

Westinghouse**100 Kw Geared Turbine Generator Units**

This unit consists of a two stage impulse turbine driving a direct-current generator through the medium of a double helical single reduction gear. The turbine, gear, and generator are mounted on a common bedplate and the unit is self-contained with force feed lubrication to all bearings except the generator outboard bearing. The turbine is provided with a speed regulating governor, overspeed trip safety device, manually operated throttle valve, oil cooler and strainer, cylinder relief valve and necessary gauges and equipment.

The generator is of 100 KW capacity producing 125 V. direct current at 1200 rpm. It is of the two wire compound wound, self ventilated open type with straight line voltage characteristic. It is designed to be capable of carrying an overload of 25% for two hours and will operate continuously at normal full load with 40°C. maximum temperature rise.

The turbine is designed to operate with steam at 375#/in.² gauge and 700°F. total temperature and to exhaust to a vacuum of 28-1/4" hg. It consists of two impulse elements, each comprising two moving and one stationary row of blades, providing one pressure, and two velocity conversions. The two elements are separated by a diaphragm which contains the nozzles for the second element.

The reduction gear is of the double helical single reduction, fixed bearing type, with bearings and gear teeth lubricated from the main oil pump on the turbine. The pinion operates at the turbine speed of 5443 rpm and the gear is connected to the generator shaft and runs at 1200 rpm.

Figure 1 shows the outline of the combined unit and Figure 2 the assembly of the turbine. The reduction gear is described and illustrated in a separate supplement. The oiling system diagram is also shown in a separate leaflet.

The turbine is connected to the reduction gear by means of a Fast-type flexible coupling, operating instructions for which are shipped with each unit, and a facsimile of one of which is included herewith. The reduction gear and generator are connected by a flanged coupling.

Lubrication for the entire unit is supplied by a gear oil pump driven from the governor shaft. Oil discharged from the pump passes to the governor mechanism and through a relief valve to the oil cooler and to the bearings and gear teeth. The bearing housings and the gear case are drained to a reservoir in the bedplate, whence the pump suction line takes the oil back to the pump inlet. The relief valve is set to maintain 45 lbs. at the governing mechanism and an orifice in a bypass from the bearing supply line to the reservoir limits the bearing oil pressure to 5 lbs. at the bearings. The generator outboard bearing is ring oiled.

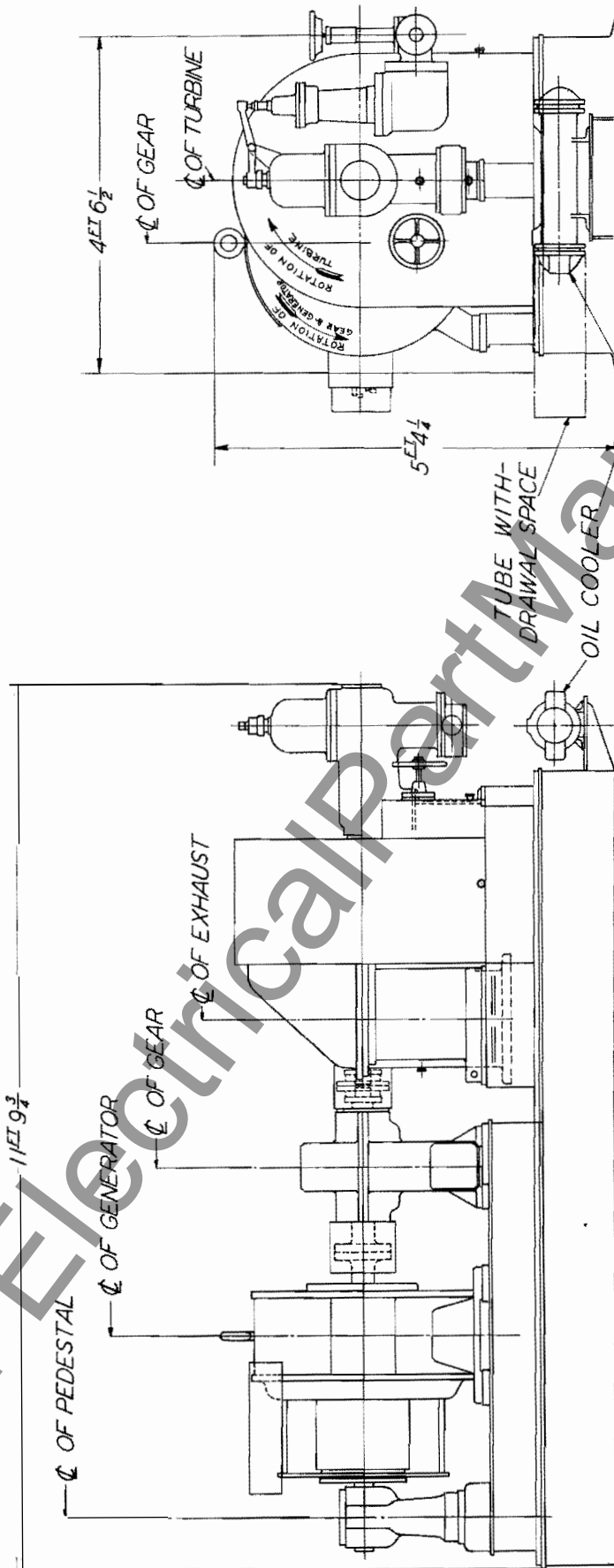


Fig. 1 - Outline

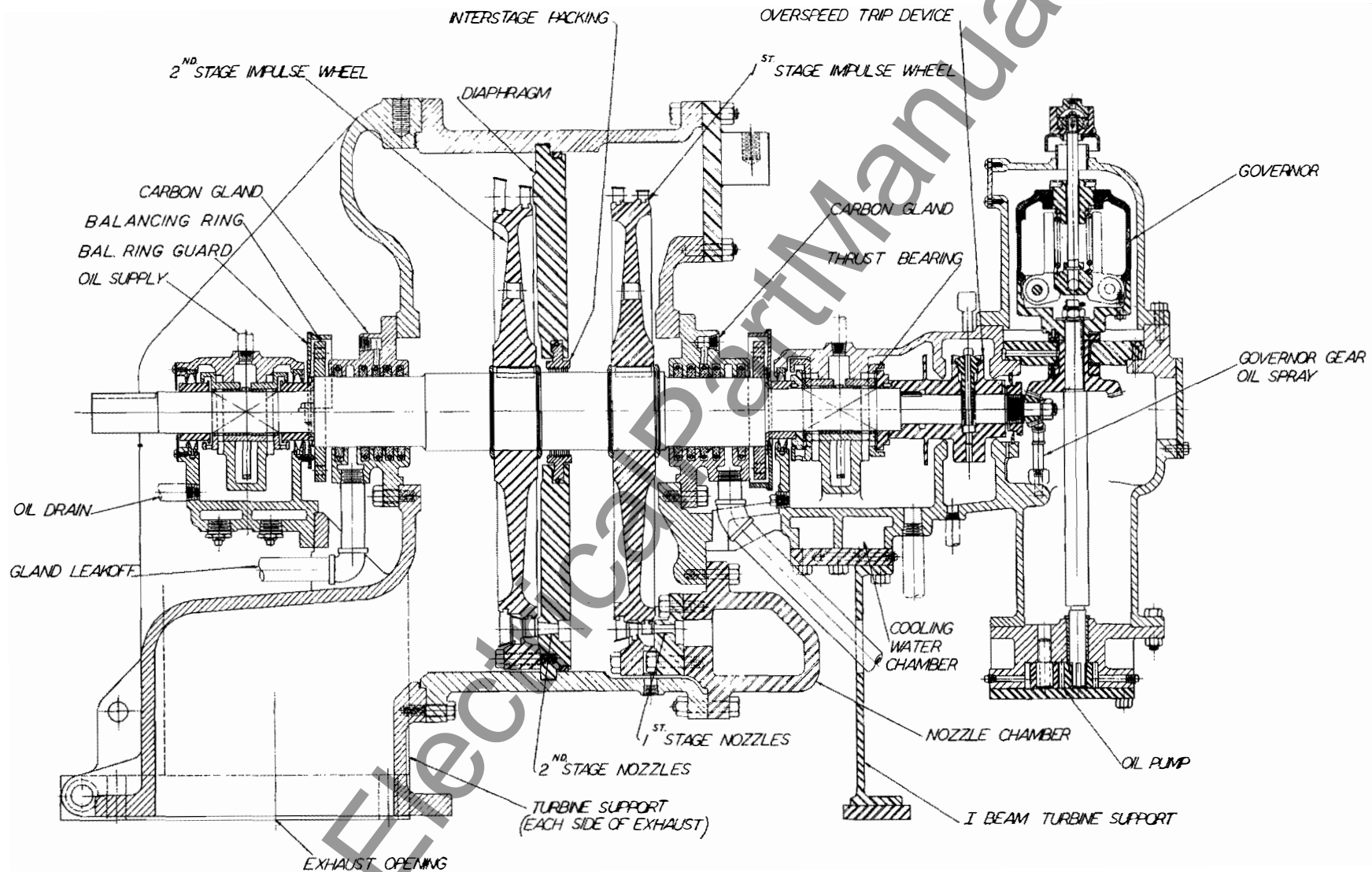
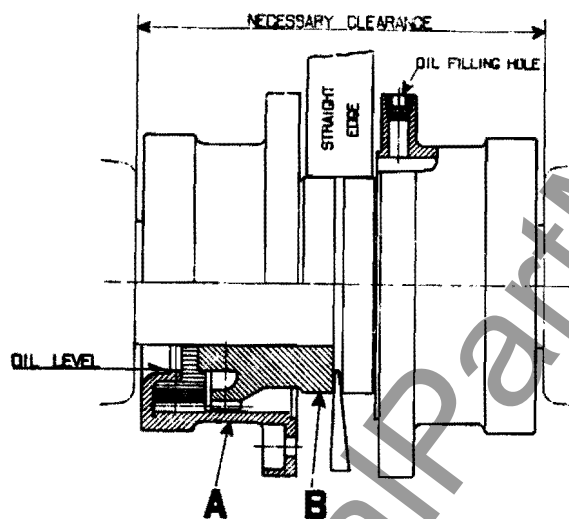


Fig. 2 - Assembly

—IMPORTANT—

DO NOT FAIL to put oil in Coupling before putting machines in operation.

DO NOT FAIL to replace the oil plugs tight enough so that the oil cannot throw out of the coupling when machines are in motion.



USE THIS METHOD OF ALIGNMENT THIS No. 2 COUPLING HOLDS $\frac{1}{6}$ PINTS OF OIL
"FAST'S" FLEXIBLE COUPLINGS

A flexible Coupling is not a universal joint. The same care should be taken in the alignment of equipment using flexible couplings as if solid couplings were to be used.

INSTRUCTIONS FOR INSTALLING

The sleeve (A) should be entered over shaft end before the hub (B) is forced on and keyed. The key must fit on its sides for the entire length of the hub. It must not bear on top or bottom.

The hubs of this No. 2 coupling must be separated $\frac{1}{8}$ of an inch. This dimension will be found stamped on the alignment faces of the hubs.

Shafts should then be lined up by using a straight edge and taper thickness gauge on alignment faces on hubs as shown above.

The Flanges of the sleeve should be cleaned and gaskets examined to insure oil seal and then bolted solidly together.

Through one of the two holes provided in the flange of the coupling, put in $\frac{1}{6}$ pints of good, heavy fluid lubricant, no lighter than 600-w and no heavier than "Crater Compound" (Do not use grease.) At the point marked "Oil Level" on the above sketch, oil will run out when the coupling is at rest if more than the necessary amount is put in. Be sure to replace plugs tightly, using wrench provided with this coupling for the purpose.

"KEEP COUPLINGS OILED"

This Coupling Serial No. 67214 to 67221 INCL. Connects TURBINES 1-A-6175-1 to 1-A-6177-1 to 1-A-6175-8 INCL and GEARS 1-A-6177-8... INCL.
 To TRANSMIT 100 kW at 5443 RPM

THE BARTLETT HAYWARD CO.

BALTIMORE, MD.

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