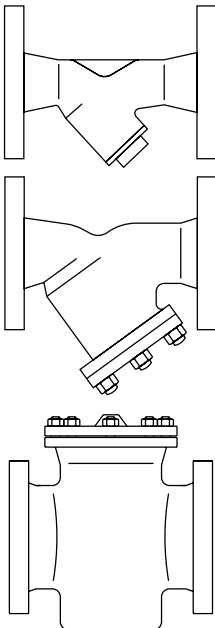


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**Fig 3, 7, 33, 34, 36, 3616, 37, 3716 and Fig 1738**  
**Flanged Strainers**  
**Installation and Maintenance Instructions**

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1. *General safety information*
2. *General product information*
3. *Installation*
4. *Commissioning*
5. *Operation*
6. *Maintenance*
7. *Spare parts*
8. *Fault finding*

# — 1. *General safety information* —

Safe operation of these units can only be guaranteed if they are properly installed, commissioned and maintained by a qualified person (see Section 11 of the attached Supplementary Safety Information) in compliance with the operating instructions. General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment must also be complied with.

## **Warning**

The cover gasket contains a thin stainless steel support ring which may cause physical injury if not handled and disposed of carefully.

## **Isolation**

Consider whether closing isolating valves will put any other part of the system or personnel at risk. Dangers might include; isolation of vents and protective devices or alarms. Ensure isolation valves are turned off in a gradual way to avoid system shocks.

## **Pressure**

Before attempting any maintenance consider what is or may have been in the pipeline. Ensure that any pressure is isolated and safely vented to atmospheric pressure before attempting to maintain the product, this is easily achieved by fitting Spirax Sarco depressurisation valves type DV (see separate literature for details). Do not assume that the system is depressurised even when a pressure gauge indicates zero.

## **Temperature**

Allow time for temperature to normalise after isolation to avoid the danger of burns and consider whether protective clothing (including safety glasses) is required.

## **Disposal**

These products are recyclable. No ecological hazard is anticipated with the disposal of these products providing due care is taken.

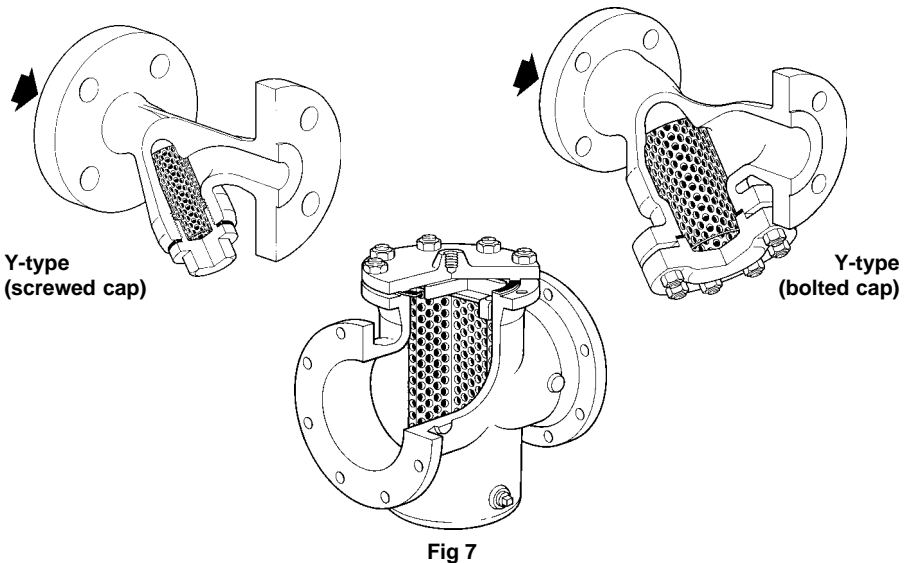
## — 2. General product information —

### 2.1 General description

The products detailed below are all strainers with flanged connections. They are used to protect other pipeline items from damage due to debris and dirt in the system. The Fig 7 strainer is a pot type design - all the others are Y-type designs. As standard, most Y-type strainers are fitted with stainless steel screens with 0.8 mm perforations. The Fig 7 is fitted with 3.2 mm perforations only (no optional extras are available for the Fig 7). Optional screens are available for the Y-type strainers only, see Section 2.2.

**Note:** For additional information see the following Technical Information Sheets:

Strainer	Body material	Body rating	Size	TI reference
<b>Fig 3</b>	Bronze body	PN25	DN15 - DN100	TI-P021-01
<b>Fig 7</b>	Carbon steel body	PN16	DN200 - DN250 only	TI-P063-03
<b>Fig 33</b>	Cast iron	PN16	DN15 - DN200	TI-S60-03
<b>Fig 34 (DIN)</b>	Carbon steel	PN40	DN15 - DN200	TI-P064-01
<b>Fig 34 (ASTM)</b>	Carbon steel	PN50 / ANSI 300	DN15 - DN200	TI-P064-02
<b>Fig 36</b>	Austenitic stainless steel	ANSI 300	DN15 - DN200	TI-P160-02
<b>Fig 3616 (ASTM)</b>	Austenitic stainless steel	ANSI 150	DN15 - DN200	TI-P160-04
<b>Fig 3616 (DIN)</b>	Austenitic stainless steel	PN16	DN15 - DN200	TI-P160-05
<b>Fig 37</b>	SG iron	PN40	DN15 - DN150	TI-P081-01
		PN25	DN200	TI-P081-01
<b>Fig 3716</b>	SG iron	PN16	DN15 - DN200	TI-P081-03
<b>Fig 1738</b>	Carbon steel	PN100	DN15 - DN200	TI-P162-01



## 2.2 Optional extras

Strainer screens	Stainless steel screen	Perforations	1.6, 3 mm
		Mesh	40, 100, 200
	Monel screen (Not available for the Fig 3716)	Perforations	0.8, 3 mm
		Mesh	100

### Blowdown or drain valve connections

The cap can be drilled and tapped to the following sizes to enable a blowdown or drain valve to be fitted.

Strainer	Size	Blowdown valve	Drain valve
Fig 3	DN15 to 20	1/2"	1/2"
	DN25	3/4"	3/4"
	DN32 to 40	1"	3/4"
	DN50	1 1/4"	3/4"
	DN65 to 80	1 1/2"	3/4"
	DN100	2"	3/4"
Fig 33	DN15	1/4"	1/4"
Fig 34	DN20 to 25	1/2"	1/2"
Fig 36	DN32 to 40	1"	3/4"
Fig 37	DN50 to 125	1 1/4"	3/4"
	DN150 to 200	2"	3/4"
* Fig 3616	DN15 to 20	3/8"	3/8"
	DN25 to 32	1/2"	1/2"
* Fig 3716	DN40 to 80	3/4"	3/4"
	DN100 to 200	1"	3/4"
Fig 1738	DN15	3/8"	3/8"
	DN20	1/2"	3/8"
	DN25	3/4"	1/2"
	DN32 to 40	1"	1/2"
	DN50	1"	3/4"
	DN65	1 1/4"	3/4"
	DN80	1 1/2"	3/4"
	DN100	1 1/2"	1"
	DN150	2"	1"
	DN200	2"	1 1/2"

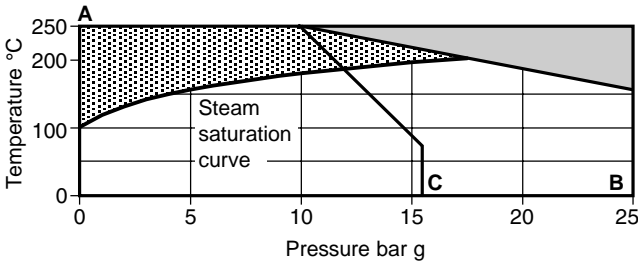
\* **Note:** The Fig 3616 and Fig 3716 can be supplied with 1/4" tappings for pressure monitoring (upstream and downstream) of the strainer screen

## 2.3 Limiting conditions (ISO 6552) / operating ranges

**Note:** Values for PMA and TMA are not concurrent for exact operating limits.

**Fig 3**

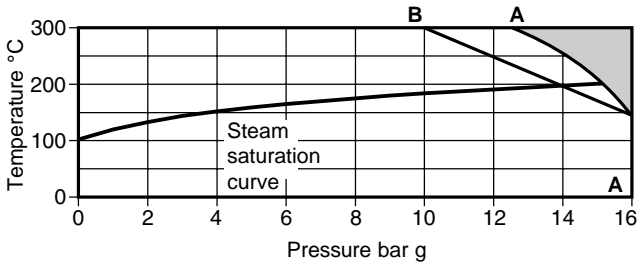
Body design conditions		PN25
PMA - Maximum allowable pressure	25 bar g	(363 psi g)
TMA - Maximum allowable temperature	250°C	(482°F)
Minimum operating temperature	0°C	(32°F)
Designed for a maximum cold hydraulic test pressure of:	38 bar g	(551 psi g)



- The product must not be used in this region.
- For use in this region the castings may be resin impregnated to MIL/276 and DEF 03 - 1/2 standards.
- A - B** Flanged BS 4504 PN25
- A - C** Flanged ANSI 150

**Fig 7**

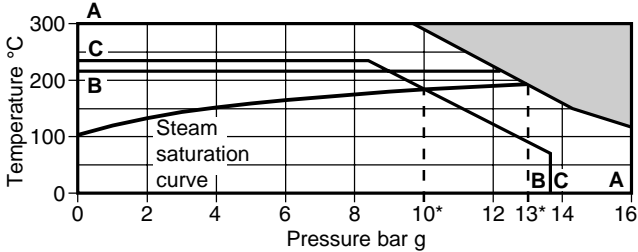
Body design conditions		PN16
PMA - Maximum allowable pressure	16 bar g	(232 psi g)
TMA - Maximum allowable temperature	300°C	(572°F)
Minimum operating temperature	0°C	(32°F)
Designed for a maximum cold hydraulic test pressure of:	28 bar g	(406 psi g)



- The product must not be used in this region.
- A - A** Flanged BS 4504 PN16
- B - A** Flanged ANSI 150

**Fig 33**

Body design conditions	PN16	
PMA - Maximum allowable pressure	16 bar g	(232 psi g)
TMA - Maximum allowable temperature	300°C	(572°F)
Minimum operating temperature	0°C	(32°F)
Designed for a maximum cold hydraulic test pressure of:	24 bar g	(348 psi g)



The product must not be used in this region.

\*PMO Maximum operating pressure for saturated steam.

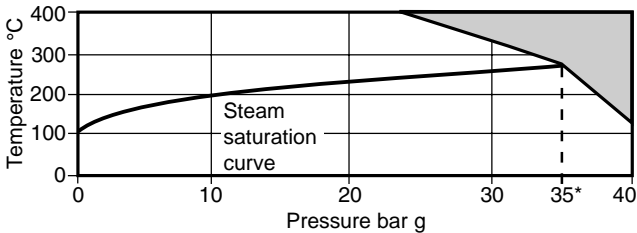
**A - A** Flanged BS 4504 PN16

**B - B** Flanged AS 2129 Table F

**C - C** Flanged ANSI 125 (including DN15, 20 flanged ANSI 150)

**Fig 34 (DIN)**

Body design conditions	PN40	
PMA - Maximum allowable pressure	40 bar g	(580 psi g)
TMA - Maximum allowable temperature	400°C	(752°F)
Minimum operating temperature	0°C	(32°F)
Designed for a maximum cold hydraulic test pressure of:	69 bar g	(1 000 psi g)

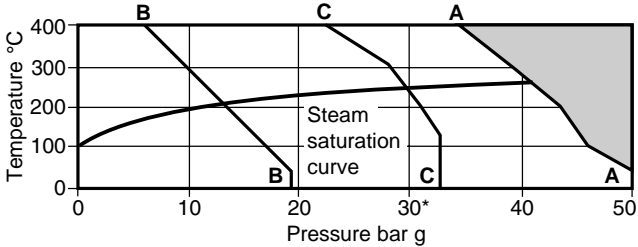


The product must not be used in this region.

\*PMO Maximum operating pressure for saturated steam.

**Fig 34 (ASTM)**

Body design conditions	ANSI 300/PN50	
PMA - Maximum allowable pressure	50 bar g	(725 psi g)
TMA - Maximum allowable temperature	400°C	(752°F)
Minimum operating temperature	0°C	(32°F)
Designed for a maximum cold hydraulic test pressure of:	78 bar g	(1 131 psi g)



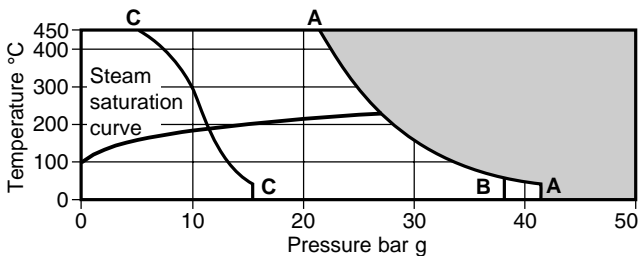
The product must not be used in this region.

\*PMO Maximum operating pressure for saturated steam.

- A - A** Flanged ANSI 300
- B - B** Flanged ANSI 150
- C - C** Flanged JIS/KS 20

**Fig 36**

Body design conditions	ANSI 300/PN50	
PMA - Maximum allowable pressure	41 bar g	(595 psi g)
TMA - Maximum allowable temperature	450°C	(842°F)
Minimum operating temperature	-29°C	(-20°F)
Designed for a maximum cold hydraulic test pressure of:	76 bar g	(1 102 psi g)

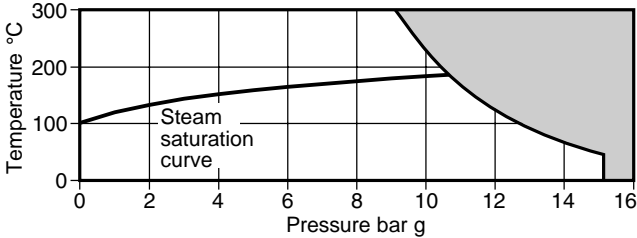



The product must not be used in this region.

- A - A** Flanged ANSI 300
- A - B** Flanged BS 4504 PN40
- C - C** Flanged ANSI 150

### Fig 3616 (DIN)

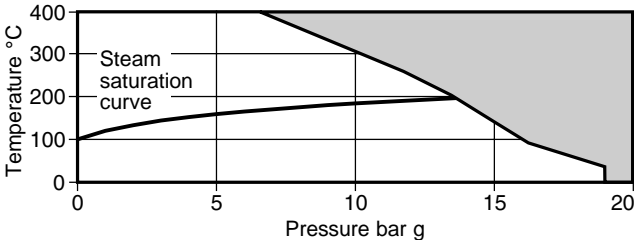
Body design conditions	PN16	
PMA - Maximum allowable pressure	15 bar g	(217.5 psi g)
TMA - Maximum allowable temperature	300°C	(572°F)
Minimum operating temperature	-10°C	(14°F)
Designed for a maximum cold hydraulic test pressure of:	24 bar g	(348 psi g)




 The product must not be used in this region.

### Fig 3616 (ASTM)

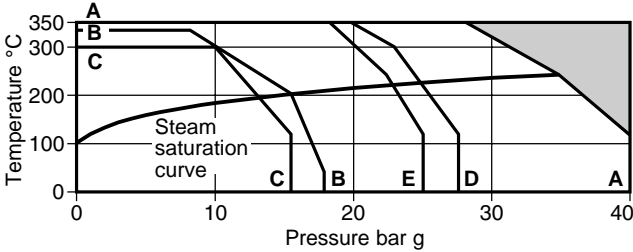
Body design conditions	ANSI 150	
PMA - Maximum allowable pressure	19 bar g	(275.5 psi g)
TMA - Maximum allowable temperature	400°C	(752°F)
Minimum operating temperature	-29°C	(-20°F)
Designed for a maximum cold hydraulic test pressure of:	30 bar g	(435 psi g)



 The product must not be used in this region.

**Fig 37**

Body design conditions		PN40
	DN200 only	PN25
PMA - Maximum allowable pressure		40 bar g (580 psi g)
	DN200 only	25 bar g (363 psi g)
TMA - Maximum allowable temperature		350°C (662°F)
		-10°C (14°F)
Minimum operating temperature	DN65 and above	0°C (32°F)
Designed for a maximum cold hydraulic test pressure of:	PN40	60 bar g (870 psi g)
	PN25 DN200 only	38 bar g (551 psi g)

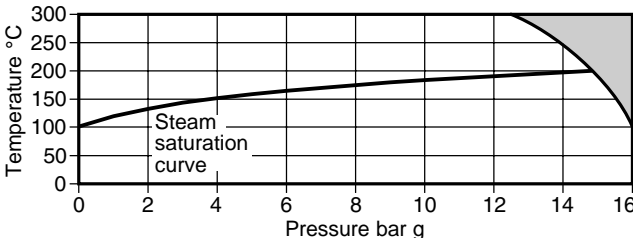


The product must not be used in this region.

- A - A Flanged BS 4504 PN40
- B - B Flanged ANSI 150
- C - C Flanged JIS/KS 10K
- A - D Flanged JIS/KS 20K
- A - E Flanged BS 4504 PN25

**Fig 3716 (DIN)**

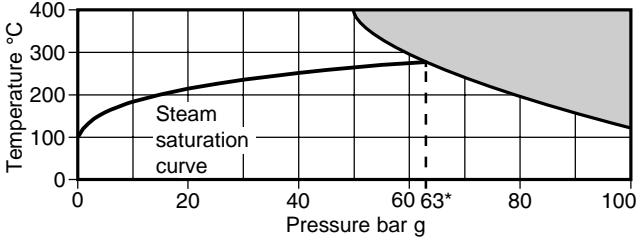
Body design conditions		PN16
PMA - Maximum allowable pressure		16 bar g (232 psi g)
TMA - Maximum allowable temperature		300°C (662°F)
PMO - Maximum operating pressure		16 bar g (232 psi g)
	Maximum operating pressure for saturated steam service	15 bar g (217.5 psi g)
TMO - Maximum operating temperature		300°C (662°F)
Minimum operating temperature		-10°C (14°F)
Designed for a maximum cold hydraulic test pressure of:		24 bar g (348 psi g)




The product must not be used in this region.

**Fig 1738**

Body design conditions	PN100	
PMA - Maximum allowable pressure	100 bar g	(1 450 psi g)
TMA - Maximum allowable temperature	400°C	(752°F)
Minimum operating temperature	-10°C	(14°F)
Designed for a maximum cold hydraulic test pressure of:	150 bar g	(2 176 psi g)



 The product must not be used in this region.

\*PMO Maximum operating pressure for saturated steam.

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## 3. Installation

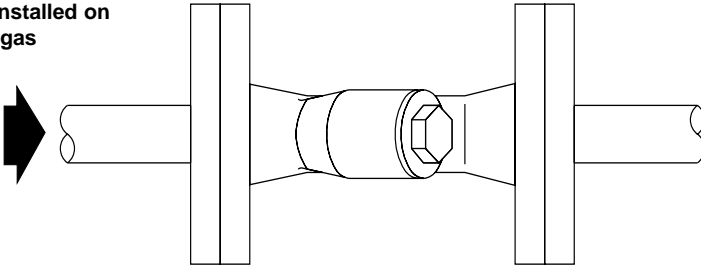
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**Note:** Before actioning any installation observe the 'Safety information' in Section 1.

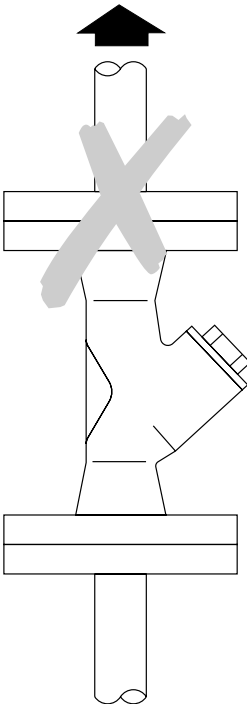
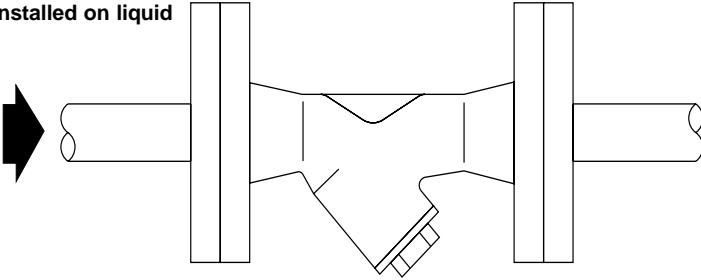
Referring to the installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended installation:

- 3.1.** Check materials, pressure and temperature and their maximum values. If the maximum operating limit of the product is lower than that of the system in which it is being fitted, ensure that a safety device is included in the system to prevent overpressurisation.
- 3.2.** Determine the correct installation situation and the direction of fluid flow.
- 3.3.** Remove protective covers from all connections.
- 3.4.** Strainers can be fitted on liquid or steam/ gas systems in either horizontal pipework or vertical pipework where the flow is downward. In a horizontal line on steam/gases the strainer pocket should be in the horizontal plane as this reduces the possibility of waterhammer. On liquid systems the strainer pocket should point downwards
- 3.5.** The strainers may be lagged if required.

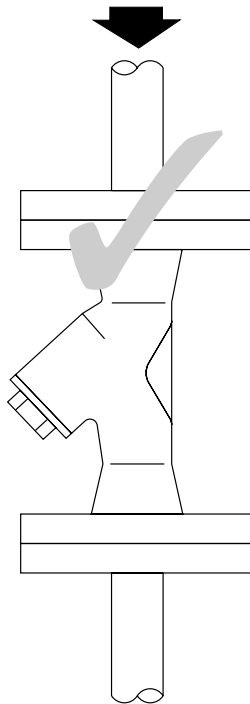
Strainer installed on steam or gas



Strainer installed on liquid



Flow



Flow downwards

## 4. Commissioning

After installation or maintenance ensure that the system is fully functional. Carry out tests on any alarms or protective devices.

## 5. Operation

Strainers are passive items and will prevent the onward movement of dirt and debris, which is larger than the holes in the screen. The pressure drop across the strainer will increase as the screen becomes blocked. Regular cleaning / blowdown is recommended to keep the screen clean.

## 6. Maintenance

**Note: Before actioning any maintenance program observe the 'Safety information' in Section 1.**

### Warning

**The cover gasket contains a thin stainless steel support ring which may cause physical injury if not handled and disposed of carefully.**

### 6.1 General information



Before undertaking any maintenance on the strainer, it must be isolated from both the supply line and return line and any pressure allowed to safely normalise to atmosphere. The trap should then be allowed to cool. When reassembling, ensure that all joint faces are clean.

### 6.2 How to clean or replace the strainer screen:



Refer to Section 7, page 11 for identification of parts

- Remove the strainer cap.
- On most sizes up to DN25 the cap is simply unscrewed.
- On all other sizes the cap is retained by bolts/nuts. The number of bolts/nuts used will depend on the strainer size, material of construction and design rating.
- Once the cap is removed the strainer screen can be taken out.
- Clean the screen or replace with a new one.
- Reassemble the screen into the cap by pushing the end into the recess.
- Always fit a new strainer cap gasket ensuring the jointing faces are clean.
- Refit the strainer cap or bolts/nuts using 'Neverseize' compound and tighten to the recommended torque (refer to the relevant Table, pages 8 to 10).
- Ensure that the nuts are tightened equally before final torque is applied.
- Check for leaks.



### Recommended tightening torques for the Fig 3 strainer

Item	Qty	Size	 or 	mm	N m	(lbf ft)
2	1	DN15		26	1" BSP x <sup>29</sup> / <sub>64</sub> "	42 - 48 (31 - 35)
	1	DN20		26	1¼" BSP x <sup>37</sup> / <sub>64</sub> "	70 - 80 (51 - 59)
	1	DN25		32	1¾" BSP x <sup>41</sup> / <sub>64</sub> "	124 - 144 (91 - 106)
5, 6	4	DN32 and DN40			<sup>3</sup> / <sub>8</sub> " UNF x <sup>3</sup> / <sub>4</sub> "	20 - 24 (15 - 18)
	4	DN50 and DN65			<sup>3</sup> / <sub>8</sub> " UNF x 1¼"	20 - 24 (15 - 18)
	6	DN80			<sup>7</sup> / <sub>16</sub> " UNF x 1½"	50 - 55 (37 - 40)
	12	DN100			½" UNF x 2"	50 - 55 (37 - 40)



## Recommended tightening torques for the Fig 7 strainer

Item	Qty	Size	 or mm 	N m	(lbf ft)
6	8	DN200	(3/4 UNC) to BS 1769	80 - 90	(59 - 66)
	10	DN250		110 - 120	(81 - 88)
7	1	DN200	3/4" BSP 1" BSP	50 - 55	(37 - 40)
	1	DN250		50 - 55	(37 - 40)



## Recommended tightening torques for the Fig 33 strainer

Item	Qty	Size	 or mm 	N m	(lbf ft)
2	1	DN15	22 M28	50 - 55	(37 - 40)
	1	DN20	27 M32	60 - 66	(44 - 49)
	1	DN25	27 M42	100 - 110	(74 - 81)
	1	DN32	41 M56	150 - 165	(110 - 121)
	1	DN40	41 M60	170 - 185	(125 - 136)
	1	DN50	55 M72	190 - 210	(140 - 154)
5	8	DN65	19 M12 x 40	20 - 24	(15 - 18)
	8	DN80	19 M12 x 40	30 - 35	(22 - 26)
	8	DN100	24 M16 x 50	70 - 77	(51 - 57)
	8	DN125	24 M16 x 50	80 - 88	(59 - 65)
	8	DN150	30 M20 x 60	100 - 110	(74 - 81)
	12	DN200	30 M20 x 70	90 - 100	(66 - 74)



## Recommended tightening torques for the Fig 34 strainer

Item	Qty	Size	 or mm 	N m	(lbf ft)
2	1	DN15	22 M28	50 - 55	(37 - 40)
	1	DN20	27 M32	60 - 66	(44 - 49)
	1	DN25	27 M42	100 - 110	(74 - 87)
5	4	DN32	19 M12 x 30	20 - 24	(15 - 18)
	4	DN40	19 M12 x 30	20 - 24	(15 - 18)
	6	DN50	19 M12 x 35	20 - 24	(15 - 18)
	8	DN65	19 M12 x 35	20 - 24	(15 - 18)
	8	DN80	19 M12 x 35	30 - 35	(22 - 26)
	8	DN100	24 M16 x 45	50 - 55	(37 - 40)
	8	DN125	30 M20 x 50	70 - 77	(51 - 57)
	8	DN150	30 M20 x 55	80 - 88	(59 - 65)
	12	DN200	36 M24 x 65	120 - 130	(88 - 96)



## Recommended tightening torques for the Fig 36 strainer

Item	Qty	Size		or mm		N m	(lbf ft)
5	4	DN15 and DN20	17		M10 x 25	22 - 25	(16 - 18)
	4	DN25	17		M10 x 25	22 - 25	(16 - 18)
	4	DN32 and DN40	19		M12 x 35	40 - 45	(29 - 33)
	8	DN50	19		M12 x 35	40 - 45	(29 - 33)
	8	DN65	19		M12 x 45	40 - 45	(29 - 33)
	8	DN80	19		M12 x 50	40 - 45	(29 - 33)
	8	DN100	24		M16 x 50	100 - 110	(73 - 80)
	8	DN125	30		M20 x 60	160 - 170	(117 - 125)
	8	DN150	30		M20 x 65	210 - 230	(154 - 169)
	8	DN200	36		M20 x 75	210 - 230	(154 - 169)



## Recommended tightening torques for the Fig 3616 strainer

Item	Qty	Size		or mm		N m	(lbf ft)
5	4	DN15 and DN20	13		M8 x 20	15 - 20	(11 - 15)
	4	DN25	13		M8 x 20	15 - 20	(11 - 15)
	4	DN32 and DN40	13		M8 x 20	15 - 20	(11 - 15)
	4	DN50	17		M10 x 25	22 - 25	(16 - 18)
	4	DN65	17		M10 x 30	22 - 25	(16 - 18)
	6	DN80	17		M10 x 30	22 - 25	(16 - 18)
	6	DN100	19		M12 x 35	50 - 60	(37 - 44)
	8	DN125	19		M12 x 40	50 - 60	(37 - 44)
	8	DN150	19		M12 x 40	50 - 60	(37 - 44)
	8	DN200	24		M16 x 50	100 - 110	(74 - 81)



## Recommended tightening torques for the Fig 37 strainer

Item	Qty	Size		or mm		N m	(lbf ft)
2	1	DN15	22		M28	50 - 55	(37 - 40)
	1	DN20	27		M32	60 - 66	(44 - 49)
	1	DN25	27		M42	100 - 110	(74 - 81)
	1	DN32	46		M56	250 - 275	(184 - 202)
	1	DN40	50		M60	250 - 275	(184 - 202)
	1	DN50	60		M72	310 - 340	(228 - 250)
	5	8	DN65	19		M12 x 35	20 - 24
8		DN80	19		M12 x 35	30 - 35	(19 - 26)
8		DN100	24		M16 x 45	50 - 55	(37 - 40)
8		DN125	30		M20 x 50	80 - 88	(59 - 65)
8		DN150	30		M20 x 55	100 - 110	(74 - 81)
12		DN200	36		M24 x 65	90 - 100	(66 - 74)

## Recommended tightening torques for the Fig 3716 strainer

Item	Qty	Size		or mm		N m	(lbf ft)
5	4	DN15 and DN20	13		M8 x 20	15 - 20	(11 - 15)
	4	DN25	13		M8 x 20	15 - 20	(11 - 15)
	4	DN32 and DN40	13		M8 x 20	15 - 20	(11 - 15)
	4	DN50	17		M10 x 25	22 - 25	(16 - 18)
	4	DN65	17		M10 x 30	22 - 25	(16 - 18)
	6	DN80	17		M10 x 30	22 - 25	(16 - 18)
	6	DN100	19		M12 x 35	50 - 60	(37 - 44)
	8	DN125	19		M12 x 40	50 - 60	(37 - 44)
	8	DN150	19		M12 x 40	50 - 60	(37 - 44)
	8	DN200	24		M16 x 50	100 - 110	(74 - 81)

## Recommended tightening torques for the Fig 1738 strainer

Item	Qty	Size		or mm		N m	(lbf ft)
5	4	DN15	17		M10 x 40	14 - 16	(10 - 12)
	4	DN20	19		M12 x 45	20 - 22	(15 - 16)
	4	DN25	19		M12 x 45	20 - 22	(15 - 16)
	8	DN32	22		M14 x 45	27 - 29	(20 - 21)
	8	DN40	22		M14 x 45	27 - 29	(20 - 21)
	8	DN50	19		M12 x 50	20 - 22	(15 - 16)
	8	DN65	24		M16 x 55	50 - 55	(37 - 41)
	8	DN80	27		M18 x 55	60 - 66	(43 - 49)
	8	DN100	30		M20 x 55	70 - 77	(52 - 57)
	8	DN150	41		M27 x 65	90 - 99	(67 - 73)
	12	DN200	36		M24 x 76	80 - 88	(59 - 65)

# 7. Spare parts

The spare parts available are shown in heavy outline. Parts drawn in broken line are not supplied as spares.

## Available spares

Strainer screen (state material, mesh, perforation and size of strainer)

**Note: The Fig 7 pot type is only available with 3.2 mm perforated stainless steel**

4

Cap gasket (packet of three)

3

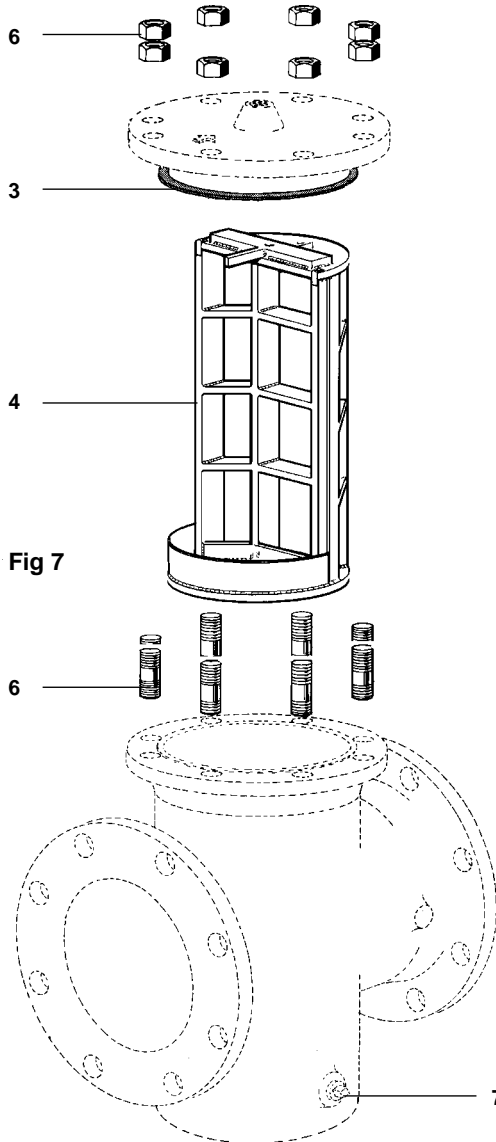


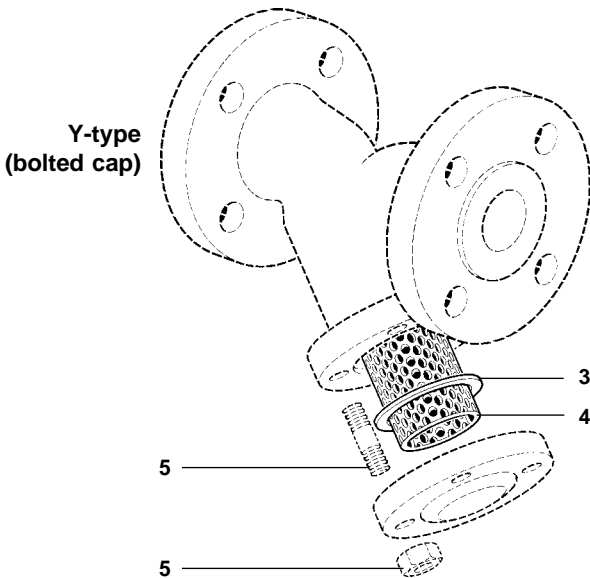
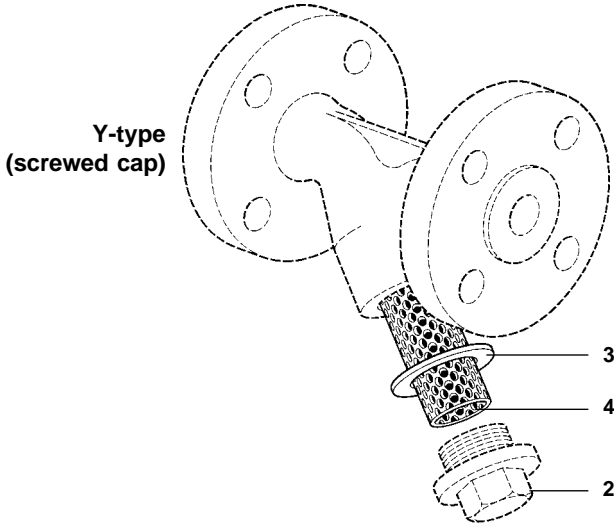
Fig 7

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## How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size, model no. and pressure rating of the trap.

**Example:** 1 off 100 mesh stainless steel screen for a DN100 Fig 34 steel strainer.



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## 8. *Fault finding*

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<b>Symptom</b>	<b>Possible cause</b>	<b>Remedy</b>
<b>No flow through strainer</b>	Blocked screen	Clean or replace screen
	System is isolated	Check isolation valves
<b>Increased pressure drop across strainer</b>	Screen is blocked up	Clean or replace screen



