



SERVICE BULLETIN

Title: 19 HR Thrust Bearing Assembly

Models Affected: 19HR

Number: C9212

Date: 7/15/92

Supersedes: None

Date:

Purpose:

To advise of a new thrust bearing design P/N 19HR322-254 for frame size 31 compressors.

Machines Affected:

All 19HR machines with frame size 31 compressors.

File: Compressor–Drive–Gears

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General:

The major change consists of machining the thrust and counterthrust shoes on an integral support ring rather than in individual segments. The back side of the thrust and counterthrust ring is machined to a spherical shape with a mating ring which allows the thrust and counterthrust faces to align to the shaft thrust disk. Slinger and thrust clearance are adjusted by removing peelable shims in the housing behind the spherical seat mating rings. The laminated shim assembly has .002" laminated shims on one side and .003" laminated shims on the other to permit close adjustment of the thrust clearance. (Use caution when handling the thrust bearing shoe ring, since the babbited shoes can be easily scratched or nicked).

1.0 Measuring Slinger Clearance:

Slinger clearance is the dimension between the thrust bearing housing face and the slinger (fig. 1). This measurement must be made with the shaft in the thrust position (thrust disc against the thrust shoe assembly) and the slinger held tightly against the shaft shoulder. Whenever adjustments are needed, the slinger clearance must be checked and, if necessary adjusted to 0.050" plus or minus 0.010" before the thrust clearance adjustment is made. Measurement of the slinger clearance can be performed by one of the following methods:

Method 1:

Wedge several blades of a feeler gage between the slinger and the retaining ring.

Method 2:

Make a sleeve from a piece of standard Sch. 40 pipe. Place the sleeve over the impeller end of the shaft, and press the slinger against the shaft shoulder by hand tightening the impeller locknut.

1. Stand the thrust bearing and shaft assembly on its splined end, inside a restraining device (see [figure 2.0](#)).
2. Push firmly down on the thrust bearing housing and using a feeler gage, measure the clearance between the slinger and the thrust bearing housing face to be 0.050" +/- 0.010", adjust the clearance by removing laminations (see [Fig. 1](#) for proper shim installation).

3.0 Adjusting Slinger Clearance:

Refer to [figure 1](#) and proceed as follows:

1. Make a reference mark across items (2), (6), and (7) to facilitate orientation during reassembly.
2. Remove retaining ring (3) and slinger (4).
3. Remove socket head screws (8) while holding the thrust bearing assembly together.
4. With one hand on the thrust bearing housing (2) and the other on the splined end of the shaft and against the counterthrust bearing end plate (7), gently invert the assembly and stand on impeller end. Lower the thrust bearing housing off the impeller end of the shaft.
5. Be sure all parts are clean and lightly coated with lubricating oil prior to assembly.
6. Check the pin's (5) height, they should protrude no further than .126".
7. Remove the .003" or .002" laminations from the shim until proper slinger clearance is reached. Install the mating ring, thrust bearing housing, high speed shaft, slinger and retaining ring.
8. With the slinger tight against the shaft shoulder and the shaft in the thrust position, measure slinger clearance as in method 1.0 or 2.0 above. Be sure that the mating ring is free to rock slightly on its spherical seat and the bearing is not seating up on the anti-rotation pins (item 5 [Fig. 1](#)).

3.0 Measuring Thrust Clearance:

Thrust clearance is the total distance the shaft moves between the full thrust and full counter-thrust positions. If thrust clearance is found to be within tolerance when measuring in place, it is unlikely that slinger clearance would be out of tolerance. Thrust clearance can be adjusted without affecting slinger clearance. However, slinger clearance cannot be adjusted without affecting thrust clearance. Thrust clearance should be measured with a dial indicator as follows:

1. Thread one end of a 5/16" dia. X 12.0" long rod and attach it to the thrust bearing housing by bolting it through one of the holes in the flange, or screwing it into a metal block and securing it with a "C" clamp (Fig. 3).
2. Mount a dial indicator on the rod and adjust it so that the button rests on the center of the snugly tightened locknut.
3. Stand the thrust bearing and shaft assembly on its splined end. With both hands, grasp the underside of the flange with the fingers so that the thumbs rest approximately 180 degrees apart on the slinger flange.
4. Apply pressure between the thumbs and fingers so as to force the flange upward and the slinger downward. Move the housing assembly back and forth on the shaft to the full thrust and counterthrust positions. Record from the dial indicator the total reading (thrust clearance), and remove laminations accordingly.

Compressor Size

31

Minimum axial float (in.) 0.004

Maximum axial float (in.) 0.006

4.0 Adjusting Thrust Clearance:

Refer to [figure 1.0](#) and proceed as follows:

1. Make a reference mark across items (2), (6), and (7) to facilitate orientation during reassembly.
2. With slinger and retaining ring in place, and the shaft on its impeller end, remove the socket head screws while holding the assembly together.
3. With one hand on the counterthrust bearing end plate (7) and the other on the impeller end of the shaft, gently invert the shaft assembly and lower the counterthrust bearing assembly off the splined end of the shaft.
4. Remove peelable shim laminations accordingly.
5. Reassemble the counterthrust bearing housing (6) and end plate (7), assuring that all shims are positioned properly ([Fig. 1](#) detail B).
6. Tighten socket head screws (8) and recheck axial float. Turn thrust bearing and shaft assembly and check for binding. If the shaft does not turn freely, remove the counterthrust end of the thrust bearing and inspect for correct assembly.

19HR322-254 THRUST BEARING

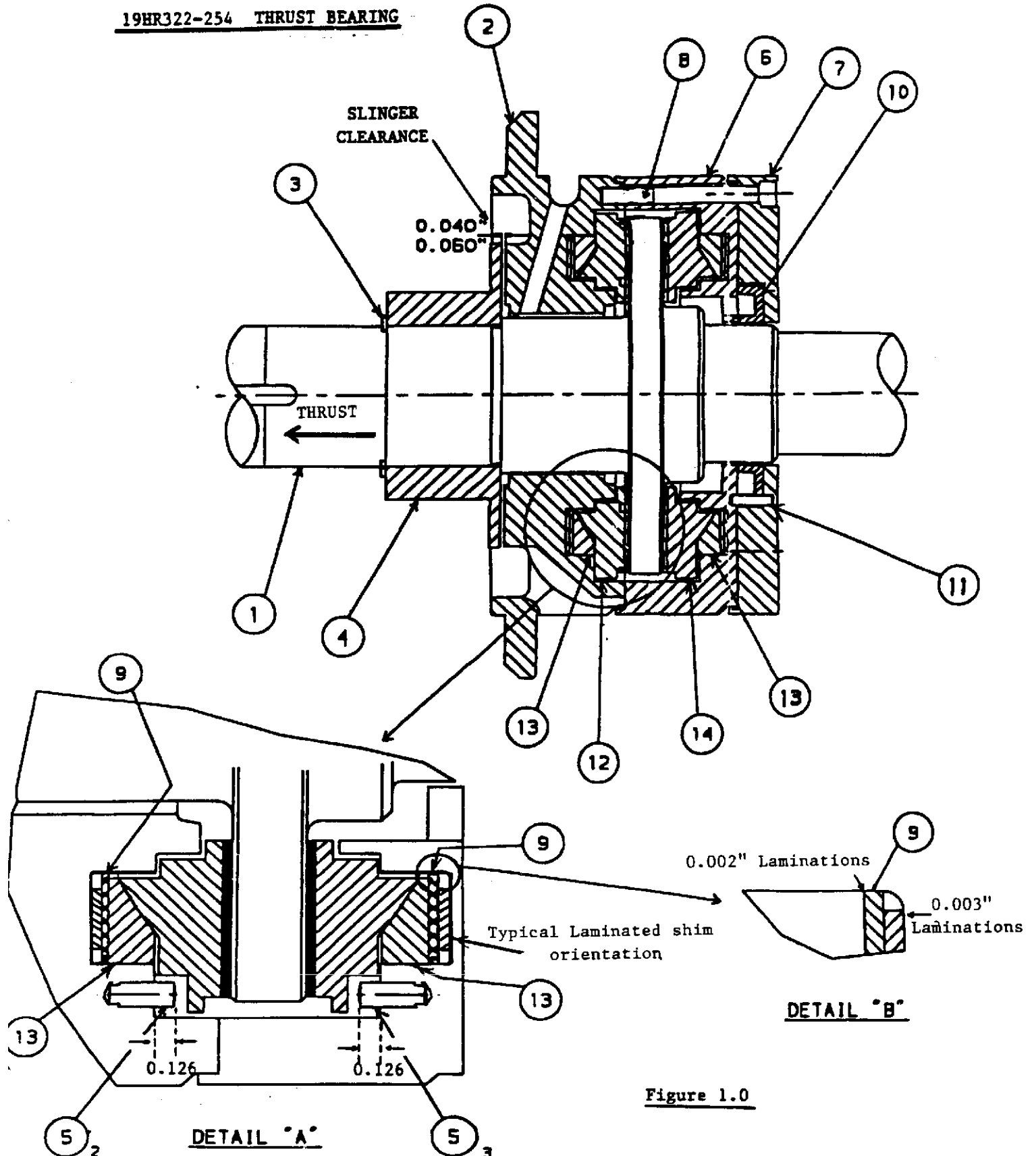


Figure 1.0

19HR322 — 254 Parts List

Item	Part Number	Req'd	Description
1	19HR312-1004	1	Shaft
2	19HR322-1154	1	Bearing Housing
3	AU94AR181	1	Retaining Ring
4	19D31-1282	1	Slinger
5	19HR212-1102	5	Lock Pin 5/32 Dia X 3/8 Lg
6	19HR322-1283	1	Thrust Bearing Housing
7	19NR322-1103	1	Thrust Bearing End Plate
8	AA44AA135	9	Soc. Head Scr. #10-24 2 Lg
9	19HR322-1183	2	Shim
10	19NR312-1123	1	Seal Ring
11	AX11AR067	1	Dowel Pin 1/8 Dia X 5/8 Lg
12	19HR322-274	1	Thrust Bearing Shoe
13	19HR322-1144	2	Thrust Bearing Seat Assy.
14	19HR322-264	1	C'Thrust Bearing Shoe

Figure 1.0a

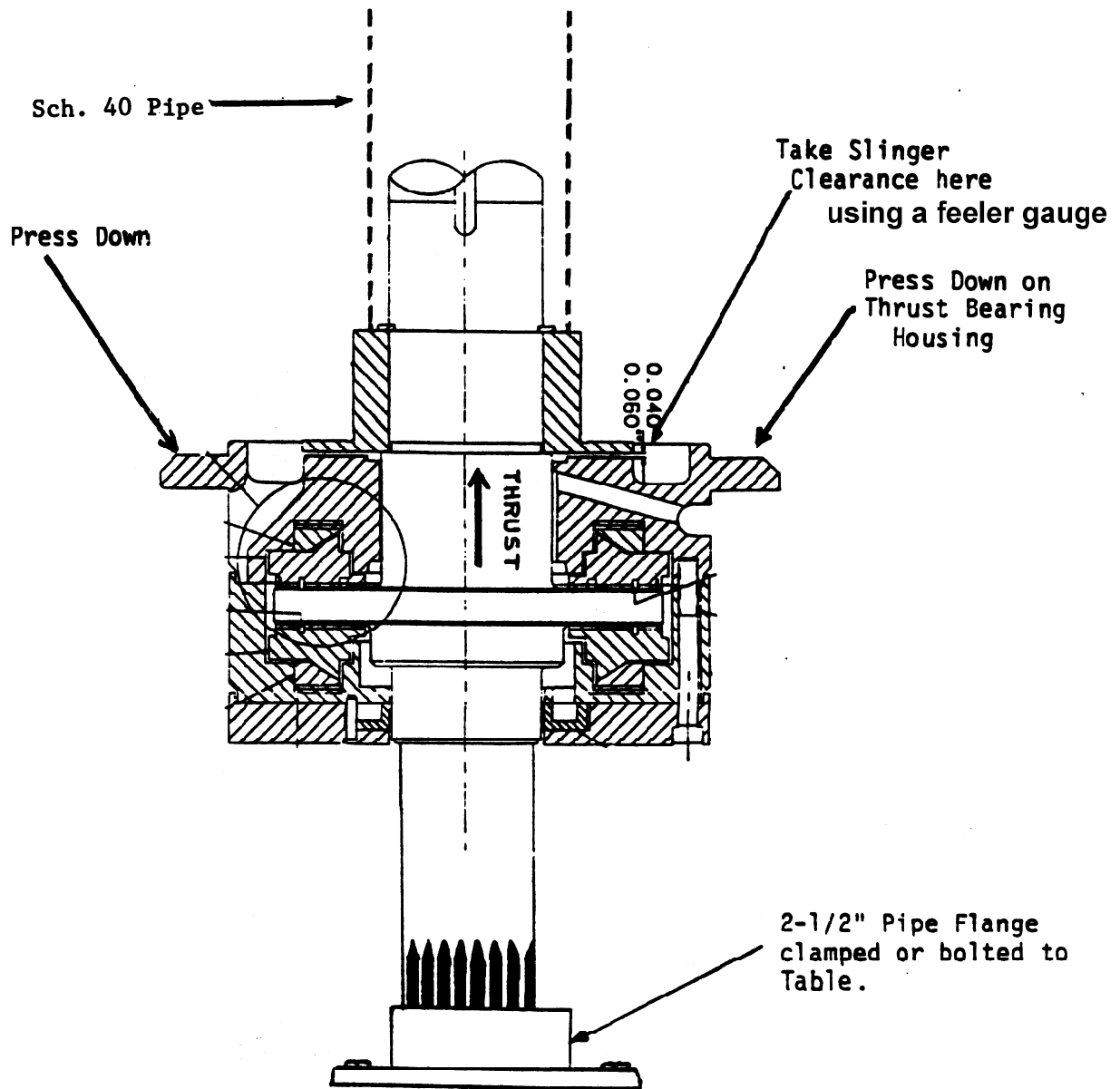


FIG. 2.0 MEASURING SLINGER CLEARANCE

Note: Impeller Nut is not shown

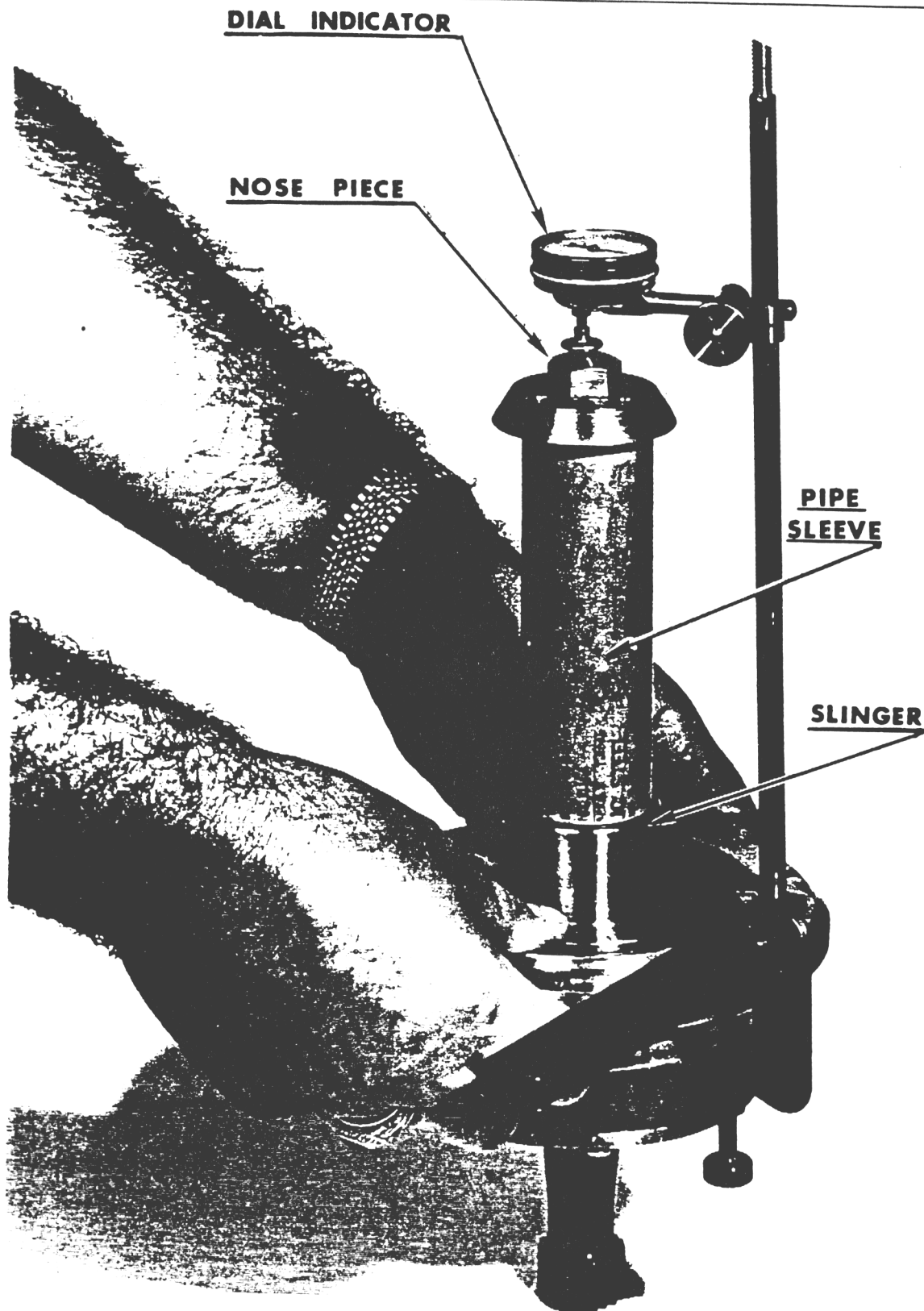


FIG. 3.0 MEASURING THRUST CLEARANCE