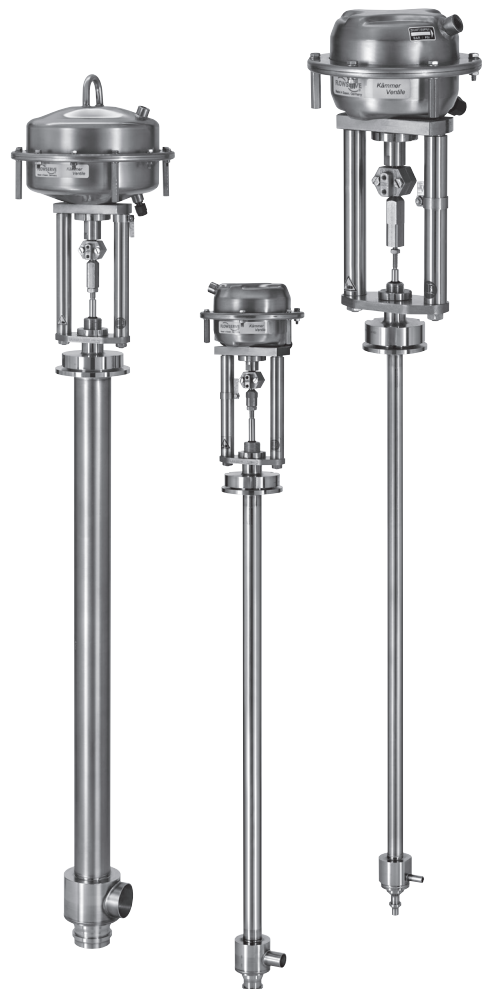




TECHNICAL BULLETIN

ColdFlow - 341000 Cryogenic Control Valves 4K

FCD KMENTB4104-00 04/17

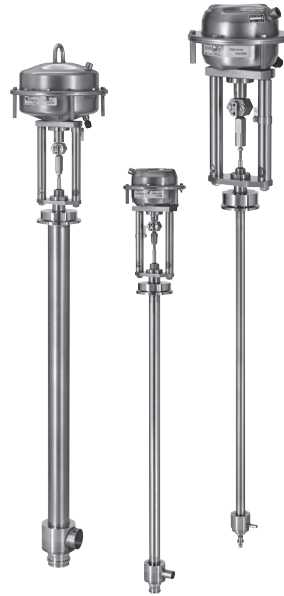


Experience In Motion

ColdFlow - 341000 Series

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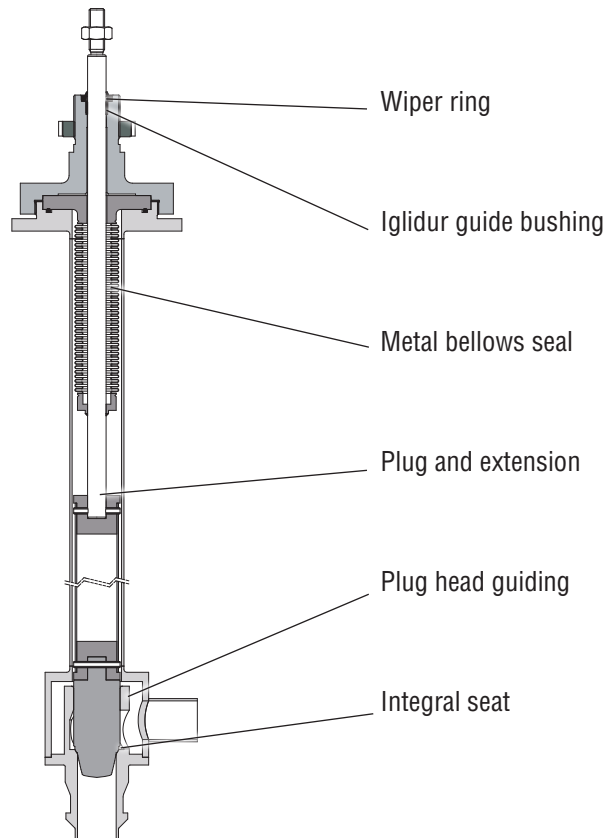


1 Introduction

Stainless steel low temperature valves mainly for helium liquefaction, however the ColdFlow-341000 valves could also be used in applications with other cold liquefied gases such as Neon, Nitrogen, Argon, Hydrogen etc. The extremely low temperature of liquid helium is utilized to maintain the super-conductive properties of magnets in applications such as particle physics, research or fusion reactors. Body and extension designed for vacuum insulation. Service temperature down to $-269\text{ }^{\circ}\text{C}$ (4 K). Not suitable for Oxygen service.

2 Features and Benefits

- **Easy maintenance**
- **Low energy consumption**
- **Reliable metal bellows seal**
- **Backup O-ring gasket**
- **Plastic plug design**
- **Modular concept**



ColdFlow - 341000 Series

3 Specification

Size	DIN DN 2 - DN 200 ANSI 0.08 - 8 inch
Pressure Class	PN 25 (optional PN 40) Class 150 (optional Class 300)
Body materials	Stainless Steel (1.4404 / 316L)
Body type	Angle
End connections	Weld ends (see dimensional table)
Face-to-face	See dimensional table
Trim type	Unbalanced
Trim design	Standard trim Soft seated trim
Trim materials	Alloy 6 (DN 2) PCTFE (\geq DN 4)
Shutoff	ANSI Class IV, V optional ANSI Class VI (Soft seat)
Flow characteristic	Modified equal percentage Modified linear On-Off
Stem sealing	Metal bellows (1.4571)
Flow capacity (Cv)	See Cv table

Actuator	Spring diaphragm actuator type KF (carbon steel) Spring diaphragm actuator type KP (stainless steel) Spring diaphragm actuator type FlowAct (carbon steel) Electric actuator
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PCTFE

Polychlorotrifluoroethylene (PCTFE or PTFCE) is a thermoplastic chlorofluoropolymer. It is similar to polytetrafluoroethene (PTFE), except that it is a homopolymer of the monomer chlorotrifluoroethylene (CTFE) instead of tetrafluoroethene. It has the lowest water vapor transmission rate of any plastic.

Due to its chemical stability, it acts as a protective barrier against chemicals. It is used as a coating and prefabricated liner for chemical applications. PCTFE is also used for tubes, valves, chemical tank liners, O-rings, seals and gaskets.

Plug with bellows and stem

ColdFlow - 341000 Series

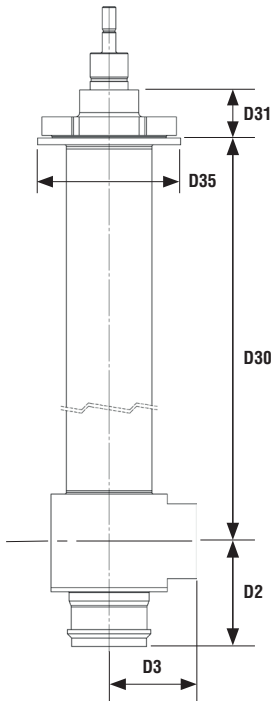
4 Cv Table

Kvs	Cv	Seat mm	Trim#		2	4	6	8	10	15	20	25	32	40	50	65	80	100	125	150	200		
			in	mm	0.08"	0.16"	0.25"	0.31"	0.39"	0.59"	0.79"	1"	1.25"	1.5"	2"	2.5"	3"	4"	5"	6"	8"		
0,0019	0,0022	2	0.08E	2E	*																		
0,0025	0,0029		0.08D	2D	*																		
0,0033	0,0038		0.08C	2C	*																		
0,0046	0,0054		0.08B	2B	*																		
0,0068	0,0079		0.08A	2A	*																		
0,011	0,013	3	0.12H	3H																			
0,017	0,02		0.12G	3G																			
0,025	0,029		0.12F	3F																			
0,04	0,047		0.12E	3E																			
0,063	0,074		0.12D	3D																			
0,1	0,12		0.12C	3C																			
0,16	0,19		0.12B	3B																			
0,25	0,29	0.12A	3A																				
0,4	0,47	4,5	0.18B	4.5B																			
0,63	0,74		0.18A	4,5A																			
1	1,2	7	0.28B	7B																			
1,6	1,9		0.28A	7A																			
2,5	2,9	10	0.40B	10B																			
4	4,7		0.40A	10A																			
6,3	7,4	15	0.63B	15B																			
			0.63A	15A																			
10	12	20	0.80B	20B																			
			0.80A	20A																			
16	19	25	1.00B	25B																			
			1.00A	25A																			
25	29	32	1.25B	32B																			
			1.25A	32A																			
40	47	40	1.60B	40B																			
			1.60A	40A																			
63	74	50	2.00B	50B																			
			2.00A	50A																			
100	120	63	2.50B	63B																			
			2.50A	63A																			
160	190	80	3.20B	80B																			
			3.20A	80A																			
250	290	100	3.90B	100B																			
			3.90A	100A																			
400	470	125	4.90B	125B																			
			4.90A	125A																			
560	650	140	5.50B	140B																			
			5.50A	140A																			
900	1040	190	7.48B	190B																			
			7.48A	190A																			

* Alloy 6 plug only / equal percentage characteristic only

ColdFlow - 341000 Series

5 Dimensional Data



DN	ANSI	D2 [mm]	D3 [mm]	D30 [mm]	D31 [mm]	D35 [mm]	BW [mm]	weight [kg]
2	0,08"	45	35	600	39	70	8 x 1	1,5
4	0,16"	45	35	600	39	70	8 x 1	1,5
6	0,25"	45	35	600	39	70	8 x 1	1,5
8	0,31"	45	35	600	39	70	12 x 1	1,5
10	0,39"	65	45	875	39	70	12 x 1	2,4
15	0,59"	65	45	875	39	70	21,3 x 1,6	2,4
20	0,79"	65	45	875	39	70	26,9 x 1,6	2,4
25	1"	80	65	875	48	110	28 x 1,5	5,0
32	1,25"	80	65	875	48	110	42,4 x 2	5,3
40	1,5"	85	65	875	48	120	48,3 x 2	7,1
50	2"	85	62	875	48	120	60,3 x 2	7,1
65	2,5"	125	105	875	57	190	76,1 x 2,6	30
80	3"	125	105	875	57	190	88,9 x 3,05	30
100	4"	175	125	1000	59	230	114 x 3	53
125	5"	175	140	1000	59	270	139,7 x 3	63
150	6"	225	175	1000	60	330	168,3 x 3	85
200	8"	300	225	1000	60	430	219,1 x 3	117

6 Bellows Seal

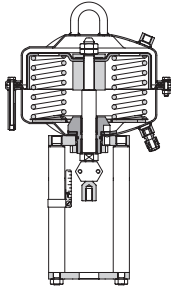
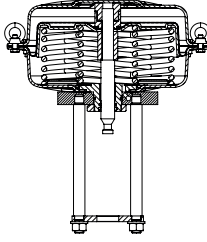
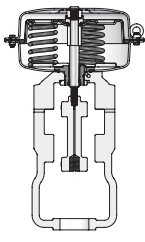
Valve Size			Standard Bellows Seal									
DN	Inch	Stroke [mm]	Type	Mat.	Pressure	Code	ID	OD	Length	Walls	Full strokes	Bellows Type
2	0.08"	10	39210	1.4571	63 bar	A	9	14	70	2	35.000	1.4571 (63 bar) Type A
4	0.16"	10	39210	1.4571	63 bar	A	9	14	70	2	35.000	1.4571 (63 bar) Type A
6	0.25"	10	39210	1.4571	63 bar	A	9	14	70	2	35.000	1.4571 (63 bar) Type A
8	0.31"	10	39210	1.4571	63 bar	A	9	14	70	2	35.000	1.4571 (63 bar) Type A
10	0.39"	10	39210	1.4571	63 bar	A	9	14	70	2	35.000	1.4571 (63 bar) Type A
15	0.59"	10	39210	1.4571	63 bar	A	9	14	70	2	35.000	1.4571 (63 bar) Type A
20	0.79"	10	39210	1.4571	63 bar	A	9	14	70	2	35.000	1.4571 (63 bar) Type A
25	1"	20	318215	1.4571	40 bar	R	18	28	100	2	19.500	1.4571 (40 bar) Type R
32	1.25"	20	318215	1.4571	40 bar	R	18	28	100	2	19.500	1.4571 (40 bar) Type R
40	1.5"	20	318215	1.4571	40 bar	R	18	28	100	2	19.500	1.4571 (40 bar) Type R
50	2"	20	318215	1.4571	40 bar	R	18	28	100	2	19.500	1.4571 (40 bar) Type R
65	2.5"	40	318215	1.4571	40 bar	S	18	28	200	2	19.500	1.4571 (40 bar) Type S
80	3"	40	318215	1.4571	40 bar	S	18	28	200	2	19.500	1.4571 (40 bar) Type S
100	4"	60	329225	1.4571	50 bar	U	29	43	300	2	12.000	1.4571 (50 bar) Type U
125	5"	60	329225	1.4571	50 bar	U	29	43	300	2	12.000	1.4571 (50 bar) Type U
150	6"	60	329225	1.4571	50 bar	U	29	43	300	2	12.000	1.4571 (50 bar) Type U
200	8"*	60	329225	1.4571	50 bar	U	29	43	300	2	12.000	1.4571 (50 bar) Type U

* 8" ANSI only: max operating pressure 20 bar (290psi)

ColdFlow - 341000 Series

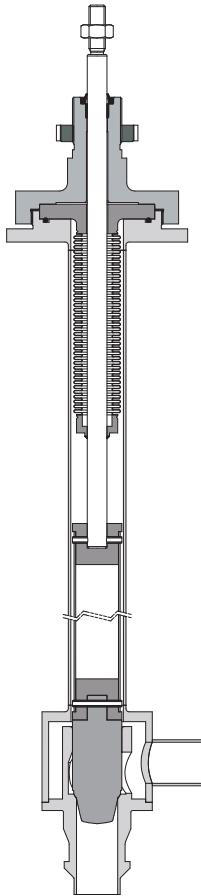
7 Actuator Selection

DN	Inch	Stroke [mm]	Stroke [in]	KP Diaphragm					KF Diaphragm			FlowAct	
				P1	P2	P3	P4	P5	F2	F3	F4	1502	3002
				220 daN	400 daN	900 daN	2000 daN	3500 daN	675 daN	1000 daN	1500 daN	3900 daN	6000 daN
2	0.08"	10	0.394	X	X				X				
4	0.16"	10	0.394	X	X				X				
6	0.25"	10	0.394	X	X				X				
8	0.31"	10	0.394	X	X	X			X				
10	0.38"	10	0.394	X	X	X			X				
15	0.5"	10	0.394	X	X	X			X				
20	0.75"	10	0.394	X	X	X			X				
25	1"	20	0.787		X	X	X		X				
32	1.25"	20	0.787		X	X	X		X	X			
40	1.5"	20	0.787		X	X	X		X	X			
50	2"	20	0.787		X	X	X		X	X			
65	2.5"	40	1.575				X	X		X	X		
80	3"	40	1.575				X	X		X	X		
100	4"	60	2.362									X	X
125	5"	60	2.362									X	X
150	6"	60	2.362									X	X
200	8"	80	3,150									X	X

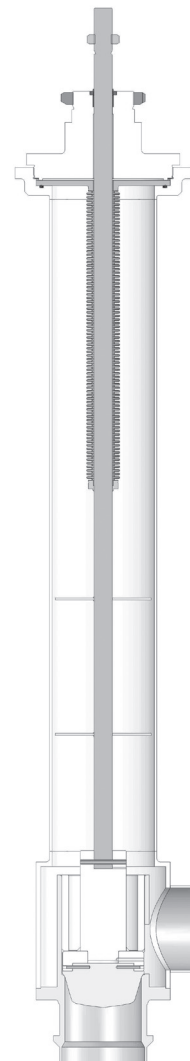
KP Diaphragm	KF Diaphragm	FlowAct
		
<ul style="list-style-type: none"> • Stainless Steel • Multispring • 80cm² - 1200cm² • Single acting • 10 - 40mm stroke • Sizes DN 2 - DN 80 (0.08" - 3") 	<ul style="list-style-type: none"> • Carbon Steel • Multispring • 250cm² - 700cm² • Single acting • 10 - 40mm stroke • Sizes DN 2 - DN 80 (0.08" - 3") 	<ul style="list-style-type: none"> • Carbon Steel • Multispring • 1500cm² - 3000cm² • Single acting • 60 - 80mm stroke • Sizes DN 100 - DN 200 (4" - 8")

ColdFlow - 341000 Series

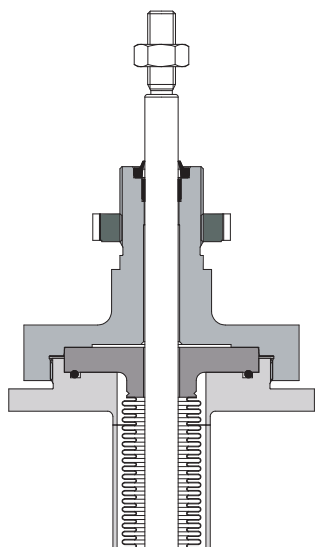
8 Technical Details



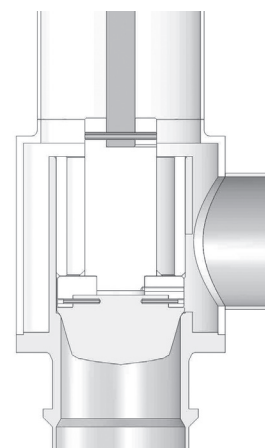
Size DN 25



Size DN 100



Stem sealing



Plug with guiding area

ColdFlow - 341000 Series

9 Valve Code

IPN Code
ColdFlow - 341000

		Valve Model	Valve Size	Valve Standard	Pressure Rating	Cv Value	Trim Characteristic
70-		AAA	BB	C	D	EEEE	F
Valve Model							
ColdFlow - 341000		341					
Valve Size							
DN 2	0.08"		02				
DN 4	0.16"		04				
DN 6	0.25"		06				
DN 8	0.31"		08				
DN 10	0.38"		10				
DN15	0.5"		15				
DN 20	0.75"		20				
DN 25	1"		25				
DN 32	1.25"		32				
DN 40	1.5"		40				
DN 50	2v"		50				
DN 65	2.5"		65				
DN 80	3"		80				
DN 100	4"		A0				
DN 125	5"		A2				
DN 150	6"		A5				
DN 200	8"		B0				
Valve Standard							
DIN				D			
ASME				A			
Pressure Rating							
PN 25	CL 150				L		
PN 40	CL 300				H		
Cv Value							
0,0022	DN 2					002E	
0,0029	DN 2					002D	
0,0038	DN 2					002C	
0,0054	DN 2					002B	
0,0079	DN 2					002A	
0,013	DN 4					003H	
0,020	DN 4					003G	
0,029	DN 4					003F	
0,047	DN 4					003E	
0,074	DN 4					003D	
0,12	DN 4					003C	
0,19	DN 4					003B	
0,29	DN 4					003A	
0,29	DN 6					045B	
0,47	DN 6					045A	
1,2	DN 8					007B	
1,9	DN 8					007A	
1,9	DN 10					010B	
2,9	DN 10					010A	
4,7	DN 15					015B	
7,4	DN 15					015A	
7,4	DN 20					020B	
12	DN 20					020A	
12	DN 25					025B	
19	DN 25					025A	
19	DN 32					032B	
29	DN 32					032A	
29	DN 40					040B	
47	DN 40					040A	
47	DN 50					050B	
74	DN 50					050A	
74	DN 65					063B	
120	DN 65					063A	
120	DN 80					080B	
190	DN 80					080A	
190	DN 100					100B	
290	DN 100					100A	
290	DN 125					125B	
470	DN 125					125A	
470	DN 150					140B	
650	DN 150					140A	
650	DN 200					190B	
1040	DN 200					190A	
Trim Characteristic							
linear							L
equal percentage							E
On-Off							O

ColdFlow - 341000 Series

10 Product Specification Materials

Body (1)

	ANSI	DIN
Materials	Stainless Steel	
Bar	316L	1.4404

Extension

	ANSI	DIN
Materials	Stainless Steel	
Pipe	316L	1.4404

Bonnet (40)

	ANSI	DIN
Materials	Stainless Steel	
Bar	316L	1.4404

Plug (50)

Materials	
DN 2 / 0.08"	Alloy 6
DN 4 / 0.16" and larger	PCTFE

Packing (88)

	Material
Standard	none

Bellows seal

	Material	max. Pressure
Standard	1.4571	40 - 63bar (580 - 915psi)

Valve temperature limitations

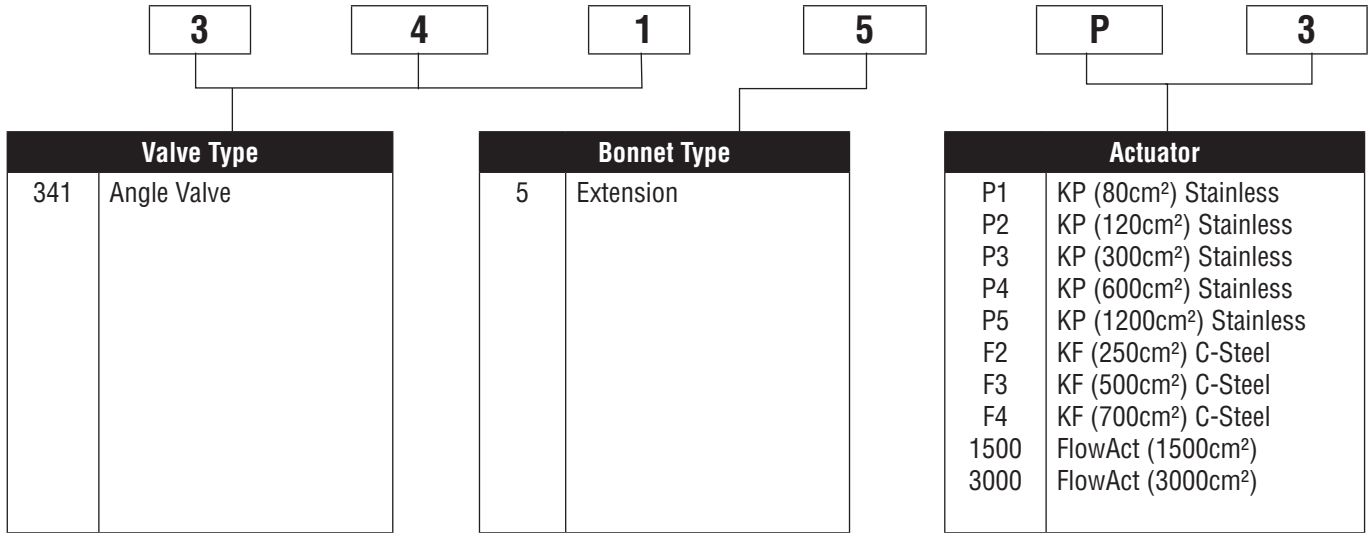
	min. Temperature	max. Temperature
	- 269°C (-452°F) / 4K	100°C (212°F) / 373K

11 Heat Load

Valve Size		Heat Load
DN	Inch	W
2	0.08"	0.3
4	0.16"	0.3
6	0.25"	0.3
8	0.31"	0.3
10	0.39"	0.49
15	0.59"	0.49
20	0.79"	0.49
25	1"	0.95
32	1.25"	0.95
40	1.5"	1.58
50	2"	1.58
65	2.5"	3.2
80	3"	3.2
100	4"	6.28
125	5"	6.28
150	6"	6.94
200	8"	8.88

ColdFlow - 341000 Series

12 Valve Model Code





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All data subject to change without notice

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