



Take
a Good Look
It May Be Your Future

MARS

SERIES 91D

Direct Mount
Uni-Body

Flanged Ball Valves 1/2" to 6" Reduced Port

www.marsvalve.com.tw



SERIES 91D

Direct Mount High Performance Flanged Ball Valves



- Construction** Uni-Body Flanged Ball Valves, Reduced Port
- Size Range** 1/2" to 6"
- Pressure Rating** ANSI CLASS 150 , CLASS 300
- Valve Material** Standard: ASTM A351 Gr. CF8M
Options: WCB, CF3M, Titanium, Duplex , Hastelloy C, Alloy 20
- Seat Material** Standard: R-TFE / PTFE
Options: TFM 1600, PEEK, Carbon filled PTFE, Delrin, UHMWPE, 50/50 S/S filled PTFE, Metal Seats....and others
- Inspection and Test** API 598
- Compliance Standards** ASME B16.34, ASME B16.5, ASME B16.10, ISO 5211, API 607, API 6D
MSS SP-55, ISO 5209
- Material Certificate** EN 10204 - 3.1
- Quality System** ISO 9001
- NACE MR - 0175** The rugged, high performance Series 91D ball valves meet requirement for oil and gas pipeline service and meet NACE specification MR - 0175 for sour gas.



APPROVALS



SIL 3



Fire safe tested
API 607 Rev 6



0035
PED 2014/68/EU
Category II
Module H



TA-Luft



ATEX 2014/34/EU

Mars Unique SealMax[®] Triple - Sealing Stem Packing System - Live Loaded - Maintenance Free - Extra Long Cycle Life - TA-Luft Approved

1. Pyramidal Stem with Stem Seal

First stage of defense against leakage. The 45° slope of the stem accompany the stem seal effectively blocks all leak path during rotation.

2. O-Ring Stem Packing

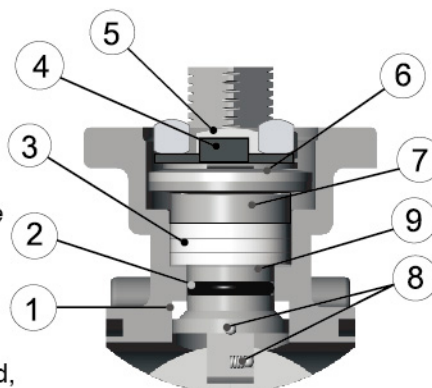
Second stage of defense against leakage. Enhances stem seal and maintains stem alignment, provides extra longer service life

3. V-Ring Stem Packing

Third stage of defense against leakage. Multiple layers of V-Ring Chevron Packing expands side way as it is being compressed, blocking all air pockets to prevent leak path.

4. Lock Saddle

Stabilizes the entire stem nut to keep it from loosening during operation



5. Stem Nut

Compress the entire stem system to enable blocking of leakage

6. Belleville Washers

Automatically compress the seals to adjust for wear, pressure, and temperature fluctuations.

7. Gland

Made of stainless steel, equally distributes the compressive force on the packing and seal.

8. Anti-Static Device

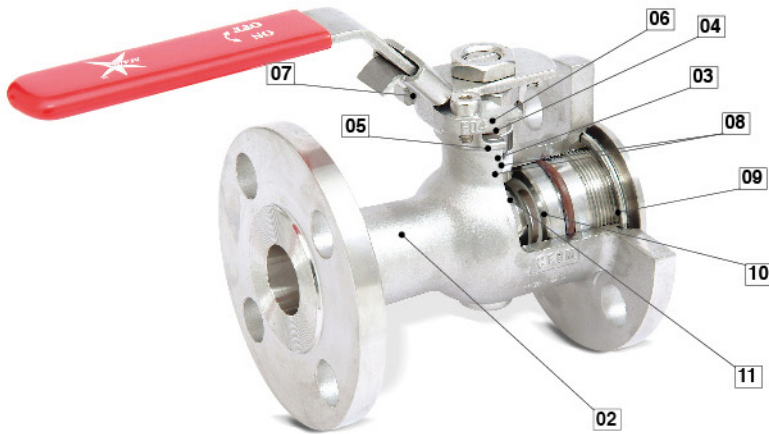
Stem-to-Ball and Stem-to-Body as standard

9. Super Smooth Stem Finish

Reduces seal friction and operating torque, prolong service life.

MARS SERIES 91D

DIRECT MOUNT BALL VALVES OFFER ADVANTAGE WELL BEYOND OTHERS



01) Mars Patented Direct Mount Design Making Automation Easy

No Bracket and adapter are required for actuator mounting, provides easy and low cost automation with improved cycle life.

02) Single Piece Body

Compact design with lower weight, high strength, eliminating the possible body - end leak path on split body design.

03) Mars TA-Luft Approved SealMax® Stem Packing System

Provides optimum stem seal and extremely high cycle life.

04) Blow-out-proof Stem

The internally assembled stem provides blowout-proof safety.

05) O-Ring Stem Seal

Enhances stem wear and maintains stem alignment

06) Super smooth stem surface

Reduces seal friction and operating torque

07) Locking device standard

08) Anti-Static Device

Standard applied to ball-to-stem and stem-to-body

09) Fully Encapsulated Body Seals

Maintains sealing integrity from high vacuum to high pressure and temperature applications.

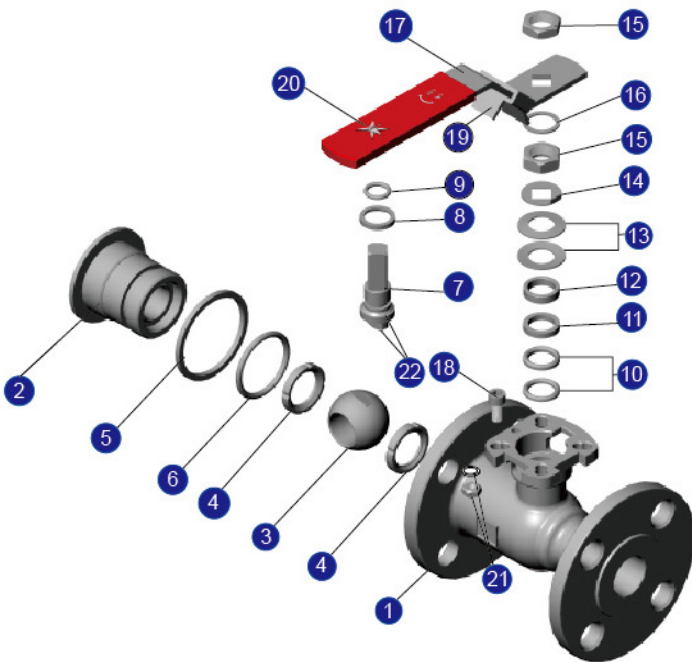
10) Seats

- Features with relief slots to relieve pressure in upstream, reducing seat wear and valve torque.
- Wide range of materials available to suit various applications.

11) Ball

- Precisely machined, mirror finished ball surface for bubble tight shutoff with less operating torque.
- A relief hole in stem slot to balance the pressure in the body cavity ensures tight shutoff and long service life.

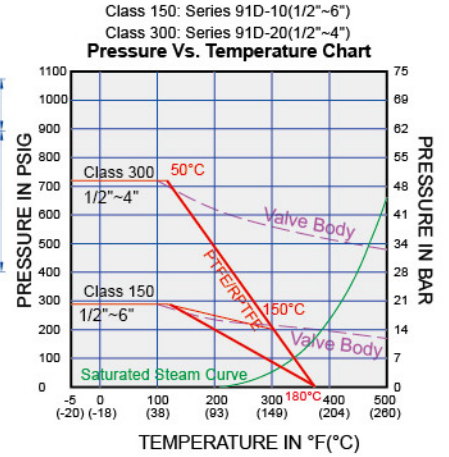
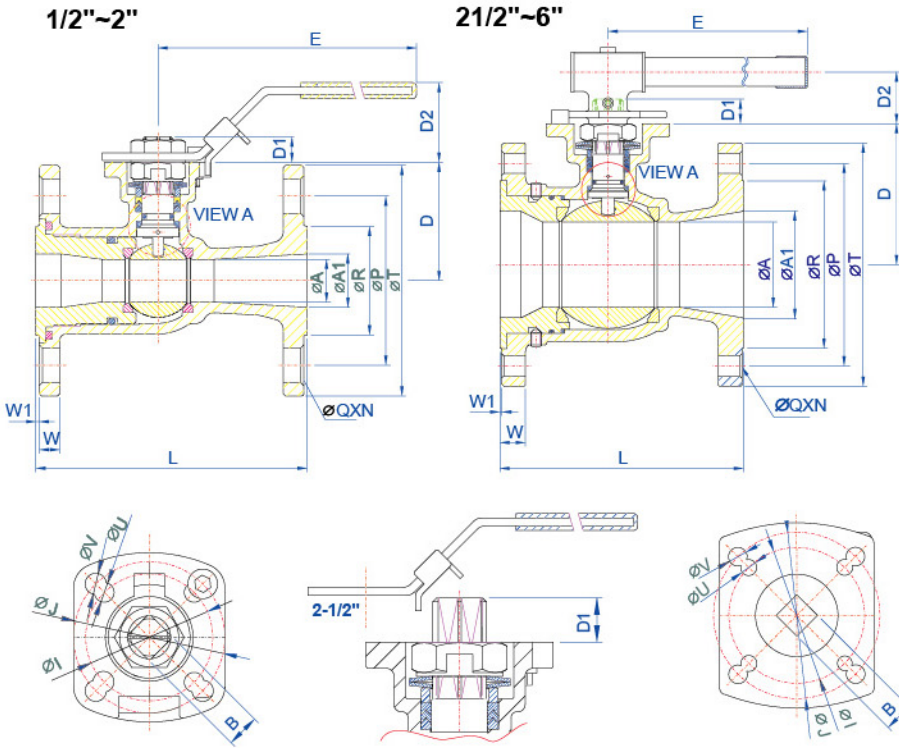
MATERIALS LIST



NO.	PART NAME	MATERIAL	Q'TY
1	Body	CF8M / WCB	1
2	Cap	CF8M / WCB	1
3	Ball	SUS 316/CF8M	1
4	Seat	RPTFE	2
5	Joint Gasket	PTFE	1
6	O-RING	VITON	1
7	Stem	SUS 316	1
8	Stem Seal	RPTFE	1
9	O-RING	VITON	1
10	Stem Packing	PTFE	§
11	Stem Packing	25% Glass Fiber Filled + PTFE	1
12	Gland	SUS 304	1
13	Belleville Washer	SUS 301	2
14	Lock Saddle	SUS 304	1
15	Stem Nut	SUS 304	2
16	Stem Washer	SUS 304	1
17	Handle	SUS 304	1
18	Stop Pin	SUS 304	1
19	Locking Device	SUS 304	1
20	Handle Sleeve	VINYL	1
21	Pin Nut & Washer	SUS 304	1
22	Anti-static Device	SUS 316	2

§ 1/2"-11/2"- 2pcs, 2-4"-3pcs.

Dimensions(mm)



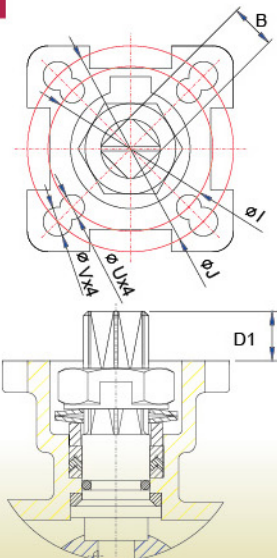
DIMENSIONS (mm) Dimension B:17/19 Standard 17, Option 19 1 PC REDUCED 150 LB BALL VALVE

SIZE	ØA	ØA1	B	E	D	D1	D2	ØI	ØJ	L	N	ØP	ØQ	ØR	ØT	W	W1	ØU	ØV	Wt(kg)	ISO5211
1/2"	12.7	15.0	11	165	45.7	9.4	36	42	50	108.3	4	60.5	16	35.1	88.9	11.2	1.6	6.5	7	1.64	F04/F05
3/4"	15.0	20.0	11	165	51.2	9.9	36	42	50	117.3	4	69.9	16	42.9	98.6	11.2	1.6	6.5	7	2.0	F04/F05
1"	20.0	25.0	11	165	55.5	9.9	36	42	50	127.1	4	79.2	16	50.8	108	11.2	1.6	6.5	7	2.57	F04/F05
1 1/2"	32.0	38.0	14	215	72.6	12.9	47	50	70	165.1	4	98.6	16	73.2	127	14.3	1.6	7.5	9	5.38	F05/F07
2"	38.0	50	17	262	89.1	18.1	55	70	102	178.3	4	120.7	19	91.9	152.4	15.9	1.6	10	12	8.12	F07/F10
2 1/2"	50	65	17	262	96.6	19	55	70	102	190	4	139.7	19	104.6	177.8	17.6	1.6	10	12	11.94	F07/F10
3"	65	80	17	365	116	19	44.3	70	102	203.5	4	152.4	19	127	190.5	19	1.6	10	12	16	F07/F10
4"	80	100	22	365	132.5	23	48.4	102	125	228.6	8	190.5	19	157.2	228.6	23.9	1.6	12	14	26	F10/F12
6"	111	153	27	705	179.7	28.5	65	125	140	266.7	8	241.3	22.2	215.9	279.4	25.4	1.6	14	18	45.09	F12/F14

DIMENSIONS (mm) Dimension B:17/19 Standard 17, Option 19 1 PC REDUCED 300 LB BALL VALVE

SIZE	ØA	ØA1	B	E	D	D1	D2	ØI	ØJ	L	N	ØP	ØQ	ØR	ØT	W	W1	ØU	ØV	ISO5211
1/2"	12.7	15.0	11	165	48.7	9.9	36	42	50	139.7	4	66.5	16	35.1	95.3	14.3	1.6	6.5	7	F04/F05
3/4"	15.0	20.0	11	165	63.5	10.3	37	42	50	152.4	4	82.6	19.1	42.9	117.3	15.8	1.6	6.5	7	F04/F05
1"	20.0	25.0	11	165	63.5	10.3	37	42	50	165.1	4	88.9	19.1	50.8	124	17.6	1.6	6.5	7	F04/F05
1 1/2"	32.0	38.0	14	215	79.7	12.9	47	50	70	190.5	4	114.3	22.2	73.2	155.5	20.5	1.6	7.5	9	F05/F07
2"	38.0	50	17	262	89.1	18.1	55	70	102	216	8	127	19.1	91.9	165.1	22.4	1.6	10	12	F07/F10
2 1/2"	50	65	17	262	98.6	17	55	70	102	241.3	8	149.4	22.2	104.6	190.6	25.4	1.6	10	12	F07/F10
3"	65	80	17	365	116	19	44.3	70	102	282.4	8	168.2	22.2	127	209.6	28.5	1.6	10	12	F07/F10
4"	80	100	22	365	132.5	23	48.4	102	125	304.8	8	200.2	22.2	157.2	254	31.8	1.6	12	14	F10/F12

MARS TOP WORKS MAKE AUTOMATION AS EASY AS IT GETS



DIMENSION(mm)

SIZE	B	D1	ØI	ØJ	ØU	ØV	ISO5211
1/2"	11	9.4	42	50	6.5	7	F04/F05
3/4"	11	9.9	42	50	6.5	7	F04/F05
1"	11	9.9	42	50	6.5	7	F04/F05
1 1/2"	14	12.9	50	70	7.5	9	F05/F07
2"	17	19	70	102	10	12	F07/F10
2 1/2"	17	19	70	102	10	12	F07/F10
3"	17	19	70	102	10	12	F07/F10
4"	22	23	102	125	12	14	F10/F12
6"	27	28.5	125	140	14	18	F12/F14

Dimension B:17/19
Standard 17, Option 19

Breakaway Torque (RPTFE) & Cv Value

INCH	DN	Inch-Lb	Nm	Cv U.S GPM	Kv M3/hour
1/2"	15	89	10	9	8
3/4"	20	89	10	15	13
1"	25	124	14	42	36
1 1/2"	40	204	23	125	106
2"	50	301	34	165	140
2 1/2"	65	346	39	245	208
3"	80	523	59	350	298
4"	100	851	96	680	578
6"	150	1878	212	1020	867

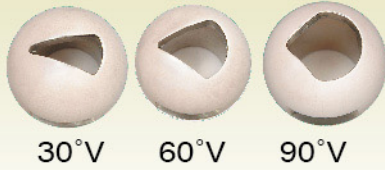
Break Away Torque
30% safety factor included.
Standard Mars valves are assembled with silicon-free based in lubricant,
Torque for dry assembled valves please consult factory.



SERIES 91D MARS OPTIONAL VALVE ACCESSORIES INCREASE PRODUCTIVITY AND GIVE YOU MORE CONTROL OVER YOUR INDUSTRIAL PROCESS

SERIES 91D V-Control Ball Valves

Mars V-Control Ball valves match the control performance of globe valve, excellent for modulating service, but Mars V-Control ball valves are more compact, lighter weight, and much less expensive than globe valves.



30°V, 60°V, & 90°V are standard, others on request

Mars "TSM" unit adds extra safety and Long Service Life

- Secondary Seal for possible fugitive emission to meet TA-Luft requirement for a safe and clean environment
- Function as Stem Extension for insulation
- ISO 5211 mounting pad and square shaft for direct actuator mounting with no brackets and adapters, ease of automation.
- Cast bosses for monitoring device

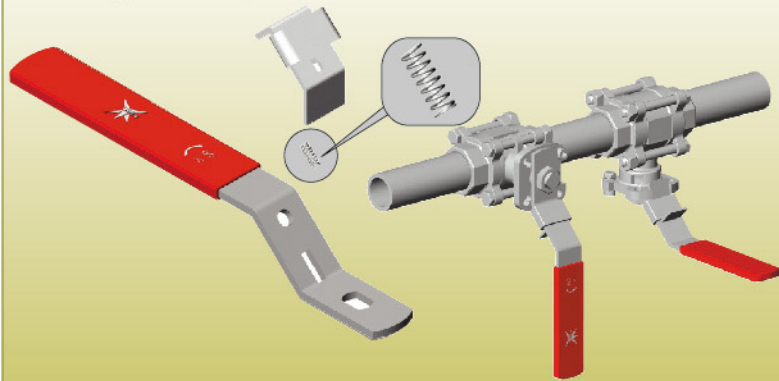


SERIES 91D with HEATING JACKET



Spring Return Sliding Lock (SRSL) Handle

No matter the orientation of the ball valves, the SRSL handle always secures handle in position, making valve operation safe.



HOW TO ORDER 91D-10 ST05B

91D-10	S	T	05	B
VALVE	BODY MATERIAL	SEAT MATERIAL	SIZE	HANDLE STYLE
<input checked="" type="checkbox"/> 91D-10 #150 <input type="checkbox"/> 91D-20 #300	<input checked="" type="checkbox"/> S - CF8M <input type="checkbox"/> W - WCB <input type="checkbox"/> L - CF3M <input type="checkbox"/> D - Duplex <input type="checkbox"/> T - Titanium <input type="checkbox"/> A - Alloy 20	<input type="checkbox"/> P PTFE <input type="checkbox"/> R R-TFE <input checked="" type="checkbox"/> T TFM1600 <input type="checkbox"/> S 50/50 S.S.-PTFE <input type="checkbox"/> M MG1241 <input type="checkbox"/> C Carbon filled PTFE <input type="checkbox"/> U UHMWPE <input type="checkbox"/> K Peek <input type="checkbox"/> D Delrin <input type="checkbox"/> A Metal	<input type="checkbox"/> 03) 1/2" <input type="checkbox"/> 04) 3/4" <input checked="" type="checkbox"/> 05) 1" <input type="checkbox"/> 06) 1 1/4" <input type="checkbox"/> 07) 1 1/2" <input type="checkbox"/> 08) 2" <input type="checkbox"/> 09) 2 1/2" <input type="checkbox"/> 10) 3" <input type="checkbox"/> 11) 4" <input type="checkbox"/> 13) 6"	<input type="checkbox"/> Std. handle <input type="checkbox"/> I - Investment Cast <input type="checkbox"/> O - Oval handle <input type="checkbox"/> L - SRSL handle <input type="checkbox"/> S - SRS handle <input checked="" type="checkbox"/> B - Bare shaft <input type="checkbox"/> G - Gear box

MARS VALVE OFFERS SINGLE-RELIABLE-SOURCE FOR A COMPLETE LINE OF BALL VALVES, ACTUATORS, AND ACCESSORIES TO MEET YOUR VALVE AUTOMATION REQUIREMENTS.

With PowerMars Electric Actuator



Torque ranges:
300 to 30,000 In-lbs
Available Voltages:
1-phase
24/120V/220V -12 &
24VDC
3-phase 220V, 380V,
and 440V

VALVE SIZE	Electric Actuator	Flange Type	◇	ØA	C	D	H	L	◆ VALVE STEM	VALVE ISO 5211	Lbs.	Kg	Remark
1/2"	OM-1	F03/F05	14	106	45.7	150	195.7	108.3	11	F04/F05	7.59	3.44	+ □
3/4"	OM-1	F03/F05	14	106	51.2	150	201.2	117.3	11	F04/F05	8.38	3.80	+ □
1"	OM-1	F03/F05	14	106	55.5	150	205.5	127.1	11	F04/F05	9.62	4.36	+ □
1 1/2"	OM-A	F05/F07	17	106	72.6	196	268.6	165.1	14	F05/F07	17.0	7.7	+ □
2"	OM-A	F05/F07	17	106	89.1	196	285.1	178.3	17	F07/F10	23.06	10.45	
2 1/2"	OM-2	F07	22	181	96.6	255	351.6	190	17	F07/F10	49.16	22.28	+ □
3"	OM-2	F07	22	181	116	255	371	203.5	17	F07/F10	57.34	25.99	+ □

VALVE SIZE	Electric Actuator	Flange Type	◇	ØA	C	D	L	◆ VALVE STEM	VALVE ISO 5211	Lbs.	Kg	
4"	OM-3	F07	22	181	132.5	255	228.6	22	F10/F12	85.60	38.8	
6"	OM-4	F10	35	217	179.7	317	266.7	27	F12/F14	102.8	46.6	

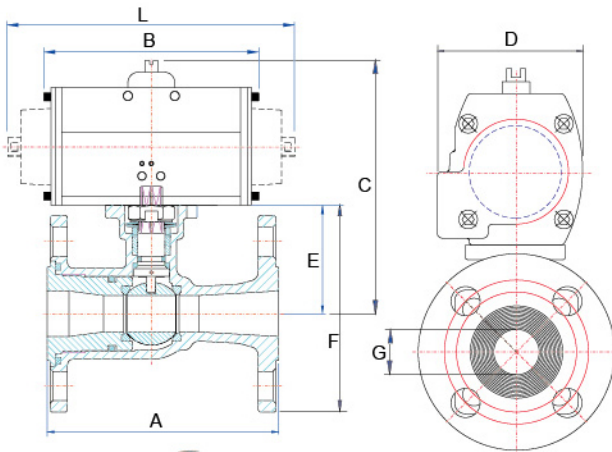
& &
& Mounting kit required.

Design Features

- IP67, NEMA 4X: Water-proof and dust-proof enclosure.
- Dry powder coating aluminum alloy.
- F (Standard) or H (Optional) insulation class for all models.
- Built-in thermal protection prevents motor burning out.
- Non-clutch design, the manual operation can be operated without any lever, clutch or brake upon power outage.
- When electric motor is operating, hand-wheel won't rotate for personal safety purpose.
- High alloy steel gear trains provide self-locking function to avoid valve back drive.



With AirMars Pneumatic Actuator



Double-Acting (80 PSI)

Valve Size	A	B	C	D	E	F	G	Actuator	Wt(Kg)
1/2"	108.3	144.3	144.7	81.4	45.7	90.15	DN15	A-250	3.04
3/4"	117.3	144.3	150.2	81.4	51.2	100.5	DN20	A-250	3.40
1"	127.1	144.3	154.5	81.4	55.5	109.5	DN25	A-250	3.96
1 1/2"	165.1	149.2	190.6	95	72.6	136.1	DN40	A-450	6.90
2"	178.3	183	230.1	119	89.1	165.3	DN50	A-1000	11.15
2 1/2"	190	183	237.6	119	96.6	185.5	DN65	A-1000	14.98
3"	203.5	183	257	119	116	211.25	DN80	A-1000	18.69
4"	228.5	259.6	293.5	140.5	132.5	246.8	DN100	A-2250	32.3
6"	266.7	304.3	375.7	185.2	179.7	319.4	DN150	A-3650	60.1

Spring-Return (80 PSI)

Valve Size	A	L	B	C	D	E	F	G	Actuator	Wt(Kg)	Remark
1/2"	108.3	205.6	149.2	163.7	95	45.7	90.15	DN15	A-450SR4	4.34	+ □
3/4"	117.3	205.6	149.2	169.2	95	51.2	100.5	DN20	A-450SR4	4.70	+ □
1"	127.1	205.6	149.2	173.5	95	55.5	109.5	DN25	A-450SR4	5.26	+ □
1 1/2"	165.1	250	183	213.6	119	72.6	136.1	DN40	A-1000SR4	9.9	+ □
2"	178.3	355	259.6	250.1	140.5	89.1	165.3	DN50	A-2250SR4	17.45	+ □
2 1/2"	190	355	259.6	257.6	140.5	96.6	185.5	DN65	A-2250SR4	21.28	+ □
3"	203.5	355	259.6	277	140.5	116	211.25	DN80	A-2250SR4	24.99	+ □
4"	228.5	422	304.3	328.5	185.2	132.5	246.8	DN100	A-3650SR4	42.8	+ □
6"	266.7	642	490	443.4	238.2	179.7	319.4	DN150	A-11000SR4	95.1	+ □

Double-acting or Spring return, 250 to 11,000 in-lbs ISO / NAMUR Connections, Aluminum alloy body Epoxy coated end caps, Easy external bi-directional travel stop adjustment, Extended cycle life guaranteed



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