

MAR'S



SERIES 22
Direct Mount
2-Piece Ball Valves
1/4" to 3"
Full Port

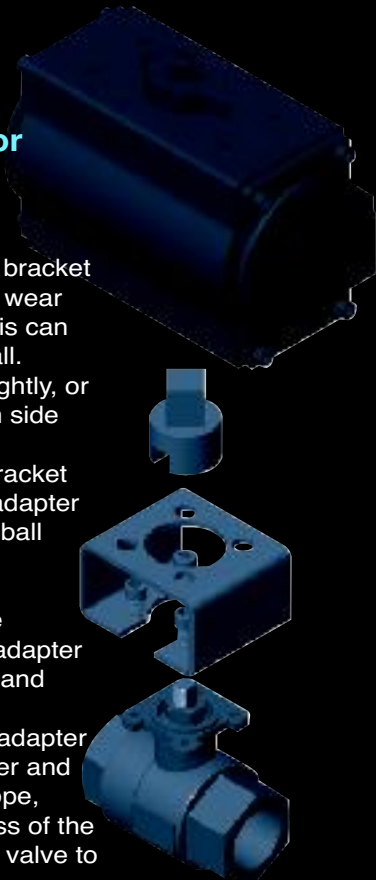
Easy Automation
High Performance

TAKE A GOOD LOCK
IT MAY BE YOUR FUTURE

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.

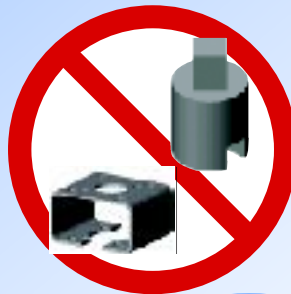


U.S. Patent 5,954,088

Germany Patent 299.02.532.2

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 COSTS.



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 / DIN 1.4408 Options: WCB, 316L S/S, Titanium, Duplex , Hastelloy C....etc.
Seat Material:	Standard: R-PTFE Options: TFM 1600, PEEK, Carbon filled PTFE, Delrin, UHMWPE, 50/50 S/S filled PTFE,and others
Inspection and Test:	API 598, BS6755 Part 1
Compliance Standards:	ANSI B16.34, ANSI B1.20, API 6D, BS 5351, BS21, DIN 3337, DIN 259, DIN 2999, ISO 5211, MSS SP25, MSS SP55
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:



0035
PED/97/23/EC
Category III
Module H



TA-Luft



II 2 GD
ATEX 94/9/EC

Easy Automation with patented Mars Direct Mount Ball Valves

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

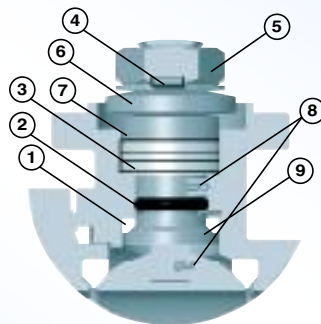
3. V-Ring Stem Packing

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.

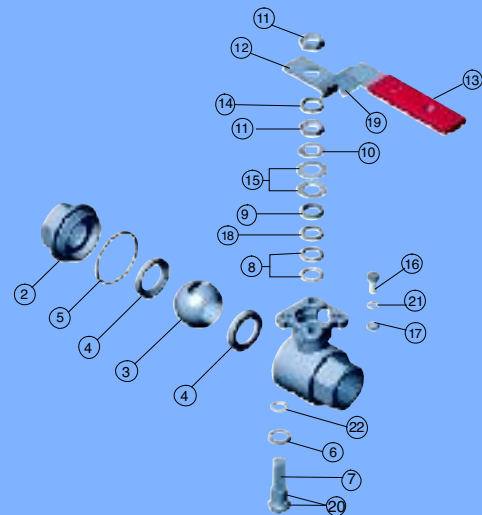
8. Anti-Static Device

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

9. Super Smooth Stem Finish

Reduces seal friction and operating torque, prolong service life.

MATERIALS OF CONSTRUCTION



NO.	PART NAME	MATERIAL	Q'TY
1	Body	ASTM A351 Gr. CF8M	1
2	End Cap	ASTM A351 Gr. CF8M	1
3	Ball	SUS 316	1
4	Seat	PTFE/RTFE	2
5	Joint Gasket	PTFE	1
6	Stem Seal	RPTFE	1
7	Stem	SUS 316	1
8	Gland Packing	PTFE	*
9	Gland Bush	SUS 304	1
10	Stop Washer	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	Gland Packing	25% Glass Fiber Filled + PTFE	1
19	Locking Device	SUS 304	1
20	Antistatic - Device	SUS 304	2
21	Washer	SUS 304	1
22	O-RING	VITON	1

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

DESIGN FEATURES

- 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
- MARS SealMax[®] Stem Design**
Provides optimum stem seal and extremely high cycle life
- Patented Leak-Watching Window**
Standard on Mars Direct Mount Ball Valves, for an early warning of stem leak, prevents accident and business disruption costs.
- Blow-Out Proof Stem**
- O-Ring Stem Seal**
Enhances stem wear and maintains stem alignment, provides extra longer service life
- Super smooth stem surface**
Reduces seal friction and operating torque
- Locking Device Standard**
- Anti-Static Device**
Spring loaded stem-to-ball and stem-to-body anti-static device as standard

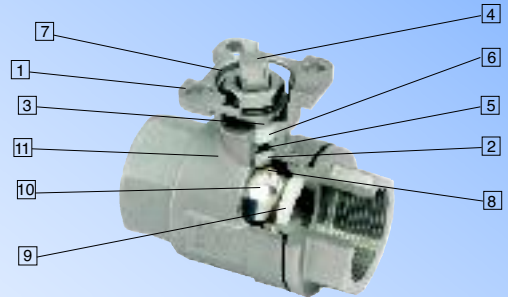
9. Seats

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

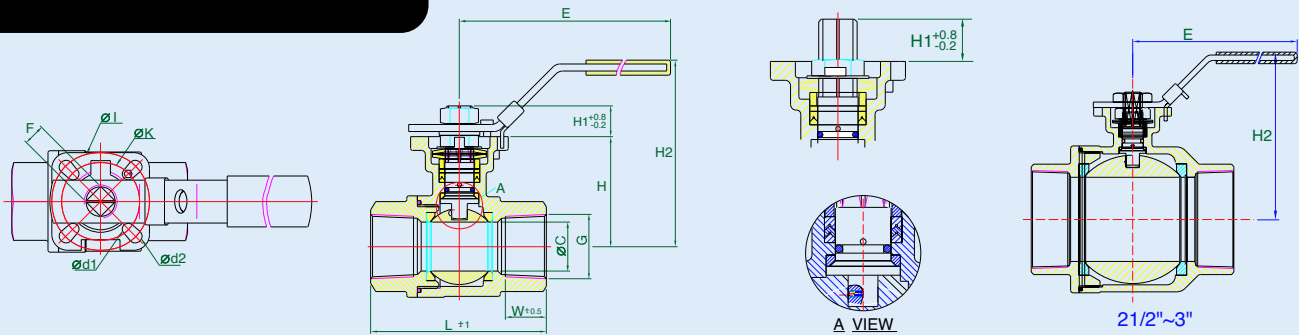
10. Ball

- 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



DIMENSIONS(mm)



SIZE	øC	ød1	ød2	E	F	G	H	H1	H2	øI	øK	L	W	W(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/F05
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	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	3" NPT or BSP	117.4	18.1	175	102	70	178.0	34	10.35	F07/F10

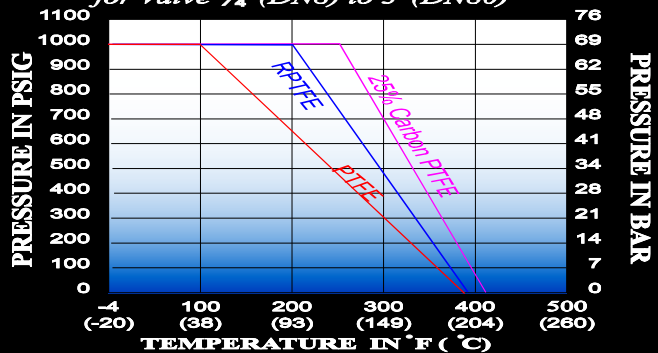
** Size 1/4" to 3/4" ISO 5211 standard configuration is F03/F04, F03/F04/F05 as option.

BREAK AWAY TORQUE AND Cv/Kv

Valve Size		Break Away Torque (R-PTFE Seats)		Cv	Kv
Inch	DN	In / Lb	Nm	G.P.M.	m ³ / h
1/4"	8	58	7	8	6.8
3/8"	10	58	7	8	6.8
1/2"	15	58	7	15	12.8
3/4"	20	69	8	34	29.1
1"	25	127	14	56	47.8
1 1/4"	32	161	18	85	72.6
1 1/2"	40	230	26	125	106.8
2"	50	323	36	250	213.7
2 1/2"	65	484	55	320	273.3
3"	80	772	87	580	495.3

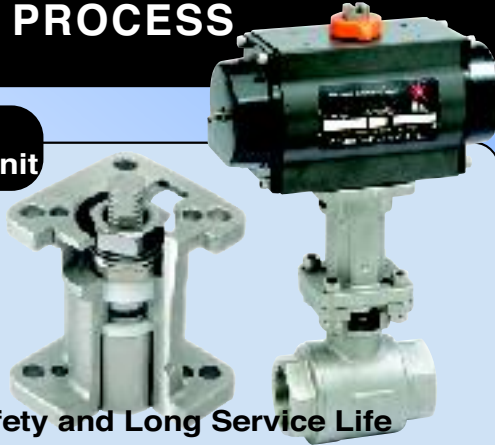
* Break Away Torque
-30% safety factor included
-Standard Mars valves are assembled with silicon-free based in lubricant, torque for dry assembled valves please consult factory

Pressure Vs. Temperature Chart for Valve 1/4"(DN8) to 3"(DN80)



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

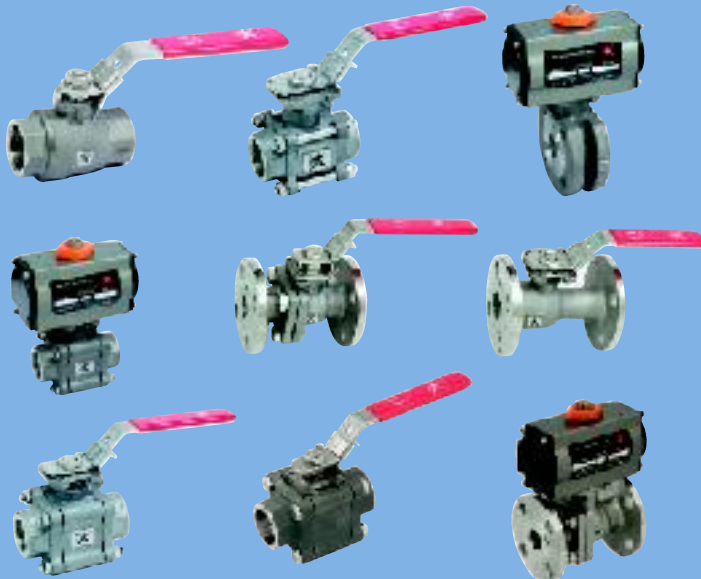
- The TSM unit designed for possible fugitive emission to meet TA-Luft requirements for a safe and clean environment, provides a secondary stem seal for the valve stem, prolongs service life.
- The TSM unit can also function as stem extension for insulation.

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 Including Series 20, Series 22, Series 77, Series 83, Series 88, Series 90, Series 90D, Series 91D, and Series 99 ball valves



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

- Investment Cast S/S Handle
Valve sizes 1/4"-2"



- T-Handle Stainless Steel
Valve sizes 2 1/2" and 3"

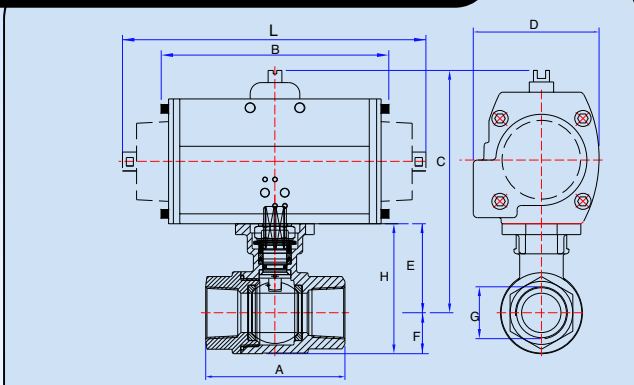


- Oval Handle
Valve sizes 1/4" - 2"

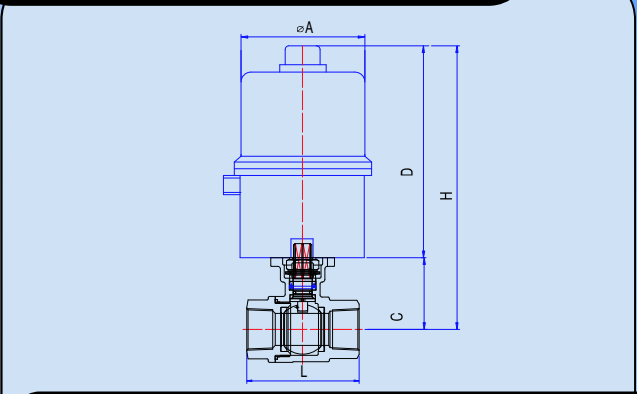


Mars Valve offers single-reliable-source for a complete line of ball valves, actuators, and accessories to meet your automation requirements.

Series 22 Ball Valves with AirMars Pneumatic Actuators



Series 22 Ball Valves with PowerMars Electric Actuators



Double-Acting

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"	74.5	120	130.15	62.2	46.15	21.5	67.6	3/4" NPT or BSP	A-125	3.31	1.50
1"	88.5	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

Valve Size	A	L	C	D	E	F	H	G	Actuator	Wt	
										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
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
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
3/4"	74.5	194.6	145.15	81.4	46.15	21.5	67.6	3/4" NPT or BSP	A-250SR4	5.29	2.40
1"	88.5	205.6	174.6	95	56.6	26	82.6	1" NPT or BSP	A-450SR4	8.36	3.79
1 1/4"	102	205.6	179	95	61	31.5	92.5	1 1/4" NPT or BSP	A-450SR4	9.26	4.20
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	355.0	278.4	140.5	117.4	69.8	187.2	3" NPT or BSP	A-2250SR4	43.63	19.79

VALVE SIZE	Electric Actuator	Flange Type	◇	A	C	D	H	L	STEM	ISO 5211	Lbs.	Kg
1/4"	OM-1	F03/F05	14	114	38.6	155	193.6	65	9	F03/F04	5.36	2.43
3/8"	OM-1	F03/F05	14	114	38.6	155	193.6	65	9	F03/F04	5.32	2.41
1/2"	OM-1	F03/F05	14	114	38.6	155	193.6	65	9	F03/F04	5.23	2.37
3/4"	OM-1	F03/F05	14	114	46.15	155	201.2	74.5	9	F03/F04	5.52	2.50
1"	OM-1	F03/F05	14	114	56.6	155	211.6	88.5	11	F04/F05	6.38	2.89
1 1/4"	OM-1	F03/F05	14	114	61	155	216	102	11	F04/F05	7.28	3.30
1 1/2"	OM-1	F03/F05	14	114	77.5	155	232.5	110	14	F05/F07	9.24	4.19
2"	OM-A	F07	17	114	85.2	203	288.2	125	14	F05/F07	13.75	6.23
2 1/2"	OM-2	F07	22	180	108.7	255	363.7	160.6	17	F07/F10	39.98	18.12
3"	OM-3	F07	22	180	117.4	255	372.4	178	17	F07/F10	45.87	20.79



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 B.V



Series 33

3-4/-5-ways B.V



Series 36

3-4-way ball valves



Series 31

3-way ball valves



MARS DIRECTMOUNT BALL VALVES MAKING OTHERS FOLLOWERS

Series 39

3-way ball valves



Series 77L

3-piece ball valves



MARS VALVE CO., LTD.
TRANSWORLD STEEL ENT.CO., LTD.

7F-6, NO. 200, SEC.4, WEN-SHIN ROAD,
TAICHUNG, TAIWAN, R.O.C.
TEL:++886-4-2297 3808
FAX:++886-4-2297 3608
E-mail: mars@marsvalve.com.tw
<http://www.marsvalve.com.tw>

Distributed by: