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Take
a Good Look
It May Be Your Future

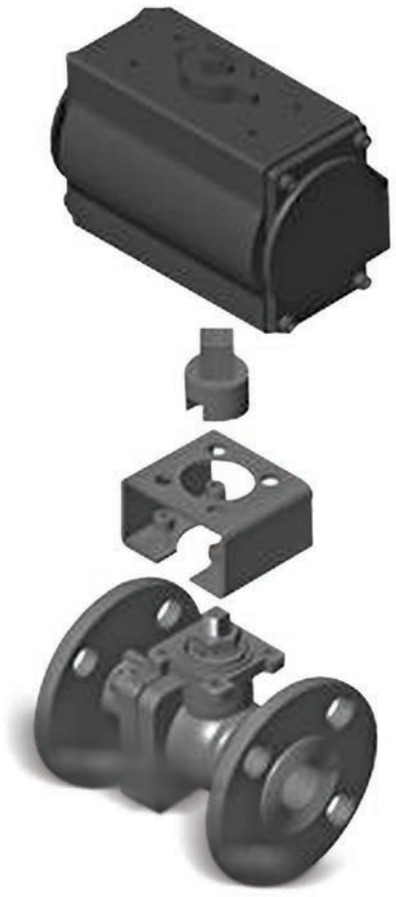
MARS

SERIES 90D

Direct Mount
Flanged Ball Valves
1/2" to 12" Full Port

www.marsvalve.com.tw

DO YOU STILL USE CONVENTIONAL ACTUATOR MOUNTING?

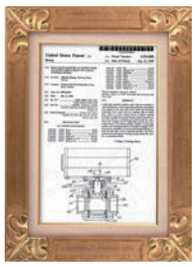


Conventional mounting method is to use a bracket and adapter between ball valve and actuator, however, the bracket and adapter can often be the source of failure for valve / actuator packages:

- 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.



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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.

MARS SERIES 90D
DIRECT MOUNT HIGH PERFORMANCE FLANGED BALL VALVES

Construction:	Split-Body Flanged Ball Valves, Full Port Investment Cast: 1/2"to 4",6" Sand Cast: 5" to 12"
Size Range:	1/2" to 12"
Pressure Rating:	FIG. 90D-10 ANSI 150# FIG. 90D-20 ANSI 300# FIG. 90D-30 PN 10/16 DIN F1 - EN 558-1-1 FIG. 90D-40 PN 10/16 DIN F4/F5 -EN 558- 1- 27 FIG. 90D-50 PN 25/40 DIN F1 - EN 558-1-1 FIG. 90D-60 PN 25/40 DIN F4/F5 - EN 558-1-27 FIG. 90D-70 JIS 10K
Valve Material:	Standard: ASTM A351 Gr. CF8M / EN 10213 1.4408 Options: WCB/1.0619, CF3M/1.4409, 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	ASME B16.34, API 607, API 6D, EN1092-1, ASME B16.5, DIN 3202 F1/F4, ASME
Standards:	B16.10, ISO 5211, MSS SP-55, ISO 5209
Material Certificate:	EN10204 – 3.1
Quality System:	ISO 9001
Options:	NACE MR-0175 Standard valve is non-fire safe design, fire safe valve is optional

APPROVALS:

SIL 3

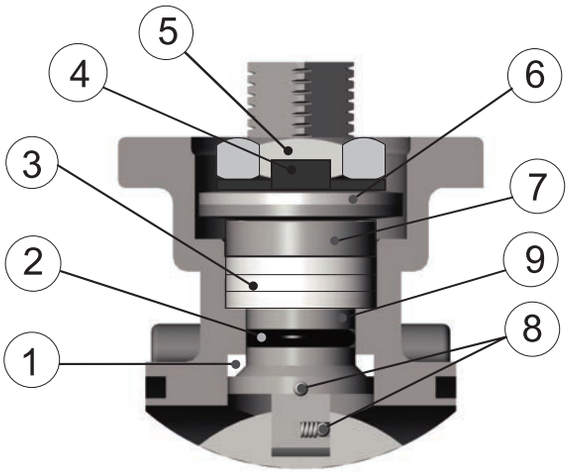
Fire safe tested
API 607 Rev 6

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

TA-Luft

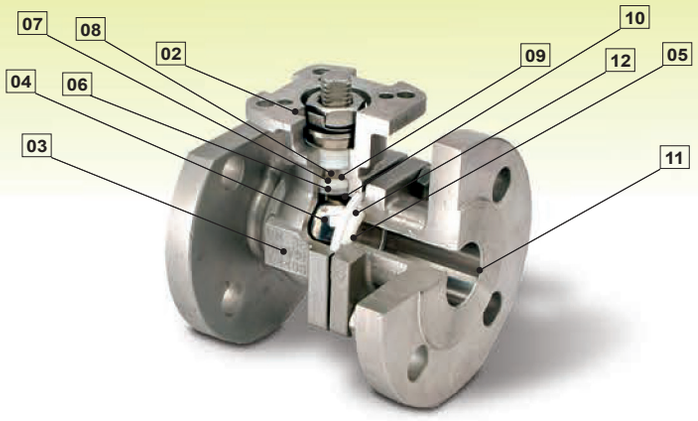
ATEX 2014/34/EU

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**
   Spring loaded Stem-to-Ball and Stem-to-Body as standard.
9. **Super Smooth Stem Finish**
   Reduces seal friction and operating torque, prolongs service life.

SERIES 90D DESIGN FEATURES



01. Fire-Safe Certified to API 607 6th Edition

02. 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.

03. Body Construction
-Sizes 1/2" to 4" investment cast.
-Sizes 5" and 6" sand cast standard, 6" investment cast optional

04. Ball
-Floating ball design provides pressure-assisted sealing plus temperature and wear compensation.
-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.
-V-PORTED BALL available on request.

05. 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.
-METAL SEATS available on request.

06. Mars SealMax® Stem Design
Provides optimum stem seal and extremely high cycle life.

07. Super smooth stem surface
Reduces seal friction and operating torque, prolongs service life.

08. Blow-out proof stem
Prevents stem from blowing out, for maximum safety.

09. O-Ring Stem Seal
Enhances stem wear and maintains stem alignment.

10. Anti-Static Device
Sprig loaded stem-to-ball and stem-to-body anti-static device as standard.

11. All wetted parts and flange surface fully machined

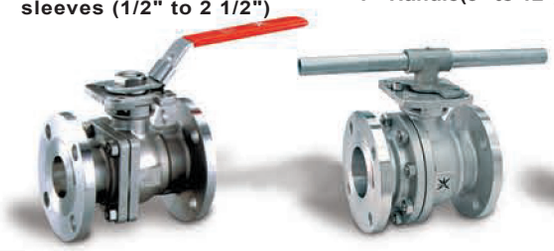
12. Fully encapsulated body seals
Maintenance sealing integrity from high vacuum to high pressure and temperature applications.

13. Interchangeable Parts with Series 90 ball valves
End Cap, Ball, and Ball Seats are interchangeable with Series 90 Ball valves, reduces manufacturing cost and your parts inventory.

Series 90D Standard Handle

S.S. Handle with vinyl sleeves (1/2" to 2 1/2")

T - Handle(3" to 12")



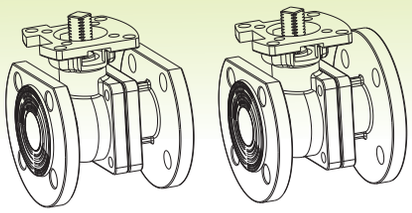
Handle Options

S . S . investment cast handle (1/2" to 21/2")

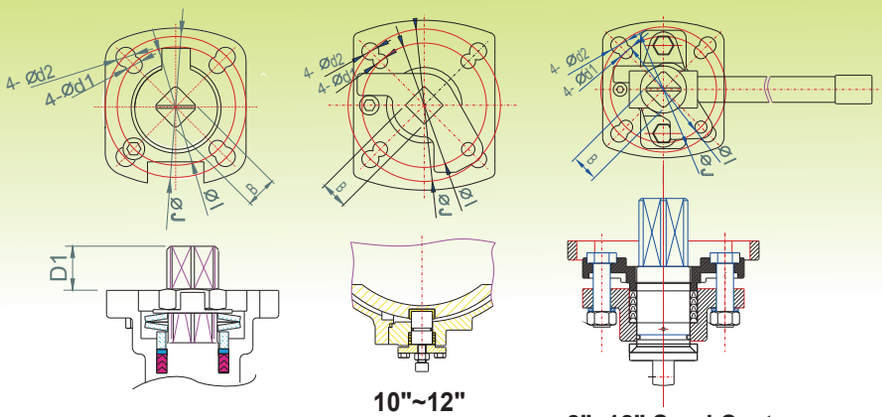
Spring Return Sliding Lock (SRSL) Handle (1/2" to 21/2")

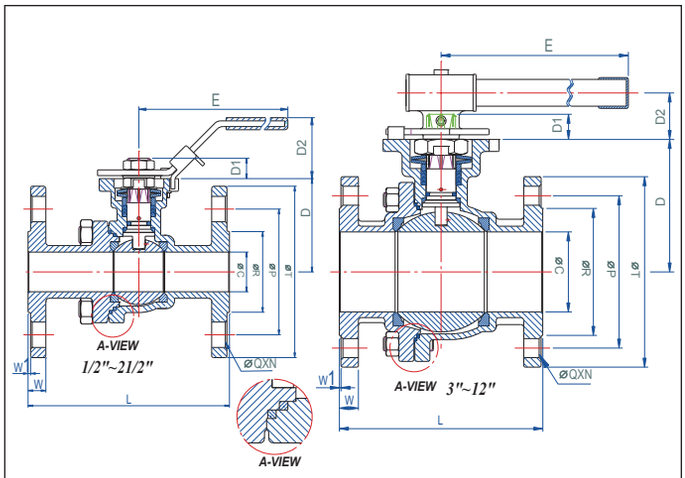
No matter the orientation of the ball valves, the SRSL handle always secure handle in position,making operation safe

SERIES 90D

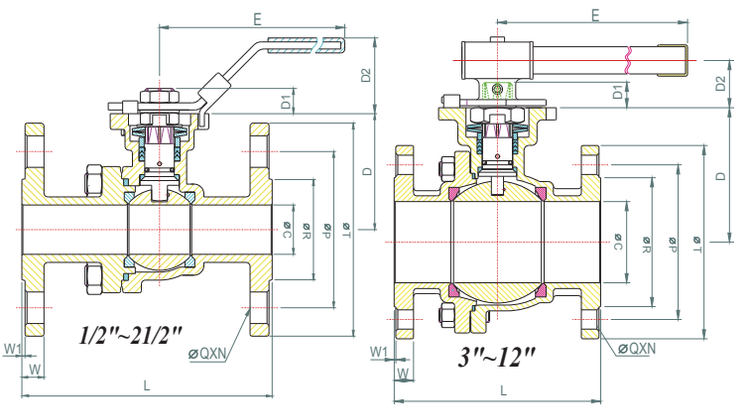


1/2",3/4" 1"~2"





SERIES 90DX double Joint Gasket Design



90D-10 (ANSI CLASS 150) Dimension B:17/19 Standard 17, Option 19

SIZE	ØC	B	E	D	D1	D2	ØI	ØJ	L	N	ØP	ØQ	ØR	ØT	W	W1	Ød1	Ød2	Wt(kg)	ISO5211
1/2"	15.0	11	165	46.7	9.9	36	42	50	108.3	4	60.5	16	35.1	88.9	11.2	1.6	6.5	7	1.81	F04/F05
3/4"	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	2.19	F04/F05
1"	25.0	11	165	58.8	10.3	36	42	50	127.1	4	79.2	16	50.8	108	11.2	1.6	6.5	7	2.91	F04/F05
11/4"	32.0	14	215	72.6	12.9	49	50	70	139.7	4	88.9	16	63.5	117.3	12.7	1.6	7.5	9	4.34	F05/F07
11/2"	38.0	17/19	262	89.1	19	58	70	102	165.1	4	98.6	16	73.2	127	14.3	1.6	10	12	6.40	F07/F10
2"	50.0	17/19	262	96.6	19	58	70	102	178.3	4	120.7	19	91.9	152.4	15.9	1.6	10	12	9.19	F07/F10
21/2"	65.0	17/19	262	116	19	58	70	102	190	4	139.7	19	104.6	177.8	17.6	1.6	10	12	14.3	F07/F10
3"	80	22	365	132.5	23	46.2	102	125	203.5	4	152.4	19	127	190.5	19	1.6	12	14	19.5	F10/F12
4"	100	22	365	157	23	46.2	102	125	228.6	8	190.5	19	157.2	228.6	23.9	1.6	12	14	31.0	F10/F12
5"	125	27	705	192.7	28.5	66.5	125	140	355.6	8	215.9	22.2	185.7	254	23.9	1.6	14	18	55.7	F12/F14
6"	150	27	705	210.2	28.5	66.5	125	140	393.7	8	241.3	22.2	215.9	279.4	25.4	1.6	14	18	75.0	F12/F14
8"	201	36	955	265	40	61	140	165	457.2	8	298.5	22.2	269.7	343	28.5	1.6	18	22	101.4	F14/F16
10"	252	46		300	45			165	533.4	12	362	25.4	324	406.4	30.3	1.6		22	143	F16
12"	303	46		340	45			165	609.6	12	431.8	25.4	381	482.6	31.8	1.6		22	239	F16

90D-20 (ANSI CLASS 300)

5"~12"(Sand Cast),6"(Investment Cast Optional)

SIZE	ØC	B	E	D	D1	D2	ØI	ØJ	L	N	ØP	ØQ	ØR	ØT	W	W1	Ød1	Ød2	Wt(kg)	ISO5211
1/2"	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	2.3	F04/F05
3/4"	20.0	11	165	63.5	10.3	36	42	50	152.4	4	82.6	19	42.9	117.3	15.8	1.6	6.5	7	3.9	F04/F05
1"	25.0	11	165	63.5	10.3	36	42	50	165.1	4	88.9	19	50.8	124	17.6	1.6	6.5	7	5.0	F04/F05
11/2"	38.0	17/19	262	89.1	19	58	70	102	190.5	4	114.3	22.2	73.2	155.4	20.6	1.6	10	12	10.05	F07/F10
2"	50.0	17/19	262	96.6	19	58	70	102	215.9	8	127	19	91.9	165.1	22.4	1.6	10	12	12.56	F07/F10
21/2"	65.0	17/19	262	116	19	58	70	102	241.3	8	149.4	22.2	104.6	190.5	25.4	1.6	10	12	19.72	F07/F10
3"	80	22	365	132.5	23	46.2	102	125	282.4	8	168.2	22.2	127	209.6	28.5	1.6	12	14	27.5	F10/F12
4"	100	22	365	157	23	46.2	102	125	304.8	8	200.2	22.2	157.2	254	31.8	1.6	12	14	44.2	F10/F12
6"	150	27	705	210.2	28.5	66.5	125	140	403.2	12	269.7	22.2	215.9	317.5	36.6	1.6	14	18	99.4	F12/F14

90D-30 F1 (PN10/16)/90D-40 F4/F5 (PN10/16)

Dimension B:17/19
Standard 17,Option 19

*Dimension for (90D-30) F1

SIZE	ØC	B	E	D	D1	D2	ØI	ØJ	L F4	L F5	*F1	N	ØP	ØQ	ØR	ØT	W	W1	Ød1	Ød2	Wt(kg)	ISO5211
1/2"	15.0	11	165	48.7	9.9	36	42	50	115		130	4	65	14	45	95	16	2	6	7	2.35	F04/F05
3/4"	20.0	11	165	53.7	9.9	36	42	50	120		150	4	75	14	58	105	18	2	6	7	3.05	F04/F05
1"	25.0	11	165	58.8	10.3	36	42	50	125		160	4	85	14	68	115	18	2	6	7	3.89	F04/F05
11/4"	32.0	14	215	72.6	12.9	49	50	70	130		180	4	100	18	78	140	18	2	7.5	9	5.78	F05/F07
11/2"	38.0	17/19	262	89.1	19	58	70	102	140		200	4	110	18	88	150	18	3	10	12	7.88	F07/F10
2"	50.0	17/19	262	96.6	19	58	70	102	150		230	4	125	18	102	165	20	3	10	12	10.16	F07/F10
21/2"	65	17/19	262	116	19	58	70	102	170		290	4	145	18	122	185	18	3	10	12	14.67	F07/F10
3"	80	22	365	132.5	23	46.2	102	125	180		310	8	160	18	138	200	20	3	12	14	19.58	F10/F12
4"	100	22	365	157	23	46.2	102	125	190		350	8	180	18	158	220	20	3	12	14	27.25	F10/F12
5"	125	27	705	192.7	28.5	66.5	125	140		325	400	8	210	18	188	250	22	3	14	18	53.43	F12/F14
6"	150	27	705	210.2	28.5	66.5	125	140		350	480	8	240	22	212	285	22	3	14	18	69.38	F12/F14
8"	201	36	955	265	40	61	140	165		400		12	295	22	268	340	24	3	18	22	89.94	F14/F16

90D-50 F1 (PN25/40)/90D-60 F4/F5 (PN25/40)

*Dimension for (90D-50) F1

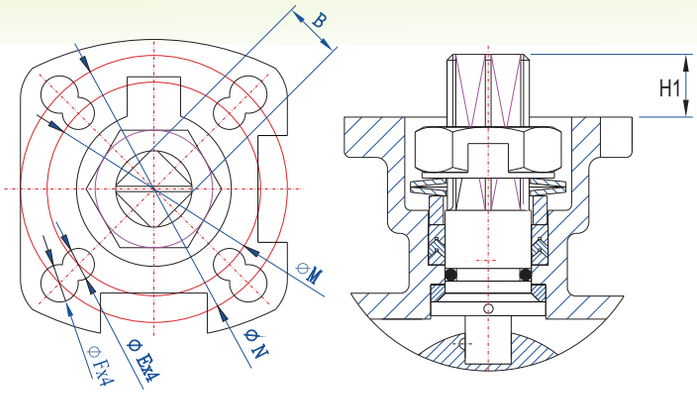
SIZE	ØC	B	E	D	D1	D2	ØI	ØJ	L F4	L F5	*F1	N	ØP	ØQ	ØR	ØT	W	W1	Ød1	Ød2	Wt(kg)	ISO5211
1/2"	15.0	11	165	48.7	9.9	36	42	50	115		130	4	65	14	45	95	16	2	6	7	2.35	F04/F05
3/4"	20.0	11	165	53.7	9.9	36	42	50	120		150	4	75	14	58	105	18	2	6	7	3.05	F04/F05
1"	25.0	11	165	58.8	10.3	36	42	50	125		160	4	85	14	68	115	18	2	6	7	3.89	F04/F05
11/4"	32.0	14	215	72.6	12.9	49	50	70	130		180	4	100	18	78	140	18	2	7.5	9	5.78	F05/F07
11/2"	38.0	17/19	262	89.1	19	58	70	102	140		200	4	110	18	88	150	18	3	10	12	7.88	F07/F10
2"	50.0	17/19	262	96.6	19	58	70	102	150		230	4	125	18	102	165	20	3	10	12	10.16	F07/F10
21/2"	65.0	17/19	262	116	19	58	70	102	170		290	8	145	18	122	185	22	3	10	12	-	F07/F10
3"	80	22	365	132.5	23	46.2	102	125	180		310	8	160	18	138	200	24	3	12	14	21.58	F10/F12
4"	100	22	365	157	23	46.2	102	125	190		350	8	190	22	162	235	24	3	12	14	30.63	F10/F12
6"	150	27	705	210.2	28.5	66.5	125	140		350		8	250	26	218	300	28	3	14	18	79.31	F12/F14

90D-70 (JIS 10K)

SIZE	ØC	B	E	D	D1	D2	ØI	ØJ	L	N	ØP	ØQ	ØR	ØT	W	W1	Ød1	Ød2	ISO5211
1/2"	15.0	11	165	48.7	9.9	36	42	50	108	4	70	15	52	95	12	1	6.5	7	F04/F05
3/4"	20.0	11	165	51.2	9.9	36	42	50	117	4	75	15	58	100	14	1	6.5	7	F04/F05
1"	25.0	11	165	63.5	10.3	36	42	50	127	4	90	19	70	125	14	1	6.5	7	F04/F05
11/4"	32.0	14	215	72.6	12.9	49	50	70	140	4	100	19	80	135	16	2	7.5	9	F05/F07
11/2"	38.0	17/19	262	89.1	19	58	70	102	165	4	105	19	85	140	16	2	10	12	F07/F10
2"	50.0	17/19	262	96.6	19	58	70	102	178	4	120	19	100	155	16	2	10	12	F07/F10
21/2"	65.0	17/19	262	116	19	58	70	102	190	4	140	19	120	175	18	2	10	12	F07/F10
3"	80	22	365	132.5	23	46.2	102	125	203	8	150	19	130	185	18	2	12	14	F10/F12
4"	100	22	365	157	23	46.2	102	125	229	8	175	19	155	210	18	2	12	14	F10/F12

MARS TOP WORKS MAKE AUTOMATION AS EASY AS IT GETS

90D-10 Series 1/2"~12"(ANSI 150#)
90D-20 Series 1/2"~6"(ANSI 300#)
90D-30(1/2"~6"),90D-40(1/2"~8")PN10/16
90D-5060 Series 1/2"~6"(PN25/40)
90D-70 Series 1/2"~4"(JIS 10K)



DIMENSION(mm)

SIZE	B	H1	* H1	M	N	E	# E	F	ISO5211
1/2"	11	9.9	9.9	42	50	6.5	6	7	F04/F05
3/4"	11	9.9	10.3	42	50	6.5	6	7	F04/F05
1"	11	10.3	10.3	42	50	6.5	6	7	F04/F05
1-1/4"	14	12.9	-	50	70	7.5	7.5	9	F05/F07
1-1/2"	17/19	19	19	70	102	10	10	12	F07/F10
2"	17/19	19	19	70	102	10	10	12	F07/F10
2-1/2"	17/19	19	19	70	102	10	10	12	F07/F10
3"	22	23	23	102	125	12	12	14	F10/F12
4"	22	23	23	102	125	12	12	14	F10/F12
5"	27	28.5	-	125	140	14	14	18	F12/F14
6"	27	28.5	28.5	125	140	14	14	18	F12/F14
8"	36	40	-	140	165	18	18	22	F14/F16
10"	46	45	-	-	165	-	-	22	F16
12"	46	45	-	-	165	-	-	22	F16

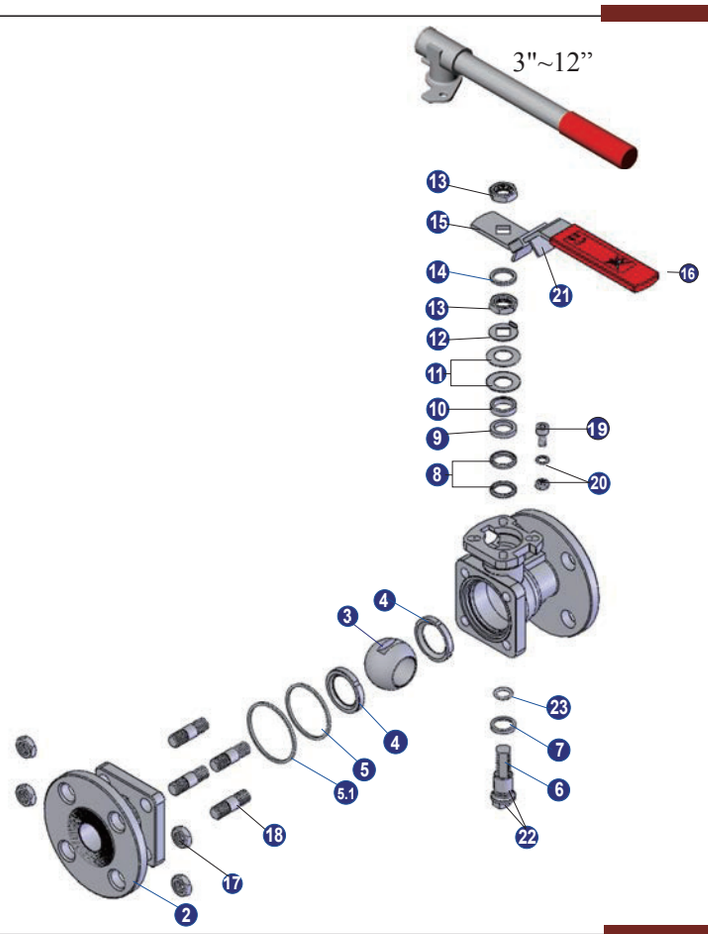
Dimension B: 17/19
Stadard 17, Option19

* Dimensions for 90D-20
#Dimensions for 90D-30/40/50/60

MATERIALS LIST

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

§ 1/2"~11/4"- 2pcs, 11/2"~6"- 3pcs.
‡ For 1/2"~2"-4pcs of bolt;and bolt nuts.
For 21/2"~ 5"- 8pcs of stud and nuts.
For 6" - 10pcs of stud and nuts.
For 8" - 12pcs of stud and nuts.
NO.* 5.1 for 90DX double Joint Gasket Design



Breakaway Torque(RPTFE) & Cv Value

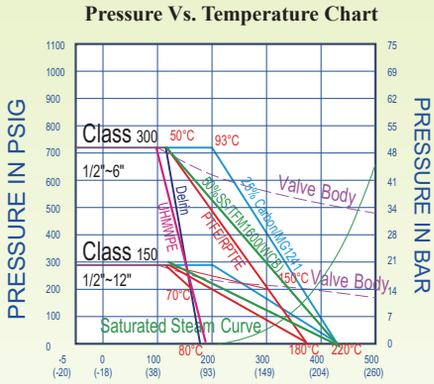
SIZE	DN	Inch-Lb	Nm	Cv	Kv M3/h
1/2"	15	89	10	15	13
3/4"	20	124	14	40	34
1"	25	151	17	70	60
1-1/4"	32	204	23	110	94
1-1/2"	40	301	34	250	213
2"	50	346	39	430	366
2-1/2"	65	514	58	700	595
3"	80	833	94	1100	935
4"	100	895	101	2000	1700
5"	125	2,073	234	3700	3145
6"	150	2,188	247	5400	4590
8"	200	7263	819	9800	8330
10"	250	12,105	1365	16400	13940
12"	300	24,209	2730	23800	20230

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

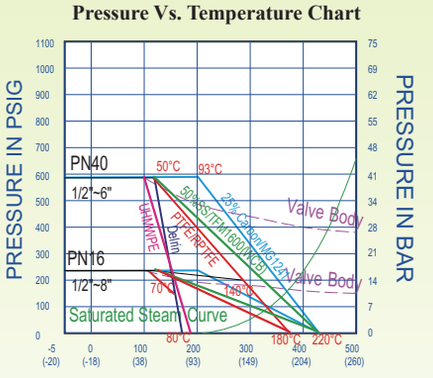
Class 150: Series 90D-10(1/2"~12")
Class 300: Series 90D-20(1/2"~6")

Pressure : PN16/PN40
PN16:SERIES 90D-30/40(1/2"~8")
PN40: SERIES 90D-50/60(1/2"~6")

Pressure Vs. Temperature Chart

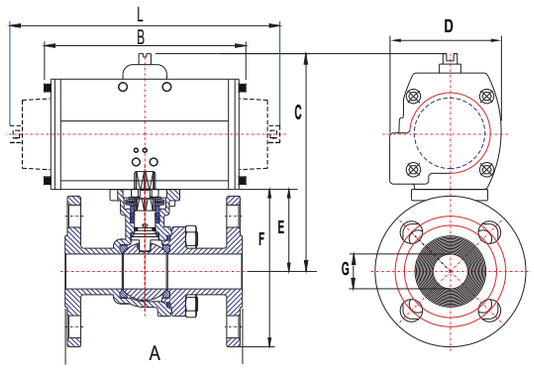


Pressure Vs. Temperature Chart



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

Series 90D Ball Valves with AirMars Pneumatic Actuator



90D-10 / 20 **Double-Acting (80 PSI)** * Dimensions for 90D-20

Valve Size	A	* A	B	C	* C	D	E	* E	F	* F	G	Actuator	Wt(Kg)	*Wt(Kg)
1/2"	108.3	139.7	144.3	145.7	147.7	81.4	56.7	48.7	91.2	96.4	DN15	A-250	3.24	3.7
3/4"	117.3	152.4	144.3	150.2	162.5	81.4	51.2	63.5	100.5	122.2	DN20	A-250	3.58	5.3
1"	127.1	165.1	144.3	157.8	162.5	81.4	58.8	63.5	112.8	125.5	DN25	A-250	4.41	6.39
11/4"	139.7	-	149.2	190.6	-	95	72.6	-	131.3	-	DN32	A-450	6.16	-
11/2"	165.1	190.5	183	230.1	230.1	119	89.1	89.1	152.5	166.8	DN40	A-1000	9.65	13.07
2"	178.3	215.9	183	237.6	237.6	119	96.6	96.6	172.8	179.2	DN50	A-1000	12.35	15.58
21/2"	190	241.3	183	257	257	119	116	116	204.9	211.3	DN65	A-1000	17.25	22.74
3"	203.5	282.4	259.6	293.5	293.5	140.5	132.5	132.5	227.8	237.3	DN80	A-2250	25.8	33.23
4"	228.5	304.8	259.6	318	318	140.5	157	157	271.3	284	DN100	A-2250	37.3	51.63
5"	355.6	-	304.3	388.7	-	185.2	192.7	-	319.7	-	DN125	A-3650	67.72	-
6"	393.7	403.2	304.3	406.2	406.2	185.2	210.2	210.2	349.9	368.9	DN150	A-3650	88	111.4
8"	457.2	-	490	528.7	-	238.2	265	-	436.5	-	DN200	A-11000	136.4	-

90D-10 / 20 **Spring-Return (80 PSI)** * Dimensions for 90D-20

Valve Size	A	* A	L	C	* C	D	E	* E	F	* F	G	Actuator	Wt(Kg)	*Wt(Kg	Remark
1/2"	108.3	139.7	205.6	164.7	166.7	95	46.7	48.7	91.2	96.4	DN15	A-450SR4	4.54	5.0	+□
3/4"	117.3	152.4	205.6	169.2	181.5	95	51.2	63.5	100.5	122.2	DN20	A-450SR4	4.88	6.6	+□
1"	127.1	165.1	250	199.8	204.5	119	58.8	63.5	112.8	125.5	DN25	A-1000SR4	8.01	9.99	+□
11/4"	139.7	-	250	213.6	-	119	72.6	-	-	-	DN32	A-1000SR4	9.16	-	+□
11/2"	165.1	190.5	355	250.1	250.1	140.5	89.1	89.1	152.6	166.8	DN40	A-2250SR4	15.95	19.37	+□
2"	178.3	215.9	355	257.6	257.6	140.5	96.6	96.6	172.8	179.2	DN50	A-2250SR4	18.65	21.88	+□
21/2"	178.3	241.3	355	277	277	140.5	116	116	204.9	211.3	DN65	A-2250SR4	23.55	29.04	+□
3"	203.5	282.4	422	328.5	328.5	185.2	132.5	132.5	227.8	237.3	DN80	A-3650SR4	36.3	43.73	+□
4"	228.5	304.8	487	373	373	204.8	157	157	271.3	284	DN100	A-5000SR4	55.3	69.63	+□
5"	355.6	-	642	456.4	-	238.2	192.7	-	326.7	-	DN128	A-11000SR4	102.7	-	+□
6"	393.7	403.2	642	473.9	473.9	238.2	210.2	210.2	362.2	368.9	DN150	A-11000SR4	123	143.4	+□

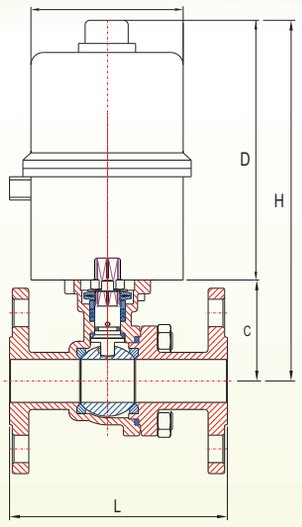
90D-30 / 40 / 50 / 60 **Double-Acting (80 PSI)**

Valve Size	A		B	C	D	E	F	G	Actuator	Wt(Kg)
	F4/F5	F1								
1/2"	115	130	144.3	147.7	81.4	48.7	96.2	DN15	A-250	3.75
3/4"	120	150	144.3	152.7	81.4	53.7	106.2	DN20	A-250	4.45
1"	125	160	144.3	157.8	81.4	58.8	116.3	DN25	A-250	5.29
11/4"	130	180	149.2	190.6	95	72.6	142.6	DN32	A-450	7.60
11/2"	140	200	183	230.1	119	89.1	164.1	DN40	A-1000	10.90
2"	150	230	183	237.6	119	96.6	179.1	DN50	A-1000	13.18
21/2"	170	290	183	257	140.5	116	208.5	DN65	A-1000	17.69
3"	180	310	259.6	293.5	140.5	132.5	232.5	DN80	A-2250	25.94
4"	190	350	259.6	318	140.5	157	267	DN100	A-2250	33.61
5"	325	400	304.3	388.7	185.2	192.7	326.7	DN125	A-3650	65
6"	350	480	304.3	406.2	185.2	210.2	362.2	DN150	A-3650	81
8"	400		490	528.7	238.2	265	435	DN200	A-11000	127.5

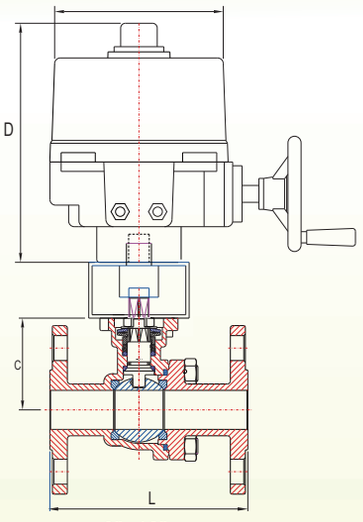
90D-30 / 40 / 50 / 60 **Spring-Return (80 PSI)**

Valve Size	A		L	C	D	E	F	G	Actuator	Wt(Kg)	Remark
	F4/F5	F1									
1/2"	115	130	205.6	166.7	95	48.7	96.2	DN15	A-450SR4	5.05	+□
3/4"	120	150	205.6	171.7	95	53.7	106.2	DN20	A-450SR4	5.75	+□
1"	125	160	250	199.8	119	58.8	116.3	DN25	A-1000SR4	8.89	+□
11/4"	130	180	250	213.6	119	72.6	142.6	DN32	A-1000SR4	10.3	+□
11/2"	140	200	355	250.1	140.5	89.1	164.1	DN40	A-2250SR4	17.2	+□
2"	150	230	355	257.6	140.5	96.6	179.1	DN50	A-2250SR4	19.48	+□
21/2"	170	290	355	277	140.5	116	208.5	DN65	A-2250SR4	23.99	+□
3"	180	310	422	328.5	185.2	132.5	232.5	DN80	A-3650SR4	36.44	+□
4"	190	350	487	373	204.8	157	267	DN100	A-5000SR4	51.61	+□
5"	325	400	642	456.4	238.2	192.7	326.7	DN125	A-11000SR4	100	+□
6"	350	480	642	473.9	238.2	210.2	362.2	DN150	A-11000SR4	116	+□

Series 90D Ball Valves with PowerMars Electric Actuator



1/2"~21/2"



3"~12"

90D-10/20/3040/5060 SERIES * Dimensions for Ansi 300LBS

VALVE SIZE	Electric Actuator 150#	Electric Actuator 300#	Flange Type 150#	Flange Type 300#	150# ◇	300# ◇	øA	C	*C	D	H	*H	L	*L	◆ STEM	ISO 5211	Lbs.	Kg	*Lbs.	*Kg
1/2"	OM-1	OM-1	F03/F05	F03/F05	14	14	106	46.7	48.7	150	196.7	198.7	108.3	139.7	11	F04/F05	8.03	3.64	9.05	4.1
3/4"	OM-1	OM-1	F03/F05	F03/F05	14	14	106	51.2	63.5	150	201.2	213.5	117.3	152.4	11	F04/F05	8.78	3.98	12.58	5.7
1"	OM-1	OM-1	F03/F05	F03/F05	14	14	106	58.8	63.5	150	208.8	213.5	127.1	165.1	11	F04/F05	10.61	4.81	14.98	6.79
11/4"	OM-1	-	F03/F05	-	14	-	106	72.6	-	150	222.6	-	139.7	-	14	F05/F07	13.15	5.96	-	-
11/2"	OM-A	OM-2	F05/F07	F07	17	22	106	89.1	89.1	196/255	285.1	344.1	165.1	190.5	17	F07/F10	19.75	8.96	44.8	20.37
2"	OM-A	OM-2	F05/F07	F07	17	22	106	96.6	96.6	196/255	292.6	351.6	178.3	215.9	17	F07/F10	27.88	12.65	50.48	22.88
21/2"	OM-2	OM-2	F07	F07	22	22	181	116	116	255	371	371	190	241.3	17	F07/F10	54.16	24.55	66.28	30.04

* Dimensions for Ansi 300LBS

VALVE SIZE	Electric Actuator	Flange Type	◇	øA	C	*C	D	L	*L	◇ STEM	ISO 5211	
3"	OM-3	F07	22	181	132.5	132.5	255	203.5	282.4	22	F10/F12	&
4"	OM-3	F07	22	181	157	157	255	228.6	304.8	22	F10/F12	&
5"	OM-4	F10	35	217	192.7	-	317	355.6	-	27	F12/F14	&
6"	OM-4	F10	35	217	210.2	210.2	317	393.7	403.2	27	F12/F14	&
8"	OM-7	F12 or F14	∅35x10	234	265	-	420	457.2	-	36	F14/F16	&
10"	OM-8	F12 or F14	∅35x10	234	300	-	420	533.4	-	46	F16	&
12"	OM-11	F16	∅75x12	260	340	-	590	609.6	-	46	F16	&

& Mounting kit required

HOW TO ORDER ☑90D-10 ST05B

90D-10	S	T	05	B
VALVE	BODY MATERIAL	SEAT MATERIAL	SIZE	HANDLE STYLE
☑90D-10 ☐90D-20 ☐90D-30 ☐90D-40 ☐90D-50 ☐90D-60 ☐90D-70	☑S - CF8M ☐W - WCB ☐L - CF3M ☐D - Duplex ☐T - Titanium ☐A - Alloy 20	☐P PTFE ☐R R-TFE ☑T TFM1600 ☐S 50/50 S.S.+PTFE ☐M MG1241 ☐C Carbon filled PTFE ☐U UHMWPE ☐K Peek ☐D Delrin ☐A Metal	☐01) 1/4" ☐02) 3/8" ☐03) 1/2" ☑04) 3/4" ☐05) 1" ☐06) 1 1/4" ☐07) 1 1/2" ☐08) 2" ☐09) 2 1/2" ☐10) 3" ☐11) 4" ☐12) 5" ☐13) 6" ☐14) 8" ☐15) 10" ☐16) 12"	☐ Standard handle ☐I - Investment cast ☐O - Oval handle ☐L - SRSL handle ☐S - SRS handle ☑B - Bare shaft ☐G - Gear box

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

SERIES 90D V-CONTROL BALL VALVES

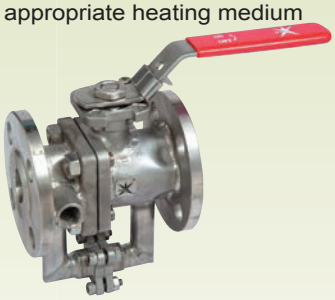
Mars V-Control Ball valves match the control performance of globe valve, excellent for modulating service, but Mars V-Control ball valves are more compact, lighter weight, and much less expensive than globe valves.

30˚V 60˚V 90˚V

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

SERIES 90D HEATING JACKET

Jacketed ball valves prevent solidification and blockage in use of hot water, steam, or other appropriate heating medium



Double Block and Bleeding Ball Valves

Stainless Steel or Carbon Steel
Size Range: 1/2" to 6"
Pressure Rating: ANSI Class 150
Face to face: According to ANSI Class 150

SERIES 90D 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 90D Titanium BALL VALVES

Light weight, Excellent for Corrosion Resistance

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