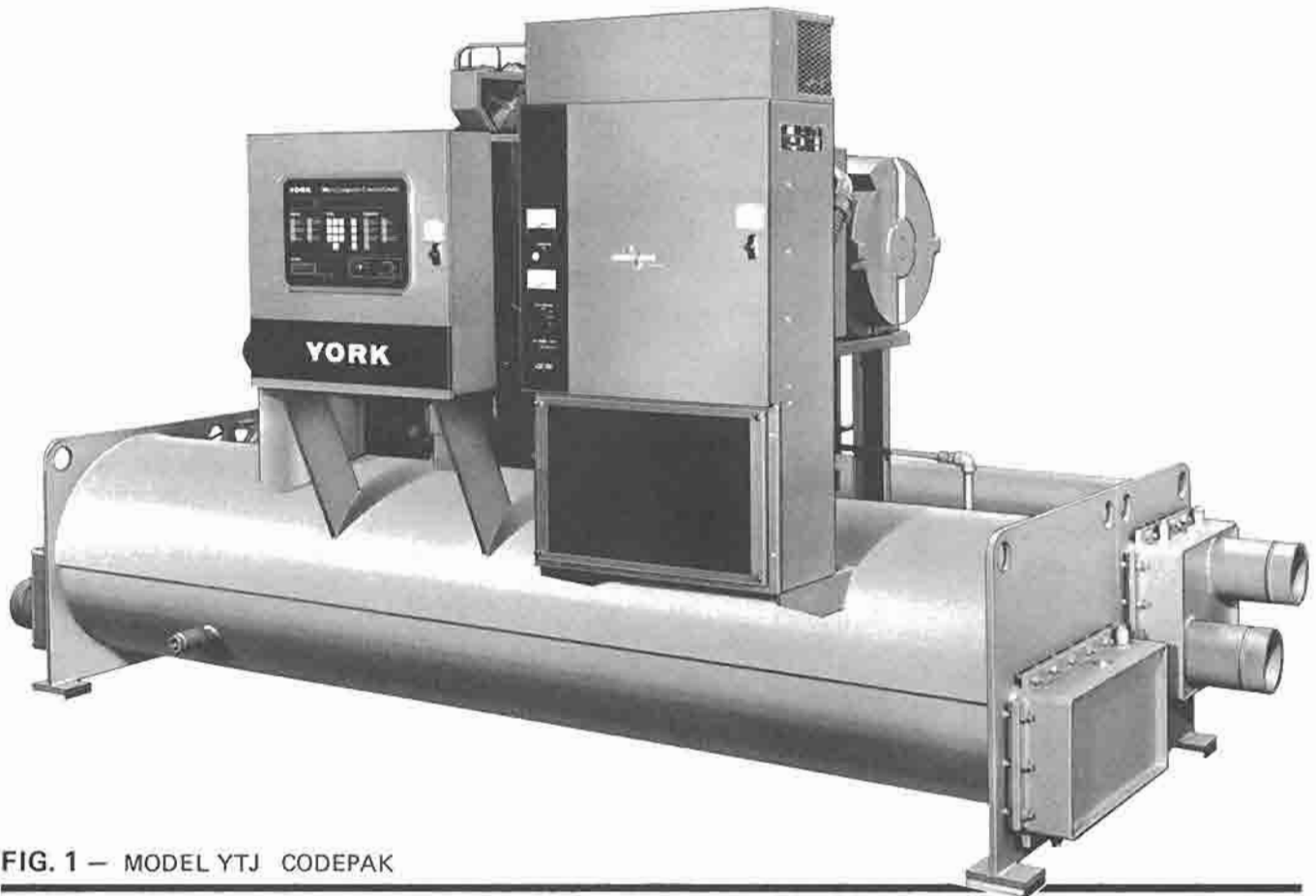


FIG. 1 — MODEL YTJ CODEPAK

### GENERAL

The overhaul and replacement of parts for the Model YTJ 67, 76, 85, 95 and YDTJ 67, 76, 85 and 95 Open Compressors, like any other mechanical operation on machinery, is best accomplished by experienced service personnel using tools and measuring instruments to accomplish accuracy in their work.

There are a number of good practices that should be followed in disassembly and reassembly of the compressor, some of these are listed as follows:

#### Do Not Mix Parts

Keep parts in some general order when removing them from the compressor. It is suggested that parts be laid out to follow exploded views as shown in the many illustrations outlining the disassembly and assembly of the various parts.

#### Do Not Mix Cap Screws and Washers

Cap screws and like parts (of a length, material, and heat treatment) are suited to the location in which they are used. Too long or too short a cap screw can result in leakage or interference with some interior parts. Washers have been selected for specific screws, etc. It is very important to use correct washers or lockwashers. The Parts List and Figures in this instruction show the correct length and size of screws and washers. See the Renewal Parts Manual to order the correct part numbers.

#### Inspect As Compressor is Disassembled

If possible, it is desirable to record shaft and impeller run-outs and thrust clearances before disassembly. Once compressor parts have been disassembled and cleaned, many valuable indications of the compressor condition are lost. Materials found in oil or on burned surfaces can often give an indication as to why a part or parts have failed.

#### Protect Parts and Surfaces

Do not pile or throw parts indiscriminately. Oil surfaces likely to rust. Tape surfaces subject to scratching or nicking during repair operations. Plug off any passages likely to accumulate dust or abrasives. Always remember to remove plugs before assembly.

#### Clean Thoroughly

No Compressor is completely overhauled if it is not cleaned internally to "new part" condition. Dirty parts cannot be inspected nor fitted, and will cause excessive wear when compressor is in operation.

#### Bearing Retaining Rings

All bearing retaining rings are tapered on one side. These rings are to be assembled with the flat side next to the bearing.

## CLEANING AND CHECKING WEARING PARTS

Before reassembling the compressor, all parts should be thoroughly washed with an approved safety solvent and checked for excessive wear.

Worn parts should be replaced with new and each new part should be thoroughly examined for shipping or manufacturing damage.

While the rotor support is open, carefully clean the interior, using an approved safety solvent and lint free cloth.

Clean and check all oil passageways and all tubing.

Before assembling parts, all friction surfaces and threads should be lightly coated with a molybdenum disulphide lubricant such as "Molykote" and oil. Be sure to use new YORK Refrigerant Oil, Type C.

NOTE: "Molykote" is available from:

- Alpha Corporation  
64 Harvard Avenue  
Stamford, Connecticut  
YORK Part No. 364-21508
- Dow Corning Corporation  
Dept. A0021  
P.O. Box 1767  
Midland, Michigan

"Molykote" is available from:

Westinghouse Electric Corporation (Sales offices in all major cities). When ordering specify, "Molykote", No. 8565-3 available from YORK Part No. 364-21508 in 2 oz. cans.

When reassembling parts, each part should be carefully checked for signs of uneven wear, bearing in mind that a nicely polished surface is not an indication of excessive wear. Sudden, excessive wear on any part of the compressor is not normal, but is usually caused by some other condition which must be determined and corrected to assure long periods of trouble-free operation.

Bearings and seals may be reused if their rubbing surfaces and matching surfaces of their corresponding rotating parts are nicely polished with no sign of uneven wear or gouging. Measure gear journal bearings for wear or distortion.

The impeller should be checked around its outside circumference for evidence of rubbing. If this condition is found, excessive bearing wear is indicated and the impeller may be worn sufficiently to require replacement.

All gaskets and "O" rings should be replaced when reassembling the compressor to assure that all surfaces have a tight seal after reassembly.

## COMPRESSOR SERVICING AND TOOLS

### COMPRESSOR SERVICING

The compressor is the heart of the Codepak unit and every effort should be made to maintain and keep it operating at peak efficiency. Being a precision built machine it is important to check the lubrication system for cleanliness by changing the oil filter as mentioned under Preventive Maintenance in the Operating and Maintenance Instruction.

The compressor should not be disassembled for inspection purposes only. However, if the compressor fails to function as outlined in the OPERATING and MAINTENANCE MANUAL, it may be necessary to do so. Individual parts are available for replacement as described in the following compressor servicing section.

Fig. 8 and 8A shows a sectional view of Models YTJ 67, 76, 85, 95 and YDTJ 67, 76, 85 and 95 Open Compressor assembly to aid in identifying parts of the compressor. A complete parts identification list, page 8 and 9B identifies each itemized number as shown in the above mentioned Figs. Throughout this compressor instruction the parts mentioned will be identified by this number, which is also used in the various illustrated Figs., for example: Gear Set (9). The Renewal Parts list will also have the same identification (See Form 160.45-1.1 Section 2).

Table 1 can be used to identify the compressor model for each of the Codepak model numbers.

TABLE 1 — YT OPEN COMPRESSOR CODE AND RESPECTIVE COMPRESSOR MODEL

COMPRESSOR CODE	COMPRESSOR	
B1	YTJ 67	YDTJ 67
B2	YTJ 76	YDTJ 76
C1	YTJ 85	YDTJ 85
C2	YTJ 95	YDTJ 95

### PREPARATION FOR SERVICING COMPRESSOR

If it becomes necessary to replace parts within the compressor, the following preparatory steps should be used as a guide:

1. The Chiller may be pressurized by one of the following methods:
  - A. Operate the chilled water pumps until the pressure rises above atmosphere.
  - B. Pressurize using dry nitrogen.
2. Before opening any part of the refrigerant system, the refrigerant charge must first be pumped into storage drums. (See HANDLING REFRIGERANT FOR DISMANTLING AND REPAIR OPERATING AND MAINTENANCE INSTRUCTION, Form 160.45-01 OPERATING INSTRUCTION).
3. While the Chiller is open for repairs, it is important to keep the refrigerant side of the unit clean and dry. Purging the system with dry nitrogen and keeping all openings covered with plastic sheeting or covers will help accomplish this task.

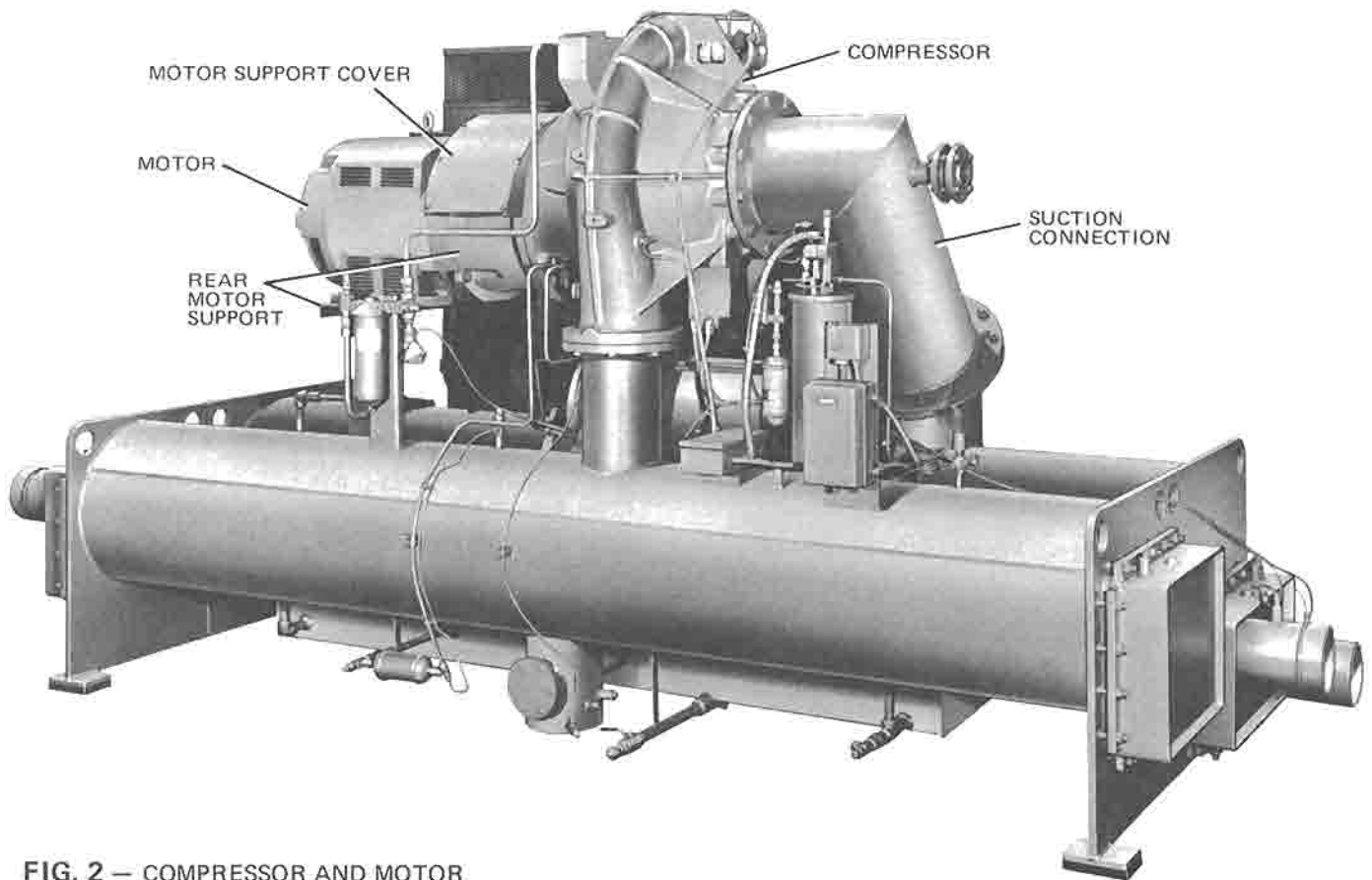


FIG. 2 — COMPRESSOR AND MOTOR

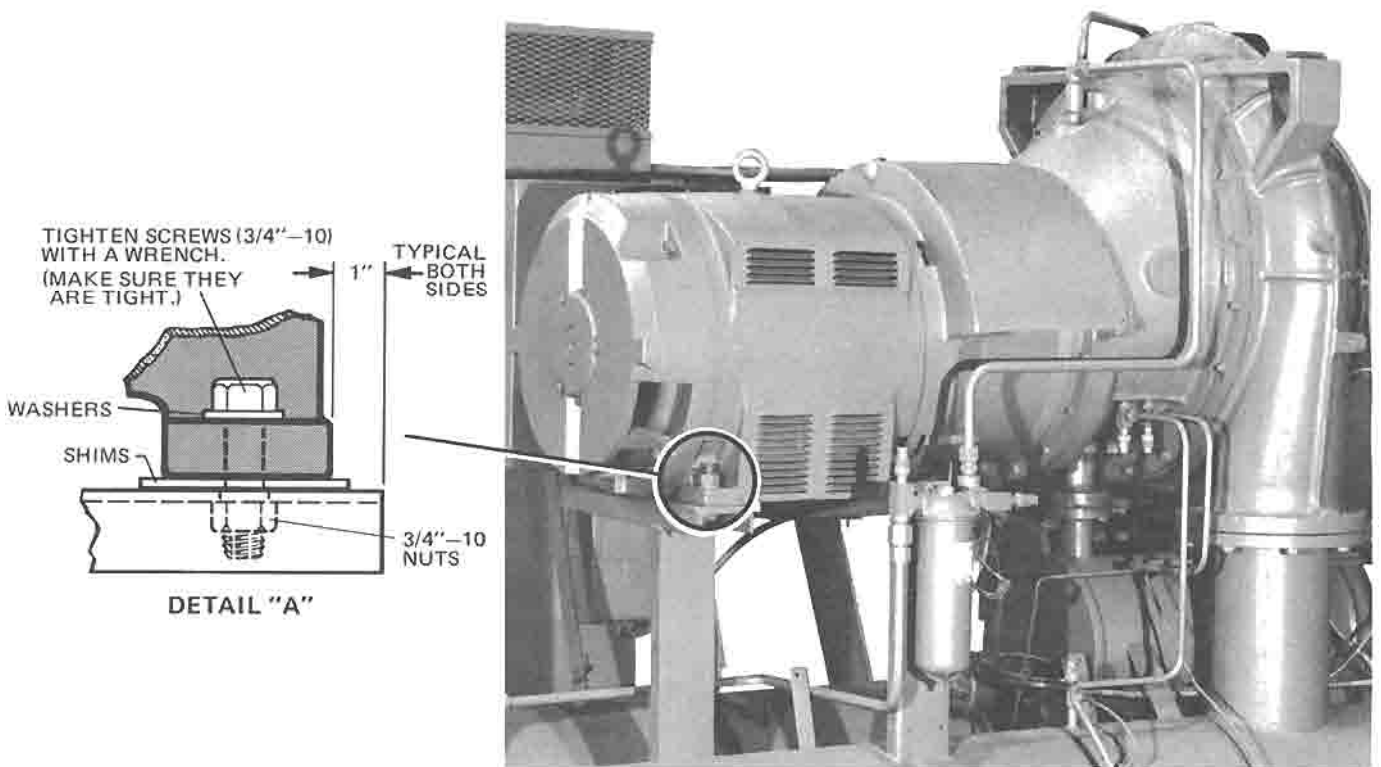


FIG. 3 — MOTOR MOUNTING

FIG. 4 — MOTOR CONNECTIONS

TABLE 2 — COMPRESSOR TOOLS

TOOL KIT (Part No. 364-46557)

Item No.	Description	Qty.	Part No.
1	Bar, Rd. 3/8 Dia. x 7 Lg.	1	064-46402
2	Guide, Pin 10—24 UNC x 6-1/2 Lg.	2	064-46488
3	Stud, Special 1/2—20 UNF 3 x 9 Lg.	1	064-14500
4	Nut, Hex Hd. Heavy 1/2—20 UNF	2	021-00483
5	Pin, Guide 3/8—16 UNC x 7-1/2 Lg.	3	064-18716
6	Bolt, Eye 7/8	1	021-07703
7	Pump, Hand Oil	1	470-10654
9	Pin, Guide 1/4—20 UNC x 8 Lg.	2	064-46499
10	Nut, Hex Hd. 1/4—20 UNC 2B	4	021-00450
11	Tool, Bar	1	064-46611
12	Tool, Hook	2	064-46610
13	Bolt, Eye 3/4	1	021-00307
14	Bar, Coupling Remover	1	064-46251
15	Screw, Cap Hex Hd. 5/8—11 x 1-3/4 Lg.	1	021-01628
16	Screw, Cap Hex Hd. 3/8—16	2	021-01510
17	Tool, Coupling Removal (Driven)	1	064-46743
18	Strap	1	064-46657
19	Spacer	1	065-46658
20	Screw, Cap Hex Hd. 3/8—16 UNC x 5/8 Lg	1	021-01463
21	Nut, Hex Hd. 3/8—16 UNC 2 Lg.	4	021-00467
22	Stud 3/8—16	2	021-14842
23	Pin, Guide	2	064-46246
24	Bolt, Eye, 5/8—11 UNC 2A	1	021-12366
25	Bolt, Eye, 1/2—13 UNC C-2A	3	021-14620
26	Bolt, Eye, 3/8—16 UNC 2A	3	021-13498

SPECIAL TOOLS AND SUPPLIES

Special tools are available and will be furnished when ordered. These tools are listed in Table 2.

The necessary refrigerant and oil charges are furnished with each unit.

The following tools are recommended to facilitate checking bolt torques, shaft runouts and compressor thrusts.

1. Dial Indicator—Magnetic bases are not recommended because they are less stable than a threaded rod inserted into a bolt hole.
2. 0 – 90 ft. lbs. wrench.
3. 90 – 300 ft. lbs. torque wrench.
4. Assorted rigging sized for the component being removed.

MOTOR REMOVAL

REPLACING MOTOR

The following paragraphs outline the procedure for replacing individual motor parts as necessary. When a motor has to be replaced or repaired contact your nearest YORK District Service Office.

REMOVING THE MOTOR

To remove and disassemble the motor and compressor motor support, refer to Figs. 3 and 5 inclusive and proceed as follows:

1. Be sure the main disconnect switch to the compressor motor is open and tagged, then disconnect the electrical leads at the motor terminals and tape the end of each lead. Make sure leads are marked correctly for later identification.
2. Support the weight of the motor from a hoist using eye-bolts at locations provided in the motor housing.
3. Remove the hex hd. cap screws 1/4—20 x 1/2 lg. (89) that holds the sheet metal cover to the compressor motor support (86). After all screws are removed, remove cover. (See Fig. 7.) Turn shaft to put keys at 12 & 6 o'clock. (See Fig. 51 & 52A).
4. To separate the motor shaft from the compressor shaft loosen and remove the 12 - hex. hd. cap screws 3/8 x 2" lg. (87) and spring lockwashers 3/8 (15) from the driver coupling (See Fig's. 7 and 51).

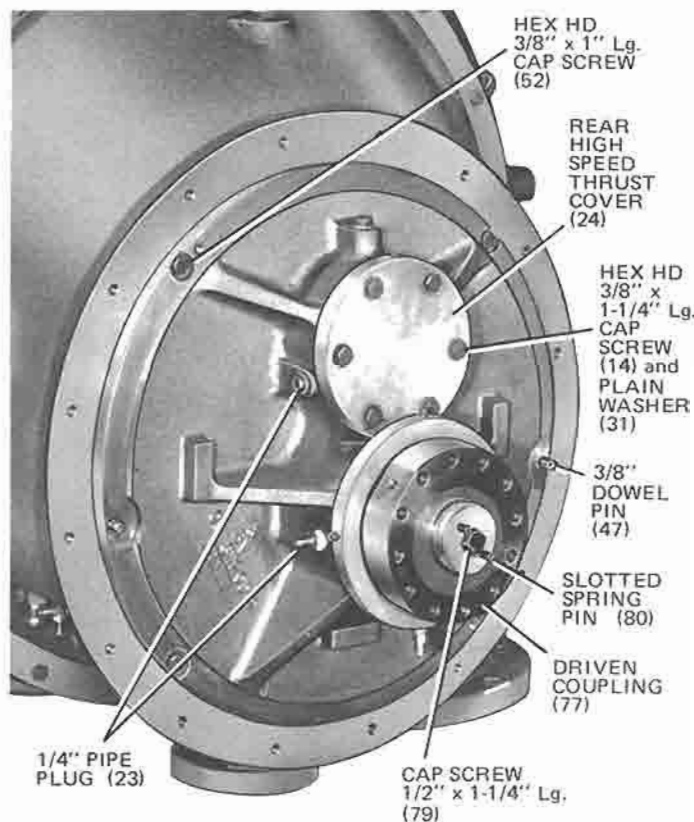


FIG. 5 — YJT COMPRESSOR ROTOR BEARING HOUSING ASSEMBLY

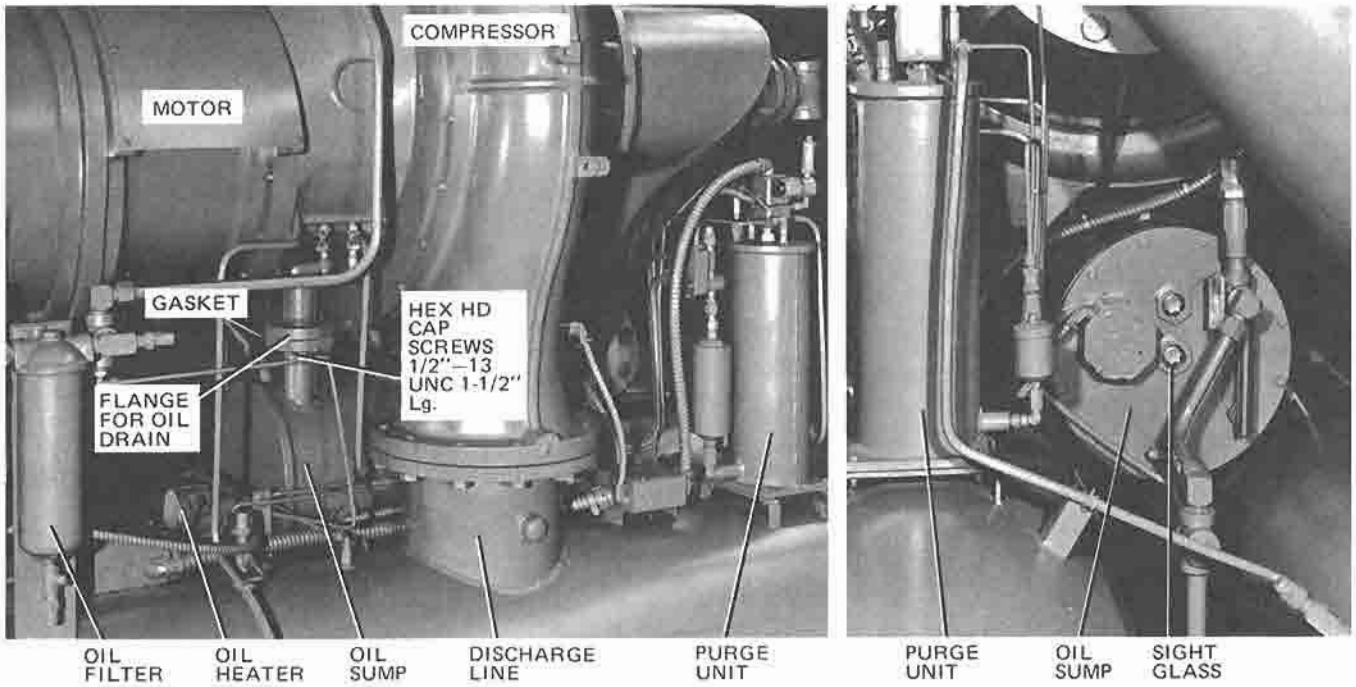


FIG. 6 — COMPRESSOR OIL DRAIN, OIL SUMP AND OIL FILTER

#### Removing the Compressor Motor Support and Motor Assembly to Disassemble Compressor Rotor Support.

1. Remove the 16-hex hd. screws  $3/8 \times 1-3/4$  lg. (220) that fastens the compressor motor support to the rotor support. (See Fig. 7).
2. Remove the 2-hex. hd. cap screws  $3/4 \times 10 \times 3-1/4$  lg., 2 hex nuts,  $3/4-10$  and washers that fasten the motor to motor bracket on the Codepak shell. Pull motor horizontally away to clear the compressor shaft and rotor support. Tighten driven bolts to make sure the driver coupling does not fall during this procedure.
3. Lift motor and motor support assembly and pull away from the compressor rotor support. Lower motor and motor support assembly to the floor surface. Remove shims from the motor mounting bracket on shell. The motor must maintain a slope to the rear to prevent the rotor from sliding out of the stator. (Note the number of motor replacement shims for each motor foot location).

#### Removing the Coupling Drive from Motor Shaft.

1. Loosen the four hex socket head cap screws  $3/8 \times 1-1/4$  lg. (85). Pull the coupling driver from the shaft. During this procedure the two keys can fall. Be careful not to let the keys fall on a rough hard surface. Place a doubled cloth or mat under shaft to prevent damage to keys. YTJ compressor (See Fig. 51 for reassembly, see page 26), or for YDTJ compressor refer to Form 160.45-M1.4 for Removal and Reassembly of Coupling.

#### Removing the Motor for Motor Repair or Replacement.

1. Remove four hex hd. screws that fasten motor support to motor. Install  $3/8-16$  UNC  $\times 7-1/2$  lg. guide pins, not in tool kit.
2. Remove the two hex hd. cap screws  $3/4-10 \times 3-1/4$  lg., two hex nuts  $3/4-10$  and washers that fasten the motor to motor mounting bracket on the Codepak shell. (See Fig. 3).

3. Pull and lift motor horizontally away from the compressor motor support, making sure the driver coupling does not fall during this procedure. Lower motor to floor surface. Remove shims from the motor mounting bracket on the shell. Remove bolts from the rear end bell of the motor one at a time and install 4" all thread or guide pins. Move the end bell with the rotor back 12". (Note the number of motor replacement shims for each motor foot location).

#### Assembling Motor to Compressor and Motor Mounting Bracket (Motor Removal Only).

1. Place the number of shims originally required on each motor mounting bracket when moving and assembling the motor. Assemble the keys and the coupling driver onto the motor shaft. Tighten screws to prevent the driver from coming off.
2. Lift motor to the proper location and push motor carefully against the compressor motor support.
3. Line up holes in the face of the motor with guide pins in the compressor motor support. Place the 4-hex. hd. cap screws and through the compressor motor support and screw into the tapped holes on the motor, (but do not fully tighten screws). Make the shaft of the motor line up with the compressor shaft. (Refer to Fig. 2.)
4. Place the 2-hex. hd. cap screws  $3/4-10$  and washers in holes. Make sure the motor is shimmed correctly to maintain levelness of motor. Place  $2-3/4-10$  hex. nuts on screws and tighten and torque. (Refer to Fig. 3.)
5. Tighten and torque screws holding motor to motor support.
6. YTJ compressor, assemble the driver and driver coupling with twelve screws (87) and lockwashers (15). Refer to page 25. (Fig. 51), for YDTJ compressor, refer to Form 160.45-M1.4 for Coupling Assembly.

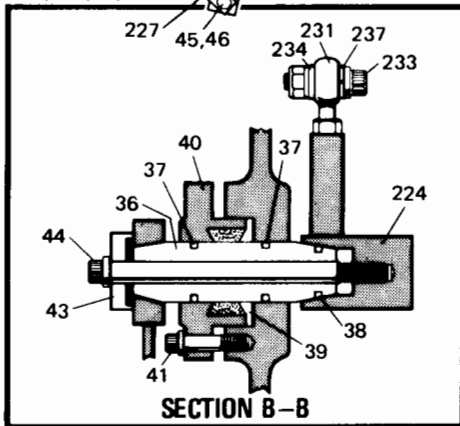
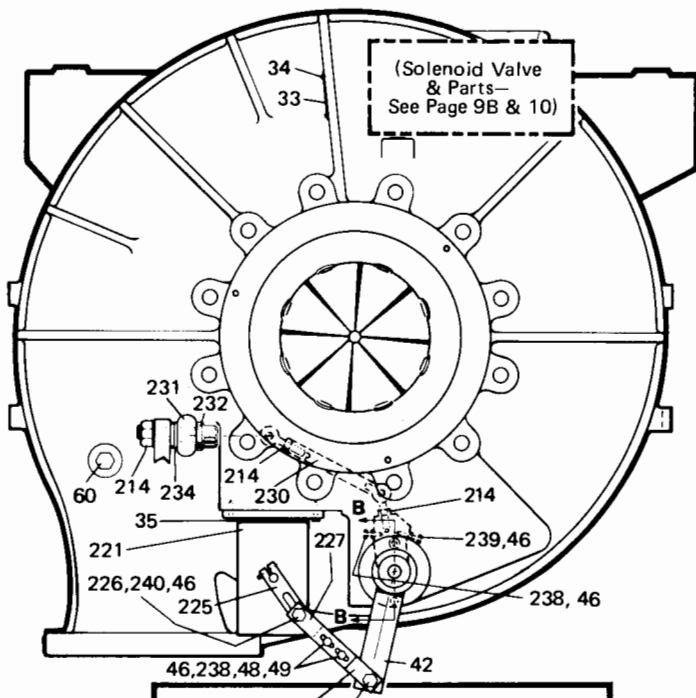
# CENTRIFUGAL COMPRESSOR PARTS LIST

## MODELS YTJ 67, 76, 85, 95 AND YDTJ 67, 76, 85 AND 95

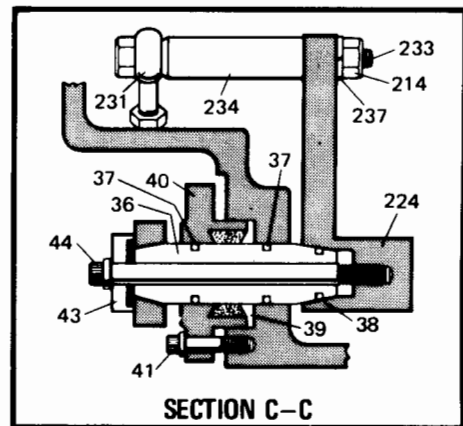
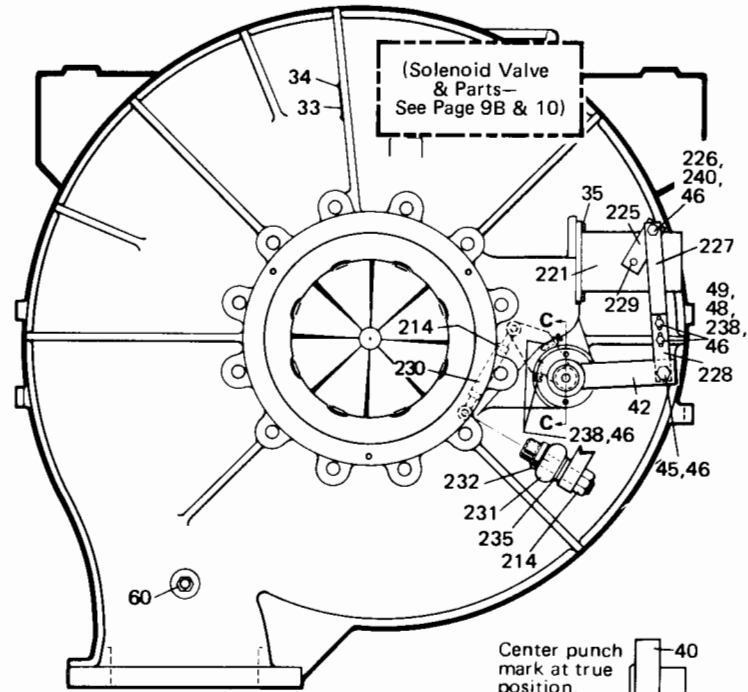
Item No.	Description	MODEL YTJ		MODEL YDTJ		Item No.	Description	MODEL YTJ		MODEL YDTJ	
		Qty.	Part No.	Qty.	Part No.			Qty.	Part No.	Qty.	Part No.
1	Scr., Cap 3/8 x 1-1/2 Lg.	3	021-01497	3	021-01497	56	Spring, Helical	1	029-06143	1	029-06143
2	Washer, Impeller Clam.	1	064-46146	1	064-46146	◆ 57	Gasket, 13/16 O.O.	1	065-21657A	1	065-21657A
3	Scr., Set 1/2 x 3/4 Lg.	2	021-00825	2	021-00825	58	Cap, Seal	1	065-06394	—	—
4	Seal, O-Ring	1	028-10178	1	028-10178	59	Scr., Cap 3/8 x 1 Lg. Hex Soc.	3	021-02585	3	021-02585
◆ 5	Plug, Pipe 1/8	2	023-01970	2	023-01970	60	Control, Temp. (Discharge)	1	025-15381-002	1	025-25163
▲ 6	Scr., Cap 1/4 x 1/2 Lg. 12 Pt. Hd.	2	021-11970	2	021-11970	61	Plug, Pipe 1/2	2	023-01994	2	023-01994
▲ 7	Retainer, Bearing	2	064-46886	2	064-46886	62	Connr., Fla. Hyd 3/4 O.D. x3/4 P.T. 45°	1	023-10696	1	023-10696
▲ 8	Bearing, Pinion Gear	2	064-46885	2	064-46885	▲ 63	Plug, Hex Hd.	1	064-46282	1	064-46282
9	Gear, Set	1	See Sales Order	1	See Sales Order	◆ 64	Seal, O-Ring	1	028-07519	1	028-07519
▲ 10	Bearing, Gear Rear	1	064-46729	1	064-46729	65	Pipe, Plug 3/4 NPTE	A.R.	013-02023	A.R.	013-02023
▲ 11	Collar, L. S. Thrust	1	064-46623	1	064-46623	◆ 66	Seal, O-Ring	1	028-04665	1	028-04665
▲ 12	Scr., Cap 5/16 x 1-3/4 Lg. 12 Pt. L.H.	1	021-11532	1	021-11532	67	Lockwasher, Spring	1	021-05271	1	021-05271
▲ 13	Pin, Slot Spring	2	029-04551	2	029-04551	68	Plug, Dot	2	029-13655	2	029-13655
14	Scr., Cap 3/8 x 1-1/4 Lg.	12	021-01485	12	021-01485	69	Sealant	2	023-04208	2	023-04208
15	Lockwasher, Spg. 3/8	12	021-05269	—	—	● 70	Seal, O-Ring	2	028-04519	2	028-04519
◆ 16	Seal, O-Ring	1	028-10156	1	028-10156	● 71	Collar, Shaft Seal	1	064-46755	1	064-46755
17	Flange, Special	1	064-46070	1	064-46070	● 72	Ring, Shaft Seal	1	029-08605-010	1	029-08605-010
◆ 18	Gasket, Oil Reservoir	1	064-46629	1	064-46629	● 73	Spring, Helical	1	029-11568-003	1	029-11568-003
19	Cover, Oil Reservoir	1	364-46626	1	364-46626	● 74	Cover, Seal	1	064-46634	1	064-47335
20	Washer, Plain	—	—	12	021-16841	75	Scr., Cap 3/8 x 1 Lg.	10	021-01477	10	021-01477
21	Seal, O-Ring 17, 772 I.O.	1	028-10182	1	028-10182	▲ 76	Key, 1/2 x 1/2 x 1-1/2 Lg.	1	064-46209	1	064-46209
▲ 22	Bearing, Thrust H.S. (Rear)	1	064-46127	1	064-46127	77	Coupling, Driven	1	064-46635	1	064-46635
23	Plug, Pipe 1/4	3	023-01973	3	023-01973	78	Washer, Coupling	1	064-46636	1	064-47374
▲ 24	Cover, Thrust H.S.	1	064-46122	1	064-46122	79	Scr., Cap 1/2 x 1-1/4 Lg.	1	021-16252	1	021-16252
◆ 25	Seal, O-Ring	1	028-08811	1	028-08811	80	Pin, Slot Spring 1/4 Dia. x 1 Lg.	2	029-06862	2	029-06862
◆ 26	Seal, O-Ring	1	028-04352	1	028-04352	81	Fill, Piece	1	064-46637	1	064-46637
▲ 27	Collar, Thrust H.S. (Rear)	1	064-46130	1	064-46130	▲ 82	Seal, D-Ring 4 I.O. x 1/8 Section	1	028-04349	1	028-04349
▲ 28	Pin, Slot Spring	2	029-03991	2	029-03991	83	Valve, Stop, Angle 1/4 NPTE x 1/4 Fla.	1	028-03836	1	028-03836
▲ 29	Scr., Cap 1/2 x 1-1/2 Lg.	1	021-01567	1	021-01567	84	Key, 5/8 x 5/8 x 2 Lg.	2	064-46517	—	—
30	Nameplate, Data	1	029-13380	1	029-13380	85	Scr., Cap 3/8 x 1-1/4 Lg. Hex Soc.	4	021-01486	4	021-01486
31	Washer, Plain	12	021-01274	12	021-16814	86	Support, Motor	1	See Sales Order	1	See Sales Order
32	Plug, Flals. 9/16	1	023-07158	1	023-07158	87	Scr., Cap 3/8 x 2 Lg.	28	021-01510	28	021-01510
33	Nameplate Pat.	1	029-13270-002	1	029-13270-002	88	Guard, Coupling	1	064-46745	1	064-47418
34	Scr., Drive No. 4 x 1/4 Lg.	8	021-03720	8	021-03720	89	Scr., Cap 1/4 x 1/2 Lg.	17	021-02438	—	—
35	Scr., Cap 1/4 x 3/4 Lg.	3	021-01379	3	021-01379	90	Elbow, (90° Tube x 3/4 MPT	1	023-10700	1	023-10700
36	Shaft, Control	1	364-29573	1	364-29573	91	Tee, Screw 3/4F x 1/2F x 3/4F	2	023-11330	2	023-11330
37	Seal, O-Ring	2	028-07002	2	028-07002	92	Connr., Fla.Hyd 1/4 O.D. x1/8 NPTE	1	023-09669	1	023-09669
38	Seal, O-Ring	1	028-09309	1	028-09309	93	Conn., Oil Drain	1	364-46448	1	364-46448
39	Gasket, Bellows Cover	1	028-00781	1	028-00781	94	Coupling, Driver	1	064-46639	1	064-46639
40	Cover, Shaft Control	1	064-13909	1	064-13909	95	Motor	1	See Sales Order	1	See Sales Order
41	Scr., Cap 12 Pt. Hd. 3/8 x 1-1/2 Lg.	2	021-11175	2	021-11175	96	Valve, Solenoid	1	025-25935	1	025-25935
42	Lever, Prv. External	1	364-28236	1	364-47108	97	Valve, Seal Oil Relief	—	—	1	022-08700
43	Washer, Special	1	064-08815	1	064-08815	98	Bushing, Pipe 3/4 NPTE x1/2 NPT1	2	023-04010	2	023-04010
44	Scr., Cap 1/2 x6 Lg. 12 Pt. Hd.	1	021-11998	1	021-11998	99	Nipple, Pipe 1/2 x 1-1/8 Lg.	2	070-01284	2	070-01284
45	Bolt, Shld.	1	064-28262	1	064-28262	100	Tube, Steel 3/8 x .049 x11-7/16 Lg.	1	066-39369	1	066-39369
46	Nut, Hex 1/4	8	021-00450	8	021-00450	101	Conn. Fla. Hyd 3/8 x1/2 NPTE	2	023-10829	2	023-10829
47	Pin, Dowel 3/8 x 2	2	029-18459	2	029-18459	102	Scr., Cap Hex Hd. 3/8-16 x 3/4 Lg.	—	—	12	021-01467
48	Lockwasher, Spring 1/4	2	021-05267	2	021-05267	103	Coupling	—	—	1	029-20006
49	Washer, 9/32 I.O.	4	021-05165	4	021-05165	104	Key	—	—	1	064-47333
▲ 50	Ball, Steel	1	029-17369	1	029-17369	105	Scr., Cap Hex Hd. 3/4-10 x2-1/4 Lg.	—	—	8	021-01661
51	Comp. Sealer Gr. AVV	A.R.	013-01671	A.R.	013-01671	106	Strip, Neoprene - 1/8 Thick	—	—	7.5 ft.	028-08091
52	Scr. Cap Hex Hd. 3/8 x 1 Lg.	14	021-01477	14	021-01477	107	Cover	—	—	2	064-47332
53	Sealer	A.R.	013-01678	A.R.	013-02825	108	Elbow, 90° 3/4 Tube x3/4 MPT	—	—	1	025-10700
54	Plunger, Valve	1	064-14790	1	064-14790	109	Scr., Cap Hex Hd. 3/8-16 x1/2 Lg.	—	—	1	021-14380
55	Washer, Plain 17/64	5	021-11973	—	—						

▲ YTJ and YDTJ 67-95	Bearing Kit Part No. 464-46887.
● YTJ and YDTJ 85-95	Shaft Seal Kit Part No. 464-46874.
■ YTJ and YDTJ 67-76	Gasket Kit Part No. 364-47164.
◆ YTJ and YDTJ 85-95	Gasket Kit Part No. 364-47163.

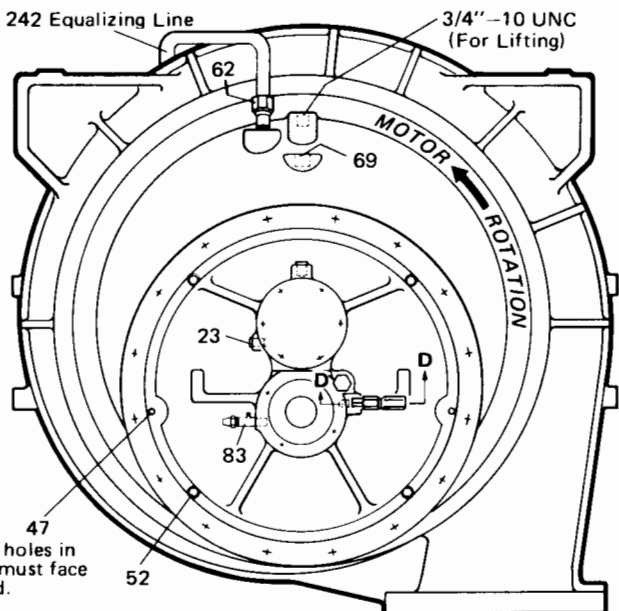
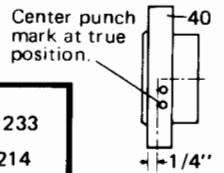
# MODELS YTJ AND YDTJ 67, 76, 85 AND 95



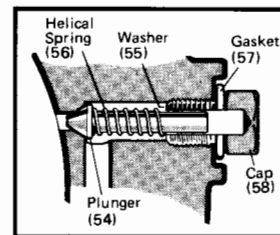
**DETAIL A — FRONT END VIEW MODELS YTJ & YDTJ 67-76 VANES IN CLOSED POSITION**



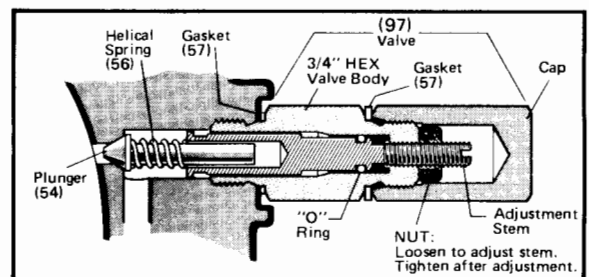
**DETAIL B — FRONT END VIEW MODELS YTJ & YDTJ 85-95 VANES IN CLOSED POSITION**



**DETAIL C — REAR END VIEW MODELS YTJ & YDTJ COMPRESSOR**



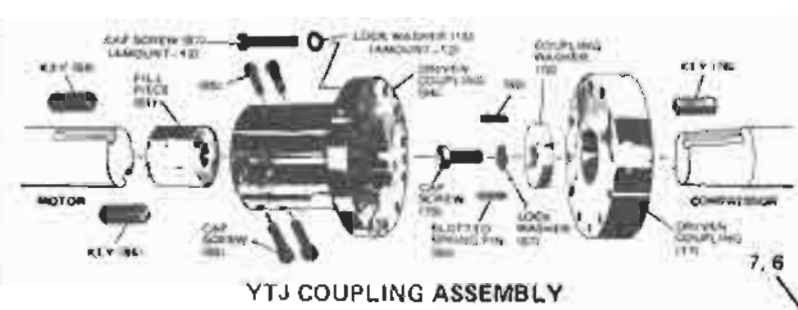
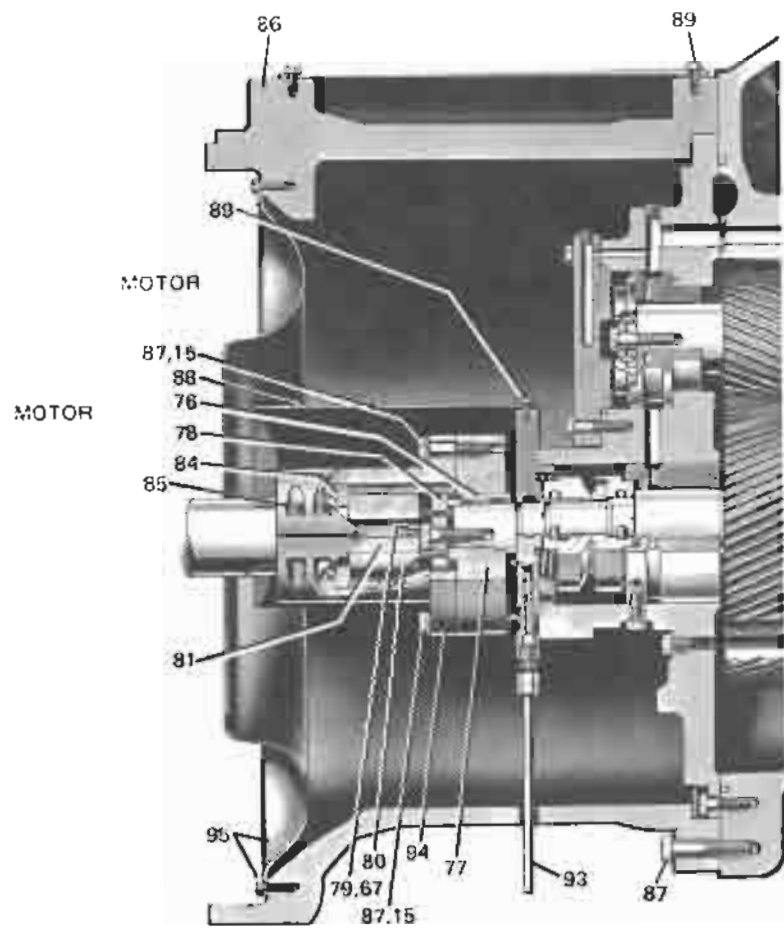
**YTJ COMPRESSOR OIL PRESSURE RELIEF VALVE ASSEMBLY**  
**SECTION D-D**  
Original Design Model YTJ



**SECTION D-D**  
**NEW DESIGN STYLE "D" COMPRESSOR**

**NOTE:** Use for replacement on "Original Design" YTJ and Model YDTJ.

**MODEL YTJ**



FORM 160.45-M1.1

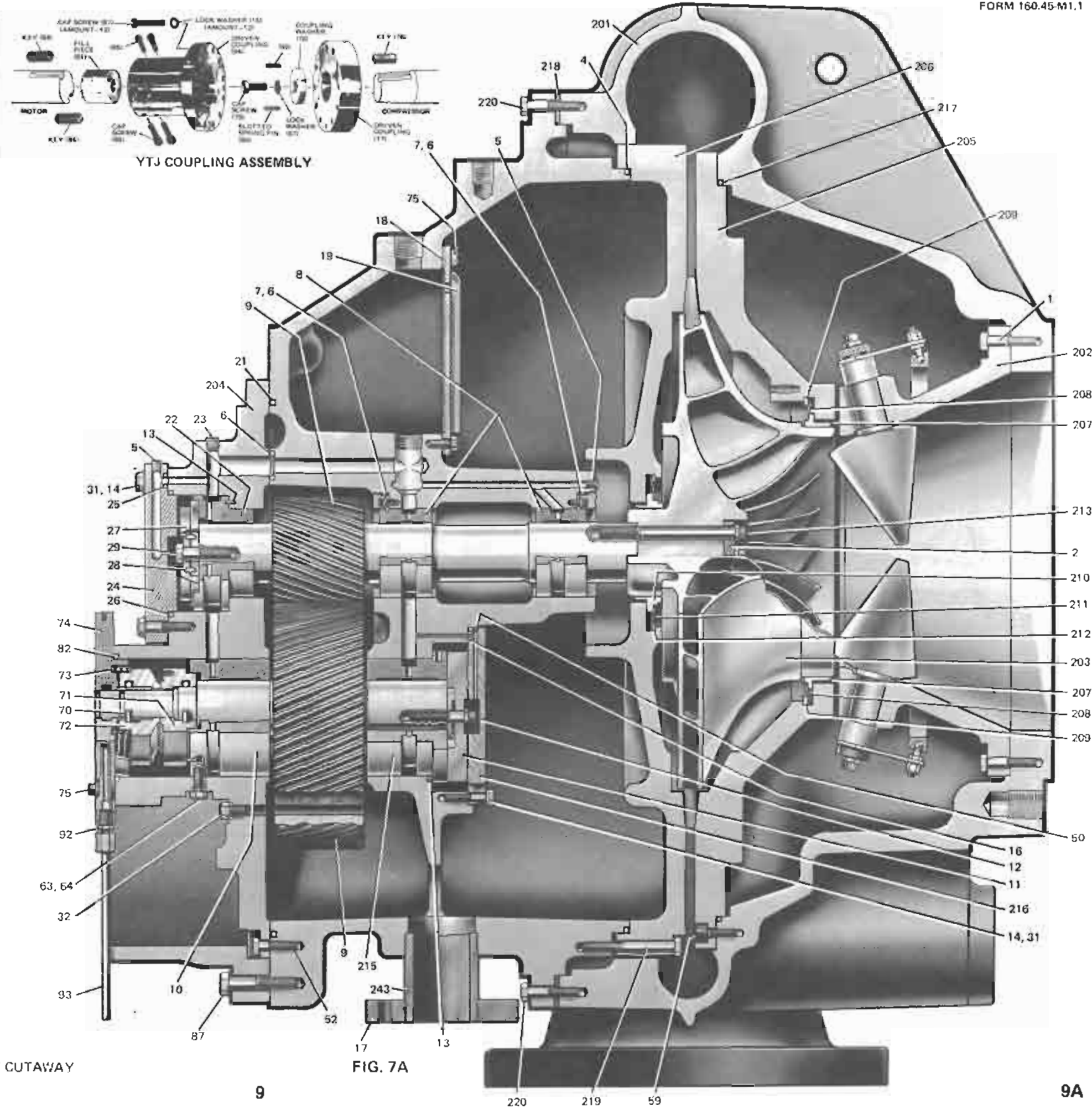
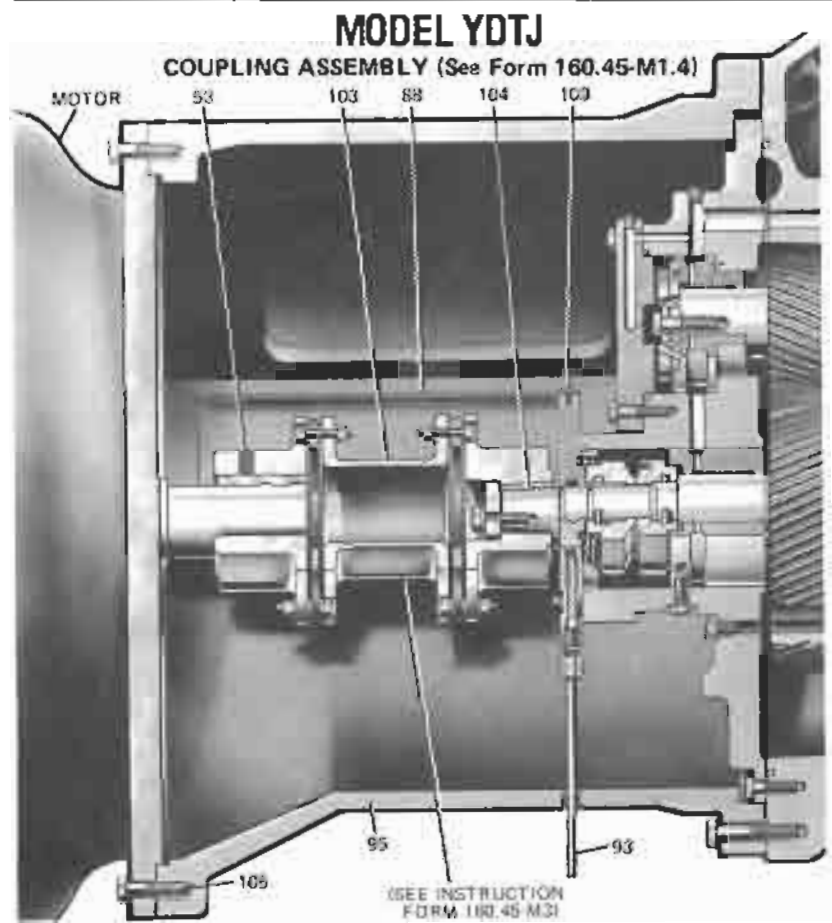


FIG. 7 — MODEL YTJ AND YDTJ COMPRESSOR AND MOTOR ASSEMBLY CUTAWAY

# CENTRIFUGAL COMPRESSOR VARIABLE COMPONENTS

Refer to Fig's. 7 and 8

Refer to Fig's. 7A and 8A

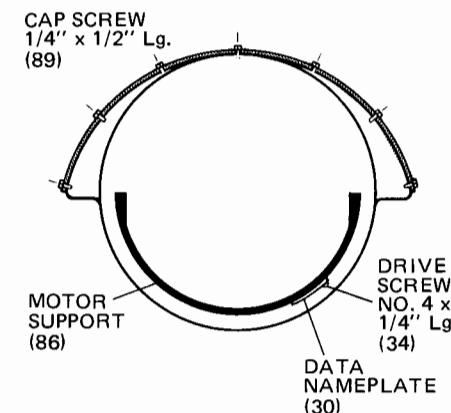
## MODELS YTJ 67, 76, 85 AND 95

## MODELS YDTJ 67, 76, 85 AND 95

Item No.	Description	YTJ-67		YTJ-76		YTJ-85		YTJ-95		YDTJ-67		YDTJ-76		YDTJ-85		YDTJ-95	
		Qty.	*364-47091-002	Qty.	*364-47091-003	Qty.	*364-47091-004	Qty.	*364-47091-005	Qty.	364-47329-002	Qty.	364-47329-003	Qty.	364-47329-004	Qty.	364-47329-005
200*	Common Parts	1	*364-47091-001	1	*364-47091-001	1	*364-47091-001	1	*364-47091-001	1	364-47429-001	1	364-47429-001	1	364-47429-001	1	364-47429-001
201	Scroll, Rotor	1	064-46976	1	064-46976	1	064-46977	1	064-46977	1	064-47107	1	064-47107	1	064-47083	1	064-47083
202	Device, Prerotation	1	364-15250	1	364-15249	1	364-15255	1	364-15266	1	364-15250	1	364-15249	1	364-15255	1	364-15266
203	Impeller	1	064-46612	1	064-46613	1	064-46614	1	064-46615	1	064-46612	1	064-46613	1	064-46614	1	064-46615
204	Support, Rotor/Brg. Hsg.	1	364-46620	1	364-46620	1	364-46621	1	364-46621	1	364-46620	11	364-46620	1	364-46621	1	364-46621
205	Plate, Nozzle Base	1	064-46566	1	064-46565	1	064-46563	1	064-46564	1	064-46566	1	064-46565	1	064-46563	1	064-46564
206	Plate, Diffuser	1	064-46591	1	064-46592	1	064-46593	1	064-46594	1	064-46591	1	064-46592	1	064-46593	1	064-46594
207	Ring, Seal Impeller	1	064-20430	1	064-20431	1	064-21418	1	064-21417	1	064-20430	1	064-20431	1	064-21418	1	064-21417
208	Washer, Flat Spring	1	064-06242	1	064-05741	1	064-05683	1	064-05656	1	064-06242	1	064-05741	1	064-05683	1	064-05656
209	Ring, Ret. Oil Seal	1	064-06243	1	064-05742	1	064-05680	1	064-05588	1	064-06243	1	064-05742	1	064-05680	1	064-05588
210	Ring, Seal	1	064-20435	1	064-20435	1	064-46185	1	064-46185	1	064-20435	1	064-20435	1	064-46185	1	064-46185
211	Washer, Flat Spring	1	064-12887	1	064-12887	1	064-21429	1	064-21429	1	064-12887	1	064-12887	1	064-21429	1	064-21429
212	Ring, Retaining Int.	1	029-05601	1	029-05601	1	029-08600	1	029-08600	1	029-05601	1	029-05601	1	029-08600	1	029-08600
213	Scr., Cap 1/2-20 12 Pt. Hd.	5	021-15804	5	021-15804	5	021-12165	5	021-12165	5	021-15804	5	021-15804	5	021-12165	5	021-12165
214	Nut, Hex	3	021-00474	3	021-00474	4	021-10171	4	021-10171	3	021-00474	3	021-00474	4	021-10171	4	021-10171
215	Bearing, Gear (Front)	1	064-46622	1	064-46622	1	064-46124	1	064-46124	1	064-46622	1	064-46622	1	064-46124	1	064-46124
216	Cover, L.S. Thrust	1	064-46624	1	064-46624	1	064-46625	1	064-46625	1	064-46624	1	064-46624	1	064-46625	1	064-46625
217	Seal, O-Ring	1	028-10176	1	028-10176	1	028-10177	1	028-10177	1	028-10176	1	028-10176	1	028-10177	1	028-10177
218	Gasket	1	064-46959	1	064-46959	1	064-46960	1	064-46960	1	064-46959	1	064-46959	1	064-46960	1	064-46960
219	Scr., Cap 3/8-16 Soc. Hd.	3	021-16082	3	021-16082	3	021-16083	3	021-16083	3	021-16082	3	021-16082	3	021-16083	3	021-16083
220	Scr., Cap 3/8-16 x 1-3/4	20	021-11916	20	021-11916	24	021-11916	24	021-11916	20	021-11916	20	021-11916	24	021-11916	24	021-11916
221	PRV. Motor	1	025-17174	1	025-17174	1	025-17175	1	025-17175	1	025-17174	1	025-17174	1	025-17175	1	025-17175
222																	
223																	
224	Lever, Prerotation Internal	1	364-20399	1	364-20399	1	364-21442	1	364-21442	1	364-20399	1	364-20399	1	364-21442	1	364-21442
225	Arm, Motor	1	025-17073	1	025-17073	1	064-33690	1	064-33690	1	025-17073	1	025-17073	1	064-47075	1	064-47075
226	Ring, Fill	1	064-28284	1	064-28284	1	064-29258	1	064-29258	1	064-28284	1	064-28284	1	064-29258	1	064-29258
227	Link, Ext. PRV and Motor	2	064-28260	1	064-28260	1	064-32604	1	064-32604	2	064-28260	1	064-28260	1	064-32604	1	064-32604
228	Link Ext. PRV and Motor					1	064-28260	1	064-28260					1	064-28260	1	064-28260
229	Scr., Set No. 10 x 3/8 Hex Soc.					1	021-03910	1	021-03910					1	021-03910	1	021-03910
230	Rod, Adj. for PRV	1	064-12314	1	064-12314	1	064-09080	1	064-09080	1	064-12314	1	064-12314	1	064-09080	1	064-09080
231	Brg. Rod End	2	029-08343	2	029-08343	2	029-07015	2	029-07015	2	029-08343	2	029-08343	2	029-07015	2	029-07015
232	Scr., Cap	1	021-11742	1	021-11742	1	021-11517	1	021-11517	1	021-11742	1	021-11742	1	021-11517	1	021-11517
233	Scr., Cap	1	021-11141	1	021-11141	1	064-09078	1	064-09078	1	021-11141	1	021-11141	1	064-09078	1	064-09078
234	Fill, Piece	3	064-12328	3	064-12328	1	064-09069	1	064-09069	3	064-12328	3	064-12328	1	064-09069	1	064-09069
235	Fill, Piece					1	064-09070	1	064-09070					1	064-09070	1	064-09070
236	Nipple, Pipe 3/4 sch. 40	1	070-01455	1	070-01455	1	070-01455	1	070-01455	1	023-14778	1	023-14778	1	023-14778	1	023-14778
237	Lockwasher, Spring	1	021-10815	1	021-10815	1	021-05271	1	021-05271	1	021-10815	1	021-10815	1	021-05271	1	021-05271
238	Scr. Cap 1/4-20 x 1 Lg.	3	021-11914	3	021-11914	4	021-11914	4	021-11914	3	021-11914	3	021-11914	4	021-11914	4	021-11914
239	Scr., Cap 1/4-20 x 1-1/2 Lg.	1	021-02399	1	021-02399					1	021-02399	1	021-02399				
240	Bolt, Shoulder	1	064-28286	1	064-28286	1	064-33744	1	064-33744	1	064-28286	1	064-28286	1	064-33744	1	064-33744
241	Sealant					.001	013-01678	.001	013-01678					.001	013-01678	.001	013-01678
242	Tube, 3/4 O.D. x .049 wall	A.R.	003-00952	A.R.	003-00952	A.R.	003-00952	A.R.	003-00952	1	064-47412	1	064-47412	1	064-47412	1	064-47412
243	Nipple, Pipe 2	1	070-02092	1	070-02092	1	070-02094	1	070-02094	1	023-14530	1	025-14530	1	025-14530	1	025-14530
244	Elbow, Scr., St., 3/4 - 90°																
245	Lockwasher	20	021-08296	20	021-08296	24	021-08296	24	021-08296	20	021-08296	20	021-08296	24	021-08296	24	021-08296

### MODEL YTJ

#### COVER FOR YTJ MOTOR SUPPORT



### MODEL YDTJ

#### COVER FOR YDTJ MOTOR SUPPORT

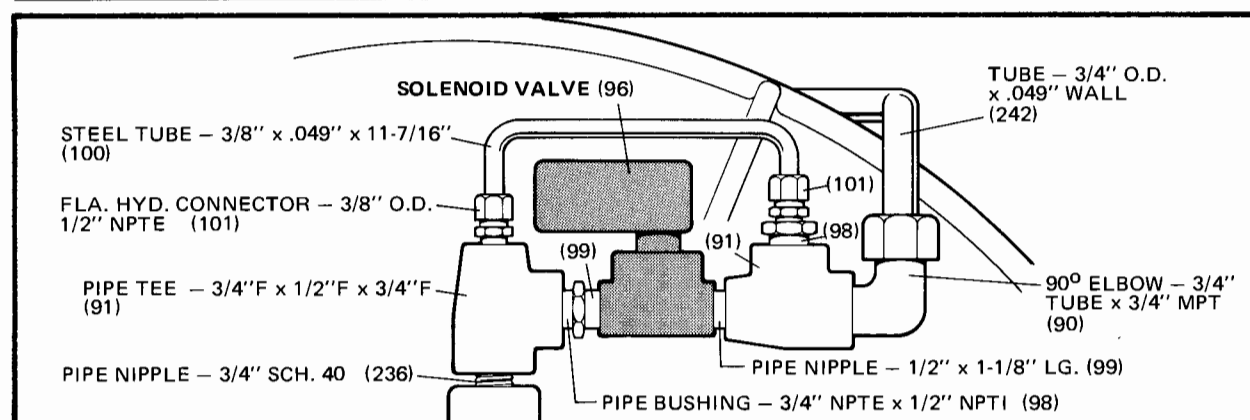
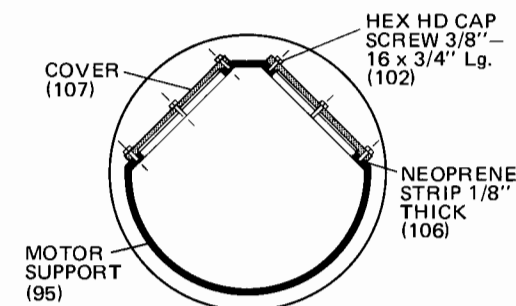


FIG. 8 — YTJ ORIGINAL DESIGN EQUALIZING LINE AND SOLENOID VALVE ASSEMBLY

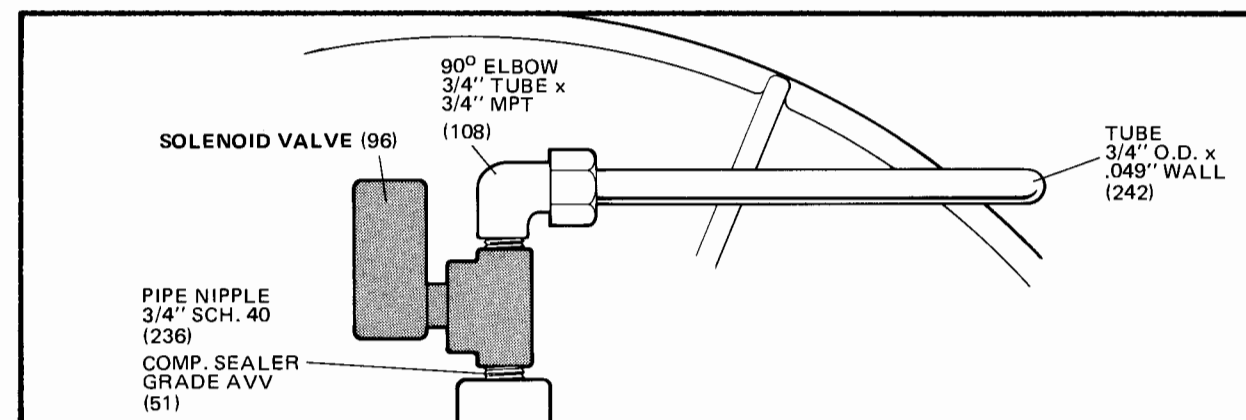


FIG. 8A — CURRENT DESIGN EQUALIZING LINE AND SOLENOID VALVE ASSEMBLY

\*NOTE: Part No. was 364-46794 and 364-46632 — To modify compressors — See Design History page 32.

## COMPRESSOR ROTOR SUPPORT

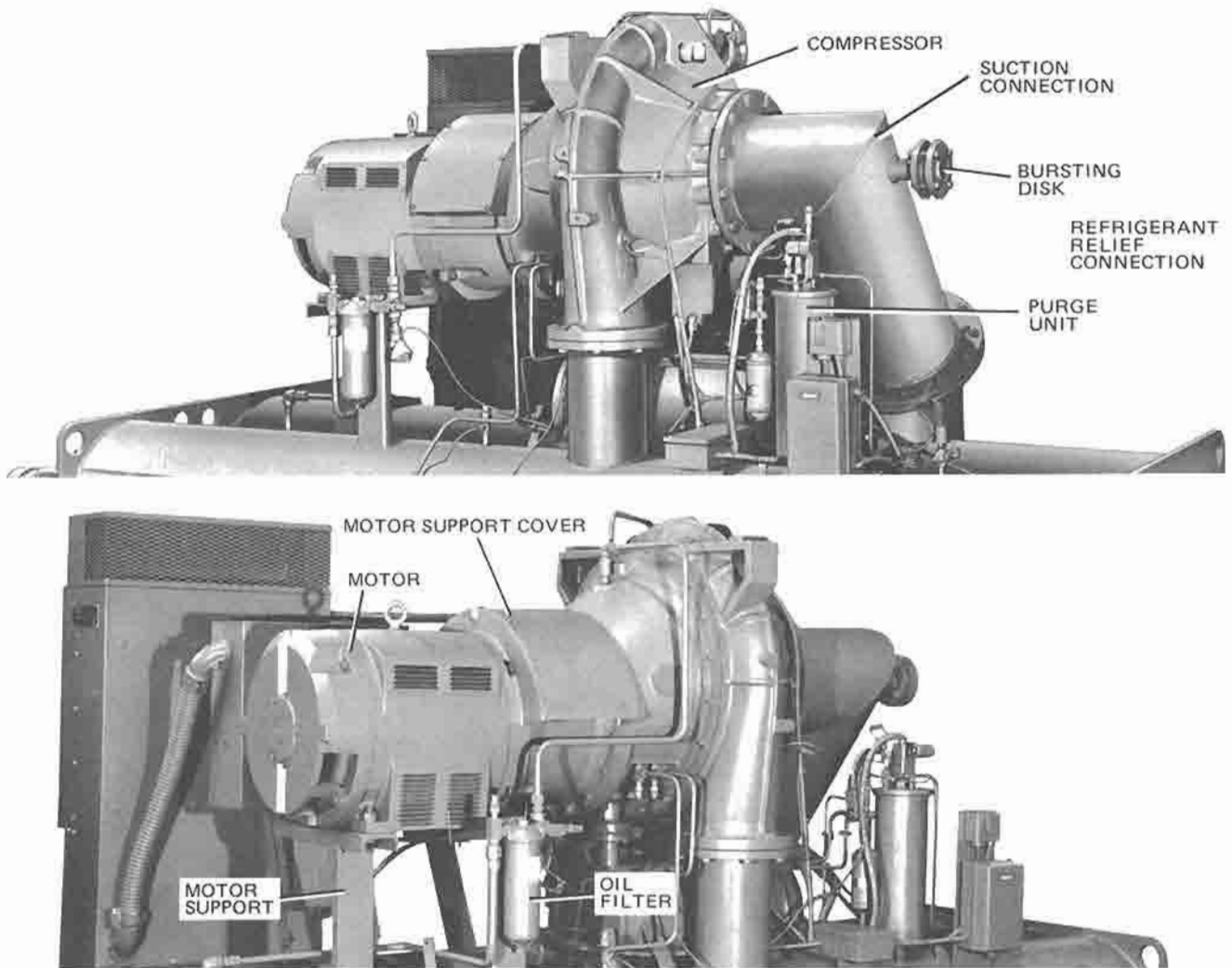


FIG. 9 — COMPRESSOR ASSEMBLY — WITH MOTOR

### DISASSEMBLY OF ROTOR SUPPORT

The following paragraphs outline the procedure for disassembling the compressor rotor support if it becomes necessary to replace internal parts:

Removing the rotor support from rotor scroll.

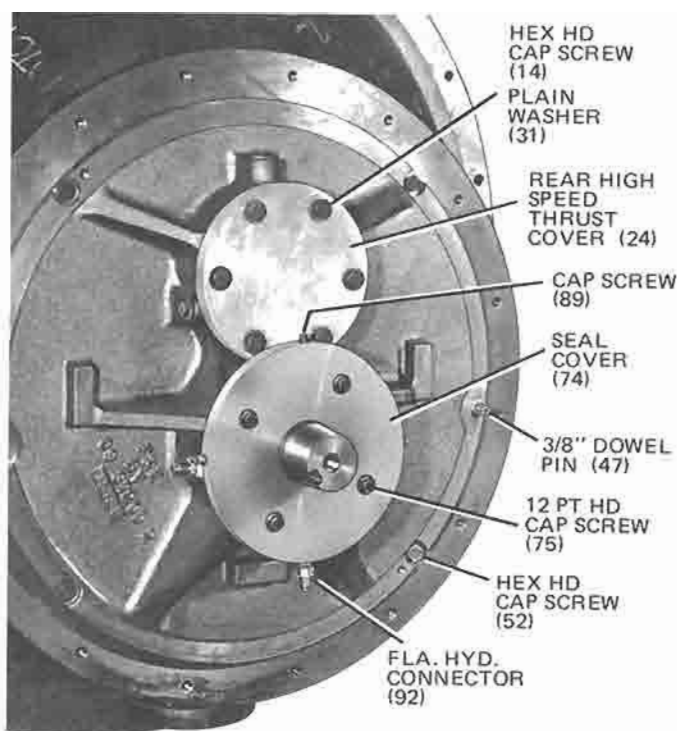
1. Follow the steps outlined under Preparation For Servicing.
2. Remove the equalizing line and solenoid valve between the top of the rotor support and the rotor scroll. Remove the lubrication connection lines and the Hex Hd. Cap Screws (1/2-13 UNC x 1-1/2 lg.) from the flange connecting the Rotor Support to the external oil sump. (Refer to Fig. 2.)
3. Support the weight of the rotor support by means of a hoist connected to an eyebolt in the top of the motor support.
4. Loosen the hex hd. cap screws 3/8"—16 UNC x 1-3/4" lg. (220) which secure the rotor support to the rotor scroll.

Remove three screws and insert guide studs (Part No. 064-18716 from tool kit). Break the flanged joint using three of the flange cap screws in the tapped holes provided for jack screws and carefully pull the rotor support out of the rotor scroll (201) (See Fig. 49). Rotate the shaft by hand while removing rotor support to prevent the impeller wheel from damaging the impeller inlet seal ring (207). Keep the rotor support suspended from the hoist with the bottom resting on a low bench for disassembly.

5. The low speed gear is drilled to receive a locking pin for holding the compressor against rotation to facilitate breaking the impeller clamping screws. Remove the plug (32) covering the locking pin hole (See Fig. 10) in the bearing housing and insert locking pin (Part No. 064-46402) from tool kit in locking pin hole, rotating shaft until gear is locked. (See page 12 for Impeller Removal).
6. Remove the low speed seal as follows:

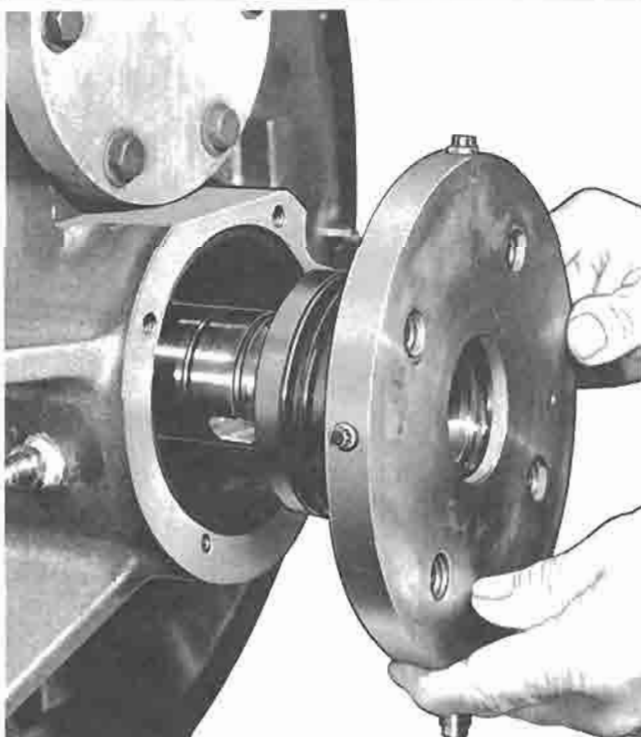
First remove the cap screw and coupling washer that attach the driven coupling half to the compressor shaft and remove driven half of coupling.

Second, to disassemble the low speed shaft seal, remove cap screws (75) and seal cover (74) with helical spring



**PIN TO LOCK GEAR** — (REMOVE PLUG AND PLACE A LOCKING PIN THROUGH HOLE IN GEAR TO PREVENT GEAR FROM ROTATING).

**FIG. 10 — REAR BEARING HOUSING**



**FIG. 11 — REAR SHAFT SEAL ASSEMBLY**

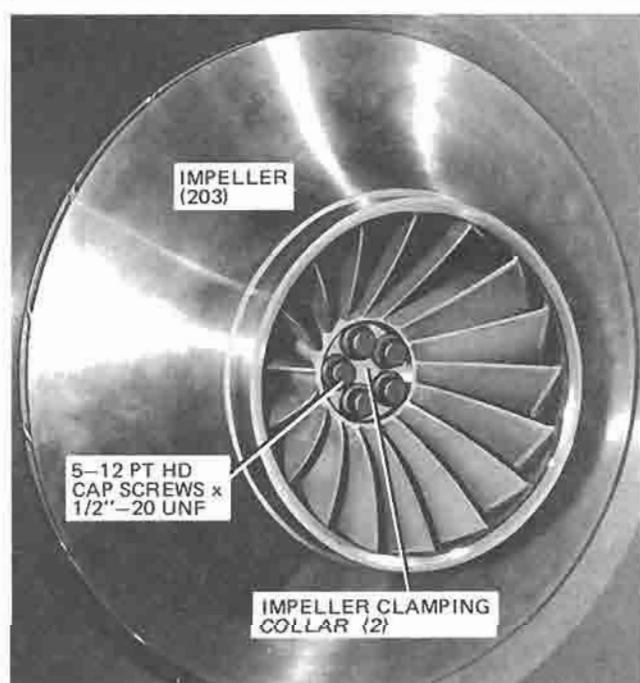
and shaft seal ring assembly (72). Then remove the cast iron collar (71) with "O" ring from the low speed gear shaft by means of the 2-1/4-20 taps. (See Fig. 28). Using two 1/4-20 UNC x 8" lg. pins (064-46499) from tool kit to pull seal. A flat bar is also provided with nuts to jack against the shaft and pull the collar from the support.

7. Remove the hex. hd. cap screws (14) and washers (31) which secure the high speed thrust cover (24). Remove the thrust cover. (See Fig. 10).

**NOTE:** Do not remove high speed thrust collar (27) at this time.

### REMOVING THE IMPELLER ASSEMBLY

1. Make sure the gear locking pin is still in place. To remove the impeller unscrew the 5-cap screws 1/2-20 UNF (213) which clamp the impeller to the hi-speed shaft. Remove the impeller clamping collar (2) and pull the impeller from the high speed gear shaft. (See Fig. 12.)



**FIG. 12 — REMOVING FRONT IMPELLER ASSEMBLY**

2. Remove the high pressure seal ring (210) by removing the retaining ring (212) and spring washer (211). (See Fig. 13).
3. From the impeller side of the rotor support, remove the three socket hex hd. cap screws 3/8-16 (219) which secure the diffuser plate (206) to the rotor support and remove the diffuser plate from the rotor support. The use of eye bolt 5/8"-UNC (021-12366) provided in the tool kit will facilitate easy removal of the diffuser plate (See Fig. 13). An "O" ring seal (4) is used at the edge of diffuser plate and the rotor support (See Fig. 2).

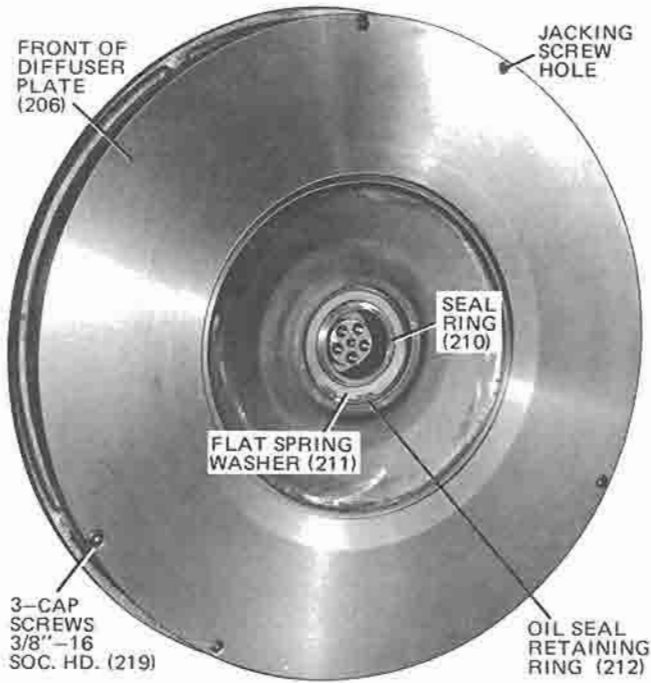


FIG. 13 — REMOVING DIFFUSER PLATE

**REMOVING THE FRONT LOW SPEED THRUST COVER, COLLAR AND LOW SPEED BEARING**

1. Remove the six hex hd. cap screws 3/8" x 1-1/4" lg. (14) and 3/8" helical spring lockwashers (15) model Y TJ or plain washers (15) model YDTJ that hold the low speed front thrust cover (216) in place. (See Fig. 14).
2. Remove the low speed thrust cover (216).

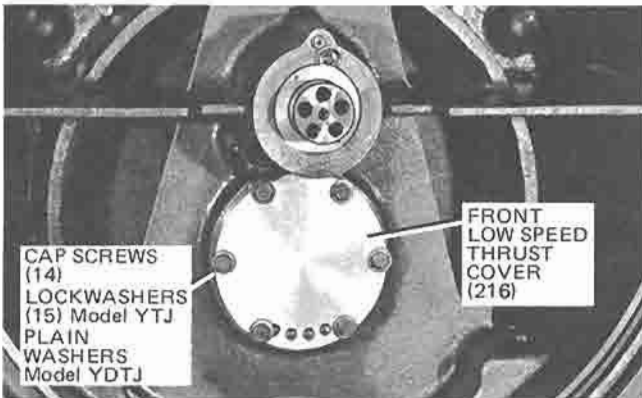
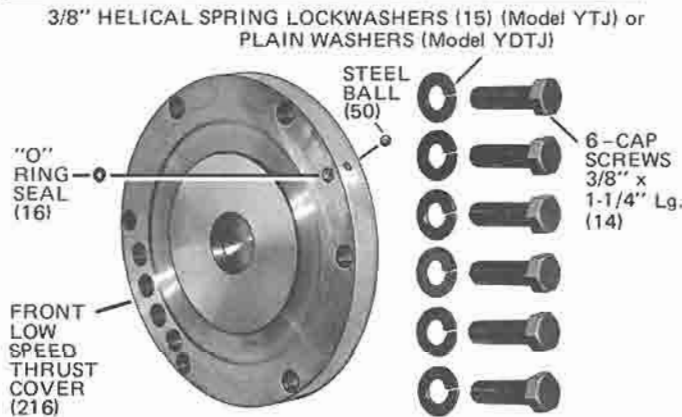


FIG. 14 — REMOVING FRONT LOW SPEED THRUST COVER

3. Lock low speed bull gear with pin.
4. Using a socket wrench remove the 12 pt. hd. cap screw 5/16" x 1-1/4" lg. (12) that fastens the low speed thrust collar (11) in place. (See Fig. 15.)
5. Remove the low speed thrust collar (11).

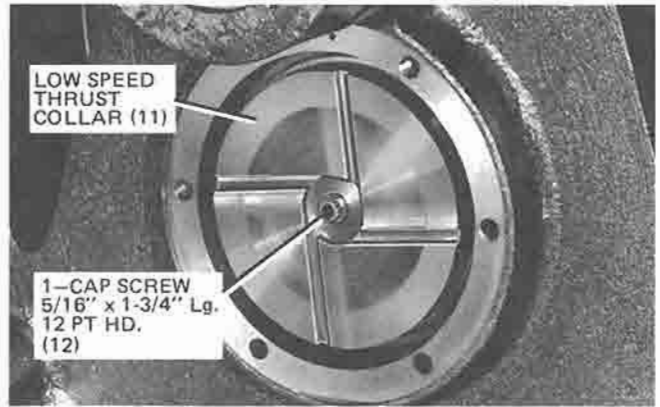


FIG. 15 — REMOVING FRONT LOW SPEED THRUST COLLAR

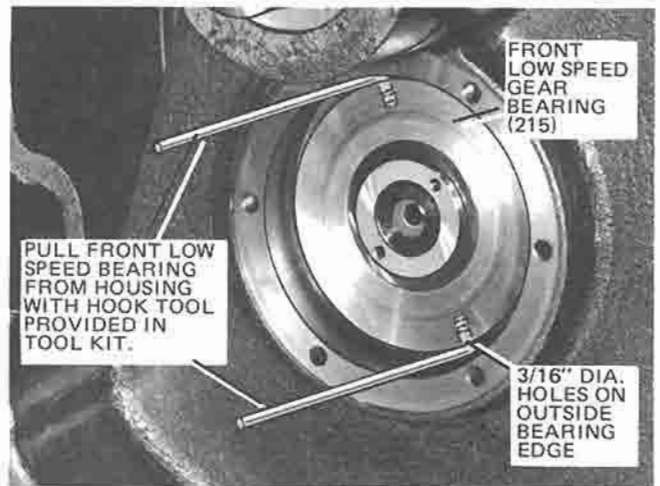
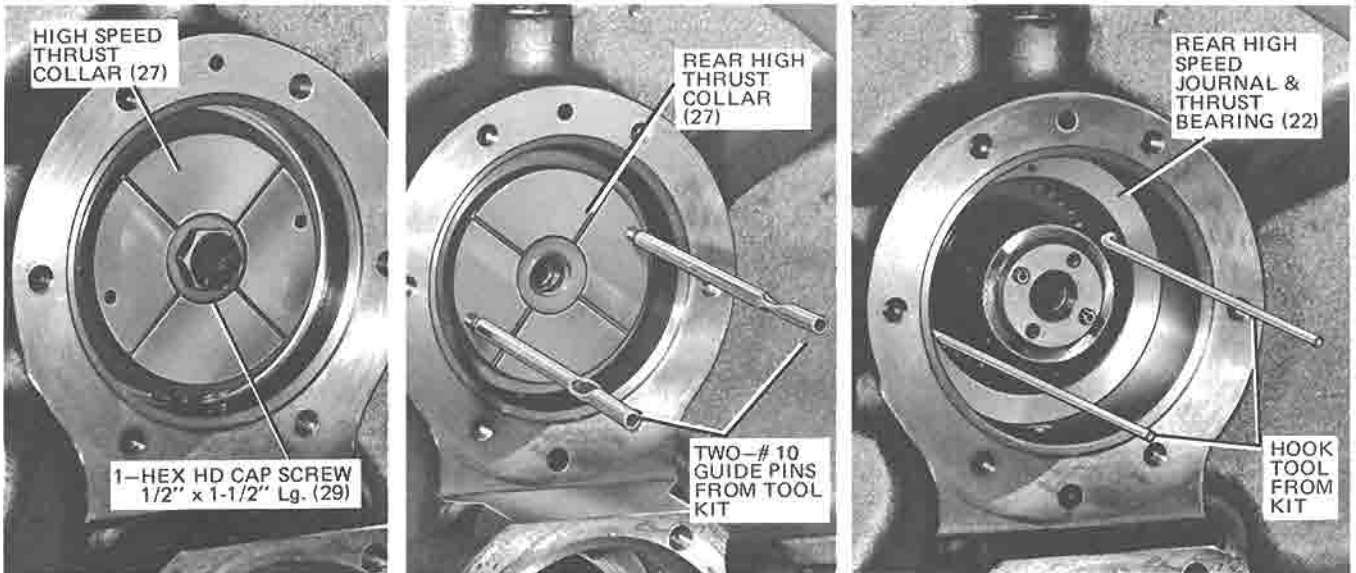


FIG. 16 — REMOVING FRONT LOW SPEED BEARING

6. Use two tool hooks 1/4" dia. provided in tool kit in the holes on the outside perimeter of the low speed gear front bearing to pull the bearing from its cavity. (See Fig. 16).
7. Re-install assembly in reverse order (See Fig. 7 ), make sure all insert pins are in place and are lined up in their respective holes and notches are lined up. Torque the 5/16 cap screw (12) to 20 ft. lbs.

**REMOVING THE REAR HIGH SPEED THRUST COLLAR AND JOURNAL BEARING**

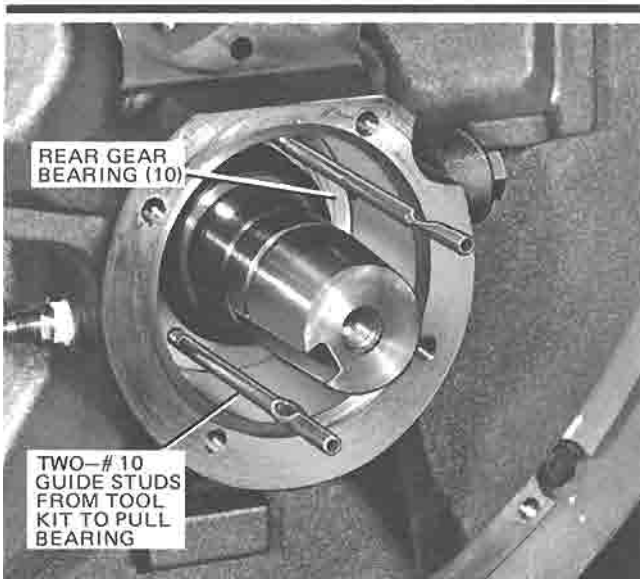
1. Use a 1/2" socket to unscrew and remove one (1) hex hd. 1/2 x 1-1/2 lg. (29) screw. With two guide pins 1/4-20 UNC (464-46499) provided in tool kit, screwed into the thrust collar pull away from the shaft. (See Fig. 17).
2. Remove the thrust and journal bearing (22) with two 1/4" hook tools provided in tool kit. Pull bearing from its cavity. (See Fig. 17).



**FIG. 17— REMOVING REAR HIGH SPEED THRUST COLLAR & HIGH SPEED JOURNAL BEARING WITH TOOL**

### REMOVING THE REAR LOW SPEED SHAFT BEARING AND BEARING HOUSING

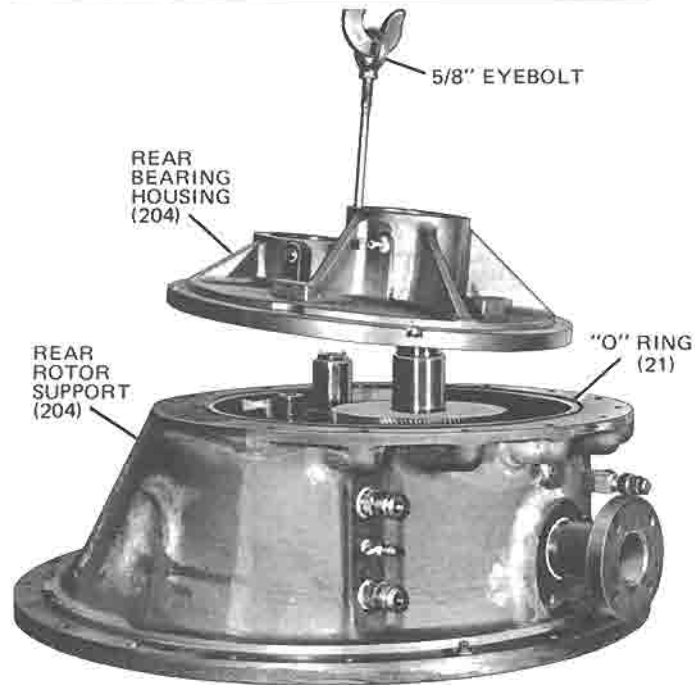
1. Carefully lower the rotor support onto a protected surface. Lay it on the impeller side and proceed as follows:
2. To remove the low speed shaft bearing;
  - a. Remove the hex hd. plug (63) and "O" ring seal (64) that hold the low speed bearings in place. (See Fig. 18).
  - b. Insert two 1/4–20 UNC guide studs (064-46499) provided in the tool kit to engage the pulling taps in the bearing then carefully remove from the housing. (See Fig. 18).



**FIG. 18 — REMOVING REAR LOW SPEED SHAFT BEARING WITH TOOL**

3. Remove 2 dowel pins (47) and the four hex hd. screws 3/8" x 1" lg. (52). Use 2 of these screws in the tapped holes to jack the bearing housing loose. (See Fig. 5).

4. Use the 5/8–11 UNC eyebolt (021-12366) provided with the tool kit. Screw it into the tapped hole in the bearing housing located in the center as shown in Fig. 19. With a hoist and hook remove the bearing housing.
5. Remove the "O" ring (21).



**FIG. 19 — REMOVING REAR BEARING HOUSING**

### REMOVING THE GEARS (See Fig. 20)

1. Rotate the high speed pinion gear as necessary to free the gear teeth while pulling the gear from the rotor support.
2. To remove the low speed gear and shaft assembly hold the shaft and pull out of the rotor support.

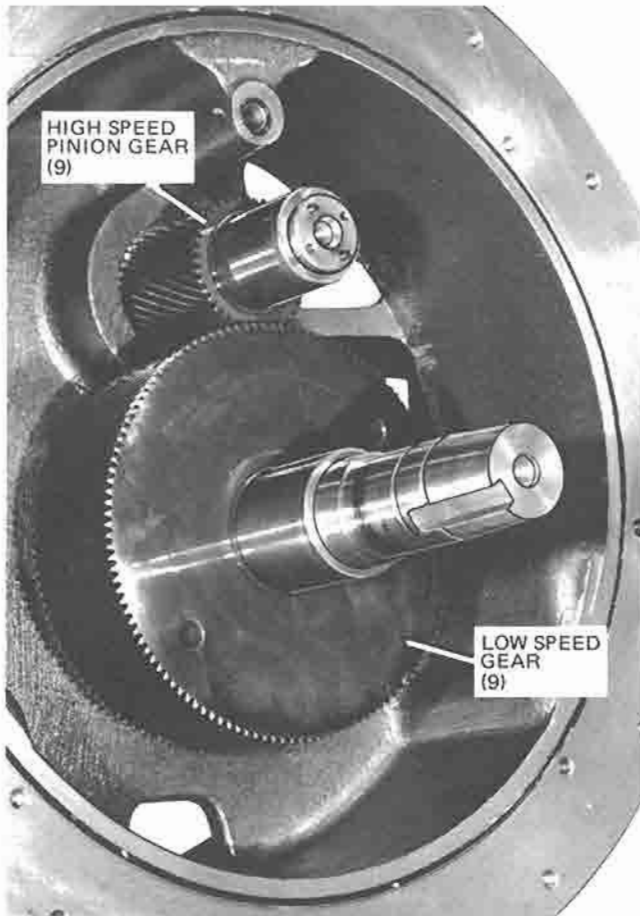


FIG. 20 — HIGH SPEED PINION GEAR (UPPER) AND LOW SPEED GEAR (LOWER)

### REMOVING THE REAR PINION GEAR MAIN SHAFT BEARING

Using 1/4" socket, remove the 12 pt. hd. cap screw 1/2"-20 x 1/2" lg. (6) and the special washer (7) which secures the pinion gear bearing (10) in position in the rotor support. Pull the pinion gear bearing (10) with No. 10-24 UNC x 6-1/2" lg. guide pins (064-46488) provided in the tool kit. (See Fig. 22).

**NOTE:** Removing the low speed gear front bearing. Refer to "Removing the Low Speed Thrust Bearing" paragraph 6 (page 13).

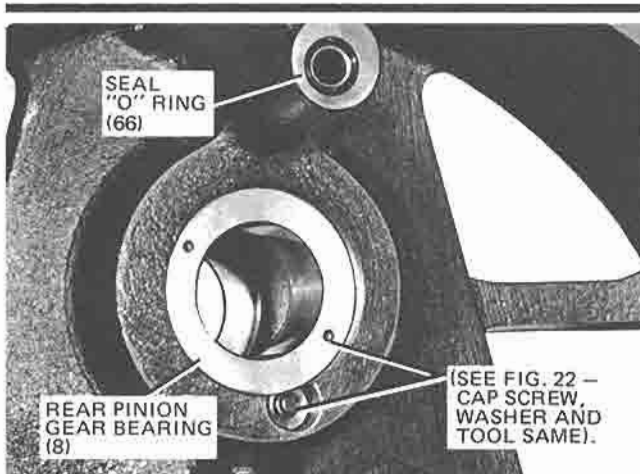


FIG. 21 — REMOVING REAR PINION GEAR MAIN BEARING

### REMOVING FRONT HIGH SPEED PINION GEAR BEARING (See Fig. 22)

1. Remove the 12 pt. hd. cap screw 1/4"-20 x 1/2" lg. (6) and the bearing retainer (7) which holds the front high speed pinion gear bearing (8) in place.
2. Using two 10-24 UNC x 6-1/2" lg. guide pins (064-46488) provided in the tool kit, screw them into the holes provided for this purpose in the front high speed pinion gear bearing (8). Pull it from its cavity.

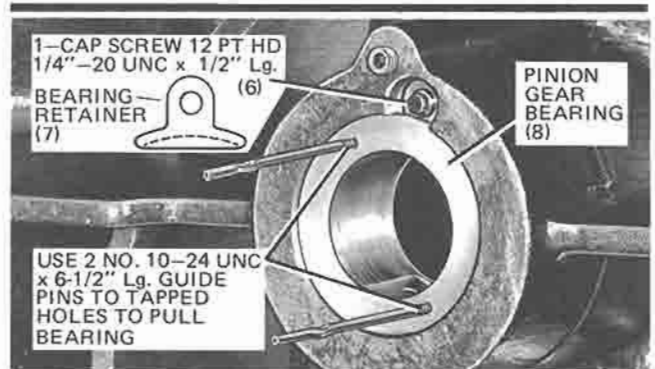


FIG. 22 — REMOVING FRONT HIGH SPEED BEARING

### REASSEMBLING THE COMPRESSOR ROTOR SUPPORT

Before assembling the compressor rotor support the section "CLEANING AND CHECKING WEARING PARTS" page 4 should be thoroughly read and understood.

To reassemble the compressor rotor support the following are some general assembly procedures:

1. All gaskets shall be renewed. Gaskets should be lubricated with a light coating of graphite and oil. "O" rings should be lubricated with a quality "O" ring lubricant or vaseline. Refer to Cutaway View (Fig. 7 and Compressor Parts List, page 9 and 10 to identify parts).
2. Bolt torques for the various size cap screws are indicated in Table 4, unless otherwise stated in instruction. Each screw shall be torqued in accordance with this table except where otherwise indicated.

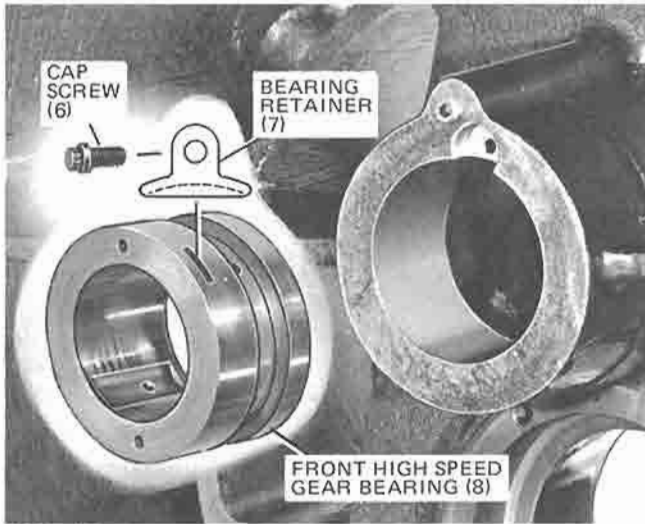
To eliminate any confusion during reassembly of the compressor the following instructions are a step-by-step procedure.

Precheck all bearings, shafts and gears for fit prior to assembly.

TABLE 4 — CAP SCREW TORQUE

BOLT SIZE (IN.)	TORQUE (FT. LB.)*
1/4"	10
5/16"	20
3/8"	35
1/2"	75
5/8"	155
3/4"	260

\*The torque values are for clean lightly oiled threads and are to be used unless specifically instructed otherwise.



**FIG. 23 — REASSEMBLING FRONT HIGH SPEED MAIN BEARING**

**REASSEMBLING THE FRONT HIGH SPEED BEARING (Refer to Fig. 23)**

Place the front high speed bearing (8) into its cavity from the impeller side of the rotor support. Push the bearing into the opening and line up the slot in the bearing with the recessed tapped hole. Place special hat shaped washer (7) into the bearing slot. Place a 12 pt. hd. 1/4-20 x 1/2 lg. cap screw (6) through the washer into the tapped hole and screw in place, tighten and torque with a socket wrench. (See Fig. 23).

**ASSEMBLY OF THE PINION GEAR REAR BEARING (Refer to Fig. 24)**

Place the pinion gear bearing (8) into the cavity in the rotor support. Push the bearing in and line up the slot for special hat shaped bearing retainer (7). Place retainer (7) into bearing slot. Insert the 12 pt. hd. 1/4"-20 x 1/2"lg. cap screw (6) through the washer into the tapped hole and screw into place. Tighten and torque with a socket wrench.

**TABLE 5 — COMPRESSOR AXIAL PLAY**

COMPRESSOR MODEL YTJ & YDTJ	LOW SPEED MIN.	AXIAL MAX.	HIGH SPEED MIN.	AXIAL MAX.
67-95	.010"	.015"	.006"	.0115

**TABLE 6 — IMPELLER WHEEL CAP SCREW TORQUE**

COMPRESSOR MODEL YTJ & YDTJ	CAP SCREW SIZE	TORQUE*
67-95	1/2"-20 UNF	See Fig. 42

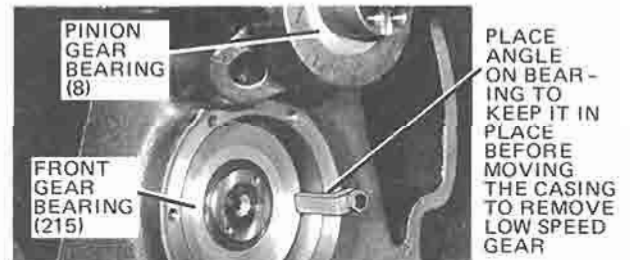
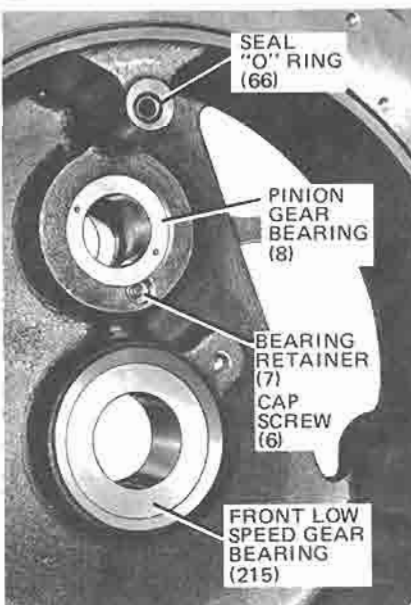
\*Using torquing sequences. See Fig. 42.

**TABLE 7 — MAXIMUM IMPELLER RUNOUT**

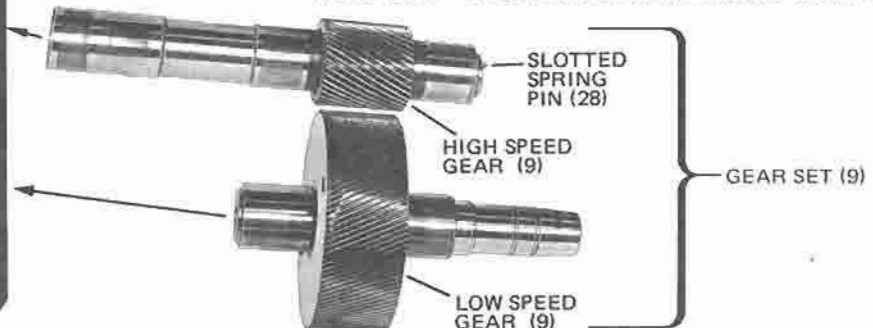
COMPRESSOR MODEL YTJ & YDTJ	RUNOUT (TOTAL INDICATOR)	
	IMPELLER EYE	IMPELLER CIRCUMFERENCE (RIM)
67	.002	.003
76	.003	.004
85-95	.003	.004

**REASSEMBLING THE LOW SPEED BEARING AND GEAR & SHAFT INTO THE FRONT ROTOR SUPPORT**

1. Place the front low speed gear bearing (215) into its cavity from the impeller side of the rotor support. (Refer to Fig. 24. Make sure insert pin (13) is in its hole. Line up the insert pin with the insert pin hole in bearing flange and push carefully into place.
2. Use an angle fastener to bearing housing to hold the front low speed bearing in place. (See Fig. 24A).
3. Place the low speed gear and shaft assembly into the low speed gear bearing from the reverse side of housing as shown in Fig. 24.



**FIG. 24A — HOLDING GEAR BEARING WITH ANGLE**



**FIG. 24 — ASSEMBLING GEARS IN ROTOR HOUSING**

## INSTALLATION OF THE REAR HIGH SPEED PINION GEAR (See Fig. 24)

Carefully assemble the high speed pinion gear into the pinion gear bearing (8). Mesh the pinion gear teeth with the low speed gear teeth. Rotate gears and carefully push the pinion into the bearing until it is properly seated.

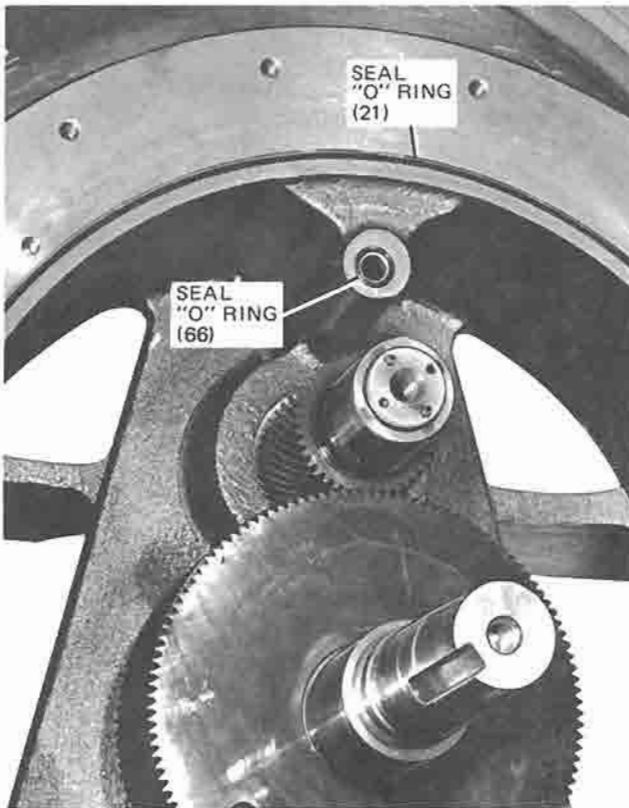
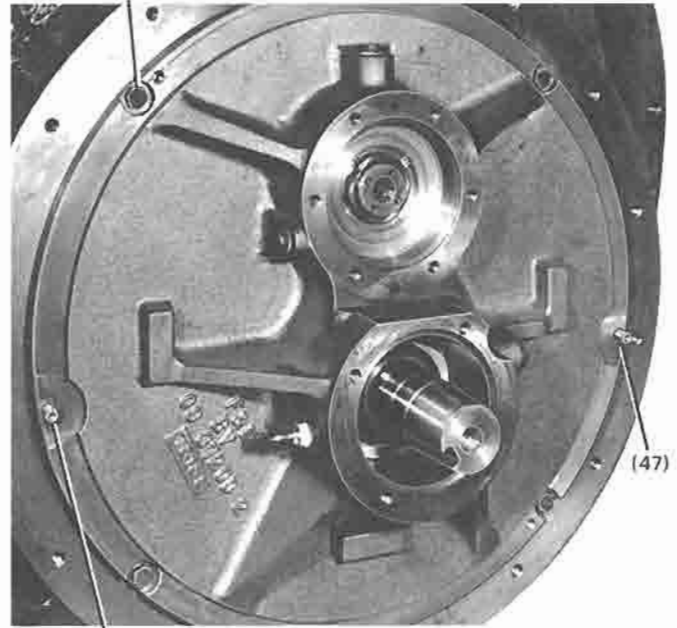


FIG. 25 — INSTALLING "O" RING ON BEARING ROTOR SUPPORT

## ASSEMBLING THE BEARING HOUSING TO THE ROTOR SUPPORT

1. Place two 3/8-16 UNC guide studs 180 degrees apart in the rotor support.
2. Install a lubricated "O" ring (21) in the groove on the rotor support. (See Fig. 25).
3. Lift the bearing housing and carefully push in place over the guide studs. Be very careful not to damage any of the machined surfaces on either the low speed gear or pinion shafts. Insert the two dowel pins (47) into the reamed holes. Leave the guide studs in position to help support the bearing housing.
4. Assemble the four 12 hex hd. cap screws 3/8-16 UNC x 1 lg. (52). Remove guide studs during the assembly of screws and tighten to the proper torque. (Refer to Table 4).

4- HEX HD. CAP SCREWS  
3/8" x 1" Lg. (52)



2-DOWEL PINS 7/8" x 2" Lg. (47)

FIG. 26 — ASSEMBLING THE BEARING HOUSING TO ROTOR SUPPORT

## INSTALLATION OF THE REAR LOW SPEED BEARING AND SHAFT SEAL (Refer to Figs. 2 & 27)

1. Oil the low speed rear gear bearing (10) thoroughly and slide it carefully over the low speed drive shaft and into the cavity of the bearing housing over the low speed gear journal. Line up the 7/16" dia. hole in the bearing with the tapped hole on the top of the cavity. Carefully screw the 9/16 hex hd. plug (63) and "O" ring seal (64) into this hole and tighten. Make sure the bearing feels loose after tightening. This plug locks low speed gear bearing in place.

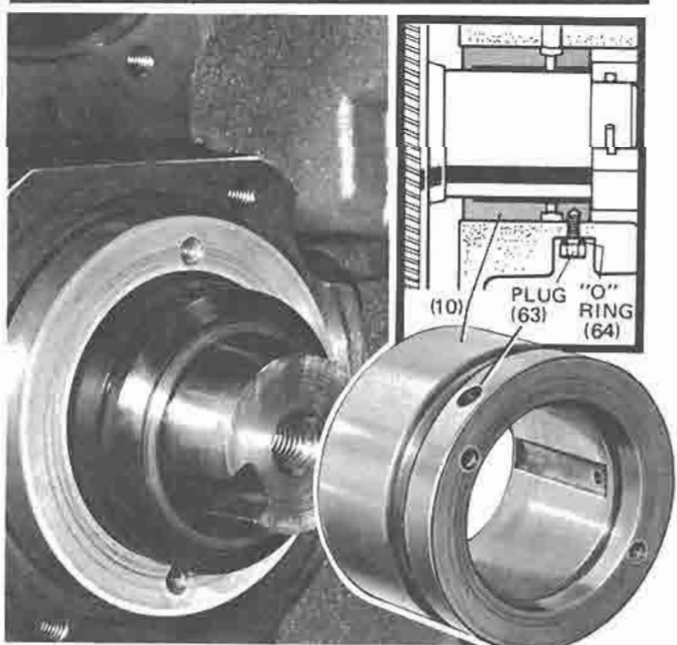


FIG. 27 — ASSEMBLING REAR LOW SPEED GEAR BEARING

## REPLACING REAR SHAFT SEAL ASSEMBLY (YT COMPRESSORS) Refer to Figs. 28 thru 32

1. Thoroughly clean the shaft seal parts prior to assembly.
2. Install green dot "O" ring (70) in "O" ring groove of shaft seal collar (71). Make sure shaft seal cavity is clean and bull gear nose is free from burrs and deep scratches. Put a light coat of refrigerant oil on the nose of the gear and on "O" ring (70). Slide new shaft seal collar (71) over nose; push and rotate simultaneously until collar seats against gear.
3. Install "O" ring (70) in "O" ring groove of shaft seal ring (72). Place spring (73) on shaft seal ring (72) making sure spring is seated flat against bottom of step as shown in Fig. (31). To install spring (73) hook end on step and hold it there while twisting spring in direction to unwind and pushing spring down against bottom of step, Fig. (31).

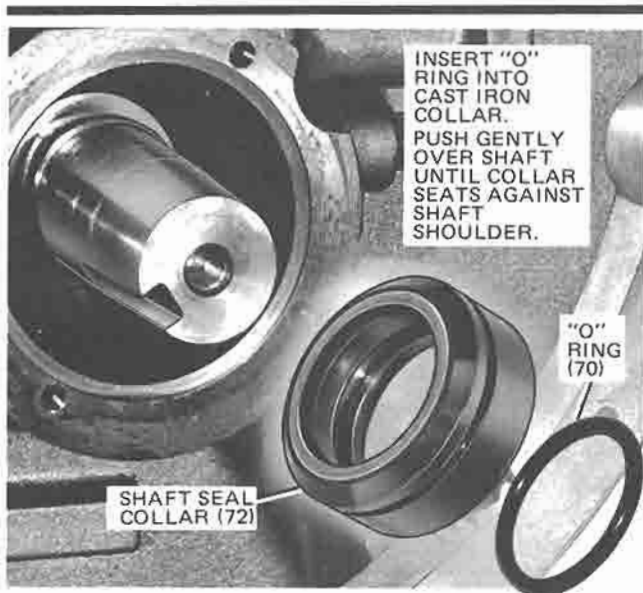


FIG. 28 — ASSEMBLING REAR SHAFT SEAL COLLAR

4. Put a light coat of oil on "O" ring (82) and nose of seal cover (74). Slide carbon shaft seal ring, with spring compressed carefully over nose of seal cover. (Keep spring compressed while installing on cover.) Hook end of spring coil over shoulder of spring pocket on coverplate and start spring for distance of about 1-1/2 inch. Insert screwdriver between 2nd and 3rd coils of spring at a point 180 degrees from starting point and pry out on first coil to snap it over edge of pocket, Fig. (31). Repeat this step at a point about 330 degrees from start of coil. This will start first coil over edge of pocket or shoulder. Press this coil down so the flat of spring is seated on cover as shown in Fig. (32).
5. By pressing on outer edges of seal ring (72) (not on lapped surface), compress spring. Release tension slowly and observe movement of seal ring on cover. There should be no sticking or binding of movement.
6. Install new "O" ring on coverplate (74) with a light coat of oil on coverplate.
7. A layer of masking tape around compressor drive shaft will protect seal face during installation. Insert 2 guide studs. Coat the coverplate "O" ring (82) and the sealing faces of the two seal rings (cast iron collar) and carbon shaft seal with a thin film of oil.
8. Gently ease the shaft seal assembly into place. When the carbon contacts the collar press the coverplate to seat the coverplate "O" ring and compress the spring. Keeping spring firmly compressed, remove guide studs, insert and tighten coverplate 12 pt. head cap screws (75) one at a time.
9. Manually turn compressor shaft counterclockwise to seat, and align the seal components.
10. Couple motor to compressor. Refer to page 26, "Assembling the Coupling".

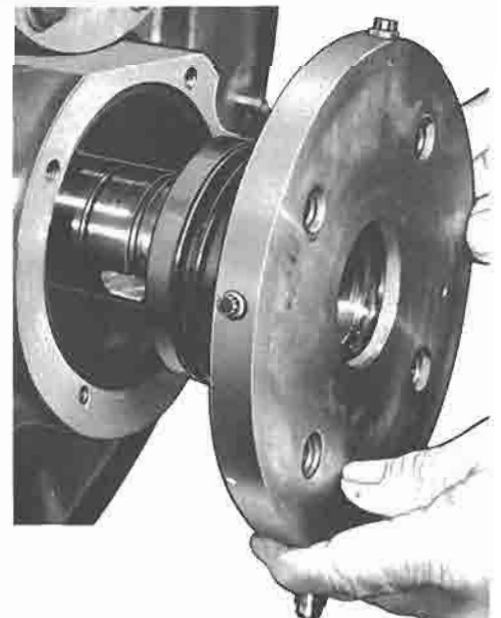
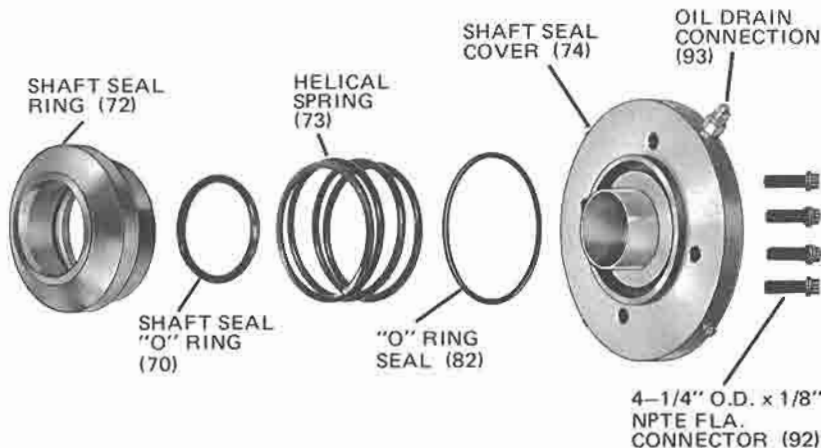


FIG. 29 — REAR LOW SPEED SHAFT SEAL ASSEMBLY

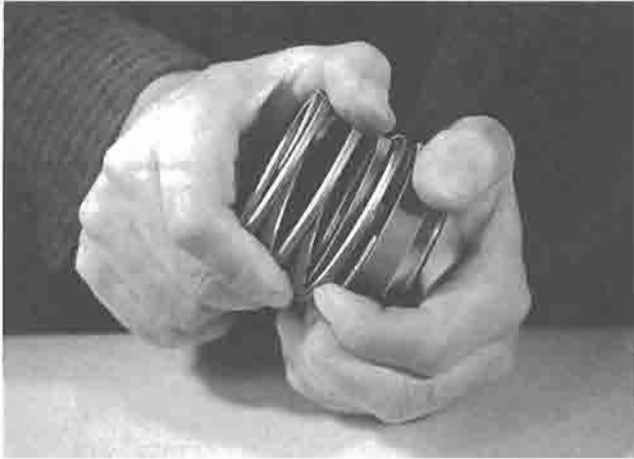


FIG. 30 — ASSEMBLING SPRING AND SEAL RING

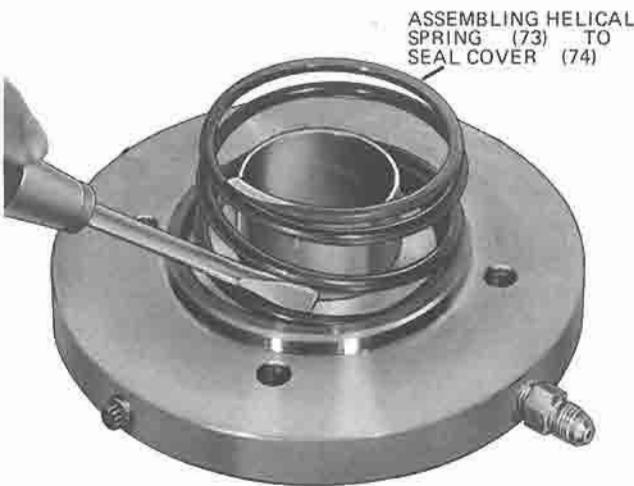


FIG. 31 — ASSEMBLING CARBON RING AND SPRING TO REAR COVERPLATE

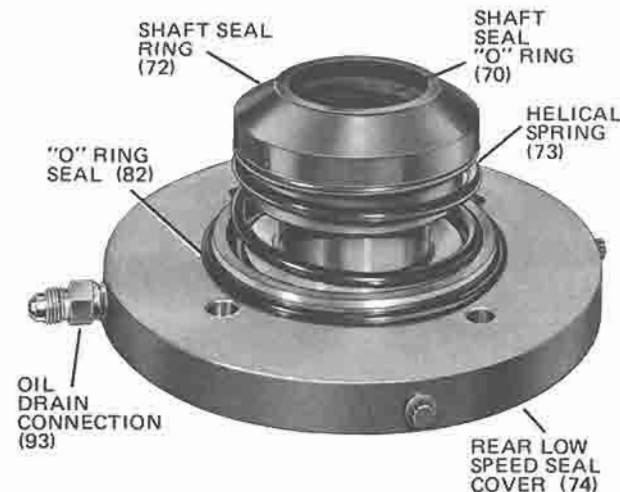


FIG. 32 — REAR LOW SPEED SHAFT SEAL COMPLETELY ASSEMBLED

**ASSEMBLING REAR HIGH SPEED THRUST BEARING (See Fig. 33)**

1. Oil the high speed thrust bearing (22) and insert into the bearing housing over the pinion gear bearing surface. Make sure the bearing is seated properly over the insert pin (13) in the housing. (Fig. 33).

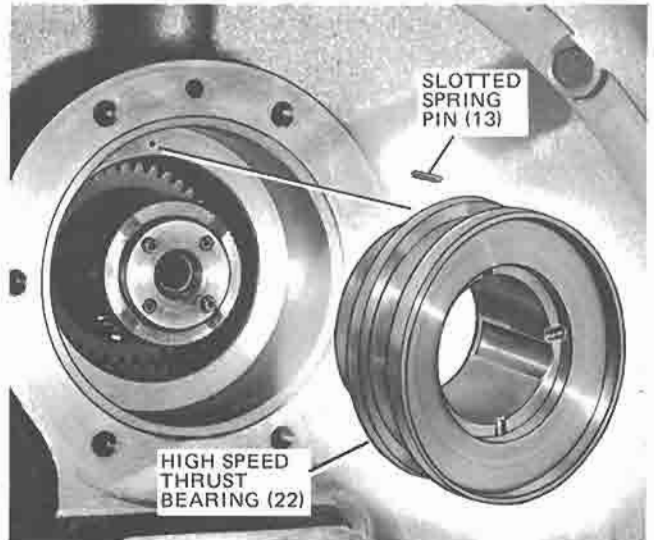


FIG. 33 — ASSEMBLING REAR HIGH SPEED THRUST BEARING

2. Place two slotted pins (28) in the end of the high speed pin gear shaft. Then insert the thrust collar (22) into its cavity over the end of shaft. Line up two holes thrust collar with the pins and press into place. (See Fig. 34.) Insert the hex hd. cap screw 1/2 x 1-1/4 lg. (29). Screw into place and tighten. Torque per Table 4.

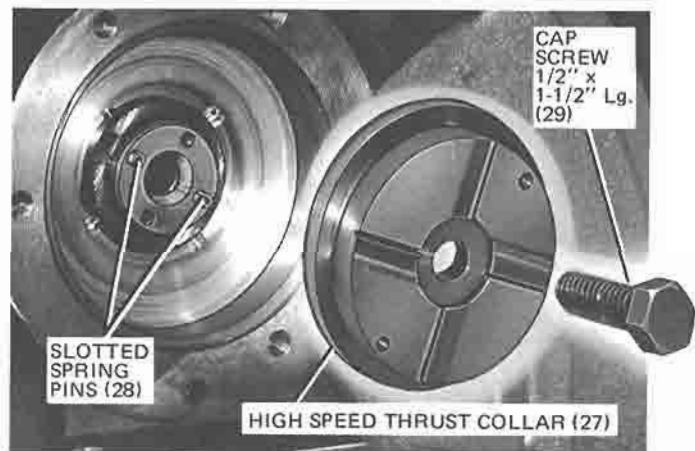


FIG. 34 — ASSEMBLING REAR HIGH SPEED THRUST COLLAR

TABLE 8 — THRUST RUNOUT  
(Total Indicator Reading – T.I.R.)

COMPRESSOR MODEL	REVERSE HIGH SPEED THRUST	FORWARD LOW SPEED THRUST
67, 76, 85, 95	.0005	.001

## ASSEMBLING THE FRONT LOW SPEED THRUST COLLAR (See Fig. 35)

To install the low speed thrust collar (11) line up the screw hole on the low speed shaft. Insert one left hd. hex cap screw 5/16 x 1-3/4 lg. (12). Tighten screw and torque in accordance to Table 4. Rotate shaft to make sure it is free to move on the bearing service.

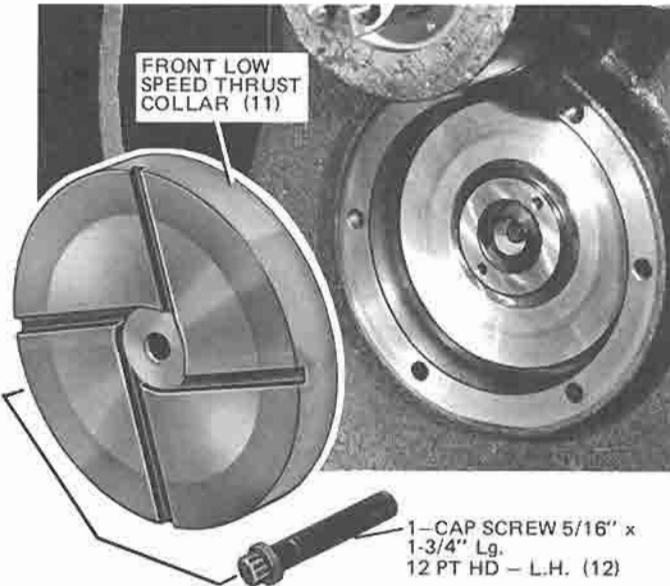


FIG. 35 — ASSEMBLY OF FRONT LOW SPEED THRUST COLLAR

## CHECKING THE REAR HIGH SPEED THRUST COLLAR FACE AND FRONT LOW SPEED THRUST COLLAR FACE FOR RUN-OUT

### Rear High Speed Thrust Collar Face

Mount a dial indicator per Fig. 36 to check the high speed thrust collar run-out. Measure at the outermost face diameter of thrust collar. Rotate shaft to check runout in accordance with Table 8.

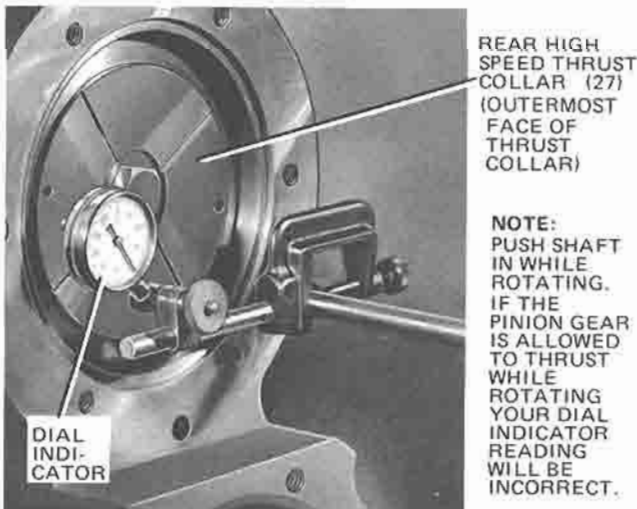


FIG. 36 — CHECKING REAR HIGH SPEED THRUST COLLAR FACE

### Front Low Speed Thrust Collar Face

Mount the dial indicator per Fig. 37 to check the forward low speed thrust collar face. Measure at the outermost face diameter of thrust collar. Rotate shaft to check runout in accordance with Table 8.

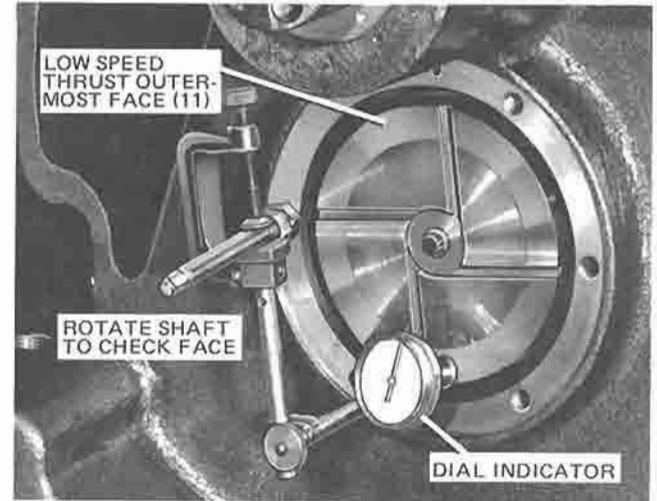


FIG. 37 — CHECKING THE FORWARD LOW SPEED THRUST COLLAR FACE FOR RUN-OUT

## ASSEMBLING THE FRONT LOW SPEED THRUST COVER (Refer to Fig. 38)

Place "O" ring (16) in the groove around the lubrication hole in the low speed thrust cover (216). Place the cover over the thrust collar face and line up holes. MAKE SURE THE LUBRICATION HOLE IN THE COVER IS ALIGNED WITH THE LUBRICATION PASSAGE HOLE IN ROTOR HOUSING. Insert right hex hd. cap screws 3/8 x 1-1/4" lg. (14) in holes and lockwashers (31) and tighten. Torque per Table 4.

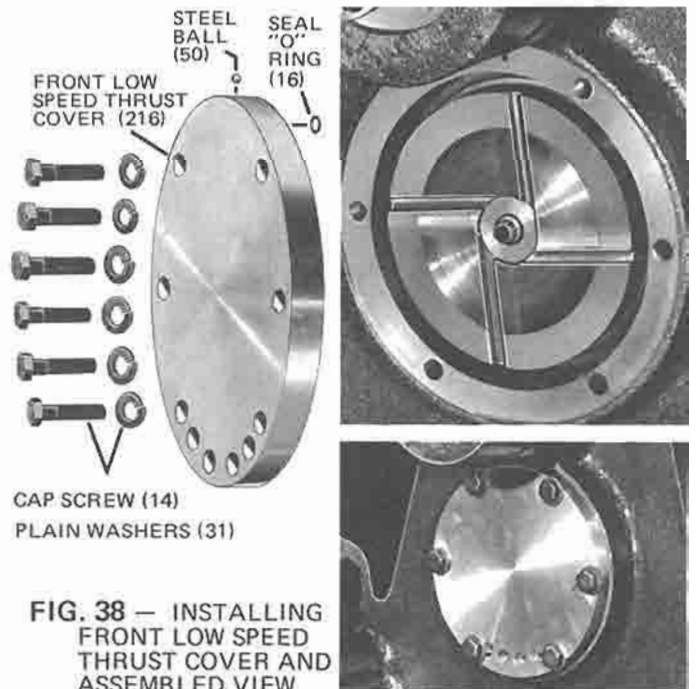


FIG. 38 — INSTALLING FRONT LOW SPEED THRUST COVER AND ASSEMBLED VIEW

## INSTALLING THE DIFFUSER PLATE AND HIGH PRESSURE SEAL

1. Install "O" ring (217) around the perimeter of the rotor housing.
2. Install two 3/8-16 UNC guide studs (064-18716 from the compressor tool kit) in the rotor support casing. (See Fig. 39).
3. Install the diffuser plate (206) over the guide studs. (See Figs. 39 & 40.)

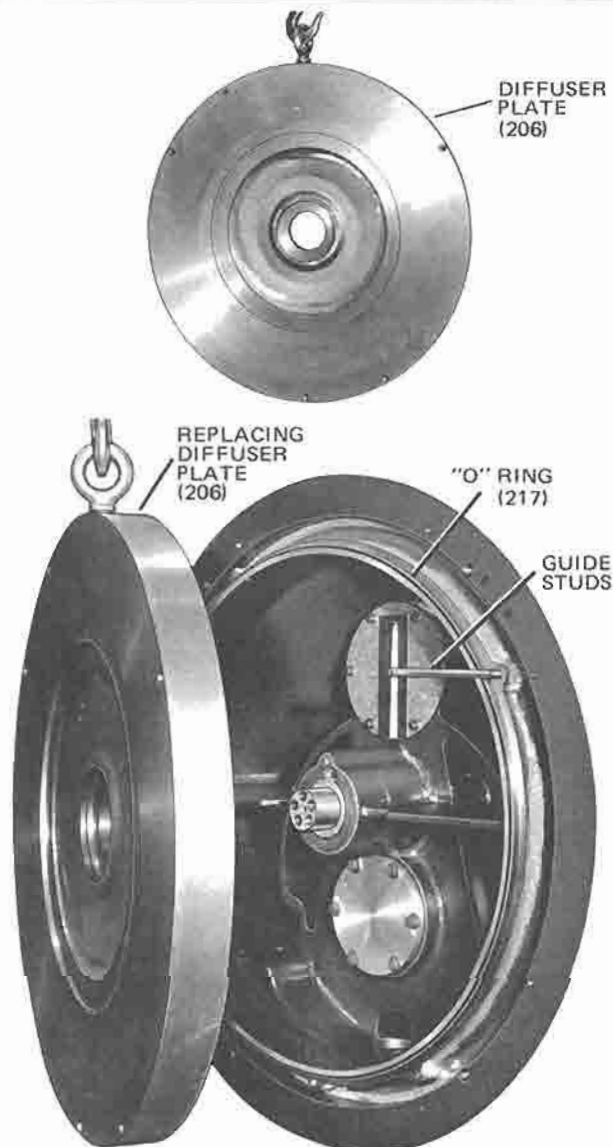


FIG. 39 — REMOVING AND REPLACING DIFFUSER PLATE

4. Install the socket hd. hex cap screws 3/8-16 UNC (219) to hold the diffuser plate in place. (Refer to Figs. 39.) Remove guide studs and replace with socket hd. cap screws tightened with a torque wrench. Torque in accordance with the specified screw size, refer to Table 4.
5. Assemble the high pressure seal ring (210) and the flat spring washer (211) into the diffuser plate using the retaining ring (212) to hold them in place. (Refer to Fig. 40 for the proper location and position.)

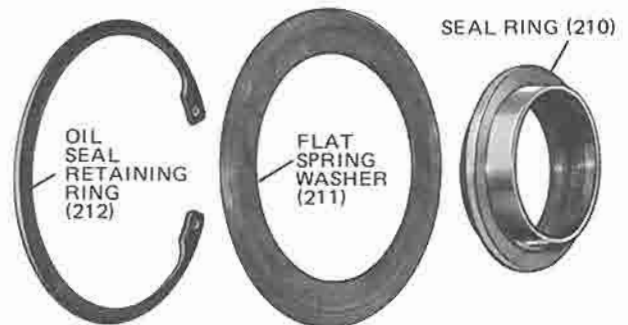
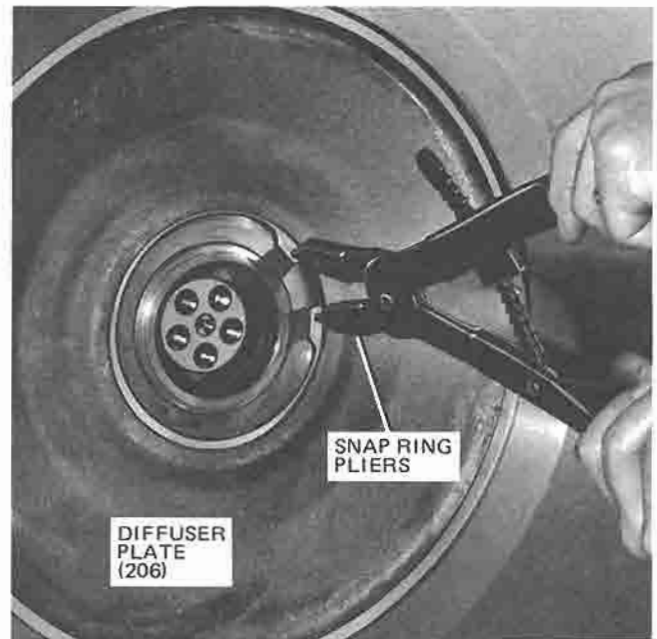
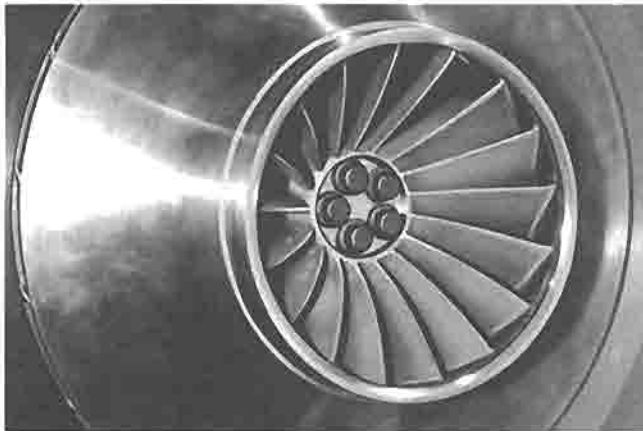
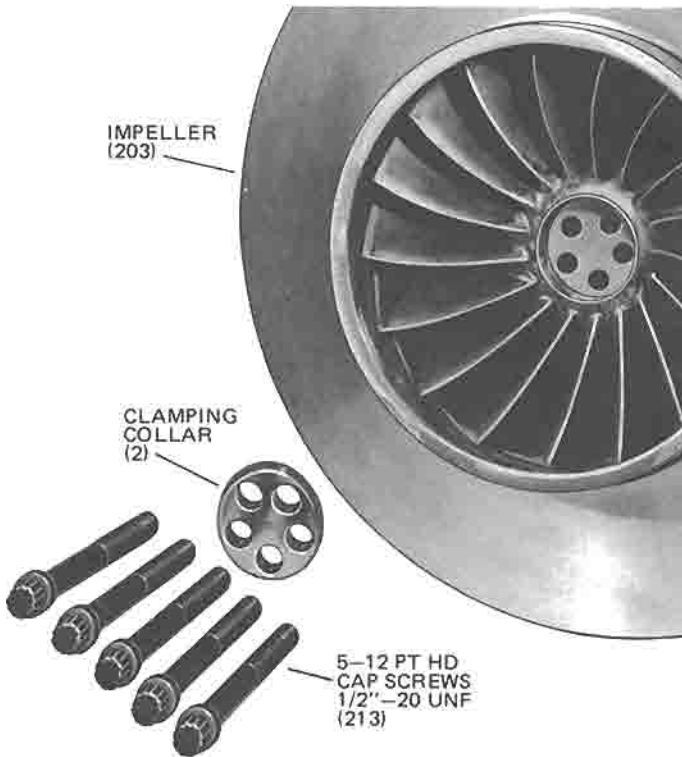


FIG. 40 — ASSEMBLING DIFFUSER PLATE AND HIGH PRESSURE SEAL

## ASSEMBLING THE IMPELLER

Impeller should be assembled per attached procedure.

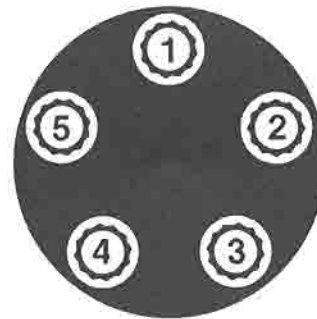
1. Place the locking pin (064-46402 from the compressor tool kit) through the locking pin hole provided in the bearing housing. (See Fig. 10). Rotate the shaft until the locking pin contacts the hole in the low speed gear. Push the locking pin until it locks the gear in place. This will keep the entire gear assembly, low speed and high speed, from rotating.
2. Assemble the impeller (203) with special washer (2), and five 12 pt. hd. 1/2-20 UNF cap screws (213) to the impeller end of the high speed shaft. (See Fig. 41.)
3. Torque cap screw as follows:
  - a. Apply the torque of 120 ft. lbs. in (3) equal steps. (Torque one skip one sequence).
  - b. Indicate impeller. If T.I.R. deviates from Tab 7, increase torque to 140 ft lbs. max. to the bolts opposite to the high T.I.R.
  - c. Check the impeller runout. (See Checking the Impeller Runout, page 24).
4. Remove the locking pin and replace the plug (52) in the bearing housing. Tighten with a wrench.



**FIG. 41 — INSTALLING IMPELLER TO HIGH SPEED SHAFT**



**REFERENCE DIAGRAM**



**SEQUENCE ORDER**

1-3-5-2-4

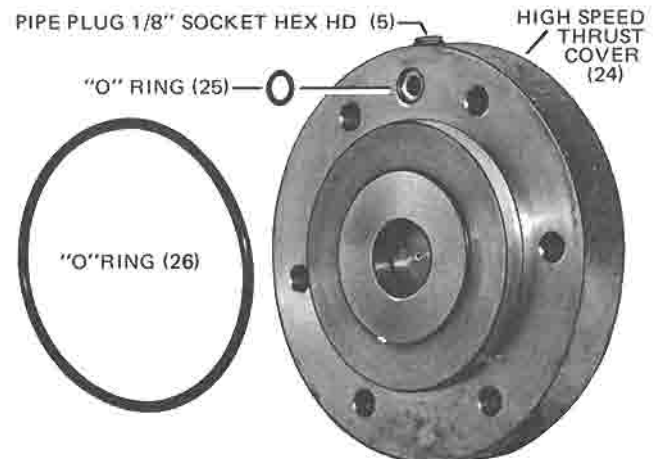
1. APPLY THE TORQUE OF 120 FT. LBS. IN THREE EQUAL STEPS BY FOLLOWING THE SEQUENCE IN THE REFERENCE DIAGRAM.
2. INDICATE IMPELLER, IF T.I.R. DEVIATES FROM TABLE 7. INCREASE TORQUE TO 140 FT. LBS. MAXIMUM ON THE BOLTS OPPOSITE TO THE HIGH T.I.R.

(T.I.R.—Total Indicator Reading)

**FIG. 42 — TORQUING IMPELLER SCREWS**

**ASSEMBLING THE REAR HIGH SPEED THRUST COVER**

1. Place the high speed thrust cover (24) with "O" ring (26) in position over the high speed thrust cavity. (Make sure the "O" ring (25) is in its cavity around the small hole in flange and plug (5) is installed and tightened.) (See Fig. 43.)
2. Place six hex hd. cap screws 3/8-16 x 1-1/4 lg. (14) with washers (31) into the holes. Tighten and torque per Table 4. (See Figs. 44 & 45.)
3. Check axial thrust play (Refer to Checking Axial Thrust Play, page (23).



**FIG. 43 — INSTALLING "O" RING & PLUG IN REAR HIGH SPEED THRUST COVER**

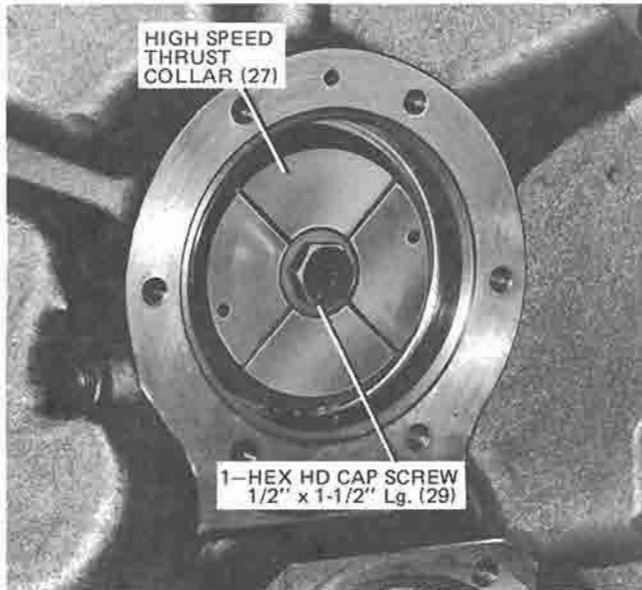


FIG. 44 — ASSEMBLY OF REAR HIGH SPEED THRUST COVER

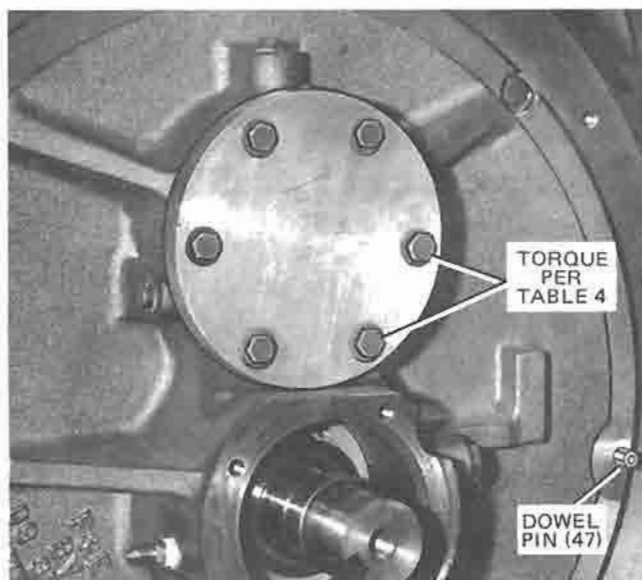
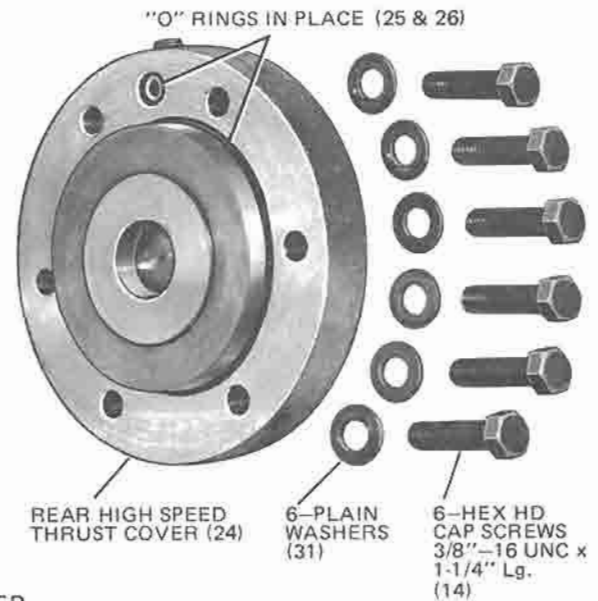


FIG. 45 — TORQUE REAR HIGH SPEED THRUST COVER

### CHECKING THE AXIAL PLAY (Refer to Figs. 46 & 47)

The total axial play of the low speed and high speed shafts is shown in Table 5 — COMPRESSOR AXIAL PLAY.

The axial play of the low speed shaft can be checked by placing a dial indicator on the end of the low speed shaft and observing the difference in the indicator reading as the shaft is pushed and pulled through its axial travel. (See Fig. 46.)

The axial play of the high speed shaft can be checked by placing a dial indicator on the end of the impeller inlet and observing the difference in the indicator reading as the impeller is pushed and pulled through its axial travel. (See Fig. 47.)

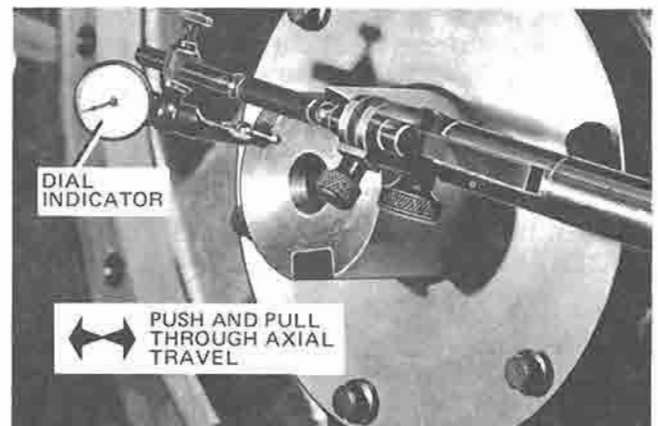


FIG. 46 — CHECK AXIAL PLAY ON REAR LOW SPEED SHAFT

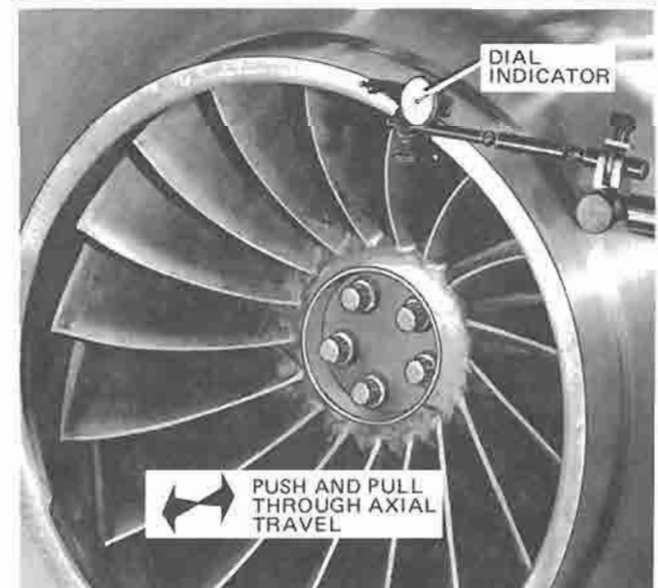
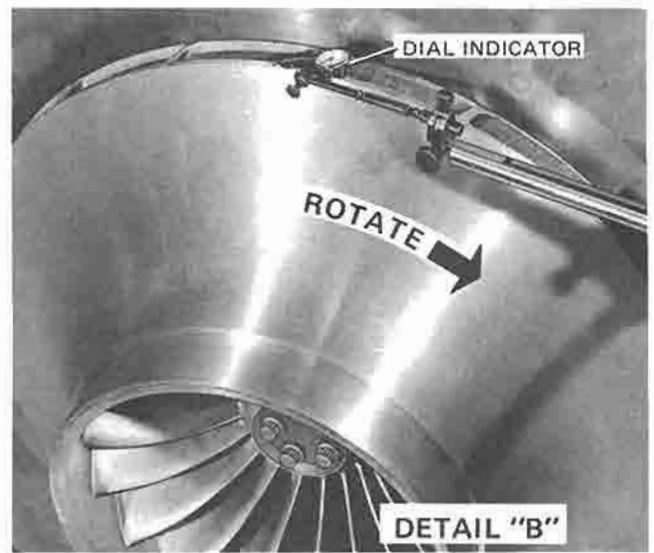
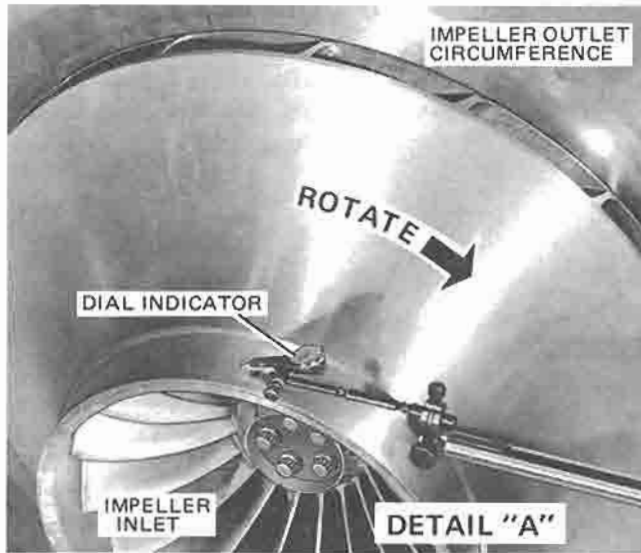


FIG. 47 — CHECKING AXIAL PLAY ON FRONT HIGH SPEED SHAFT



**FIG. 48 — CHECKING IMPELLER RUNOUT AT INLET**

### CHECKING THE IMPELLER RUNOUT (Refer to Fig. 52)

With a dial indicator indicating first on the impeller inlet, then on the outside circumference of the impeller, rotate the high speed shaft and check the runout of the impeller inlet (Fig. 48, Detail A) and outlet circumferences (Fig. 48, Detail B) to be sure these runouts are within the tolerances shown in Table 7. Detail A illustrates the dial indicator mounted for checking runout of the impeller inlet and

Detail B illustrates runout of the impeller circumference.

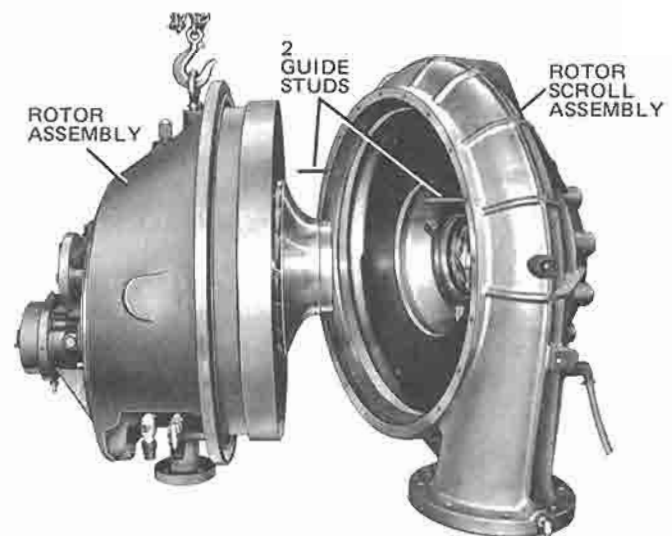
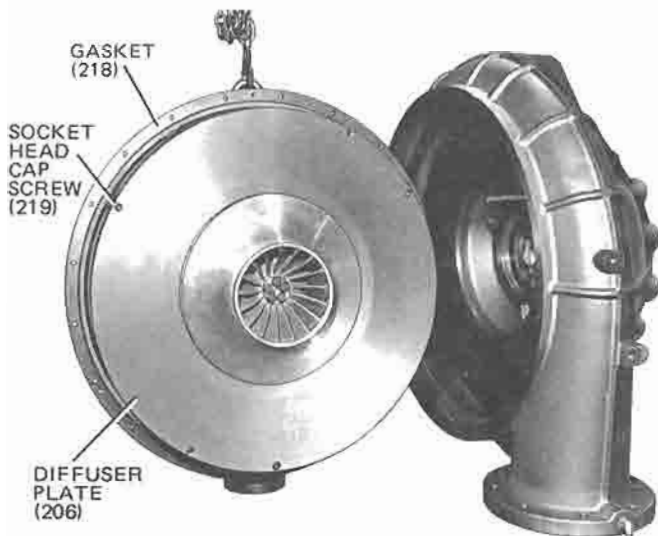
If the runout is not within the limits specified in Table 7, remove the impeller and carefully clean the mating surface between the high speed shaft and the impeller and between the impeller and the clamping collar. Carefully check the mating surface and the mounting screw holes in the impeller for burrs. Then reinstall the impeller and recheck the runout.

### INSTALLING THE ROTOR SUPPORT TO THE SCROLL (Refer to Fig. 49)

1. Before installing the assembled rotor support in the scroll be sure the impeller seal ring is centered. The position of this ring can be measured by means of a sacle — top, bottom, and both sides. Place gasket (218) around the flange I.D. of the rotor casing.
2. To facilitate the rotor support installation, screw three 3/8–16 UNC (064-18716 from compressor tool kit)

guide studs into three of the tapped holes, 120 degrees apart, in the rotor scroll, then carefully slide the rotor support, into position on the guide studs, rotating the shaft as the impeller enters the seal rings. Place the 12 pt. hd. cap screws 3/8–16 x 1-3/4 lg. (220) in the holes and tighten, then remove the guide studs and replace with 12 pt. hd. screws. Torque all screws in accordance to the specified torque in Table 4.

3. Replace equalizing line and solenoid valve between the top of rotor support and the rotor scroll. (See Fig. 8).



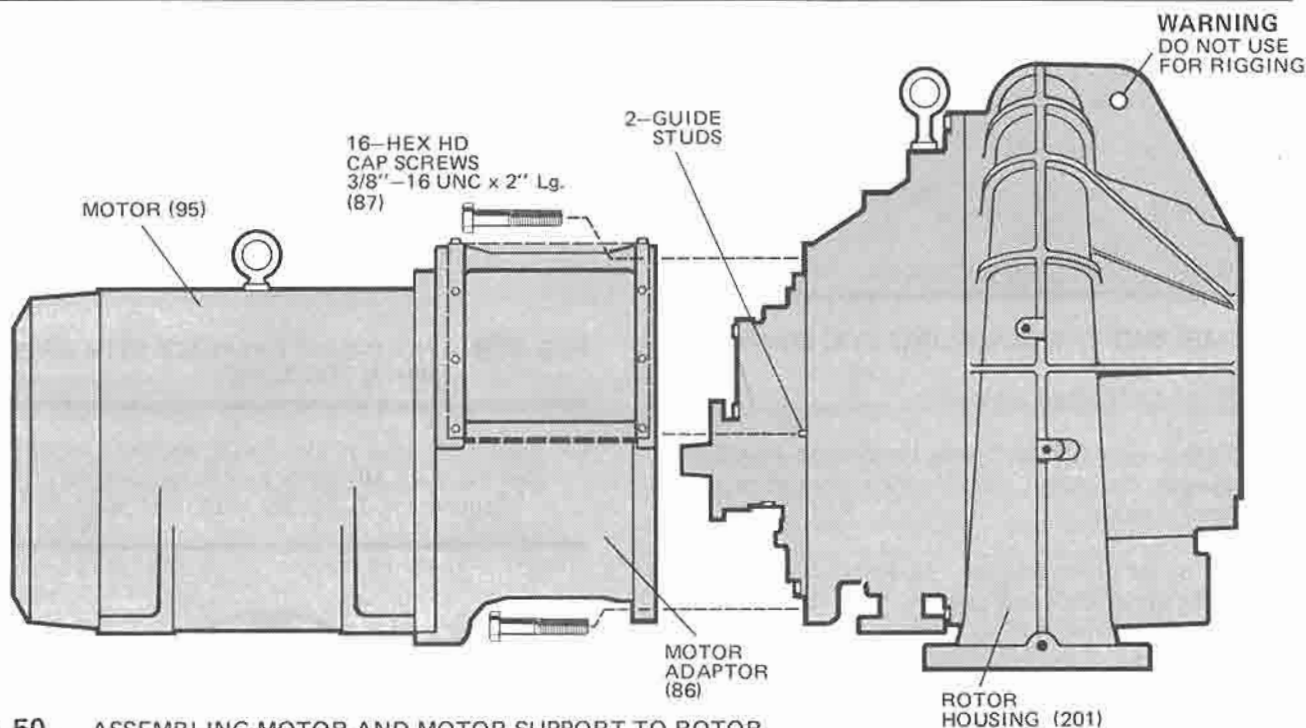
**FIG. 49 — ASSEMBLING ROTOR SUPPORT TO SCROLL**

**ASSEMBLING MOTOR AND MOTOR ADAPTOR TO ROTOR SUPPORT (Refer to Fig. 50)**

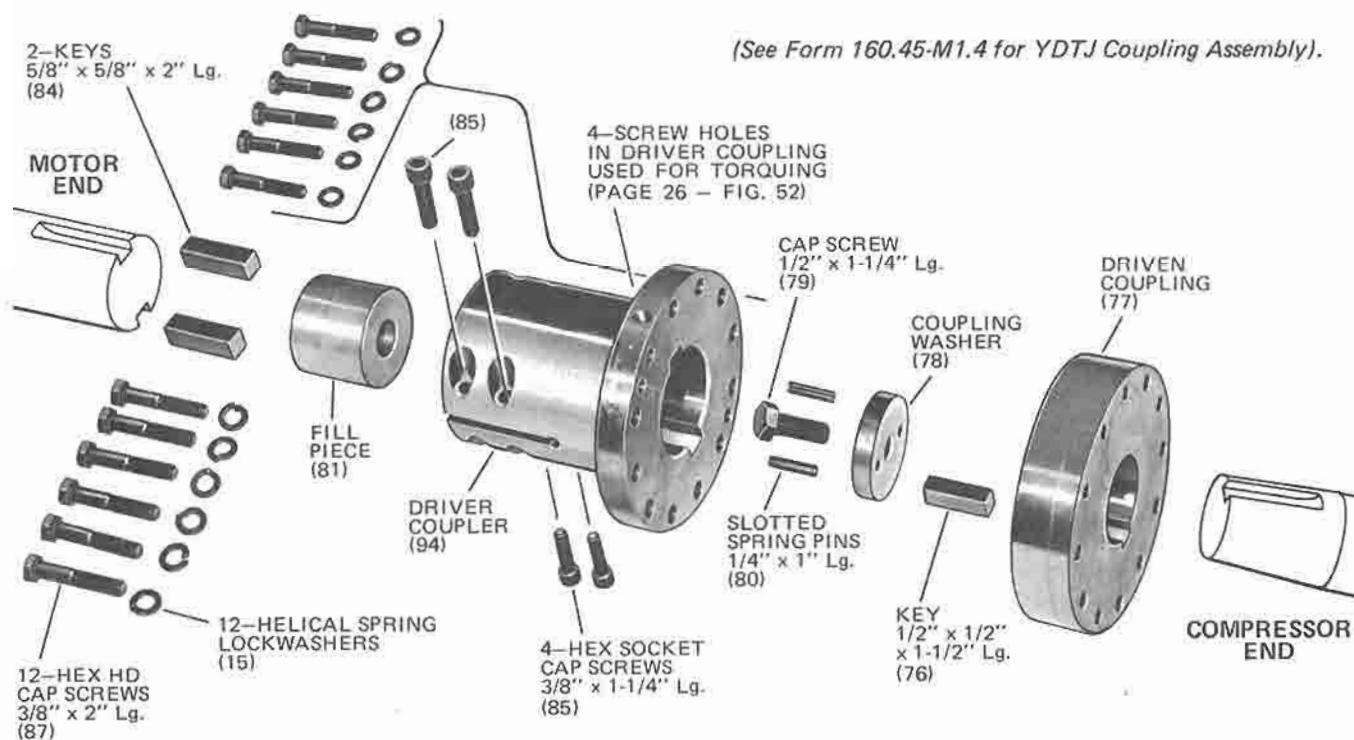
1. Place three 3/8-16 UNC (064-18716 from compressor tool kit) guide studs equally spaced in the holes in the rotor support.
2. Lift the motor (95) and compressor motor support

(86) assembly to the guide studs and push motor against the rotor support. The extended guide studs will locate the assembly in the correct position to align the low speed compressor shaft to the motor shaft.

3. Insert sixteen 3/8-16 UNC x 2 lg. (87) screws into the tapped holes and tighten. Remove the guide studs and insert and tighten screws. Torque all screws. Refer to Table 4.

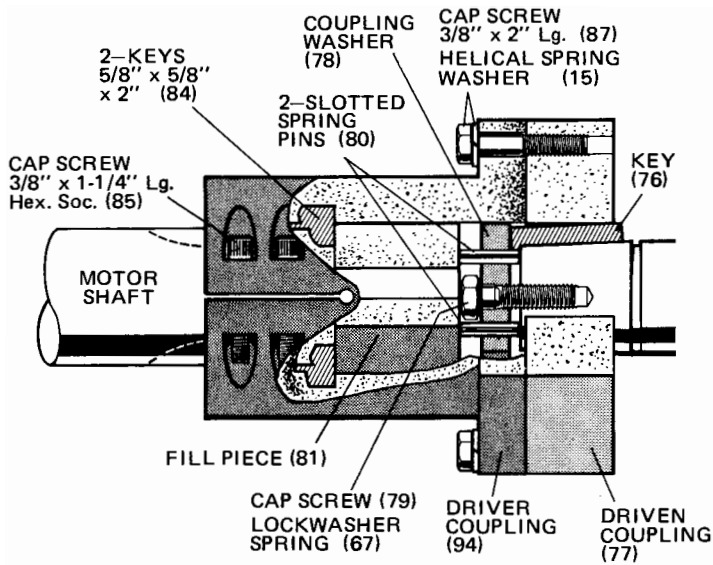


**FIG. 50 — ASSEMBLING MOTOR AND MOTOR SUPPORT TO ROTOR**



(See Form 160.45-M1.4 for YTDJ Coupling Assembly).

**FIG. 51 — COUPLING ASSEMBLY YTDJ COMPRESSOR (ONLY)**

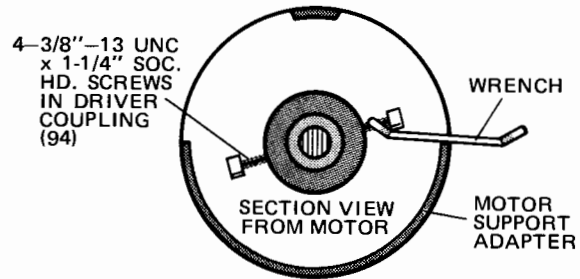


**FIG. 52A — COUPLING ASSEMBLY**

**ASSEMBLING THE COUPLING (YTJ COMPRESSOR)**

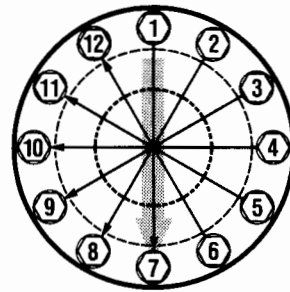
1. Oil two motor shaft keyways.
2. Oil two keys (84) and place them in the motor shaft keyways. The motor shaft keyways must be in a horizontal position.
3. Line up the driver coupling (94) keyways with the keys on the motor shaft and carefully push the driver coupling on the motor shaft so the front of the driver is even with the end of the motor shaft.
4. Oil keyway on the compressor shaft and oil key (76). Place key in keyway.
5. Oil the keyway of the driven coupling (77). Line-up the keyway of the driven coupling with key on compressor shaft and push into place.
6. Press two slotted pins into the two holes provided in the end of compressor shaft.
7. Line up the coupling washers two holes with the pins in the compressor shaft and press into place.
8. Place cap screw 1/2" x 1-1/4" (79) and spring lockwasher (67) to hold the coupling washer (78) in place. Tighten and torque screw to 130 ft. lbs.
9. Place the fillpiece (81) between the motor shaft and the compressor shaft, line up, and then pull the driver coupling (94) over the fillpiece (81), key in driven coupling, push together until it touches the driven coupling. Line up the holes in the driver coupling (94) with the holes in the driven coupling (77).
10. Take up slack between the shafts and fillpiece by tapping on the rear of motor shaft.
11. Insert twelve 3/8"-UNC x 2" lg. cap screws (87) with 3/8" spring lockwashers (15) into the driver coupling and tighten snugly.

12. Insert four 3/8"-13 UNC x 1-1/4" socket head screws (85) into the hole located on the side of the driver coupling. Tighten snugly.
13. Check the motor shaft TIR; should not exceed .022" in.
14. To hold shaft in place for torque screws hold shaft per Fig. 52B.



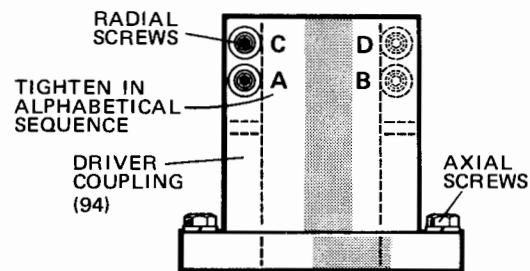
**FIG. 52B — HOLD SHAFT IN PLACE WITH WRENCH WHEN TORQUING**

15. Torque all axial screws first in sequence to 40 ft. lbs. (See Fig. 53.) Any screw may be number one. Sequence: 1-7, 2-8, 3-9, 4-10, 5-11, 6-12,



**FIG. 53 — AXIAL TORQUING SEQUENCE**

16. Retighten radial screws and torque to 40 ft. lbs.: Sequence A-B-C-D (See Fig. 54.)



**FIG. 54 — DRIVER COUPLING SCREW LOCATIONS**

17. Recheck motor shaft TIR; should not exceed .002.

## SERVICE TIPS FOR CLOSE COUPLINGS [YTJ COMPRESSOR]

### General:

1. Make sure there are not any burrs or dirt particles on the shaft or coupling parts.
2. Make sure keys slide freely in the key slots located on the shafts and coupling parts.
3. Make sure keys do not ride up in slots, binding between shaft and coupling and preventing a proper TIR from being obtained.
4. To check TIR's roll the shaft in the bearings to build up the oil film. Do not take TIR readings in the stopped position as the oil will start being squeezed out of the bearings affecting the readings.

### MODELS YTJ 67, 76, 85, 95 (B & C) COMPRESSORS

#### A. Driven (Compressor Coupling) half:

1. Check compressor shaft without coupling.
  - a. Shaft should be free turning with a TIR no greater than 0.001 in. This TIR may be difficult to measure; be careful not to raise the shaft up in the bearings when turning this will give an incorrect TIR reading.
  - b. With an indicator on shaft end, lift the shaft. The indicator should move 0.010–0.020 in. to take up the clearances in the bearing.
2. Check clearances with driven half of coupling located on compressor shaft.
  - a. Pilot (for drive half) dia. TIR should be no more than 0.001 in.
  - b. Face TIR (on as large a radius as possible).

#### B. Motor Drive (Motor Coupling) half:

1. Make sure the aluminum shaft spacer is not trapped in at an angle causing it to bind in the coupling.

2. With both keys in place, the drive half should slide back and forth on the motor shaft freely. There should be some angular play in the coupling to indicate the keys can move and are not binding.

#### C. TIR Adjustment:

1. With coupling assembled on shafts and the four socket head radial bolts snug (less than 130 Ft lb), turn shafts to get highest spot on TIR in line with the indicator. Bump coupling over the motor shaft and in line with high spot until indicator reads one half of its original value. Check TIR to see if it is within specifications. If not, repeat bumping and checking until acceptable TIR is obtained.
2. Continue tightening bolts, checking TIR, and tapping until proper TIR and bolt torque is obtained.
3. If the high spot is in line with a split in the coupling, an alternative to bumping exists. Turn the high spot vertical and in line with the indicator. Break two radial bolts on a side until the indicator reads one half of its original value. Continue with steps 1, 2, or this one.
4. If acceptable TIR still cannot be obtained remove 12 axial bolts and rotate compressor drive shaft 180 degrees. Install at least four axial bolts 90 degrees apart and use steps 1 through 3 to get an acceptable TIR. Then install remaining axial bolts.
5. If there is still a problem, check for a bent motor shaft, a condition extremely unlikely to exist. Remove motor rotor and set bearing and drive end in V-blocks. Turn rotor and check TIR at tip of drive end of shaft. TIR should be 0.001 in. or less.

### ASSEMBLING COUPLING YDTJ COMPRESSORS (See Form 160.45-M1.4).

## IMPELLER SEAL AND PREROTATION VANE

### REPLACING IMPELLER SEAL AND PREROTATION VANES

To replace the impeller seal and prerotation vane assembly, refer to Fig's. 55, 56, 57 and 59 then proceed as follows:

1. Remove the compressor coupling and the compressor rotor support as outlined previously in this instruction. An "O" ring seal (217) is used on the joint between the nozzle base and scroll. Fig. 55 shows a compressor rotor

scroll complete with impeller seal and prerotation vane assembly.

2. Remove the 12 pt. hd. cap screws (59) which secure the nozzle base plate (205) to the rotor scroll, and pull the nozzle base plate out of the compressor. Fig. 56 shows a rotor scroll (201) with the impeller eye seal, PRV assembly, and diffuser components removed. The impeller seal consists of a seal ring (207) and spring washer (208), held in place in the nozzle base plate by means of an inlet oil seal retaining ring (209).

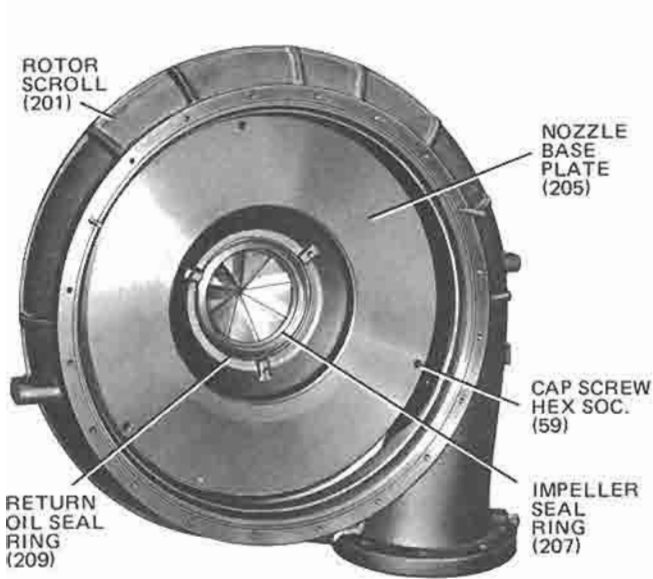


FIG. 55 — COMPRESSOR ROTOR SCROLL ASSEMBLY  
YTJ 67, 76, 85, 95 AND YDTJ 67, 76, 85 AND 95

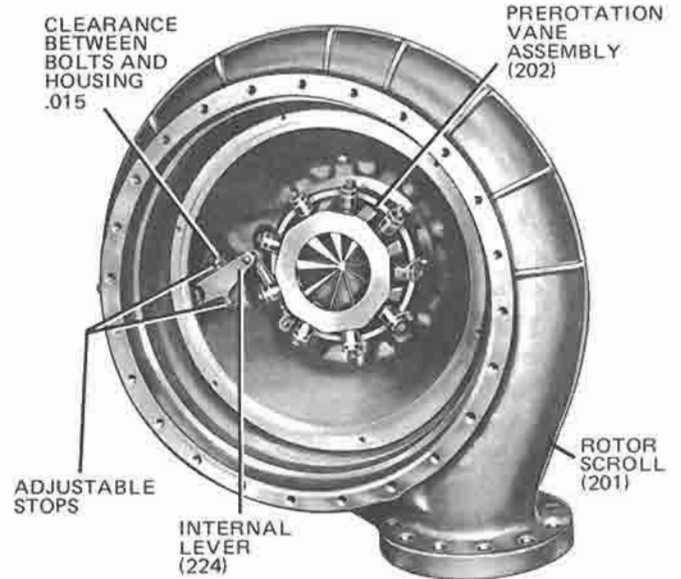


FIG. 56 — ROTOR SCROLL SHOWING PRV ASSEMBLY

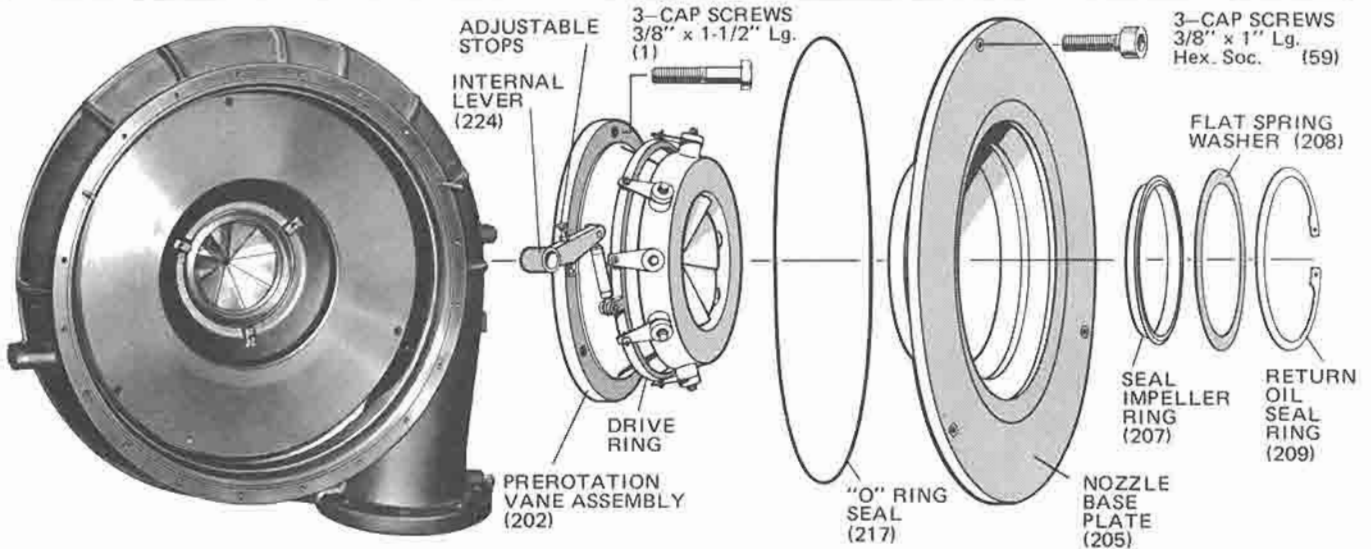


FIG. 57 — ROTOR SCROLL DISASSEMBLED — YTJ 67 THRU 95 AND YDTJ 67 THRU 95

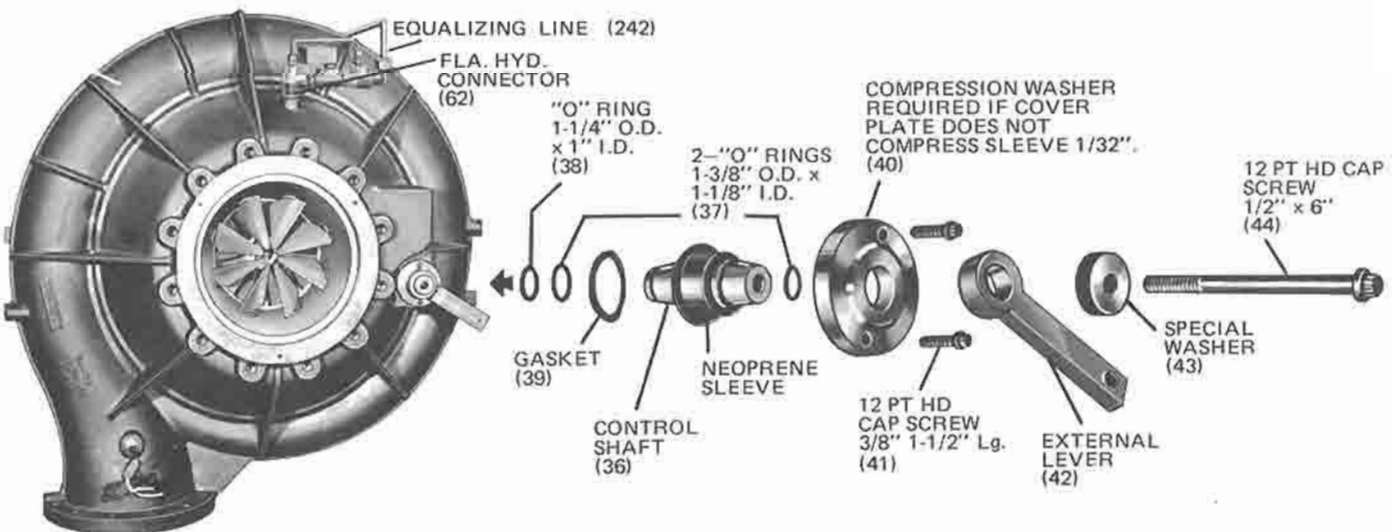


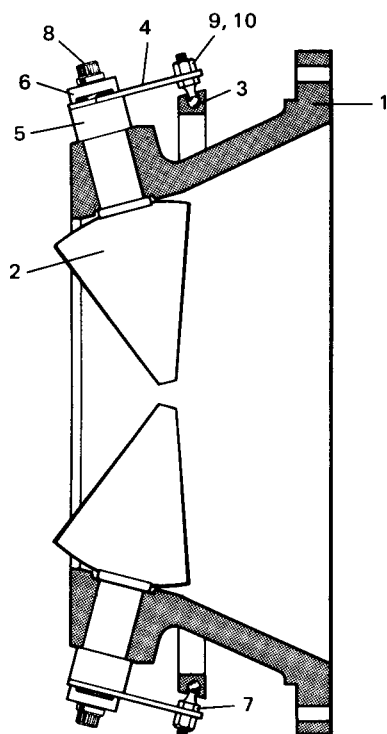
FIG. 58 — PREROTATION VANE CONTROL SHAFT REMOVED (SAME ASSEMBLY  
FOR ALL COMPRESSORS) MODEL YTJ 67 AND YDTJ 67

3. Remove the 12 pt. hd. cap screws which hold the prerotation vane assembly (202) in the rotor scroll (201) and lift out the prerotation vane assembly (202). (See Fig. 56). The vanes are actuated by a rotating vane driving ring through individual vane arms to each vane. Individual vanes may be removed by removing the cap screw which secures the vane arm to the vane, lifting off the vane arm with the cap screw which secures the vane arm to the vane, lifting off the vane arm with the two special washers and pulling the vane out toward the inside of the vane housing.

4. Reassemble the prerotation vane assembly (202), and impeller seal following the above steps in reverse with special attention to the following:

If any of the individual vanes were removed or replaced, refer to Fig. 59, applying to the particular compressor involved. The vane cap screw must be tightened to the torque indicated in Table 4 or the particular cap screw size being tightened.

## PREROTATION VANE HOUSING PARTS MODELS YTJ 67, 76, 85, 95 AND YDTJ 67, 76, 85 AND 95



Item	Part Description	Models			
		YTJ or YDTJ 67		YTJ or YDTJ 76	
		Part No.	Quan.	Part No.	Quan.
1	Housing, Pre-Rotation	064-13486	1	064-13485	1
2	Vane, Pre-Rotation	064-10618	9	064-10618	9
3	Ring, Vane Driving	064-10815	1	064-10815	1
4	Arm, Vane	064-10818	9	064-10818	9
5	Washer	064-10819	9	064-10819	9
6	Washer - Special	064-09289	9	064-09289	9
7	Washer	021-11973	10	021-11973	10
8	Screw, Cap 12 Pt. Hd. 3/8-24 UNF x 2" Lg.	021-11956	9	021-11956	9
9	Screw, Ball	029-07017	9	029-07017	9
10	Nut, Hex, 1/4-28 UNF 33	021-12943	9	021-12943	9
		YTJ or YDTJ 85		YTJ or YDTJ 95	
1	Housing, Pre-Rotation	064-13481	1	064-13482	1
2	Vane, Pre-Rotation	064-08822	8	064-08822	8
3	Ring, Vane Driving	064-08813	1	064-08813	1
4	Arm, Vane	064-08814	8	064-08814	8
5	Washer	064-09061	8	064-09061	8
6	Washer - Special	064-08815	8	064-08815	8
7	Washer	021-11973	10	021-11973	10
8	Screw, Cap 12 Pt. Hd. 3/8-24 UNF x 2" Lg.	021-11743	8	021-11743	8
9	Screw, Ball	029-07017	8	029-07017	8
10	Nut, Hex, 1/4-28 UNF 33	021-12943	8	021-12943	8

FIG. 59 — PREROTATION VANE ASSEMBLY (MODELS YTJ 67, 76, 85, 95 AND YDTJ 67, 76, 85 AND 95)

### REPLACING CONTROL SHAFT ASSEMBLY

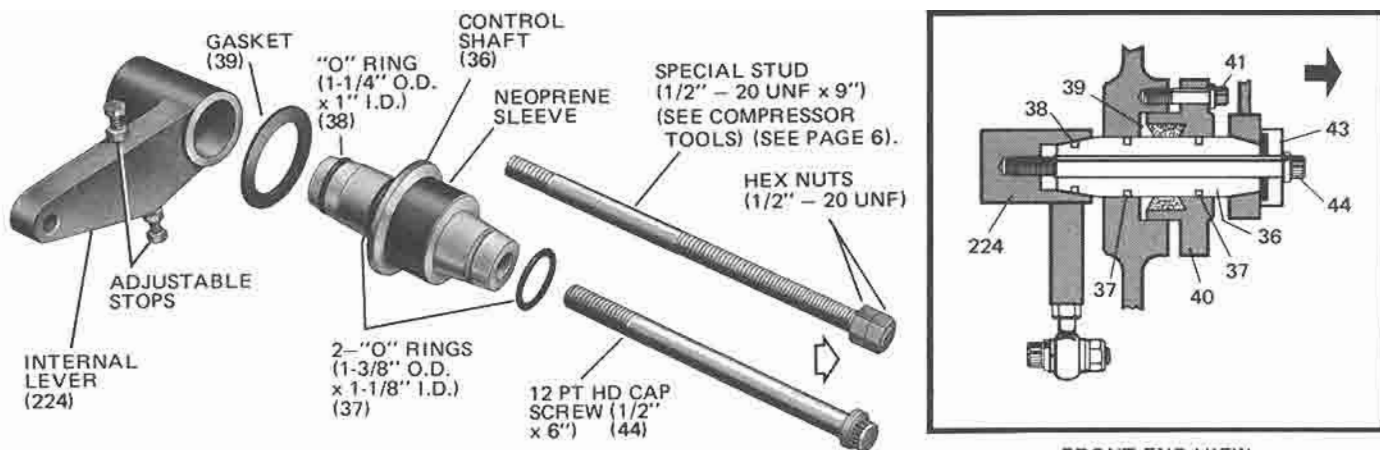
The external (224) and internal (42) levers are secured to the control shaft (36) by means of a single 1/2" x 6" 12 pt. hd. cap screw (44) threaded into the internal lever.

Adjustable stops are provided in the internal lever arm. These stops are not to be used to stop the vanes in the extreme positions of normal travel, but are supplied as protection should some external force be applied to the linkage beyond the normal travel limits. The stops are set about 1/32" away from the scroll casting walls when the vanes are in their extreme position, and will prevent damage to the internal vane mechanism should over-travel occur. A friction producing compound ("Loctite Nut Lock", York Part No. 013-01678) (53) is used on the threads when the

stops are initially positioned to prevent any change in position. The compound should again be used in the stops are ever reset.

If it becomes necessary to replace the control shafts on these compressors, only the following parts are required:

ITEM	PART NAME	PART NUMBER
36	Shaft, vane control	364-29577
37	Ring, "O" (Quan. 2)	028-07002
38	Ring, "O"	028-09309
39	Gasket Lubricant, valve stem (Beacon grease and Molykote)	028-00781 360-00125



**FIG. 61 — PREROTATION VANE SHAFT CONTROL ASSEMBLY**

To replace control shafts refer to Figs. 55, 56 & 57 and proceed as follows:

1. Reduce or increase the system pressure to slightly above atmospheric pressure.
2. Disconnect the linkage from the external lever.
3. Loosen and remove the 1/2" x 6" 12 pt. hd. cap screw (44) and washer (43).
4. Insert the special stud (See Table 2-Compressor Tools) through the hole in the external lever (42) and control shaft (36) and screw the stud into the internal lever (224). Be sure to put a nut on the outside end of the special stud.
5. Using a hammer and a block of hardwood, tap the outside end of the stud to loosen the internal lever. **DO NOT REMOVE THE SPECIAL STUD.**
6. Remove the cover plate cap screws (40).
7. Slide the external lever (42) control shaft (36) and cover plate (40) from the control shaft (36).
8. Replace the existing gasket (39) with a new one.
9. Install the two new "O" rings (37) in their respective grooves in the new control shaft, small "O" ring (38) in groove taper below cover gasket (39).  
  
Liberally coat the control shaft ("O" rings and neoprene sleeve) and the inside of the cover plate with York Valve Stem Lubricant (360-00125). Do Not lubricate the tapered surfaces of the shaft.
10. Slide the new shaft with "O" rings into position over the special stud.
11. Install the cover plate (40) but do not tighten the cap screws (41) at this time.
12. Tighten the nut on the outside end of the stud against the end of the control shaft to pull the internal lever (224) hard up on the taper of the shaft.

13. With the cover plate (40) loosely installed, close the vanes by turning the nut on outside end of the stud.

Position the external lever (42) on the control shaft (36) so that the punch mark on the lever aligns with the closed "C" mark on the housing. Push external lever arm (42) slightly to seat on taper.

14. Remove the nut and stud.
15. Install the 6" lg. cap screw (44) and washer (43). Draw the cap screw tight. Move the external lever (42) to the "open" and "closed" positions, to check the open and closed positions on the cover plate. Readjust the external lever (42) position, if necessary.
16. Using a torque wrench, tighten the cap screw (6) to a torque of 75 ft. lbs.
17. Move the external lever to its midposition (vanes half open) and tighten the cover plate cap screws to a torque of 35 ft. lbs. This is important and assures that the sleeve will twist equally when the vanes are moved to either the wide open or the fully closed position.
18. Connect the linkage to the external lever.

**NOTE:** Store the special stud for use in removing and re-installing subsequent control shaft assemblies.

When connecting the vane linkage to the electric motor shaft the closed position and connect the vane linkage while holding the vanes in the closed position. Operate the vane motor open and closed several times to be sure the motor does not jam at either end of its travel. Adjust as necessary by either lengthening or shortening the distance between the motor linkage and the external lever to be sure the vanes are wide open and tightly closed as the motor rotates from one end of its travel to the other.

It is important that the arm length from motor centerline to force point, the arm length from control shaft centerline to force point and the length of connecting arm be the same as they were set at the factory. Also, the angular position of the motor shaft must be as it came from the factory.

**OPERATING CHECKS AND ADJUSTMENTS**

1. With oil temperature at 100 degrees F to 135 degrees F (operating temperature) and suction pressure at design conditions adjust seal relief valve to maintain 2 to 3 PSIG in seal cavity.\* Pressure measured with gauge in 1/4" tapped hole in side of seal cavity. (Tighten nut to increase pressure slightly.)

\***DECREASE** pressure by placing additional gasket (Part No. 028-03021) (57) under seal cap.

**DETAIL "B" STYLE "D" COMPRESSOR (NEW DESIGN) (MODEL YDTJ)** (See Detail "B").

**INCREASE** or **DECREASE** pressure by removing valve cap to adjust the valve with a screwdriver. To adjust, loosen nut and replace cap with its gasket. Make sure the cap is tight. This new design valve may be used as replacement for the original design.

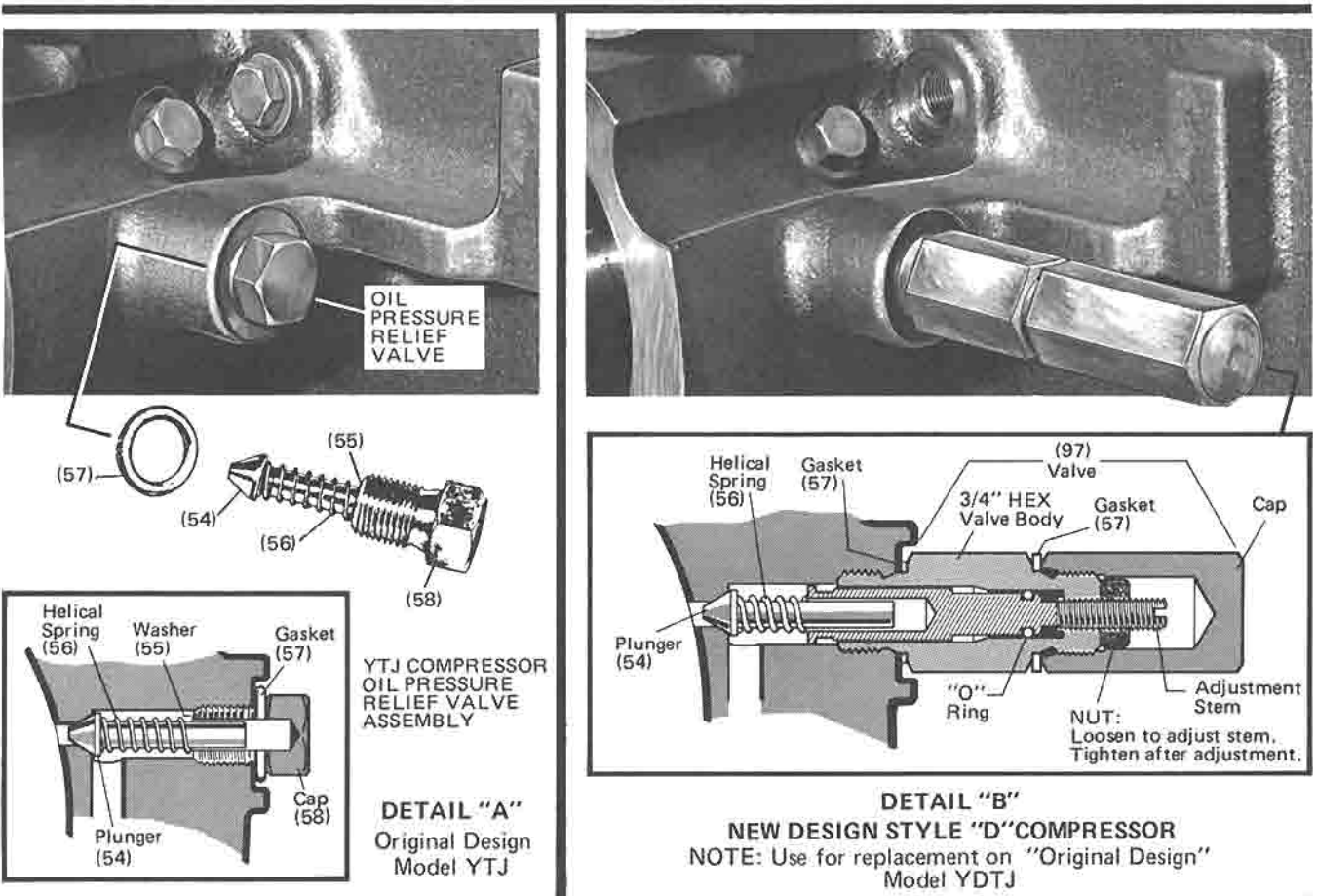
**EXAMPLE:**

Oil Temperature	-108 degrees F off Cooler
Suction Pressure at Design Load	-16.5" Hg. Vacuum
Adjust Seal Relief to Maintain:	-2 to 3 PSIG

**DETAIL "A" ORIGINAL DESIGN (MODEL YTJ)**

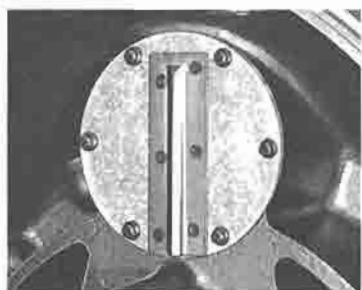
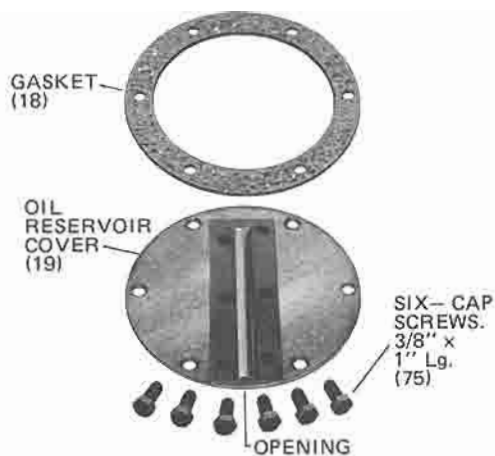
\***INCREASE** pressure by adding plain washer (Part No. 021-11973) (55) between cap and spring in relief assembly. (See Fig. 62). (See Detail "A").

2. During operation the shaft seal will drip a slight amount of oil into the seal oil collector. A slight leakage between the seal surfaces is normal. This oil should be discarded.



**FIG. 62 — REMOVING OIL PRESSURE RELIEF VALVE**

<b>FOR FURTHER INFORMATION:</b>
<b>TESTING THE MOTOR (YT COMPRESSOR) — SEE FORM 160.45-M1.2</b>
<b>OIL SUMP ASSEMBLY — SEE FORM 160.45-M1.2</b>
<b>TURBOGUARD PURGE UNIT — SEE FORM 160.45-M1.2</b>
<b>COOLERS AND CONDENSERS — SEE FORM 160.45-M1.2</b>



OPENING MUST BE AT 6 O'CLOCK LOCATION

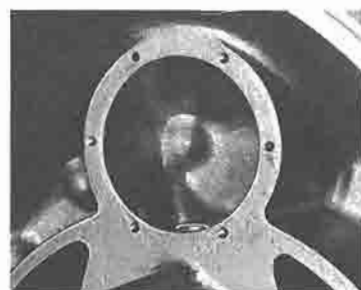
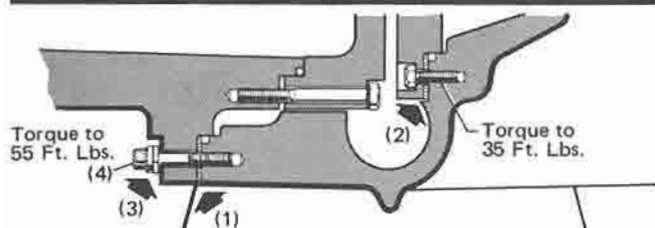


FIG. 63 — DISASSEMBLY AND ASSEMBLY OF OIL RESERVOIR COVER

## DESIGN HISTORY

Several modifications were made to the design of the YTJ/LTJ 67-95 compressor that require an awareness to insure the proper ordering of parts. Review the following changes before ordering parts for the YTJ/LTJ compressor.

1. In 1984 a design change was made to the compressor removing the "O" rings from the rotor support (204) to scroll (201) joints. It is recommended that each compressor be modified to the gasket design on rebuild. The modification includes the substitution and placement of gaskets and the bottom tapping of the scroll bolt holes. (See Fig. 64). The threads are 3/8"-16 UNC. Before ordering parts the arrangement must be verified either visually or by part number. Compressors with the following part numbers require the gaskets from the modification kit. Model LTJ part no. 364-46631 and model YTJ part no. 364-46632. (See Fig. 64).



LTJ/YTJ 67-76, Kit Part No. 364-46997

Item	Description	Qty./Unit	Part No.
1	Gasket, Rotor Support	1	064-46995C
2	Gasket, Nozzle Base Plate	1	064-46961C
3	Lockwasher 3/8"	20	021-08296
4	Scr., Cap 12 Pt. Hd. 3/8-16 UNC x 1-3/4 Lg.	20	021-11916
5	Instruction	1	035-06478

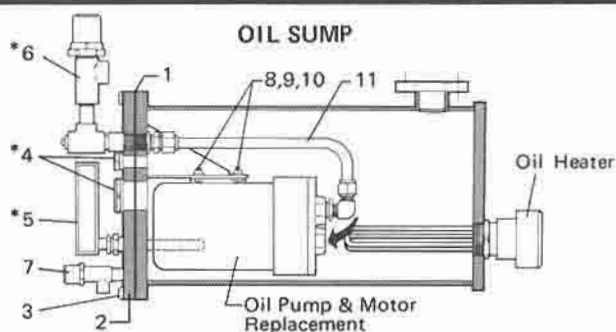
LTJ/YTJ 85-95, Kit No. 364-46998

Item	Description	Qty./Unit	Part No.
1	Gasket, Rotor Support	1	064-46996C
2	Gasket, Nozzle Base Plate	1	064-46962C
3	Lockwasher 3/8"	24	021-08296
4	Scr., Cap 12 Pt. Hd. 3/8-16 UNC x 1-3/4 Lg.	24	021-11916
5	Instruction	1	035-06479

FIG. 64 — DESIGN CHANGES ON LTJ & YTJ COMPRESSOR

2. Compressors shipped after midyear 1984 and compressor with the following part numbers: LTJ 364-46973 and YTJ 364-46974 DO NOT require field modification. The parts listing Form 160.45-RP1.1 (Sect. 2) on page 2 and 3.

There were also several changes incorporated into the oil sump assembly. (See Form 160.45-RP1.1 (Sect. 2).



Item	Description	Qty.	Part No.
1	Gasket	1	066-82923
2	Cover	1	-
3	Scr., Cap Hex Hd. 3/8-16 x 1-1/2" Lg.	12	021-01497
*4	Sight Glass	2	026-16556
*5	Thermometer	1	026-16555
*6	Valve Relief, 3/4"	1	022-04506
7	Valve Stop	1	022-03835
8	Scr., Cap Hex Hd. 5/16-18 x 3/4	4	021-01418
9	Nut, Hex 5/16-18	4	021-00461
10	Washer, Plain, 11/32 I.D. x .065 Thk.	4	021-05166
11	Connection	1	366-82918

\* Parts that have changes with current design.

FIG. 65 — OIL SUMP CUTAWAY VIEW — ORIGINAL DESIGN

3. Units shipped after May 1984 utilized a new design oil pump to decrease the effects of cavitation. The oil pump parts (motor and pump) are not interchangeable between designs. If a problem occurs with the old style oil pump it is recommended that the complete assembly be ordered per the guidelines on page 11 of Form 160.45-RP1.1 (Sect. 2). (See Fig. 65).

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