

# Liquid drainers

for air and gas systems



**spirax**  
**/sarco**

# Liquid drainers for air and gas systems

The Spirax Sarco liquid drainer is the product of many years of experience.

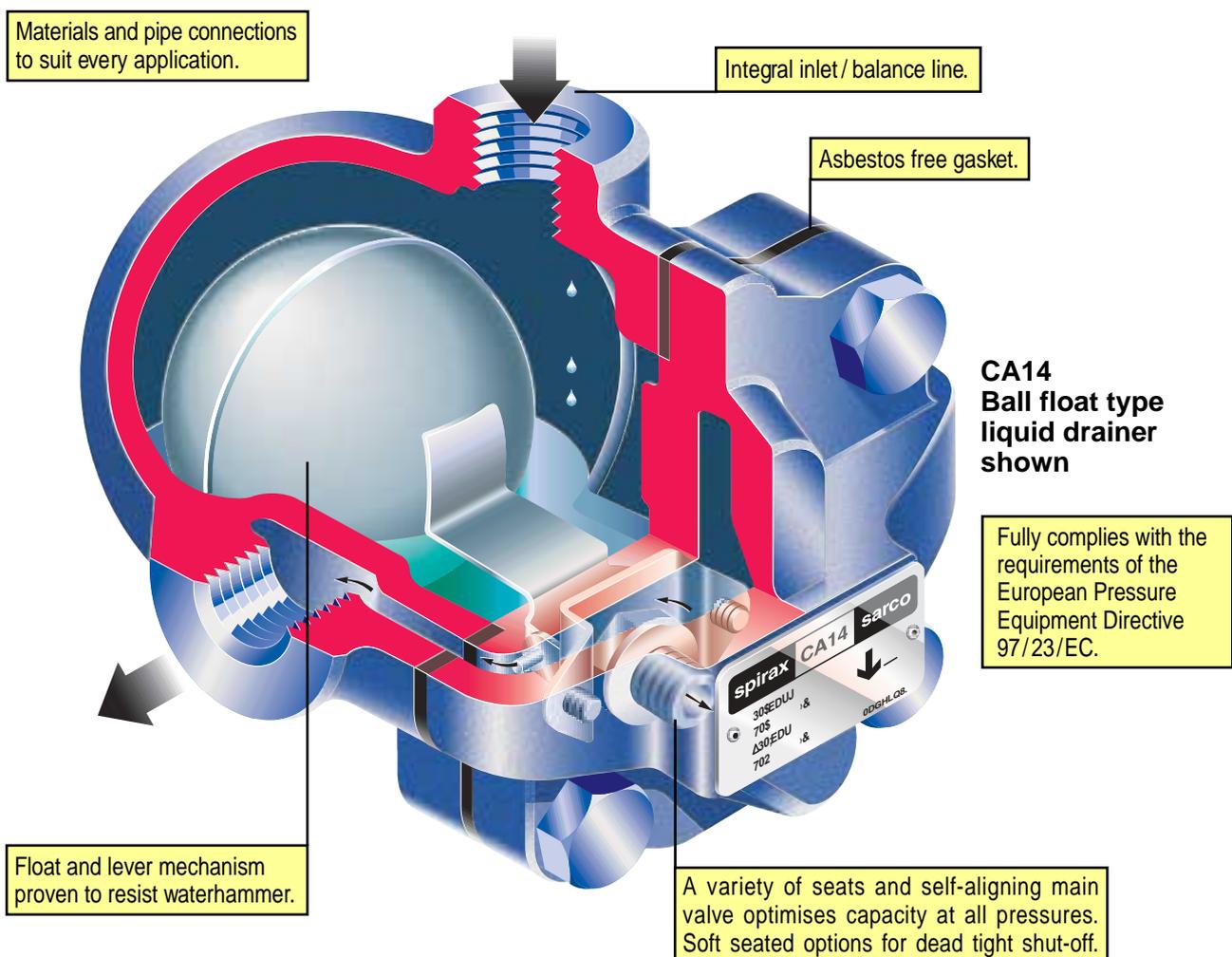
Constant design improvements have made today's liquid drainer range extremely robust and ideally suited to the rigorous demands of any air or gas system.

## Ball float type liquid drainer (CA)

Unique amongst all ball float liquid drainers is the self-aligning main valve assembly which is resistant to waterhammer.

Such attention to detail ensures complete shut-off at all pressures and reliable operation providing extended product life which requires minimal maintenance.

With drain cock and balance pipe tappings, together with the choice of body materials, the Spirax Sarco ball float liquid drainer range is adaptable to all applications where ball float liquid drainers are recommended and instantaneous removal of condensate is required.



## Disc type liquid drainer (Airodyn)

The Spirax Sarco Airodyn liquid drainer works using the proven principal of thermodynamics. Its robust design with minimal moving parts makes it ideally suited to the arduous conditions found in some air and gas systems. The Airodyn blast action is particularly suited to oily systems where other types of liquid drainer block-up as oil carried over from the compressor emulsifies at the main valve orifice.

Having a compact body it can be installed within the confines of machinery casings where space is at a premium and with a small internal volume has a reduced risk of damage caused by freezing when compared to other liquid drainers.

## Product range and options

Material	Cast iron	SG iron		Austenitic stainless steel					Carbon steel	
Trap type	CA10S	CA14	CA14S	Airodyn	CAS14	CAS14S	CA46	CA46S	CA44	CA44S
Ball float type	●	●	●		●	●	●	●	●	●
Disc type				●						
Body design rating	PN16	PN16	PN16	PN63	PN25	PN25	PN40	PN40	PN40	PN40
Sizes	DN15 - 1/2"	●	●	●	●	●	●	●	●	●
	DN20 - 3/4"	●	●	●		●	●	●	●	●
	DN25 - 1"			●		●		●		●
	DN40 - 1 1/2"			●				●		●
	DN50 - 2"			●				●		●
Connections	Screwed	●	●	●	●	●				1" Only
	Flanged		●	●			●	●	●	●
	Socket weld					●	●			1" Only
Valve head	Viton		●		●		●		●	
	Stainless steel	●		●		●		●		●
Integral inlet/balance line		●	●							
Separate balance line	●	Flanged only	Flanged only		●	●	●	●	●	●
Drain cock tapping option	●						●	●	●	●
Integral strainer				●	Optional	Optional				

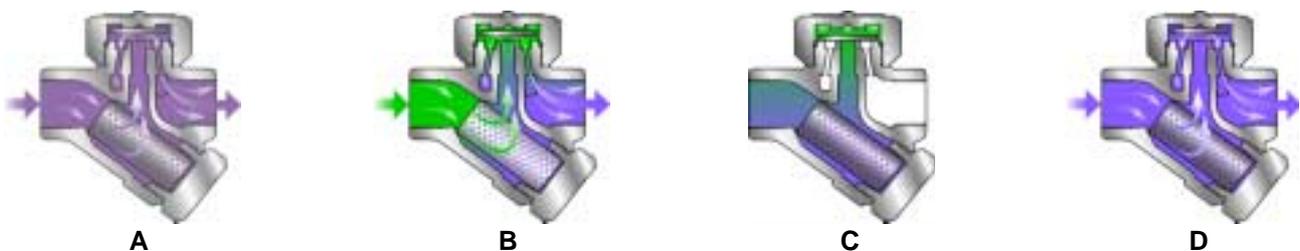
Spirax Sarco also have a range of inverted bucket drainers. Consult Spirax Sarco for further details.

### How a ball float type liquid drainer works

On start-up, the balance line allows air or gas to pass through the body and back into the inlet. This would otherwise not be able to escape (a condition known as 'air/gas binding').

As soon as condensate reaches the drainer, the float rises and the lever mechanism opens the main valve. Condensate continues to flow through the main valve. When air or gas arrives, the float drops and closes the main valve. At all times the main valve remains below the water level which ensures that air or gas cannot be passed.

### How a disc type liquid drainer works



On start-up, incoming pressure raises the disc and condensate is immediately discharged (A). High velocity creates a low-pressure area under the disc and high-pressure building above the disc draws it towards the seat (B). The pressure above the disc overcomes the pressure below it and the disc snaps shut onto its inner and outer seats (C). Note: The underside of the disc is scored across the outer seat. The pressure trapped above the disc falls as it bleeds across the outer seat. The disc is raised by the higher condensate pressure upstream and the cycle repeats (D).

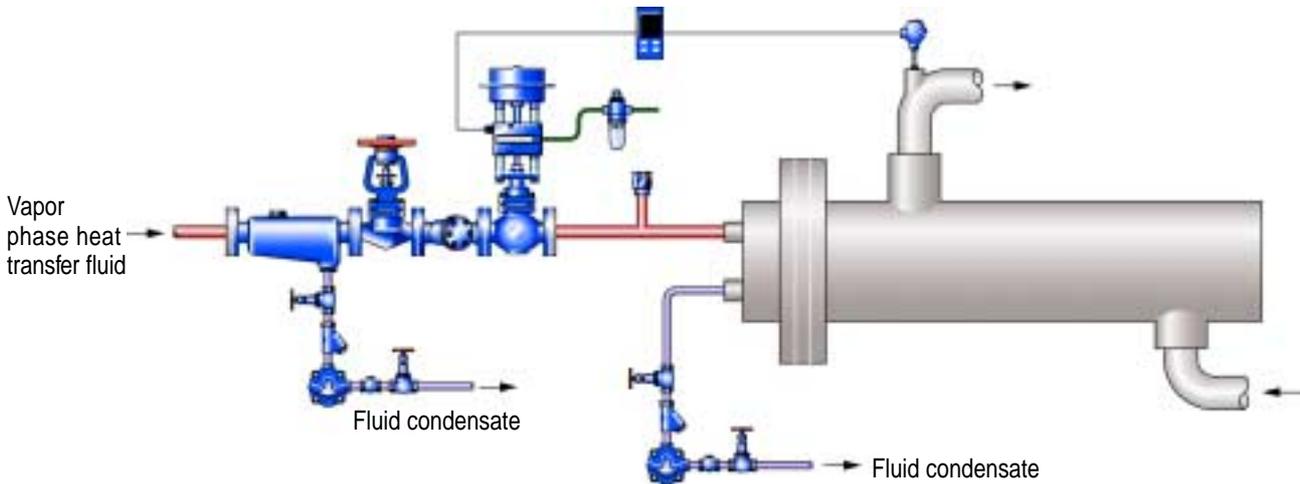
### User benefits

- Fully complies with the requirements of the European Pressure Equipment Directive 97/23/EC.
- Compact and lightweight reducing installation costs.
- Immediate discharge with clean tight shut-off. No back-up of condensate ensures maximum plant efficiency.
- Robust construction to guarantee long life against waterhammer and vibration.
- Large discharge capacity in relation to size.
- Stainless steel internals that can tolerate a variety of fluids.
- Spirax Sarco's worldwide guarantee of knowledge, service and technical support.

# Typical applications

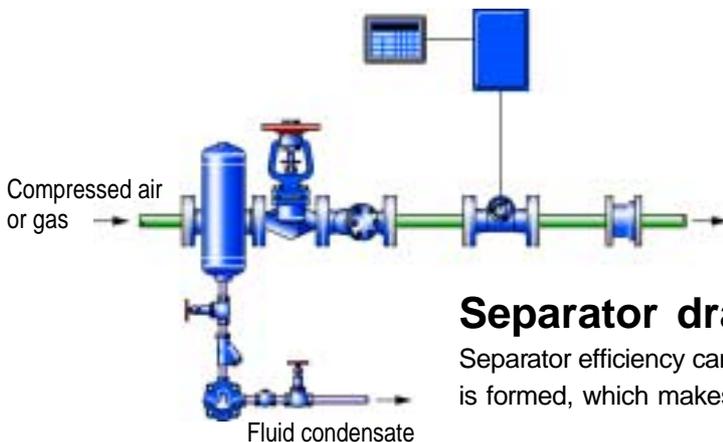
Ball float liquid drainers are the first choice for drainer applications. They are able to handle heavy or light condensate loads equally well and are not disturbed by wide and sudden fluctuations of pressures. Although compact in size, their discharge capacity is high and continuous. They are the best choice for draining both batch and continuous process plant. On all applications condensate is removed as soon as it is formed.

Applications can be found in abundance e.g. most facilities use compressed air, and on chemical plant there are many gases like  $H_2$ ,  $N_2$ ,  $CO_2$ ,  $C_3$ ,  $C_4$  etc. that may need drainage points. Vapour phase heat transfer oils also require to be trapped in the same manner as steam lines.



## Heat exchangers on vapour phase heat transfer oil

The ball float liquid drainer is ideal for handling a variable load normally associated with temperature controlled heat exchangers. Air and incondensable gases are also discharged efficiently to ensure rapid warm-up during start-up conditions.

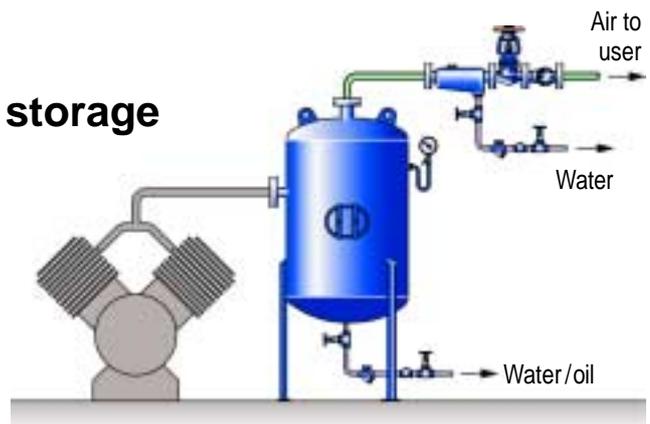


## Separator drainage on air and gas lines

Separator efficiency can only be maintained by removing condensate as it is formed, which makes the ball float liquid type drainer the ideal choice.

## Compressed air generation and storage

An Airoidyn liquid drainer is fitted to the bottom of an air receiver where there may be contamination from oil carried over from the compressor, to remove condensate to ensure air is dry and thereby prevent corrosion.



# CA10S



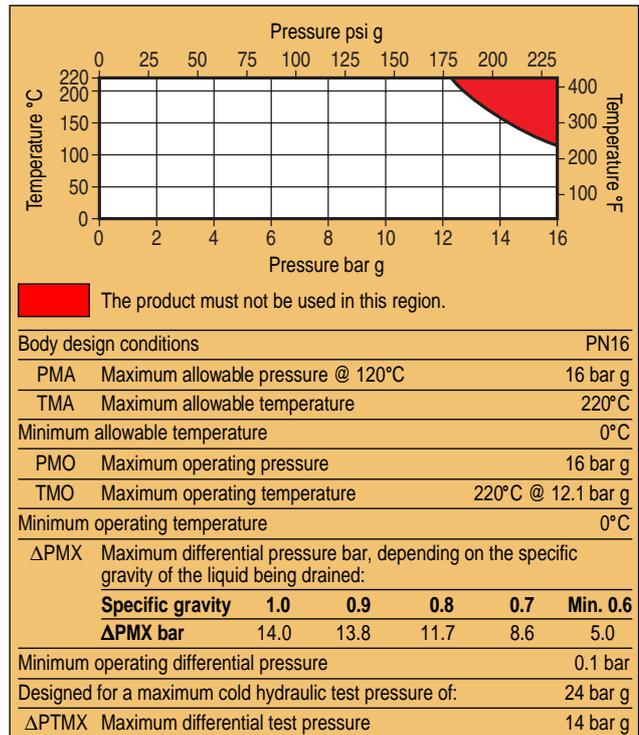
## Sizes and pipe connections

3/4" screwed BSP (BS 21 parallel) or NPT.  
A 1/2" tapping is provided for a balance pipe.

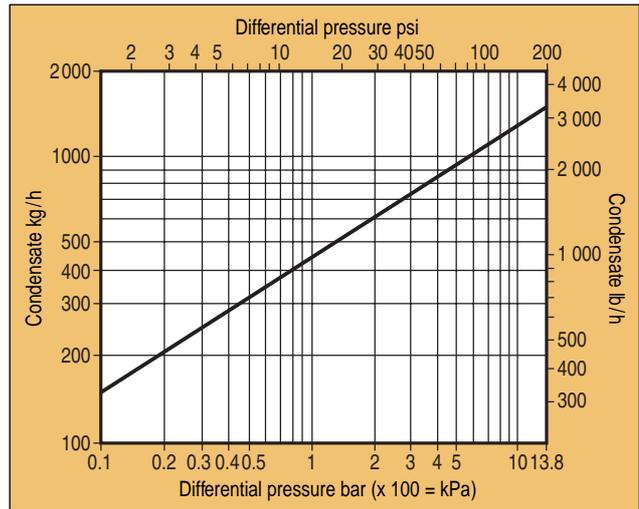
## Materials

<b>Body</b>	Cast iron	DIN 1691 GG 20
<b>Cover gasket</b>	Reinforced exfoliated graphite	
<b>Cover</b>	Cast iron	DIN 1691 GG 20
<b>Internals</b>	Stainless steel	BS 1449 304 S16
<b>Valve head</b>	Stainless steel	

## Pressure/temperature limits

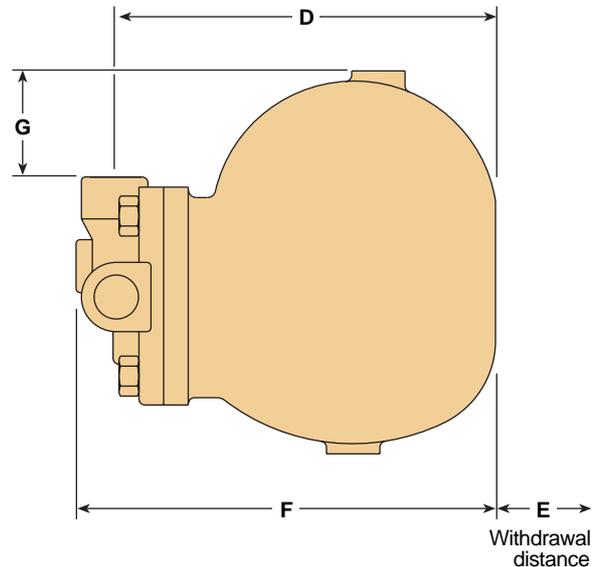
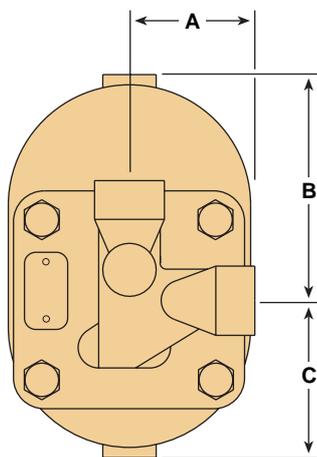


## Capacities



## Dimensions/weights (approximate) in mm and kg

Size	A	B	C	D	E	F	G	Weight
3/4"	60	111	77	195	165	217	50	6.8



# CA14 and CA14S



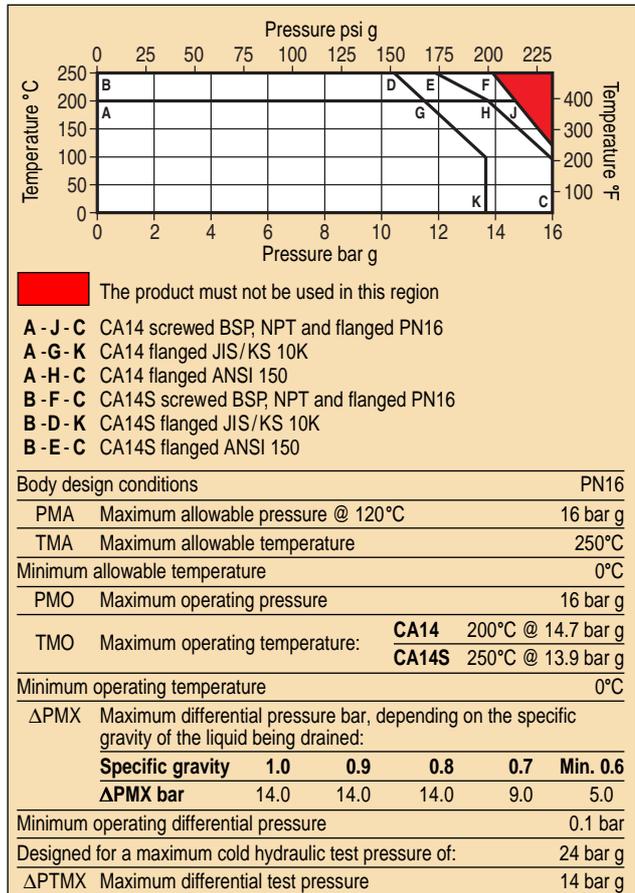
## Sizes and pipe connections

½" and ¾" screwed BSP or NPT.  
DN15, DN20 and DN25 standard flange EN 1092 PN16,  
ANSI B 16.5 Class 150 and JIS/KS 10K.

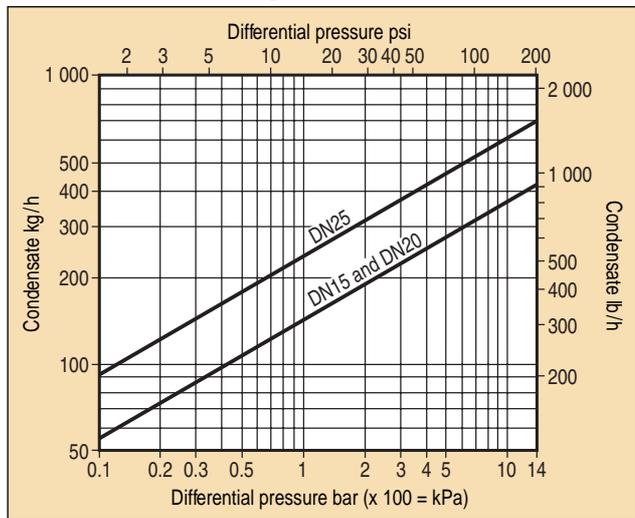
## Materials

<b>Body</b>	SG iron	Flanged	DIN 1693 GGG 40.3
		Screwed	DIN 1693 GGG 40
<b>Cover gasket</b>	Reinforced exfoliated graphite		
<b>Cover</b>	SG iron	Flanged	DIN 1693 GGG 40.3
		Screwed	DIN 1693 GGG 40
<b>Internals</b>	Stainless steel		
<b>Valve head</b>	<b>CA14</b>	Synthetic rubber	Viton
	<b>CA14S</b>	Stainless steel	AISI 440B

## Pressure/temperature limits

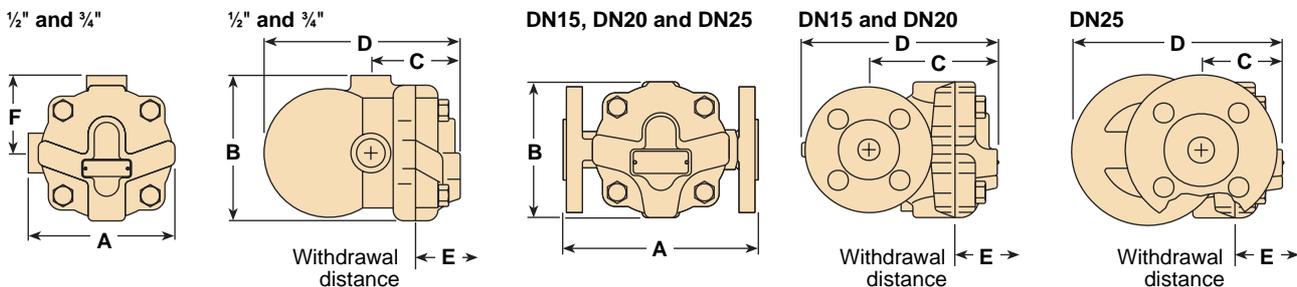


## Capacities



## Dimensions/weights (approximate) in mm and kg

Size	BSP/NPT	DIN/ANSI	JIS/KS 10K	B	C	D	E	F	Weight
	A	A	A						
½"	114	-	-	114	67	147	105	60.5	2.5
¾"	114	-	-	114	67	147	105	60.5	2.5
DN15	-	150	150	107	101	152	115	-	4.5
DN20	-	150	150	107	101	156	115	-	5.0
DN25	-	160	170	117	70	170	120	-	6.5



# CA14S DN40 and DN50 flanged

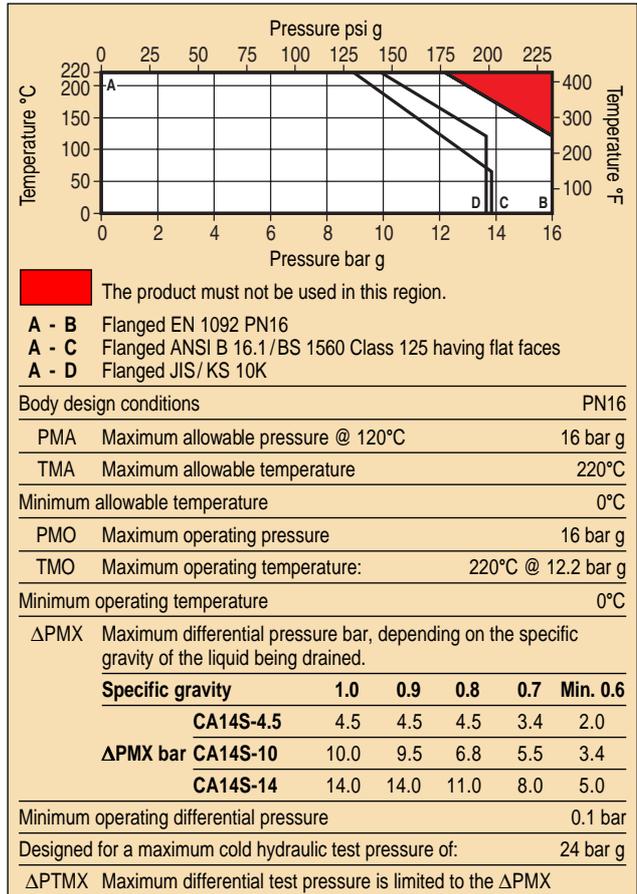


DN40 shown

## Sizes and pipe connections

DN40 and DN50  
Standard flanges are EN 1092 PN16.  
On request ANSI B 16.1/BS 1560 Class 125 and JIS/KS 10K flanges with drilled and tapped bolt holes can be provided.  
PN flanges will be provided with BSP balance line connection and ANSI, JIS/KS with NPT balance line connection.

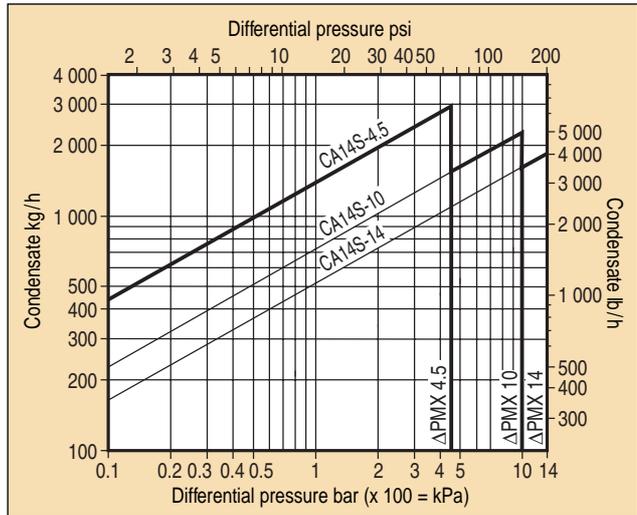
## Pressure/temperature limits



## Materials

Body	Cast iron	DIN 1691 GG 25
Cover gasket	Reinforced exfoliated graphite	
Cover	Cast iron	DIN 1691 GG 25
Internals	Stainless steel	
Valve head	Stainless steel	AISI 440B

## Capacities

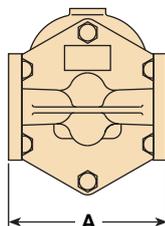


## Dimensions/weights (approximate) in mm and kg

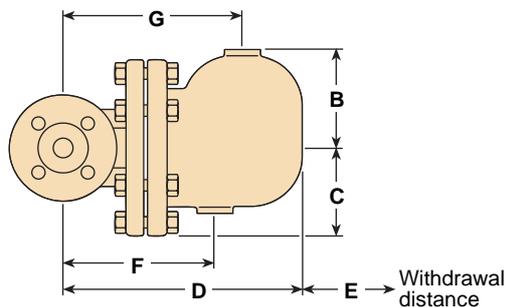
Size	PN16	ANSI 125	JIS/KS 10K		D	E	F	G	Weight	
	A	A	A	B						
DN40	230	221	228	128	110	312	200	187	230	21.5
DN50	230	220	228	140	126	324	200	219	239	30.5

### Flange bolt hole tappings

Size	ANSI 125
DN40	½" - 13 UNC-2B
DN50	3" - 11 UNC-2B



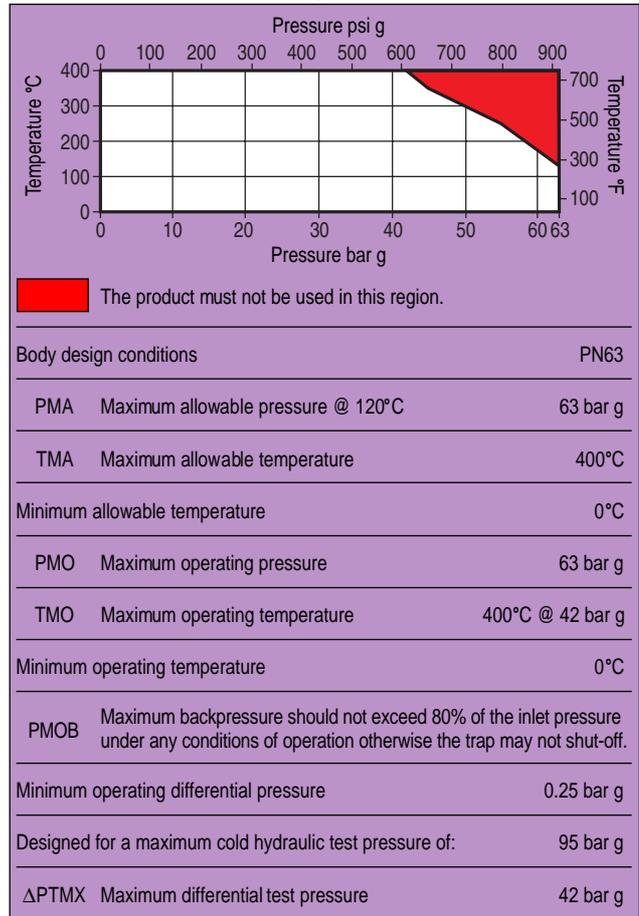
DN50 shown



# Airodyn



## Pressure/temperature limits



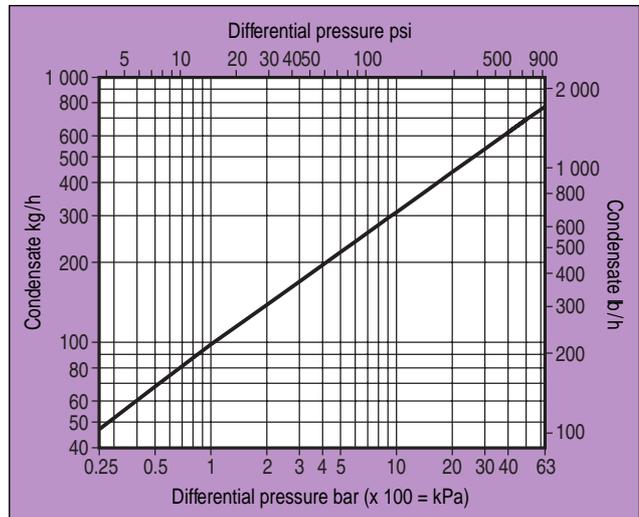
## Sizes and pipe connections

½" screwed BSP or NPT.

## Materials

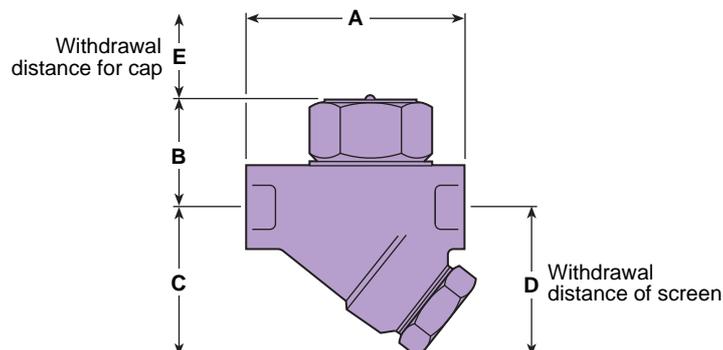
Body	Stainless steel	ASTM A743 Gr. CA40F
Cap	Stainless steel	AISI 416
Disc	Stainless steel	BS 1449 420 S45
Strainer screen	Stainless steel	BS 1449 304 S16
Strainer cap	Stainless steel	AISI 416
Strainer cap gasket	Stainless steel	BS 1449 304 S16

## Capacities



## Dimensions/weight (approximate) in mm and kg

Size	A	B	C	D	E	Weight
½"	78	41	55	85	41	0.77



# CAS14 and CAS14S



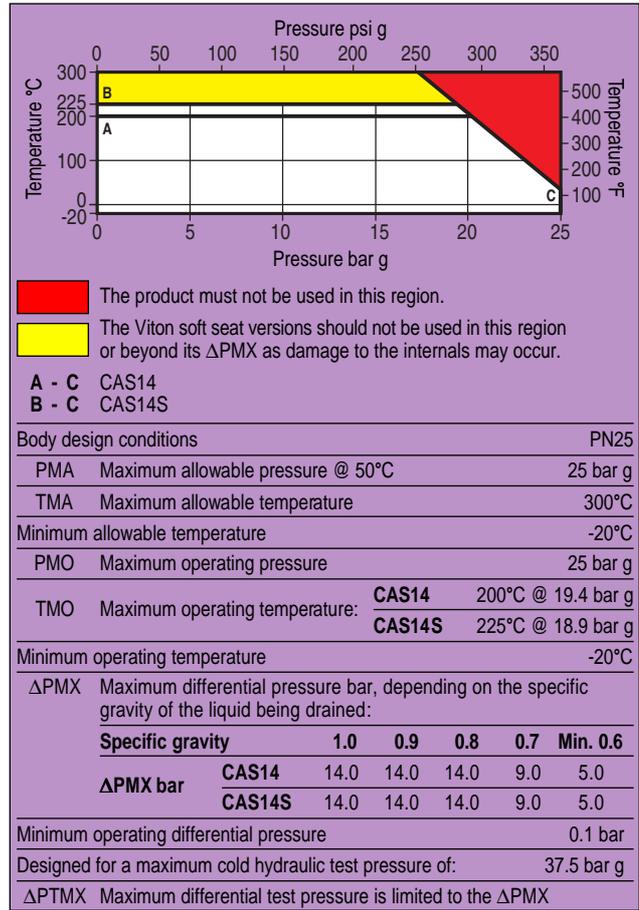
## Sizes and pipe connections

1/2", 3/4" and (1" CAS14 only)  
screwed BSP (BS 21 and DIN 2999) and NPT (ANSI B 1.20.1),  
socket weld ends to ANSI B 16.11, BS 3799 Class 3000 and DIN 3239.

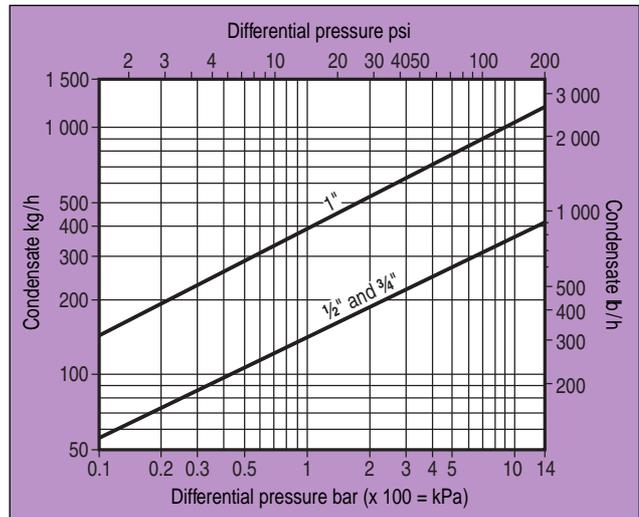
## Materials

<b>Body</b>	Austenitic stainless steel (316)	EN 10213-4 (1.4408) ASTM A351 CF8M
<b>Cover gasket</b>	Reinforced exfoliated graphite	
<b>Cover</b>	Austenitic stainless steel (316)	EN 10213-4 (1.4408) ASTM A351 CF8M
<b>Internals</b>	Stainless steel	
<b>Valve head</b>	<b>CAS14</b>	Viton
	<b>CAS14S</b>	Stainless steel AISI 440B

## Pressure/temperature limits

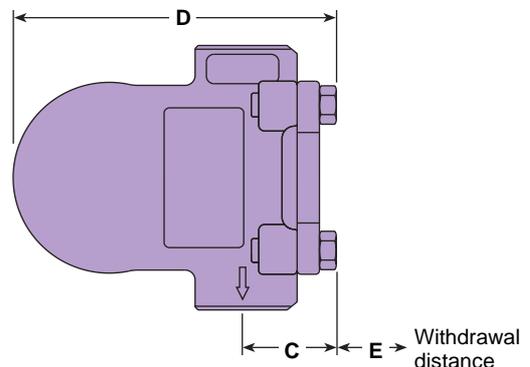
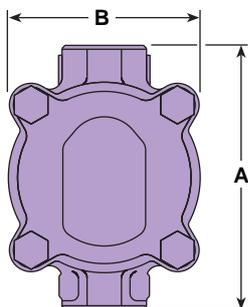


## Capacities



## Dimensions/weights (approximate) in mm and kg

Size	A	B	C	D	E	Weight
1/2"	135	97	48	162	135	3.75
3/4"	135	97	48	162	135	3.75
1"	139	113	51	179	145	4.25



# CA46 and CA46S



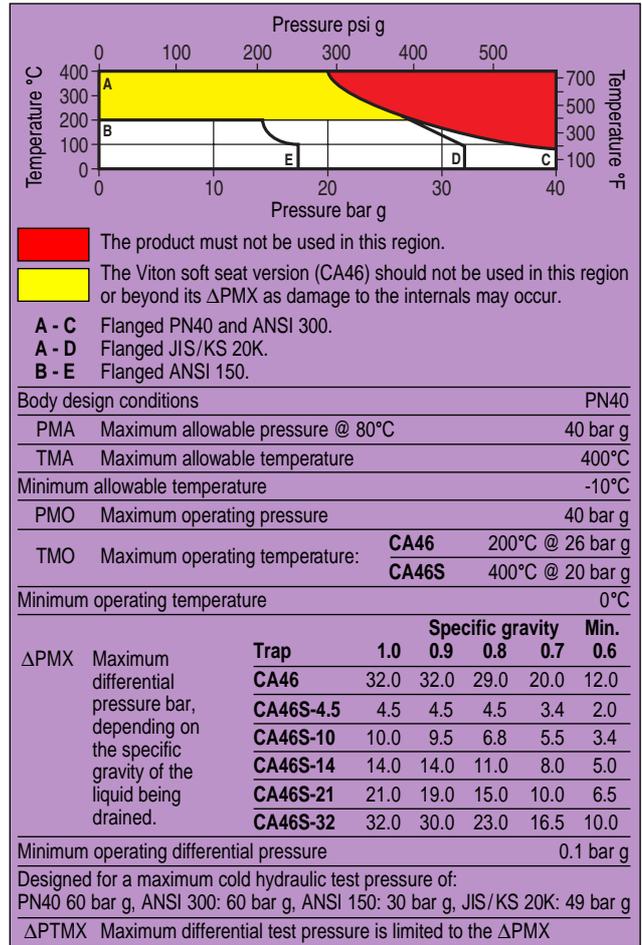
## Sizes and pipe connections

**DN15, DN20** and **(DN25 is only available for the CA46S)**. Standard flanges are EN 1092 PN40 with DIN face-to-face dimensions. ANSI 150/ANSI 300 and JIS/KS 20K flanges with drilled and tapped bolt holes with DIN face-to-face dimensions can be provided.

**DN40** and **DN50** sizes are only available for the CA46S. Standard flanges are EN 1092 PN40 with DIN face-to-face dimensions. ANSI 150/ANSI 300 and JIS/KS 20K flanges with drilled and tapped bolt holes with DIN face-to-face dimensions can be provided.

**Note:** PN and JIS/KS flanges will be provided with a BSP balance line connection and ANSI flanges with an NPT balance line connection.

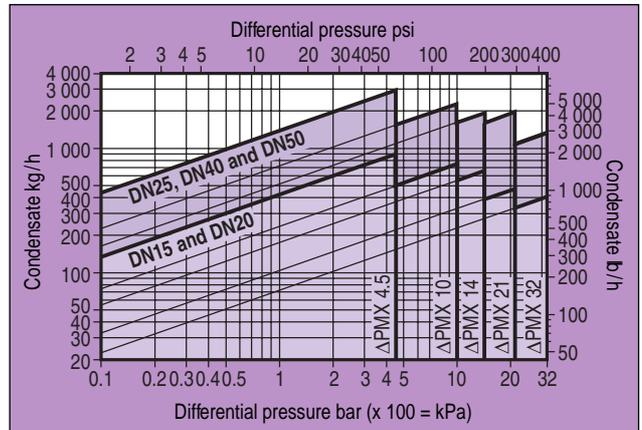
## Pressure/temperature limits



## Materials

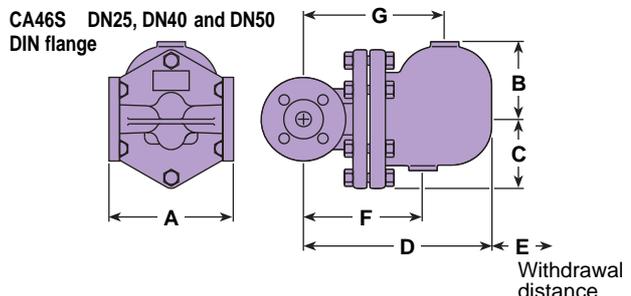
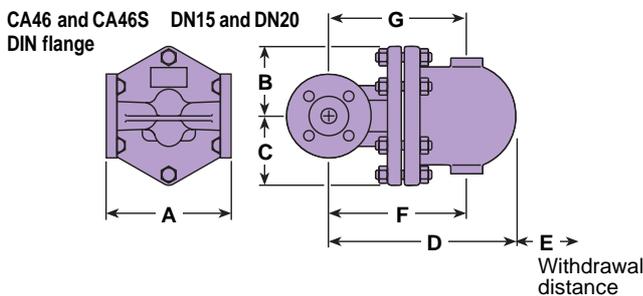
<b>Body</b>	Austenitic stainless steel (316)	DIN 17445 GX5CrNiMoNb 1810 (Werkstoff Nr 1.4581)
<b>Cover gasket</b>	Austenitic stainless steel	BS 1449 304 S16
<b>Cover</b>	Austenitic stainless steel (316)	DIN 17445 GX5CrNiMoNb 1810 (Werkstoff Nr 1.4581)
<b>Internals</b>	Stainless steel	
<b>Valve head</b>	<b>CA46</b>	Synthetic rubber Viton
	<b>CA46S</b>	Stainless steel

## Capacities



## Dimensions/weights (approximate) in mm and kg

Size	ANSI 150				ANSI 300				Weight
	PN40 A	ANSI 150 A	ANSI 300 A	JIS/KS A	PN40 B	PN40 C	ANSI 150 JIS/KS D	ANSI 300 JIS/KS D	
DN15	150	203	209	206	80	80	215	-	10.8
DN20	150	205	209	210	80	80	225	-	10.8
DN25	160	208	212	210	115	85	282	-	15.0
DN40	230	321	327	322	130	116	326	248	33.0
DN50	230	313	320	311	141	123	332	251	43.0



# CA44 and CA44S



## Sizes and pipe connections

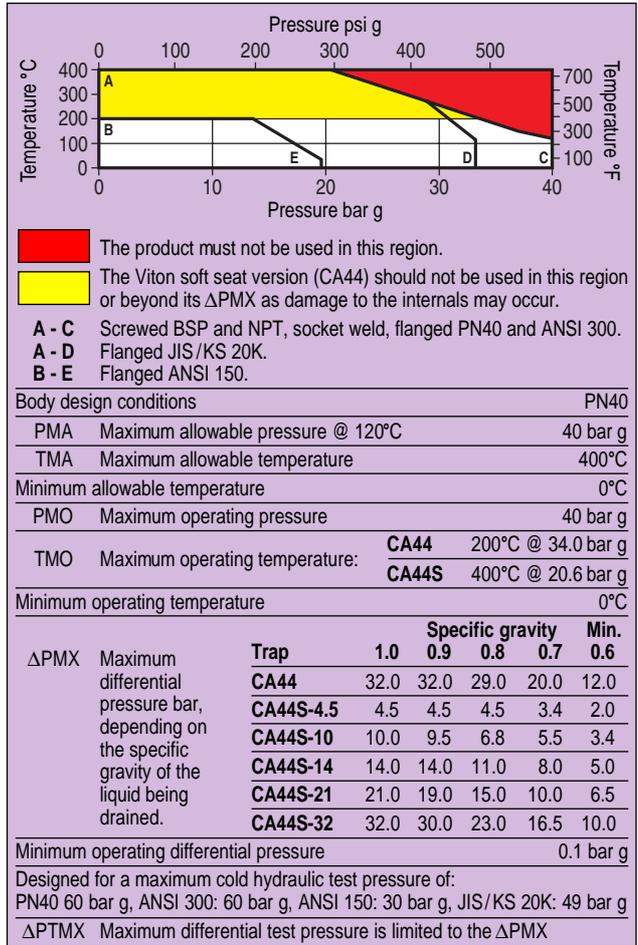
1" screwed BSP or NPT and socket weld BS 3799 Class 3000 (CA44S only).

**DN15, DN20** and (**DN25** is only available for the CA44S). Standard flanges are EN 1092 PN40 with DIN face-to-face dimensions or ANSI B 16.5 Class 150 and 300 and JIS/KS 20K with extended face-to-face dimensions. On request ANSI 150 and ANSI 300 flanges with drilled and tapped bolt holes with DIN face-to-face dimensions can be provided.

**DN40** and **DN50** sizes are only available for the CA44S. Standard flanges are EN 1092 PN40 with DIN face-to-face dimensions, BS 1560 ANSI 150, ANSI 300 and JIS/KS 20K with extended face-to-face dimensions.

- Notes:**
1. PN, JIS/KS flanges and BSP screwed versions will be provided with BSP balance line connection.
  2. ANSI flanges and NPT screwed versions will be provided with an NPT balance line connection.
  3. The socket weld version will be provided with NPT or socket weld balance line connection.

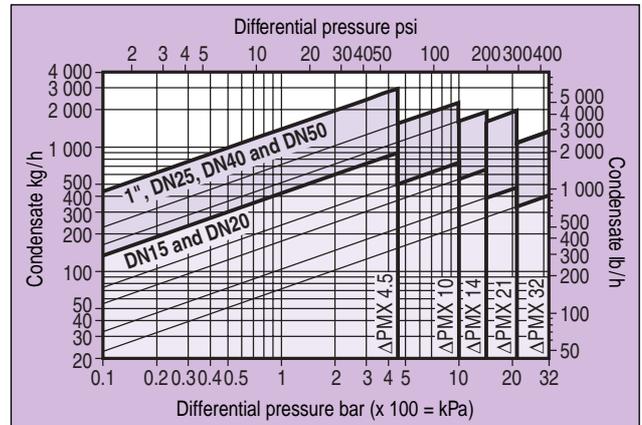
## Pressure/temperature limits



## Materials

<b>Body</b>	Carbon steel	EN 10213-2 1.0619 + N
<b>Cover gasket</b>	Reinforced exfoliated graphite	
<b>Cover</b>	Carbon steel	EN 10213-2 1.0619 + N
<b>Internals</b>	Stainless steel	
<b>Valve head</b>	<b>CA44</b>	Synthetic rubber Viton
	<b>CA44S</b>	Stainless steel

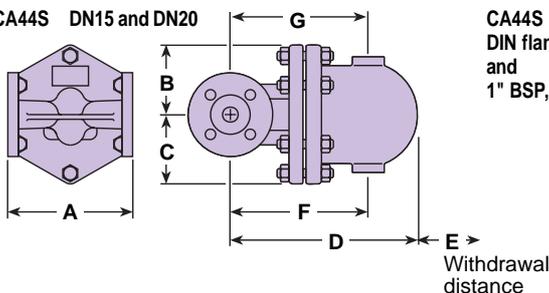
## Capacities



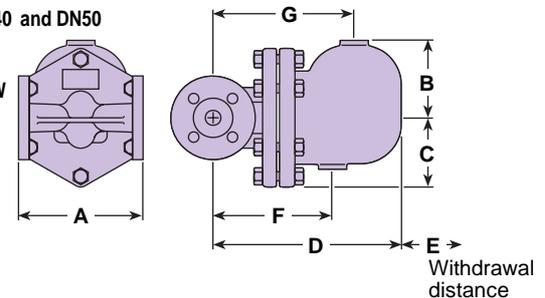
## Dimensions/weights (approximate) in mm and kg

Size	BSP/NPT			ANSI 150			ANSI 300			BSP/NPT			ANSI 150			Weight		
	SW	PN40	A	A	A	A	B	C	D	D	E	F	F	F	G		G	G
<b>DN15</b>	-	150	203	209	206	80	80	-	215	-	120	-	155	100	-	155	100	10.8
<b>DN20</b>	-	150	205	209	210	80	80	-	225	-	120	-	165	100	-	165	100	10.8
<b>DN25</b>	-	160	208	212	210	115	85	-	282	-	170	-	195	125	-	215	145	15.0
<b>DN40</b>	-	230	321	327	322	130	116	-	326	248	-	-	200	154	-	242	164	33.0
<b>DN50</b>	-	230	313	320	311	141	123	-	332	251	-	-	225	158	-	248	167	43.0
<b>1"</b>	165	-	-	-	-	115	85	208	-	-	170	146	-	-	146	-	-	12.5

CA44 and CA44S DN15 and DN20 DIN flange



CA44S DN25, DN40 and DN50 DIN flange and 1" BSP, NPT and SW



Some of the products may not be available in certain markets.

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