Thrust Bearing Adjusting Mechanism

This mechanism, shown in Figure 1. provides an external means of moving the thrust bearing case, and with it the turbine rotor, in an axial direction to obtain the desired rotor setting. Its principal parts are:- the handwheel "15", adjusting stem "19", and yoke "5".

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 pedestal and the retainer "12". Therefore, rotation of the handwheel and nut moves the stem in an axial direction. Ball bearings "10" 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 bottom of the yoke. The yoke, in turn, extends upward 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 "4", placed back of shoes "1" which are shaped to fit the cams.

The direction plate "22" 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 adjusting stem nut housing "11" complete with the handwheel can be removed by breaking the joint between the housing "11" and the thrust pedestal. Counterclockwise rotation of the handwheel will then carry the complete assembly off the stem "19".

The stem cross-head "7" engages the yoke loosely and there is no mechanical connection at this point. Further dismantling is obvious.

Re-assembly is in the reverse order. It is important to note that the yoke "5" must be in place before the turbine rotor is installed.

Lubrication

The ball bearings "10", 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 "23" is provided for the injection of this lubricant. The seal rings "13" reduce the leakage outward to a minimum.

The yoke bearings "27" and the surfaces of the cam shoes "1" are lubricated by oil, at bearing supply pressure, delivered through drilled passages.

Adjustments

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

1 - Set the turbine rotor midway between the Running and Start and Stop positions.

2 - Adjust liners "4" to put the yoke "5" in a vertical position. Be sure to install enough liners "4" to take up all lost motion between the yoke cam and the thrust bearing cage lugs.

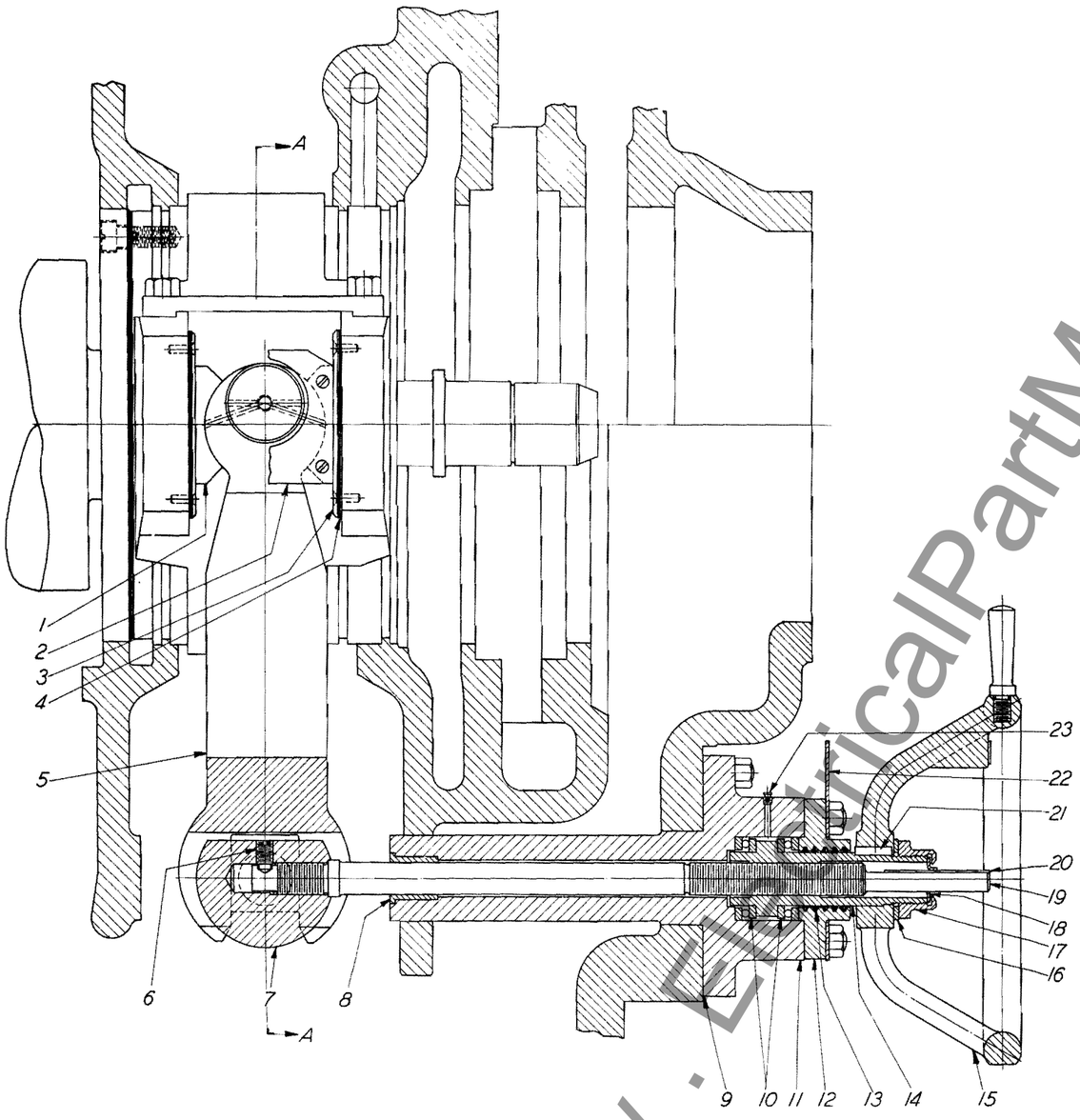
3 - Set the turbine rotor in the Running position.

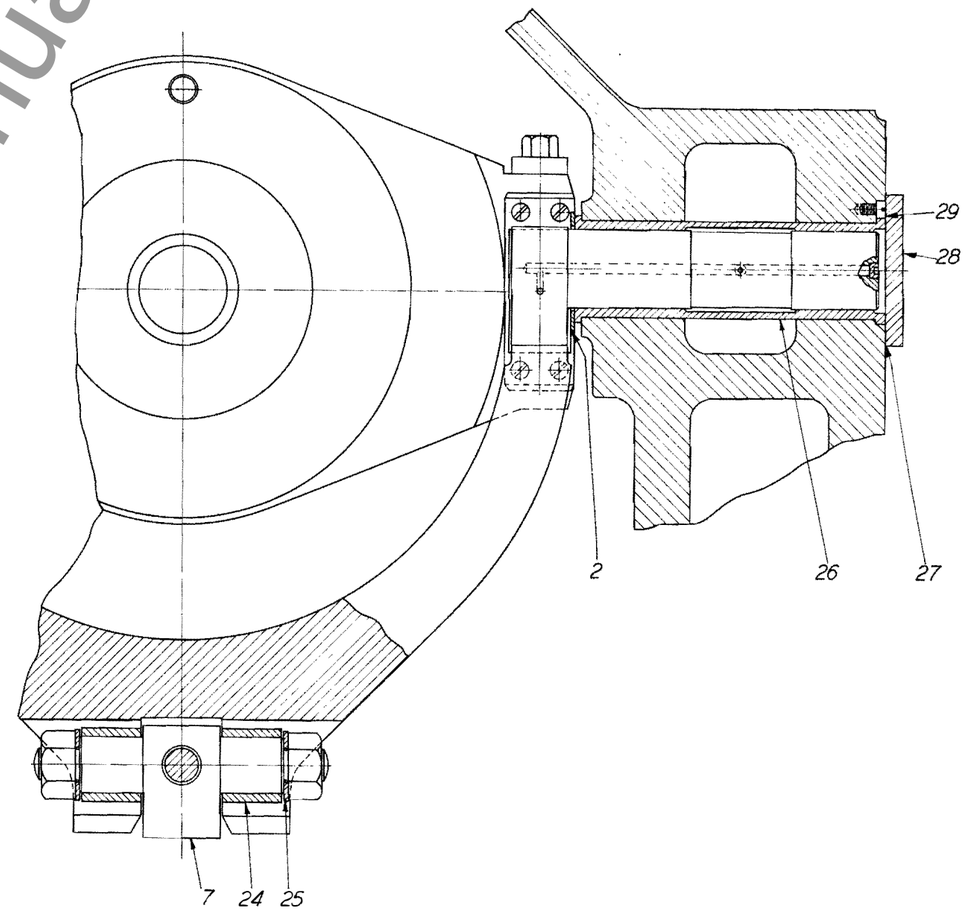
4 - Fasten the indicator plate "20" to the shaft "19" so that the "0" point is in line with the indicator "18". With the indicator plate set in this manner movements from the "0" point towards the generator show an increase of actual running clearances.

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
1	Yoke Cam Shoe
2	Yoke Cam Shoe Retainer
3	Yoke Cam Shoe Liner Retainer
4	Yoke Cam Shoe Liners
5	Yoke
6	Adjusting Stem Cross-head Set Screw
7	Adjusting Stem Cross-head
8	Adjusting Stem Bushing
9	Gasket
10	Adjusting Stem Nut Ball Bearing
11	Adjusting Stem Nut Bearing Housing
12	Adjusting Stem Nut Bearing Housing Cover
13	Adjusting Stem Nut Packing
14	Adjusting Stem Nut
15	Adjusting Handwheel
16	Adjusting Handwheel Lock Nut Washer
17	Adjusting Handwheel Lock Nut
18	Adjusting Stem Indicator
19	Adjusting Stem
20	Adjusting Stem Indicator Plate
21	Adjusting Handwheel Key
22	Adjusting Instruction Plate
23	Grease Fitting
24	Adjusting Stem Cross-head Bushing
25	Adjusting Stem Cross-head Washer
26	Yoke Bearing
27	Gasket
28	Yoke Trunnion Cover
29	Yoke Bearing Retainer Screw

Thrust Bearing Adjusting Mechanism





SECTION A-A

FIGURE 1