J.S.COCK A/S
DISTRIBUTOR NORWAY

Take
a Good Look
It May Be Your Future

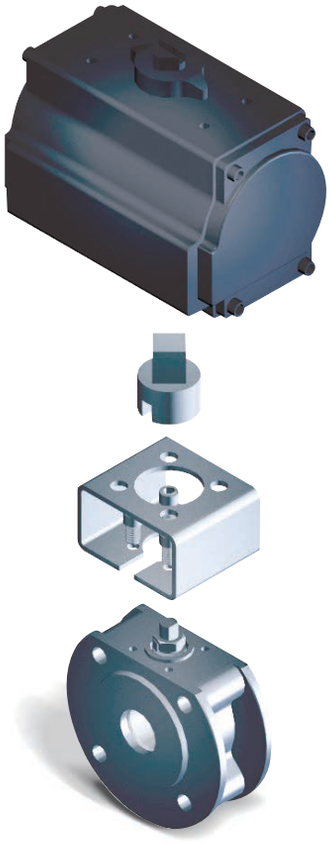
MARS

SERIES 99

Direct Mount
Hight Performance
Compact Ball Valves 1/2" to 6" Full Port
PN10-40, ANSI #150

www.marsvalve.com.tw

DO YOU STILL USE CONVENTIONAL ACTUATOR MOUNTING?

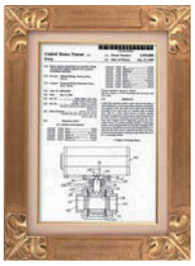


Conventional mounting method is to use a bracket and adapter between ball valve and actuator, however, the bracket and adapter can often be the source of failure for valve / actuator packages:

- A simple misalignment of the bracket and adapter can cause excessive wear and high torque than expected, this can result in stem leakage or valve stall.
- A warped bracket, however slightly, or the bolt drillings lose center, stem side loading can occur.
- If the adapter is too long and bracket bolts are drawn down tightly, the adapter can jam the valve stem into valve ball resulting in higher torque than the actuator provided.
- The bracket and adapter leave exposed moving parts, when the adapter turns it can become a pinch point and injury may occur.
- The connections between the adapter and the valve stem and the adapter and the actuator drive can create a slope, known as hysteresis, the looseness of the connecting surface can cause the valve to not fully open or fully close.

Patented Direct Mount Design

The U.S.,Germany, and China Patent and Trademark Offices Have awarded Mars Valve Patent Protection for the Direct Mount Design.



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1) U.S. Patent 5,954,088
2) Germany Patent 299.02.532.2
3) China Patent ZL 98 2 09161.3

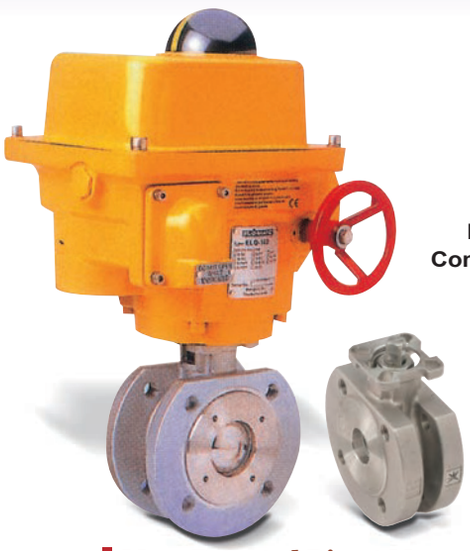
Mars Direct Mount Ball Valve Sets A New Standard For Ball Valve / Actuator Mounting, Enhances Functional Performance With Easy Installation And Lower Maintenance Cost.

The new way of mounting actuator is the Direct Mount Configuration, it is designed to overcome the problems of conventional actuator mounting.This design allows an actuator bolted directly to the top of ball valves for greater reliability, easy installation and improved cycling life.

No bracket and adapter are required, the valve stem is an integral part of the actuator drive. The direct valve stem coupling to actuator shaft ensures correct alignment of the valve to the actuator, minimizes stem side loading and backlash during operation, increased service life and performance.

- **Modular design and simplicity**
  No confusion as to how to select brackets and adapters.
- **Low cost and easy automation**
  Direct mount eliminates the need for additional brackets and adapters, time and labor saving too.
  In the event maintenance is needed, Mars Direct Mount ball valves facilitate fast, easy breakdown and assembly of ball valve and actuator package, the result is reduced maintenance time and the lowest overall cost of ownership.
- **Compact and Space-Saving**
  The close coupling of the actuator to the valve makes the total package as compact as possible.
- **Safety**
  There are no External Moving Parts, No Pinch Points.
- **Direct Valve Stem / Actuator Drive Connection**
  Less chance for Hysteresis.

SERIES 99
Direct Mount High Performance Compact Ball Valves



Mars Patented Direct Mount Ball Valves Making Automation Easy

Construction	One-Piece Investment Cast Construction, Full Port
Size Range	1/2" to 6" (DN 15 to DN 150)
Pressure Rating	PN10-40, ANSI CLASS 150
Valve Material	Standard: ASTM A351 Gr. CF8M / EN 10213 1.4408 Options: WCB/1.0619, CF3M/1.4409, Titanium, Duplex S/S, Hastelloy C....etc.
Seat Material	Standard: R-TFE 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, EN 1092-1, ASME B16.5, ISO 5211, MSS SP-55, ISO 5209
Material Certificate	EN 10204 - 3.1
Quality System	ISO 9001
NACE MR - 0175	The rugged, high performance Series 99 ball valves meet requirement for oil and gas pipeline service and meet NACE specification MR - 0175 for sour gas.

APPROVALS

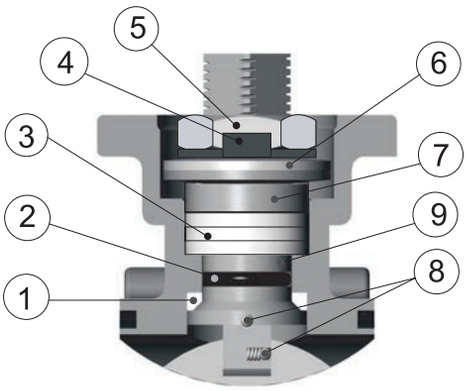
CE 0035 PED 2014/68/EU Category II Module H

TA-Luft

ATEX 2014/34/EU

SIL 3

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

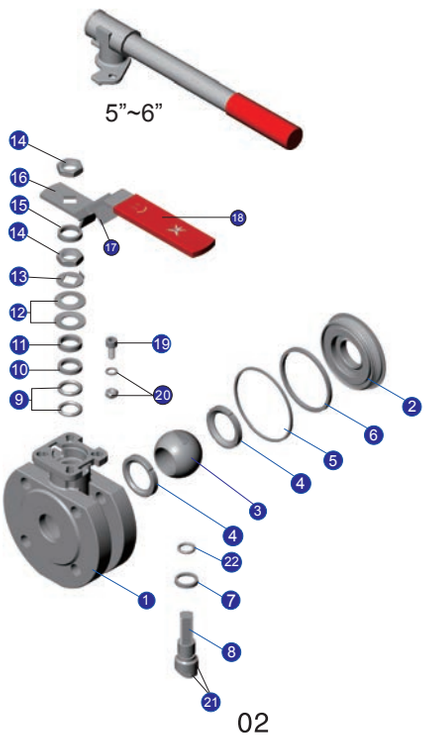


1. **Pyramidal Stem with Stem Seal**
   First stage of defense against leakage. The 45° slope of the stem accompany the stem seal effectively blocks all leak path during rotation.
2. **O-Ring Stem Packing**
   Second stage of defense against leakage. Enhances stem seal and maintains stem alignment, provides 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, prolongs service life.

MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	Body	*1.4408/CF8M/WCB/1.0619*	1
2	End Cap	*1.4408/CF8M/WCB/1.0619*	1
3	Ball	*1.4408/CF8M*	1
4	Seat	*PTFE/RPTFE*	2
5	Joint Gasket	*PTFE*	1
6	Joint Gasket	*PTFE*	1
7	Stem Seal	*RPTFE*	1
8	Stem	*SUS 316*	1
9	Stem Packing	*PTFE*	*
10	Stem Packing	*25% Glass Fiber Filled + PTFE*	1
11	Gland	*SUS 304*	1
12	Belleville Washer	*SUS 301*	2
13	Lock Saddle	*SUS 304*	1
14	Stem Nut	*SUS 304*	2
15	Stem Washer	*SUS 304*	1
16	Handle	*SUS 304*	1
17	Locking Device	*SUS 304*	1
18	Handle Sleeve	*VINYL*	1
19	Stop Pin	*SUS 304*	1
20	Pin Nut & Washer	*SUS 304*	1
21	Antistatic - Device	*SUS 316*	2
22	O-Ring	*VITON*	1

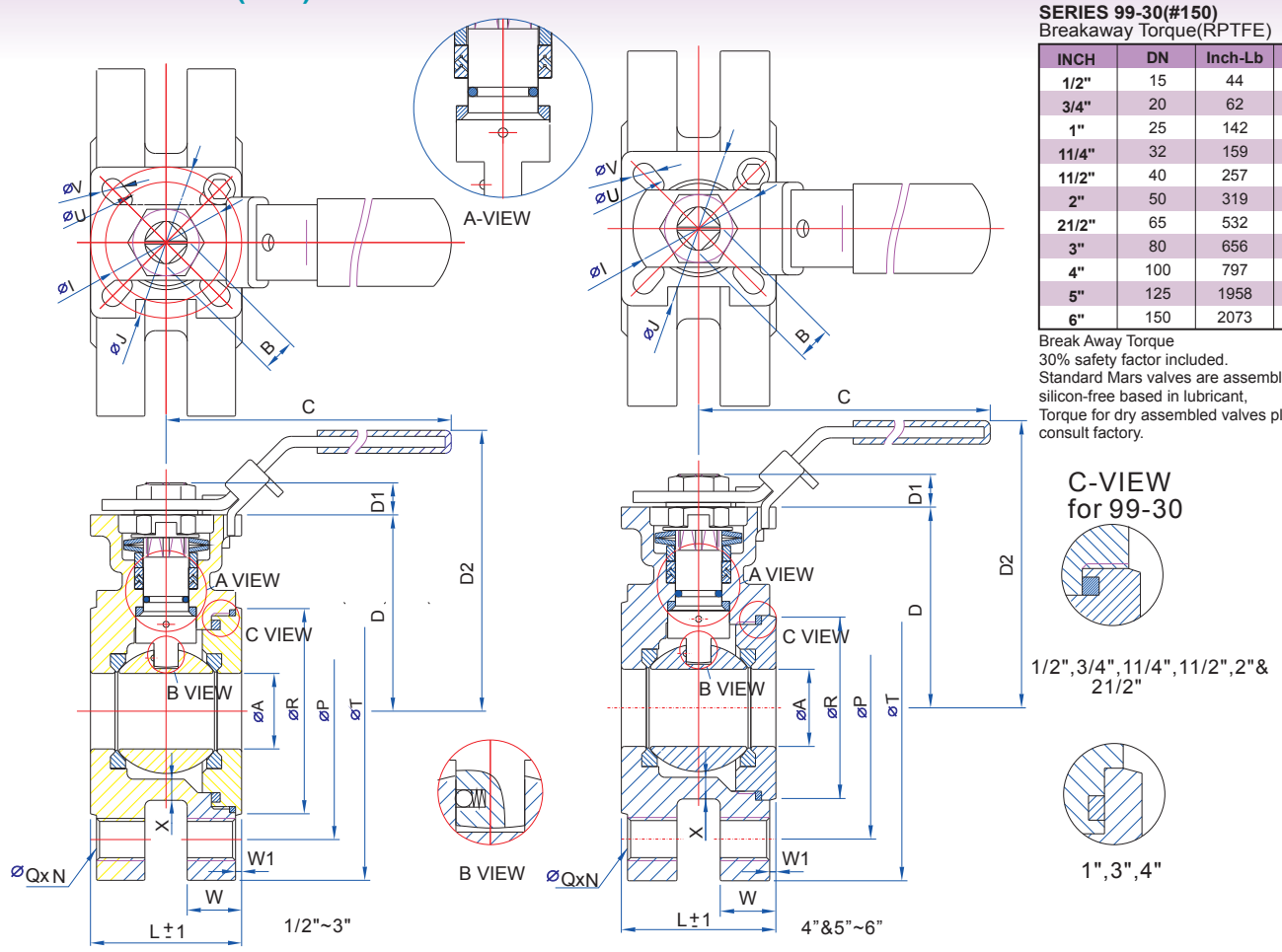
* For 1/2"~2"-2pcs, For 21/2"~6"-3pcs.



Direct Mount Compact Ball Valves Offer Advantage Well Beyond Followers

1. **Dual Pattern ISO 5211 Mounting Pad With Square Shaft**
   No bracket and adapter are required for actuator mounting, provides easy and low cost automation with improved cycle life.
2. **MARS SealMax® Stem Design**
   Provides optimum stem seal and extremely high cycle life.
3. **Patented Leak-Watching Window**
   Standard on Mars Direct Mount Ball Valves, for an early warning of stem leak, prevents accident and business disruption costs.

DIMENSIONS(mm)



SERIES 99-10/20(PN16/40)
SERIES 99-30(#150)
Breakaway Torque(RPTFE)

INCH	DN	Inch-Lb	Nm
1/2"	15	44	5
3/4"	20	62	7
1"	25	142	16
11/4"	32	159	18
11/2"	40	257	29
2"	50	319	36
21/2"	65	532	60
3"	80	656	74
4"	100	797	90
5"	125	1958	221
6"	150	2073	234

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.

C-VIEW for 99-30

1/2",3/4",11/4",11/2",2"& 21/2"

1",3",4"

FIG. 99-10 (PN10/16) & FIG. 99-20(PN25/40) Dimension B:17/19 Standard 17, Option 19 * Dimension For 99-20

SIZE	øA	B	C	D	D1	D2	øI	øJ	L	N	* N	øP	øQ	øR	øT	W	W1	øU	øV	Wt.(kg)	ISO5211
1/2"	15.0	9	139	48.7	7	85	36	42	40.8	4	4	65	M12	45	82	16	2	6	6	1.30	F03/F04
3/4"	20.0	9	139	53.7	8	90	36	42	44	4	4	75	M12	58	98.6	18	2	6	6	1.96	F03/F04
1"	25.0	11	165	65	12	104	40	50	50	4	4	85	M12	68	115	18	2	6	7	2.8	F04/F05
11/4"	32.0	11	165	77	11.3	116	40	50	60	4	4	100	M16	78	140	18	2	6	7	4.15	F04/F05
11/2"	38.0	14	215	85.5	15.5	135	50	70	65	4	4	110	M16	88	150	18	3	7.5	9	5.25	F05/F07
2"	50.0	14	215	93	16	142	50	70	80	4	4	125	M16	102	165	20	3	7.5	9	6.66	F05/F07
21/2"	65.0	17/19	263	109.7	15.8	168	70	102	110	4	8	145	M16	122	185	22	3	10	12	11.88	F07/F10
3"	80.0	17/19	313	119.5	16	178	70	102	120	8	8	160	M16	138	200	24	3	10	12	14.9	F07/F10

FIG. 99-10 (PN10/16) & FIG. 99-20(PN25/40) * Dimension For 99-20

SIZE	øA	B	C	D	* D	D1	D2	*D2	øI	øJ	L	N	øP	*øP	øQ	*øQ	øR	*øR	øT	*øT	W	* W	W1	øU	øV	Wt.(kg)	ISO5211
4"	100	17/19	344	131.7	132.7	17.8	190	191	70	102	150	8	180	190	M16	M20	158	162	220	235	20	24	3	10	12	20.38	F07/F10
5"	125	27	705	192.7		28.5			125	140	200	8	210		M16		188		250		20.9		3	14	18	50.8	F12/F14
6"	150	27	705	210.2		28.5			125	140	240	8	240		M20		212		285		22.4		3	14	18	68.2	F12/F14

99-30 (ANSI CLASS 150) Dimension B:17/19 Standard 17, Option 19

SIZE	øA	B	C	D	D1	D2	øI	øJ	L	N	øP	øQ	øR	øT	W	W1	øU	øV	X	Wt.(kg)	ISO5211
1/2"	15.0	9	139	48.7	7	85	36	42	40.8	4	60.5	1/2"-13UNC	35.1	88.9	11.2	1.6	6	6	7.7	1.69	F03/F04
3/4"	20.0	9	139	53.7	8	90	36	42	44	4	69.9	1/2"-13UNC	42.9	98.6	11.2	1.6	6	6	9	2.10	F03/F04
1"	25.0	11	165	65	12	104	40	50	50	4	79.2	1/2"-13UNC	64	108	11.2	1.6	6	7	7	3.02	F04/F05
11/4"	32.0	11	165	77	11.3	116	40	50	60	4	88.9	1/2"-13UNC	63.5	117.3	12.7	1.6	6	7	7	5.56	F04/F05
11/2"	38.0	14	215	85.5	15.5	135	50	70	65	4	98.6	1/2"-13UNC	73.2	127	14.3	1.6	7.5	9	6	6.17	F05/F07
2"	50.0	14	215	93	16	142	50	70	80	4	120.7	5/8"-11UNC	91.9	152.4	15.9	1.6	7.5	9	6	8.70	F05/F07
21/2"	65.0	17/19	263	109.7	15.8	168	70	102	110	4	139.7	5/8"-11UNC	104.6	177.8	17.6	1.6	10	12	8	13.62	F07/F10
3"	80.0	17/19	313	119.5	16	178	70	102	120	4	152.4	5/8"-11UNC	127	190.5	19	1.6	10	12	9	18.58	F07/F10
4"	100	17/19	344	132.7	17.8	191	70	102	150	8	190.5	5/8"-11UNC	157.2	228.6	23.9	1.6	10	12	9.2	29.6	F07/F10
5"	125	27	705	192.7	28.5		125	140	200	8	215.9	3/4"-10UNC	185.7	250	22.3	1.6	14	18		50.8	F12/F14
6"	150	27	705	210.2	28.5		125	140	240	8	241.3	3/4"-10UNC	215.9	285	23.8	1.6	14	18		68.2	F12/F14

4. Blow-Out Proof Stem
5. O-Ring Stem Seal
Enhances stem wear and maintains stem alignment
6. Super smooth stem surface
Reduces seal friction and operating torque
7. Locking Device Standard
8. Anti-Static Device
Standard applied to stem-to-ball and stem-to-body
9. Fully Encapsulated Body Seals
Maintains sealing integrity from high vacuum to high pressure and temperature applications.
10. Compact design for space and weight savings

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

12. 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
- **V-PORT** control valves available

13. Fire-safe design in compliance with API 607

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

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

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

Titanium Ball Valves

Light Weight, Excellent for Corrosion Resistance

Other special alloy available on request

Monel, Hastelloy C, Alloy 20, Duplex

Heating Jacket

Mars "TSM" unit

Adds Extra Safety and Long Service Life

TSM Design Advantages:

- The TSM unit designed for possible fugitive emission to meet TA-Luft requirements for a safe and clean environment, and provides a secondary stem seal for the valve stem, prolongs service life.
- Function as stem extension for insulation.
- Cast bosses for monitoring device

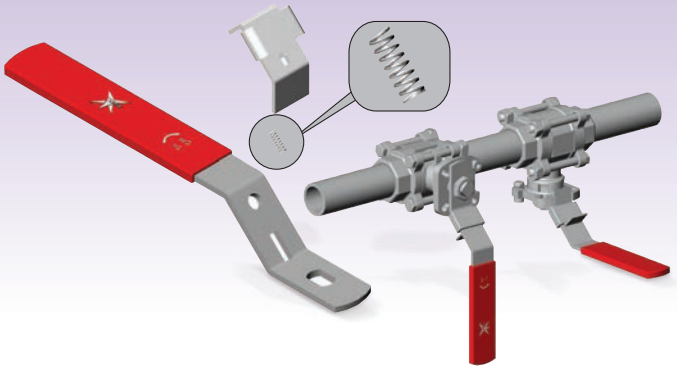
(SRS) Spring Return Safety Handle

The SRS Handle is a spring energized handle, the ball valve will return to pre-determined closed (or open) position when an operator disengages from handle, provides safe and positive fail close or open operation, creating a reliable sampling, filling, dispensing, and pressure relief valve.

Full S.S. construction provides excellent corrosion resistance for extended service life.

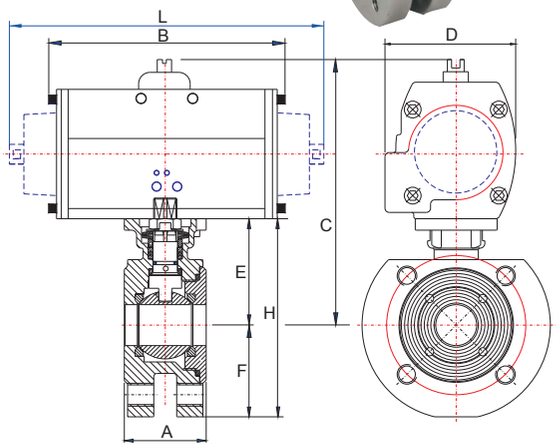
Spring Return Sliding Lock(SRSL) Handle

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



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

AirMars Pneumatic Actuators



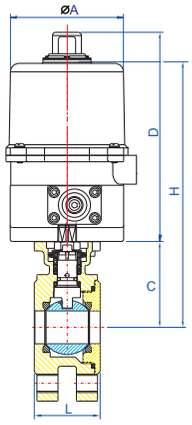
Double-Acting (80 PSI)

Valve Size	A	B	C	D	E	F	H	Actuator	Wt Lbs.	Wt Kg.
1/2"	40.8	120	132.7	62.2	48.7	40.4	89.1	A-125	4.85	2.2
3/4"	44	120	137.7	62.2	53.7	49.3	103	A-125	6.31	2.86
1"	50	144.3	164	81.4	65	56.0	121	A-250	9.27	4.20
11/4"	60	144.3	176	81.4	77	68.0	145	A-250	12.24	5.55
11/2"	65	149.2	203.5	95	85.5	73.5	159	A-450	15.58	7.06
2"	80	149.2	211	95	93	80.5	173.5	A-450	18.69	8.47
21/2"	110	183	250.7	119	109.7	90.5	200.2	A-1000	32.87	14.90
3"	120	183	260.5	119	119.5	95	214.5	A-1000	39.40	17.86
4"	150	183	272.7	119	131.7	104	235.7	A-1000	51.21	23.21
5"	200	304.3	388.7	185.2	192.7	125	317.7	A-3650	145.0	65.8
6"	240	304.3	406.2	185.2	210.2	142.5	352.7	A-3650	183.4	83.2

Spring-Return(80 PSI)

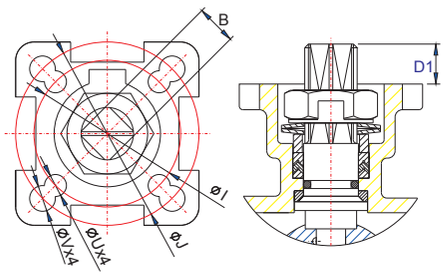
Valve Size	A	L	C	D	E	F	H	Actuator	Wt Lbs.	Wt Kg.	Remark
1/2"	40.8	194.6	147.7	81.4	48.7	40.4	89.1	A-250SR4	6.84	3.10	+□ ISO F04
3/4"	44	194.6	152.7	81.4	53.7	49.3	103	A-250SR4	8.30	3.76	+□ ISO F04
1"	50	205.6	183	95	65	56.0	121	A-450SR4	12.13	5.50	+□
11/4"	60	250.0	218	119	77	68.0	145	A-1000SR4	20.16	9.15	+□
11/2"	65	250.0	226.5	119	85.5	73.5	159	A-1000SR4	22.20	10.06	+□
2"	80	250.0	234	119	93	80.5	173.5	A-1000SR4	25.31	11.47	+□
21/2"	110	355.0	270.7	140.5	109.7	90.5	200.2	A-2250SR4	46.77	21.20	+□
3"	120	355.0	280.5	140.5	119.5	95	214.5	A-2250SR4	53.30	24.16	+□
4"	150	422.0	327.7	185.2	131.7	104	235.7	A-3650SR4	82.67	37.51	+□
5"	200	642.0	456.4	238.2	192.7	125	317.7	A-11000SR4	222.2	100.8	+□
6"	240	642.0	473.9	238.2	210.2	142.5	352.7	A-11000SR4	260.5	118.2	+□

PowerMars Electric Actuators



SIZE	Electric Actuator	Flange Type	◇	ØA	C	D	H	L	◇STEM	ISO 5211	Lbs.	Kg	
1/2"	OM-1	F03/F05	14	106	48.7	150	198.7	40.8	9	F03/F04	7.06	3.2	+□
3/4"	OM-1	F03/F05	14	106	53.7	150	203.7	44	9	F03/F04	8.52	3.86	+□
1"	OM-1	F03/F05	14	106	65	150	215	50	11	F04/F05	10.15	4.6	+□
11/4"	OM-1	F03/F05	14	106	77	150	227	60	11	F04/F05	13.13	5.95	+□
11/2"	OM-1	F03/F05	14	106	85.5	150	235.5	65	14	F05/F07	15.14	6.86	
2"	OM-A	F05/F07	17	106	93	196	289	80	14	F05/F07	20.45	9.27	+□
21/2"	OM-2	F07	22	181	109.7	255	364.7	110	17	F07/F10	48.98	22.2	+□
3"	OM-2	F07	22	181	119.5	255	374.5	120	17	F07/F10	55.51	25.16	+□
4"	OM-3	F07	22	181	131.7	255	386.7	150	17	F07/F10	67.31	30.51	+□
5"	OM-4	F10	35	217	192.7	317	509.7	200	27	F12/F14	&	&	
6"	OM-4	F10	35	217	210.2	317	527.2	240	27	F12/F14	&	&	

& Mounting kit required.



DIMENSION(mm)

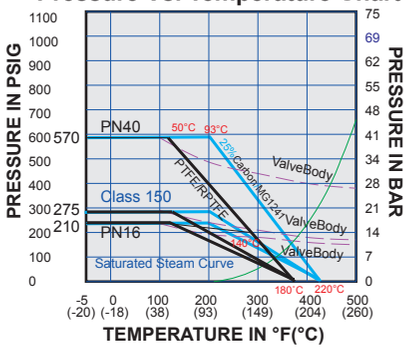
Dimension B:17/19 Standard 17,Option 19

SIZE	B	D1	ØI	ØJ	ØU	ØV	ISO5211
1/2"	9	7	36	42	6	6	F03/F04
3/4"	9	8	36	42	6	6	F03/F04
1"	11	12	40	50	6	7	F04/F05
11/4"	11	11.3	40	50	6	7	F04/F05
11/2"	14	15.5	50	70	7.5	9	F05/F07
2"	14	16	50	70	7.5	9	F05/F07
21/2"	17/19	15.8	70	102	10	12	F07/F10
3"	17/19	16	70	102	10	12	F07/F10
4"	17/19	17.8	70	102	10	12	F07/F10
5"	27	28.5	125	140	14	18	F12/F14
6"	27	28.5	125	140	14	18	F12/F14

99-10: 1/2"~6" 99-20: 1/2"~4" 99-30: 1/2"~6"

SERIES 99-10/20(PN16/40)
SERIES 99-30(#150)

Pressure Vs. Temperature Chart



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