



## 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 2014/68/EU.
- Low separation velocity to produce drier steam.
- Free-draining.

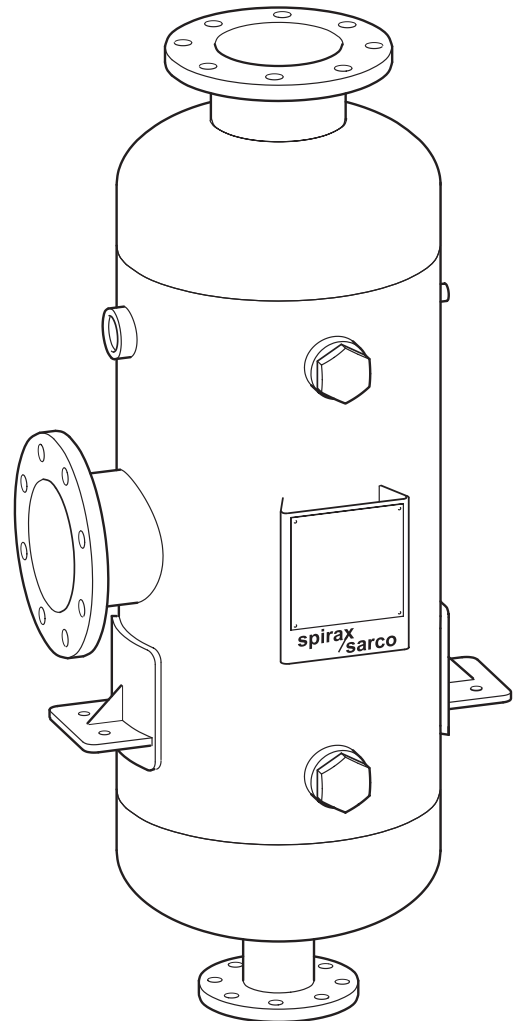
### Sizes and pipe connections

#### Connections available as standard:

Screwed connections to BS 21 taper.

Flanged connections to EN 1092 PN16.

**Note:** Vessels are available flanged to ASME B16.5 Class 150 or 300, or screwed NPT.



Model FV15 and FV18 shown

### Limiting conditions

Maximum design conditions (body) 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 2014/68/EU.

**Note :** Maximum design Pressure and Temperature can be further limited, lower than that stated on the nameplate depending on the chosen flange rating of the system.

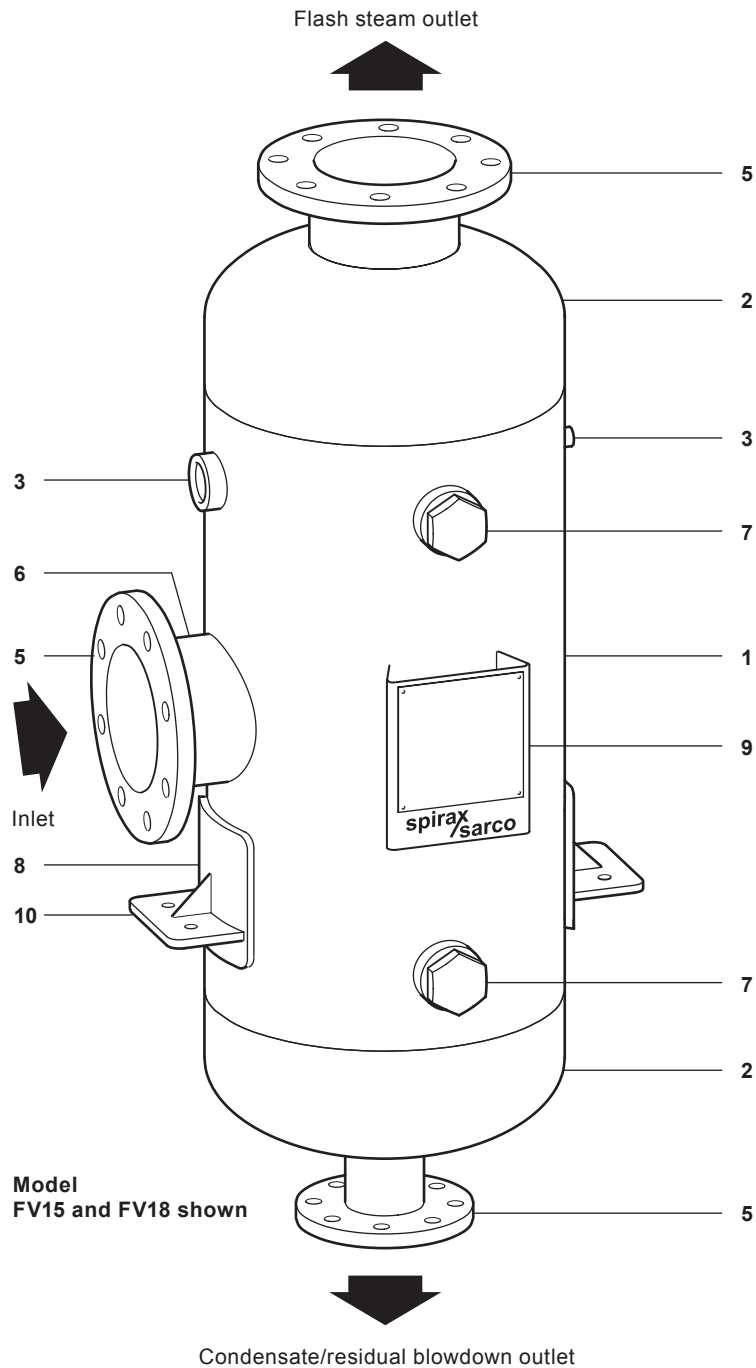
PN16

13.3 bar g @ 198 °C

Class A150

13.8 bar g @ 198 °C

**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)

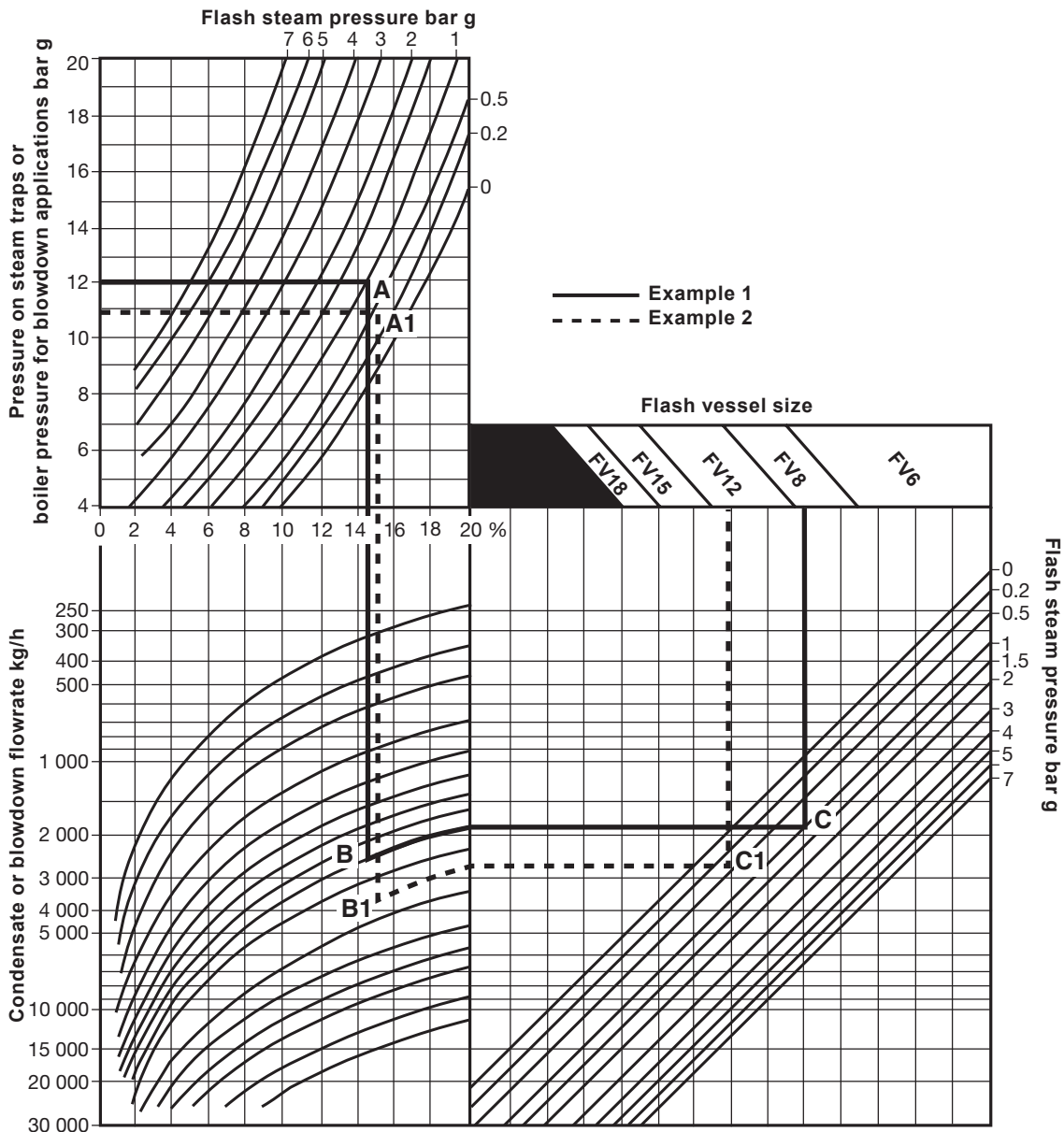
A boiler plant operating at 12 bar g has a TDS control blowdown flowrate of 2 500 kg/h (3 boilers at 833 kg/h each). The flash steam from the blowdown is to be added to the low pressure steam system operating at 1 bar g.

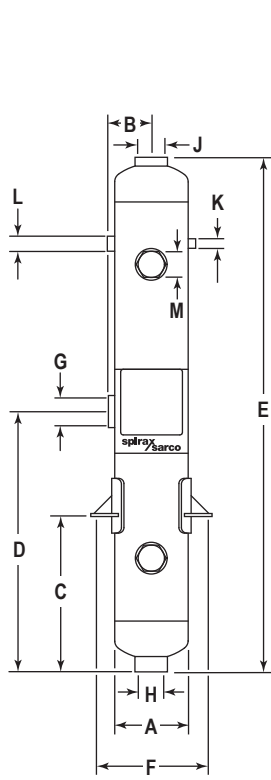
1. From boiler pressure move horizontally to flash steam pressure - **A**
2. Drop vertically to blowdown flowrate in kg/h - **B**
3. Follow curve to right-hand scale and across to same flash pressure - **C**
4. Move upwards to flash vessel size. Select flash vessel - in this case an **FV8** is required.

### Example 2: (dotted lines)

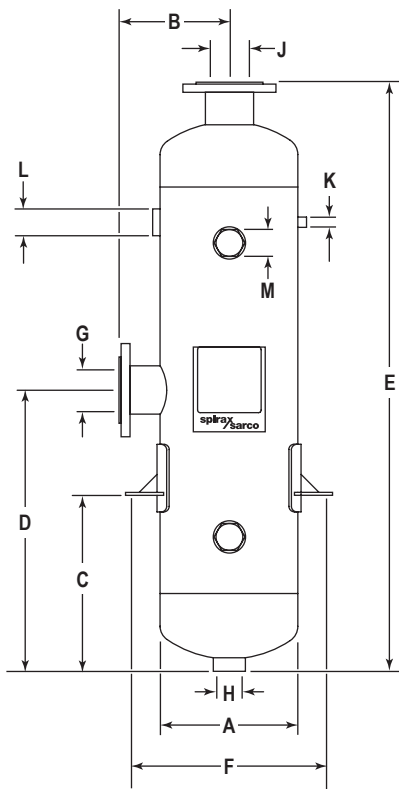
A plant operating on steam at 11 bar g condenses 4 000 kg/h of steam. Flash is to be recovered at 0.5 bar g.

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.

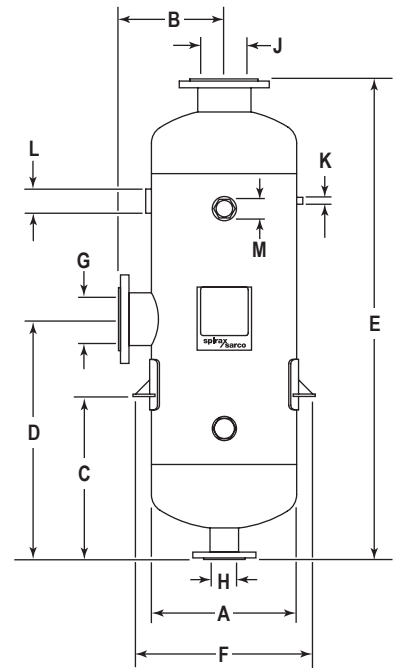




**FV6**



**FV8 and FV12**



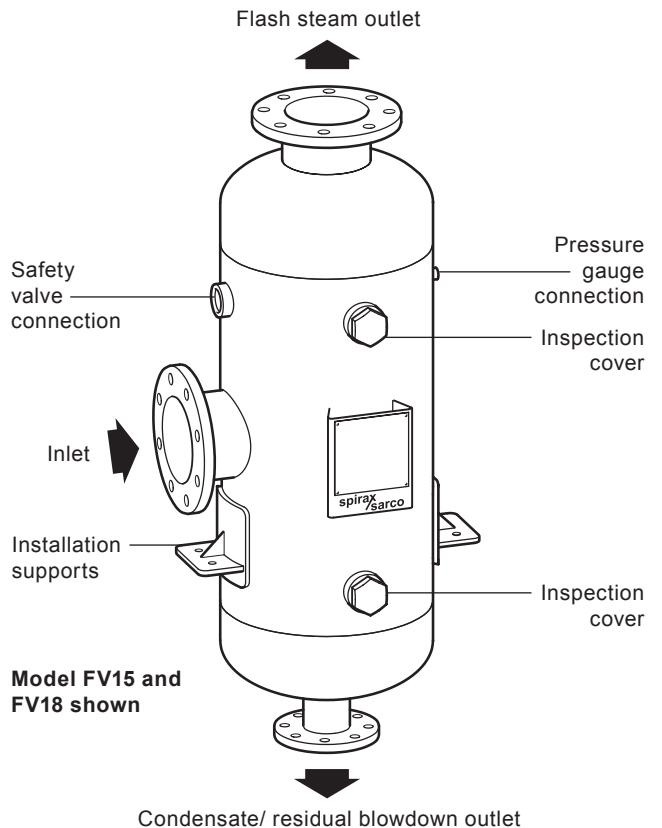
**FV15 and FV18**

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

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