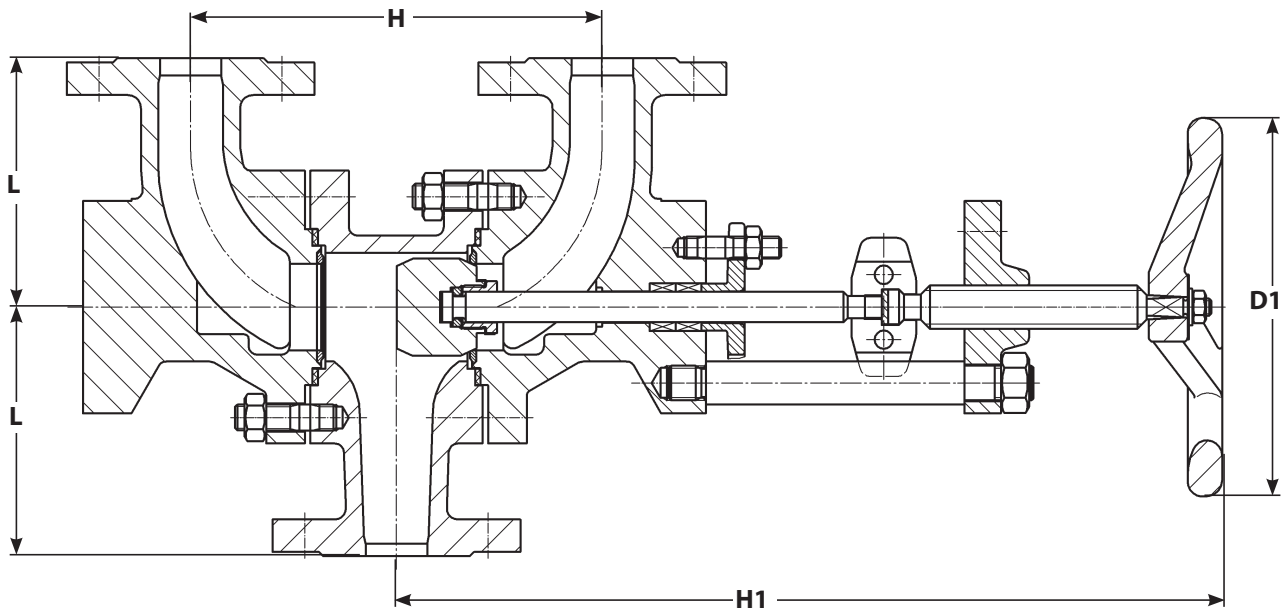


DN 25 - 50 / 1" - 2"			
PN 40 / ASME 150 - 300			
	C.S.	S.S.	Low temp.
Tmin.	-10°C	-200°C	-50°C
Tmax.	+400°C	+400°C	+300°C

Permissible working pressure acc. EN 1092 - Part 1
Terms of delivery acc. DIN 3230/EN 12266-1
Detailed information and more alternatives are given in the appendix



Component	Material		
	C.S. 11.7-FL	S.S. 11.7-FL-A4	Low temp. 11.7-FL-TT
Body	1.0619	1.4408	1.1138
Body seat	1.4370	Stellite 21	1.4370
Bonnet	1.0619	1.4408	1.1138
Disc	1.4021	1.4571	1.4571
Disc surface	1.4021	Stellite 6	Stellite 6
Gaskets		1.4571/graphite	
Bolts	A2/70	A2/70	A2/70
Nuts	A2/70	A2/70	A2/70
Gland packing		Pure graphite	
Gland	1.0420	1.4408	1.4408
Stem-upper part	1.4122	1.4122	1.4122
Stem-lower part	1.4301	1.4571	1.4301
Handwheel	0.6020	0.6020	0.6020

Coefficients of resistant (ζ)		
DN	stem side	opposite side
25	0,6	0,6
40	0,6	0,7
50	0,7	0,9

DN	L [mm]	H [mm]	H1 [mm]	D1 [mm]	G [kg]
25	115	190	385	175	25
40	150	265	535	200	46
50	150	265	535	200	49

Change-over-valve with flanges acc. EN 1092-1 or ASME B 16.5; with outside roll-formed stem screw thread and burnished shaft. With safety stuffing box packing made of pure graphite and grooved bonnet gasket made of stainless steel 1.4571 with a coating of pure graphite on both sides, housed in a tongue and grooved flange.

Carbon steel: Body made of carbon steel 1.0619, seats hardfaced with 1.4370, disc with conical plug made of chrome steel 1.4021, vacuum hardened.

Stainless steel: Body made of stainless steel 1.4408, seats hardfaced with stellite 21, disc with conical plug made of s.s. 1.4571, sealing surface hardfaced with stellite 6.

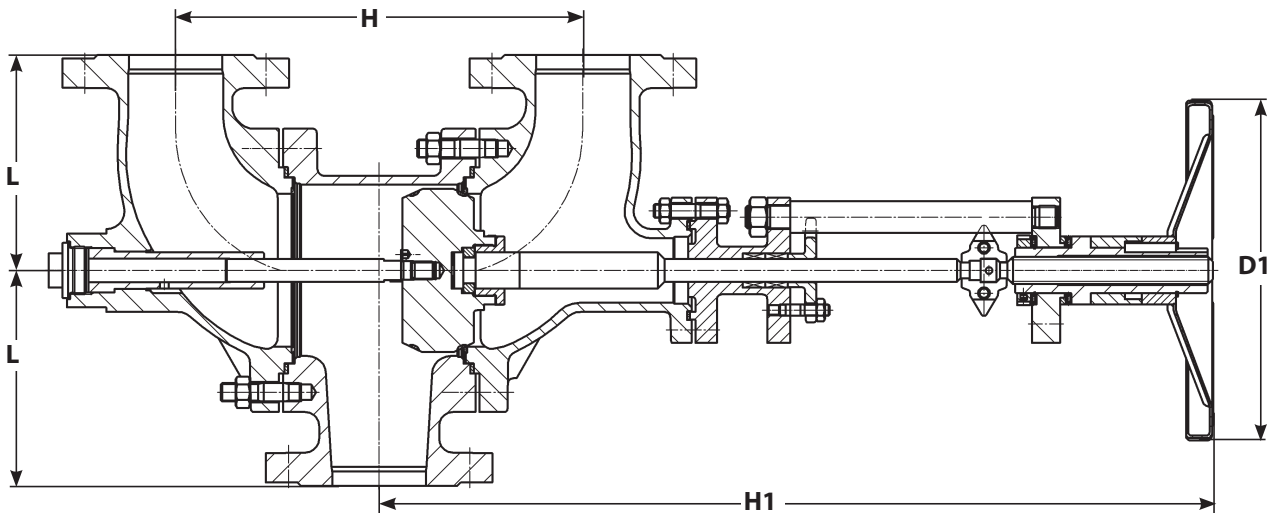
Low temperature: Body made of low temperature steel 1.1138, seats hardfaced with 1.4370, disc with conical plug made of chrome s.s. 1.4571, sealing surface hardfaced with stellite 6.

CHANGE-OVER-VALVE, GLAND TYPE

11.7-FL

DN 65 - 400 / 2 1/2" - 16"			
PN 40 / ASME 150 - 300			
	C.S.	S.S.	Low temp.
Tmin.	-10°C	-200°C	-50°C
Tmax.	+400°C	+400°C	+300°C

Permissible working pressure acc. EN 1092 - Part 1
Terms of delivery acc. DIN 3230/EN 12266-1
Detailed information and more alternatives are given in the appendix



Components	Material		
	C.S.	S.S.	Low temp.
	11.7-FL	11.7-FL-A4	11.7-FL-TT
Body	1.0619	1.4408	1.1138
Body seat	1.4370	Stellite 21	1.4370
Bonnet	1.0619	1.4408	1.1138
Disc	1.0460/1.0619	1.4571/1.4408	1.4571/1.0566
Disc surface	1.4009	Stellite 6	Stellite 6
Gaskets		1.4571/graphite	
Bolts	A2/70	A2/70	A2/70
Nuts	A2/70	A2/70	A2/70
Gland packing		Pure graphite	
Gland	1.0420	1.4408	1.4408
Stem-upper part	1.4122	1.4122	1.4122
Stem-lower part	1.4301	1.4571	1.4301
Handwheel	0.6020	0.6020	0.6020

DN	Coefficients of resistant (ζ)	
	stem side	opposite side
65	0,83	0,90
80	0,83	0,90
100	0,79	0,94
125	0,84	0,98
150	0,81	0,89
200	0,84	0,92
250	0,99	0,96
300	0,84	0,91
350	0,89	0,85
400	0,83	0,79

DN	L [mm]	H [mm]	H1 [mm]	D1 [mm]	G [kg]
65	190	360	740	300	96
80	190	360	740	300	99
100	230	460	815	300	151
125	300	460	815	300	156
150	280	600	1110	400	323
200	370	800	1445	500	667
250	430	900	1670	600	830
300	440	950	1670	600	950
350	470	1090	2170	800	1480
400	480	1140	2170	800	1790

Change-over-valve with flanges acc. EN 1092-1 or ASME B 16.5; with outside roll-formed stem screw thread and burnished shaft. With safety stuffing box packing made of pure graphite and grooved bonnet gasket made of stainless steel 1.4571 with a coating of pure graphite on both sides, housed in a tongue and grooved flange.

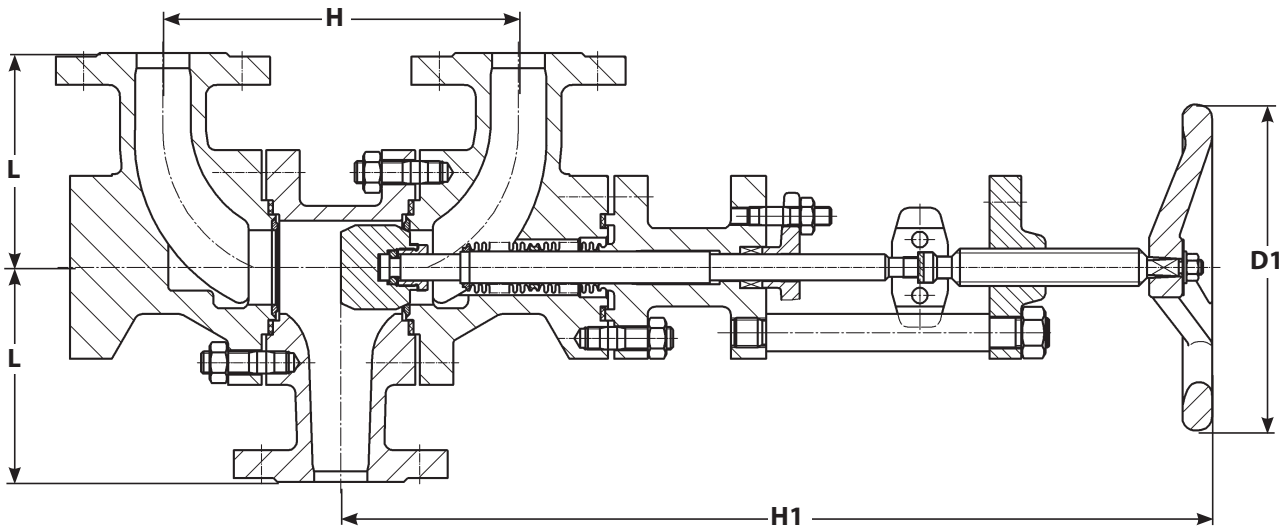
Carbon steel: Body made of carbon steel 1.0619, seats hardfaced with 1.4370, disc with conical plug made of 1.0460/1.0619, sealing surface hardfaced with 1.4009.

Stainless steel: Body made of stainless steel 1.4408, seats hardfaced with stellite 21, disc with conical plug made of s.s. 1.4571/1.4408, sealing surface hardfaced with stellite 6.

Low temperature: Body made of low temperature steel 1.1138, seats hardfaced with 1.4370, disc with conical plug made of 1.4571/1.0566, sealing surface hardfaced with stellite 6.

DN 25 - 50 / 1" - 2"			
PN 40 / ASME 150 - 300			
	C.S.	S.S.	Low temp.
Tmin.	-10°C	-200°C	-50°C
Tmax.	+400°C	+400°C	+300°C

Permissible working pressure acc. EN 1092 - Part 1
Terms of delivery acc. DIN 3230/EN 12266-1
Detailed information and more alternatives are given in the appendix



Component	Material		
	C.S.	S.S.	Low temp.
	11.8-FL	11.8-FL-A4	11.8-FL-TT
Body	1.0619	1.4408	1.1138
Body seat	1.4370	Stellite 21	1.4370
Bonnet	1.0619	1.4408	1.1138
Disc	1.4021	1.4571	1.4571
Disc surface	1.4021	Stellite 6	Stellite 6
Bellows	1.4571	1.4571	1.4571
Gaskets		1.4571/graphite	
Bolts	A2/70	A2/70	A2/70
Nuts	A2/70	A2/70	A2/70
Gland packing		Pure graphite	
Gland	1.0420	1.4408	1.4408
Stem-upper part	1.4122	1.4122	1.4122
Stem-lower part	1.4301	1.4571	1.4301
Handwheel	0.6020	0.6020	0.6020

Coefficients of resistant (ζ)		
DN	stem side	opposite side
25	1,0	0,6
40	0,8	0,7
50	0,8	0,9

DN	L [mm]	H [mm]	H1 [mm]	D1 [mm]	G [kg]
25	115	190	470	175	27
40	150	265	615	200	47
50	150	265	615	200	50

Bellows sealed change-over-valve with flanges acc. EN 1092-1 or ASME B 16.5; with outside roll-formed stem screw thread and burnished shaft, coupled stem. Multiplewall liquid contacted bellows made of stainless steel, with anti torque device, safety stuffing box packing made of pure graphite and grooved bonnet gasket made of stainless steel 1.4571 with a coating of pure graphite on both sides, housed in a tongue and grooved flange.

Carbon steel: Body made of carbon steel 1.0619, seats hardfaced with 1.4370, disc with conical plug made of chrome steel 1.4021, vacuum hardened.

Stainless steel: Body made of stainless steel 1.4408, seats hardfaced with stellite 21, disc with conical plug made of s.s. 1.4571, sealing surface hardfaced with stellite 6.

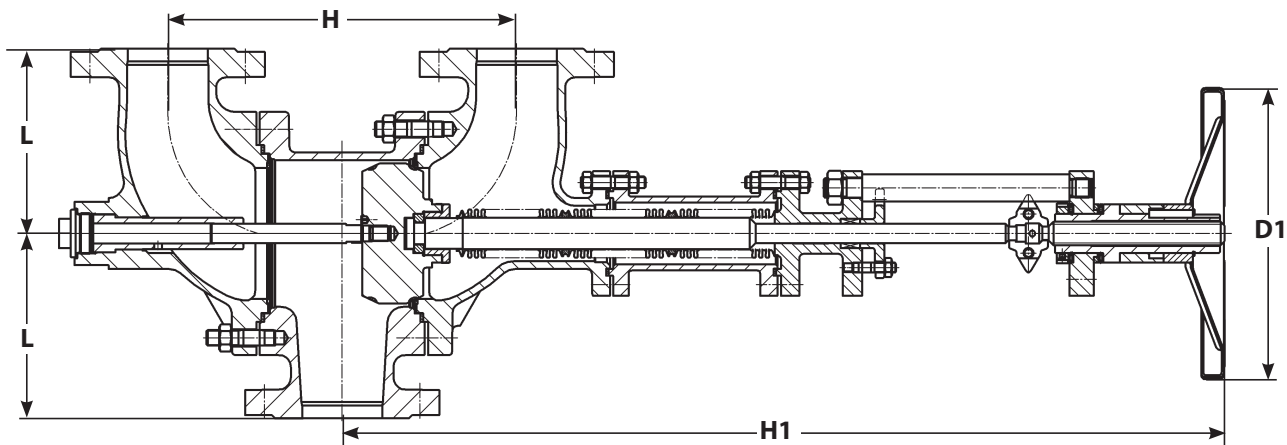
Low temperature: Body made of low temperature steel 1.1138, seats hardfaced with 1.4370, disc with conical plug made of chrome s.s. 1.4571, sealing surface hardfaced with stellite 6.

CHANGE-OVER-VALVE, BELLOWS SEALED TYPE

11.8-FL

DN 65 - 400 / 2 1/2" - 16"			
PN 40 / ASME 150 - 300			
	C.S.	S.S.	Low temp.
Tmin.	-10°C	-200°C	-50°C
Tmax.	+400°C	+400°C	+300°C

Permissible working pressure acc. EN 1092 - Part 1
Terms of delivery acc. DIN 3230/EN 12266-1
Detailed information and more alternatives are given in the appendix



Component	Material		
	C.S.	S.S.	Low temp.
	11.8-FL	11.8-FL-A4	11.8-FL-TT
Body	1.0619	1.4408	1.1138
Body seat	1.4370	Stellite 21	1.4370
Bonnet	1.0619	1.4408	1.1138
Disc	1.0460/1.0619	1.4571/1.4408	1.4571/1.0566
Disc surface	1.4009	Stellite 6	Stellite 6
Bellows	1.4571	1.4571	1.4571
Gaskets		1.4571/graphite	
Bolts	A2/70	A2/70	A2/70
Nuts	A2/70	A2/70	A2/70
Gland packing		Pure graphite	
Gland	1.0420	1.4408	1.4408
Stem-upper part	1.4122	1.4122	1.4122
Stem-lower part	1.4301	1.4571	1.4301
Handwheel	0.6020	0.6020	0.6020

DN	Coefficients of resistant (z)	
	stem side	opposite side
65	0,93	0,90
80	0,93	0,90
100	0,89	0,94
125	0,94	0,98
150	0,91	0,89
200	0,94	0,92
250	1,05	0,96
300	0,91	0,89
350	0,94	0,85
400	0,91	0,79

DN	L [mm]	H [mm]	H1 [mm]	D1 [mm]	G [kg]
65	190	360	910	300	106
80	190	360	910	300	109
100	230	460	985	300	161
125	300	460	985	300	166
150	280	600	1390	400	338
200	370	800	1720	500	682
250	430	900	1670	600	850
300	440	950	1670	600	970
350	470	1090	2465	800	1500
400	480	1140	2465	800	1810

Bellows sealed change-over-valve with flanges acc. EN 1092-1 or ASME B 16.5; with outside roll-formed stem screw thread and burnished shaft, coupled stem. Multiplewall liquid contacted bellows made of stainless steel, with anti torque device, safety stuffing box packing made of pure graphite and grooved bonnet gasket made of stainless steel 1.4571 with a coating of pure graphite on both sides, housed in a tongue and grooved flange.

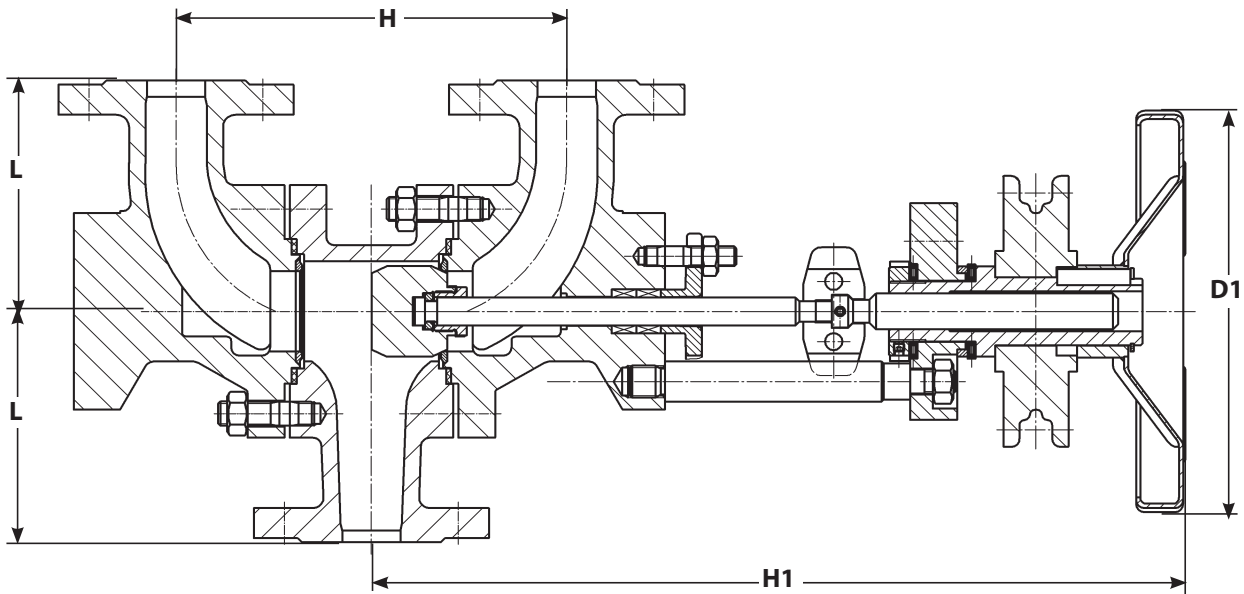
Carbon steel: Body made of carbon steel 1.0619, seats hardfaced with 1.4370, disc with conical plug made of 1.0460/1.0619, sealing surface hardfaced with 1.4009.

Stainless steel: Body made of stainless steel 1.4408, seats hardfaced with stellite 21, disc with conical plug made of s.s. 1.4571/1.4408, sealing surface hardfaced with stellite 6.

Low temperature: Body made of low temperature steel 1.1138, seats hardfaced with 1.4370, disc with conical plug made of 1.4571/1.0566, sealing surface hardfaced with stellite 6.

DN 25 - 50 / 1" - 2"			
PN 40 / ASME 150 - 300			
	C.S.	S.S.	Low temp.
Tmin.	-10°C	-200°C	-50°C
Tmax.	+400°C	+400°C	+300°C

Permissible working pressure acc. EN 1092 - Part 1
Terms of delivery acc. DIN 3230/EN 12266-1
Detailed information and more alternatives are given in the appendix



Component	Material		
	C.S.	S.S.	Low temp.
	11.75-FL	11.75-FL-A4	11.75-FL-TT
Body	1.0619	1.4408	1.1138
Body seat	1.4370	Stellite 21	1.4370
Bonnet	1.0619	1.4408	1.1138
Disc	1.4021	1.4571	1.4571
Disc surface	1.4021	Stellite 6	Stellite 6
Gaskets		1.4571/graphite	
Bolts	A2/70	A2/70	A2/70
Nuts	A2/70	A2/70	A2/70
Gland packing		Pure graphite	
Gland	1.0420	1.4408	1.4408
Stem-upper part	1.4122	1.4122	1.4122
Stem-lower part	1.4301	1.4571	1.4301
Handwheel	Steel	Steel	Steel
Chainwheel	CG 20-25	CG 20-25	CG 20-25

Coefficients of resistant (ζ)		
DN	stem side	opposite side
25	0,6	0,6
40	0,6	0,7
50	0,7	0,9

DN	L [mm]	H [mm]	H1 [mm]	D1 [mm]	G [kg]
25	115	190	400	200	26
40	150	265	515	200	47
50	150	265	515	200	49

Inlet or outlet change-over-valve for interlocking system with flanges acc. EN 1092-1 or ASME B 16.5; with outside roll-formed stem screw thread and burnished shaft. With safety stuffing box packing made of pure graphite and grooved bonnet gasket made of stainless steel 1.4571 with a coating of pure graphite on both sides, housed in a tongue and grooved flange The inlet change-over valve is fitted with chainwheel, chain tightener and chain; the outlet change-over valve is only fitted with chain wheel.

Carbon steel: Body made of carbon steel 1.0619, seats hardfaced with 1.4370, disc with conical plug made of chrome steel 1.4021, vacuum hardened.

Stainless steel: Body made of stainless steel 1.4408, seats hardfaced with stellite 21, disc with conical plug made of s.s. 1.4571, sealing surface hardfaced with stellite 6.

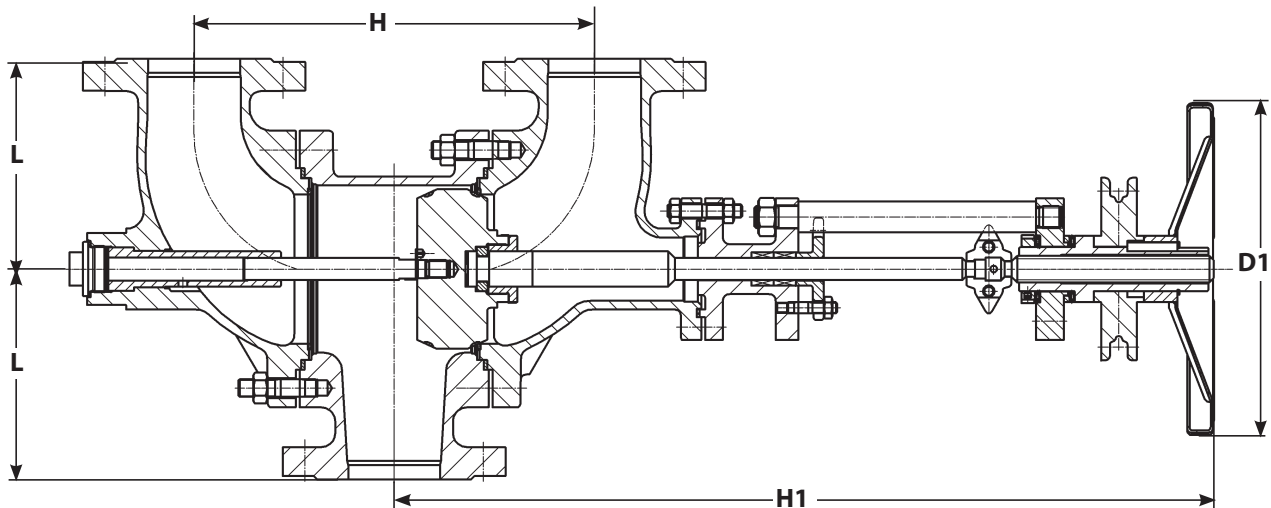
Low temperature: Body made of low temperature steel 1.1138, seats hardfaced with 1.4370, disc with conical plug made of chrome s.s. 1.4571, sealing surface hardfaced with stellite 6.

INTERLOCKING CHANGE-OVER-VALVE, GLAND TYPE

11.75-FL

DN 65 - 400 / 2 1/2" - 16"			
PN 40 / ASME 150 - 300			
	C.S.	S.S.	Low temp.
Tmin.	-10°C	-200°C	-50°C
Tmax.	+400°C	+400°C	+300°C

Permissible working pressure acc. EN 1092 - Part 1
Terms of delivery acc. DIN 3230/EN 12266-1
Detailed information and more alternatives are given in the appendix



Components	Material		
	C.S.	S.S.	Low temp.
	11.75-FL	11.75-FL-A4	11.75-FL-TT
Body	1.0619	1.4408	1.1138
Body seat	1.4370	Stellite 21	1.4370
Bonnet	1.0619	1.4408	1.1138
Disc	1.0460/1.0619	1.4571/1.4408	1.4571/1.0566
Disc surface	1.4009	Stellite 6	Stellite 6
Gaskets		1.4571/graphite	
Bolts	A2/70	A2/70	A2/70
Nuts	A2/70	A2/70	A2/70
Gland packing		Pure graphite	
Gland	1.0420	1.4408	1.4408
Stem-upper part	1.4122	1.4122	1.4122
Stem-lower part	1.4301	1.4571	1.4301
Handwheel	Steel	Steel	Steel
Chainwheel	CG 20-25	CG 20-25	CG 20-25

Coefficients of resistant (ζ)		
DN	stem side	opposite side
65	0,83	0,90
80	0,83	0,90
100	0,79	0,94
125	0,84	0,98
150	0,81	0,89
200	0,84	0,92
250	0,99	0,96
300	0,84	0,91
350	0,89	0,85
400	0,83	0,79

DN	L [mm]	H [mm]	H1 [mm]	D1 [mm]	G [kg]
65	190	360	740	300	96
80	190	360	740	300	99
100	230	460	815	300	151
125	300	460	815	300	156
150	280	600	1110	400	323
200	370	800	1445	500	667
250	430	900	1670	600	830
300	440	950	1670	600	950
350	470	1090	2170	800	1480
400	480	1140	2170	800	1790

Inlet or outlet change-over-valve for interlocking system with flanges acc. EN 1092-1 or ASME B 16.5; with outside roll-formed stem screw thread and burnished shaft. With safety stuffing box packing made of pure graphite and grooved bonnet gasket made of stainless steel 1.4571 with a coating of pure graphite on both sides, housed in a tongue and grooved flange.

The inlet change-over-valve is fitted with chainwheel, chain tightener and chain; the outlet change-over valve is only fitted with chain wheel.

Carbon steel: Body made of carbon steel 1.0619, seats hardfaced with 1.4370, disc with conical plug made of 1.0460/1.0619, sealing surface hardfaced with 1.4009.

Stainless steel: Body made of stainless steel 1.4408, seats hardfaced with stellite 21, disc with conical plug made of s.s. 1.4571/1.4408, sealing surface hardfaced with stellite 6.

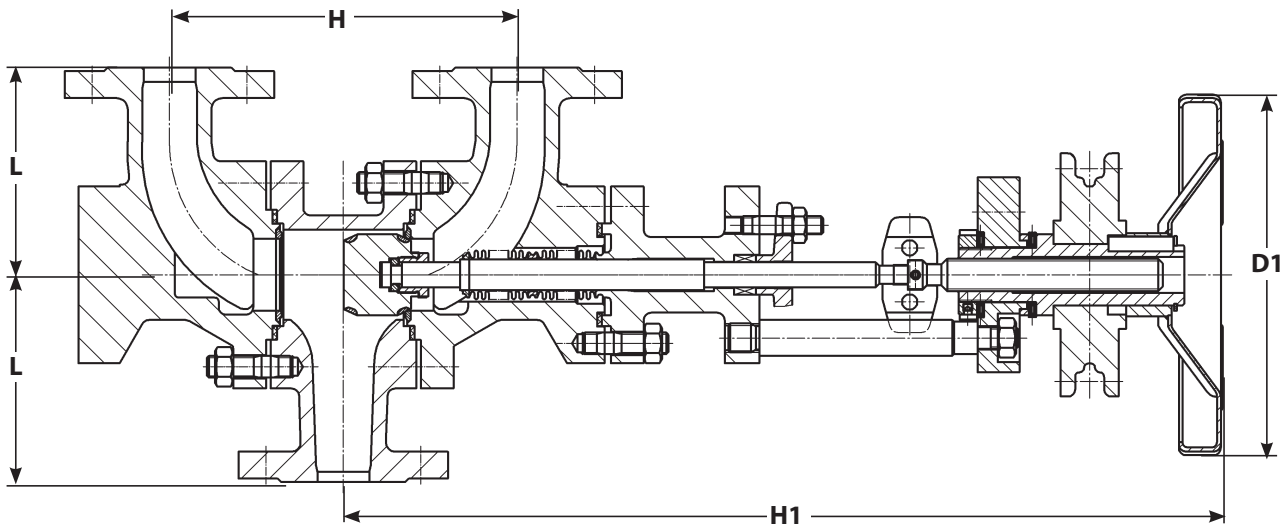
Low temperature: Body made of low temperature steel 1.1138, seats hardfaced with 1.4370, disc with conical plug made of chrome 1.4571/1.0566, sealing surface hardfaced with stellite 6.

INTERLOCKING CHANGE-OVER-VALVE BELLOWS SEALED TYPE

11.85-FL

DN 25 - 50 / 1" - 2"			
PN 40 / ASME 150 - 300			
	C.S.	S.S.	Low temp.
Tmin.	-10°C	-200°C	-50°C
Tmax.	+400°C	+400°C	+300°C

Permissible working pressure acc. EN 1092 - Part 1
Terms of delivery acc. DIN 3230/EN 12266-1
Detailed information and more alternatives are given in the appendix



Component	Material		
	C.S.	S.S.	Low temp.
	11.85-FL	11.85-FL-A4	11.85-FL-TT
Body	1.0619	1.4408	1.1138
Body seat	1.4370	Stellite 21	1.4370
Bonnet	1.0619	1.4408	1.1138
Disc	1.4021	1.4571	1.4571
Disc surface	1.4021	Stellite 6	Stellite 6
Bellows	1.4571	1.4571	1.4571
Gaskets		1.4571/graphite	
Bolts	A2/70	A2/70	A2/70
Nuts	A2/70	A2/70	A2/70
Gland packing		Pure graphite	
Gland	1.0420	1.4408	1.4408
Stem-upper part	1.4122	1.4122	1.4122
Stem-lower part	1.4301	1.4571	1.4301
Handwheel	Steel	Steel	Steel
Chainwheel	CG 20-25	CG 20-25	CG 20-25

Coefficients of resistant (ζ)		
DN	stem side	opposite side
25	1,0	0,6
40	0,8	0,7
50	0,8	0,9

DN	L [mm]	H [mm]	H1 [mm]	D1 [mm]	G [kg]
25	115	190	485	200	28
40	150	265	600	200	48
50	150	265	600	200	52

Inlet or outlet bellows sealed change-over-valve for interlocking system with flanges acc. EN 1092-1 or ASME B 16.5; with outside roll-formed stem screw thread and burnished shaft, coupled stem. Multiplewall liquid contacted bellows made of stainless steel, with anti torque device, safety stuffing box packing made of pure graphite and grooved bonnet gasket made of stainless steel 1.4571 with a coating of pure graphite on both sides, housed in a tongue and grooved flange. The inlet change-over-valve is fitted with chainwheel, chain tightener and chain; the outlet change-over valve is only fitted with chain wheel.

Carbon steel: Body made of carbon steel 1.0619, seats hardfaced with 1.4370, disc with conical plug made of chrome steel 1.4021, vacuum hardened.

Stainless steel: Body made of stainless steel 1.4408, seats hardfaced with stellite 21, disc with conical plug made of s.s. 1.4571, sealing surface hardfaced with stellite 6.

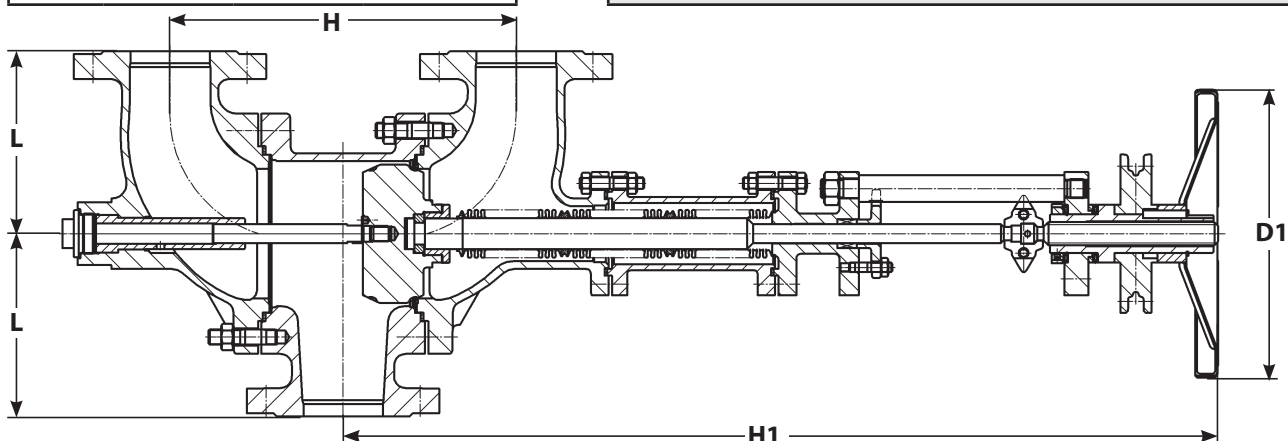
Low temperature: Body made of low temperature steel 1.1138, seats hardfaced with 1.4370, disc with conical plug made of s.s. 1.4571, sealing surface hardfaced with stellite 6.

INTERLOCKING CHANGE-OVER-VALVE BELLOWS SEALED TYPE

11.85-FL

DN 65 - 400 / 2 1/2" - 16"			
PN 40 / ASME 150 - 300			
	C.S.	S.S.	Low temp.
Tmin.	-10°C	-200°C	-50°C
Tmax.	+400°C	+400°C	+300°C

Permissible working pressure acc. EN 1092 - Part 1
Terms of delivery acc. DIN 3230/EN 12266-1
Detailed information and more alternatives are given in the appendix



Component	Material		
	C.S.	S.S.	Low temp.
	11.85-FL	11.85-FL-A4	11.85-FL-TT
Body	1.0619	1.4408	1.1138
Body seat	1.4370	Stellite 21	1.4370
Bonnet	1.0619	1.4408	1.1138
Disc	1.0460/1.0619	1.4571/1.4408	1.4571/1.0566
Disc surface	1.4009	Stellite 6	Stellite 6
Bellows	1.4571	1.4571	1.4571
Gaskets		1.4571/graphite	
Bolts	A2/70	A2/70	A2/70
Nuts	A2/70	A2/70	A2/70
Gland packing		Pure graphite	
Gland	1.0420	1.4408	1.4408
Stem-upper part	1.4122	1.4122	1.4122
Stem-lower part	1.4301	1.4571	1.4301
Handwheel	Steel	Steel	Steel
Chainwheel	CG 20-25	CG 20-25	CG 20-25

DN	Coefficients of resistant (ζ)	
	stem side	opposite side
65	0,93	0,90
80	0,93	0,90
100	0,89	0,94
125	0,94	0,98
150	0,91	0,89
200	0,94	0,92
250	1,05	0,96
300	0,91	0,89
350	0,94	0,85
400	0,91	0,79

DN	L [mm]	H [mm]	H1 [mm]	D1 [mm]	G [kg]
65	190	360	910	300	106
80	190	360	910	300	109
100	230	460	985	300	161
125	300	460	985	300	166
150	280	600	1390	400	338
200	370	800	1720	500	682
250	430	900	1670	600	850
300	440	950	1670	600	970
350	470	1090	2465	800	1500
400	480	1140	2465	800	1810

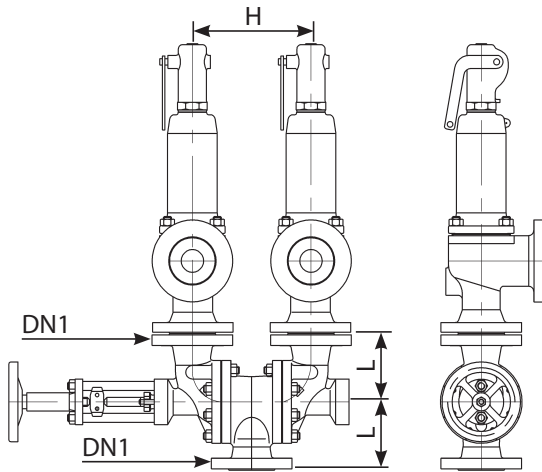
Inlet or outlet bellows sealed change-over-valve for interlocking system with flanges acc. EN 1092-1 or ASME B 16.5; with outside roll-formed stem screw thread and burnished shaft, coupled stem. With safety stuffing box packing made of pure graphite and grooved bonnet gasket made of stainless steel 1.4571 with a coating of pure graphite on both sides, housed in a tongue and grooved flange. The inlet change-over-valve is fitted with chainwheel, chain tightener and chain; the outlet change-over valve is only fitted with chain wheel.

Carbon steel: Body made of carbon steel 1.0619, seats hardfaced with 1.4370, disc with conical plug made of 1.0460/1.0619, sealing surface hardfaced with 1.4009.

Stainless steel: Body made of stainless steel 1.4408, seats hardfaced with stellite 21, disc with conical plug made of s.s. 1.4571/1.4408, sealing surface hardfaced with stellite 6.

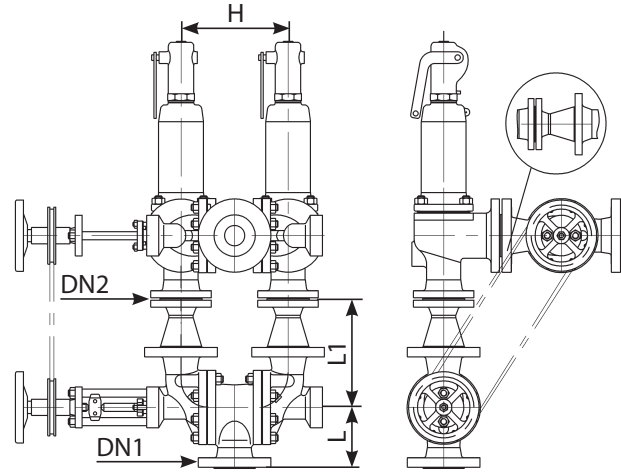
Low temperature: Body made of low temperature steel 1.1138, seats hardfaced with 1.4370, disc with conical plug made of chrome 1.4571/1.0566, sealing surface hardfaced with stellite 6.

Change-over valve only on the inlet side of the safety valves



This arrangement presupposes unrestricted discharge, either direct into atmosphere or into discharge piping catering for this safety valve only.

Combination of change-over valves type on the inlet and outlet sides of safety valves



The two change-over valves are coupled with sprocket wheels and chains to provide a positive interlock between them. As a result of the change-over valve on the outlet side and the pipe system immediately downstream of it, back pressure is built up on the outlet side of the safety valve when it discharges.

The connecting dimensions refer to the standard pressure ratings. Higher pressure ratings will increase the dimensions. The height over-all of a combination depends on the safety valve design.

General:

The use of change-over valves allows essential maintenance work to be carried out on a safety valve, without interruption of the plant operation, simply by changing over to the relevant standby valve, thus protecting the plant against excessiv overpressure.

When operating the change-over valve it is necessary to ensure that the valve does not remain in any intermediate position.

The respective part of the valve shall be fully open.

Sizing:

The change-over valve at the inlet side of a combination of change-over valves and safety valves causes during discharging a pressure drop. To guarantee the function of a safety valve the following rules for the sizing of change-over valves should be taken into account.

Combination of change-over valves on the inlet and outlet side of safety valves:

Standard safety valve: Usually the standard safety valve has the same nominal diameter at the inlet and outlet. The nominal diameter of the connected change-over valves are adequate to them.

Full lift safety valve: The full lift safety valve has different nominal diameters at the inlet and outlet. The nominal diameter on the outlet determines the size of the change-over valves. Therefore the change-over valve at the inlet of the combination has also the same diameter as the change-over valve at the outlet. But both outlet flanges of the change-over valve are reduced to the nominal inlet diameter of the safety valve.

Change-over valve only at the inlet of the safety valves:

Standard safety valve: The nominal inlet diameter of the standard safety valve refers to the nominal diameter of the change-over valve.

Full lift safety valve: The nominal outlet diameter of the full lift safety valve determines the size of the change-over valve. To connect the safety valves both outlet flanges of the change-over valve are reduced to the inlet diameter of the safety valves. In the following cases it is possible to choose the size of the change-over valve one nominal diameter smaller than the outlet diameter or even in the same

nominal diameter as the inlet of the safety valves: The service conditions don't require the maximum discharge capacity of the safety valve. A change-over valve type is chosen, which creates only a small pressure drop.