

Thrust Bearing Adjusting Mechanism

This mechanism, shown in Figure 1, provides an external means of moving the thrust bearing cage and with it the turbine rotor in an axial direction to obtain the desired rotor setting. Its principal parts are:- the handwheel "6", adjusting stem "15", and yoke "18".

The handwheel is secured to the nut "14" which is threaded on the stem. This nut is held against axial movement by a counter bore in the bearing cover and the retainer "9". Therefore, rotation of the hand wheel and nut moves the stem in an axial direction. Ball bearings "11" are provided on each side of the nut collar to absorb the thrust on the stem and thus reduce the friction in the mechanism.

The end of the stem carries a cross-head which engages lugs at the top of the yoke. The yoke, in turn, extends downward so as to engage lugs formed integrally on each side of the bearing cage. The ends of the yoke are circular in shape and are fulcrumed in the bearing pedestal slightly above the horizontal centerline of the bearing, thus forming a cam, so that axial movement of the handwheel stem gives a much smaller axial movement at the ends of the yoke. These yoke ends fit closely between lugs on the bearing cage, all lost motion being taken up by liners "19", placed back of shoes "22" which are shaped to fit the cams.

The direction plate "8" indicates the direction of handwheel rotation required to move the rotor to the Running or the Start and Stop position. One complete revolution of the handwheel moves the rotor 5 mils, after all lost motion has been taken up. When the turbine is to be started or stopped, the thrust bearing should be moved to the Start and Stop position, and should never be moved to the Running position, until the unit has had ample time to become heated to its normal operating temperature.

In connection with maintenance work, it is important to note that on some machines it is necessary to move the rotor toward the exhaust end, beyond the start and stop position, before raising the cylinder cover or the rotor. When such additional movement is necessary the detailed instructions are given on the rotor clearance drawing.

Assembling and Dismantling

The handwheel unit composed of items "1" to "9" inclusive and "11" to "14" inclusive, can be dismantled without disturbing the pedestal cover. After breaking the joint between the retainer "9" and the pedestal cover, counter-clockwise rotation of the handwheel will carry the complete assembly off the stem "15". With this assembly removed, further dismantling is obvious.

As shown in "Section C-C", the yoke trunion bearings are supported in the pedestal cover only. Consequently the pedestal cover can be raised with the yoke, stem and handwheel assembly complete. The yoke is then removed by removing the bearing caps "23". The stem cross-head "17" engages the yoke loosely and there is no mechanical connection at this point.

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Re-assembly is in the reverse order. When lowering the pedestal cover into place, the yoke ends should be guided to make sure that they enter between the cage lugs properly.

Lubrication

The ball bearings "11", used on the adjusting stem nut, should be kept filled with a good grade of heavy ball bearing grease. Do not use grease containing graphite. A suitable fitting "10" is provided for the injection of this lubricant. The seal rings "13" reduce the leakage outward to a minimum.

The yoke bearings "24" and the surfaces of the cam shoes "22" are lubricated by oil, at bearing supply pressure, delivered thru drilled passages.

Adjustments

When assembling this mechanism, the following adjustments should be checked.

- 1 - Adjust the total thickness of liners "12" so that the nut "14" turns freely but without end-play.
- 2 - Turn handwheel until the "0" mark on stem "15" coincides with index line (Centerline of sight hole) on nut "14".

Then shift liners "12" from one side to the other to put the yoke "18" in a vertical position.

- 3 - With the above setting correct, adjust liners "19" to hold the rotor midway between its Running and Start and Stop positions. Be sure to install enough liners "19" to take up all lost motion between the yoke cam and the thrust bearing cage lugs.

The following list has been compiled to facilitate ordering spare or renewal parts by item number and name together with the serial number of the turbine.

Item No.	Name	Item No.	Name
1	Handwheel Retaining Nut	14	Adjusting Stem Nut
2	Handwheel Retaining Nut Washer	15	Adjusting Stem
3	Handwheel Instruction Plate	16	Adjusting Stem Bushing
4	Handwheel Handle Pin	17	Adjusting Stem Cross-head.
5	Handwheel Handle	18	Yoke
6	Handwheel	19	Yoke Cam Shoe Liners
7	Handwheel Key	20	Yoke Cam Shoe Liner Retainer
8	Adjusting Instruction Plate	21	Yoke Cam Shoe Retainer
9	Adjusting Stem Nut Retainer	22	Yoke Cam Shoe
10	Grease Fitting	23	Yoke Bearing Cap
11	Ball Bearing	24	Yoke Bearing
12	Adjusting Stem Nut Liners	25	Adjusting Stem Cross-head Bushing
13	Oil Seal Rings	26	Adjusting Stem Cross-head Set Screw

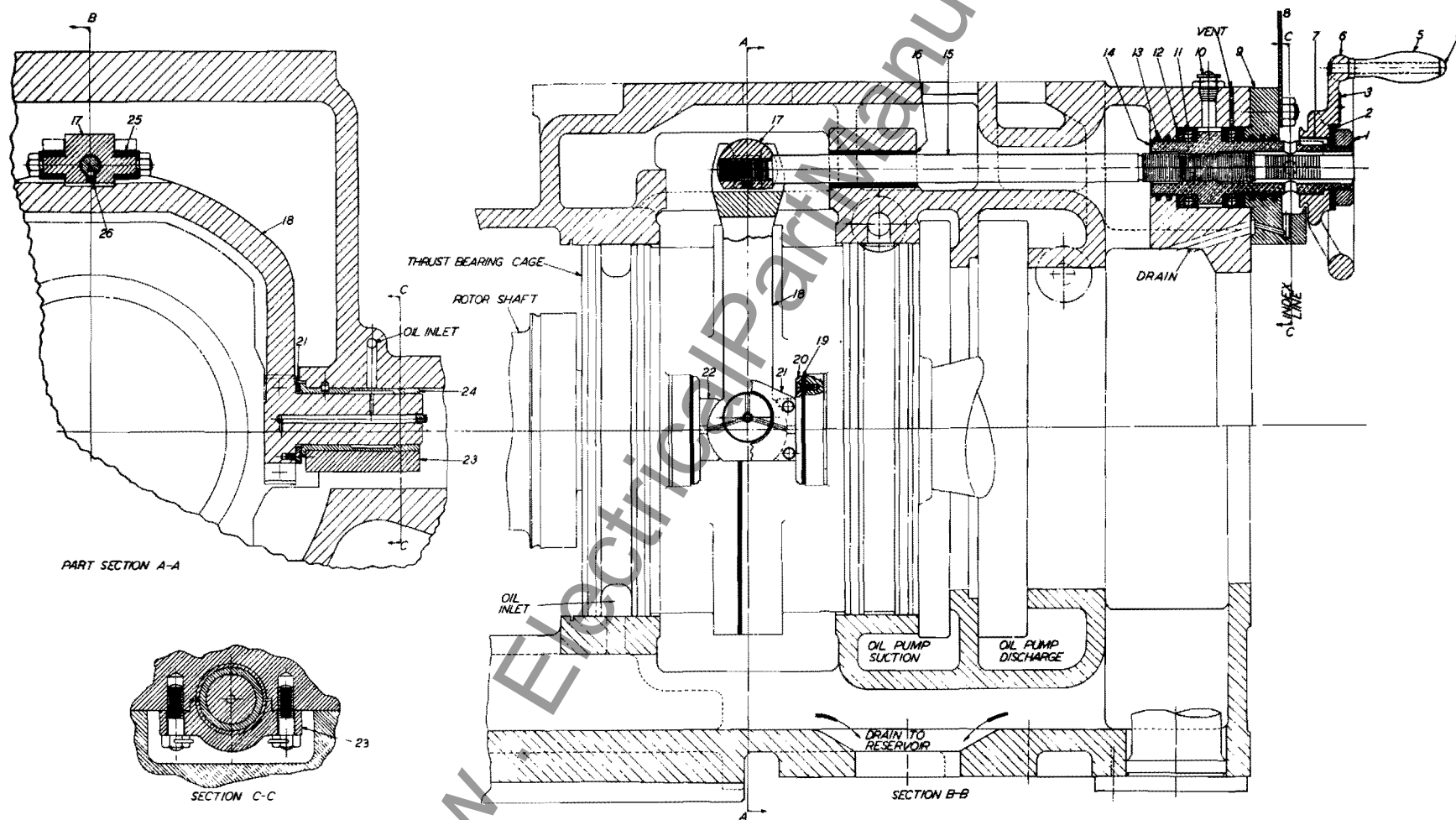


Fig. 1 - Assembly

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