

Thermodynamic Disc Traps

SERIES S

Thermodynamic steam traps operate on the basis of the Bernoulli principle, depending on the relationship between the velocity and the pressure exerted by the condensate and steam inside the steam trap.

They have only one moving part – the disc.

Due to their compact design and cost effectiveness thermodynamic steam traps are widely used in applications where the condensate must be removed immediately from steam lines and steam equipment. They discharge the condensate near the saturation temperature. The traps may operate up to a back pressure of 80% of the inlet pressure, but for smooth operation it is recommended that the back pressure does not exceed 50% of the inlet pressure. Thermodynamic steam traps discharge the condensate intermittently.

All steam traps are equipped with a hardened stainless steel disc and seat. After the lapping process all disc surfaces are controlled individually before releasing them for use in steam traps. These features and very high and severe quality standards for the whole production process give MIYAWAKI's thermodynamic steam traps a long and reliable service life.

Models S31N

Ductile Cast Iron Steam Traps with replaceable internals

SC31

Stainless steel steam traps with replaceable internals

SC, SF

Cast Iron Steam Traps for high capacity

SV

Steam Traps with inbuilt bypass

SL3

Compact, very small trap for low capacity applications

SU2N, SU2H, SD1

Stainless steel steam traps for low to high pressure applications

S55N, S55H, S61N, S62N

Forged steel steam traps for high pressure applications

Features

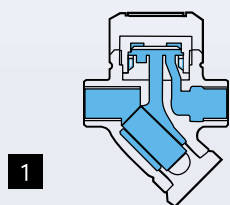
- Immediate discharge of condensate
- Insensitive to waterhammer, superheated steam and freezing
- Most types contain a bimetal ring which improves the ability of the trap to discharge air and cold condensate quickly at start-up and prevents air locking during times of operation
- Can be installed in vertical or horizontal position
- In case of danger of air locking special discs available
- All traps equipped with additional cover for reduced frequency of cycling and energy savings
- All traps with inbuilt strainers (except SL3)
- Easy maintenance

Suitable for

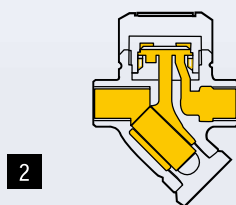
light to medium condensate loads: steam tracing, steam main drips, small heat exchangers, unit heaters, sterilizers and many other applications in the petrochemical, chemical, textile, food, pharma-ceutical and further industries. Series SV Thermodynamic steam traps with inbuilt bypass are designed for special applications in the food, pharmaceutical or other industries or for laundry applications where costs and space must be saved.

Operating principle

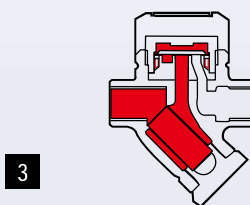
■ cold condensate ■ hot condensate ■ steam



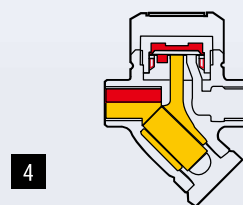
1
At the time of start-up the pressure of the incoming cold condensate and air raise the disc and water and air are discharged quickly.



2
When hot condensate flows into the trap, the trap is still open and the hot condensate can be discharged quickly.

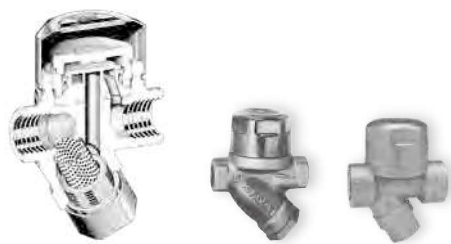


3
After hot condensate flows into the trap, steam enters it. As the velocity of the fluid increases, the pressure under the seat exerted by the steam decreases. At the same time the pressure in the pressure chamber above the disc increases. The disc is pressed down and closes.

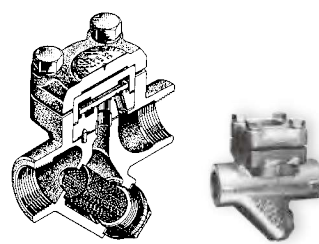


4
While hot condensate flows into the trap, the trap remains closed for a certain period, as far as the steam inside the pressure chamber does not condense. The more condensate flows into the trap, the more the temperature cools down. The steam inside the pressure chamber also cools down and condenses. As a result, the pressure of the incoming condensate raises the disc and condensate is discharged. Cycles 2, 3 and 4 repeat.

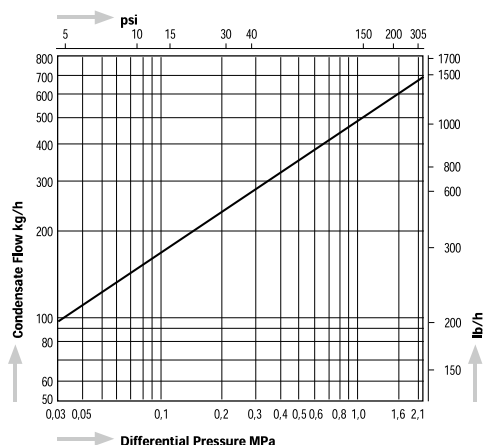
S31N, SC31



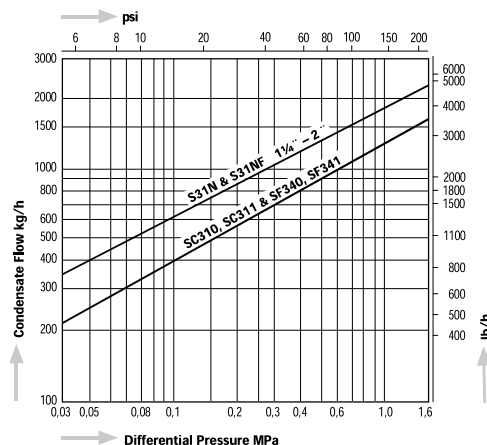
SC, SF



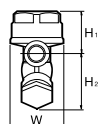
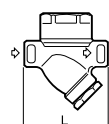
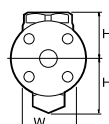
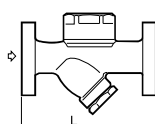
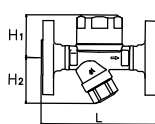
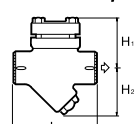
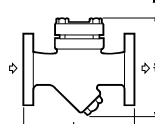
Capacity Chart

SC31 & SC31F/S31N & S31NF ½" – 1"

Capacity Chart

S31N & S31NF 1¼" – 2"; SC-310, SC-311 & SF-340, SF-341

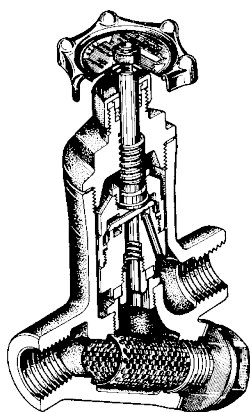
Dimensions

S31N/SC31 ½" – 1"**S31NF ½" – 1"****SC31F ½" – 1"****S31N 1¼" – 2"
SC-310, SC-311****S31NF 1¼" – 2"
SF-340, SF-341**

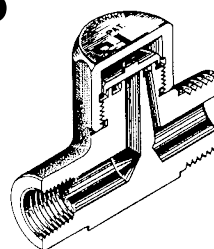
Model	Connections	Size	Max. Operating Pressure		Max. Operating Temperature		Dimensions (mm)				Dimensions (in)				Body Material	Weight													
			MPa	psig	°C	°F	L	H1	H2	W	L	H1	H2	W		kg	lb												
SC31	Screwed Rc, Rp, NPT	½"	2,1	305	220	428	78	55	59	61	3.1	2.2	2.3	2.4	Stainless Steel SCS14/CF8M	1,0	2.2												
		¾"					90	3.5			1,3	2.9																	
		1"					95	3.7			1,2	2.6																	
SC31F	Flanged JIS, ASME	½"					143	5.6			Stainless Steel SCS14/CF8M+ SUSF304	2,3-2,9 *1			5.1-6.4 *1														
		¾"					155	6.1				2,9-3,9 *1			6.4-8.6 *1														
		1"					175	6.9				3,6-4,7 *1			7.9-10.3 *1														
		1¼"					185	7.3			Stainless Steel SCS14/CF8M SUS304TP+SUSF304	4,2-5,5 *1			9.3-12.1 *1														
		1½"						5,0-7,3 *1				11.0-16.0 *1																	
		2"						6,1-8,2 *1				13.4-18.1 *1																	
		Flanged DIN						DN15	150	61	59	61	5.9	2.4	2.3	2.4	Stainless Steel SCS14/CF8M+ SUSF304	2,7	6.0										
							DN20	3,9					8.6																
	DN25						4,7	10.4																					
			160	6.3																									
	S31N	Screwed Rc, NPT	½"	1.6	230	220	428	90	55	65	60	3.5	2.2	2.6	2.4	Ductile Cast Iron FCD450	1,1	2.4											
			¾"					60	3.7			1,2	2.6																
1"			95					3.7	1,3			2.9																	
1¼"			180					104	100	106	7.1	4.1	3.9	4.2	Cast Iron FC250	8,0	17.6												
1½"								111			4.4	8,7				19.2													
2"												9,3	20.5																
S31NF	Flanged JIS, ASME, DIN	½"	1.6					230	220	428	140	55	65	60	5.5	2.2	2.6	2.4	Ductile Cast Iron FCD450	2,5	5.5								
		¾"									150	5.9			3,0	6.6													
		1"									160	6.3			4,2	9.3													
		1¼"									240	104	100	106	9.5	4.1	3.9	4.2	Cast Iron FC250	12,0	26.4								
		1½"																		13,5	29.8								
		2"																		14,5	32.0								
SC - 310 311	Screwed Rc, NPT	¾"																		1.6	230	220	428	180	87	81	96	7.1	3.4
		1"									240	89	9.5	3.5	10,0	22.0													
¾"																													
SF - 340 341	Flanged JIS, ASME, DIN	1"																											

*1 Depending on size and flange standard the weight of the traps differs. Please, look at our technical drawings.

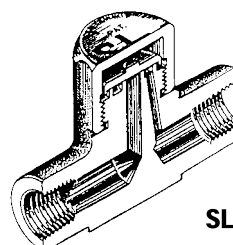
SV



SL3



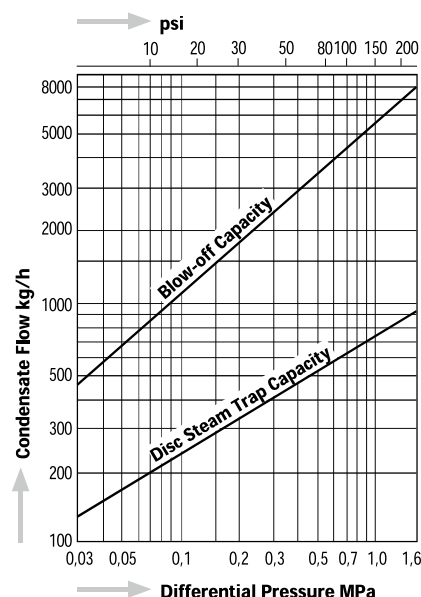
SL3



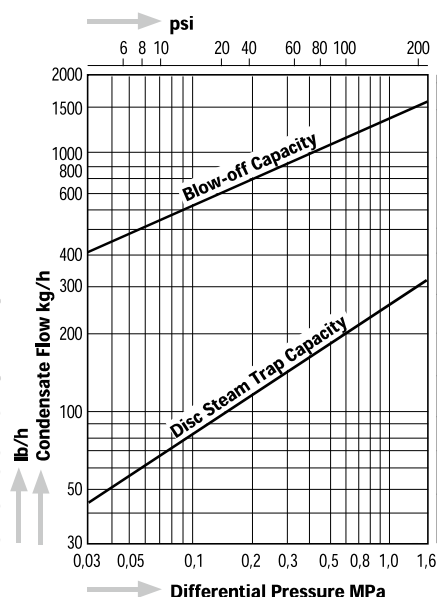
SL3-X



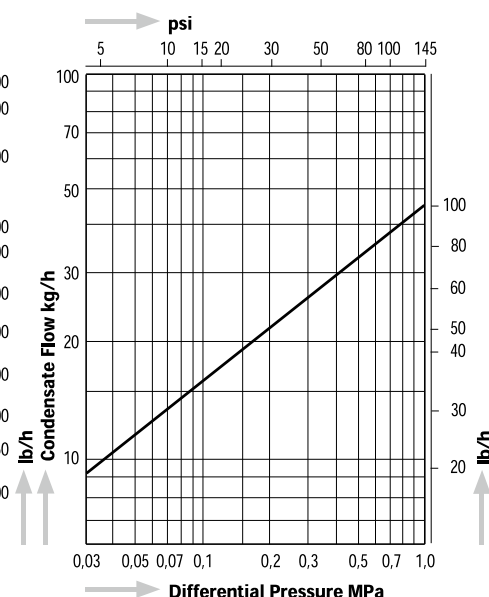
Capacity Chart SV-N



Capacity Chart SV1

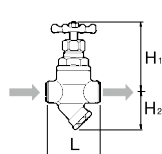


Capacity Chart SL3

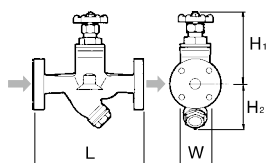


Dimensions

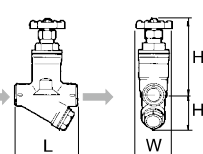
SV1



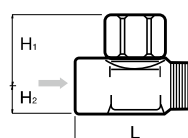
SV - 4NF, 6NF, 8NF



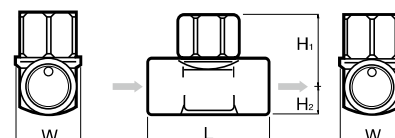
SV - 4N, 6N, 8N



SL3



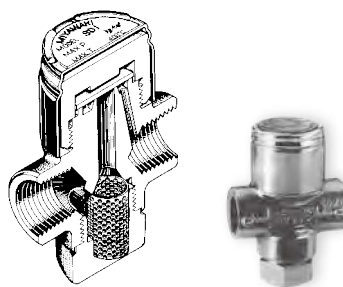
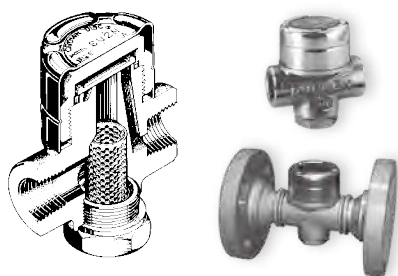
SL3-X



Model	Connections	Size	Max. Operating Pressure		Max. Operating Temperature		Dimensions (mm)				Dimensions (in)				Body Material	Weight							
			MPa	psig	°C	°F	L	H1	H2	W	L	H1	H2	W		kg	lb						
SV1	Screwed Rc, NPT	³ / ₈ " , ¹ / ₂ "	1,6	230	220	428	75	105	53	65	3.0	4.1	2.1	2.6	Cast Steel WCB	1,0	2.2						
		107						4.2				1,3				2.9							
SV -	4N 6N 8N	Screwed Rc, NPT					¹ / ₂ "	110	155	60	65	65	4.3	6.1	2.4	2.6	Cast Iron FC250	2,4	5.3				
							³ / ₄ "											120	70	4.7	2.8	2,5	5.5
							1"															2,7	6.0
	4NF 6NF 8NF	Flanged JIS, ASME, DIN					¹ / ₂ "	220	150	90	65	8.7	5.9	3.5	2.6	4,1		9.0					
							³ / ₄ "									4,7		10.3					
							1"									230		9.1	6,5	14.3			
SL3	Screwed Inlet : Rc, NPT Outlet: G	¹ / ₄ "	1,0	145	400	752	40	22	8	19	1.6	0.9	0.3	0.7	Stainless Steel SUS416	0,06	0.13						
SL3-X	Screwed Rc, NPT	¹ / ₄ "	1,0	145	400	752	40	22	8	19	1.6	0.9	0.3	0.7		0,06	0.13						

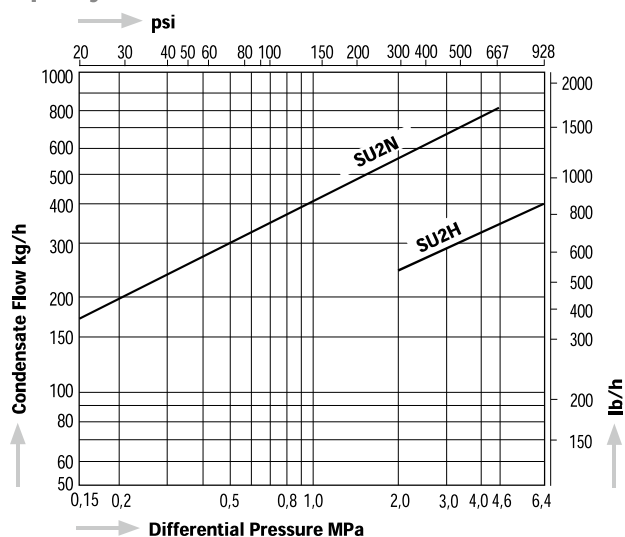
SU2N, SU2H

SD1



Special face-to-face dimensions available.

Capacity Chart SU2N, SU2H



Capacity Chart SD1

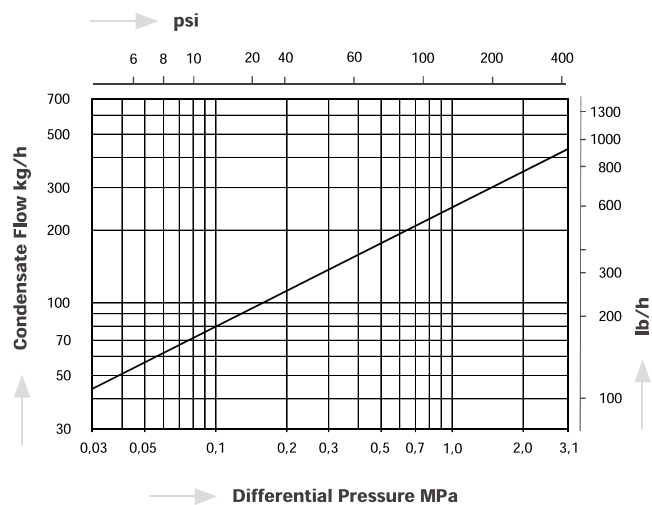
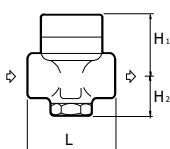


Table 1: Dimensions L and Weights

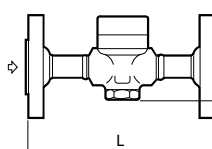
Model	Size	Dimension L		DIN PN40		DIN PN63/100	
		mm	in	kg	lb	kg	lb
SU2NF SU2HF	DN15	150	5.9	2,6	5,7	4,0	8,8
	DN20			3,6	7,9	5,8	12,8
	DN25	160	6.3	4,2	9,3	7,1	15,7

Dimensions

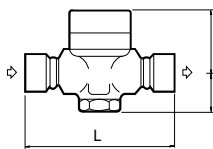
SU2N, SU2H



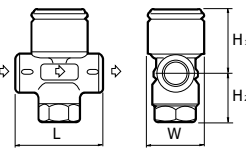
SU2NF, SU2HF



SU2NW, SU2HW



SD1



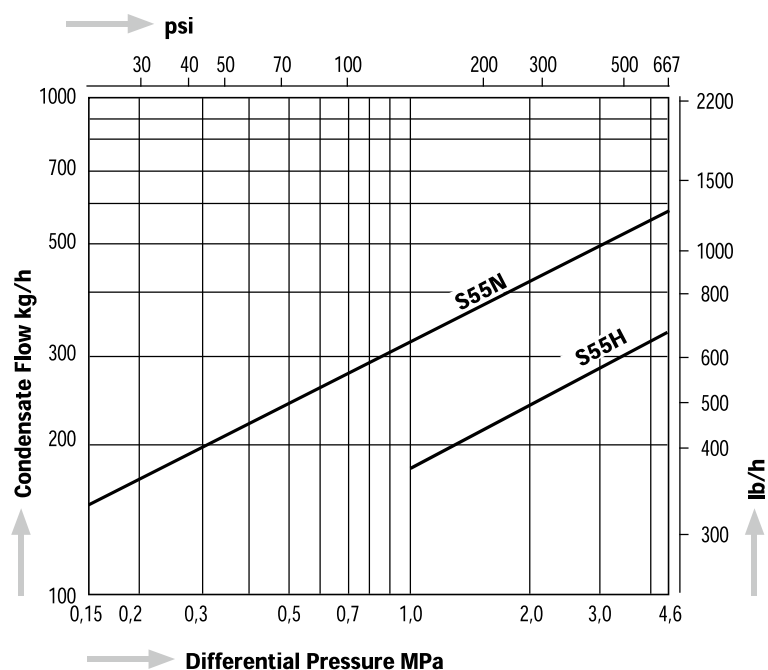
Model	Size	Dimension L		JIS 10K/16K/20K		JIS 30K		JIS 40K		JIS 63K		ASME 150lb		ASME 300lb		ASME 600lb		ASME 900lb	
		mm	in	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
SU2NF SU2HF	1/2"	205	8.1	2,6	5,7	3,8	8,4	4,1	9,0	4,9	10,8	2,2	4,9	2,7	6,0	3,3	7,3	5,7	12,6
	3/4"			3,0	6,6	4,1	9,0	4,4	9,7	6,2	13,7	2,6	5,7	3,7	8,2	4,6	10,1	7,1	15,7
	1"			4,4	8,8	5,0	11,0	5,4	11,9	7,0	15,4	3,0	6,6	4,3	9,5	5,4	11,9	9,6	21,2

Applicability of flange standards: JIS 10K/16K and ASME 150lb for SU2NF only

JIS 63K and ASME 900 lb for SU2HF only

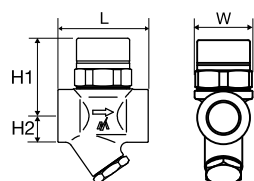
Model	Connections	Size	Max. Operating Pressure		Max. Operating Temperature		Dimensions (mm)				Dimensions (in)				Body Material	Weight					
			MPa	psig	°C	°F	L	H1	H2	W	L	H1	H2	W		kg	lb				
SU2N (SU2H)	Screwed Rc, NPT	½"	4,6 (6,4)	667 (928)	425	800	70	47	32	53	2.8	1.9	1.3	2.1	Stainless Steel SUS420J2	0,8	1.8				
		¾"					75	51			3.0	2.0				1,0	2.2				
		1"																			
SU2NW (SU2HW)	Socket Weld JIS, ASME, DIN	½"																		1,5	3.3
		¾"					140	47	32	53	5.5	1.9	1.3	2.1		1,4	3.1				
		1"														1,3	2.9				
SU2NF (SU2HF)	Flanged JIS, ASME, DIN	½"																			
		¾"					Table1	47	32	53	Table1	1.9	1.3	2.1	Stainless Steel SUS420J2	Table1	Table1				
		1"																			
SD1	Screwed Rc, NPT	¼"	3,1	450	400	752	52	39	25	34	2.0	1.5	1.0	1.3	Stainless Steel SUS420J2	0,3	0.7				
		⅜"					60	41	23		2.4	1.6	0.9								
		½"																			

S55N, S55H

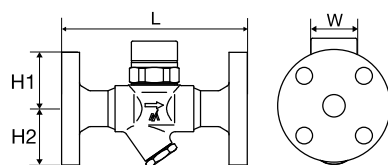

Capacity Chart S55N, S55H


Dimensions

**S55N, S55H,
S55NW, S55HW**



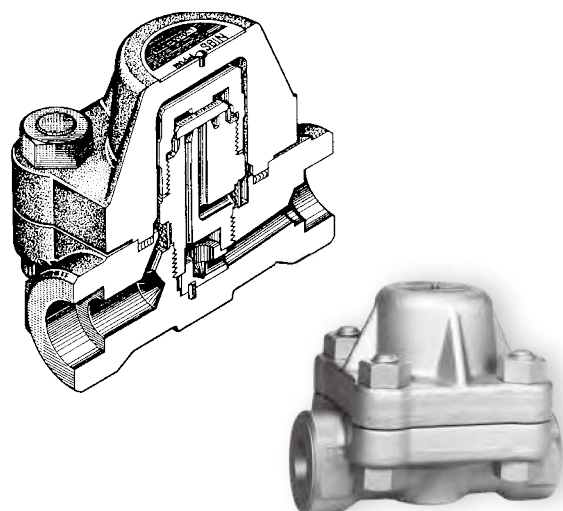
S55NF, S55HF


Table 1: Weights

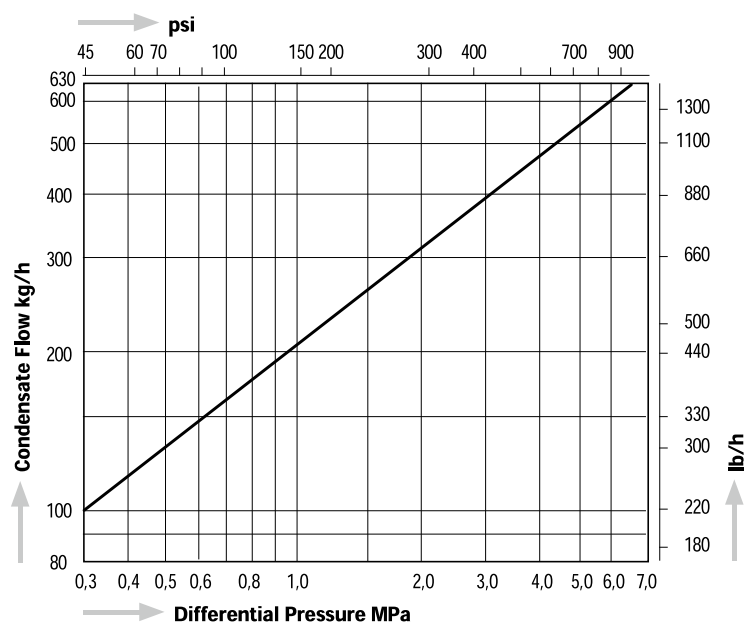
Model	Size	JIS 10/16K		JIS 20K		JIS 30/40K		ASME 150lb		ASME 300lb		ASME 600lb		DIN PN40		DIN PN100	
		kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
S55NF S55HF	½"	2,6	5,7	2,8	6,2	4,0	8,8	2,6	5,7	3,1	6,8	3,2	7,1	3,1	6,8	3,7	8,2
	¾"	3,1	6,8	3,3	7,3	4,4	9,7	3,1	6,8	4,0	8,8	4,2	9,3	3,7	8,2	5,3	11,7
	1"	4,2	9,3	4,5	9,9	5,6	12,4	4,2	9,3	5,5	12,1	5,7	12,6	4,4	9,7	6,3	13,9

Model	Connections	Size	Max. Operating Pressure		Max. Operating Temperature		Dimensions (mm)				Dimensions (in)				Body Material	Weight	
			MPa	psig	°C	°F	L	H1	H2	W	L	H1	H2	W		kg	lb
S55N (S55H)	Screwed Rc, NPT	½"	4,6	667	425	800	70	60	52	45	2,8	2,4	2,0	1,8	Forged Steel A105	1,0	2,2
		¾"					75	65	56		3,0	2,6	2,2			1,2	2,6
		1"					140				5,5						
S55NF (S55HF)	Flanged JIS, ASME	½"					165	60	52	45	6,5	2,4	2,0	1,8		Table1	Table1
		¾"					175				6,9						
		1"															
S55NF (S55HF)	Flanged DIN	DN15					150	60	52	45	5,9	2,4	2,0	1,8		Table1	Table1
		DN20					160				6,3						
		DN25															
S55NW (S55HW)	Socket Weld JIS, ASME, DIN	½"					70	60	52	45	2,8	2,4	2,0	1,8		1,0	2,2
		¾"					75	65	56		3,0	2,6	2,2			1,2	2,6
		1"															

S61N, S62N



Capacity Chart S61N, S62N



Dimensions

**S61N, S62N,
S61NW, S62NW**

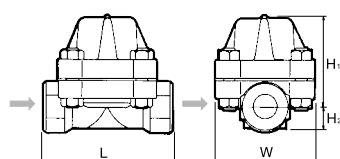
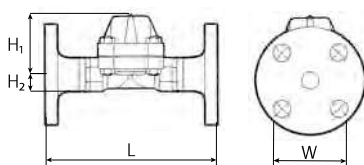


Table 1: Dimensions L and Weight

Model	Size	JIS 20K				JIS 30K				JIS 40K				JIS 63 K			
		mm	in	kg	lb	mm	in	kg	lb	mm	in	kg	lb	mm	in	kg	lb
S61NF S62NF	½"	200	7.9	7.3	16.1	200	7.9	8.4	18.5	200	7.9	8.7	19.2	220	8.7	9.6	21.2
	¾"	210	8.3	7.7	17.0	210	8.3	8.9	19.6	210	8.3	9.2	20.3	230	9.1	11.1	24.5
	1"	240	9.4	9.2	20.3	240	9.4	10.1	22.3	240	9.4	10.5	23.1	240	9.4	12.1	26.7

S61NF, S62NF

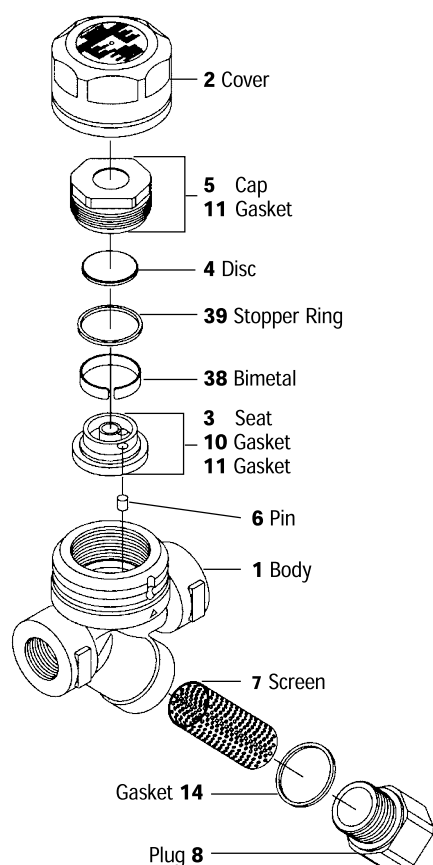


Model	Size	ASME Class 150				ASME Class 300				ASME Class 600				ASME Class 900			
		mm	in	kg	lb	mm	in	kg	lb	mm	in	kg	lb	mm	in	kg	lb
S61NF S62NF	½"	200	7.9	6.7	14.8	200	7.9	7.2	15.9	200	7.9	7.3	16.1	220	8.7	9.6	21.2
	¾"	210	8.3	7.7	17.1	210	8.3	8.2	18.1	210	8.3	8.5	18.7	230	9.1	10.9	24.0
	1"	240	9.4	8.3	19.1	240	9.4	9.4	20.7	240	9.4	9.6	21.2	240	9.4	13.3	29.3

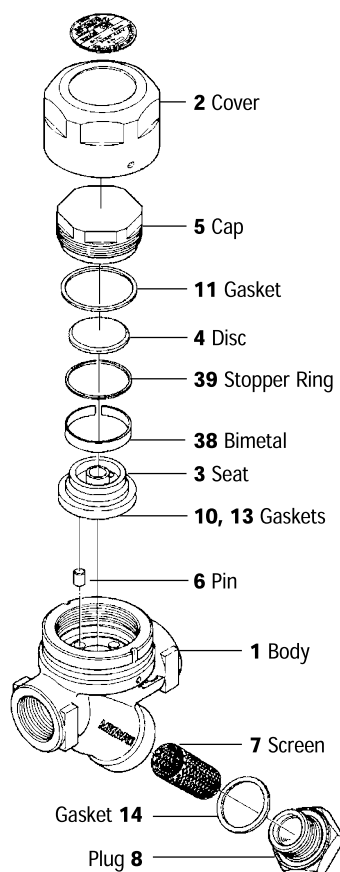
Model	Size	DIN PN63				DIN PN100			
		mm	in	kg	lb	mm	in	kg	lb
S61NF S62NF	DN15	210	8.3	9.4	20.7	210	8.3	9.4	20.7
	DN20	230	9.1	11.4	25.1	230	9.1	11.4	25.1
	DN25			12.5	27.6			12.5	27.6

Model	Connections	Size	Max. Operating Pressure		Max. Operating Temperature		Dimensions (mm)				Dimensions (in)				Body Material	Weight	
			MPa	psig	°C	°F	L	H1	H2	W	L	H1	H2	W		kg	lb
S61N (S62N)	Screwed Rc, NPT	½"	6.5	943	425 (S62N: 475)	800 (S62N: 887)	130	90	25	100	5.1	3.5	1.0	3.9	Forged Steel A105 (S62N: A182F22)	5.7	12.6
		¾"					Table 1				Table 1					Table 1	Table 1
		1"					130				5.1					5.7	12.6
S61NF (S62NF)	Flanged JIS, ASME, DIN	½"	6.5	943	425 (S62N: 475)	800 (S62N: 887)	Table 1	90	25	100	Table 1	3.5	1.0	3.9	Forged Steel A105 (S62N: A182F22)	Table 1	Table 1
		¾"					Table 1				Table 1					Table 1	Table 1
		1"					Table 1				Table 1					Table 1	Table 1
S61NW (S62NW)	Socket Weld JIS, ASME, DIN	½"	6.5	943	425 (S62N: 475)	800 (S62N: 887)	130	90	25	100	5.1	3.5	1.0	3.9	Forged Steel A105 (S62N: A182F22)	5.7	12.6
		¾"					Table 1				Table 1					Table 1	Table 1
		1"					Table 1				Table 1					Table 1	Table 1

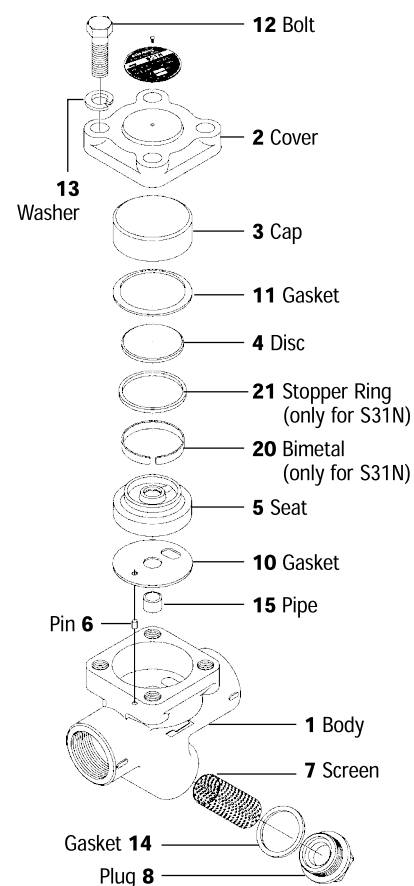
SC31



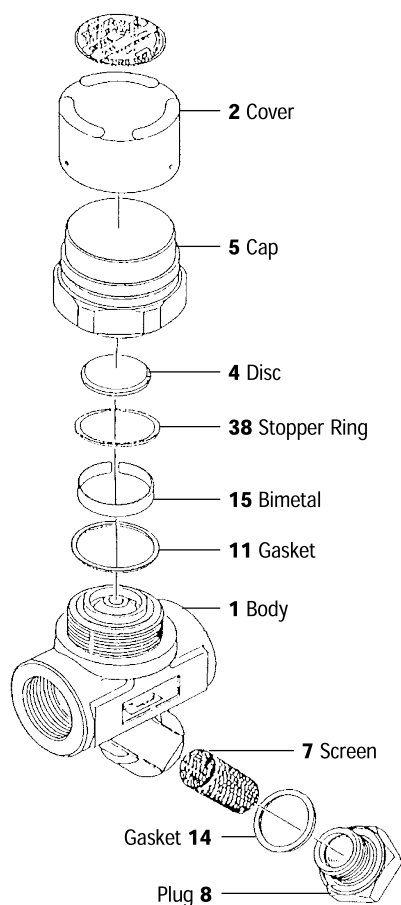
S31N (1/2"–1")



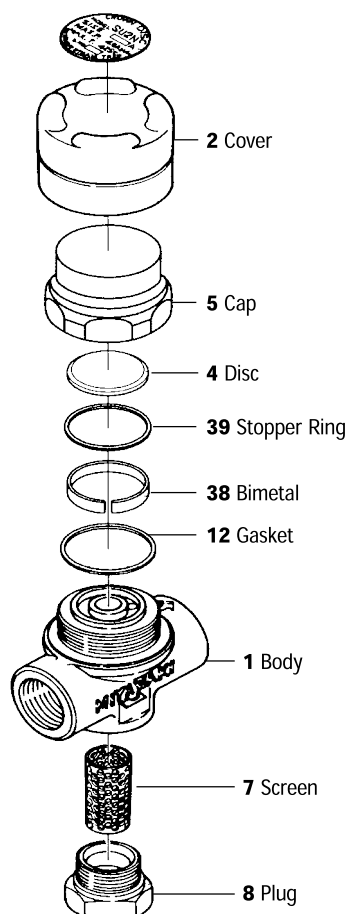
S31N (1 1/4"–2"), SC, SF (3/4"–1")



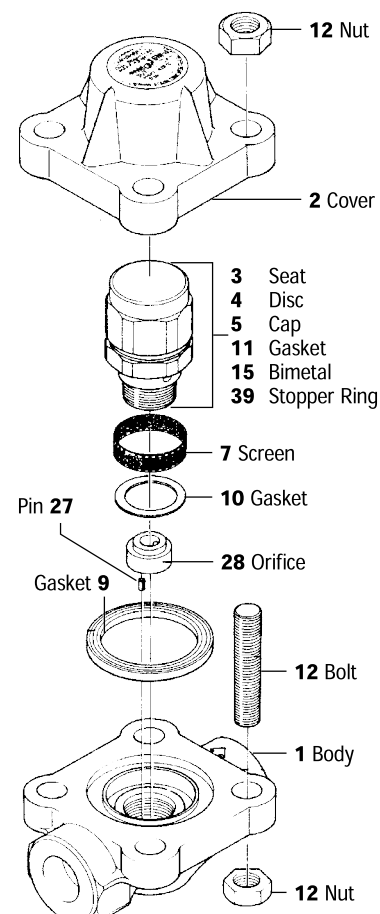
S55N/S55H



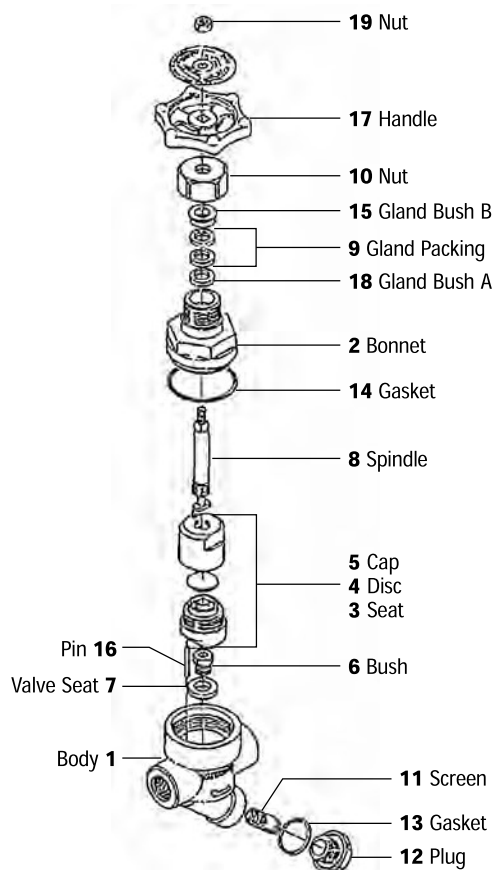
SU2N/SU2H



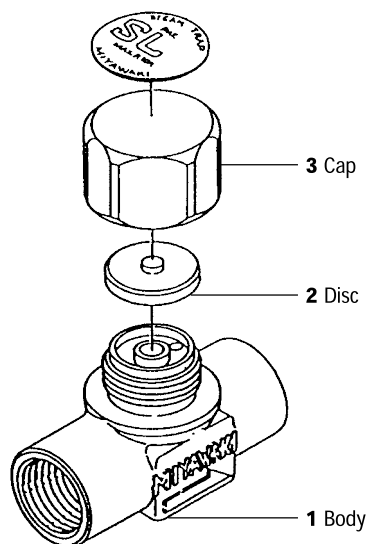
S61N/S62N



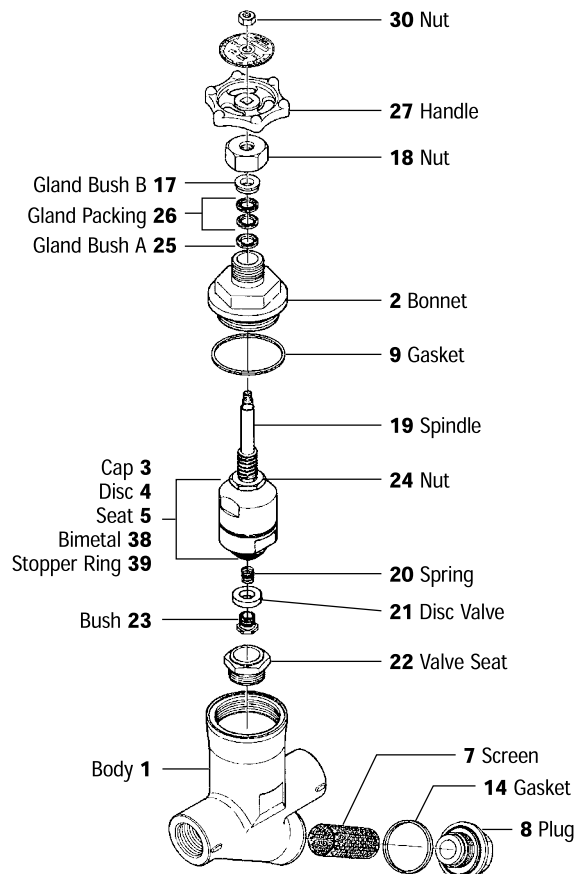
SV1



SL3



SV-N



SD1

