



**UNITED
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CARRIER**

Commercial Division
Carrier Corporation

BULLETIN: CA-SB-17-79-31

DATE: 11/15/79

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SERVICE BULLETIN

SUBJECT:

BABBITTED COUNTERTHRUST BEARING

SUPERSEDE

BULLETIN:

DATE:

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PURPOSE

To transmit a revised Modification Guide, Babbitted Counterthrust Bearing, for use with Conversion Package 17M32-251 when it is necessary to replace an Oilite bronze counterthrust bearing which is no longer available.

MACHINES AFFECTED

17M, P, S Size 30 and 40 contact seal machines, compressor Serial No. 8548 and higher.

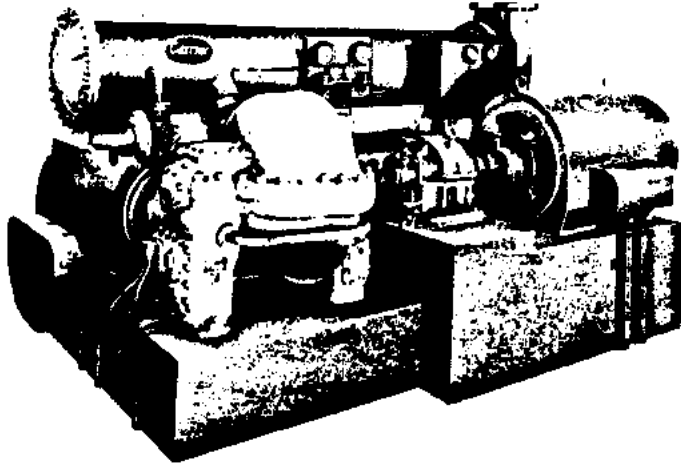


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17M,P,S

MODIFICATION GUIDE

for use with
17M32-251



**BABBITTED
COUNTERTHRUST BEARING**

17M,P,S 30 AND 40 SIZE
CONTACT SEAL MACHINES

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INTRODUCTION

The Oilite bronze counterthrust bearing, used on 17M,P,S Size 30 and 40 contact seal machines manufactured before December 1965, is no longer available. When replacement is required, follow the procedure outlined to install the babbitted counterthrust bearing.

MATERIALS AND TOOLS REQUIRED

Conversion Package 17M32-251 which contains:

<u>Description</u>	<u>Carrier Part No.</u>
Babbitted Counterthrust Bearing	17M32-3482
Thrust Disc Spacer	17M32-2391
Dowel Pin, 1/4 x 5/8" lg	AX11AR167
Thrust Housing Shim	17M32-1832
Modification Guide	17M32-101-2

A set of mechanic's hand tools, including the following items, is required:

1. Dial Indicator
2. Feeler Gages
3. 6" Scale
4. Scribe
5. Center Punch
6. Prussian Blue
7. Bearing Scraper
8. Straight-Edge, at least 16" long
9. Loctite (Grade AV or equal)

NOTE: Machining and drilling operations to the journal bearing housing must be done in a machine shop to insure accuracy.

THRUST END DISASSEMBLY

Disassemble thrust end in the sequence shown in Fig. 1.

NOTE:

If counterthrust bearing failed, determine shaft position with rotor against failed counterthrust. Remove counterthrust bearing. IF ROTOR CANNOT BE MOVED FURTHER TOWARD THE COUNTERTHRUST POSITION, IMPELLERS MAY HAVE RUBBED STATIONARY INTERNAL PARTS OF COMPRESSOR. UPPER HALF OF COMPRESSOR MUST BE REMOVED AND INTERNAL PARTS INSPECTED.

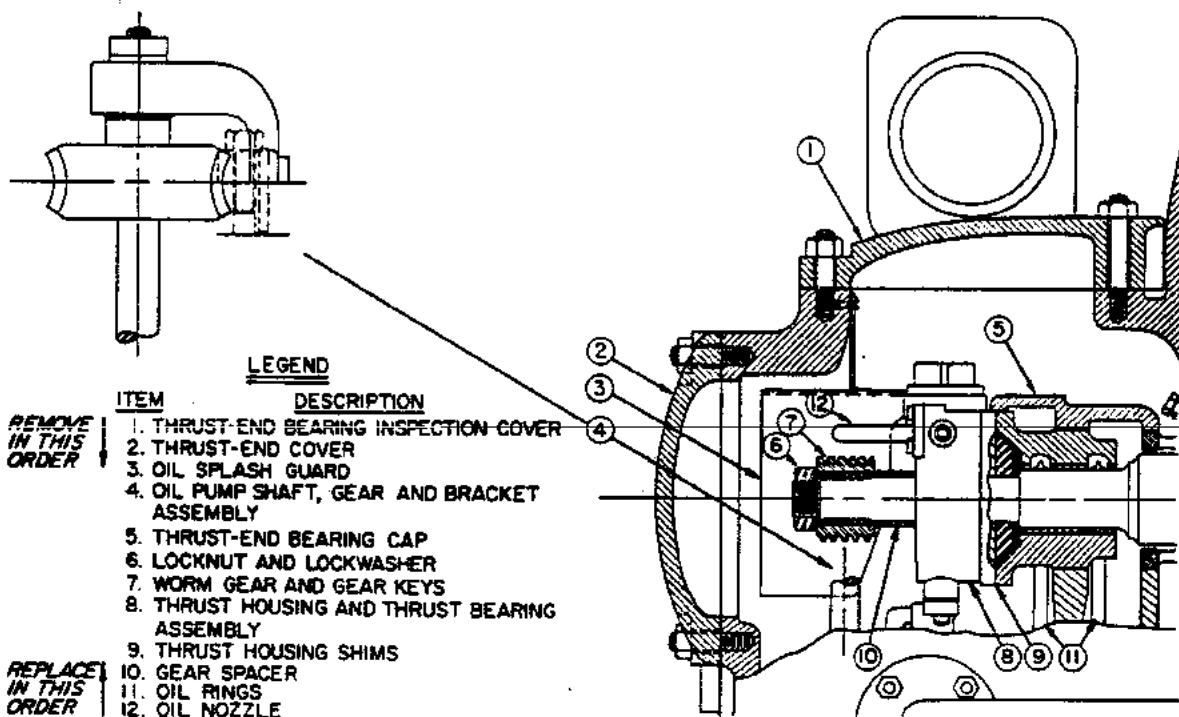


FIG.1 - COMPRESSOR CUTAWAY

MACHINING & DRILLING

Machining and drilling operations to the journal bearing housing must be done in a machine shop to insure accuracy.

Upper Half Journal Housing

1. Machine housing as required (Fig. 2) to allow new counterthrust to seat properly.

Counterthrust bearing should not contact journal bearing.

2. Remove all metal chips and burrs from upper half journal housing.

Lower Half Journal Housing

1. Machine housing as required (Fig. 2) to allow new counterthrust to seat properly.
2. Drill hole for dowel pin, using 1/4" dia. drill (Fig. 2).

CAUTION: COUNTERTHRUST DOWEL PIN MUST BE POSITIONED AS SHOWN IN FIG. 2 AND 3!

3. Remove all metal chips and burrs from lower half journal housing.
4. Install counterthrust dowel pin (Fig. 2). Dowel pin must not prevent counterthrust bearing from seating.

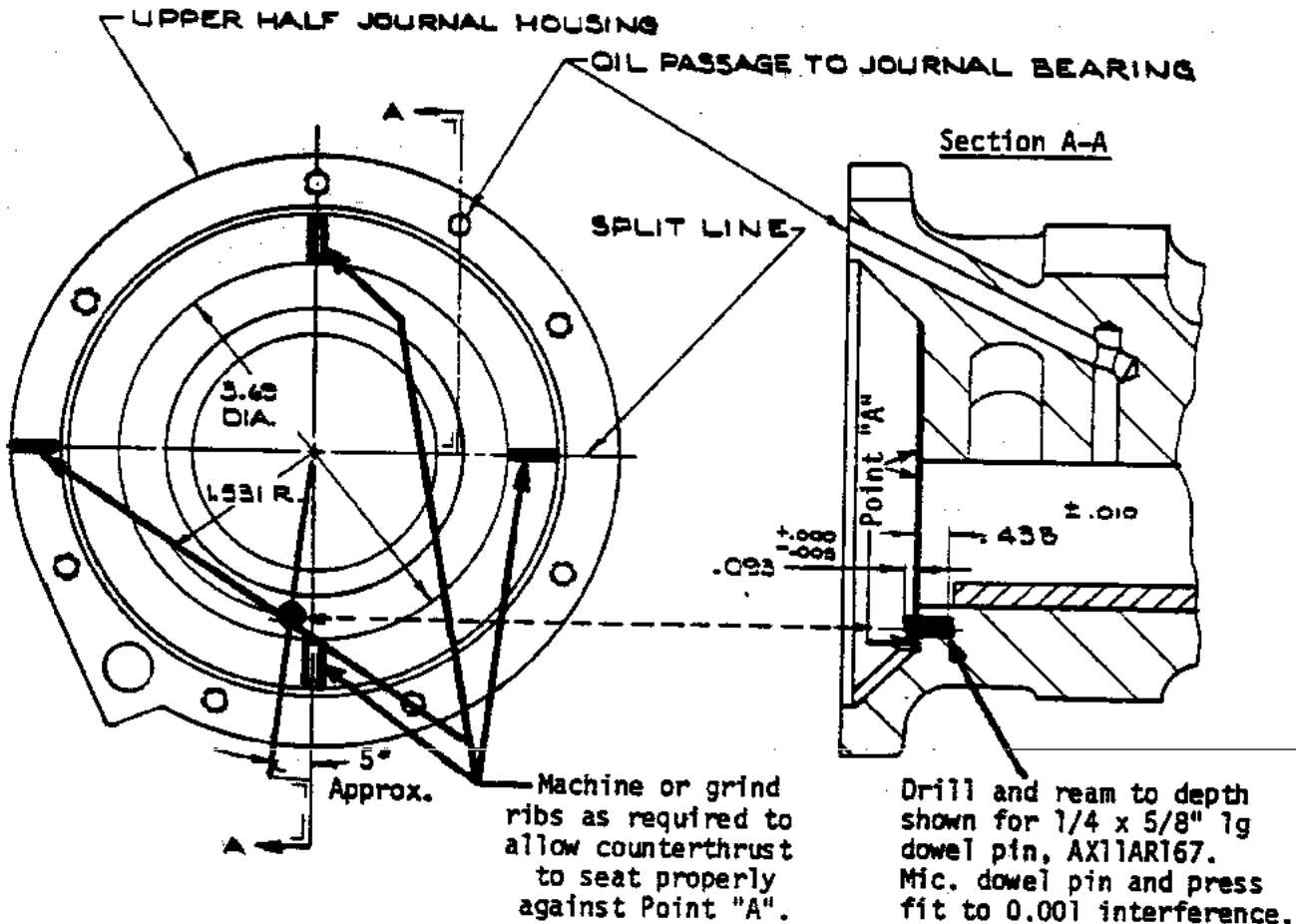


FIG. 2

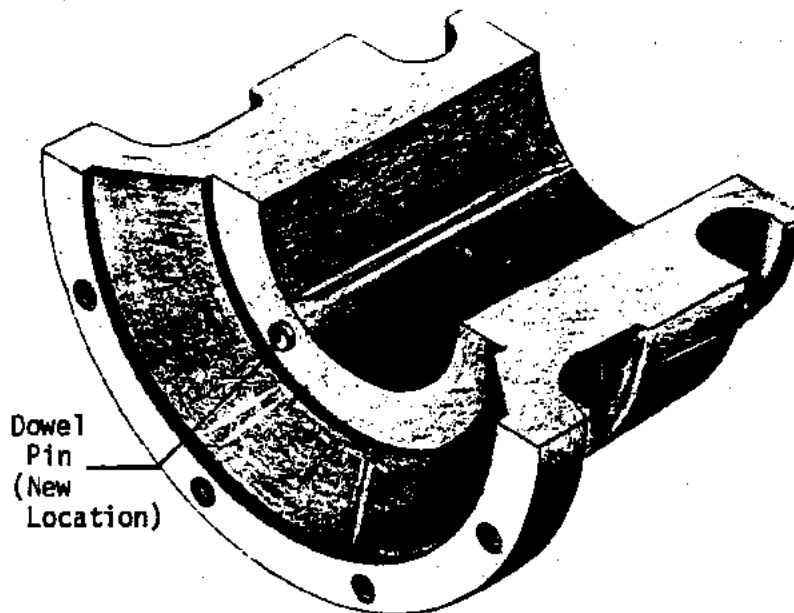


FIG. 3

ALIGNMENT & RE-ASSEMBLY

1. Replace thrust disc, if damaged.
2. "Blue" the new counterthrust bearing to back of thrust disc. Remove high spots on counterthrust bearing to insure 90% contact of all counterthrust shoes.
3. Refer to Fig. 5, and install the lower half journal housing, bearing liners, and counterthrust bearing.

CAUTION

Be sure the dowel pin is engaged in the counterthrust bearing slot, and that the bearing is seated correctly against the shoulder.

Install the thrust disc key, thrust disc spacer, and thrust disc.

IMPORTANT! The new thrust disc spacer (provided in the package) will have to be machined. It is purposely thicker than required.

4. Refer to Fig. 1, and install the gear spacer, worm gear, and lockwasher and locknut.

5. With the seal housing and gasket removed, position the shaft shoulder (against which the contact ring is fitted).

Using a straight-edge and steel rule, align the shaft shoulder to the compressor end flange. (See Table 1 and Fig. 4, page 4.)

6. Measure the clearance between back of thrust disc and counterthrust bearing. This clearance must be $.010 \pm .002$ " (Fig. 6).
7. Remove the locknut and lockwasher, worm gear, gear spacer, thrust disc, thrust disc spacer, and thrust disc key.
8. Machine the thrust disc spacer as required. The machined surface must be flat and parallel.
9. Re-install the thrust disc key, thrust disc spacer, and thrust disc.
10. Set up dial indicator and check run-out of thrust disc. Maximum allowable outage: .0005 inch.

Table 1. Shaft Shoulder Position	
Compressor Model & Size	Shaft Shoulder Position $\pm .005"$
17M,P,S 30	.500" Out*
17M,P,S 40	Flush
17S 30 with 400 Style Seal	1.375" In**
17M,P,S 40 w/ " " "	1.375" In

*Model S has cast iron bearing inspection cover (seal end).

**Has flat steel bearing inspection cover (seal end).

11. Replace seal housing and gasket (Fig. 6).
12. Install oil rings and nozzle (Fig. 1).
13. Install upper half journal housing (Fig. 5).
14. Refer to Fig. 1, and install the gear spacer; thrust housing shims; thrust housing and thrust bearing assembly; worm gear and keys; and lockwasher and locknut.

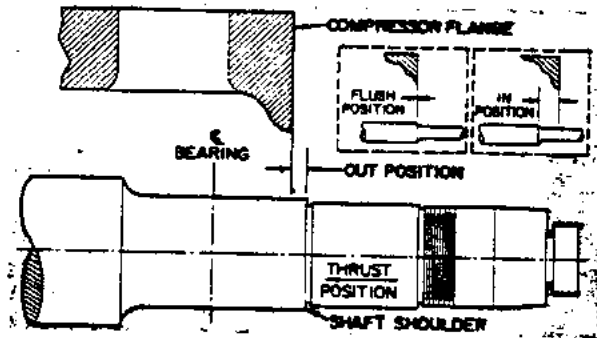
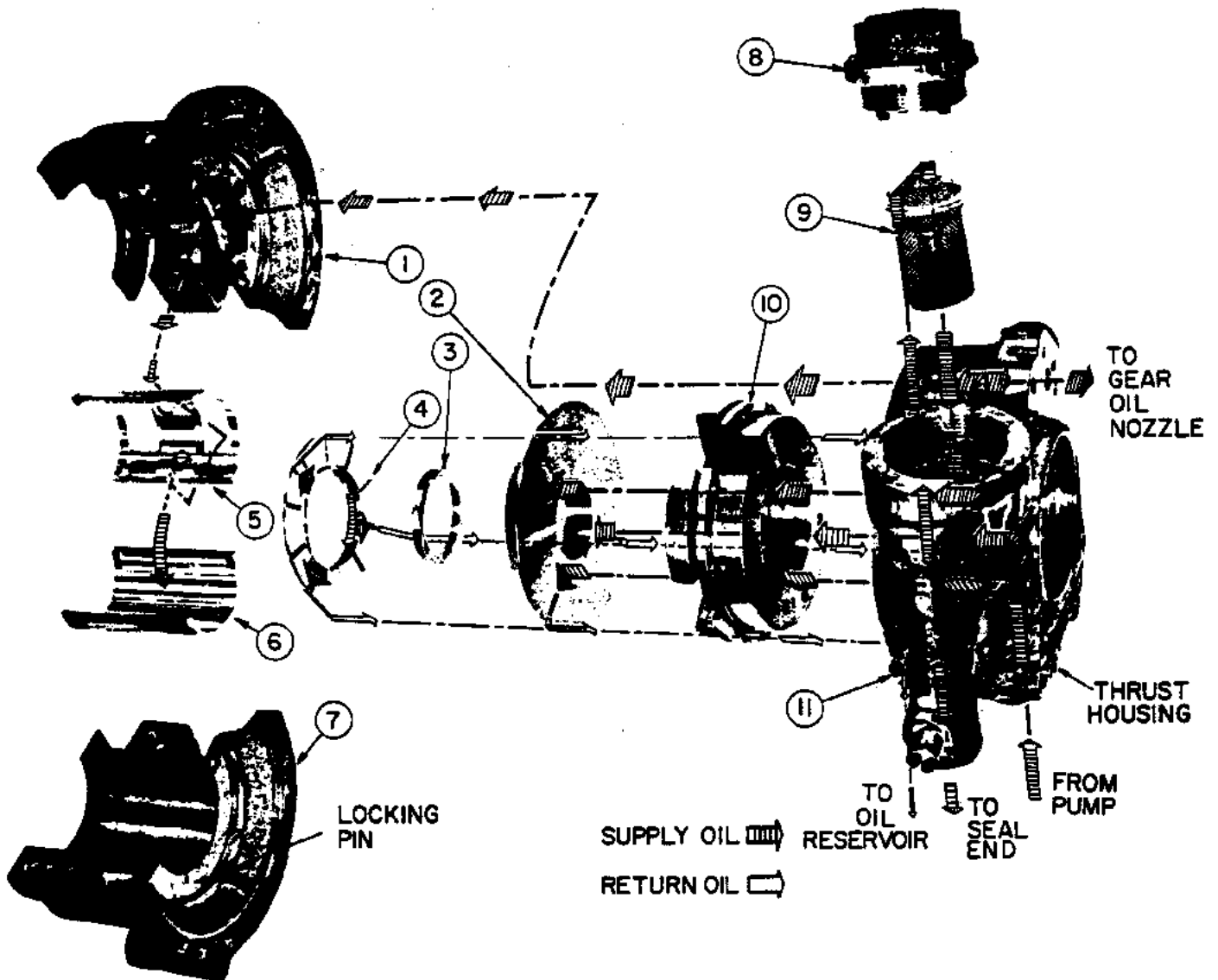


Fig. 4 - Relative Position of Shaft Shoulder to Compressor Flange

15. Check shaft float with a dial indicator. If necessary, unbolt the thrust housing and add or remove thrust housing shims (Item 9, Fig. 1) until shaft float is $.010 \pm .002"$ (Fig. 6). Re-install the thrust housing.
16. Refer to Fig. 1, and install the thrust end bearing cap; oil pump shaft, gear, and bracket assembly; oil splash guard; thrust end cover; and the thrust end bearing inspection cover.
17. Re-assemble the seal.



LEGEND

<u>Item</u>	<u>Description</u>	<u>Item</u>	<u>Description</u>
1	Upper Half Journal Housing	7	Lower Half Journal Housing
2	Thrust Disc	8	Oil Strainer Cap
3	Thrust Disc Spacer	9	Oil Strainer Screen Assembly
	Thrust Disc Key (NOT SHOWN)	10	Thrust Bearing Assembly
4	Counterthrust Bearing	11	Plug (Passage from Overflow Orifice)
5	Upper Bearing Liner		
6	Lower Bearing Liner		

Fig. 5. Thrust End Bearing Arrangement (Exploded View)

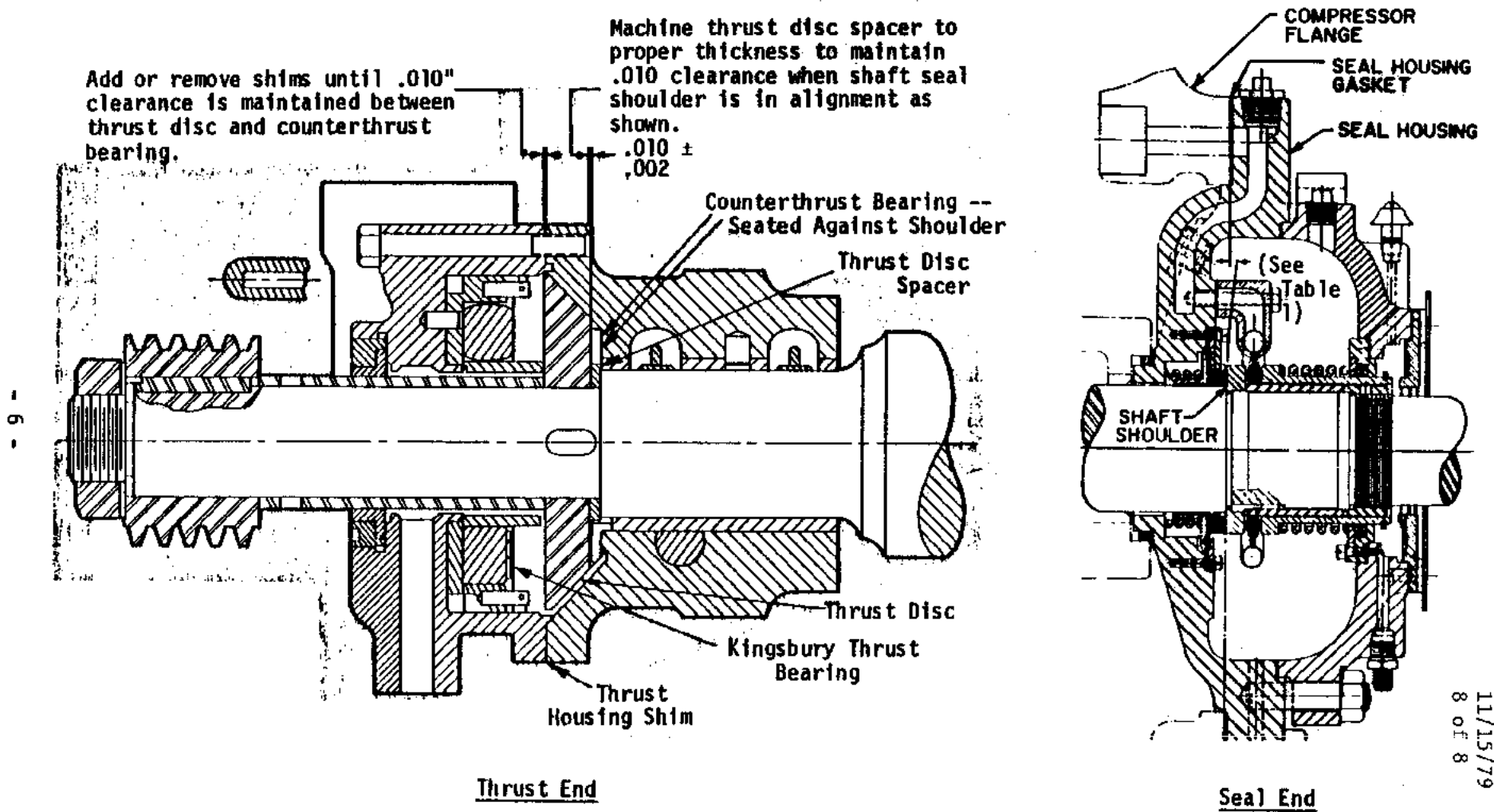


FIG. 6