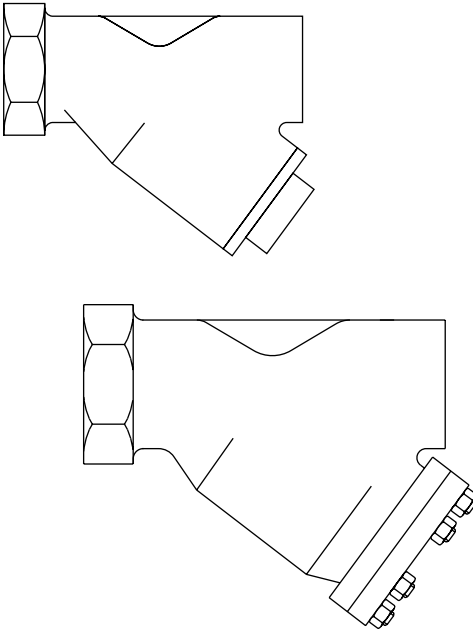


## Fig 1, Fig 12, Fig 13, Fig 14, Fig 16 and Fig 16L Strainers Installation and Maintenance Instructions

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

# — 1. *General safety information* —

Safe operation of the unit can only be guaranteed if it is properly installed, commissioned and maintained by a qualified person in compliance with the operating instructions and Supplementary Safety Information with the product (IM-S60-16). General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment which must also be complied with.

## **Warning**

The strainer cap gasket contains a thin stainless steel support ring, which may cause physical injury if it is 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, protective devices or alarms. Ensure isolation valves are turned off in a gradual way to avoid system shocks.

## **Pressure**

Before attempting any maintenance of the strainer, 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 strainer. 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.

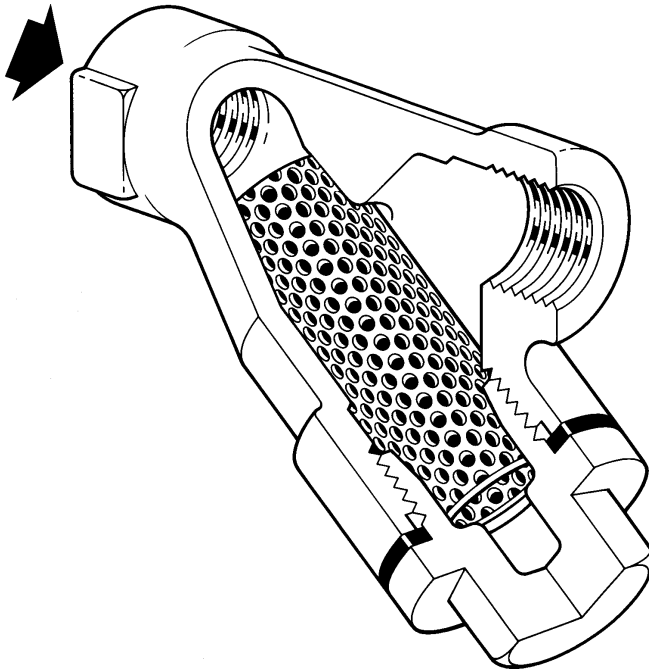
## **Temperature**

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**

The product is recyclable. No ecological hazard is anticipated with disposal of this product providing due care is taken.

## — 2. General product information —



### 2.1 General description

The products detailed are all Y-type strainers with screwed connections. They are used to protect other pipeline items from damage due to debris and dirt in the system.

**Note:**

For additional information see the following Technical Information Sheets:

Products	Body material	Technical information sheet
Fig 1	Bronze	TI-P164-02
Fig 12GM	Bronze	TI-P164-02
Fig 12SG	SG iron	TI-P163-01
Fig 13	Cast iron	TI-P063-01
Fig 14	Carbon steel	TI-P063-02
Fig 16	Stainless steel	TI-P160-01
Fig 16L	Stainless steel	TI-P160-01

As standard they are fitted with 0.8 mm perforated stainless screens. Optional screens are available, which can incur an extra cost:

**Optional screens in stainless steel**

Perforations	1.6 mm and 3.0 mm
Mesh	40, 100 and 200

**Optional screens in monel**

Perforations	0.8 mm and 3.0 mm
Mesh	100

## 2.2 Options

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

Strainer size	Blowdown valve	Drain valve valve
1/4" - 1/2"	1/4"	1/4"
3/4" - 1"	1/2"	1/2"
1 1/4" - 1 1/2"	1"	3/4"
2" - 2 1/2"	1 1/4"	3/4"
3" (Fig 1 only)	1 1/2"	3/4"

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

**Fig 1**

Body design conditions	PN16	
PMA - Maximum allowable pressure	16 bar g	(232 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:	24 bar g	(348 psi g)



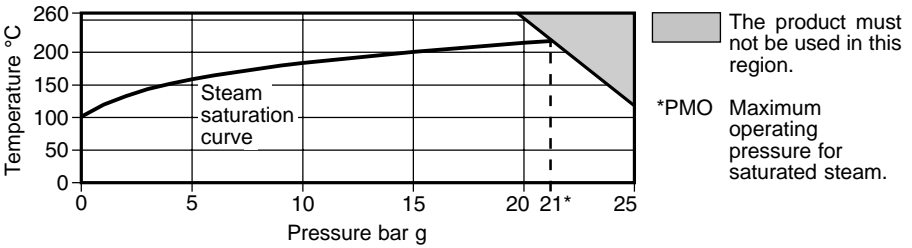
**Fig 12GM**

Body design conditions	PN25	
PMA - Maximum allowable pressure	25 bar g	(362 psi g)
TMA - Maximum allowable temperature	210°C	(410°F)
Minimum operating temperature	-198°C	(-325°F)
Designed for a maximum cold hydraulic test pressure of:	38 bar g	(551 psi g)



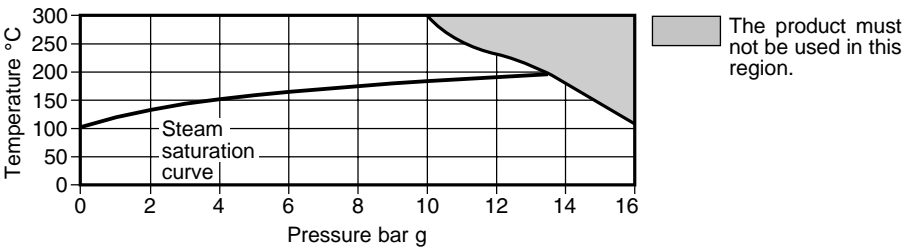
**Fig 12SG**

Body design conditions	PN25	
PMA - Maximum allowable pressure	25 bar g	(362 psi g)
TMA - Maximum allowable temperature	260°C	(500°F)
Minimum operating temperature	0°C	(32°F)
Designed for a maximum cold hydraulic test pressure of:	38 bar g	(551 psi g)



**Fig 13**

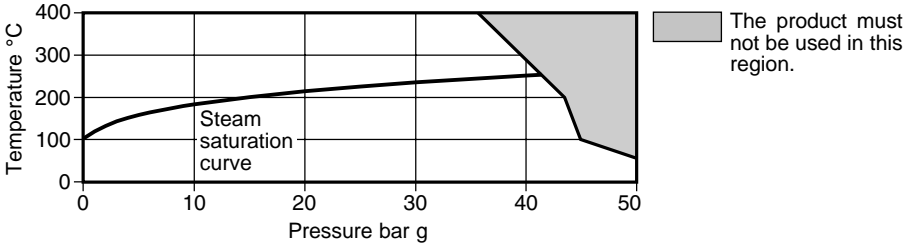
Body design conditions	PN16	
PMA - Maximum allowable pressure	16 bar g	(232 psi g)
TMA - Maximum allowable temperature	300°C	(572°F)
Minimum operating temperature	-10°C	(14°F)
Designed for a maximum cold hydraulic test pressure of:	24 bar g	(348 psi g)



**Note: See page 6 for Fig 14, Fig 16 and Fig 16L limiting conditions and operating ranges.**

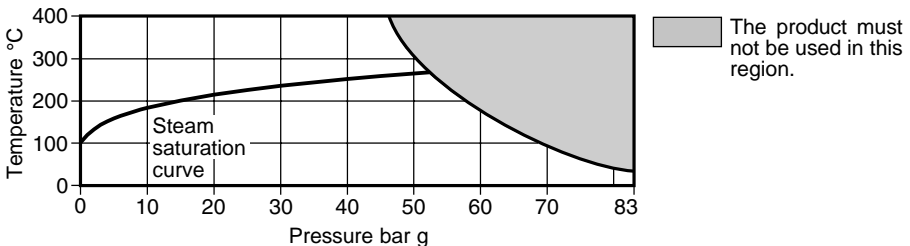
**Fig 14**

Body design conditions		ANSI 300	
PMA - Maximum allowable pressure	50 bar g	(725 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:	1¼" - 1"	78 bar g	(1 131 psi g)
	1¼" - 2"	85 bar g	(1 233 psi g)



**Fig 16 and Fig 16L**

Body design conditions		ANSI 600	
PMA - Maximum allowable pressure	83 bar g	(1 203 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:	125 bar g	(1 812 psi g)	



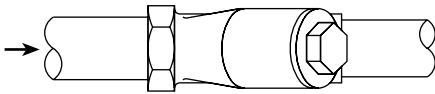
## 3. Installation

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

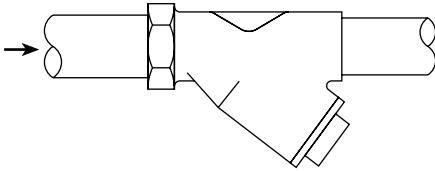
Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended installation:

- 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.

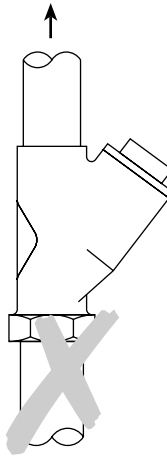
- 3.2** Determine the correct installation situation and the direction of fluid flow.
- 3.3** Remove protective covers from all connections.
- 3.4** Strainers can be fitted on liquid or steam/gas systems in either horizontal pipework or vertical pipework where the flow is downward. In a horizontal line 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.



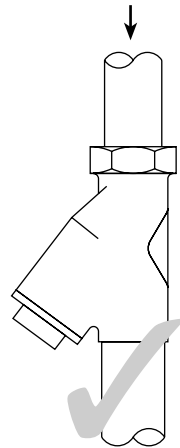
**Strainer installed on steam or gas line**



**Strainer installed on liquid line**



**Flow upwards**



**Flow downwards**

- 3.5** The strainers may be lagged if required.

## 4. Commissioning

After installation or maintenance ensure that the system is fully functioning. 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 observe the 'Safety information' in Section 1.

**WARNING:**



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

**6.1** Before undertaking any maintenance of 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:**

Remove the strainer cap. On most sizes the cap is simply unscrewed. On sizes above 2½" and 3" Fig 12SG the cap is retained by four bolts. On the 3" Fig 1 the cap is retained by 4 x studs/nuts. 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 and tighten to the recommended torque. On sizes above 2" ensure that the nuts are tightened equally before final torque is applied. Check for leaks.

**Recommended tightening torques**

Product	Item	Size	No off	 or 	mm	N m	(lbf ft)
<b>Fig 1 and Fig 12 Bronze</b>	2	¾" - ½"	1	22	M28	38 - 40	28 - 29
		¾"	1	27	M32	42 - 48	31 - 35
		1"	1	27	M42	70 - 80	51 - 59
		1¼"	1	41	M56	124 - 144	91 - 106
		1½"	1	41	M60	164 - 184	121 - 135
		2"	1	55	M72	234 - 264	172 - 194
		2½"	1	55	¾" - 16 UNS	300 - 330	221 - 242
	5	3"	6	¾"	⅞" UNF	50 - 55	37 - 40
<b>Fig 12SG</b>	2	½"	1	22	M28	38 - 40	28 - 29
		¾"	1	27	M32	42 - 48	31 - 35
		1"	1	32	M42	70 - 80	51 - 59
		1¼"	1	46	M56	124 - 144	91 - 106
		1½"	1	50	M60	164 - 184	121 - 135
		2"	1	60	M72	234 - 264	172 - 194
	5	2½" - 3"	4	19	M12	50 - 55	37 - 40
<b>Fig 14</b>	2	½"	1	22		50 - 55	37 - 40
		¾"	1	27		60 - 66	44 - 49
		1"	1	27		100 - 110	74 - 81
		1¼"	1	46		180 - 200	132 - 147
		1½"	1	50		230 - 250	169 - 184
		2"	1	60		330 - 360	243 - 265
<b>Fig 16 and Fig 16L</b>	2	¾" - ½"	1	22		45 - 50	33 - 37
		¾"	1	27		60 - 66	44 - 49
		1"	1	27		100 - 110	74 - 81
		1¼"	1	46		240 - 260	176 - 191
		1½"	1	46		260 - 280	191 - 206
		2"	1	60		310 - 340	228 - 250
<b>Fig 13</b>	2	¼" and ⅜"	1	22		50 - 55	37 - 40

# 7. Available spares

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

## Available spares

Strainer screen (always state material, size of perforation / mesh and size of strainer)	<b>4</b>
Cap gasket (packet of 3)	<b>3</b>

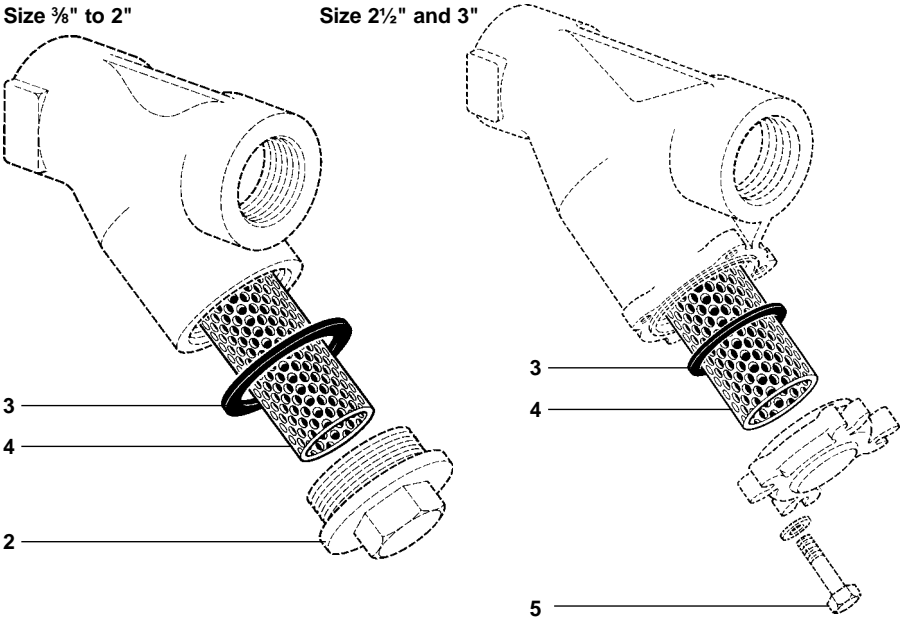
## How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the material, size of perforation/mesh, model No. and size of strainer.

**Example:** 1 off strainer screen in stainless steel with 100 mesh to suit 3/4" Fig 14 steel strainer.

**Size 3/8" to 2"**

**Size 2 1/2" and 3"**



## Screen interchangeability chart

Screen size Dimensions (mm)		Brass / Bronze		SG iron	Cast iron	Carbon steel	Stainless steel
Length	Diameter	Fig 1	Fig 12GM	Fig 12SG	Fig 13	Fig 14	Fig 16/16L
46	18.3		3/8" 1/2"	1/2"	1/4" 3/8"	1/2"	3/8" 1/2"
60	23.0		3/4"	3/4"		3/4"	3/4"
71	32.5		1"	1"		1"	1"
98	43.5		1 1/4"	1 1/4"		1 1/4"	1 1/4"
108	48.5		1 1/2"	1 1/2"		1 1/2"	1 1/2"
139	57.0		2"	2"		2"	2"
152	69.5		2 1/2"				
178	91.0	3"					

**Note:** Screen size is the same regardless of design or material.

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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 the strainer</b>	Screen is blocking up	Clean or replace screen



