



TI-P404-03
 AB Issue 10

FV Flash Vessel

Description

The Spirax Sarco FV flash vessel is designed and constructed to ASME VIII DIV 1 2004 + ADD06. The design is free-draining which is essential in boiler blowdown applications.

Applications

These vessels are particularly suited to boiler blowdown heat recovery systems where efficient separation of the flash steam from the blowdown is essential to prevent contamination of the boiler feedtank and/or heat transfer surfaces. Spirax Sarco flash vessels are equally suited to condensate flash steam applications.

Principal features:

- Designed and constructed in compliance with the European Pressure Equipment Regulations 97/23/EC.
- Low separation velocity to produce drier steam.
- Free-draining.

Sizes and pipe connections

Connections available as standard:

Screwed connections to BS 21 taper.
 Flanged connections to EN 1092 PN16.

Note: Vessels are available flanged to BS 1560 Class 150 or 300, or screwed NPT.

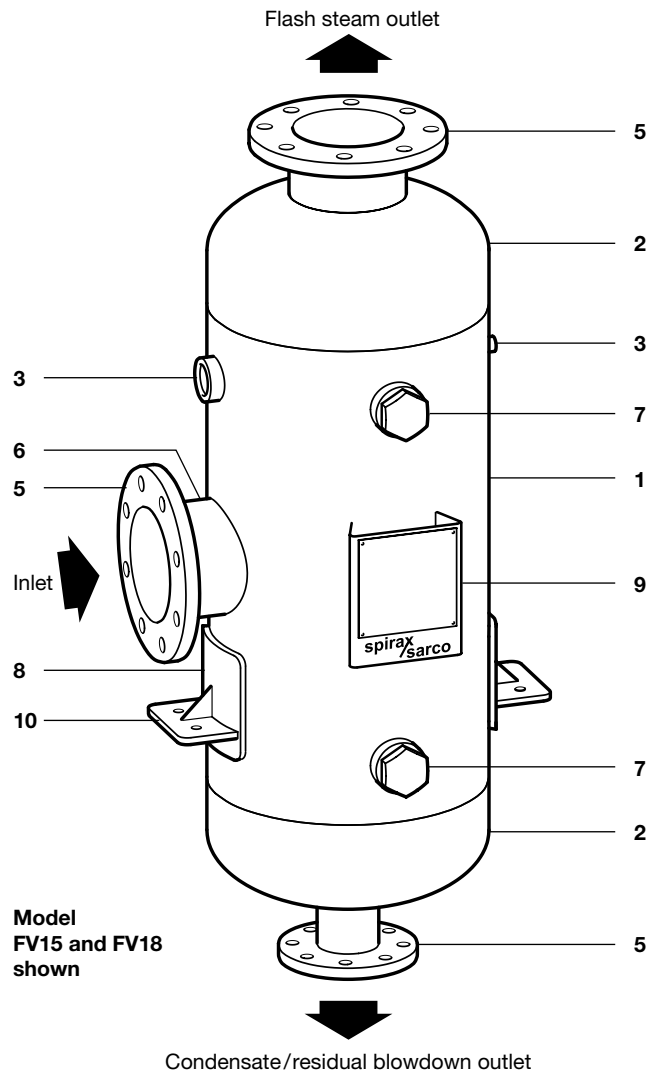
Limiting conditions

Maximum design conditions are 14 bar g @ 198°C (saturation temperature of steam).

Minimum design (operating) temperature -10°C

Cold hydraulic test pressure in accordance with European Pressure Equipment Directive 97/23/EC.

Note: These vessels will withstand full vacuum conditions.



Materials

No.	Part	Material	
1	Shell cylinder	ASTM A106B	C. Max. 0.25%
2	End cap	ASTM A234 WPB	C. Max. 0.25%
3	Nozzle - Half coupling	ASTM A105N	C. Max. 0.25%
4	Nozzle - Full coupling	ASTM A105N	C. Max. 0.25%
5	Nozzle - Flange	ASTM A516-70	C. Max. 0.25%
6	Nozzle - Pipe	ASTM A106B	C. Max. 0.25%
7	Blanking plug	ASTM A105N	C. Max. 0.25%
8	Wrapper plate	ASTM A516-60	C. Max. 0.25%
9	Name-plate bracket	BS EN 10028-2 P265GH	C. Max. 0.25%
10	Support foot/gusset	BS EN 10025 S275	

How to size

Use the chart below to select the appropriate flash vessel. It is necessary to know the pressure on the steam traps or boiler pressure in the case of blowdown heat recovery, the flash steam pressure (desired or existing), and the condensate or blowdown flowrate.

Example 1: (solid lines)

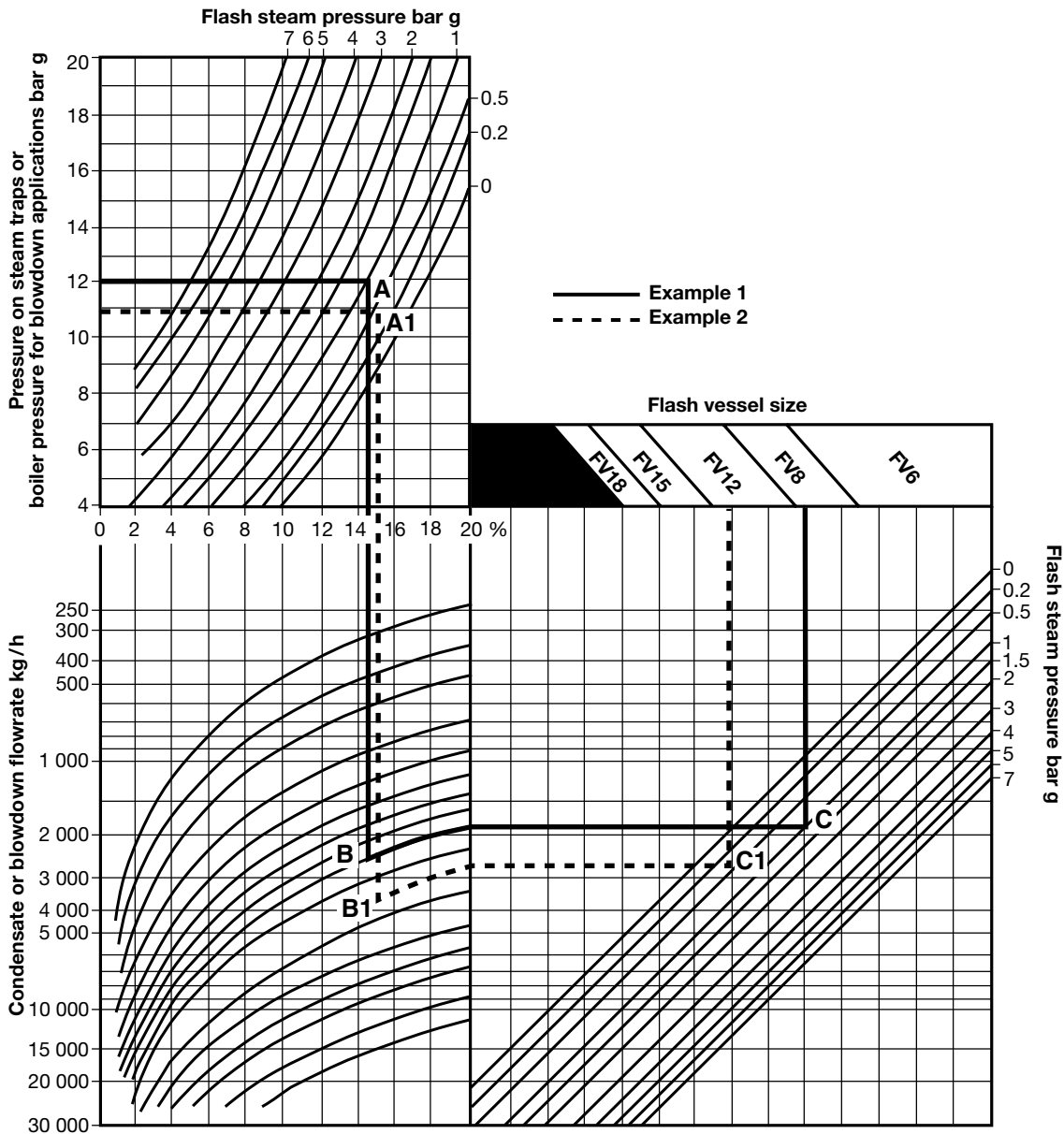
A boiler plant operating at 12 bar g has a TDS control blowdown flowrate of 2 500 kg/h (3 boilers at 833 kg/h each). The flash steam from the blowdown is to be added to the low pressure steam system operating at 1 bar g.

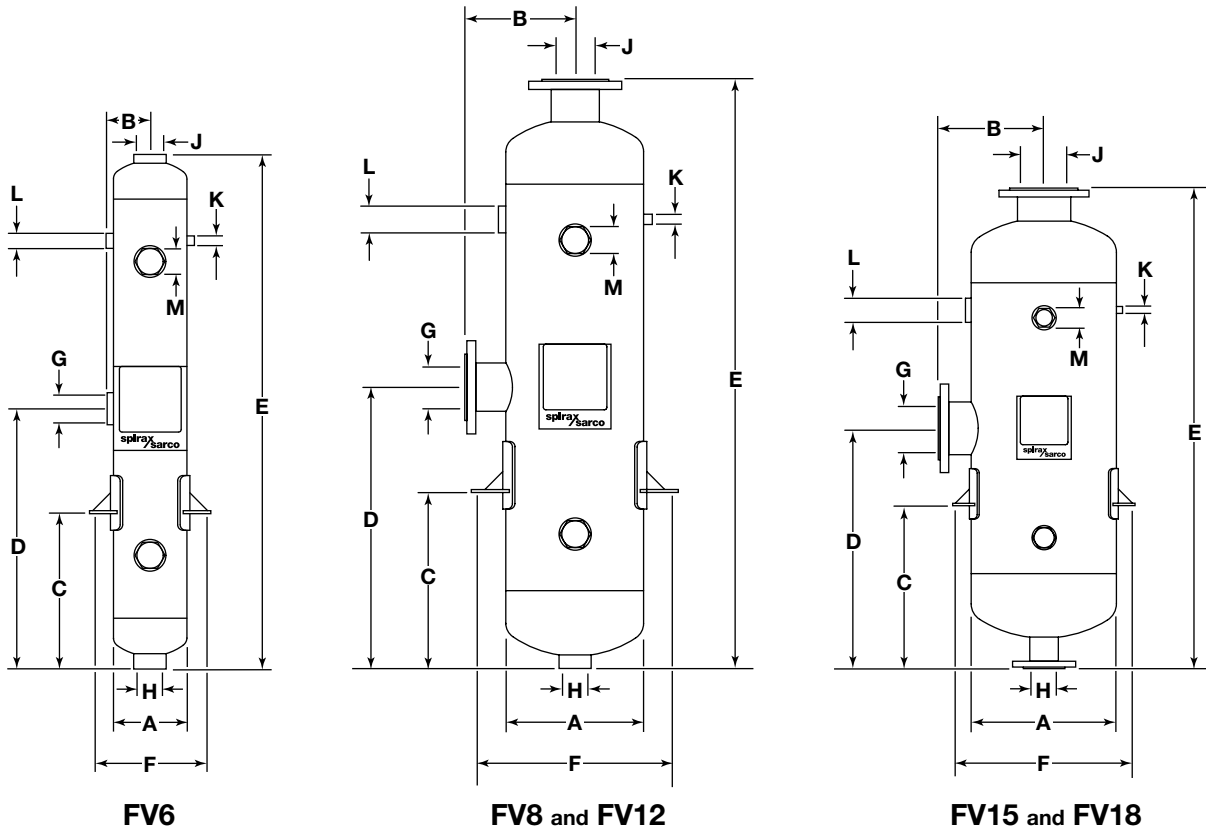
1. From boiler pressure move horizontally to flash steam pressure - **A**
2. Drop vertically to blowdown flowrate in kg/h - **B**
3. Follow curve to right-hand scale and across to same flash pressure - **C**
4. Move upwards to flash vessel size. Select flash vessel - in this case an **FV8** is required.

Example 2: (dotted lines)

A plant operating on steam at 11 bar g condenses 4 000 kg/h of steam. Flash is to be recovered at 0.5 bar g.

1. From pressure on steam traps move horizontally to flash steam pressure - **A1**
2. Drop vertically to condensate flowrate in kg/h - **B1**
3. Follow curve to right hand scale and across to same flash pressure - **C1**
4. Move upwards to flash vessel size. Select flash vessel - in this case an **FV12** is required.



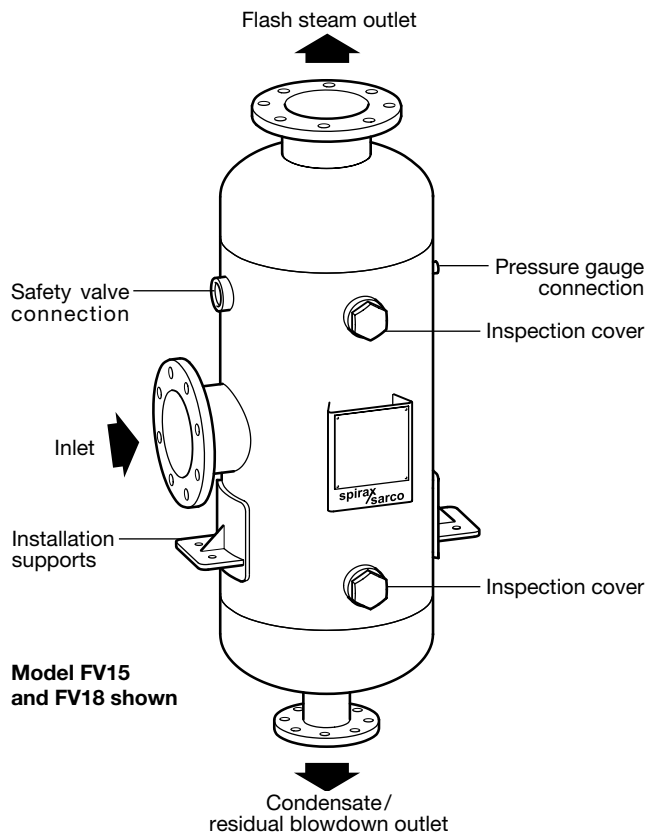


Dimensions/weights (approximate) in ins, mm and kg

	FV6	FV8	FV12	FV15	FV18
A	168	219	324	406	457
B	104	210	262	303	329
C	370	413	418	390	514
D	620	663	668	640	764
E	1225	1391	1400	1275	1521
F	230	281	411	492	544
G	2"	DN80	DN100	DN150	DN150
H	2"	2"	2"	DN80	DN80
J	2"	DN80	DN100	DN150	DN150
K	3/8"	3/8"	3/8"	3/8"	3/8"
L	3/4"	1"	1 1/2"	1 1/2"	2"
M	2"	2"	2"	2"	2"
Weight	45	76	130	150	193

Installation

The vessel should be mounted with the flash steam outlet at the top, and connected as indicated below. Each vessel incorporates a 3/8" screwed boss for a pressure gauge. For drainage, it is recommended that a float trap is fitted. A safety valve connection is provided on the vessel. It should not be assumed that the safety valve will be the same size as the connection. Safety valve sizing and selection should be in accordance with National and Local Regulations.



How to order

Example: 1 off Spirax Sarco FV6 flash vessel having screwed BSP connections. The unit is to be constructed to ASME VIII DIV 1 2004 + ADD06.

Model FV15 and FV18 shown