



# **General Electric Turbine & Auxiliaries**

## **Section 7.4**

# Learning Objectives

1. State the purposes of the turbine & turbine auxiliaries.
2. Identify the sources of heating steam to the Moisture Separator Reheaters (MSRs).
3. State the purpose of the following Turbine valves.
  - a. Stop Valves
  - b. Control valves
  - c. Combined Intermediate Valves.

## Obj-1 The Purposes of the Turbine & Auxiliaries:

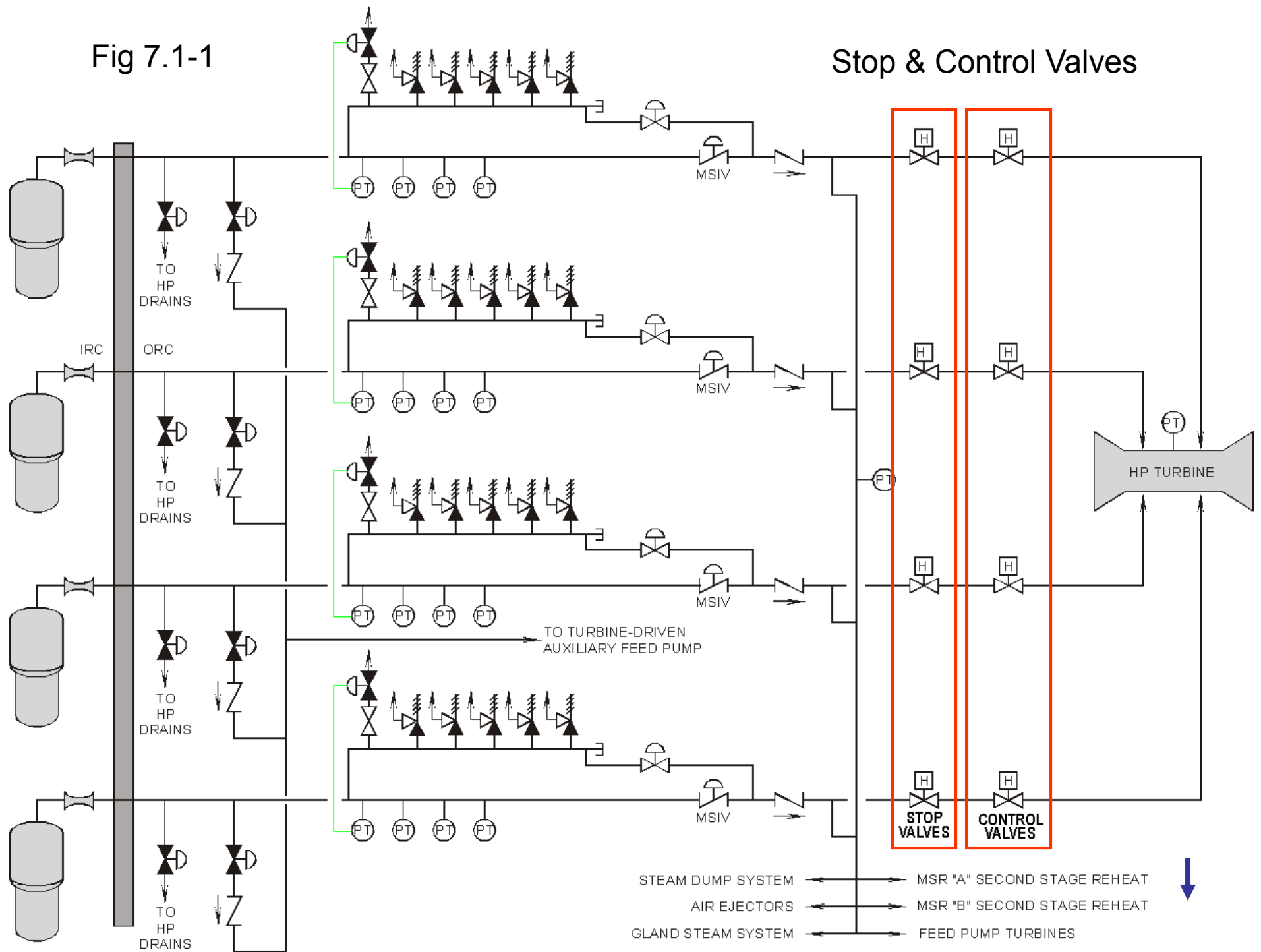
(7.4.1)

1. To convert the thermal energy of the steam to mechanical energy to turn the main generator,
2. To provide turbine shaft sealing,
3. To provide turbine/generator lubricating oil, and
4. To provide dry, superheated steam to the LP turbines to reduce moisture erosion and increase plant efficiency.



Fig 7.1-1

# Stop & Control Valves



## Stop Valves (7.4.2.2)

Obj-3a

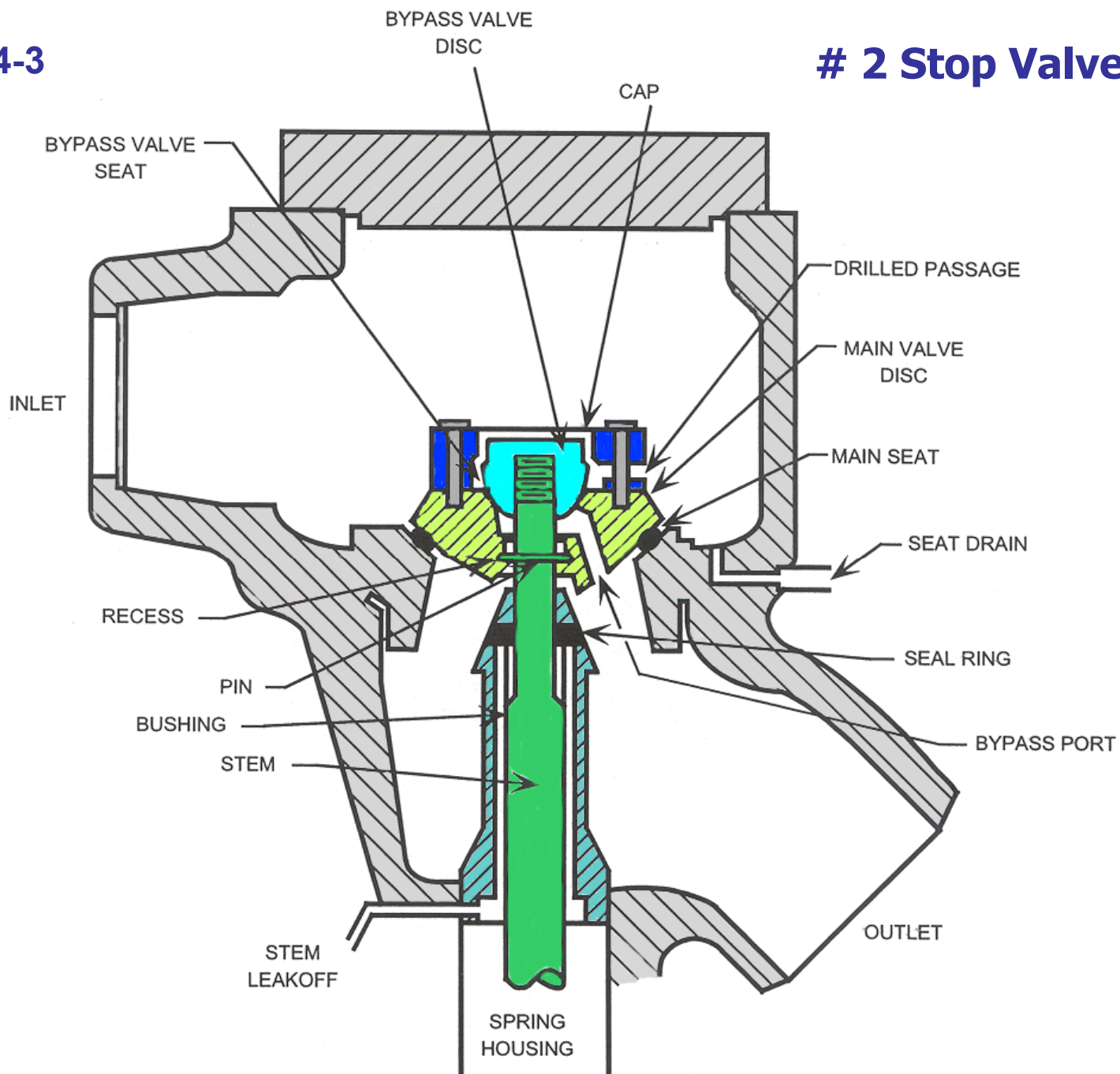
### Purposes:

- Supply steam to HP turbine.
- Close rapidly to isolate steam to HP turbine on turbine trip.
- No. 2 Stop Valve provides warming steam during turbine startup.



Fig 7.4-3

# 2 Stop Valve 28"



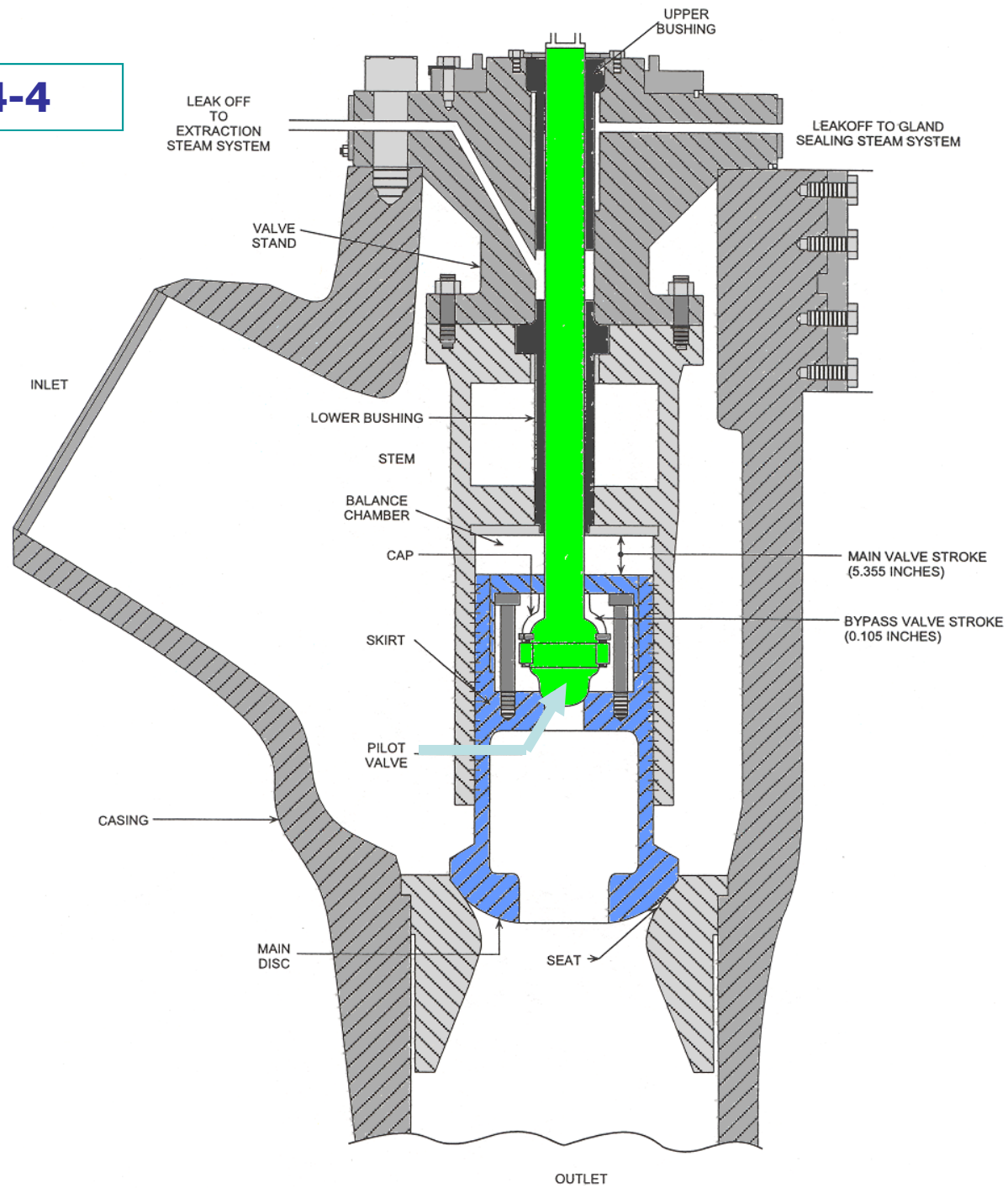
## Control Valves (7.4.2.2)

Obj-3b

### Purposes:

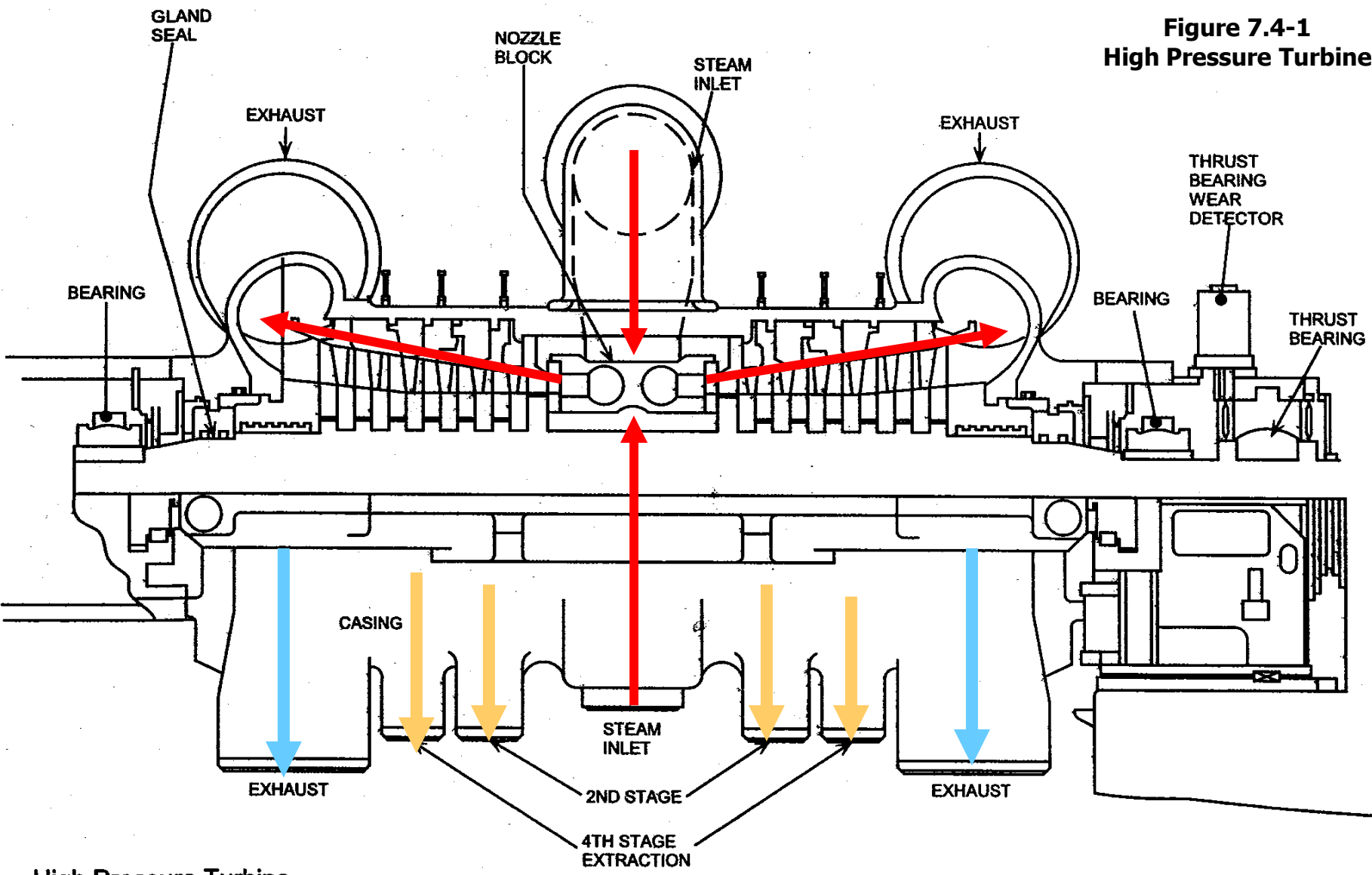
- Controls Turbine speed & load based on mode of control from Electrohydraulic Control (EHC) system (Chapter 11.5).
- Will auto close on Turbine trip signal to provide redundant steam isolation.

**Fig 7.4-4**





**Figure 7.4-1**  
**High Pressure Turbine**



**High Pressure Turbine**



**Main Steam**

SECOND STAGE  
TUBE BUNDLE

STEAM OUTLET

**Fig 7.4-9**

FIRST STAGE  
TUBE BUNDLE

**Extraction  
Steam**

SHELL

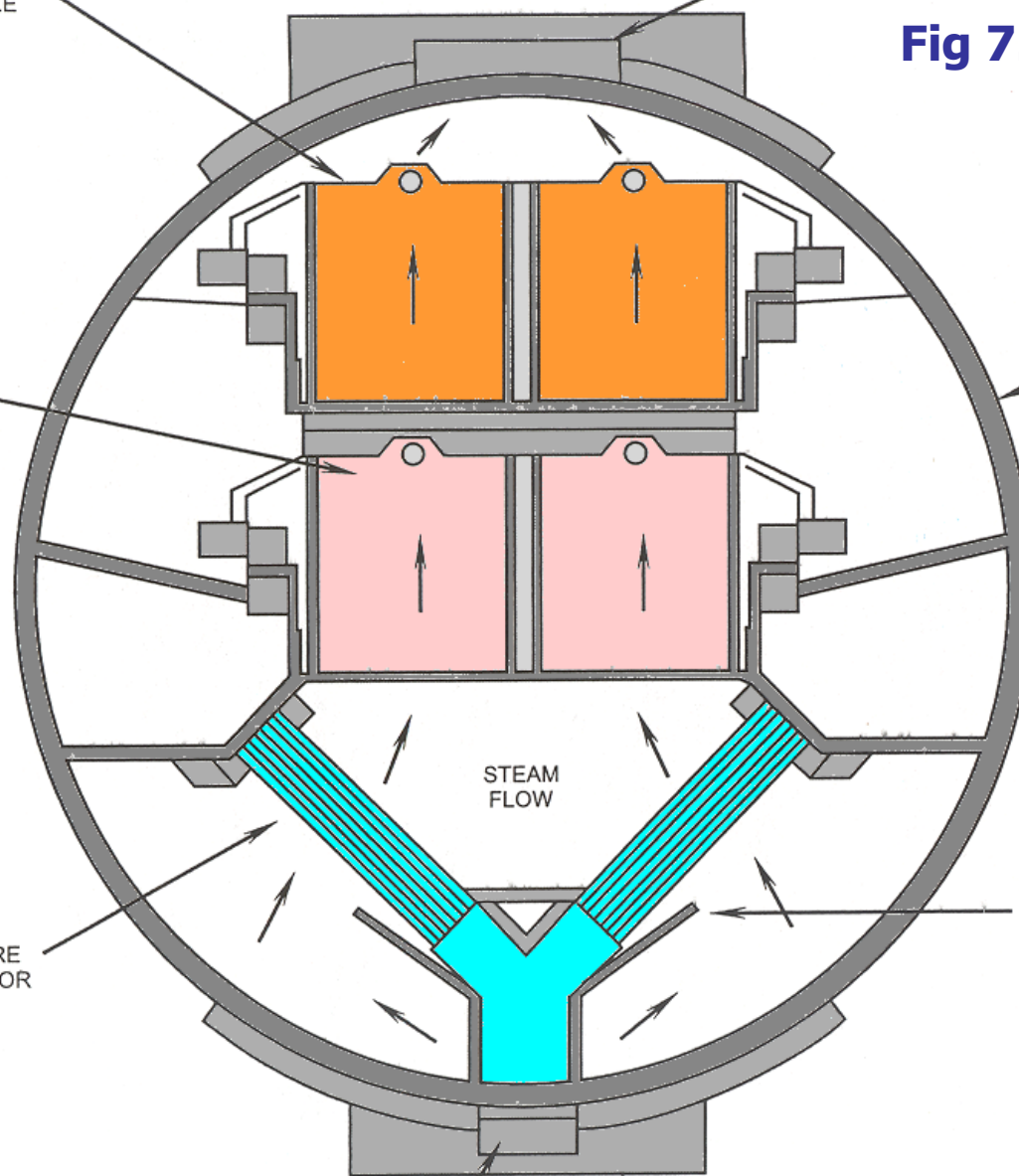
STEAM  
FLOW

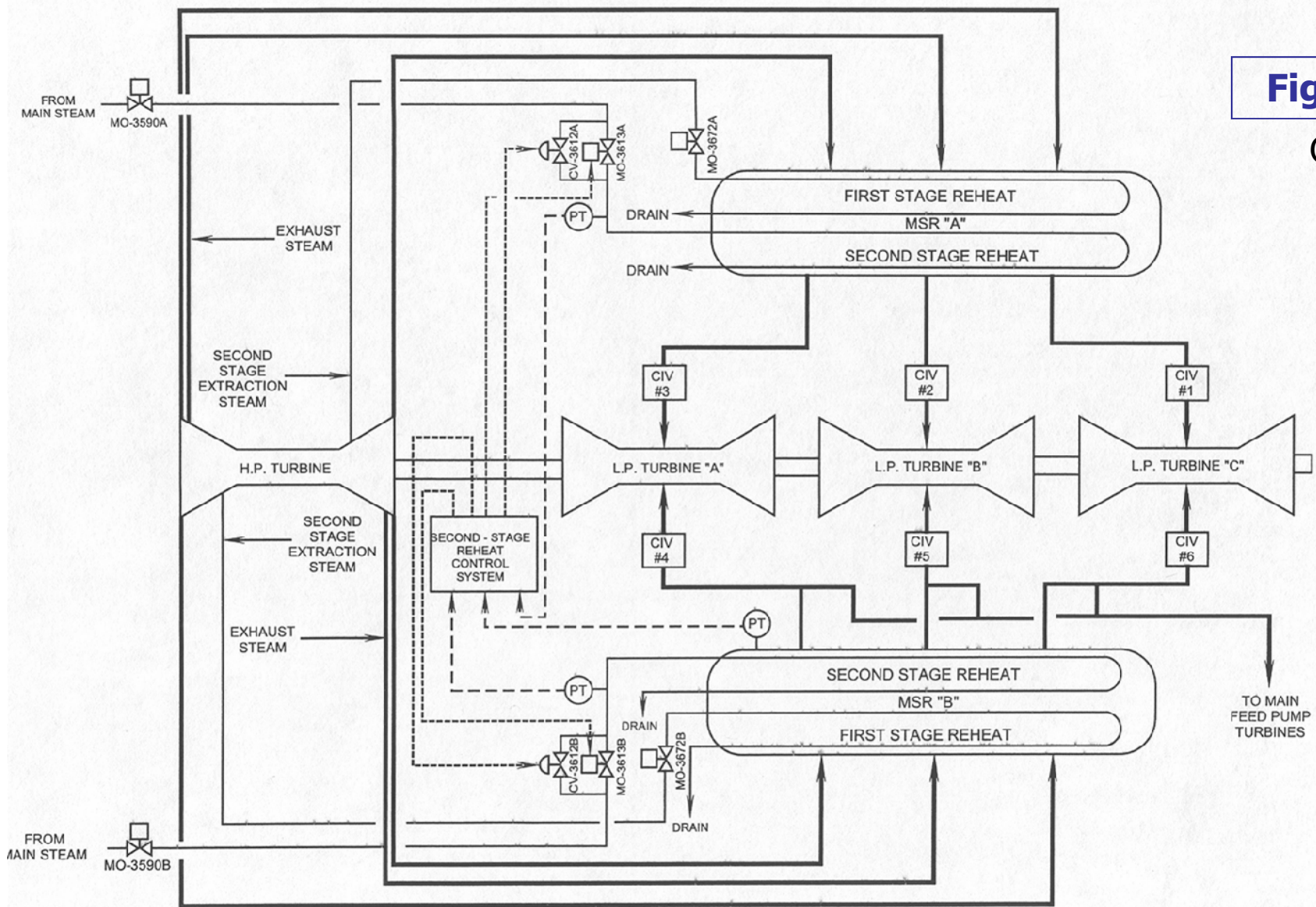
IMPINGEMENT  
BAFFLE

MOISTURE  
SEPARATOR

MOISTURE SEPARATOR  
DRAIN

STEAM INLET





**Fig 7.4-2**

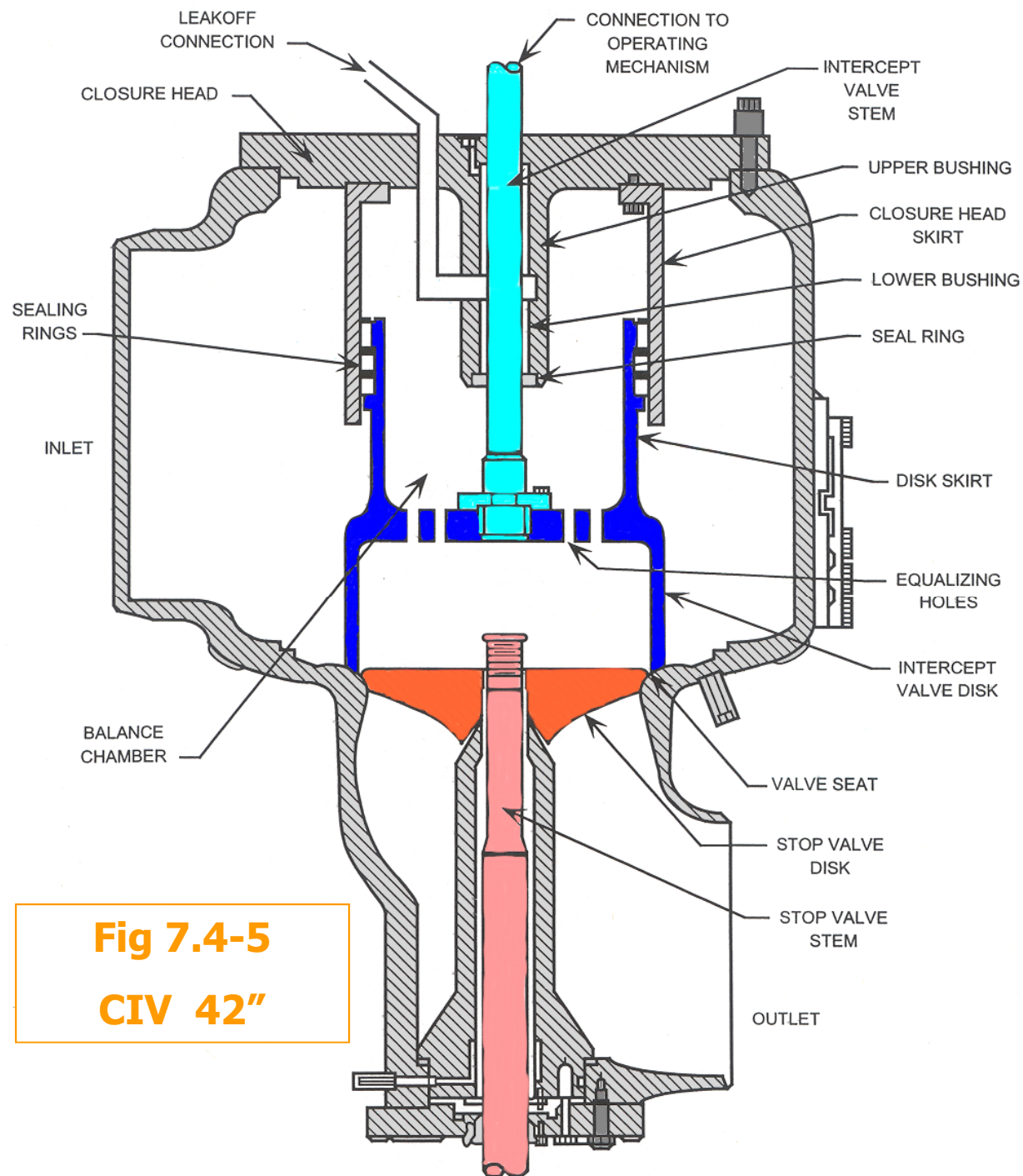
OBJ-2

## CIV (7.4.2.2)

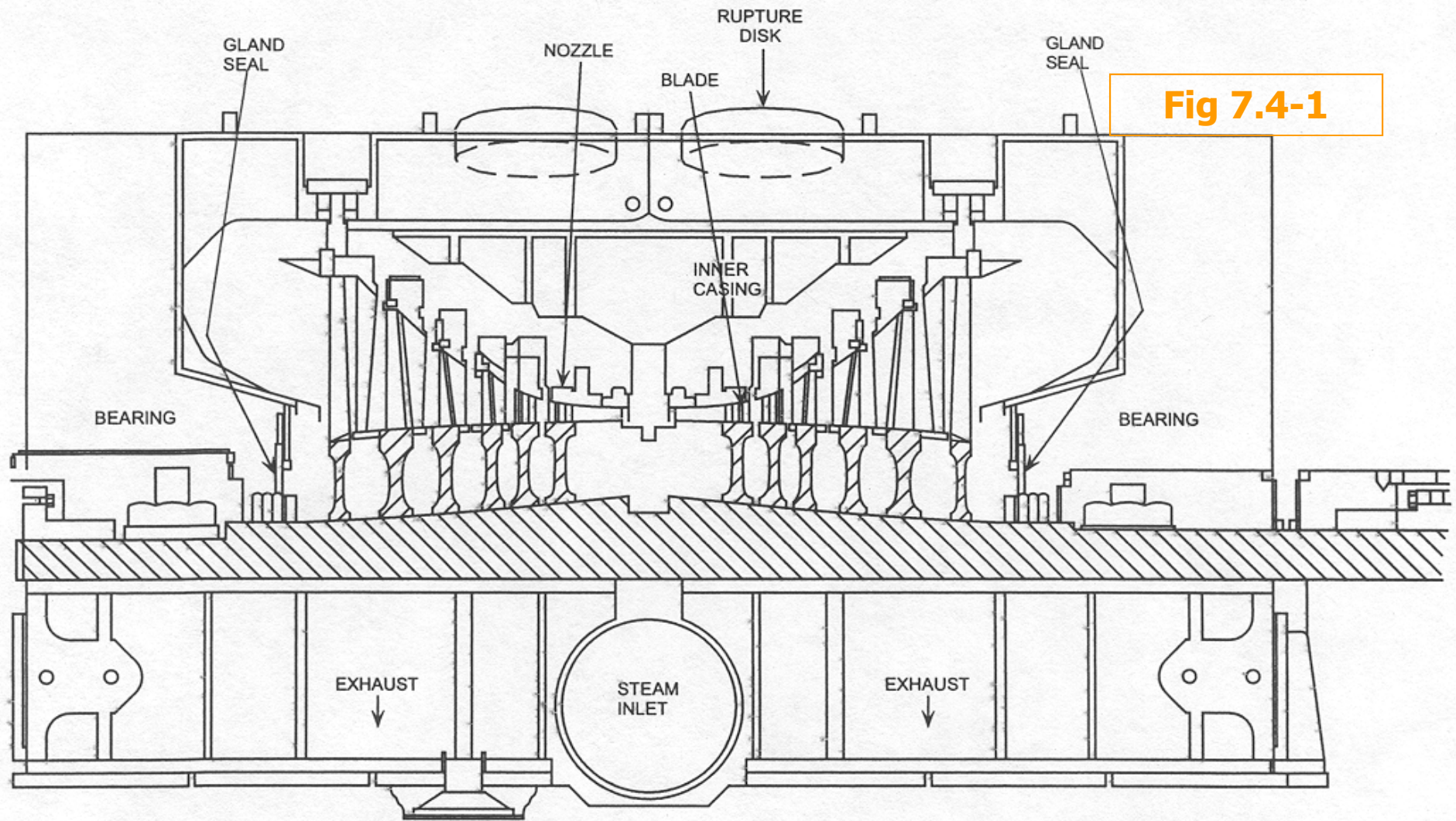
Obj-3c

### Purposes:

- Shut when turbine trips to provide redundant isolation of the LP turbines from the reheat steam (MSRs).
- Intercept valves will also operate to prevent turbine overspeed on turbine trip or load rejection.





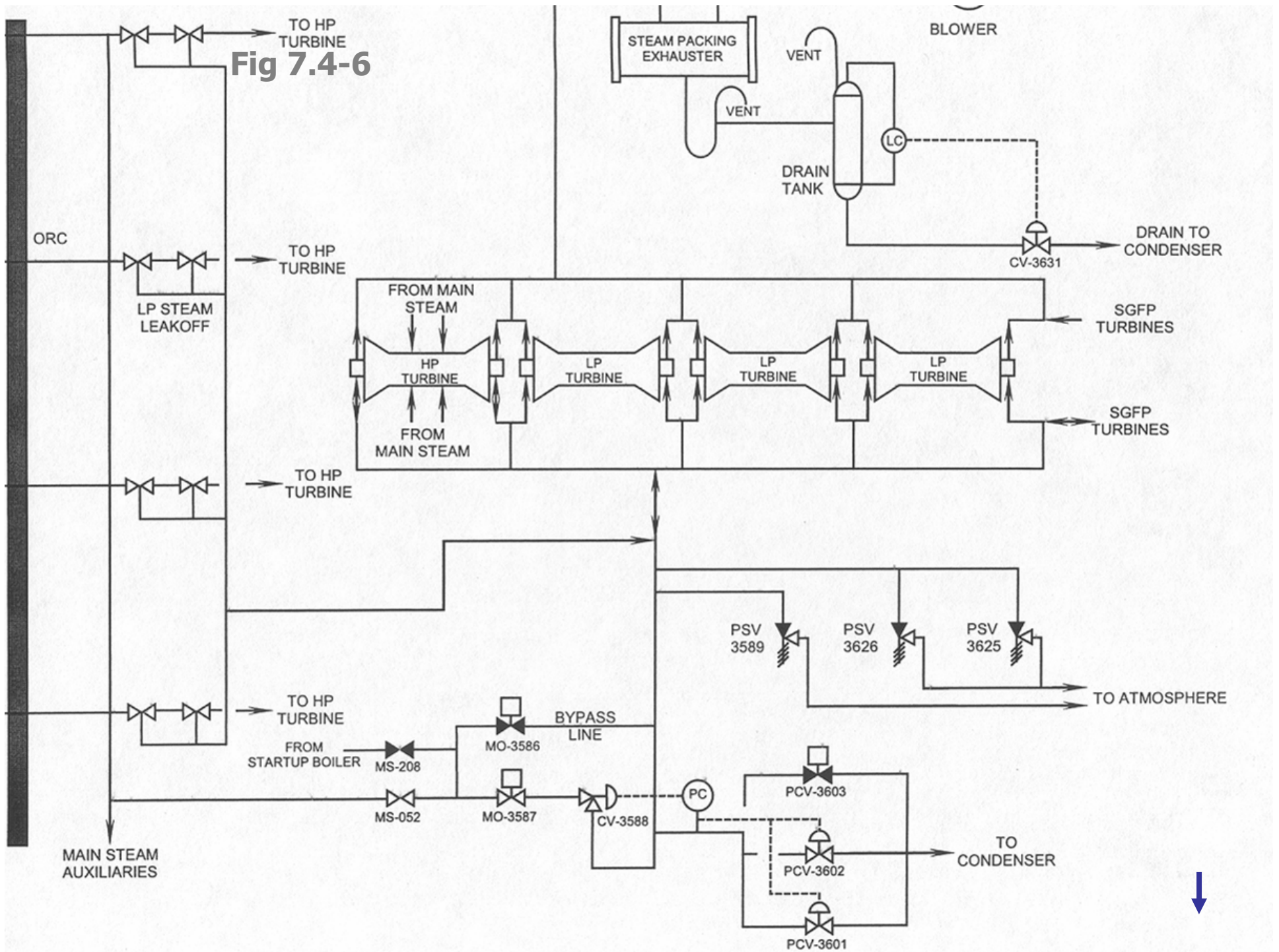


**Fig 7.4-1**

Low Pressure Turbine

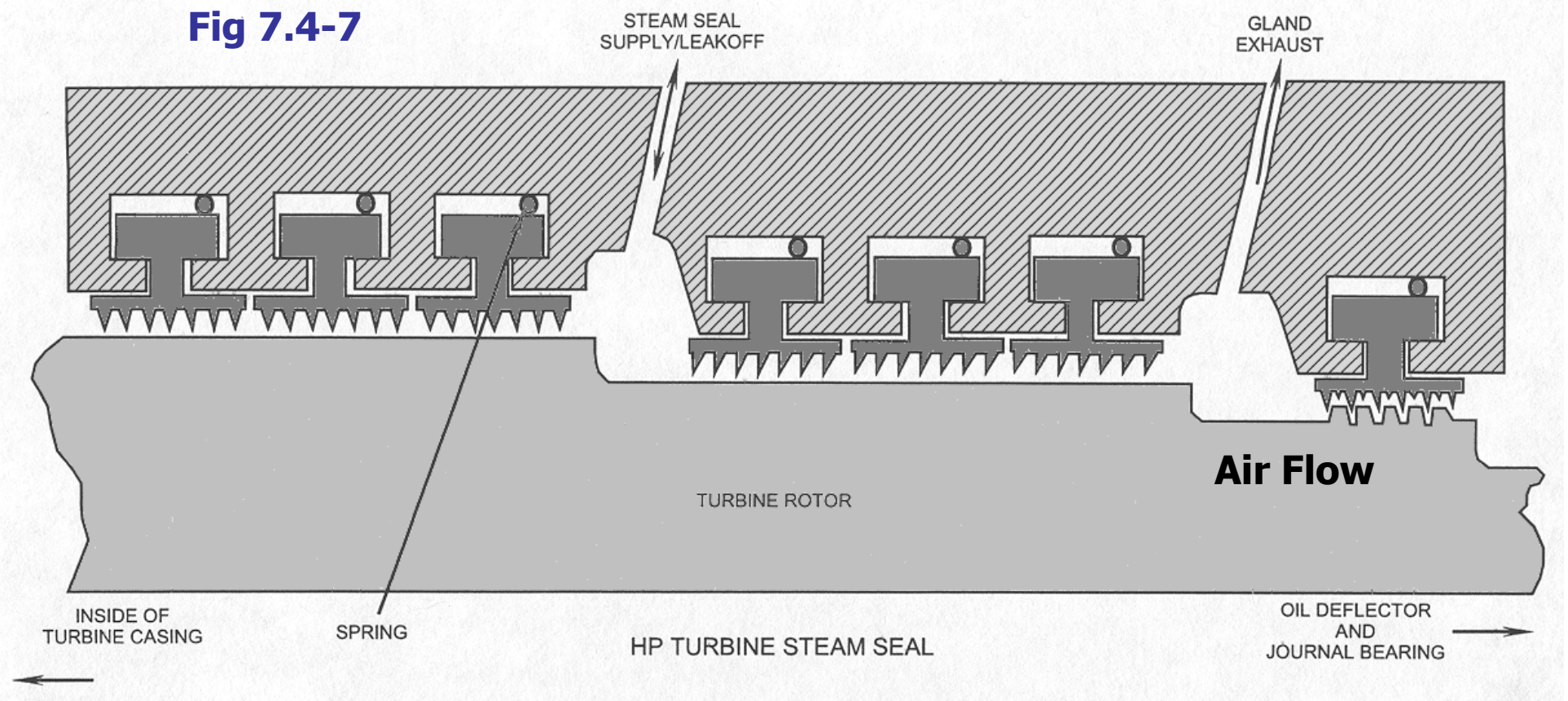
**To Main Condenser**





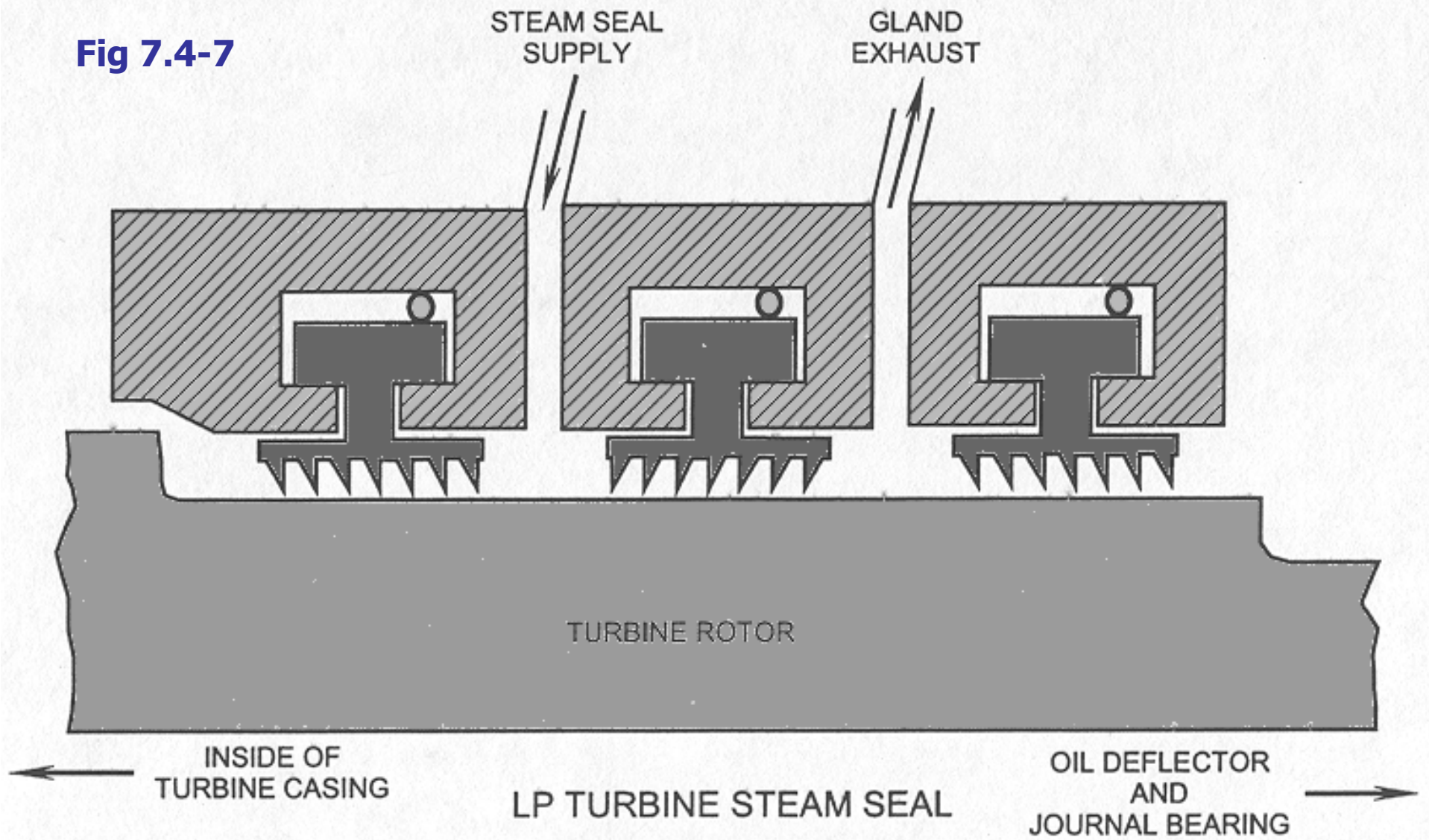


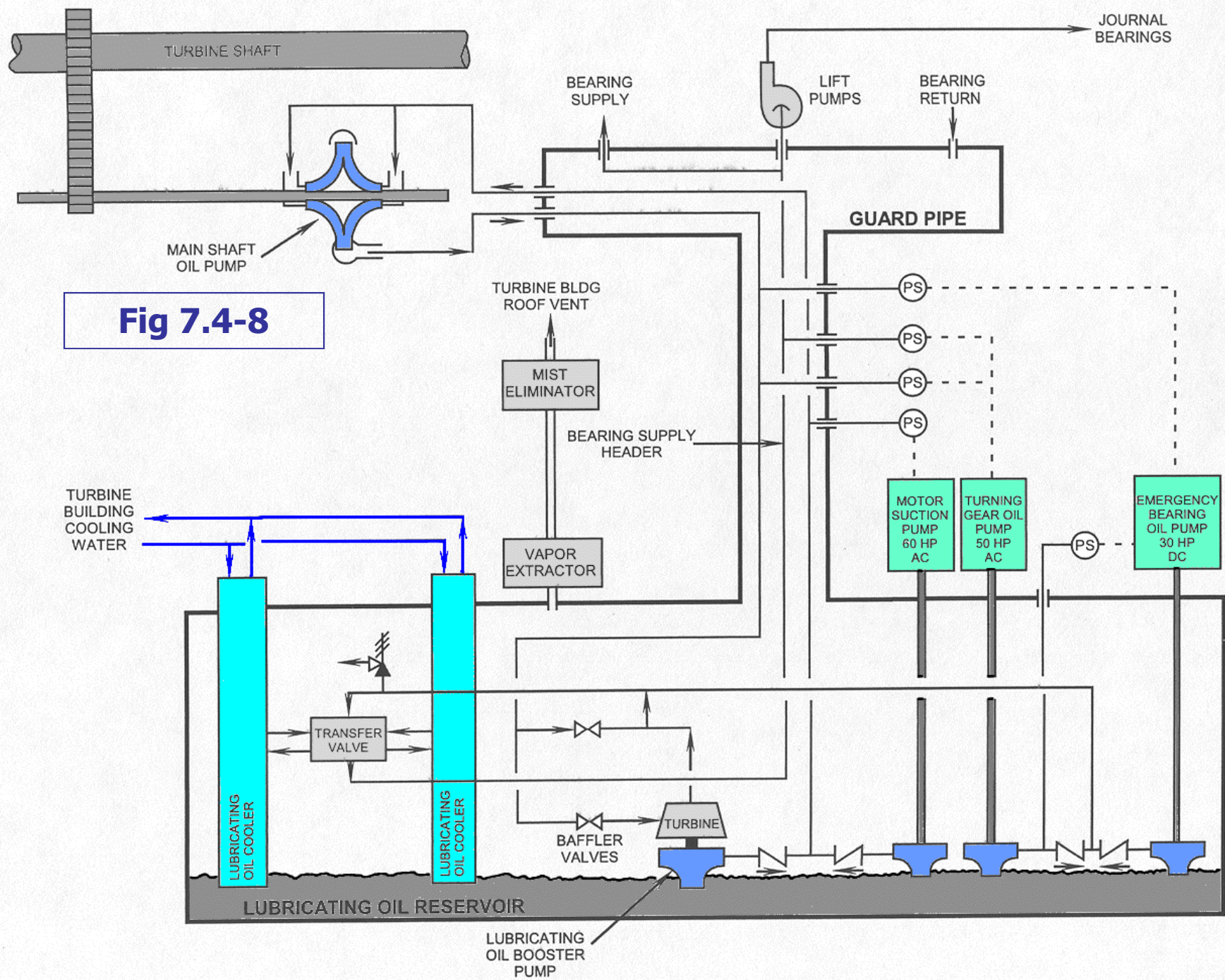
**Fig 7.4-7**





**Fig 7.4-7**





**Fig 7.4-8**