



Take  
a Good Look  
It May Be Your Future



# MARS

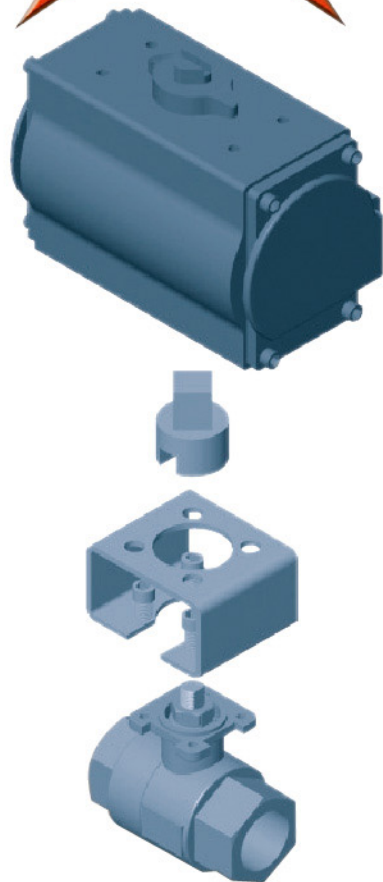
## SERIES 22

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

[www.marsvalve.com.tw](http://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) 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 22 Direct Mount Two-Piece Ball Valves



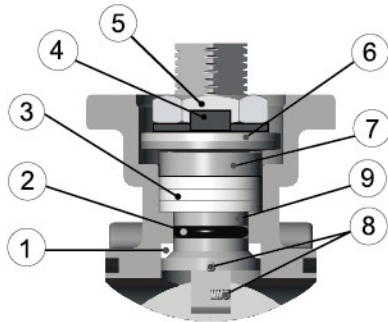
- Construction** 2-Piece Ball Valve, Full Port
- Size Range** 1/4" to 3" (DN 8 to DN 80)
- Pressure Rating** 1000 PSI Max.
- Valve Material** Standard: ASTM A351 Gr. CF8M / EN 10213 1.4408  
Options: WCB/1.0619, CF3M/1.4409, Titanium, Duplex, Hastelloy C....etc.
- Seat Material** Standard: R-PTFE  
Options: TFM 1600, Carbon filled PTFE, UHMWPE, 50/50 S/S filled PTFE, ....and others
- Inspection and Test** API 598
- Compliance Standards** NPT ASME B1.20.1, BSPP ISO 228-1, BSPT ISO 7-1, DIN2999, ISO 5211, ISO 5209
- Material Certificate** EN 10204 - 3.1
- Quality System** ISO 9001
- Options** Face to face acc. to DIN 3202 M3
- NACE MR - 0175** The high performance Series 22 ball valves meet NACE specification MR - 0175 for sour gas.

## APPROVALS



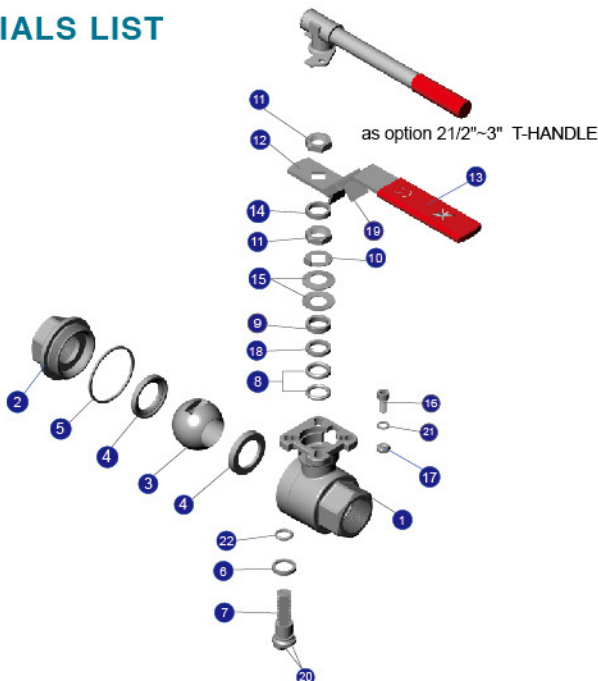
**Mars Patented Direct Mount Ball Valves Making Automation Easy**

## 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**  
Spring loaded stem-to-ball and stem-to-body anti-static device as standard.
- 9. Super Smooth Stem Finish**  
Reduces seal friction and operating torque, prolongs service life.

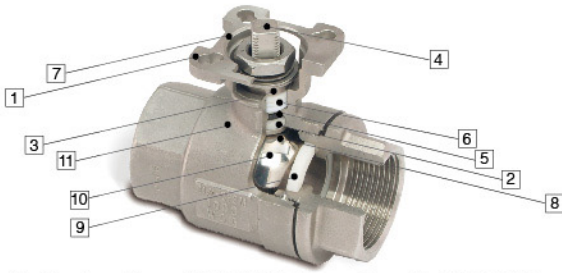
## MATERIALS LIST



NO.	PART NAME	MATERIAL	Q'TY
1	Body	ASTM A351 Gr. CF8M	1
2	End Cap	ASTM A351 Gr. CF8M	1
3	Ball	SUS316 / CF8M	1
4	Seat	PTFE/RTFE	2
5	Joint Gasket	PTFE	1
6	Stem Seal	RPTFE	1
7	Stem	SUS 316	1
8	Stem Packing	PTFE	*
9	Gland	SUS 304	1
10	Lock Saddle	SUS 304	1
11	Stem Nut	SUS 304	2
12	Handle	SUS 304	1
13	Handle Sleeve	VINYL	1
14	Stem Washer	SUS 304	1
15	Belleville Washer	SUS 301	2
16	Stop Pin	SUS 304	1
17	Pin Nut	SUS 304	1
18	Stem Packing	25% Glass Fiber Filled + PTFE	1
19	Locking Device	SUS 304	1
20	Antistatic - Device	SUS 316	2
21	Washer	SUS 304	1
22	O-Ring	VITON	1

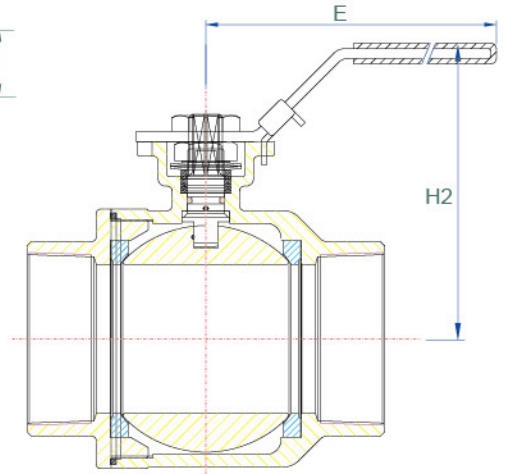
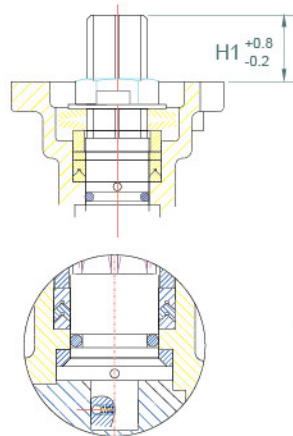
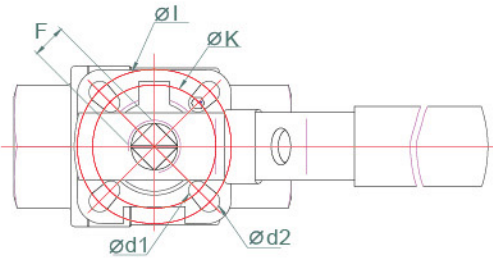
\*For 1/4"-1/2"-1pcs, For 3/4"-2"-2pcs, For 21/2"-3"-3pcs.

# DESIGN FEATURES

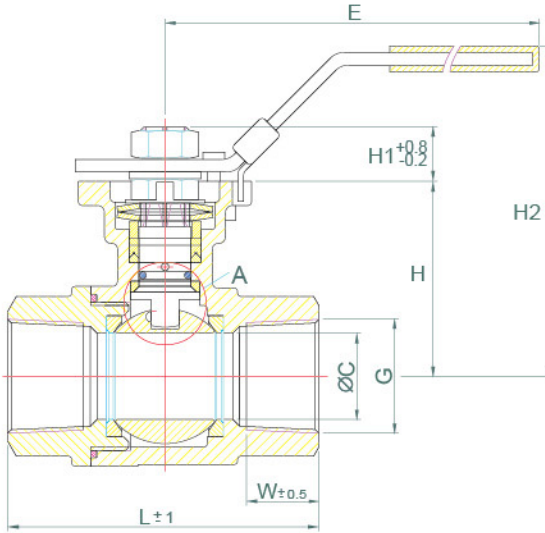


- 1. Dual pattern ISO 5211 Mounting Pad With Square Shaft**  
No bracket and adapter are required for actuator mounting, provides easy and low cost automation with improved cycle life
- 2. MARS SealMax<sup>®</sup> Stem Seal Design**  
Provides optimum stem seal and extremely high cycle life
- 3. Patented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

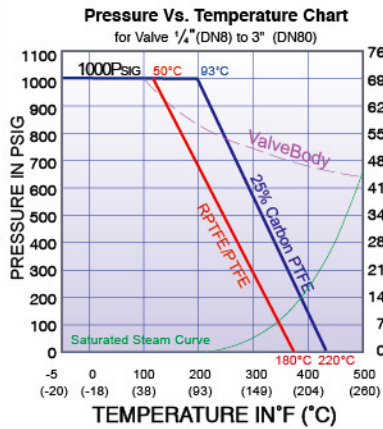
- 4. Blow-Out Proof Stem**
- 5. O-Ring Stem Seal**  
Enhances stem wear and maintains stem alignment, provides extra longer service life
- 6. Super smooth stem surface**  
Reduces seal friction and operating torque
- 7. Locking Device Standard**
- 8. Anti-Static Device**  
Spring loaded stem-to-ball and stem-to-body anti-static device as standard
- 9. 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
- 10. Ball**  
-Precisely machined, mirror finished ball surface for bubble tight shutoff with less operating torque  
-A relief hole in the body cavity ensures tight shutoff and long service life
- 11. Compact for Weight and Space Savings**



2 1/2"~3" T-HANDLE as option



Standard



Breakaway Torque(RPTFE) & Cv Value

SIZE	DN	Inch-Lb	Nm	Cv	Kv-m <sup>3</sup> /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	161	18	110	94
1.1/2"	40	230	26	250	213
2"	50	323	36	430	366
2.1/2"	65	484	55	700	595
3"	80	772	87	1100	935

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.

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

SIZE	ØC	Ød1	Ød2	E	F	G	H	H1	H2	ØI	ØK	L	W	Wt(kg)	ISO5211
1/4"	11.5	6	6	139	9	1/4" NPT or BSP	38.6	6.6	74	42	36	65.0	15	0.53	F03/F04 **F03/F04/F0
3/8"	12.5	6	6	139	9	3/8" NPT or BSP	38.6	6.6	74	42	36	65.0	15	0.51	F03/F04 **F03/F04/F05
1/2"	15.0	6	6	139	9	1/2" NPT or BSP	38.6	6.6	74	42	36	65.0	16	0.46	F03/F04 **F03/F04/F05
3/4"	20.0	6	6	139	9	3/4" NPT or BSP	46.1	7.1	82	42	36	74.6	17	0.60	F03/F04 **F03/F04/F05
1"	25.0	6.5	7	165	11	1" NPT or BSP	56.6	10.9	96	50	42	88	21	1.09	F04/F05
1 1/4"	32.0	6.5	7	165	11	1 1/4" NPT or BSP	61.0	10.9	100	50	42	102.0	22	1.50	F04/F05
1 1/2"	38.0	7.5	9	215	14	1 1/2" NPT or BSP	77.5	13.9	127	70	50	110.0	22.5	2.55	F05/F07
2"	50.0	7.5	9	215	14	2" NPT or BSP	85.2	13.9	134	70	50	125.0	26	3.60	F05/F07
2 1/2"	65.0	10	12	263	17/19	2 1/2" NPT or BSP	108.7	16.8	167	102	70	160.6	31	7.43	F07/F10
3"	80.0	10	12	313	17/19	3" NPT or BSP	117.4	18.1	175	102	70	178.0	34	10.35	F07/F10

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



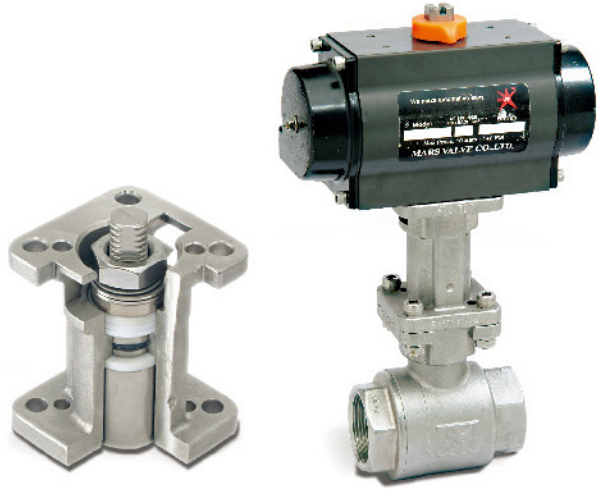
# MARS OPTIONAL VALVE ACCESSORIES INCREASE PRODUCTIVITY AND GIVE YOU MORE CONTROL OVER YOUR INDUSTRIAL PROCESS

## SERIES 22

### With Mars "TSM" Unit

#### Adds Extra Safety and Long Service Life

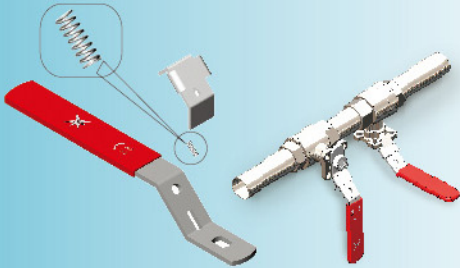
- The TSM unit designed for possible fugitive emission to meet TA-Luft requirements for a safe and clean environment, provides a secondary stem seal for the valve stem, prolongs service life.
- The TSM unit can also function as stem extension for insulation.
- ISO 5211 mounting pad and square shaft for direct actuator mounting with no brackets and adapters, ease of automation.
- Cast bosses for monitoring device



## SERIES 22

### Handle Options

- **Spring Return Sliding Lock Handle (SRSL Handle)** Valve sizes 1/4"-3"  
No matter the orientation of the ball valves, the SRSL handle always secures handle in position, making valve operation safe



## SERIES 22 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

## SERIES 22

### 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 for extended service life.



## MARS Valve Is Specialized In Producing Titanium Ball Valves

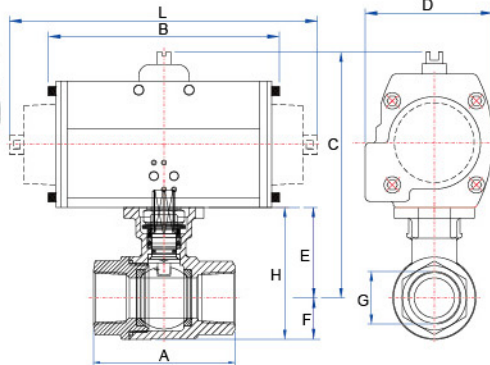
Series 20, Series 22, Series 77, Series 83, Series 88, Series 90, Series 90D, Series 91D, and Series 99 ball Valves.



# MADE IN MARS

# Mars Valve offers single-reliable-source for a complete line of ball valves, actuators, and accessories to meet your automation requirements.

## Series 22 Ball Valves with AirMars Pneumatic Actuators



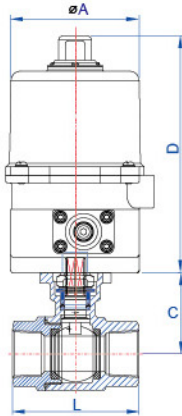
### Double-Acting (80 psi)

Valve Size	A	B	C	D	E	F	H	G	Actuator	Wt	
										Lbs.	Kg.
1/4"	65	120	122.6	62.2	38.6	18.5	57.1	1/4" NPT or BSP	A-125	3.15	1.43
3/8"	65	120	122.6	62.2	38.6	18.5	57.1	3/8" NPT or BSP	A-125	3.11	1.41
1/2"	65	120	122.6	62.2	38.6	18.5	57.1	1/2" NPT or BSP	A-125	3.02	1.37
3/4"	74.6	120	130.15	62.2	46.1	21.5	67.6	3/4" NPT or BSP	A-125	3.31	1.50
1"	88	144.3	155.6	81.4	56.6	26	82.6	1" NPT or BSP	A-250	5.49	2.49
1 1/4"	102	144.3	160	81.4	61	31.5	92.5	1 1/4" NPT or BSP	A-250	6.39	2.90
1 1/2"	110	149.2	195.5	95	77.5	36.5	114	1 1/2" NPT or BSP	A-450	9.68	4.39
2"	125	149.2	203.2	95	85.2	45	130.2	2" NPT or BSP	A-450	11.97	5.43
2 1/2"	160.6	183	249.7	119	108.7	59	167.7	2 1/2" NPT or BSP	A-1000	23.85	10.82
3"	178	183	258.4	119	117.4	69.8	187.2	3" NPT or BSP	A-1000	29.74	13.49

### Spring-Return(80 psi)

Valve Size	A	L	C	D	E	F	H	G	Actuator	Wt		Remark
										Lbs.	Kg.	
1/4"	65	194.6	137.6	81.4	38.6	18.5	57.1	1/4" NPT or BSP	A-250SR4	5.14	2.33	ISO F04 + □
3/8"	65	194.6	137.6	81.4	38.6	18.5	57.1	3/8" NPT or BSP	A-250SR4	5.09	2.31	ISO F04 + □
1/2"	65	194.6	137.6	81.4	38.6	18.5	57.1	1/2" NPT or BSP	A-250SR4	5.00	2.27	ISO F04 + □
3/4"	74.6	194.6	145.1	81.4	46.1	21.5	67.6	3/4" NPT or BSP	A-250SR4	5.29	2.40	ISO F04 + □
1"	88	205.6	174.6	95	56.6	26	82.6	1" NPT or BSP	A-450SR4	8.36	3.79	+ □
1 1/4"	102	250.0	202	119	61	31.5	92.5	1 1/4" NPT or BSP	A-1000SR4	14.3	6.5	+ □
1 1/2"	110	250.0	218.5	119	77.5	36.5	114	1 1/2" NPT or BSP	A-1000SR4	16.29	7.39	+ □
2"	125	250.0	226.2	119	85.2	45	130.2	2" NPT or BSP	A-1000SR4	18.58	8.43	+ □
2 1/2"	160.6	355.0	269.7	140.5	108.7	59	167.7	2 1/2" NPT or BSP	A-2250SR4	37.74	17.12	+ □
3"	178	422.0	313.4	185.2	117.4	69.8	187.2	3" NPT or BSP	A-3650SR4	61.25	27.79	+ □

## Series 22 Ball Valves with PowerMars Electric Actuators



VALVE SIZE	Electric Actuator	Flange Type	Actuator $\diamond$	$\phi A$	C	D	L	$\diamond$ STEM	ISO 5211	
1/4"	OM-1	F03/F05	14	106	38.6	150	65	9	F03/F04	+ □
3/8"	OM-1	F03/F05	14	106	38.6	150	65	9	F03/F04	+ □
1/2"	OM-1	F03/F05	14	106	38.6	150	65	9	F03/F04	+ □
3/4"	OM-1	F03/F05	14	106	46.1	150	74.6	9	F03/F04	+ □
1"	OM-1	F03/F05	14	106	56.6	150	88	11	F04/F05	+ □
1 1/4"	OM-1	F03/F05	14	106	61	150	102	11	F04/F05	+ □
1 1/2"	OM-1	F03/F05	14	106	77.5	150	110	14	F05/F07	+ □
2"	OM-A	F05/F07	17	106	85.2	196	125	14	F05/F07	+ □
2 1/2"	OM-2	F07	22	181	108.7	255	160.6	17	F07/F10	+ □
3"	OM-3	F07	22	181	117.4	255	178	17	F07/F10	+ □

## MARS DIRECT MOUNT BALL VALVES FAMILY MEMBERS

Series 22  
2-pc ball valves



Series 77  
3-piece ball valves



Series 88  
3-piece ball valves



Series 90D  
Flanged ball valves



Series 91D  
Flanged ball valves



Series 99  
Compact ball valves



Series 33  
3-/4-/5-ways B.V



Series 36  
3-/4-way ball valves



Series 31  
3-way ball valves



**MARS**  
DIRECT MOUNT  
BALL VALVES  
MAKING OTHERS  
FOLLOWERS

Series 39  
3-way ball valves



Series 77L  
3-piece ball valves



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