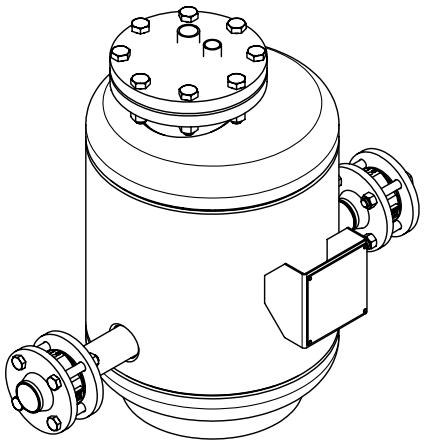


Steam-Powered Condensate-Return Unit
FPS 23

Description

The FPS 23 steam-powered condensate-return unit uses booster steam to collect and transport condensate at intervals that vary depending on the level. The transport intervals are controlled by a special float valve. This system does not require electric condensate pumps.

The equipment may only be used within the admissible pressure and temperature ratings, with due consideration of chemical and corrosive influences. Improper use also includes using equipment made of materials that are unsuitable for the fluid used.

Function

Condensate fills the equipment, causing the ball float to rise. At the upper switchpoint, the ball float actuates the valve control. This opens the booster steam supply and closes the vent valve. The booster steam forces the condensate out of the equipment and the ball float drops. During this pumping process, the flow of condensate builds up in the supply line. When the ball float reaches the lower switchpoint, the valve control stops the supply of booster steam and the vent valve opens. The flow of condensate accumulates in the equipment and the process is repeated. The non-return valve in the inlet prevents condensate and booster steam from flowing back through the condensate inlet. The non-return valve in the outlet prevents any return flow in the condensate outlet.

Design

FPS 23 carbon steel:
Made of steel 1.0425 (P265GH), float valve of steel, chromium steel. Vessel of welded sheet steel, bare on the inside, the outside has an anti-rust coating on untreated substrate. Equipped with the necessary connections and sockets, plus two Disco RK.. non-return valves. The system rests on a support ring.

FPS 23A stainless steel:
Made of stainless steel 1.4571, float valve of chromium steel. Vessel of welded sheet steel, pickled and passivated inside and out. Equipped with the necessary connections and sockets, plus two Disco RK.. non-return valves. The system rests on a support ring.

Connections

- Flange PN 16, B1 (EN 1092-1)
- Flange ASME B 16.5 Class 150 RF

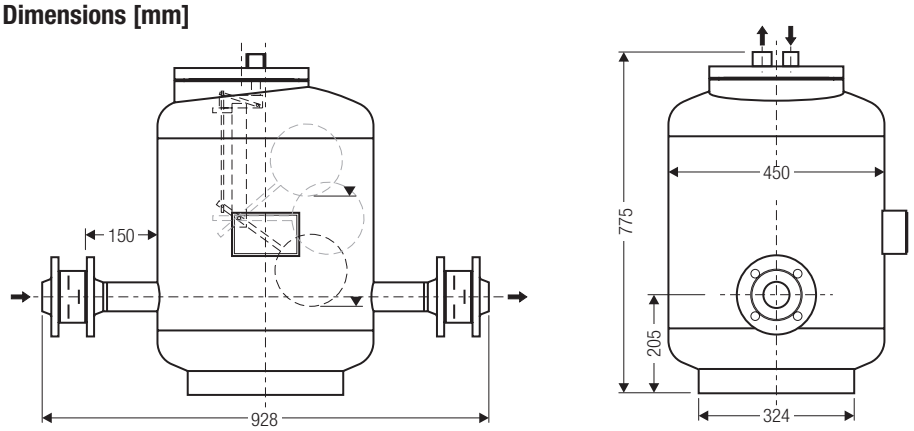
How to order

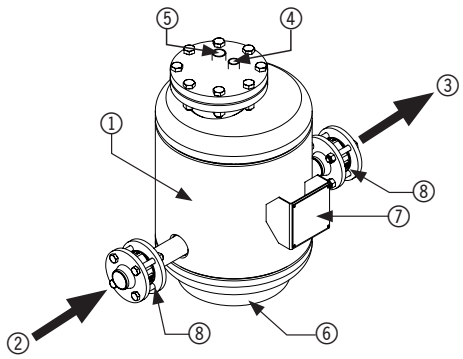
GESTRA Condensate-Return Unit **FPS 23**

Steam pressure/Service pressure.....
Back pressure.....
Condensate flowrate.....
Design.....
Nominal size.....
Place of installation.....
Type of steam user(s).....

Please enter data, strike through if not applicable.

Dimensions [mm]





		FPS 23-10	FPS 23A-10
Empty weight	kg	110	110
Filled weight	kg	198	196

No.	Designation
1	Vessel
2	Connection for condensate inlet DN 50
3	Connection for condensate outlet DN 50
4	Connection for booster steam G ½

No.	Designation
5	Connection for air vent G 1
6	Support ring
7	Name plate
8	Non-return valve

Steam-Powered
Condensate-Return Unit
FPS 23

Technical data

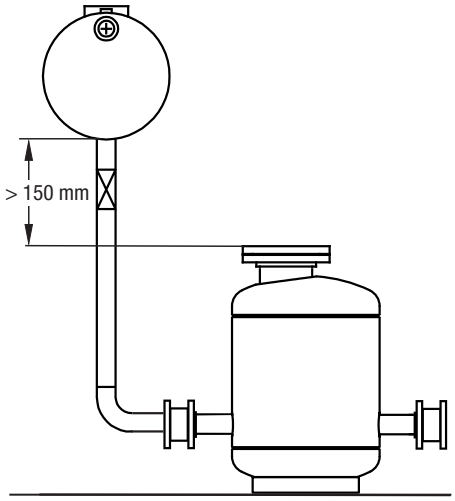
The FPS 23 steam-powered condensate-return unit is built for condensate flowrates of up to 2.4 t/h as standard. The delivery rate drops as the back pressure increases.

For higher condensate flowrates, we recommend GESTRA SD and SDR condensate collection and return systems.

Maximum pressure
FPS 23-10, FPS 23A-10: 10 bar

Service temperature
200 °C

Delivery head
Booster steam pressure [bar] x 0.7



Application of European Directives

Pressure Equipment Directive

The equipment conforms to this directive and can be used for the following fluids:

- Group 2 fluids

ATEX Directive

The equipment does not have its own potential ignition source and is therefore not subject to this directive.

Static electricity: Static electricity can be produced in the system if the equipment is installed between pipe flanges.

If the equipment is used in potentially explosive atmospheres, the discharge or prevention of possible electrostatic charging is the responsibility of the manufacturer or operator of the system.

Please note our general terms of business.

Technical data continued

Flow in the FPS 23					
Installed with height difference of 900 mm above condensate-return unit					
Booster steam pressure barg	Back pressure barg	Flowrate kg/h	Booster steam pressure psig	Back pressure psig	Flowrate lb/h
10.3	1.0	2,468	150	15	5,440
	2.8	2,359		40	5,200
	4.1	2,250		60	4,960
8.6	1.0	2,431	125	15	5,360
	2.8	2,286		40	5,040
	4.1	2,177		60	4,800
6.9	1.0	2,395	100	15	5,280
	2.8	2,214		40	4,880
	4.1	2,105		60	4,640
5.2	1.0	2,395	75	15	5,280
	2.8	2,105		40	4,640
	4.1	1,814		60	4,000
3.4	0.7	2,322	50	10	5,120
	1.7	2,105		25	4,640
	2.8	1,742		40	3,840
1.7	0.3	2,214	25	5	4,880
	0.7	2,032		10	4,480
	1.0	1,851		15	4,080

Height difference correction factor				
Height difference mm	150	300	600	900
Factor	0.7	0.8	0.9	1

Example:

Condensate flowrate:	1900 kg/h
Height difference:	600 mm
Booster steam pressure:	7 barg
Delivery head (condensate outlet to boiler):	10 m
Pressure (condensate outlet):	1.2 barg
Pressure loss (pipes):	0.2 barg

Calculation:

Total back pressure:
1.2 bar + 0.2 bar + (10 m x 0.0981) = 2.381 barg
Condensate-return unit, see table with:

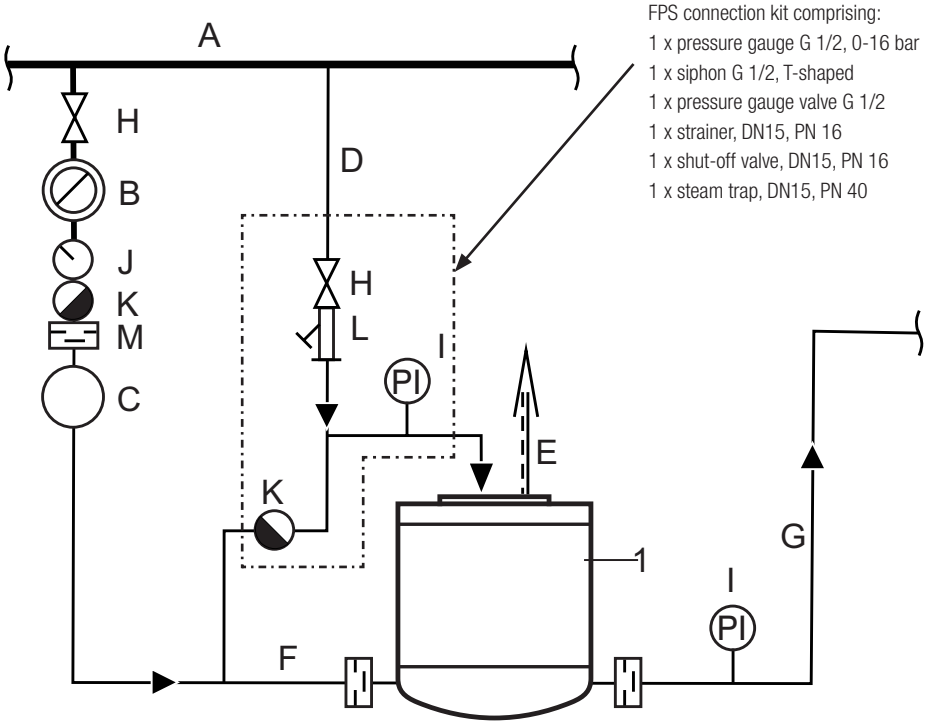
Booster steam pressure:	6.9 barg
Back pressure:	2.8 barg
Flowrate:	**2214 kg/h**

Correction due to 300 mm height difference:

Factor	0.8
Flowrate 4028 kg/h x 0.8	**= 1993 kg/h**

The condensate-return unit has the correct dimensions.

Example installation:



Accessories

FPS connection kit comprising:
1 x pressure gauge G 1/2, 0-16 bar
1 x siphon G 1/2, T-shaped
1 x pressure gauge valve G 1/2
1 x strainer, DN15, PN 16
1 x shut-off valve, DN15, PN 16
1 x steam trap, DN15, PN 40

1	FPS
A	Steam line
B	Consumer
C	Reservoir
D	Booster steam line
E	Air vent
F	Condensate inflow to FPS

G	Condensate to boiler house
H	Shut-off valve
I	Pressure gauge
J	Sight glass
K	Steam trap
L	Strainer
M	Non-return valve

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818701-03/11-2021cm (808602-04) · GESTRA AG · Bremen · Printed in Germany