



What are boiler mountings and accessories?

Definition of Boiler:

In today's article, you are gonna get a brief knowledge on **Boiler Accessories and Mountings**. So at first let's look at **what is a boiler?** A **boiler** is a closed vessel in which water is heated, vaporized and converted into steam at a pressure higher than the atmospheric pressure. The heat energy required for steam generation is produced by burning fuel in the furnace.

Let's see what are the boiler mountings and accessories?

So these are the important *boiler accessories and mountings* we will discuss today:

- *Water level indicator*
- *Pressure gauge*
- *Safety valve*
- *Fusible plug*
- *Steam stop valve*
- *Blow off valve or blowdown valve*
- *Feed check valve*
- *Economizer*
- *Superheater*



- *Steam separator*
- *Steam trap*
- *Feed pump*
- *Injector*

Let's discuss them one by one.



Boiler mountings:

*What are the boiler mountings? **Boiler mountings** are those mechanical appliances which are considered essential for operating a boiler*



smoothly and safely which are usually mounted on the surface of a boiler.

The followings are the important mountings of a boiler:

1. **Water level indicator**
2. **Pressure gauge**
3. **Safety valve**
4. **Fusible plug**
5. **Steam stop valve**
6. **Blowoff valve or blowdown valve**
7. **Feed check valve**

Let me discuss all.

Water level indicator:

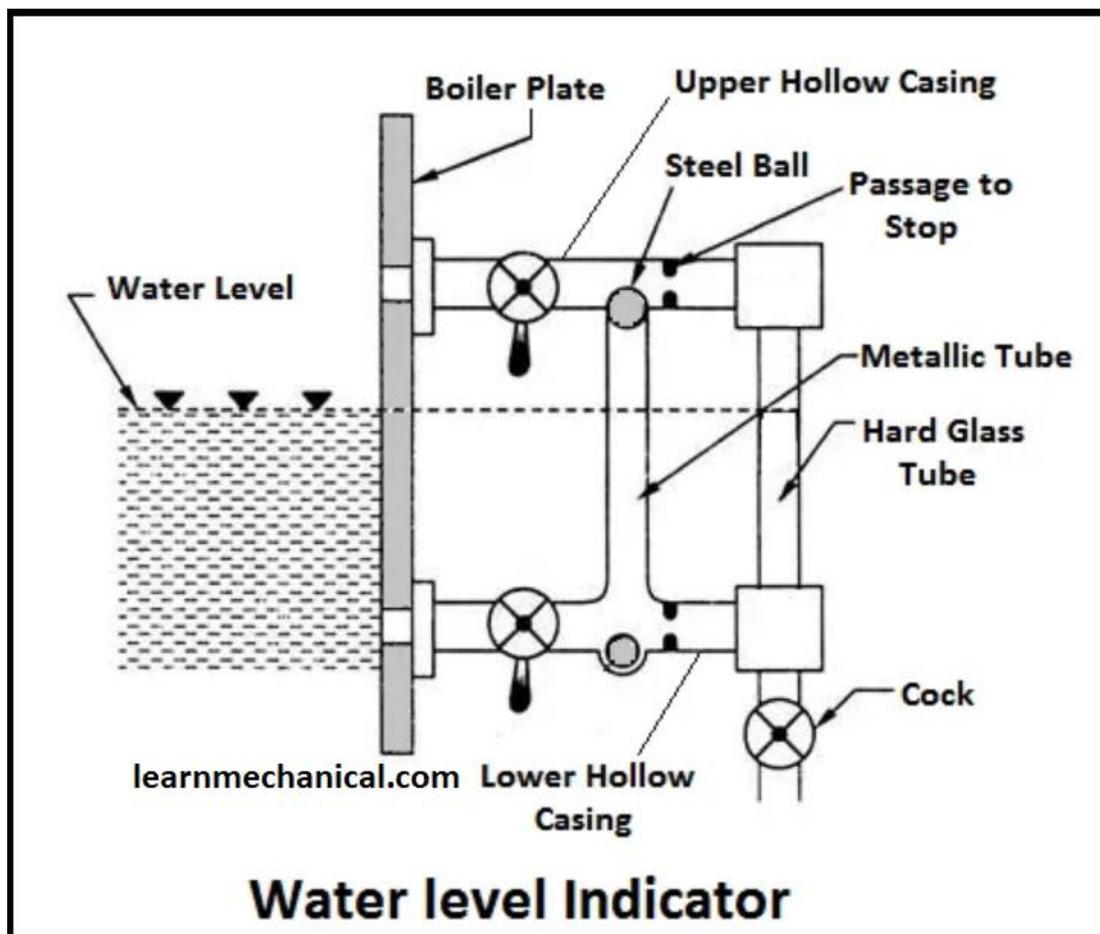
The **water level indicator** located in front of the boiler in such a position that the level of water can easily be seen by the attended.

There are two indicators:

A **water level indicator** consists of a metal and a strong glass tube with marking. The upper and lower ends of these tubes are connected to two gunmetal hollow pipes.

The upper pipe has a steam cock and the lower pipe has a water cock which is bolted to the boiler plated by two flanges. The upper pipe is opened to the steam and the lower pipe is open to the water with the help of steam and water cocks, respectively.

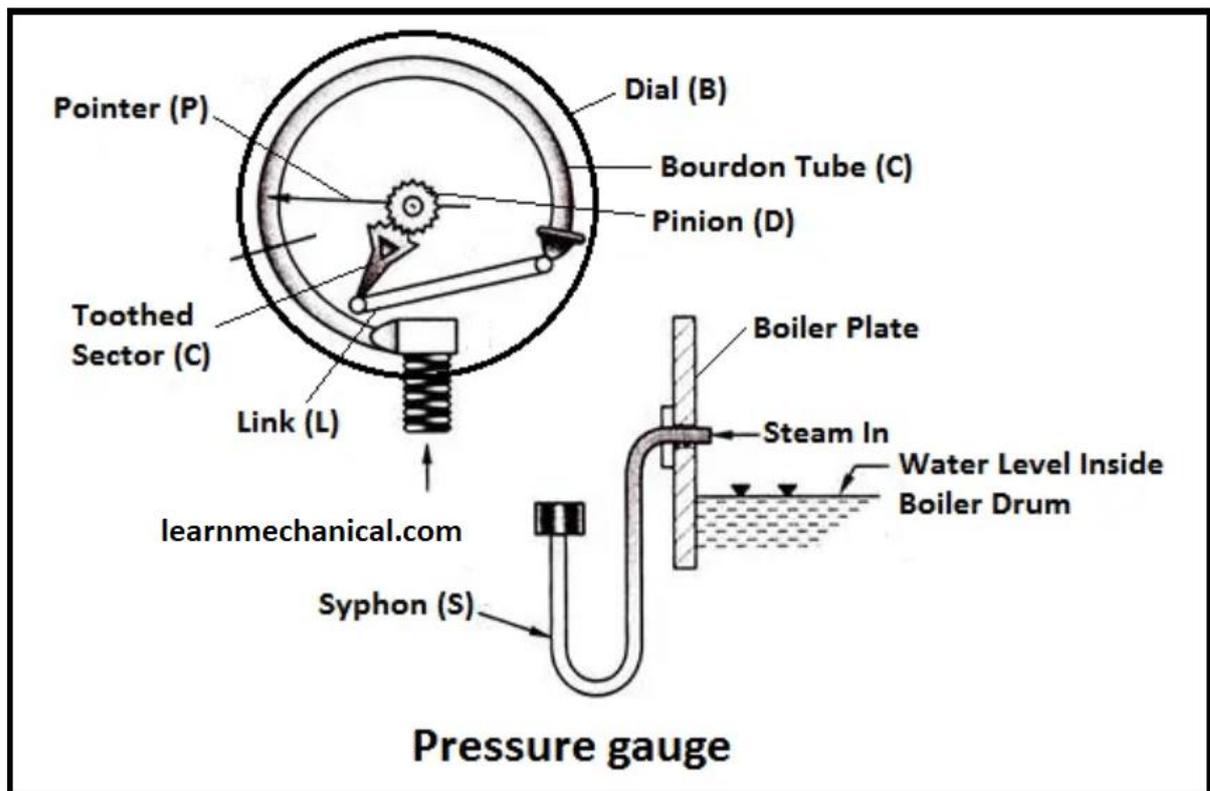
In case of glass gauge breaks accidentally, the water and steam simultaneously rush out through the gunmetal pipe and they are carried away by water and steam and passages are closed. The water and steam cocks are then closed and the glass gauge is replaced.



Water level indicator diagram

Pressure gauge:

A **pressure gauge** is fitted in front of a boiler in such a position that the operated can conveniently read it. It reads the pressure of steam in the boiler and is connected to the steam space by a siphon tube.



Pressure gauge diagram

Safety valve:

The **safety valve is a relief valve** which prevents the boiler pressure from raising over its normal working pressure by automatically opening when the



boiler pressure exceeds the normal working pressure, thus allowing excess steam to escape into the atmosphere until the pressure comes down on its normal value.

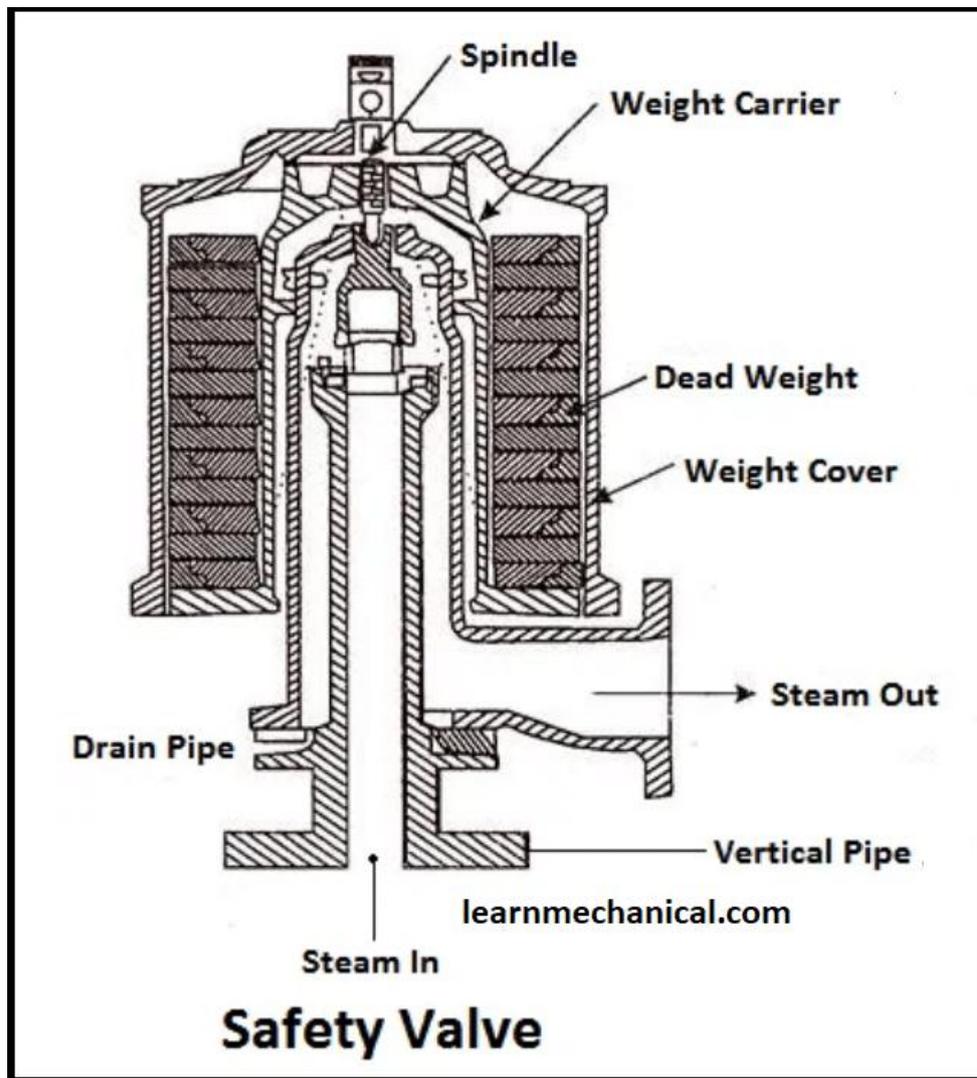
Thus, a **safety valve** ensures safety to a boiler from being damaged due to excessive steam pressure.

It also ensures safety to a pipe or vessel containing water under high pressure.

There are generally **four types of safety valve**.

These are:

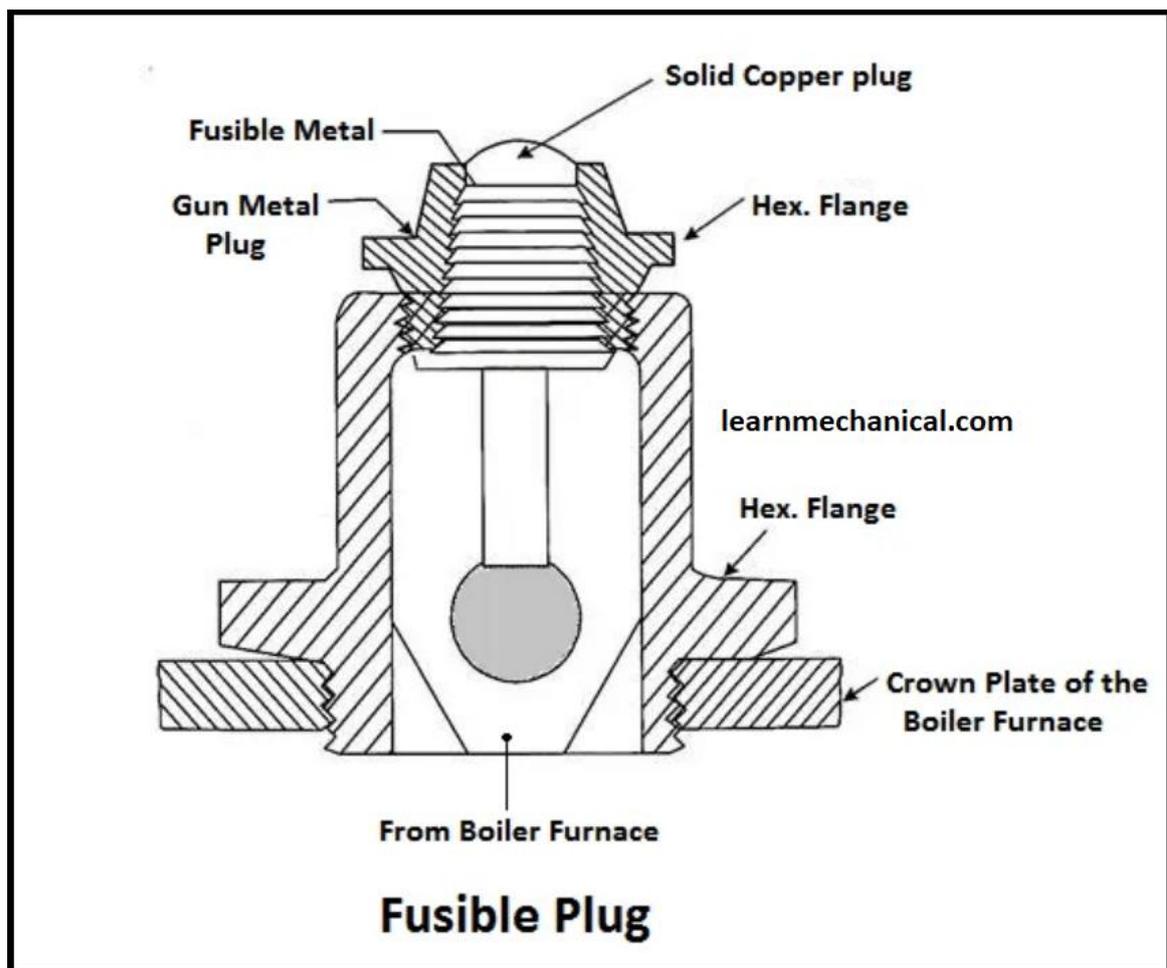
1. [Lever-type safety valve](#)
2. [Deadweight type of safety valve](#)
3. [Spring-loaded safety valve](#)
4. High steam and low water safety valve



Safety valve diagram

Fusible plug:

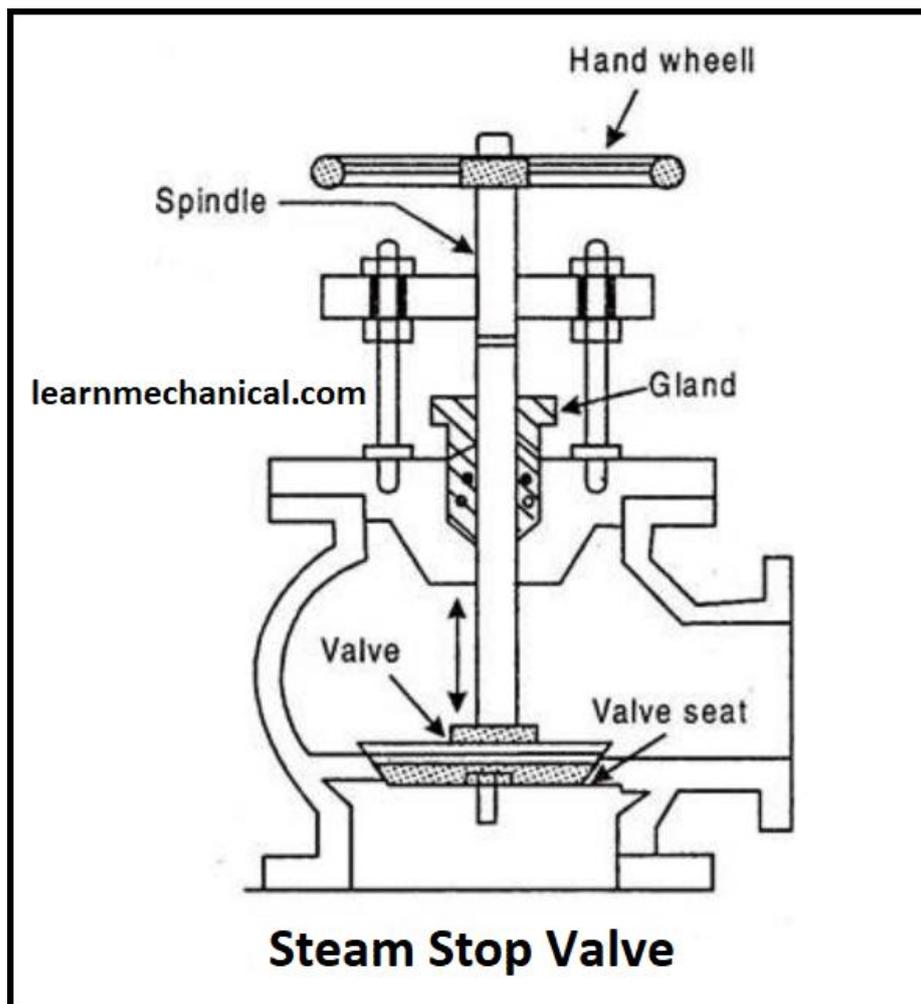
The function of a **fusible plug** is to ensure safety to the boiler from being damaged by overheating due to water level falling very low in the boiler.



Fusible plug diagram

Steam stop valve:

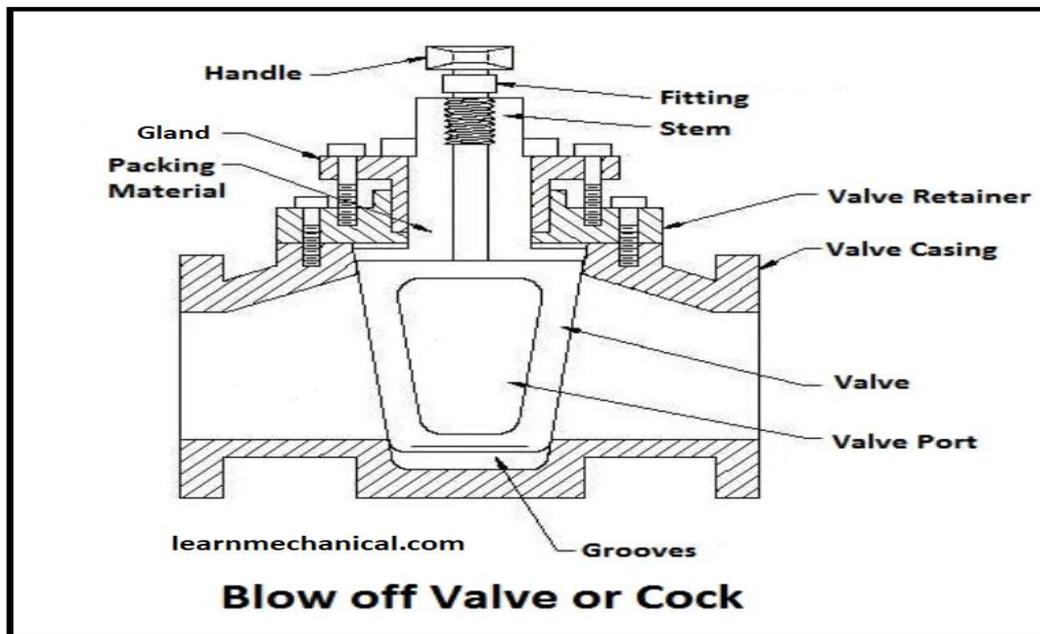
The function of a **steam stop valve** (this is called main stop valve) is to control the flow of steam from within the boiler and to stop it completely when required.



Steam stop valve diagram

Blow-off valve or blow-down valve:

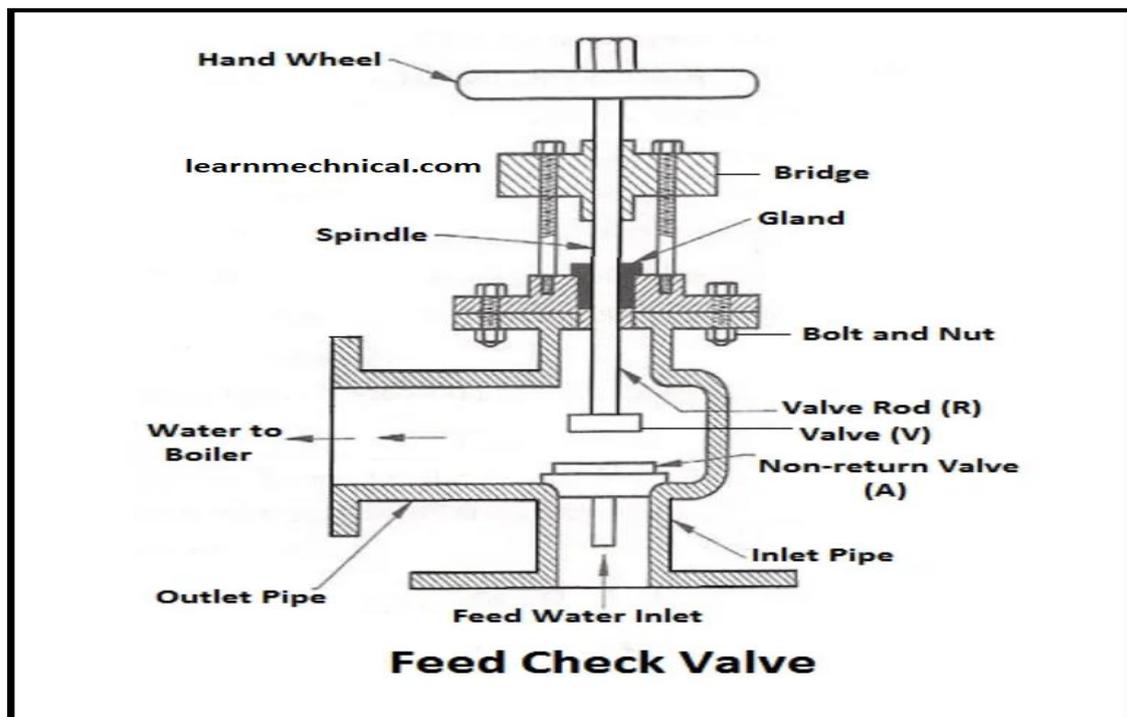
The function of a **blow-off valve** is to remove periodically the sediments deposited at the bottom of the boiler while the boiler is in operation and to empty the boiler while it is to be cleaned or inspected. When the blow-off valve is opened the water which is under the pressure of steam, rushes out with tremendous velocity thus crying out the sediments along with it.



Blow off valve diagram

Feed check valve:

The function of a **feed check valve** is to control the flow of water from the feed pump to the boiler and to prevent the backflow of water from the boiler to the pump when the pump pressure is less than the boiler pressure or when the feed pump ceases to work.



Feed check valve diagram

Also read: [What are the types of boiler?](#)



Boiler accessories:

*What are the boiler Accessories? **Boiler accessories are those appliances and plants which are installed along with a boiler to improve the operating condition and overall efficiency of the boiler plant.***

There are several boiler accessories, and those are:

1. **Economizer**
2. **Superheater**
3. **Steam separator**
4. **Steam trap**
5. **Feed pump**
6. **Injector**

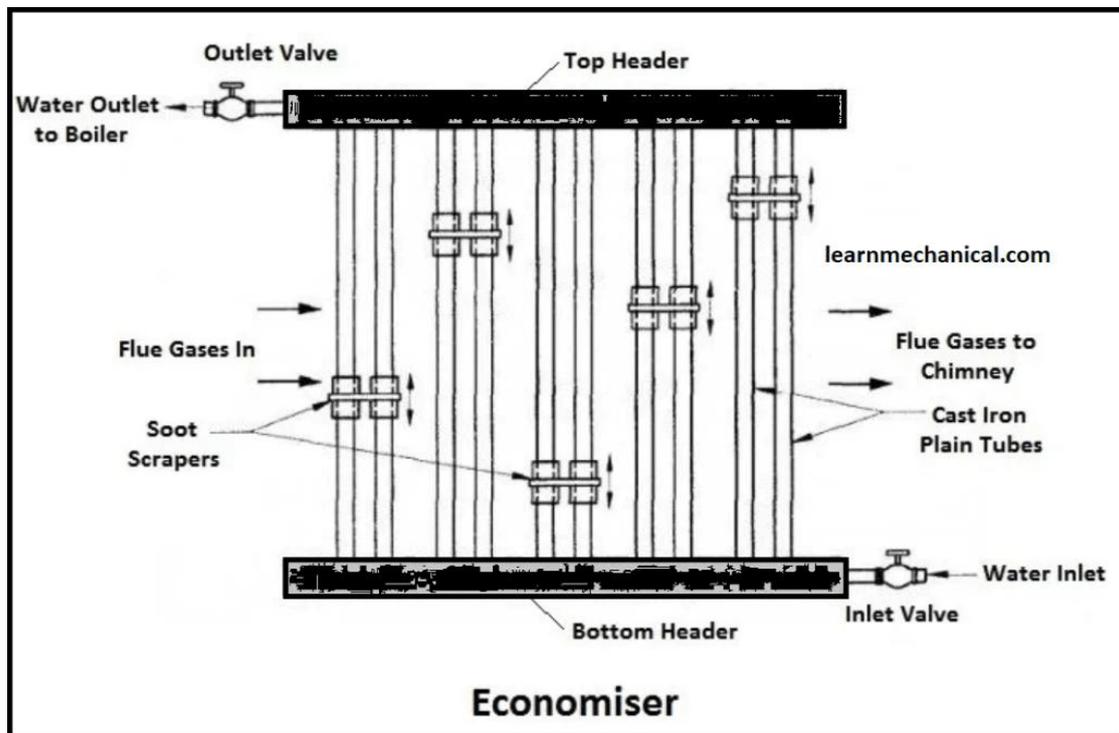
Let's discuss them all.

Economizer:

The **economizer** is a plant in which the feed water is preheated before it enters into a boiler, the heat is taken from the waste flue gases of the boiler

Advantages:

- Saving of fuel
- The increase in the evaporative capacity of the boiler.
- The long life of the boiler.



Economizer diagram

Superheater:

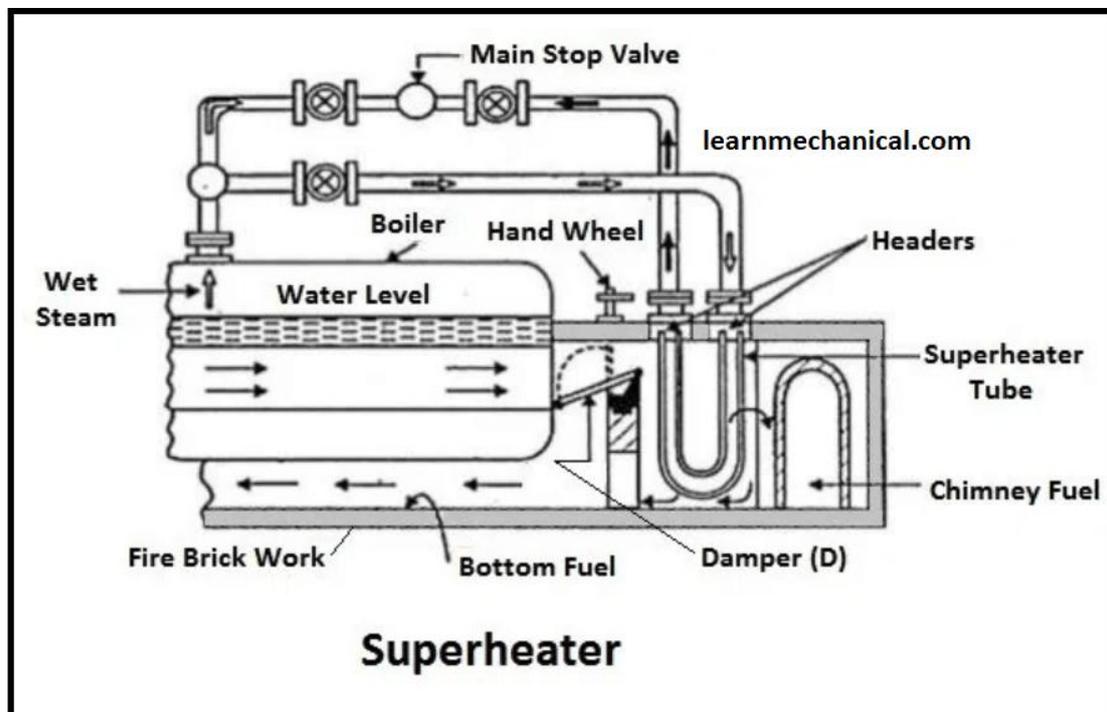
It is a **heat exchanger** in which products of the heat of combustion is utilized to dry the wet steam and to make superheated by increasing its temperature.

During superheating of the steam, pressure remains constant and its volume and temperature increase. A superheater consists of a set of small diameter U tube in which steam flows and takes up the heat from hot flue gases.

Advantages:

1. There is a saving in fuel consumption.

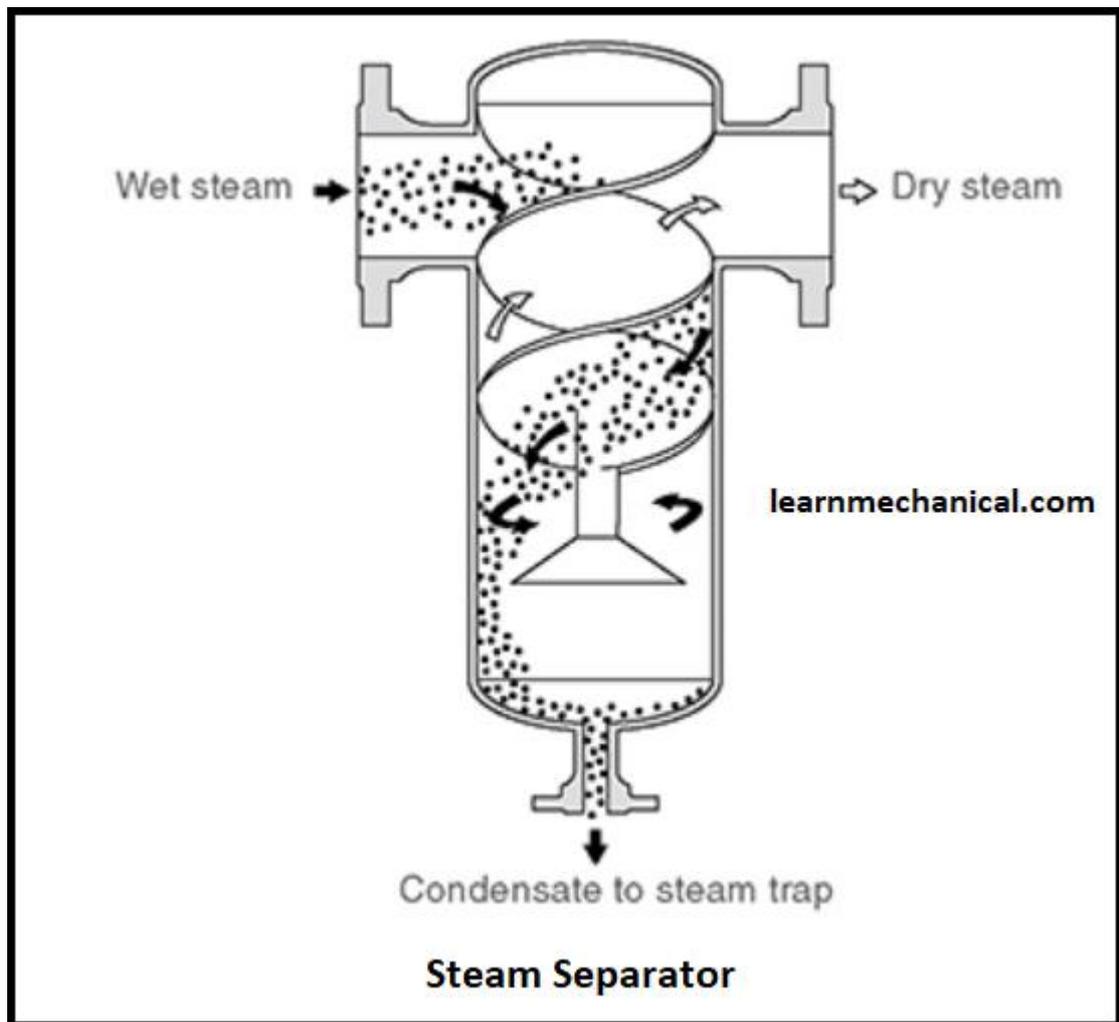
2. The overall efficiency is increased.



Super heater diagram

Steam separator:

Saturated steam obtained from all types of industrial boilers contains some water particles which decries the economy and efficiency of steam engines and steam turbines. For this, a steam separator is fitted before the steam engine or steam turbine to separated water particles from steam.



Steam separator diagram

Steam trap:

The function of a **steam trap** is automatically to drain away or return to the boiler, the water collected in the steam pipe or steam jacket due to partial condensation of steam without allowing steam escape.



Feed pump:

Feed pump delivers feed water at a pressure higher than that in the boiler.

There are two types of feed pumps.

1. Reciprocating feed pump
2. Rotary feed pump

- **Reciprocating feed pump:**

These are positive displacement type pumps. The most popular types of reciprocating feed pump used in a boiler is a duplex feed pump. It consists of a steam engine and a water pump side by side.

- **Rotary feed pump:**

It is a high-speed centrifugal pump and is used to deliver a large quantity of water into the boiler. It consists of impeller and casing.

Injector:

An **injector** is a simple device used to supply feed water into the boiler. It has no moving parts and water is supplied into the boiler by the action of steam flowing through nozzles. This type of feed pump is used in locomotives.



Difference between boiler mountings and accessories:

Mountings	Accessories
1. Boiler mounting is an essential apparatus without which a boiler cannot be operated.	1. Boiler accessory is not an essential apparatus. This is used to improve the operating condition and overall efficiency of the boiler plant.
2. Boiler mountings are mounted on the boiler.	2. Boiler accessories are not generally mounted on the boiler but installed within or near the boiler.
3. Boiler mounting occupies less floor space.	3. Boiler accessory occupies comparatively greater floor space.

Also, read the article on "[Lathe Machine: Definition, Parts, Types, and Operations](#)"