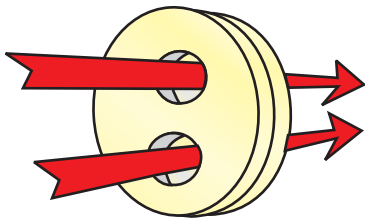TRUSTED
SINCE 1958
WORLDWIDE
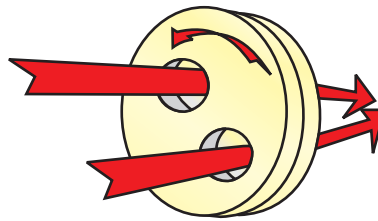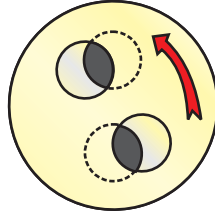
WORLDWIDE

Precise.

Quality.

Reliable.

Taylor Valve Technology Multi-Orifice Valve Design Principle Provides Precision Control.
The two adjacent internal discs each contain two precision orifices.

Full Open	Throttling	Full Closed

When the holes on both discs are aligned the valve is in the Full Open Position.

When the front disc is rotated, changing the alignment and relationship to the fixed back disc, the flow area and orifice size are affected, the result is either increase or decrease in flow.
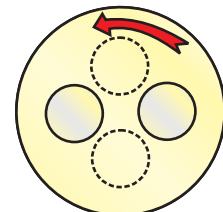
When the front disc is rotated a full 90° (one quarter turn), the valve is in the Full Closed Position.

The discs are lapped to within two light bands of flatness (+/- .00002") to achieve positive shut off and maintain precise control. The fixed back disc is held perpendicular to the flow. The front disc floats against the back disc and seeks a mating surface promoting a positive seal. The differential pressure across the upstream disc and the downsteam disc stabilizes the control surfaces. Vibration, noise or fatigues normally associated with loose or unsupported parts are eliminated. No control surfaces are introduced into the orifice, providing a clear center line for the flow. The valves are rated for shut-off at ANSI Class III or IV depending on the style of valve and trim used. The orifices of the standard disc expose a small control surface profile to the fluid steam reducing wear. The multi-orifice design produces near linear flow characteristics. The low torque and quarter-turn design of Taylor Valve Technology's Multi-orifice valves allows for a variety of actuation options: manual, pneumatic, hydraulic, or electric.

1" BODY STANDARD DIMENSIONS AND WEIGHTS

| CONNECTIONS | | DIM. END-to-END IN. (MM.) +/- .10 | WEIGHT | |
INLET	OUTLET		LB.	KG.
1" FNPT	1" FNPT	8.92	22	9.99
1" BUTT WELD	1" BUTT WELD	8.92	22	9.99
1" 150 RFF	1" 150 RFF	13.48	28	12.71
1" 150 RTJ	1" 150 RTJ	13.85	28	12.71
1" 300 RFF	1" 300 RFF	13.98	30	13.62
1" 300 RTJ	1" 300 RTJ	14.35	30	13.62
1" 600 RFF	1" 600 RFF	14.48	30	13.62
1" 600 RTJ	1" 600 RTJ	14.48	30	13.62
1" 900 RFF	1" 900 RFF	15.35	40	18.16
1" 900 RTJ	1" 900 RTJ	15.35	40	18.16
1" 1500 RFF	1" 1500 RFF	15.35	40	18.16
1" 1500 RTJ	1" 1500 RTJ	15.35	40	18.16

2" BODY STANDARD DIMENSIONS AND WEIGHTS

| CONNECTIONS | | DIM. END-to-END IN. (MM.) +/- .10 | WEIGHT | |
INLET	OUTLET		LB.	KG.
2" FNPT	2" FNPT	10.04	23	10.40
2" BUTT WELD	2" BUTT WELD	9.80	22	9.99
2" 150 RFF	2" 150 RFF	14.98	34	15.44
2" 150 RTJ	2" 150 RTJ	15.35	34	15.44
2" 300 RFF	2" 300 RFF	15.48	40	18.16
2" 300 RTJ	2" 300 RTJ	15.98	40	18.16
2" 600 RFF	2" 600 RFF	16.23	46	20.88
2" 600 RTJ	2" 600 RTJ	16.36	46	20.88
2" 900 RFF	2" 900 RFF	18.48	72	32.69
2" 900 RTJ	2" 900 RTJ	18.61	72	32.69
2" 1500 RFF	2" 1500 RFF	18.48	72	32.69
2" 1500 RTJ	2" 1500 RTJ	18.61	72	32.69

MC Inline Choke
1" & 2" Configuration
316 SS
¼ Turn Actuated
Body Rating = 3,600 PSI
CV Range = 0.70 - 16.57

FLOW

End-to-End

No.	Description	Qty
1	Hub	1
2	O Ring	1
3	O Ring	1
4	Disc	2
5	O Ring	2
6	Backup Ring	2
7	Rotator	1
8	Cap Screw	6
9	Handle	1
10	Retaining Ring	1
11	Body	1
12*	Flow Tube	1
13**	Dowel Pins	5
14**	Drive Screw	2
15**	Index Label	1
16**	Data Plate	1
17**	Screw	2
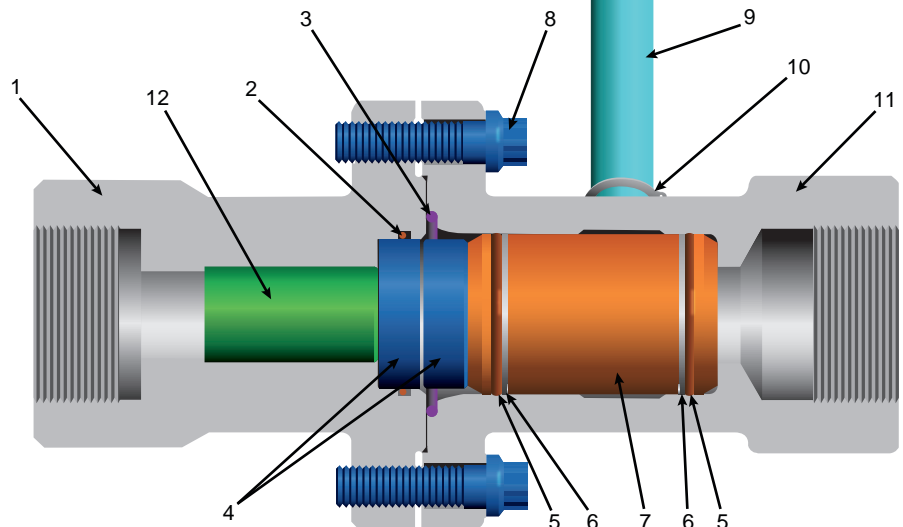
*Item optional
** Items not shown in section view

NOTE: Taylor Valve reserves the right to change product designs and specifications without notice.

3

MC SERIES
CHOKE VALVES

FEATURES
&*Benefits*

- **Accurate Control** - 90 degree rotation from Full Off to Full On

- **Bolted Body** - Body is constructed with two bolted segments, avoiding the risk of corrosion, cross threading, galling of threaded type valve assemblies.

- **Extended Mean Time Between Service** - Robust design and liberal application of hardened materials, efficient flow-geometry means the valves offer maximum production potential and minimum service requirements.

- **Easy Maintenance** - Choke valves are designed to provide simple straightforward disassembly with no special tooling or fixtures.

- **Optional Features** - Choke valves can have trims and actuators custom designed for specific requirements, such as, special trims for noise reduction and sand control, several trims are available to accommodate high pressure flows or minimum pressure loss applications.

Applications:
- Well Site Automation
- Water Injection Control Valve
- CO_2 Injection Control Valve
- Pump Bypass
- Pump Startup
- Gas Lift Injection Control
- Blow Down and Dump Valve
- Steam Injection
- Throttling Valve
- High DP Valve
- Motor Operated Valve

Taylor Valve Technology

WWW.TAYLORVALVE.COM

The MC Series of Inline MOV Chokes Offer:

~ ANSI Class III Shut Off
~ Linear flow characteristics
~ Downstream Wear Resistant Flow Tube
~ Simple Design for easy field maintenance
~ Choice of materials for body standard is 316 SS
~ Threaded, Flanged, Butt Weld, and Victaulic End
~ Sizes from 1" and 2" Threaded to 3" Flanged
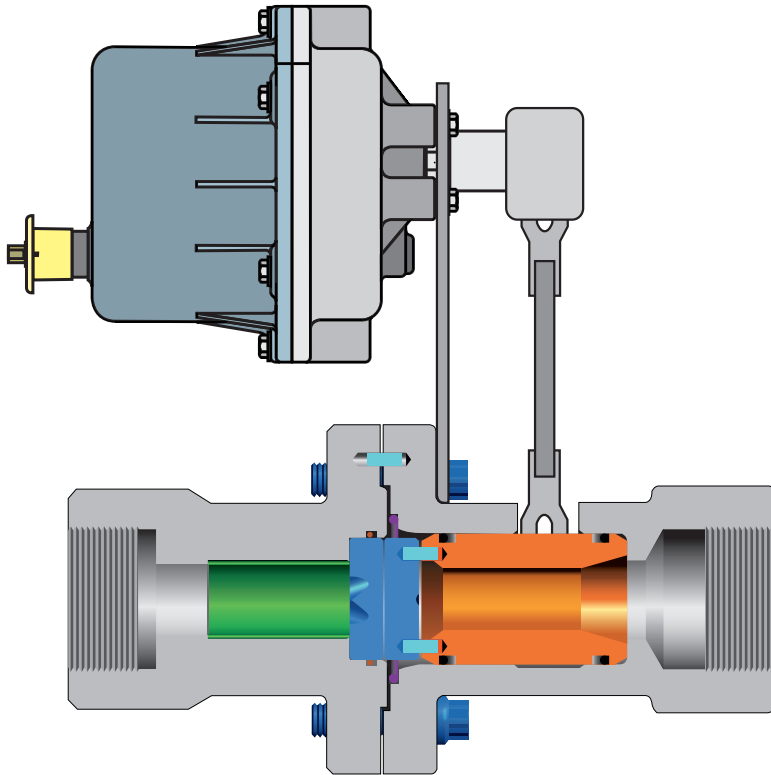
Control Element Disc

Ceramic disc recommended
up to 1500 PSI Pressure Drops
Tungsten Carbide above
500 psi up to maximum
operating pressure of valve.

Taylor Valve MC Series
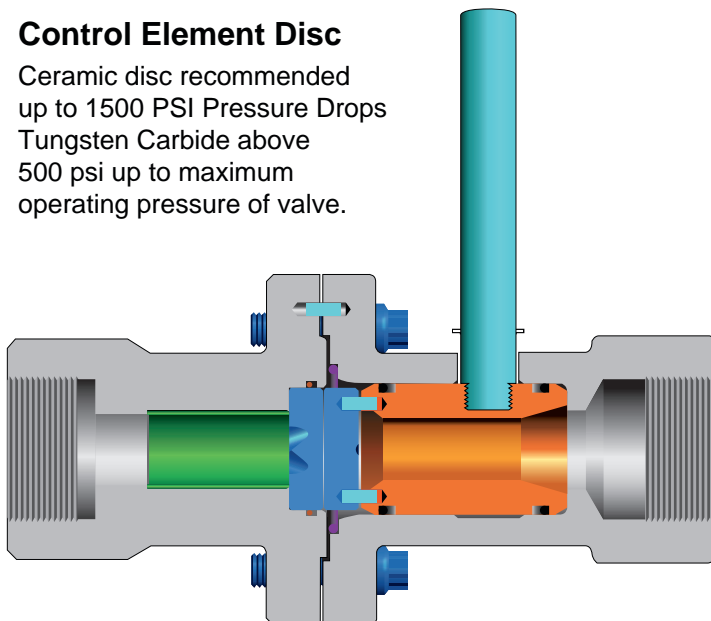
NOMOGRAPHS

For WATER

PRESSURE DROP (DP)
ACROSS CHOKE (PSI)

10000
8000
6000
5000
4000
3000
2000
1000
800
600
500
400
300
200
100
80
60
50
40
30
20
10
8
6
5
4
3
2
1

FLOW RATE
BBL/DAY   GAL/MIN

100000
80000
60000 — 2000
40000
30000 — 1000
20000 — 800
        — 600
        — 400
10000 — 300
8000
6000 — 200
4000
3000 — 100
2000 — 80
        — 60
        — 40
1000 — 30
800
600 — 20
400
300 — 10
200 — 8
        — 6
        — 4
100 — 3
80
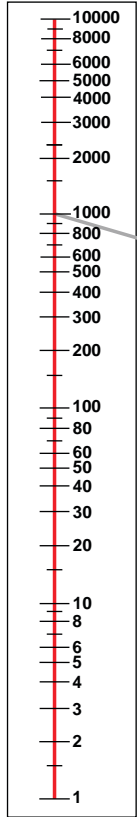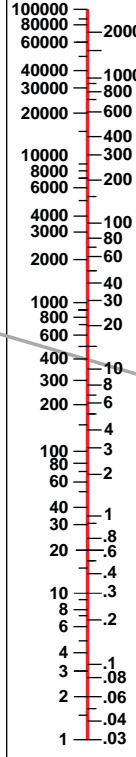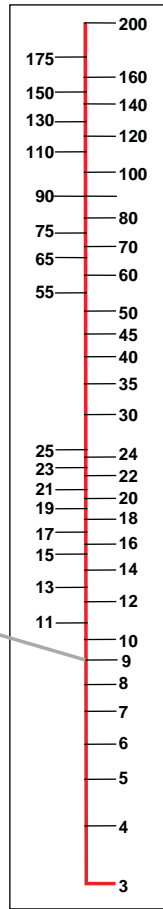60 — 2
40
30 — 1
20 — .8
        — .6
        — .4
10 — .3
8
6 — .2
4
3 — .1
2 — .08
        — .06
1 — .04
    — .03

ORIFICE SIZE
Bean Size = 1/64th Dia

200
175 — 160
150 — 140
130 — 120
110 — 100
90
75 — 80
65 — 70
55 — 60
        — 50
        — 45
        — 40
        — 35
        — 30
25 — 24
23 — 22
21 — 20
19 — 18
17 — 16
15 — 14
13 — 12
11 — 10
        — 9
        — 8
        — 7
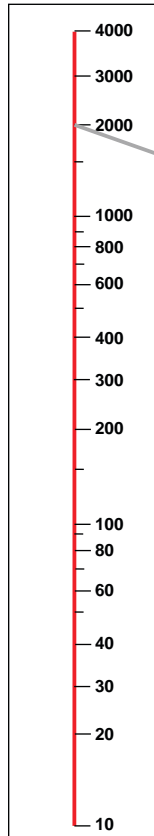   — 6
        — 5
        — 4
        — 3

EXAMPLE:
PRESSURE DROP DP 1000 PSI,
WATER FLOW RATE 400 BARRELS
PER DAY OR 2310 B/D DOUBLE
ORIFICE CHOKE READ BEAN SIZE 9

NOTE: P1-P2 = DP
WHEN P1 = UPSTREAM PRESSURE
P2 = DOWNSTREAM PRESSURE
DP = PRESSURE DROP ACROSS THE CHOKE

For GAS

PRESSURE DROP (DP)
ACROSS CHOKE (PSI)

4000
3000
2000
1000
800
600
400
300
200
100
80
60
40
30
20
10

FLOW RATE
BBL/DAY   GAL/MIN

100000
80000
60000
40000
20000
10000
8000
6000
4000
2000
1000
800
600
400
200
100
80
60
40
20
10
8
6
4
2
1

ORIFICE SIZE
Bean Size = 1/64th Dia

50
45
40
35
30
25 — 24
23 — 22
21 — 20
19 — 18
17 — 16
15 — 14
13 — 12
11 — 10
        — 9
        — 8
        — 7
        — 6
        — 5
        — 4
        — 3
        — 2
        — 1
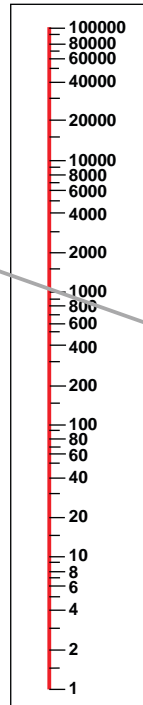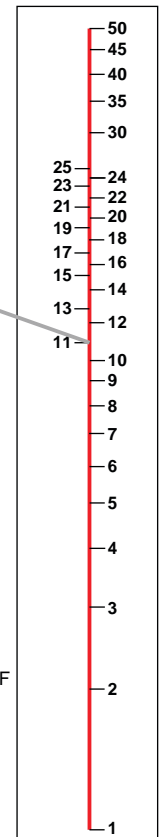
* GAS FLOW AT .825 SPECIFIC GRAVITY AND TEMPERATURE AT 60 F
** STEAM QUALITY = 80%
NOTE: LBS/HR of STEAM = LB/D * 14.5

EXAMPLE:
UPSTREAM PRESSURE IS 2000 PSI AND THE SETTING IS 11,
GAS FLOW RATE WILL BE 1000 SCFD

6

Sizing Information Flow Equations

Liquid

Solve for C_V

$$C_V = Q/34.3 \sqrt{\frac{\Delta P}{S_G}}$$

Solve for Flow (Q)

$$Q = 34.3 \times C_V \sqrt{\frac{\Delta P}{S_G}}$$

Where:

P_1 = Inlet Pressure (psia)
P_2 = Outlet Pressure (psia)
$\Delta P = P_1 - P_2$
Q = Flow Rate (BPD)
S_G = Specific Gravity - Water = 1.00
C_V = Valve coefficient of Flow

Sizing Data for Liquids

P_1 - Inlet Pressure (psia, psig, Bara, kPaa)
P_2 - Outlet Pressure (psia, psig, Bara, kPaa)
Q_L - Flow (bbl/d, gal/min, lbs/hr, kg/hr, m/d)
S_G - Specific Gravity of Liquid
T - Temperature (F^o, C^o, R^o, K^o)

2 Phase Flow

P_1 - Inlet Pressure (psia, psig, Bara, kPaa)
P_2 - Outlet Pressure (psia, psig, Bara, kPaa)
Q_G - Flow (scf/d, m³/hr, kg/hr)
Q_L - Flow (bbl/d, gal/min, lbs/hr, kg/hr, m/d)
G_G - Specific Gravity of Gas
S_G - Specific Gravity of Liquid
T - Temperature (F^o, C^o, R^o, K^o)

Gas

Solve for C_V

$$C_V = Q / .0234 \sqrt{\frac{\Delta P (P_1 + P_2)}{G_G}}$$

Solve for Flow (Q)

$$Q = C_V \times .0234 \sqrt{\frac{\Delta P (P_1 + P_2)}{G_G}}$$

Where:

P_1 = Inlet Pressure (psia)
P_2 = Outlet Pressure (psia)
$\Delta P = P_1 - P_2$
Q = Flow Rate (MMSCFD)
G_G = Specific Gravity - Air = 1.00
C_V = Valve coefficient of Flow

Sizing Data for Gas Service

P_1 - Inlet Pressure (psia, psig, Bara, kPaa)
P_2 - Outlet Pressure (psia, psig, Bara, kPaa)
Q_G - Flow (scf/d, m³/hr, kg/hr)
G_G - Specific Gravity
T - Temperature (F^o, C^o, R^o, K^o)

Co2 (Gaseous)

P_1 - Inlet Pressure (psia, psig, Bara, kPaa)
P_2 - Outlet Pressure (psia, psig, Bara, kPaa)
Q_G - Flow (scf/d, m³/hr, kg/hr)
P_V - Vapor Pressure (Function of Temperature)
V - Specific Volume (Function of Temperature and P_1 Pressure)
SG_G - Specific Gravity of Gas
T - Temperature (F^o, C^o, R^o, K^o)

Choke Nomenclature

Choke Series
CA	
CI	
MC	
MCX	
MDA	
MDAS	
MDI	
MDIS	
RB	
R	

Size
1	1"
2	2"
3	3"
4	4"
6	6"

Service Type
0	Standard
1	NACE
2	Steam/High Temp.

Actuation Type
0	Manual Handle
1	Manual Gear
2	Electric
3	Pneumatic
4	Hydraulic
7	Positive Bean

Style
0	Non-flanged
1	RFF
2	RTJ
3	RFF X RTJ
4	RTJ X RFF

Schedule
0	Non-flanged
1	40
2	80
3	160
4	XS
5	XXS
6	SLIP-ON
7	API
8	120

Trim Material
03	CARBIDE DISC - STELLITE WR SLV
04	CERAMIC DISC - STELLITE WR SLV
05	CARBIDE DISC - CARBIDE WR SLV
15	CERAMIC DISC - NO WR SLV
16	CARBIDE DISC - NO WR SLV
32	CERAMIC DISC/CARBIDE FLOW TUBE
44	R/RB-SERIES
47	BEAN 17-4 SS

Body Material
00	DUPLEX SS
03	CARBON STEEL
04	LOW ALLOY (4130 LACS)
05	316 SS (CF8M)
06	316 SS "L" (CF3M)
07	ALUMINUM BRONZE
08	A350 LF2
09	LCC
11	SUPER DUPLEX SS

Example:

MC – 2 0 0 17 17 1 2 04 05 03 04 = MC-20017171204050304

EXAMPLE ONLY*

Choke part number has to be 17 digits.

Inlet Connection / Outlet Connection
01	1" FNPT	41	6" 600
02	1" BUTT WELD	42	6" 900
03	1" SOCKET WELD	43	6" 1500
04	1" VICTAULIC	44	6" 2500
05	1" 150	45	8" 150
06	1" 300	46	8" 300
07	1" 600	47	8" 600
08	1" 900/1500	48	8" 900
09	1" 2500	49	8" 1500
10	2" FNPT	50	8" 2500
12	2" BUTT WELD	51	2-1/16" 3000
13	2" SOCKET WELD	52	2-1/16" 5000
14	2" VICTAULIC	53	2-1/16" 10000
15	2" 150	54	2-9/16" 3000
16	2" 300	55	2-9/16" 5000
17	2" 600	56	2-9/16" 10000
18	2" 900/1500	57	3-1/8" 3000
19	2" 2500	58	3-1/8" 5000
20	3" FNPT	59	3-1/8" 10000
21	3" BUTT WELD	60	4-1/16" 3000
22	3" SOCKET WELD	61	4-1/16" 5000
23	3" 150	62	1-13/16" 10000
24	3" 300	63	3-1/16" 5000
25	3" 600	64	3/4" 600#
26	3" 900	65	1.5" 900/1500
27	3" 1500	66	3-1/16" 10000
28	3" 2500	67	7-1/16" 5000
29	4" FNPT	68	1-13/16" 15000
30	4" BUTT WELD	69	2-1/16" 15000
31	4" SOCKET WELD	75	1" UNION
32	4" VICTAULIC	76	3" 602M x 3" 602F Union
33	4" 150	80	10" 600
34	4" 300	81	10" 900
35	4" 600	82	10" 1500
36	4" 900	83	10" 2500
37	4" 1500	84	2-9/16" 15000
38	4" 2500	85	6" Butt Weld
39	6" 150		
40	6" 300		

Orifice Size
01	(2) 1/8" RND PORTS	29	48/64 BEAN
02	(2) 3/16" RND PORTS	34	32/64 BEAN
03	(2) 1/4" RND PORTS	43	40/64 BEAN
04	(2) 3/8" RND PORTS	44	34/64 BEAN
05	(2) 1/2" RND PORTS	45	28/64 BEAN
06	(2) 5/8" PIE PORTS	46	30/64 BEAN
07	(2) 3/4" RND PORTS	53	10/64 BEAN
08	(2) 7/8" RND PORTS	63	11/64 BEAN
10	(2) 1-3/16" RND PORTS	64	14/64 BEAN
11	(2) 1-1/4" RND PORTS	65	15/64 BEAN
14	(2) 1-1/2" RND PORTS	66	16/64 BEAN
30	(2) 3/4" PIE PORTS	67	19/64 BEAN
35	(2) 1" ROUND PORTS	68	20/64 BEAN
38	(2) 2" PIE PORTS	69	24/64 BEAN
40	(2) 1-1/4" PIE PORTS	70	21/64 BEAN
41	(2) 1-3/8" PIE PORTS	71	22/64 BEAN
42	(2) 1-1/8" RND PORTS	72	23/64 BEAN
47	(2) 1-1/2 PIE PORTS	73	27/64 BEAN
49	(2) 5/8" RND PORTS	74	29/64 BEAN
54	(2) 2.92 PIE HOLES	75	25/64 BEAN
55	3 CV	76	1/7" RND PORTS
56	12 CV	77	7/64 BEAN
57	164 CV	78	54/64 BEAN
58	420 CV	79	44/64 BEAN
59	64 CV	80	45/64 BEAN
60	35 CV	81	47/64 BEAN
22	17/64 BEAN	82	51/64 BEAN
23	18/64 BEAN	83	35/64 BEAN
24	8/64 BEAN	84	37/64 BEAN
25	13/64 BEAN	85	6 CV
26	4/64 BEAN	87	12/64 BEAN
27	38/64 BEAN	88	78 CV
28	36/64 BEAN		

Seal Material
00	HNBR/HSN
01	NBR
03	EPDM
04	FKM (VITON)
05	NEOPRENE
06	NBR (PEROXIDE CURED)
07	STEAM SEALS
09	AFLAS
12	KALREZ

PINS
I	INCONEL (Optional)

Butt weld connections MUST specify a schedule.

All API connections are "RTJ" style by default.

API flange bore (SCHEDULE) is specified by API.

*For more options, contact Taylor Valve.

REVISED: 10-05-17