Seetru *Safety Relief Valves*

For Cryogenic & Liquefied Gas Applications

CRYOGENIC & LIQUEFIED GAS

SEETRU

www.seetru.com

Edition 5 2.4.2025

Bristol-based Manufacturers of Safety and Relief Valves

Seetru Limited was founded in 1949 with the aim of producing the finest liquid level gauges so customers could “see the true” level even under the most severe conditions. This philosophy of making the finest through innovation continued with the introduction of the Seetru range of pressure relief devices, circa 1950 the Seetru Tutchtite-sealing system revolutionized the safety valve market with valves that do not leak even after repeated popping even at high pressures.

Today, Seetru have an extensive range of Pressure Relief Valves and Liquid Level Gauges which carry a wide range of international approvals and are supplied worldwide.

Our Products

Seetru are Bristol-based manufacturers of safety relief valves and other special purpose ancillary valves for a wide range of compressed air, industrial gas, refrigerants, powder, steam, liquid and liquefied gas applications. These valves meet important international standards which include: ISO-4126-1 &-7 and ASME BPVC VIII.1 & XIII design codes as well as type test approvals from TÜV and the National Board. These products comply with the requirements of the European Pressure Equipment Directive (PED) and are available with both the CE mark as well as the UV stamp, and have wide international approvals. Seetru products are fully compliant with the requirements of the UK Pressure Equipment (Safety) Regulations and come with the UKCA mark.

Seetru also have a wide range of special purpose valves. The range includes Change-Over Valves (designed for switching parallel safety valves without interrupting operation), Minimum Pressure Check Valves (typically suitable for application on compressors), Air-Start Valves (designed to handle a two-stage operation for air starting of engines). We also manufacture a range of Air Receiver & In-line Check Valves.

Seetru liquid level gauges are primarily of two types, sight gauges and magnetic float by-pass gauges. Many of the gauges are direct reading though most have optional electronic remote reading systems and computer interfaces. The range includes the Quickmount, Seemag and CPI gauges for industrial and chemical applications, and the Seeflex and Seemag for marine applications. The Company’s substantial design and development department, which includes TÜV approved testing facilities, enable us to provide extensive bespoke design, advisory and manufacturing services to develop or adapt individual products for new applications.

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PhD Chartered Engineers

Innovation Fuelled by Expertise

SEETRU

75 YEARS ANNIVERSARY

Where Innovation Meets Expertise

At Seetru, safety isn't just a priority, it's a passion fuelled by a team of highly qualified engineers. We combine cutting-edge innovation with unparalleled expertise to deliver the industry's most reliable and advanced safety relief valves.

Our team boasts a unique blend of academic excellence and real-world experience. Many of our engineers hold PhDs and are Chartered Engineers, signifying their commitment to ongoing professional development and adherence to the highest engineering standards.

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www.seetru.com | info@seetru.com | +44 (0) 117 930 6100

Ensuring Safety

Reliable protection for your pressurised systems

Why Choose Seetru Safety Valves?

Seetru prioritises rigorous testing and analysis, ensuring exceptional valve performance across diverse applications. Our keen understanding of various industries allows us to tailor valves to specific needs. By combining cutting-edge design, unparalleled expertise, and application-specific solutions, we have established ourselves as a leader in the safety valve industry.

A company you can trust to safeguard your critical systems

www.seetru.com/approvals

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Seetru Safety Relief Valves

Setting the Standard
Seetru safety valves set the standard for reliability and safety across a wide range of industrial applications

Engineered for Every Need
Safety valves available with a range of bore sizes, material options, and connection types.

Performance Approved
The Seetru range of safety valves are approved for a wide range of temperatures & pressures

Powerful Protection ...In the Palm of Your Hand

Easier Installation
Seetru safety valves fit seamlessly into tight spaces, simplifying system integration

Enhanced Flexibility
Allows for greater layout freedom during system design

www.seetru.com

CRYOGENICS & LIQUEFIED GASES

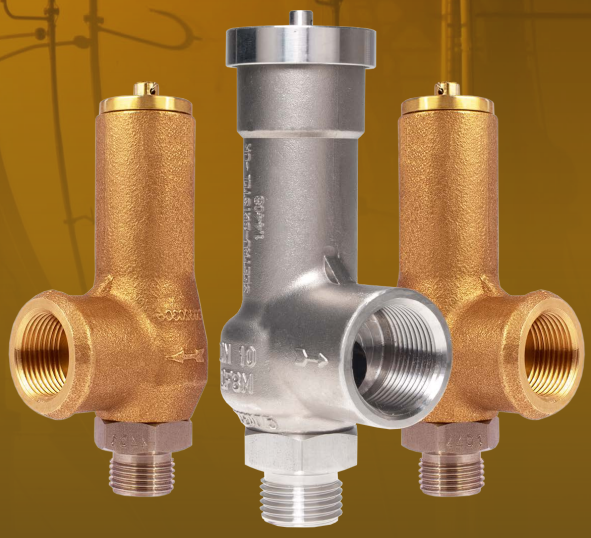
Cryogenic Solutions

Your safety valve partner for cryogenic and liquefied gas

The Seetru range of safety valves for cryogenic & liquefied gas applications is built using Seetru sealing technology, suitable for temperatures down to-196°C, and pressures up to 1100 bar. Available with PTFE, PPS, or metal-to-metal sealing.

SEETRU

- **Pressure vessels/receivers, pressure equipment, and piping**
- **Cryogenics including oxygen and special gases**
- **Medical gas equipment**
- **Cryogenic compressor applications**
- **Container lorries, cryogenic trailers, LPG/LNG terminals, carriers, etc.**
- **Industrial freezing**
- **Fire fighting equipment**



www.seetru.com/cryogenic-and-liquefied-gas

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Enclosed Discharge Safety Relief Valves

for compressed air or gases | *cryogenic & liquefied gas* | *refrigeration*

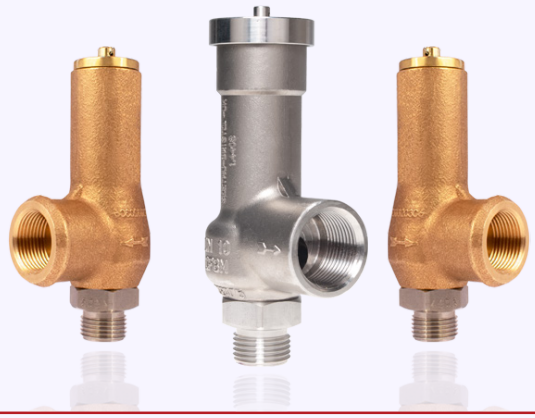
Seetru Limited

Type 346 / 356

Safety valves with either Bronze or Stainless Steel body <
Enclosed discharge valve with threaded connections <

Example Applications

- Air/Gas systems
- Pressure vessels
- Medical gases
- Technical Gases
- CO2 refrigeration
- Ammonia refrigeration (34610)
- Cryogenic applications
- Liquefied gases



Specifications

- Inlet connections: 3/8” to 3/4”
- Temperature range:-196°C to +50°C
- Pressure range: 0.83 to 30.76 bar

Approvals

- Designed in accordance with BS EN ISO-4126-1 &-7
- PED 2014/68/EU (CE)
- PE(S)R UK SI 2016 No. 1105 (UKCA)
- Materials meet the requirements of BAM for oxygen service.

CE UKCA EAC

Materials of Construction

Component	Material	Grade
Inlet	Stainless Steel	1.4401 (316)
Body	356 Valve = Bronze	C83600
	346 Valve = Stainless Steel	1.4408 (316)
Internal Parts	356 Valve = Brass	BS2874 CZ121
	346 Valve = Stainless Steel	1.4401 (316)
Spring	Stainless Steel	1.4310 (302)

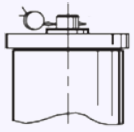
Seal Materials

Seal Material	Temperature Range
PTFE	-196°C to +50°C

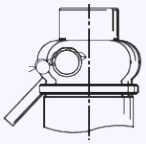
Standard seal materials shown, others are available.

Top Fitting Options

- Standard Option
Sealed Cap (gas tight cap)



- Other options:
Sealed lever (gas tight)

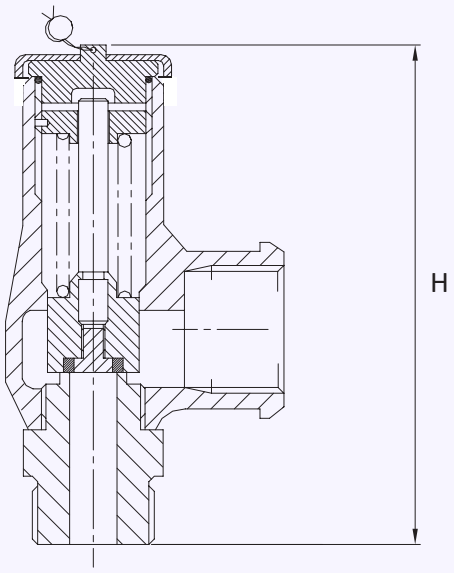


Technical information by bore size

Bore size	9.5mm (34610)			9.5mm (35610)		
Inlet Size	3/8"	1/2"	3/4"	3/8"	1/2"	3/4"
Outlet Size	3/4"			3/4"		
Flow Area	70.9mm²			70.9mm²		
H - Height (Rota-lift cap version)	113mm			99mm		
TÜV alloted outflow coefficient	0.77 above 1.55 bar (contact Seetru for below 1.55 bar)			0.77 above 1.55 bar (contact Seetru for below 1.55 bar)		
Weight (approximate) Kg	0.7 (3.0 to 30.76 bar)			0.7 (3.0 to 30.76 bar)		
Set Pressure range - PED (CE) bar	0.8			0.8		
Relieving pressure/fully open pressure	**Set pressure +10%**					
Reseating pressure	**Set pressure -10%**					

Maximum permissible built up back pressure = 10% of set pressure at or below which flow is not reduced. Stable operation on flows down to 50% of valve rated capacity.

Valve drawing



Standard Thread Connection Types

- BSP Parallel male thread
- BSP Taper male thread
- NPT male thread

Standard Outlet Connection Types

- BSP Parallel female thread
- NPT female thread

Valve Selection Guide

Body Material	Valve Type	Select Bore	Inlet Size	Inlet Thread Type	Outlet Thread Type	Easing Gear	Seal Material
Stainless Steel	**346**	9.5mm	Select inlet size from above table	Select Inlet thread type	Select Outlet thread type	Sealed cap	PTFE
Bronze	**356**						

EAC marking available upon request

***Please send your selected details to Seetru and we can provide the full ordering code, price and lead-time.**

Example of Valve Selection Process

Example Selection	Bronze	356	9.5	1/2"	NPT	NPT	Sealed Cap	PTFE	23.5 bar
	Body Material	Valve Type	Bore = 9.5mm	Inlet Size	Inlet Thread Type	Outlet Thread Type	Top Fitting	Seal	Set Pressure

Capacity Table - In accordance with TÜV, AIR at 0°C and 1013mbar. Normal m³/hour

Type 346/356: Flow rates at 10% above the set pressure

Set Pressure		Bore Size (D0)				
		9.5mm				
bar	psi	Nm³/Hour				
0.83	12.04	63.8				
1.0	14.50	71.4				
2.0	29.00	119.4				
3.0	43.50	160.3				
4.0	58.00	201.3				
5.0	72.50	242.1				
6.0	87.00	283.0				
7.0	101.50	323.9				
8.0	116.00	364.8				
9.0	130.50	405.7				
10.0	145.00	446.6				
15.0	217.50	651.1				
20.0	290.00	855.5				
25.0	362.50	1060.0				
30.0	435.00	1264.5				
30.76	446.02	1295.6				

For any intermediate pressures/flows please contact Seetru

Enclosed Discharge Safety Relief Valves

for compressed air or gases | *cryogenic & liquefied gas* | *refrigeration* | *hydrogen*

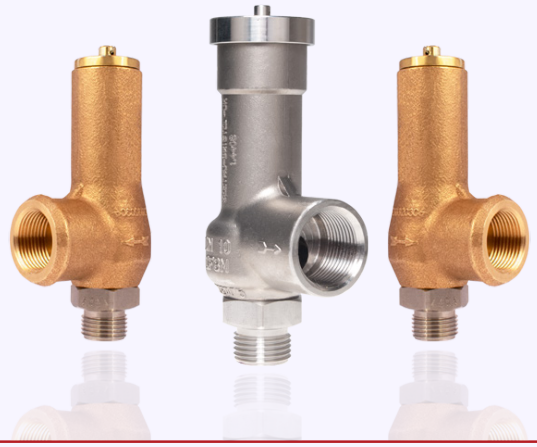
Seetru Limited

Type 329

Safety valves with either Bronze or Stainless Steel body <
Enclosed discharge valve with threaded connections <

Example Applications

- Air/Gas systems
- Natural Gas
- CNG/LNG
- Pressure vessels
- Medical gases
- Technical Gases
- CO2 refrigeration
- Ammonia refrigeration (Stainless steel)
- Cryogenic applications
- Liquefied gases



Specifications

- Inlet connections: 3/8” to 3/4”
- Temperature range:-196°C to +70°C
- Pressure range: 53.0 to 370.0 bar

Approvals

- Designed in accordance with BS EN ISO-4126-1 &-7
- PED 2014/68/EU (CE)
- PE(S)R UK SI 2016 No. 1105 (UKCA)
- ASME BPVC VIII.1 & XIII (UV)
- CRN

Materials of Construction

Component	Material	Grade
Inlet	Stainless Steel	1.4401 (316)
Body	Bronze	C83600
	Stainless Steel	1.4408 (316)
Internal Parts	Brass	BS EN 12164 CW614N
	Stainless Steel	1.4401 (316)
Spring	Stainless Steel	1.4310 (302)

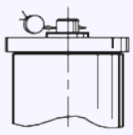
Seal Materials

Seal Material	Temperature Range
PTFE (up to 202 bar) PPS (202 to 370 bar)	-196°C to +70°C

Standard seal materials shown, others are available.

Top Fitting Options

- Standard Option
Sealed Cap (gas tight cap)

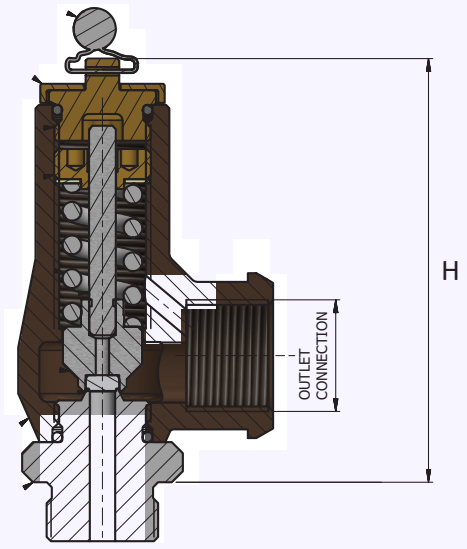


Technical information by bore size

Bore size	6mm		
Inlet Size	3/8"	1/2"	3/4"
Outlet Size	3/4"		
Flow Area	28.2mm²		
H - Height	100mm (53.0 to 240.0 bar) 114mm (240.0 to 370.0 bar)		
TÜV alloted outflow coefficient	0.77		
NB Certified rated slope (ASME)	0.7scfm/psia		
Weight (approximate) Kg	0.8		
Set Pressure range - PED (CE) bar	53.0 to 370.0		
Set Pressure range - ASME (UV) psi	768.5 to 5365.0		
Relieving pressure/fully open pressure	**Set pressure +10%**		
Reseating pressure	**Set pressure -15%**		

Maximum permissible built up back pressure = 10% of set pressure at or below which flow is not reduced.

Valve drawing



Standard Thread Connection Types

- BSP Parallel male thread
- BSP Taper male thread
- NPT male thread

Standard Outlet Connection Types

- BSP Parallel female thread
- NPT female thread

Valve Selection Guide

Valve Type	Body Material	Approval Required	Select Bore	Inlet Size	Inlet Thread Type	Outlet Thread Type	Easing Gear	Seal Material
329	Stainless Steel Bronze	**PED (CE)** **PED (CE), ASME (UV, NB), CRN**	6mm	Select inlet size from above table	Select Inlet thread type	Select Outlet thread type	Sealed cap	PTFE

EAC marking available upon request

Please send your selected details to Seetru and we can provide the full ordering code, price and lead-time

Example of Valve Selection Process

Example Selection	Bronze	329	PED (CE)	6	1/2"	NPT	NPT	Sealed Cap	PTFE	175 bar
	Body Material	Valve Type	Approval	Bore = 6mm	Inlet Size	Inlet Thread Type	Outlet Thread Type	Top Fitting	Seal	Set Pressure

Capacity Table - In accordance with TÜV, AIR at 0°C and 1013mbar. Normal m³/hour
Type 329: Flow rates at 10% above the set pressure

Set Pressure		Bore Size (D0)				
		6mm				
bar	psi	Nm³/Hour				
53	768.5	879.6				
60	870.0	993.8				
70	1015.0	1156.9				
80	1160.0	1320.0				
90	1305.0	1483.1				
100	1450.0	1646.3				
150	2175.0	2461.9				
200	2900.0	3277.5				
250	3625.0	4093.1				
300	4350.0	4908.7				
350	5075.0	5724.4				
370	5365.0	6050.6				

For any intermediate pressures/flows please contact Seetru

Capacity Table - In accordance with ASME BPVC.XIII, AIR at 60°F and 14.7 psia/scfm. SCFM
Type 329: Flow rates at 10% above the set pressure

Set Pressure		Bore Size (D0)				
		6mm				
psi	bar	SCFM				
768.5	53	602				
870	60	680				
913.5	63	714				
1203.5	83	937				
1305	90	1015				
1450	100	1127				
2175	150	1685				
2900	200	2243				
2929	202	2266				
3480	240	2690				
3625	250	2802				
4350	300	3360				
5075	350	3918				
5365	370	4141				

For any intermediate pressures/flows please contact Seetru

Enclosed Discharge Safety Relief Valves

for compressed air or gases | *steam* | *cryogenics & liquefied gases* | *hydrogen*

Seetru Limited

Type 936 Threaded

Safety valves made with brass inlets<
Enclosed discharge valve with threaded connections<
Metal to metal sealing<

Example Applications

- Air / gas compressors
- Pressure vessels
- Medical gases/Technical gases
- Thermal relief
- Steam systems

Specifications

- Inlet connections: 1/2” to 2” threaded connections (depending on valve bore size) (for flanged connections see 946 Flanged datasheet).
- Temperature range: -60°C to +250°C (depending on body o’ring material)
- Pressure range: 0.3 to 28.0 bar (depending on valve bore size)

Approvals

- Designed in accordance with BS EN ISO-4126-1 &-7
- PED 2014/68/EU (CE)
- PE(S)R UK SI 2016 No. 1105 (UKCA)
- Leak tightness at 90% set pressure to API 527 and in accordance with EN ISO 4126-1
- Materials meet the requirements of BAM (Germany) for oxygen service

CE UKCA EAC

Materials of Construction

Component	Material	Grade
Inlet	Brass	CZ132 / CW602N
Outlet Body (10mm bore valve)	Bronze	SB-62 C8360
Outlet Body (15, 20 & 25mm bore valves)	Stainless Steel	1.4408 (316)
Spring	Stainless Steel	1.4310 (302)
Disc	Stainless Steel	S20910

Seal Materials

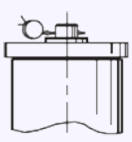
This valve using metal to metal sealing. There is a choice of o’ring used for the sealed cap/lever.

O'ring material	Temperature Range
Viton® (FKM)	-20°C to +250°C
Nitrile (NBR)	-20°C to +120°C
Silicone	-50°C to +200°C
PTFE	-60°C to +200°C
EPDM	-55°C to +130°C

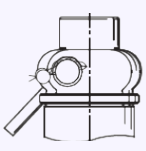
Standard seal materials shown, others are available.

Easing Gear / Lifting Gear / Top Fitting Options

- Sealed Cap (gas tight cap)

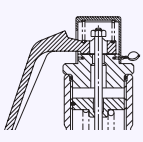


- Sealed lever (gas tight)



- Rota-lift (not gas tight)

- Open Lever (not gas tight)

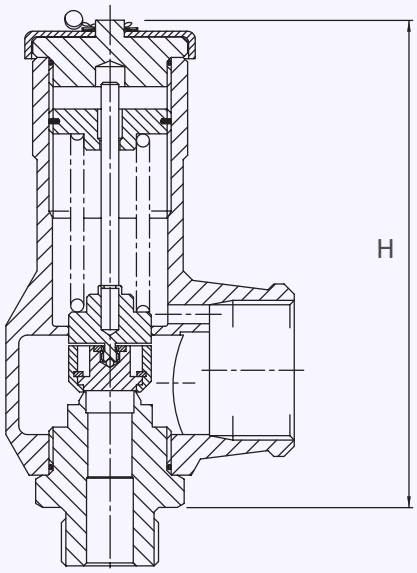


Technical information by bore size

Bore size	10mm (93610)			15mm (93615)			20mm (93620)			25mm (93625)			
Inlet Size	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	1"	1 1/4"	1 1/2"	1"	1 1/4"	1 1/2"	2"
Outlet Size	1"			1 1/2"			2"			2"			
Flow Area	78.5mm²			177mm²			314mm²			491mm²			
H - Height (Sealed Lever version)	114mm			168mm			141mm			225mm			
TÜV alloted outflow coefficient	0.85 (0.7 below 0.8 bar)			0.85 (0.7 below 0.8 bar)			0.85 (0.7 below 0.8 bar)			0.85 (0.7 below 0.8 bar)			
Weight (approximate) Kg	1.0			2.1			3.5			4.2			
Set Pressure range - PED (CE) bar	0.3 to 28.0			0.3 to 28.0			0.3 to 28.0			0.3 to 20.0			
Relieving pressure/fully open pressure	**Set pressure +10%** (0.1 bar below 1.0 bar)												
Reseating pressure	**Set pressure -10%** (0.3 bar below 3.0 bar)												

- TÜV alloted outflow coefficients for pressures above 3.0/4.0 bar, for lower pressures please see the flow rate tables or contact Seetru.
- Maximum permissible built up back pressure = 10% of set pressure at or below which flow is not reduced.
- Stable operation on flows down to 50% of valve rated capacity.
- Leak tightness at 90% set pressure to API 527 and in accordance with EN ISO 4126-1

Valve Drawing



Standard INLET Connection Types

- BSP parallel male thread
- BSP taper male thread
- NPT male thread
- BSP parallel female thread (limited option)

Standard OUTLET Connection Types

- BSP parallel female thread

Valve Selection Guide

Valve type	Select Bore	Inlet Size	Inlet Thread Type	Top Fitting	O'ring material (for cap)	Set pressure
936	Select bore size from above table	Select inlet size from above table	Select Inlet Thread type	Select easing gear/top fitting	See table	Set pressure from available range

EAC marking available upon request

***Please send your selected details to Seetru and we can provide the full ordering code, price and lead-time.**

Example of Valve Selection Process

Example Selection	936	15	1"	BSP parallel	Rota Lift	Viton	17.5 bar
	Valve Type	Bore = 15mm	Inlet Size	Inlet Thread Type	Top Fitting	O'ring	Set Pressure

Capacity Table - In accordance with TÜV, AIR at 0°C and 1013mbar. Normal m³/hour
Type 936: Flow rates at 10% above the set pressure

Set Pressure		Bore Size (D0)				
		10mm	15mm	20mm	25mm	
bar	psi	Nm³/Hour	Nm³/Hour	Nm³/Hour	Nm³/Hour	
0.3	4.35	48.5	109.2	194.2	303.5	
0.5	7.25	59.0	132.9	236.2	369.1	
1	14.5	96.1	216.2	384.4	600.6	
2	29	146.1	328.7	584.4	913.2	
3	43.5	196.1	441.3	784.5	1225.8	
4	58	246.1	553.8	948.6	1538.4	
5	72.5	296.1	666.4	1184.7	1851.1	
6	87.00	346.2	778.9	1384.8	2163.7	
7	101.5	396.2	891.4	1584.8	2476.3	
8	116	446.2	1004.0	1784.9	2788.9	
9	130.5	496.2	1116.5	1985.0	3101.6	
10	145	546.7	1229.1	2185.1	3414.2	
15	217.5	796.3	1791.8	3185.5	4977.3	
20	290	1046.4	2354.6	4185.9	6540.4	
25	362.5	1296.5	2917.3	5186.3		
28	406	1446.6	3254.9	5786.5		

For any intermediate pressures/flows please contact Seetru

Capacity Table - In accordance with TÜV, STEAM. Kg/hour
Type 936: Flow rates at 10% above the set pressure

Set Pressure		Bore Size (D0)				
		10mm	15mm	20mm	25mm	
bar	psi	Kg/hour of Steam	Kg/hour of Steam	Kg/hour of Steam	Kg/hour of Steam	
0.3	4.35	37.6	84.5	150.2	234.7	
0.5	7.25	46.6	104.8	186.3	291.1	
1	14.5	76.6	172.5	306.6	479.0	
2	29	115.1	259.0	460.5	719.5	
3	43.5	153.2	344.6	612.7	957.4	
4	58	190.9	429.7	763.9	1193.7	
5	72.5	228.6	514.3	914.4	1428.7	
6	87.00	266.1	598.6	1064.2	1662.9	
7	101.5	303.4	682.6	1213.5	1896.2	
8	116	340.6	766.5	1362.6	2129.1	
9	130.5	377.9	850.4	1511.8	2362.2	
10	145	415.1	933.9	1660.4	2594.4	
15	217.5	600.3	1350.7	2401.3	3752.0	
20	290	785.4	1767.2	3141.7	4909.0	
25	362.5	970.5	2183.7	3882.2		
28	406	1081.9	2434.4	4327.9		

For any intermediate pressures/flows please contact Seetru

Enclosed Discharge Safety Relief Valves

for compressed air or gases | *steam* | *cryogenics & liquefied gases* | *hydrogen*

Seetru Limited

Type 946 Threaded

Safety valves made from Stainless Steel <
Enclosed discharge valve with threaded connections <
Metal to metal sealing <

Example Applications

- Air / gas compressors
- Pressure vessels
- Medical gases/Technical gases
- Refrigeration (including ammonia)
- Thermal relief
- Steam systems
- Hydrogen

Specifications

- Inlet connections: 1/2” to 2” threaded connections (depending on valve bore size) *For flanged connections see datasheet 946 Flanged
- Temperature range: -196°C to +250°C (depending on body o’ring material)
- Pressure range: 0.3 to 28.0 bar (depending on valve bore size)

Approvals

- Designed in accordance with BS EN ISO-4126-1 &-7
- PED 2014/68/EU (CE)
- PE(S)R UK SI 2016 No. 1105 (UKCA)
- Leak tightness at 90% set pressure to API 527 and in accordance with EN ISO 4126-1

CE UKCA EAC

Materials of Construction

Component	Material	Grade
Inlet	Stainless Steel	1.4401 (316)
Body	Stainless Steel	1.4408 (316)
Internal Parts	Stainless Steel	1.4401 (316)
Spring	Stainless Steel	1.4310 (302)
Disc	Stainless Steel	S20910

Seal Materials

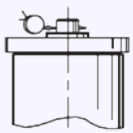
This valve using metal to metal sealing. There is a choice of o’ring used for the sealed cap/lever.

O’ring material – Top cap	Temperature Range
Viton® (FKM)	-20°C to +200°C
Nitrile (NBR)	-20°C to +120°C
Silicone	-50°C to +200°C
EPDM	-55°C to +130°C
PTFE	-196°C to +200°C

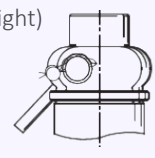
Standard seal materials shown, others are available.

Easing Gear / Lifting Gear / Top Fitting Options

- Sealed Cap (gas tight cap)



- Sealed lever (gas tight)



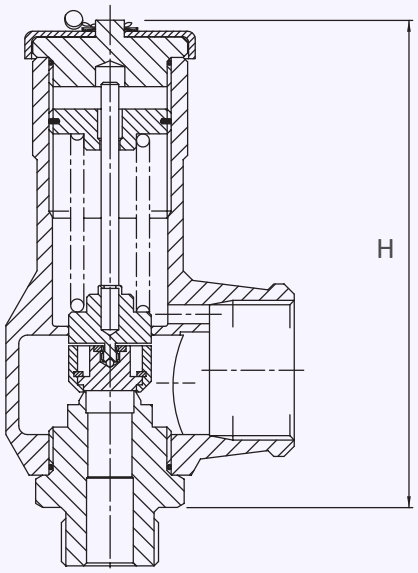
- Rota-lift (not gas tight)

Technical information by bore size

Bore size	10mm (94610)			15mm (94615)			20mm (94620)			25mm (94625)			
Inlet Size	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	1"	1 1/4"	1 1/2"	1"	1 1/4"	1 1/2"	2"
Outlet Size	1"			1 1/2"			2"			2"			
Flow Area	78.5mm²			177mm²			314mm²			491mm²			
H - Height (Sealed Lever version)	114mm			168mm			141mm			225mm			
TÜV alloted outflow coefficient	0.85 (0.7 below 0.8 bar)			0.85 (0.7 below 0.8 bar)			0.85 (0.7 below 0.8 bar)			0.85 (0.7 below 0.8 bar)			
Weight (approximate) Kg	1.0			2.1			3.5			4.2			
Set Pressure range - PED (CE) bar	0.3 to 28.0			0.3 to 28.0			0.3 to 28.0			0.3 to 20.0			
Relieving pressure/fully open pressure	**Set pressure +10%** (0.1 bar below 1.0 bar)												
Reseating pressure	**Set pressure -10%** (0.3 bar below 3.0 bar)												

- TÜV alloted outflow coefficients for pressures above 3.0/4.0 bar, for lower pressures please see the flow rate tables or contact Seetru.
- Maximum permissible built up back pressure = 10% of set pressure at or below which flow is not reduced.
- Stable operation on flows down to 50% of valve rated capacity. Leak tightness at 90% set pressure to API 527 and in accordance with EN ISO 4126-1

Valve Drawing



Standard INLET Connection Types

- BSP parallel male thread
- BSP taper male thread
- NPT male thread
- BSP parallel female thread (limited option)

Standard OUTLET Connection Types

- BSP parallel female thread

Valve Selection Guide

Valve type	Select Bore	Inlet Size	Inlet Thread Type	Top Fitting	O'ring material (for cap)	Set pressure
946	Select bore size from above table	Select inlet size from above table	Select Inlet Thread type	Select easing gear/top fitting	See table	Set pressure from available range

EAC marking available upon request

***Please send your selected details to Seetru and we can provide the full ordering code, price and lead-time.**

Example of Valve Selection Process

Example Selection	946	15	1"	BSP parallel	Sealed Lever	Viton	17.5 bar
	Valve Type	Bore = 15mm	Inlet Size	Inlet Thread Type	Top Fitting	O'ring	Set Pressure

Capacity Table - In accordance with TÜV, AIR at 0°C and 1013mbar. Normal m³/hour
Type 946: Flow rates at 10% above the set pressure

Set Pressure		Bore Size (D0)			
		10mm	15mm	20mm	25mm
bar	psi	Nm³/Hour	Nm³/Hour	Nm³/Hour	Nm³/Hour
0.3	4.35	48.5	109.2	194.2	303.5
0.5	7.25	59.0	132.9	236.2	369.1
1	14.5	96.1	216.2	384.4	600.6
2	29	146.1	328.7	584.4	913.2
3	43.5	196.1	441.3	784.5	1225.8
4	58	246.1	553.8	948.6	1538.4
5	72.5	296.1	666.4	1184.7	1851.1
6	87.00	346.2	778.9	1384.8	2163.7
7	101.5	396.2	891.4	1584.8	2476.3
8	116	446.2	1004.0	1784.9	2788.9
9	130.5	496.2	1116.5	1985.0	3101.6
10	145	546.7	1229.1	2185.1	3414.2
15	217.5	796.3	1791.8	3185.5	4977.3
20	290	1046.4	2354.6	4185.9	6540.4
25	362.5	1296.5	2917.3	5186.3	
28	406	1446.6	3254.9	5786.5	

For any intermediate pressures/flows please contact Seetru

Capacity Table - In accordance with TÜV, STEAM. Kg/hour
Type 946: Flow rates at 10% above the set pressure

Set Pressure		Bore Size (D0)			
		10mm	15mm	20mm	25mm
bar	psi	Kg/hour of Steam	Kg/hour of Steam	Kg/hour of Steam	Kg/hour of Steam
0.3	4.35	37.6	84.5	150.2	234.7
0.5	7.25	46.6	104.8	186.3	291.1
1	14.5	76.6	172.5	306.6	479.0
2	29	115.1	259.0	460.5	719.5
3	43.5	153.2	344.6	612.7	957.4
4	58	190.9	429.7	763.9	1193.7
5	72.5	228.6	514.3	914.4	1428.7
6	87.00	266.1	598.6	1064.2	1662.9
7	101.5	303.4	682.6	1213.5	1896.2
8	116	340.6	766.5	1362.6	2129.1
9	130.5	377.9	850.4	1511.8	2362.2
10	145	415.1	933.9	1660.4	2594.4
15	217.5	600.3	1350.7	2401.3	3752.0
20	290	785.4	1767.2	3141.7	4909.0
25	362.5	970.5	2183.7	3882.2	
28	406	1081.9	2434.4	4327.9	

For any intermediate pressures/flows please contact Seetru

Enclosed Discharge Safety Relief Valves

Seetru Limited

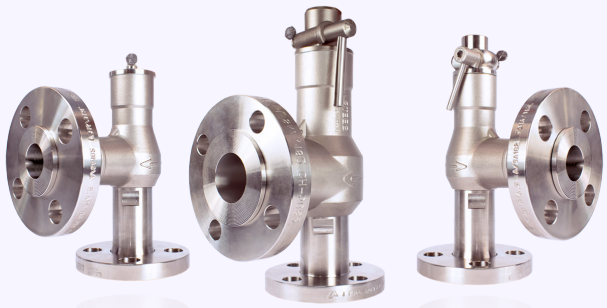
for compressed air or gases | *cryogenic & liquefied gas* | *steam* | *refrigeration* | *hydrogen*

Type 946 Flanged

Safety valves made from Stainless Steel <
Enclosed discharge valve with flanged connections <
Metal to metal sealing <

Example Applications

- Air / gas compressors
- Pressure vessels
- Medical gases/Technical gases
- Refrigeration (including ammonia)
- Thermal relief
- Steam systems
- Hydrogen



Specifications

- Inlet connections: DN15 (1/2), DN20 (3/4") or DN25 (1") flange – DIN EN1092 and ANSI flanges are available
- Temperature range: -196°C to +250°C (depending on body o'ring material)
- Pressure range: 0.3 to 28.0 bar

Approvals

- Designed in accordance with BS EN ISO-4126-1 &-7
- PED 2014/68/EU (CE)
- PE(S)R UK SI 2016 No. 1105 (UKCA)
- Leak tightness at 90% set pressure to API 527 and in accordance with EN ISO 4126-1

CE UKCA EAC

Materials of Construction

Component	Material	Grade
Inlet & Outlet Flanges	Stainless Steel	1.4401 (316)
Body	Stainless Steel	1.4408 (316)
Internal Parts	Stainless Steel	1.4401 (316)
Spring	Stainless Steel	1.4310 (302)
Disc	Stainless Steel	S20910

Seal Materials

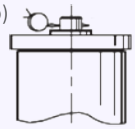
This valve using metal to metal sealing. There is a choice of o'ring used for the sealed cap/lever.

O'ring material – Top cap	Temperature Range
Viton® (FKM)	-20°C to +200°C
Nitrile (NBR)	-20°C to +120°C
Silicone	-50°C to +200°C
EPDM	-55°C to +130°C
PTFE	-196°C to +200°C

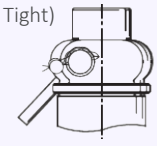
Standard seal materials shown, others are available.

Easing Gear / Lifting Gear / Top Fitting Options

- Sealed Cap (Gas Tight Cap)

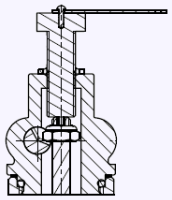


- Sealed lever (Gas Tight)



- Sealed lever (With Test Gag)

A test gag is used to prevent the valve from opening at the set pressure during hydraulic testing when commissioning a system. Once tested, the gag screw is removed and replaced with a short blanking plug before the valve is place in service.



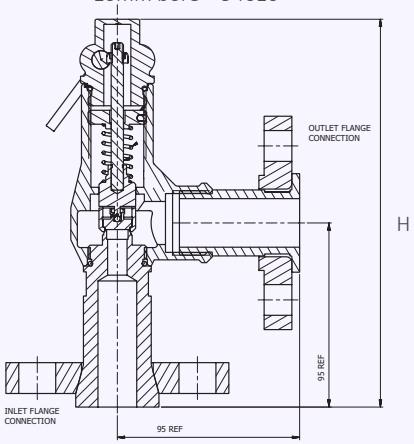
Technical information by bore size

Bore size	10mm (94610)			15mm (94615)
Inlet Size	DN15 (1/2")	DN20 (3/4")	DN25 (1")	DN25 (1")
Outlet Size	DN25 (1")			DN40 (1 1/2")
Flow Area	78.5mm²			177mm²
H - Height (Sealed Lever version)	200mm			253mm
TÜV alloted outflow coefficient	0.85 (0.7 below 0.8 bar)			0.85 (0.7 below 0.8 bar)
Weight (approximate) Kg	3.0			5.3
Set Pressure range - PED (CE) bar	0.3 to 28.0			0.3 to 28.0
Relieving pressure/fully open pressure	**Set pressure +10% (0.1 bar below 1.0 bar)**			
Reseating pressure	**Set pressure -10% (0.3 bar below 3.0 bar)**			

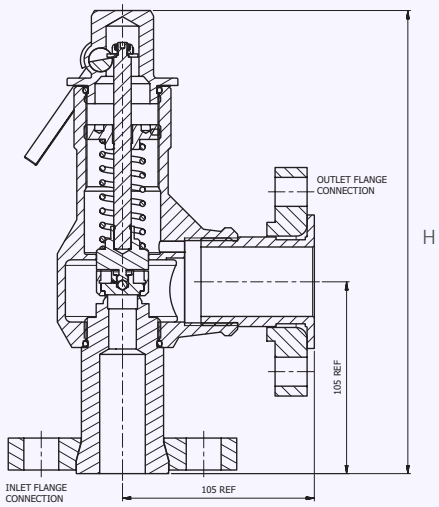
- TÜV alloted outflow coefficients for pressures above 3.0 bar, for lower pressures please see the flow rate tables or contact Seetru.
- Maximum permissible built up back pressure = 10% of set pressure at or below which flow is not reduced.
- Stable operation on flows down to 50% of valve rated capacity.
- Leak tightness at 90% set pressure to API 527 and in accordance with EN ISO 4126-1.

Valve Drawing

10mm bore – 94610



15mm bore – 94615



Standard INLET Connection Types

- DIN EN1092 Flange PN16, PN25 or PN40
- ASME Flange CL150, CL300 or CL600

Standard OUTLET Connection Types

- DIN EN1092 Flange PN16, PN25 or PN40
- ASME Flange CL150 or CL300

Valve Selection Guide

Valve type	Select Bore	Inlet Size	Inlet Flange Type	Outlet Flange Type	Easing Gear	O'ring material (for cap)
946	Select bore size from above table	Select inlet size from above table	Select Inlet Flange type	Select Outlet Flange type	Select easing gear/top fitting	See table

EAC marking available upon request

***Please send your selected details to Seetru and we can provide the full ordering code, price and lead-time.**

Example of Valve Selection Process

Example Selection	946	10	DN20	DIN EN1092 Flange PN16	DIN EN1092 Flange PN16	Sealed Lever	Viton	10.5 bar	16.2 bar
	Valve Type	Bore = 10mm	Inlet Size	Inlet Flange Type	Outlet Flange Type	Top Fitting	O'ring	Set Pressure	Set Pressure

Capacity Table - In accordance with TÜV, AIR at 0°C and 1013mbar. Normal m³/hour
Type 946: Flow rates at 10% above the set pressure

Set Pressure		Bore Size (D0)				
		10mm	15mm			
bar	psi	Nm³/Hour	Nm³/Hour			
0.3	4.35	48.5	109.2			
0.5	7.25	59.0	132.9			
1	14.5	96.1	216.2			
2	29	146.1	328.7			
3	43.5	196.1	441.3			
4	58	246.1	553.8			
5	72.5	296.1	666.4			
6	87.00	346.2	778.9			
7	101.5	396.2	891.4			
8	116	446.2	1004.0			
9	130.5	496.2	1116.5			
10	145	546.7	1229.1			
15	217.5	796.3	1791.8			
20	290	1046.4	2354.6			
25	362.5	1296.5	2917.3			
28	406	1446.6	3254.9			

For any intermediate pressures/flows please contact Seetru

Capacity Table - In accordance with TÜV, STEAM. Kg/hour
Type 946: Flow rates at 10% above the set pressure

Set Pressure		Bore Size (D0)				
		10mm	15mm			
bar	psi	Kg/hour of Steam	Kg/hour of Steam			
0.3	4.35	37.6	84.5			
0.5	7.25	46.6	104.8			
1	14.5	76.6	172.5			
2	29	115.1	259.0			
3	43.5	153.2	344.6			
4	58	190.9	429.7			
5	72.5	228.6	514.3			
6	87.00	266.1	598.6			
7	101.5	303.4	682.6			
8	116	340.6	766.5			
9	130.5	377.9	850.4			
10	145	415.1	933.9			
15	217.5	600.3	1350.7			
20	290	785.4	1767.2			
25	362.5	970.5	2183.7			
28	406	1081.9	2434.4			

For any intermediate pressures/flows please contact Seetru

Enclosed Discharge Safety Relief Valves

for compressed air or gases | *cryogenic & liquefied gas* | *hydrogen*

Seetru Limited

Type
94605 / 946H5 / 95605 / 956H5

Safety valves made from stainles steel <
Enclosed discharge with threaded connections <

Example Applications

- Air/Gas Compression
- Air/Gas Boosters
- Natural Gas
- Pressure Vessels
- Hydrogen Production
- Hydrogen Storage

Specifications

- **Inlet Connections**
  - ½" NPT, BSP & BSPT
  - 9/16" Cone & Thread
  - 3/4" Cone & Thread
- **Outlet Connections**
  - ½" NPT & BSP
  - ¾" NPT & BSP
  - 1" NPT & BSP
- **Temperature Range**
  - Type 94605 and 946H5 = 0° to 250°C
  - Type 95605 and 956H5 (H2 option) =-196°C to 250°C
- **Temperature Range (Special Options)**
  - High temperature option, up to 300°C, available upon request
  - -269°C version (up to 300 bar) available upon request
- **Pressure Range**
  - 35.0 to 515 bar (9*605)
  - 35.0 to 1100 bar (9*6H5)

*Maximum set pressure for steam is 85 bar

Materials of Construction

Component	Valve Type 2nd Digit	Material	Grade
Seat	4	Stainless	1.4057
	5		S20910
Body	4 & 5	Stainless	1.4401
Disc	4	Stainless	1.4057
	5	Ceramic	
Spring	4 & 5	Stainless	1.4401
Gaskets	4 & 5	PTFE	

For Hydrogen applications above 515 bar, a ceramic disc is required, use type 956H5

Key Features

- Compact and space saving design
- Designed and built for repeatable operation
- Advanced sealing technology with super-lapped hard-faced seat and disc, designed to offer robust high-performance sealing
- Orientable gas-tight packed lever option (9*6H5 only)
- Simple and robust design with three moving parts
- Maintenance friendly design
- Designed with Hydrogen embrittlement resistant materials (H_2 option)

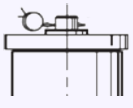
Approvals

- BS EN ISO 4126-1
- PED 2014/68/EU
  - Module B – TÜV Rheinland
  - Module D – LRQA Deutschland
- PE(S)R 2016 (UKCA)
  - Module B – TÜV UK
  - Module D – LRQA UK
- Seat tightness better than API 527

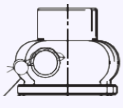
EAC marking available upon request

Top Fitting Options

- Sealed Cap (gas tight cap)

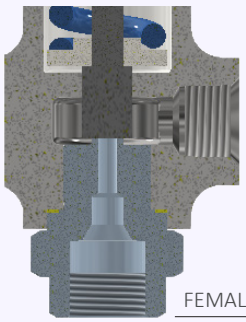


- Sealed lever (gas tight)



Technical information by bore size

Model No.	9*605		9*6H5		
Bore	4.6mm				
Inlet	1/2"	9/16"	1/2"	9/16"	3/4"
Outlet	1/2"		1/2"	3/4"	1"
Flow Area	16.6 mm²				
Height H	158		202		
Kdr	0.75				
Weight	1.5 kg		2.8 kg		



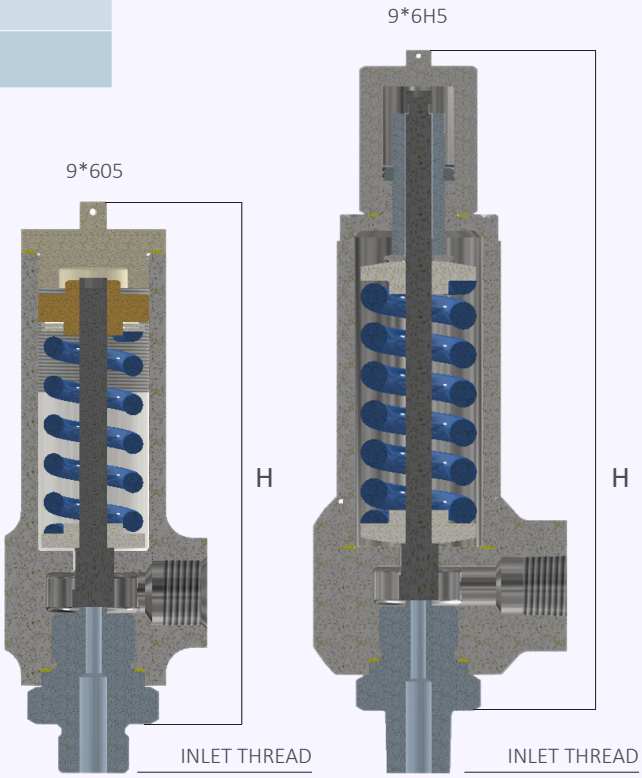
FEMALE CONE & THREAD INLET

Standard INLET Connection Types

- BSP (male) max 515 bar
- BSPT (male) max 515 bar
- NPT (male) max 1034 bar
- Cone & Thread (female) max 1100 bar

Standard OUTLET Connection Types

- BSP (female)
- NPT (female)



Please send your selected details to Seetru and we can provide the full ordering code, price and lead-time.

Valve Selection Guide - Type 94605, 946H5, 95605 & 956H5

Valve type	H_2 or low temperature valve type 2nd digit		Inlet Size	Inlet Connection	Outlet Size	Outlet Connection	Easing Lever (Sealed Lever)
	Yes	No					
9*605	5	4	9/16" & 3/4"	C&T	1/2"	NPT, BSP	9*6H5 only
			1/2"	NPT, BSP, BSPT			
9*6H5			1/2"		1/2", 3/4", 1"		
			9/16" & 3/4"	C&T			

Example of Valve Selection Process for Order Code 956H5F1297

Example Selection	Approval	Materials from above Table	Bore	Inlet Size	Inlet Thread	Outlet Size	Outlet Thread	Duty	Set Pressure
	PED and UKCA (ASME in process)	5 = Body=1.4401, Seat=S20910, Disc=Ceramic	4.6mm	1/2"	NPT	3/4"	NPT	Hydrogen	1000 bar

Capacity Table -Per EN 4126-7 and at 10% Overpressure

Type 94605 / 946H5 / 95605 / 956H5: Flow rates at 10% above the set pressure.

Set Pressure		Flow of Air
bar	psi	Nm^3/hr
35	507.5	335.5
50	725	475.5
75	1087.5	709.0
100	1450	942.5
150	2175	1409.4
200	2900	1876.4
250	3625	2343.3
300	4350	2810.3
350	5075	3277.2
400	5800	3744.2
450	6525	4211.1
500	7250	4678.1
550	7975	5145.1
600	8700	5612.0
650	9425	6078.9
700	10150	6545.9
750	10875	7012.8
800	11600	7479.8
850	12325	7946.7
900	13050	8413.7
950	13775	8880.6
1000	14500	9347.6
1050	15225	9814.5
1100	15950	10281.5

Set Pressure		Flow of Hydrogen
bar	psi	Nm^3/hr
35	507.5	1273.2
50	725	1804.9
75	1087.5	2691.1
100	1450	3577.2
150	2175	5349.5
200	2900	7121.8
250	3625	8894.1
300	4350	10666.3
350	5075	12438.6
400	5800	14210.9
450	6525	15983.3
500	7250	17755.5
550	7975	19527.8
600	8700	21300.1
650	9425	23072.4
700	10150	24844.7
750	10875	26617.1
800	11600	28389.2
850	12325	30161.5
900	13050	31933.8
950	13775	33706.1
1000	14500	35478.5
1050	15225	37250.7
1100	15950	39023.0

Change-Over Valves

Seetru Limited

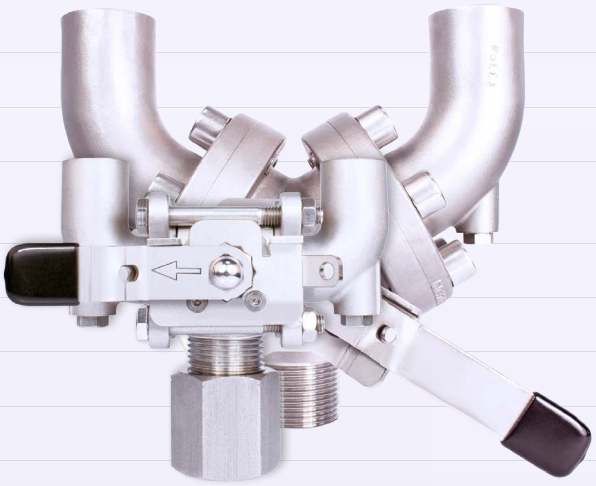
for compressed air or gases | *cryogenic & liquefied gas* | *refrigeration* | *hydrogen*

COV10 / COV13 / COV30

Solutions for plant and process efficiency

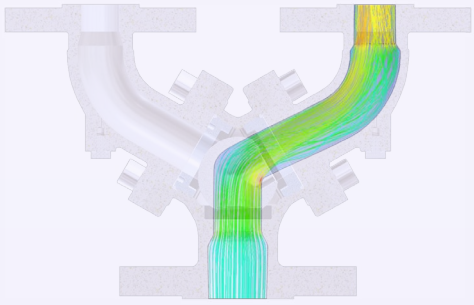
Change-over valves (sometimes referred to as selector valves or three-way valves) enables the switching of flow from one safety valve to another. Typically used where plant shutdown is impossible or undesirable for process, engineering or commercial reasons. With change-over valves it is possible to switch over between parallel safety valves without interrupting operation, so that maintenance work can be carried out on each safety valve in turn. Seetru change-over valves in combination with our safety valves provide the best solution for plant safety and efficiency. Seetru products are widely recognised for their exceptional quality and reliability.

Features



- Patented Design
- Lubricant Free Operation
- Can be fitted with a Bursting Disc
- Lockable handle (optional padlock available)
- Designed for ease of maintenance
- Option to degrease for Oxygen service
- Impossible to isolate both safety valves
- Adjustable Spindle Gland
- Robust Construction
- Compact and easy to use design
- Designed in accordance with BS EN 378
- Pressure drops with 10.0mm for COV10 bore SRV & 18.0mm for COV30 (in accordance with BS EN 13136)
- Ventable outlets for safe removal of Safety Valves
- Seat leakage EV 12266-1 Rate A
- Available with a wide range of fittings and adaptors
- Optimised using Computational Fluid Dynamics (CFD)

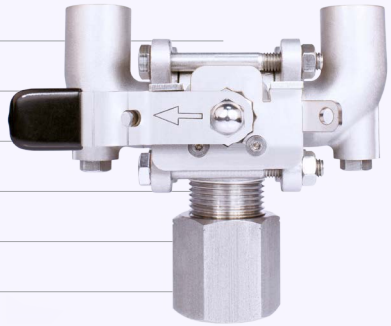
Fluid Mahcanics



The Seetru Change-Over Valves were designed and developed using Computational Fluid Dynamics (CFD) in order to simulate and optimise the flow of the fluids through the valve.

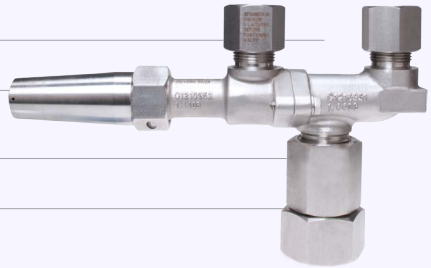
Specifications: COV10

System Connections	½” to 1” BSP, BSPT & NPT
Valve Connectiond	½” NPT or 3/4” BSP (with or without orientators)
Change-Over Valve Kv	10.0 (Cv= 11.5)
Materials of Construction	Stainless Steel
Seat Materials	25% Carbon filled P.T.F.E.
Temperature Range	-196°C to +200°C
Max Design Pressure	75 bar
Material Certifiation	BS EN ISO10204 3.1 Pressure Retaining Parts (Optional Extra)
Safety Valve Orifice Size	Up to 10mm (Full Lift Type)
Maximum Safety Valve Set Pressure	75 bar



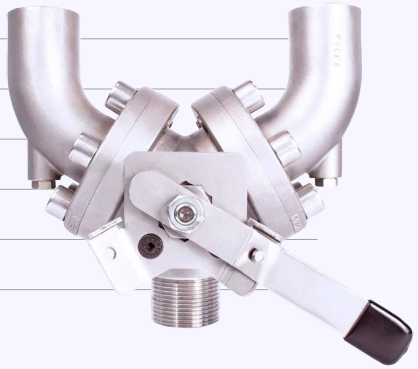
Specifications: COV13

System Connections	Please contact Seetru for information
Valve Connections	Please contact Seetru for information
Materials of Construction	Stainless Steel with Mild Steel or Stainless Steel Internals
Seat Materials	Elastomer P.T.F.E
Maxium Safety valve Set Pressure	65.0 bar
Temperature Range	-30 °C to 200 °C (subject to seal material)



Specifications: COV30

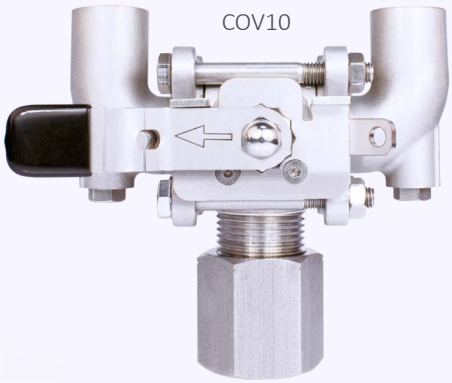
System Connections	1” to 1-1/2” BSP, BSPT, NPT, CL150 to CL600 & PN16 to PN100
Valve Connections	¾” to 1” BSP, BSPT, NPT (with or without orientators), CL150 to CL600 & PN16 to PN100
Change-Over Valve Kv	30
Materials of Construction	CF8M/316/1.4401
Seat Materials	25% Carbon filled P.T.F.E.
Temperature Range	-196°C to +200°C
Max Design Pressure	CL600 or PN100
Material Certifiation	BS EN ISO10204 3.1 Pressure Retaining Parts (Optional Extra)
Safety Valve Orifice Size	Up to 18mm (Full Lift Type)
Maximum Safety Valve Set Pressure	100 bar



Operation Instructions: COV10 / COV30

1	Unlock handle if locking device fitted (recommended).
2	Starting in a motion away from the duty SRV, rotate handle through 180° (COV10) or 120° (COV10), either clockwise or anticlockwise dependent uponstart starting position.
3	Once fully rotated, lock in position if locking device fitted (recommended).
4	If the now standby SRV is to be remove: with caution, un-tighten vent nut of standby Change-over arm by 1 to 2 revolutions to exhaust trapped fluid from change-over arm.
5	Once trapped fluid has de-pressurised, re-tighten vent plug with a tightening torque of 3.0 Nm.
6	Remove the standby SRV.
7	The user may plug the vacant outlet if desired, however sufficient safety procedures (for example Lock out Tag out) must be in place to prevent inadv inadvertent change over, thus rendering the system un-protected against excessive pressure. If the outlet is plugged, vent arm of pressure, as previously described, prior to removal.

COV10



COV30

Fittings, Adaptors and Connections

The Seetru COV30 Flanged Change-Over Valve

- The Seetru COV10 and COV30 Change-Over Valves can be supplied with a range of fittings and adaptors to provide compatibility with a large variety of systems.
- The COV30 is also available with flanged connections (A or PN).

Explore Seetru's Product Range

Quality & Innovation

Safety Relief Valves

Seetru safety relief valves are known for their reliability, performance, and safety. These valves are manufactured in bronze, brass, or stainless steel and offer a wide range of connections, for applications up to 250 °C

Change-Over Valves

Change-over valves are critical components in various industrial applications, enabling seamless switching between fluid sources or flow paths. Typically used where plant shut-down is impossible or undesirable for process, engineering, or commercial reasons.

Liquid Level Gauges

Accurate liquid level monitoring is crucial, whether you're navigating the high seas or managing critical industrial processes. Seetru offers a comprehensive range of liquid-level gauges and indicators designed for precise, reliable measurement in diverse applications.

Pressure & Temperature Valves

The Seetru P3W Pressure & Temperature relief valve provides protection against both excess temperature as well as over pressurisation. Each of the lift mechanisms will work independently of each other. The valve is designed to be used in hot water boiler applications.

Auxiliary Valves

From preventing backflow with check valves to guaranteeing precise pressure with minimum pressure valves, each compact valve plays a vital role. Air start valves deliver rapid pressure bursts while isolating valves segment flow for maintenance.

Circular Window Sight Glasses

Seetru circular window sight glasses are compact low-cost assemblies that provide reliable level indication and positive indication when liquid is present. These screw-in plugs are fitted with high-quality glass.

Pressure Reducing Valves

Alongside our own manufactured items, Seetru also offers a range of pressure-regulating valves, pressure-reducing valves, and overflow valves. They are mainly used in industrial plants, plant engineering, and process engineering. Pressure-reducing valves can be supplied with flanges, weld ends, or threaded connections.

Testing Equipment

The Seetru Quicktester™ is compact, lightweight, and portable design is very robust and able to meet the demands of a busy maintenance workshop or mobile operation. he Quicktester™ can be used with plant-generated air supplies or with mobile bottled gas.

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Seetru is a global company with an extensive distributor network. This means that wherever you are on the planet, you can access our industry-leading safety valves and receive exceptional service.

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