

Overspeed Trip Device

Section A-A of Figure 1 shows the overspeed trip device which automatically closes the throttle valve, thus shutting off the flow of steam to the turbine, if the speed increases to approximately 10% above normal. As shown in the illustration, the overspeed trip body is keyed to the turbine shaft and secured by the nut "8". The overspeed trip weight "5" is set in a hole drilled in the rotor shaft and overspeed trip body, perpendicularly to the axis of rotation. The center of gravity of the weight "5" is slightly offset from the axis of rotation, and normally it is held in place by the compression spring "1" and the retainer "4". If the speed of the turbine increases to the point for which the Auto Stop is set to operate (approximately 10% above normal), the weight "5", due to its increased centrifugal force, overcomes the compression of the spring "1" and flies out, striking the trigger "9". This disengages the latch plate "11" and reset lever "12" allowing a spring, not shown, to pull the throttle valve shut, thus shutting off the flow of steam to the turbine.

The mechanism can be tripped by hand by striking the reset lever "12" and disengaging the latch plate. Tripping by hand, however, tests only the throttle valve and not the overspeed trip.

When the tripping mechanism has operated, it can be reset by closing the throttle valve and then pulling up on the reset lever "12" until the latch plate "11" re-engages the lever.

The turbine should be overspeeded occasionally to check the speed at which the weight "5" flies out and actuates the tripping mechanism. This test should be carried out in the following manner:

1. Close the throttle valve until the turbine speed drops below normal. The governing valve will then open wide. Place blocks under the valve operating lever so as to hold the valve open.
2. Open the throttle valve slowly, carefully watching the tachometer, and increase the speed to the tripping point. During this test an operator should stand by, ready to trip the mechanism by hand instantly if it does not trip automatically at approximately 10% overspeed.

If the weight "5" fails to fly out at the correct speed, the unit should be shut down and the auto stop parts inspected. Make sure that the weight is not sticking in the shaft or body and that the spring is not fouled in any way.

The speed at which the auto stop will function can be adjusted by means of the liners "2". Increasing the thickness of the liners increases the tripping speed. Decreasing the thickness of the liners decreases the tripping speed.

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

Item No.	Name	Item No.	Name
1	Overspeed Trip Device Spring	7	Overspeed Trip Device Body
2	Overspeed Trip Device Spring Liners		Oil Ring
3	Overspeed Trip Device Retainer Lock Washer	8	Overspeed Trip Device Body Shaft Nut
4	Overspeed Trip Device Retainer	9	Trip Lever
5	Overspeed Trip Device Weight	10	Trip Lever Fulcrum Pin
6	Overspeed Trip Device Body	11	Trip Lever Latch Plate
		12	Reset Lever

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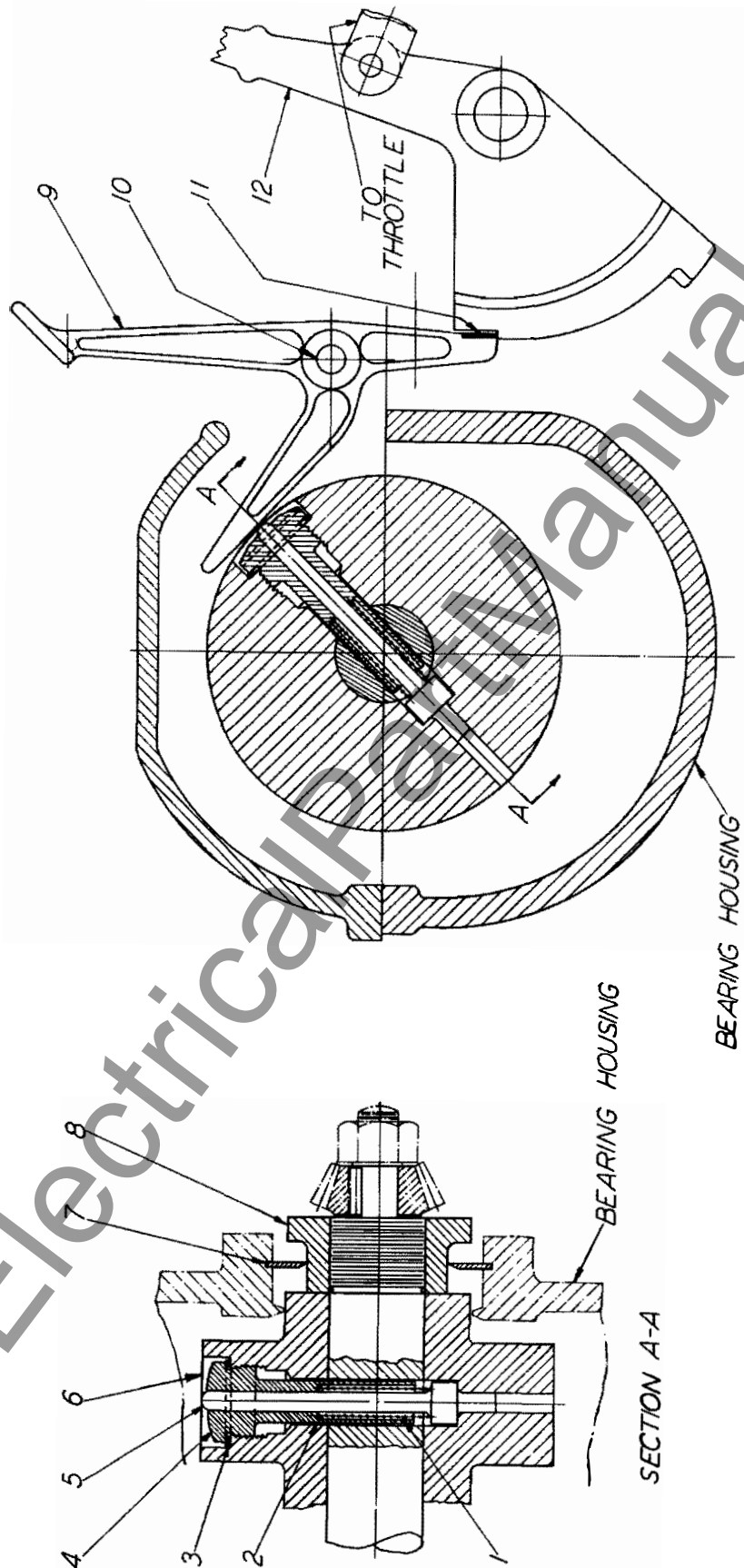


Fig. 1 - Overspeed Trip Device