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**GE Power Systems**  
*Steam Turbine*

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## **Low Bearing Pressure Trip Relay**

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*These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes the matter should be referred to the GE Company.*

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# LOW BEARING PRESSURE TRIP RELAY

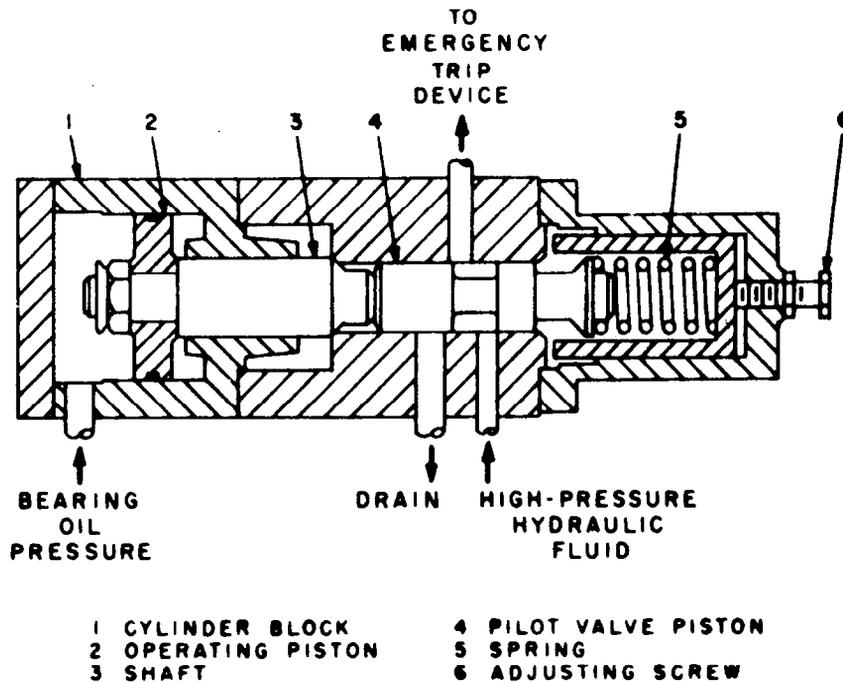
## PURPOSE

The low bearing pressure trip relay controls the emergency trip header at its source-- the high-pressure hydraulic supply. If the bearing oil pressure drops below a preset value, the emergency trip header will be dumped to drain regardless of the state of the other components in the emergency trip system. This relay prevents a bearing failure in the event bearing oil pressure is lost by immediately shutting down the turbine.

## DESIGN FEATURES

The relay consists of an operating piston (2, Figure 1) which senses bearing oil pressure. The piston transmits force through shaft (3), to which it is connected, to pilot valve piston (4). The pistons are spring loaded against the force of the bearing oil pressure by spring (5). Tension on the spring is adjusted by adjusting screw (6).

The pistons are housed in cylinder block (1) which has ports for hydraulic fluid and is bolted to a manifold in the dry compartment of the front standard.



*Fig. 1 - Low bearing pressure trip relay*

## **OPERATION**

Bearing oil is supplied to the end of operating piston (2). At normal bearing oil pressures, the force applied to the operating piston is sufficient to move it and pilot valve piston (4) to full stroke against the spring.

At this point, pilot valve piston (4) exposes a port in the pilot valve bushing and cylinder block to supply the high-pressure hydraulic fluid. Also opened is a second port which supplies fluid to the emergency trip device. The drain port is closed. With the relay in this position, the emergency trip header is maintained in the reset position.

When the bearing oil pressure drops below a value determined by the adjustment of screw (6), the spring moves the piston and pilot valve assembly in the opposite direction. This closes the high-pressure hydraulic fluid port, opens the drain port and thereby trips the high-pressure header supply to the emergency trip device and the turbine.

The relay will reset when the bearing oil pressure returns to the normal operating value.

## **ADJUSTMENT**

The adjusting screw makes it possible to set the relay to trip and reset at a wide range of bearing oil pressures. The relay is set at the factory to trip at 8 psig and reset at 10.5 psig. This setting should be maintained in the field.





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