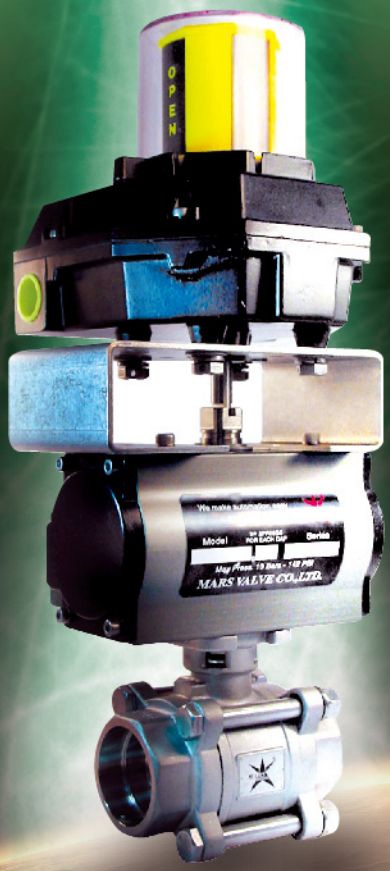
J.S.COCK A/S
DISTRIBUTOR NORWAY

Take
a Good Look
It May Be Your Future



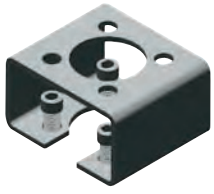
MARS

SERIES 77

Direct Mount
3 Piece Ball Valves
1/4" to 4" Full Port

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.


1


2


3

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 77
Direct Mount High Performance Three-Piece Ball Valves

Mars Patented Direct Mount Ball Valves Making Automation Easy

Construction	3-Piece In-Line Swing Out Design, Full Port
Size Range	1/4" to 4" (DN 8 to DN 100)
Pressure Rating	1000 PSI Max.
Valve Material	Standard: ASTM A351 Gr. CF8M / EN 10213 1.4408 Options: WCB/1.0619, CF3M/1.4409, Titanium....etc.
Seat Material	Standard: R-TFE, PTFE Options: TFM 1600, Carbon filled PTFE, UHMWPE, 50/50 S/S filled PTFE, MG1241....and others
Inspection and Test	API 598
Compliance Standards	ASME B1.20.1, ISO 228-1, ISO 7-1, DIN 2999, ASME B16.11, ASME B16.25, EN 1092-1, ASME B16.5, ISO 5211, ISO 5209
Material Certificate	EN 10204 - 3.1
Quality System	ISO 9001
Options	NACE MR - 0175 Face to face acc. to DIN 3202 M3

Approvals

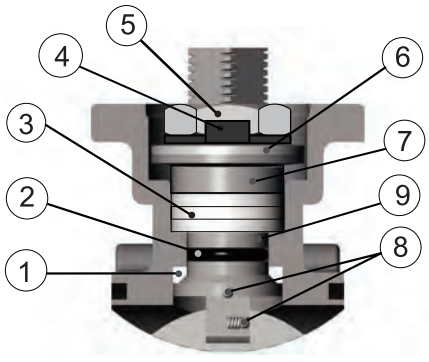
SIL 3

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, prolongs service life.

AVAILABLE END CONNECTIONS

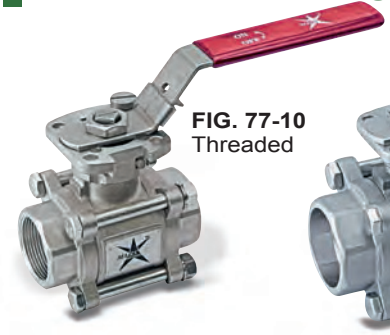


FIG. 77-10
Threaded

FIG. 77-20
Socket Weld

FIG. 77-30
Butt Weld

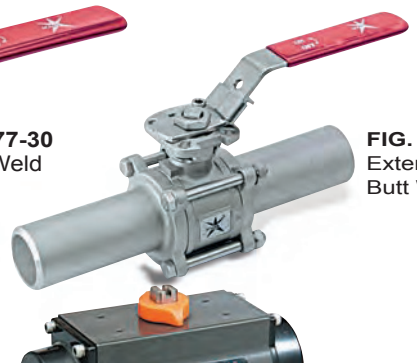


FIG. 77-40
Extended Butt Weld

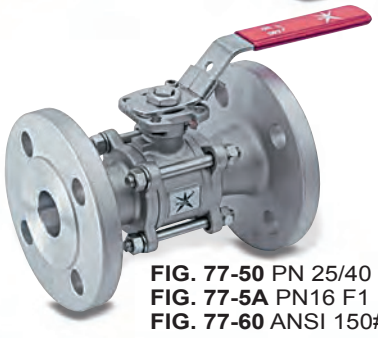
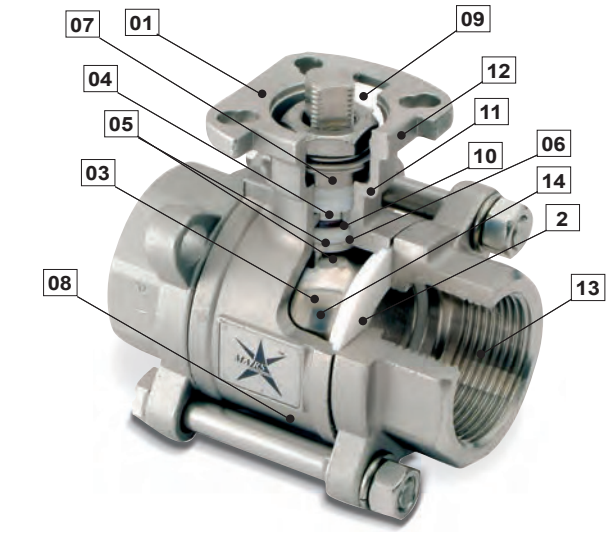


FIG. 77-50 PN 25/40 F1
FIG. 77-5A PN16 F1
FIG. 77-60 ANSI 150#

FIG. 77-70
Tube(ISO), Butt Weld

FIG. 77TB
Tank Bottom Ends

MARS SERIES 77 DIRECT MOUNT 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 actuation with improved cycle life.

2. 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

3. Ball
- Precisely machined, mirror polished solid ball 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

4. Blow-Out Proof Stem
Prevents stem from blowing out, for maximum safety

5. Anti-Static Device
Standard applied to ball-to-stem and stem-to-body

6. MARS SealMax® Stem Design
Provides optimum stem seal and extremely high cycle life

7. Super Smooth Stem Surface
Reduces seal friction and operating torque, prolongs service life.

8. 3-Piece Swing-Out Design
Fast and simple inline maintenance

9. Patented Leak-Watching Window
Standard on Mars Direct Mount Ball Valves, for an early warning of stem leak, prevents accident and business disruption costs.

10. O-Ring Stem Seal
Enhances stem wear and maintains stem alignment, provides extra longer service life

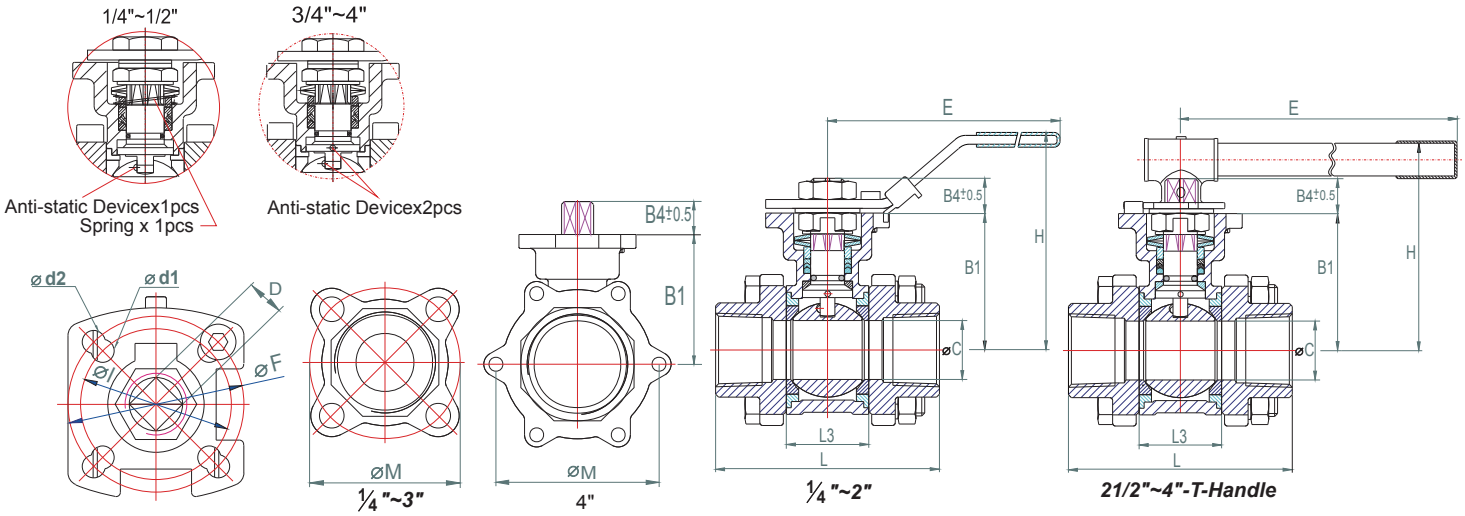
11. Extended Valve Neck
Gives sufficient room between mounting pad and valve body, allows easy access for mounting actuator without interference with pipeline

12. Locking Device Standard

13. Stainless Steel Welded Ends in CF3M Standard
Reduces inter-granular corrosion in welding.

14. Floating Ball
Provides pressure - assisted sealing plus temperature and wear compensation, for positive shutoff

DIMENSIONS (mm)

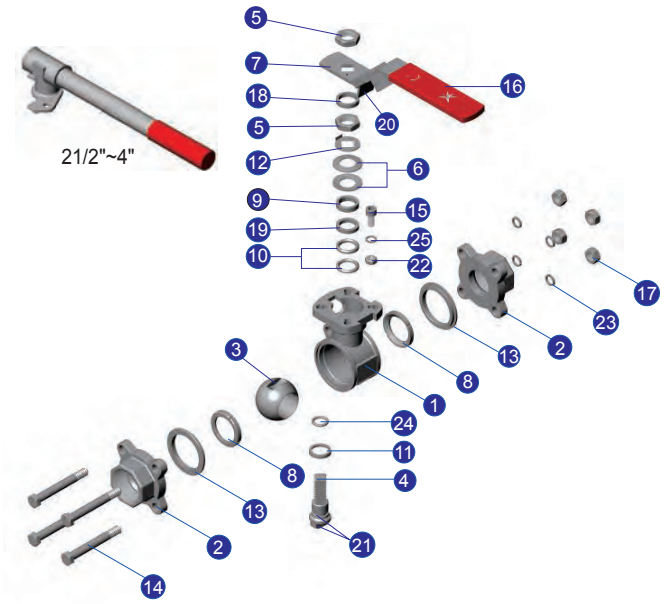


DIMENSIONS (mm) Dimension D: 17/19 Standard 17, Option 19

SIZE	ø A	B1	B4±0.5	ø C	D	E	@E	ø G	H	@H	ø d1	ød2	ø I	ø F	J	* L	L	L1	*L1	L2	L3	LE	ø M	LF	N	ø P	øQ	ø R
¼"	14.3	42.1	6.1	11.6	9.0	139		16.2	77		6	6	36	42	1.6	60	63.7	62.7	70	10	23.6	225	46					
⅜"	17.6	42.1	6.1	12.7	9.0	139		17.5	77		6	6	36	42	1.6	60	63.7	62.7	70	10	23.6	225	46					
½"	21.9	42.1	6.1	15.0	9.0	139	185	22.7	77	74	6	6	36	42	1.6	75	65.7	65.7	75	10	23.6	225	46	130	4	65	14	45
¾"	27.3	48.0	6.6	20.0	9.0	139	185	27.5	83	90	6	6	36	42	1.6	80	76.2	76.2	90	13	28	225	52	150	4	75	14	58
1"	33.9	56.6	10.9	25.0	11.0	165	212	34	96	101	6	7	42	50	1.6	90	86.2	86.2	100	13	33.9	245	60	160	4	85	14	68
1¼"	42.8	60.9	10.9	32.0	11.0	165	212	42.7	100	108	6	7	42	50	1.6	110	102.8	102.8	110	13	42.5	255	73.5	180	4	100	18	78
1½"	48.9	77.5	13.9	38.0	14.0	215	262	48.6	127	127	7.5	9	50	70	1.6	120	119.4	119.4	125	13	53.2	260	85.5	200	4	110	18	88
2"	61.3	85.2	13.9	50.0	14.0	215	262	60.5	134	134	7.5	9	50	70	1.6	140	131.4	131.4	150	16	64.6	275	103.8	230	4	125	18	102
2½"	ANSI 74 PN 76.9	108.7	16.8	65.0	17/19	300	300	76.3	167	167	10	12	70	102	2	185	164	164	190	16	87	334	130	290	8	145	18	122
3"	90.0	117.7	17.8	80.0	17/19	370	370	90.0	176	176	10	12	70	102	2	205	182.7	182.7	220	16	99	354	155.5	310	8	160	18	138
4"	115.5	132.55	17.8	100	17/19	370	370	116.0	192	192	10	12	70	102	3.5	240	235.6	236.2	270	20	127	365	188	350	8	190	22	162

* L - Dimension for DIN 3202-M3 Length
* L1 - Dimension for S13 Length
@ Dimension for-PN40/PN16/ANSI 150#

MATERIALS LIST

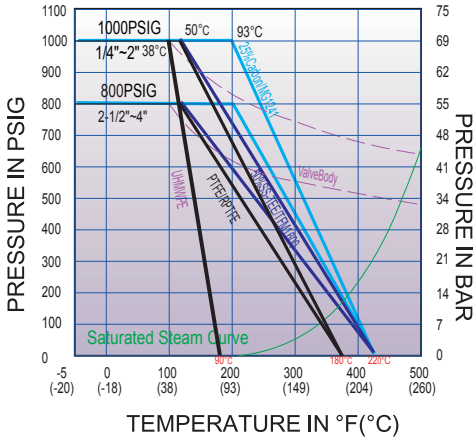


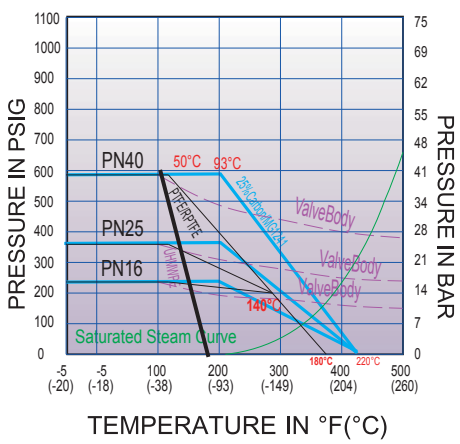
NO.	PART NAME	MATERIAL		Q'TY
1	Body	CF8M	WCB	1
2	End Cap	CF8M¤	WCB	2
3	Ball	SUS316/CF8M		1
4	Stem	SUS316		1
5	Stem Nut	SUS304		2
6	Belleville Washer	SUS301		2
7	Handle	SUS304		1
8	Seat	RPTFE		2
9	Gland	SUS304		1
10	Stem Packing	PTFE		§
11	Stem Seal	RPTFE		1
12	Lock Saddle	SUS304		1
13	Joint Gasket	PTFE		2
14	Bolt	SUS304		*
15	Stop Bolt	SUS304		1
16	Handle Sleeve	VINYL		1
17	Bolt Nut	SUS304		†
18	Stem Washer	SUS304		1
19	Stem Packing	25% Glass Fiber Filled+PTFE		1
20	Locking Device	SUS304		1
21	Antistatic Device	SUS316		#
22	Stop Nut	SUS304		1
23	Bolt Washer	SUS304		†
24	O-RING	VITON		1
25	Washer	SUS304		1

¤ Socket weld and butt weld uses CF3M material
§ For 1/4"~2"-2pcs, 21/2"~4"-3pcs.
* For 1/2" to 3"- 4pcs; For 4"- 6pcs
For 2" to 3"-4pcs of bolts(double ends, external thread)
For 4"-6pcs of bolts(double ends, external thread)
† For 1/4" to 2"- 4pcs; For 21/2"~3"-8pcs,For 4"-12pcs.
# 1/4"~1/2"-1pcs,3/4"~4"-2pcs.
Series 77, Ball valve uses WCB material, For 2" ~ 4", bolt uses Ferritic Steels material, B7 (No.14 bolt B7 equipped with No.17 nut 2H)

Pressure Vs. Temperature Chart

for Valve ¼"(DN8) to 2"(DN50)
for Valve 2½"(DN65) to 4"(DN100)



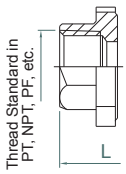


Breakaway Torque(RPTFE) & Cv Value

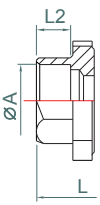
SIZE	DN	Inch-Lb	Nm	Cvus.GPM	Kv m³/h
1/4"	8	58	7	7	6
3/8"	10	58	7	8	7
1/2"	15	58	7	15	13
3/4"	20	69	8	40	34
1"	25	127	14	70	60
1.1/4"	32	173	20	110	94
1.1/2"	40	253	29	250	213
2"	50	323	36	430	366
2. 1/2"	65	518	59	700	595
3"	80	806	91	1100	935
4"	100	1014	114	2000	1700

* 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

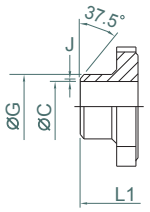
END CAP OPTIONS



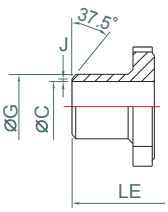
77-10
Threaded



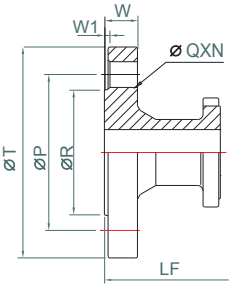
77-20
Socket Weld



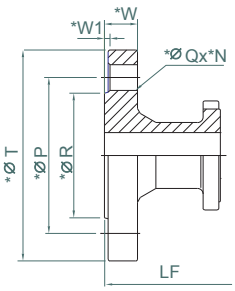
77-30
Butt Weld



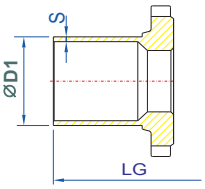
77-40
Extended Butt Weld



77-50
Flange
(PN25/40 F1)



77-5A/77-60
Flange End
PN16/ANSI 150#



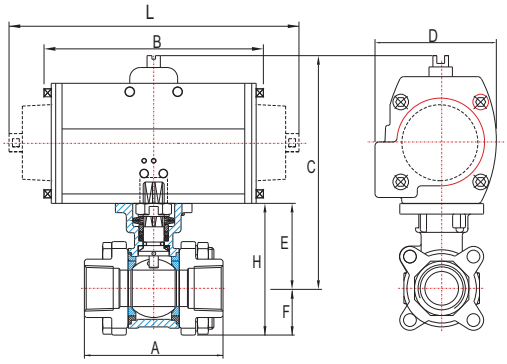
77-70
Extended ISO
(Butt Weld End)

	ØT	W	W1	LF	*N	*ØP	*ØQ	*ØR	*ØT	*W	*W1	LF	*N	*ØP	*ØQ	*ØR	*ØT	*W	*W1	ØD1	LG	S	Wt(kg)	ISO5211
	PN25/40(77-50)			PN16(21/2"~4")77-5A								ANSI 150#(1/2"~4")77-60											0.63	F03/F04 **F03/F04/F05
																				17.2	120.2	1.6	0.63	F03/F04 **F03/F04/F05
	95	16	2									127	4	60.5	16	35.1	88.9	11.2	1.6	21.3	140.2	1.6	0.66	F03/F04 **F03/F04/F05
	105	18	2									140	4	69.9	16	42.9	98.6	11.2	1.6	26.9	140	1.6	0.82	F03/F04 **F03/F04/F05
	115	18	2									154	4	79.2	16	50.8	108	11.5	1.6	33.7	152.2	1.8	1.25	F04/F05
	140	18	2									172	4	88.9	16	63.5	117.3	13.1	1.6	42.4	165.1	2	1.94	F04/F05
	150	18	3									186	4	98.6	16	73.2	127	14.6	1.6	48.3	190.4	2	3.15	F05/F07
	165	20	3									213.8	4	120.7	19	91.9	152.4	15.9	1.6	60.3	203	2.5	4.56	F05/F07
	185	22	3	290	4	145	18	122	185	18	3	245	4	139.7	19	104.6	177.8	17.6	1.6	76.1	254	3	9.01	F07/F10
	200	24	3	310	8	160	18	138	200	20	3	261.6	4	152.4	19	127	190.5	19.1	1.6	88.9	280.2	3	12.3	F07/F10
	235	24	3	350	8	180	18	158	220	20	3	348	8	190.5	19	157.2	228.6	23.9	1.6	114.3	317	3	21.54	F07/F10

** Size 1/4" to 3/4" ISO 5211 standard configuration is F03/F04, and for your convenience the F03/F04/F05 is available as option.

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

Series 77 with AirMars Pneumatic Actuators



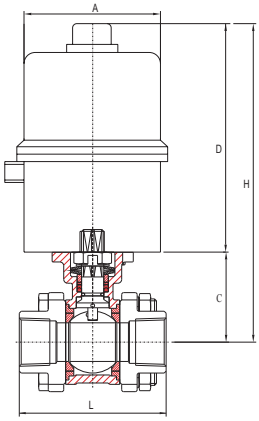
Double-Acting (80 PSI)

Valve Size	A	B	C	D	E	F	H	Actuator	Wt Lbs.	Wt Kg.	Remark
1/4"	63.7	120	126.1	62.2	42.1	23.3	65.4	A-125	3.37	1.53	
3/8"	63.7	120	126.1	62.2	42.1	23.3	65.4	A-125	3.37	1.53	
1/2"	65.7	120	126.1	62.2	42.1	23.3	65.4	A-125	3.44	1.56	
3/4"	76.2	120	132	62.2	48	25.4	73.4	A-125	3.79	1.72	
1"	86.2	144.3	155.6	81.4	56.6	28.3	84.9	A-250	5.86	2.66	
11/4"	102.8	144.3	159.9	81.4	60.9	34.5	95.4	A-250	7.39	3.35	
11/2"	119.4	149.2	195.5	95	77.5	39.3	116.8	A-450	11.07	5.02	
2"	131.4	149.2	203.2	95	85.2	47.3	132.5	A-450	14.11	6.40	
21/2"	164	183	249.7	119	108.7	58.5	167.2	A-1000	26.41	11.98	
3"	182.7	183	258.7	119	117.7	69	186.7	A-1000	33.20	15.06	
4"	235.6	259.6	293.6	140.5	132.6	95.4	228	A-2250	61.95	28.10	+ ☐

Spring-Return (80 PSI)

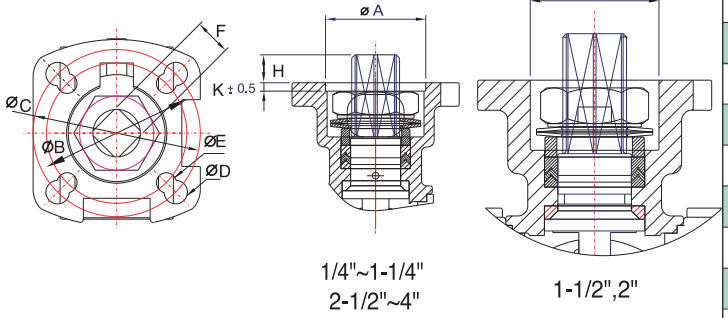
Valve Size	A	L	C	D	E	F	H	Actuator	Wt Lbs.	Wt Kg.	Remark
1/4"	63.7	194.6	141.1	81.4	42.1	23.3	65.4	A-250SR4	5.36	2.43	+ ☐
3/8"	63.7	194.6	141.1	81.4	42.1	23.3	65.4	A-250SR4	5.36	2.43	+ ☐
1/2"	65.7	194.6	141.1	81.4	42.1	23.3	65.4	A-250SR4	5.42	2.46	+ ☐
3/4"	76.2	194.6	147	81.4	48	25.4	73.4	A-250SR4	5.78	2.62	+ ☐
1"	86.2	205.6	174.6	95	56.6	28.3	84.9	A-450SR4	8.73	3.96	+ ☐
11/4"	102.8	250.0	201.9	119	60.9	34.5	95.4	A-1000SR4	15.32	6.95	+ ☐
11/2"	119.4	250.0	218.5	119	77.5	39.3	116.8	A-1000SR4	17.68	8.02	+ ☐
2"	131.4	250.0	226.2	119	85.2	47.3	132.5	A-1000SR4	20.72	9.40	+ ☐
21/2"	164	355.0	269.7	140.5	108.7	58.5	167.2	A-2250SR4	40.30	18.28	+ ☐
3"	182.7	422.0	313.7	185.2	117.7	69	186.7	A-3650SR4	64.71	29.36	+ ☐
4"	235.6	422.0	328.6	185.2	132.6	95.4	228	A-3650SR4	85.15	38.60	+ ☐

Series 77 with PowerMars Electric Actuators



VALVE SIZE	Electric Actuator	Flange Type	◇	A	C	D	H	L	◆ STEM	ISO 5211	Wt Lbs.	Wt Kg	Remark
1/4"	OM-1	F03/F05	14	106	42.1	150	192.1	63.7	9	F03/F04	5.58	2.53	+☐
3/8"	OM-1	F03/F05	14	106	42.1	150	192.1	63.7	9	F03/F04	5.58	2.53	+☐
1/2"	OM-1	F03/F05	14	106	42.1	150	192.1	65.7	9	F03/F04	5.65	2.56	+☐
3/4"	OM-1	F03/F05	14	106	48	150	198	76.2	9	F03/F04	6.00	2.72	+☐
1"	OM-1	F03/F05	14	106	56.6	150	206.6	86.2	11	F04/F05	6.75	3.06	+☐
11/4"	OM-1	F03/F05	14	106	60.9	150	210.6	102.8	11	F04/F05	8.27	3.75	+☐
11/2"	OM-1	F05/F07	14	106	77.5	150	227.5	119.4	14	F05/F07	10.63	4.82	
2"	OM-A	F05/F07	17	106	85.2	196	281.2	131.4	14	F05/F07	15.88	7.20	+☐
21/2"	OM-2	F07	22	181	108.7	255	363.7	164	17	F07/F10	42.54	19.28	+☐
3"	OM-3	F07	22	181	117.7	255	372.7	182.7	17	F07/F10	49.33	22.36	+☐
4"	OM-3	F07	22	181	132.6	255	387.6	235.6	17	F07/F10	68.53	31.06	+☐

MARS TOP WORKS MAKE AUTOMATION AS EASY AS IT GETS



1/4"~1-1/4"
2-1/2"~4"

1-1/2",2"

77 SERIES Standard — Dimension F: 17/19 Standard 17, Option 19

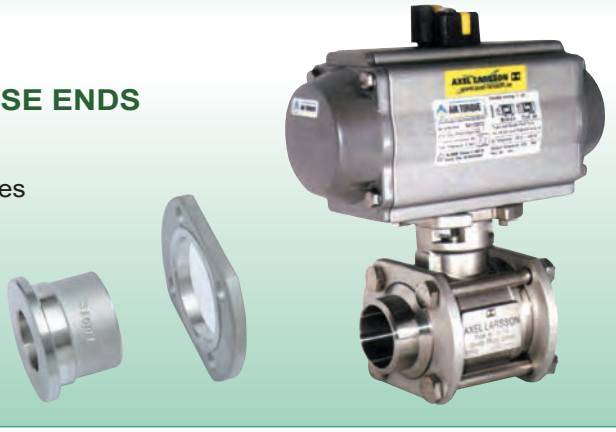
SIZE	ISO5211 DIN 3337	ØA Recess DIA	ØB Inner Holes PCD	ØC Outer Holes PCD	ØD Outer Holes DIA (Clearance)	ØE Inner Holes DIA (Clearance)	F Stem Square Across Flats	H Square H/T Above plate	K Top Plate to Stem Nut (Clearance)
1/4" ~ 1/2"	F03/F04 * F03/F04/F05	25	36	42	6	6	9	6.4	2.5
3/4"	F03/F04 * F03/F04/F05	25	36	42	6	6	9	6.9	2.5
1"	F04/F05	30	42	50	7	6	11	11.2	2.5
1-1/4"	F04/F05	30	42	50	7	6	11	11.2	2.5
1-1/2"	F05/F07	38.5	50	70	9	7.5	14	14.2	
2"	F05/F07	38.5	50	70	9	7.5	14	14.2	
2-1/2"	F07/F10	55	70	102	12	10	17 / 19	17.1	3.5
3"	F07/F10	55	70	102	12	10	17 / 19	18.1	3.5
4"	F07/F10	55	70	102	12	10	17 / 19	17.1	3.5

* Size 1/4" to 3/4" ISO 5211 standard configuration is F03/F04, F03/F04/F05 as option

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

SERIES 77L BALL VALVES WITH LOOSE ENDS
1/4" - 4", Full Port, 1000 PSI

- Loose ends design allows ball valve 360 degrees rotation around the pipe, free position.
- No risk of misalignment of connections after welding.
- Time Saving and low cost welding, no need to take care the position of connections when welding ball valve with pipe line.

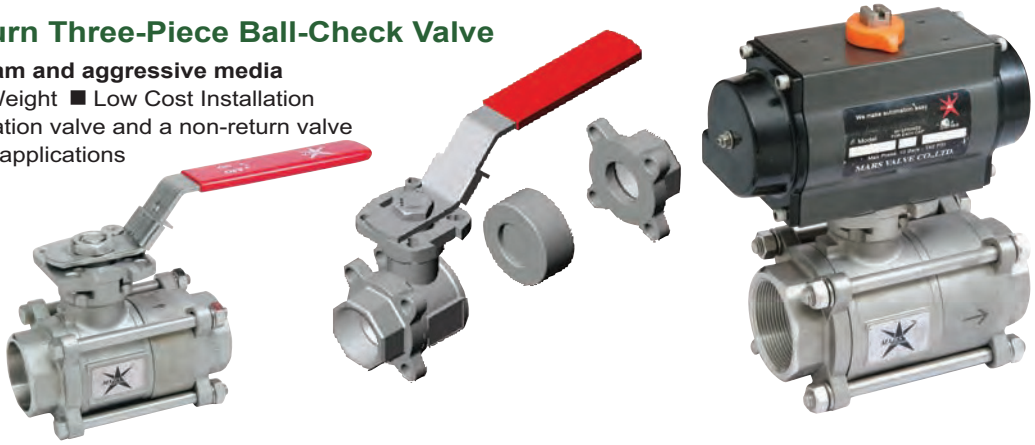


SERIES 77 Non-Return Three-Piece Ball-Check Valve

Designed for handling steam and aggressive media

■ Space Saving ■ Lighter Weight ■ Low Cost Installation

One valve instead of an isolation valve and a non-return valve for most steam and process applications



SERIES 77
With (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 forextended service life.

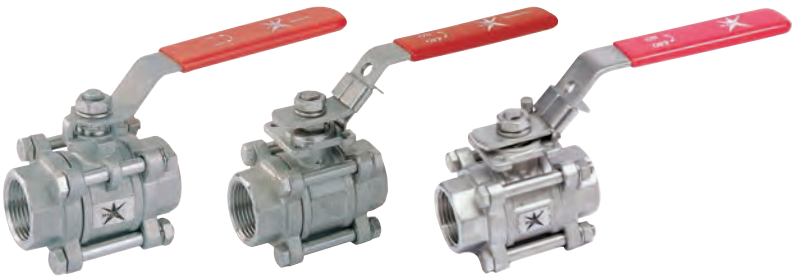
SERIES 77
With Mars "TSM" unit
Adds Extra Safety and Long Service Life

The TSM unit designed for possible fugitive emission to meet TA-Luft requirements for a safe and clean environment, provides a secondary stem seal for the valve stem, prolong service life.
The TSM unit can also function as stem extension for insulation.

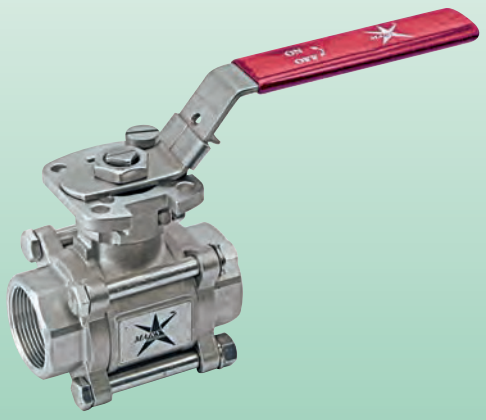
SERIES 77 Titanium BALL VALVES
Light weight, Excellent for Corrosion Resistance

SERIES 77 INTERCHANGEABILITY

Valve Ball, Seats and Seals, and End Caps are interchangeable with the Mars Series 50, Series 55, and Series 55A three-piece ball valves



SERIES 50 **SERIES 55** **SEREIS 55A**



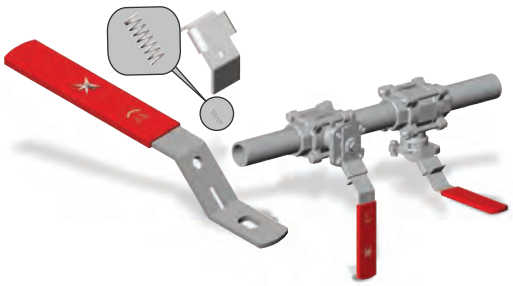
MARS SERIES 77 V-CONTROL BALL VALVES

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

SPRING RETURN SLIDING LOCK HANDLE



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

MARS SOLENOID VALVES

NAMUR interface
High Switch Reliability
No matter the orientation, valve mayt be mounted in any position

LIMIT SWITCHES

Visual Position Indicator
"Quick Set" Cams Compact Design
Enclosure:
Weather Proof NEMA 4 (IP 68)
Explosion Proof IIC T6
Max. 250VAC 16A / 125VDC 0.6A

HOW TO ORDER ☑77-10 SR05B

77-10	S	R	05	B
VALVE STYLE	**BODY MATERIAL**	**SEAT MATERIAL**	**SIZE**	**HANDLE STYLE**
☑ 77-10	☑ S - CF8M	☐ P PTFE	☐ 01) 1/4"	☐ Standard handle
☐ 77-20	☐ W - WCB	☑ R R-TFE	☐ 02) 3/8"	☐ I - Investment cast
☐ 77-30	☐ L - CF3M	☐ T TFM1600	☐ 03) 1/2"	☐ O - Oval handle
☐ 77-40	☐ D - Duplex	☐ S 50/50 S.S.+PTFE	☐ 04) 3/4"	☐ L - SRSL handle
☐ 77-50	☐ T - Titanium	☐ M MG1241	☑ 05) 1"	☐ S - SRS handle
☐ 77-5A		☐ C Carbon filled PTFE	☐ 06) 1 1/4"	☑ B - Bare shaft
☐ 77-60		☐ U UHMWPE	☐ 07) 1 1/2"	☐ G - Gear box
☐ 77-70			☐ 08) 2"	
			☐ 09) 2 1/2"	
			☐ 10) 3"	
			☐ 11) 4"	

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