



Taylor Valve
Technology

MC SERIES Choke Valves

Unique.

Precise.

Quality.

Reliable.

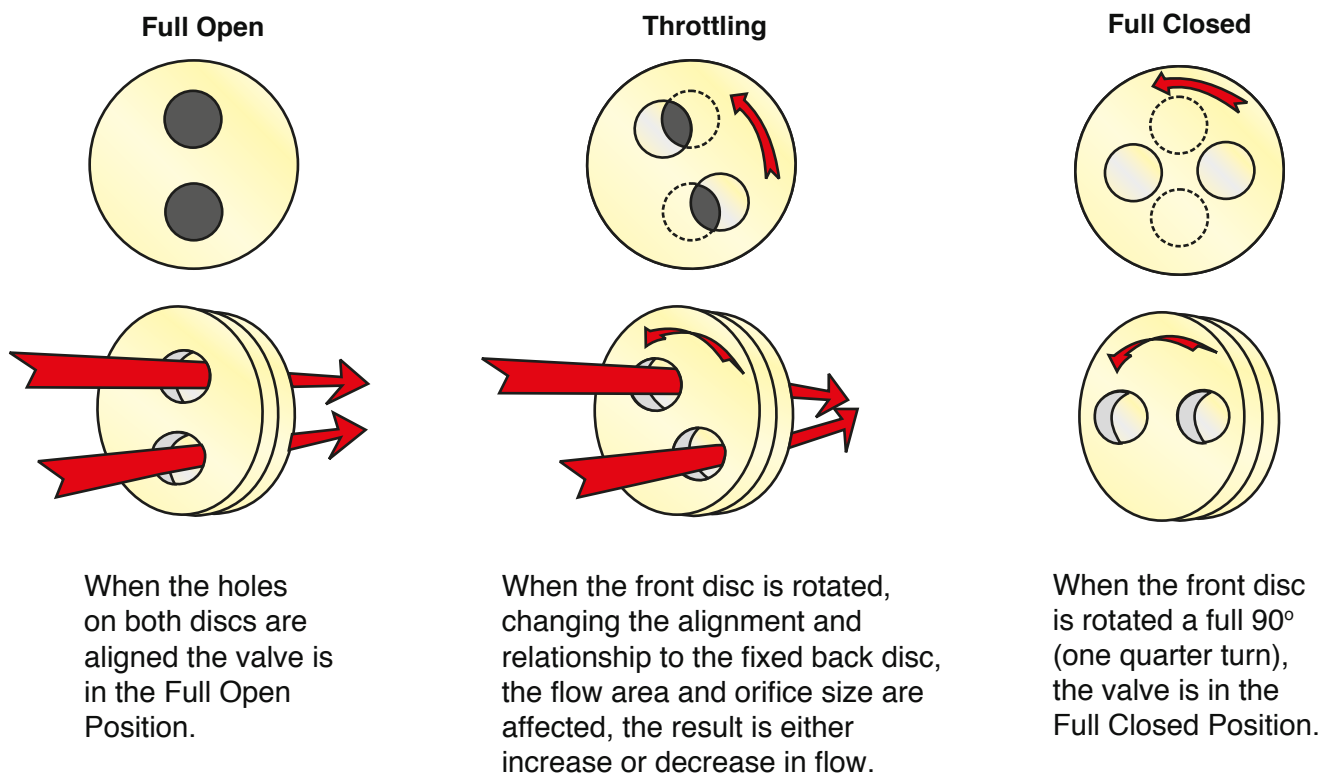


SINCE 1958



MOV Valve Principle of Operation

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



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 downstream 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.

MC Specifications and Cutaway View

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

MC Inline Choke

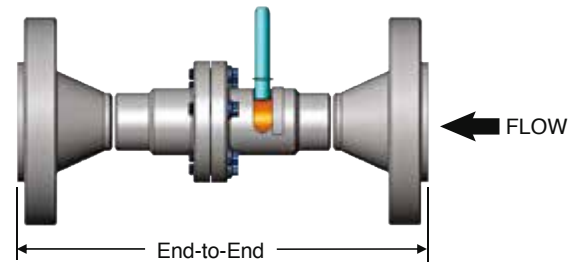
1" & 2" Configuration

316 SS

¼ Turn Actuated

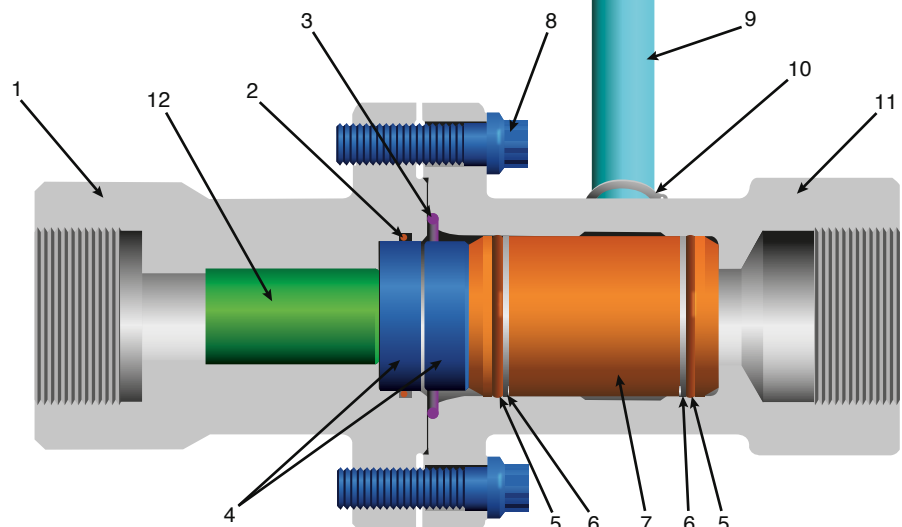
Body Rating = 3,600 PSI

CV Range = 0.70 - 16.57



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

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



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

*Item optional

** Items not shown in section view

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.



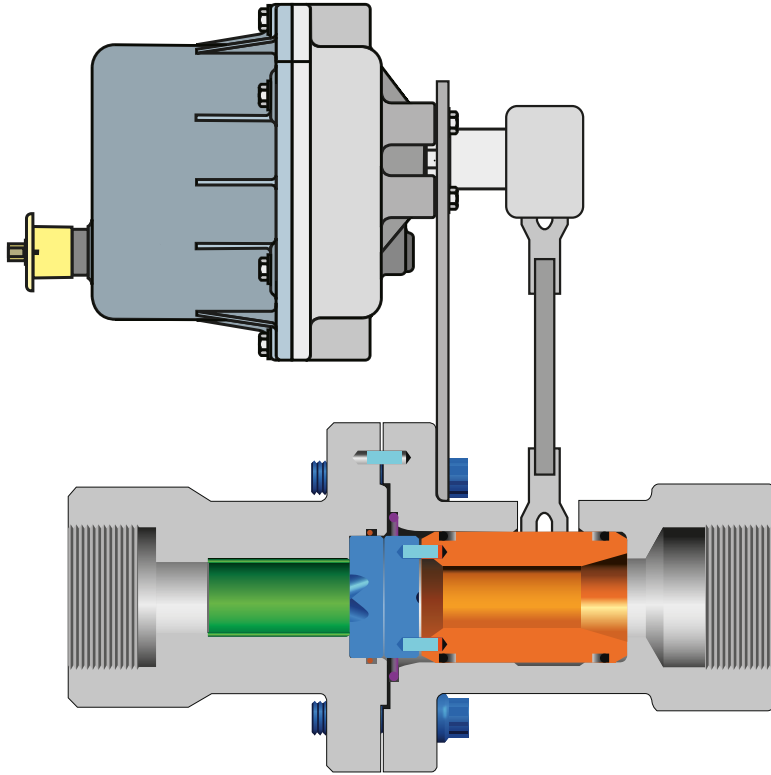
Applications:

- Well Site Automation
- Water Injection Control Valve
- CO2 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



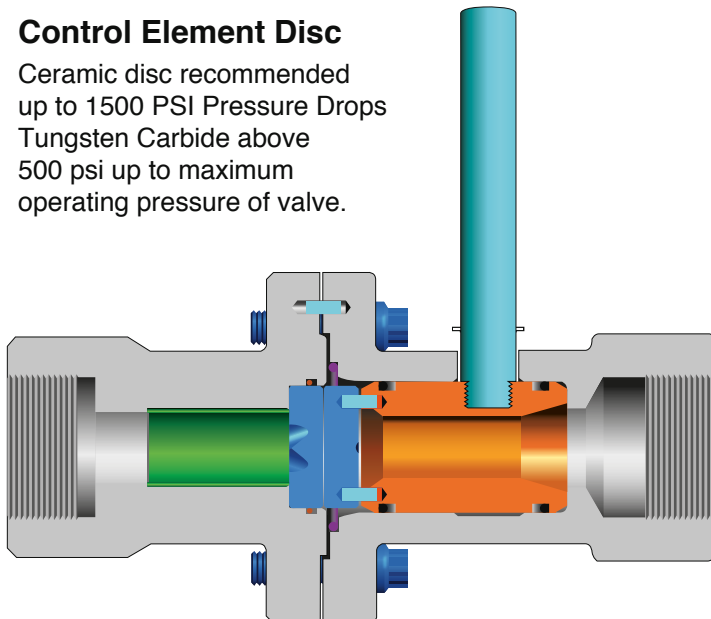
The MC Series of Inline MOV Chokes Offer:

- ~ 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

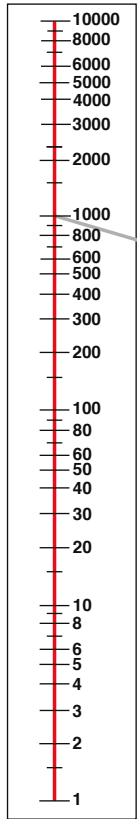
Ceramic disc recommended
up to 1500 PSI Pressure Drops
Tungsten Carbide above
500 psi up to maximum
operating pressure of valve.



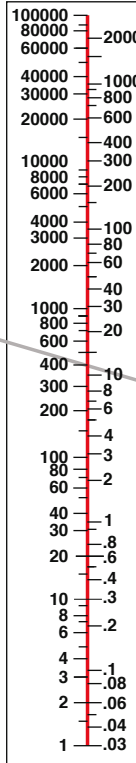
NOMOGRAPHS

For
WATER

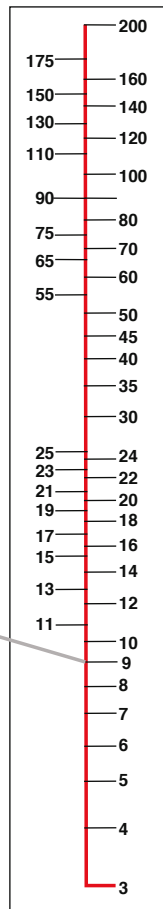
**PRESSURE DROP (DP)
ACROSS CHOKE (PSI)**



**FLOW RATE
BBL/DAY GAL/MIN**



**ORIFICE SIZE
Bean Size = 1/64th Dia**

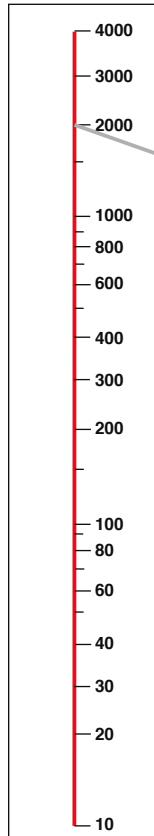


EXAMPLE:
PRESSURE DROP DP 1000 PSI,
WATER FLOW RATE 400 BARRELS
PER DAY OR 2310 B/D DOUBLE
ORIFICE CHOKE READ BEAN SIZE 9

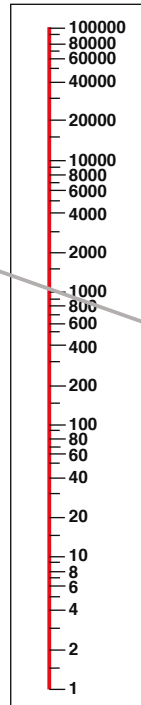
NOTE: P1-P2 = DP
WHEN P1 = UPSTREAM PRESSURE
P2 = DOWNSTREAM PRESSURE
DP = PRESSURE DROP ACROSS THE CHOKE

For
GAS

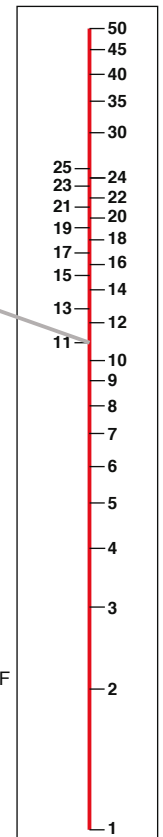
**PRESSURE DROP (DP)
ACROSS CHOKE (PSI)**



**FLOW RATE
BBL/DAY GAL/MIN**



**ORIFICE SIZE
Bean Size = 1/64th Dia**



* 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

Sizing Information Flow Equations

Liquid

Solve for C_v

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

Solve for Flow (Q)

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

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° , C° , R° , K°)

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

2 Phase Flow

- P_1 - Inlet Pressure (psia, psig, Bara, kPaa)
- P_2 - Outlet Pressure (psia, psig, Bara, kPaa)
- Q_G - Flow (scf/d, m^3/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° , C° , R° , K°)

Gas

Solve for C_v

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

Solve for Flow (Q)

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

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, m^3/hr , kg/hr)
- G_G - Specific Gravity
- T - Temperature (F° , C° , R° , K°)

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

Co2 (Gaseous)

- P_1 - Inlet Pressure (psia, psig, Bara, kPaa)
- P_2 - Outlet Pressure (psia, psig, Bara, kPaa)
- Q_G - Flow (scf/d, m^3/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° , C° , R° , K°)

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 ONLY* MC - 2 0 0 17 17 1 2 04 05 03 04 = MC-20017171204050304
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	
1	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.

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