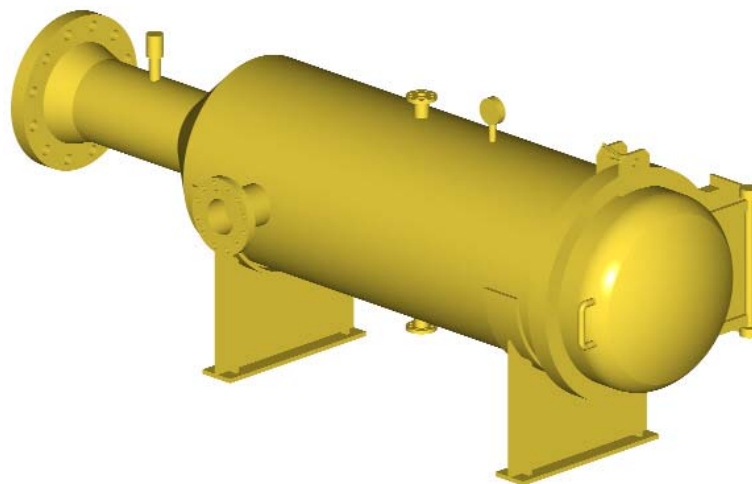


# PIG LAUNCHING & RECEIVING SYSTEMS



## PIG TRAP DESCRIPTION

Pipeline production and maintenance operations include the practice of inserting a mechanical plug (pig) or inflatable ball (sphere) into the pipeline line and allowing the production fluid to drive it from one end to the other. The Pig Trap is the equipment purposely designed for performing this job.

It is basically consisting of:

- a main body or "barrel", for pig storing;
- a quick opening closure (QOC) for inserting or removing the pigs, manually or motor operated (electric, hydraulic or pneumatic);
- a tube end, for connecting the trap to the pipeline;
- fluid by-pass nozzle, for pig motion control;
- minor fitting nozzles, for pressure and temperature gauges, safety valves, drains, vents, etc.;
- saddles or equivalent supports.

Pig operations are generally carried out for the purpose of:

- Removing hydrotest water and debris accumulated within the pipeline, particularly during its pre-commissioning, by using "gauging" pigs;
- Cleaning the internal surface of the pipeline, for the removal of the deposited oil wax, by using "cleaning" pig or spheres;
- Separating two fluids, according to production requirements by using "separation" pigs;
- Inspecting the conditions of the line pipes, by using special inspection vehicles.

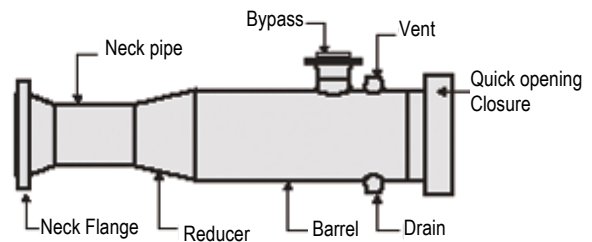
Traps are generally installed at the opposite ends of the pipeline, but they may be also mounted at intermediate stations, depending on service requirements.

## TRAP TYPES

According to different working conditions, traps can be basically classified as follows:

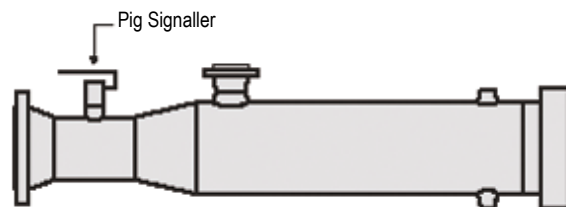
### ❖ **Launching Traps**

designed for inserting the pig into the line



### ❖ **Receiving Traps**

designed for taking the pig out of the line



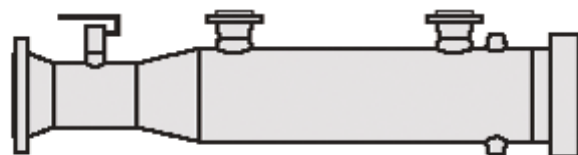
### ❖ **Bi-directional Traps**

designed to perform both launching and receiving operations.

Regarding the position of their installation, traps can be:

### ❖ **Horizontal**

The Trap is resting on saddles of equal height. It is the most used type, particularly where heavy pigs are to be handled.



### ❖ **Vertical**

The trap is resting on circumferential supports. This type is often used where the trap installation area is limited, particularly on offshore platforms.



#### ❖ Sloped

The trap is resting on saddles of different height. Sloped traps are generally used for sphere operation, in order to use the gravity for rolling the spheres along the trap barrel.

#### Trap Size Range

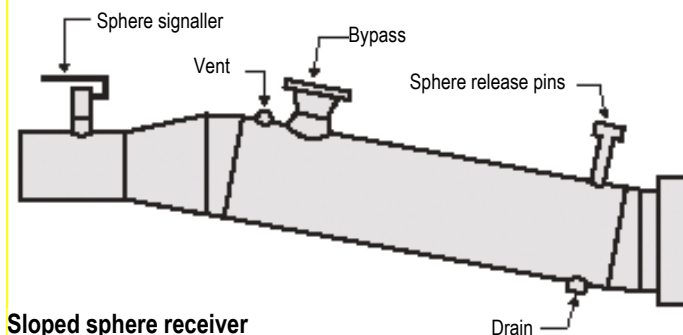
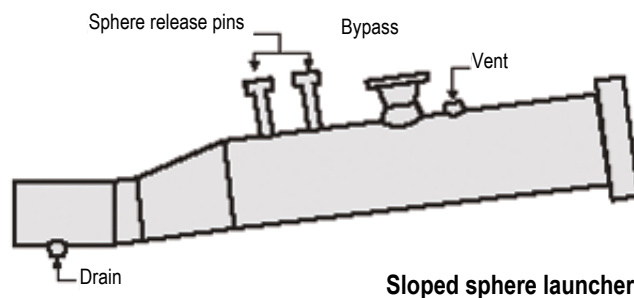
Our common manufacturing range of pig traps spans from 6" to 60" line diameters, but traps of larger sizes can be designed and manufactured by FILTERS. Pressure range, from ANSI 150 to ANSI 2500. Any value of diameter, pressure and temperature can be calculated by our designers, in order to define the most appropriate barrel thickness. The barrel length is affected by the trap type (launching or receiving), by the pig type (ordinary, sphere, or inspection vehicle) and by the required launching sequence (single or multiple).

#### Design Codes

Our pig traps are usually designed in accordance with the following internationally recognised codes:

- ASME VIII for QOC.
- ASME/ANSI B31.4, 31.8, 31.3, for liquid and gas piping systems.

We are however in a position to meet the requirements of any National Code or specification the customer may require.



## **TRAP ANCILLARY EQUIPMENT**

### **Pig Handling System**

On major line diameters, where the weight of the pig makes handling difficult, some mechanical devices can be used to carry out loading and unloading operations more easily and quickly.

The most complete FILTERS system designed for this job includes:

- A Travelling Trolley for extracting and inserting the pig supporting cradle into and out of the trap, complete with runways and control winch.
- A Removable Bar to be mounted on the trolley head for pushing the pig along the cradle.
- A rotating Jib Crane, for lifting, positioning and lowering the pig outside the trap.

The system can be either hand operated or motor controlled (electric, hydraulic or pneumatic powered).

### **Pig Passage Indicator or Pig Signaller**

The purpose of the passage indicator is to detect the passage of pigs inside the pipeline.

Our Pig Signaller consists basically of:

- a supporting bush, to be welded on the line pipe;
- a threaded or flanged sleeve, to be mounted on the supporting bush, including a sliding domed plunger and a suitable lever system,
- a counter weighted warning flag.

The passing pig pushes upward the in-the-line protruding plunger, triggering a lever system which pushes up the external warning flag.

After each passage, the flag shall be manually reset in its down position.

FILTERS passage indicator is bi-directional. It may be also fitted with an electrical switch for remote indication.

### **Sphere Release Pins**

Sphere release pins are generally mounted on multi-sphere sloped traps, in order to control the sphere rolling down by gravity to the trap neck.

The system allows a single-sphere launching, even if several spheres are loaded in the trap. By the alternate raising and lowering of two parallel pins placed at a suitable distance, the first sphere becomes free for launching, while the others are retained in the barrel.

FILTERS units can be either manually or motor operated.

### **Complete Pig Launching/Receiving System**

The supply of FILTERS Pig Traps can be extended, on request, to all auxiliary line connections and control equipment arranged to get a completely automatic operation of the trap system.

