

PRESSURE RATINGS

AVAILABLE CONFIGURATIONS

ACCESSORIES / OPTIONS

M&H VALVE--ECCENTRIC PLUG VALVES (3"-24")

Size Range	Seat Test psi	Hydrostatic Shell Test psi
3"-12"	175	265
14"-24"	150	225

Available End Connections	Size Range	Style No.
Flanged Ends	3"-24"	1820-02
Mechanical Joint	3"-24"	1820-01
Grooved Ends	4"-16"	1820-GR
Flanged Ends "Full Port"	3"-12"	2725

Accessories / Options:

- Floor stands
- Extension Stems
- 2" Square Operating Nuts
- Hand wheels
- Chain wheels
- Lever Wrench Head (3"-8")
- Worm Gear Actuators
- Electric Motors Actuators
- Cylinder Actuators
- Limit Switches
- Stem Guides
- Floor boxes
- "T" Handles
- Chain Levers (3"-8")

NOTE 1: Contact Factory For Special Applications

NOTE 2: Geared actuators are recommended on 6" and larger valves.

NOTE 3: Valves 3" through 8" are available with lever actuators. Lever actuators can only be used for pressure ratings of 100 psi maximum and 25 psi in the reverse flow condition. Water Hammer can occur by sudden valve shut-off. High velocity lines increase the effects of water hammer. In pipelines with high velocity it is recommended that geared valves be installed.

FEATURES AND BENEFITS

M&H VALVE--ECCENTRIC PLUG VALVES (3"-24")

1. **STEM PACKING SEALS** – M&H utilizes Buna-N multiple “V” ring stem packing seals. This sealing system conforms to AWWA C504 and AWWA C507 standards. The M&H valve can be repacked under pressure without removing the actuation. The packing seal is held in place with an adjustable gland follower to provide many years of reliable service.
2. **BOLTED BONNET** – Valve bonnets are fully sealed and securely bolted to the valve body for easy removal of the plug should maintenance be required.
3. **SHAFT BEARINGS** – Sintered 316 stainless steel shaft bearing are used in the upper and lower truunions. These bearings are permanently lubricated for ease of operation even after long periods of inactivity.
4. **VALVE BODY** – The body and cover of the M&H valve is cast iron (Semi-Steel) conforming to ASTM A126 Class B. Flanged valves are in full compliance with ANSI B16.1 Class 125 standards including flange thickness. Mechanical Joint valves are in compliance with AWWA C111/ANSI 21.11. Grooved End valves are in compliance with AWWA C606.
5. **WELDED NICKEL SEAT** – M&H welds a corrosion resistant nickel seat to a raised area in the body. The weld is of 90% pure nickel, at least 1/8” thick after it is machined. The nickel covers the entire seat surface so that there is no possibility of corrosion that could damage the plug face.
6. **PLUG** – The valve plug is cast iron ASTM A126, Class B. The portion of the plug in the valve body cavity is coated with Buna-N rubber using an injection molding process. This allows for the entire surface to be covered not just the plug face. With this injection molding process, you do not have to worry about the rubber dis-bonding from the iron.
7. **O-RING BONNET SEAL** – The seal between the body and bonnet is an O-ring allowing for easier maintenance, and since O-rings seal better than flat gaskets the number of bonnet bolts is reduced.

SUGGESTED SPECIFICATIONS

M&H VALVE--ECCENTRIC PLUG VALVES (3"-24")

Eccentric Plug valves shall be of the tight closing, resilient faced, non-lubricating variety and shall be of eccentric design such that the valves pressure member (plug) rises off the body seat contact area immediately upon shaft rotation during the opening movement. Valves shall be bubble-tight at the rated pressure (175 psi through 12", 150 psi 14" and above) and shall be satisfactory for applications involving throttling service as well as frequent or infrequent on-off service. The valve closing member should rotate approximately 90 degrees from the full-open to full-close position.

The valve body shall be constructed of cast iron conforming to ASTM A126, Class B. Body ends shall be:

1. Flanged with dimensions, facing, and drilling in full conformance with ANSI B16.1, Class 125.
2. Mechanical Joint to meet the requirements of AWWA C111 / ANSI A21.11.
3. Grooved ends to meet the requirements of AWWA C606.

Eccentric Plug Valves shall have a rectangular shaped port. Port areas for 3"-20" valves shall be a minimum 80% of full pipe area. Port area for 24" valve shall be a minimum 70% of full pipe area.

Valve seat surface shall be welded-in overlay, cylindrically shaped of not less than 95% pure nickel. Seat area shall be raised, with raised area completely covered with weld to ensure proper seat contact. The machined seat area shall be a minimum of .125" thick and .500" wide.

The valve plug shall be constructed of cast iron conforming to ASTM A126, Class B. The plug shall have a cylindrical seating surface that is offset from the center of the plug shafts. The plug shafts shall be integral. The entire plug shall be 100% encapsulated with Buna-N rubber in all valve sizes. The rubber compound shall be approximately 70 (Shore A) durometer hardness. The rubber to metal bond must withstand 75 lbs. pull under test procedure ASTM D-429-73 Method B.

Shaft bearing, upper and lower, shall be sleeve type metal bearings, sintered, oil impregnated, and permanently lubricated Type 316 stainless steel conforming to ASTM A743 Grade CF-8M. Thrust bearings shall be Nylatron.

Plug valve shaft seals shall be on the multiple V-ring type (Chevron) and shall be adjustable. All packing shall be replaceable without removing the bonnet or actuator and while the valve is in service. Shaft seals shall be made of Buna N.

Each valve shall be given a test against the seat at the full-rated working pressure and a hydrostatic shell test at 1 ½ times the rated working pressure. Certified copies of individual test shall be submitted when requested. Certified copies of proof-of-design tests shall be submitted upon request.

Manual valves shall have lever or worm gear type actuators with handwheels, 2" square nuts, or chainwheels attached. Lever actuators shall be furnished on valves 8" and smaller where the maximum unseating pressure is 25 PSIG or less. Worm gear type actuators shall be furnished on all 4" or larger valves where the maximum unseating pressure is 25 PSIG or more.

All eccentric plug valves shall be M&H 1820-02 (flanged), 1820-01 (mechanical joint), or 1820-GR (grooved) or approved equal.

September 1, 2012 / M&H Eccentric Plug Valves

MATERIALS SPECIFICATIONS

M&H VALVE--ECCENTRIC PLUG VALVES (3"-24")

CAST IRON Specifications ASTM A-126 Class B

Physical Properties

Minimum tensile strength	31,000 psi
Minimum transverse strength	3,300 lbs.
Minimum deflection (12" Centers)	.12 in

Chemical Analysis (percent)

Phosphorus (maximum)	.75
Sulfur (maximum)	.15

STAINLESS STEEL – 316 – ASTM A743 – Grade CF-8M

Physical Properties

Ultimate tensile strength	70,000 psi
Yield Strength	30,000 psi
Elongation	30%
Rockwell Hardness	B50

Chemical Analysis (percent)

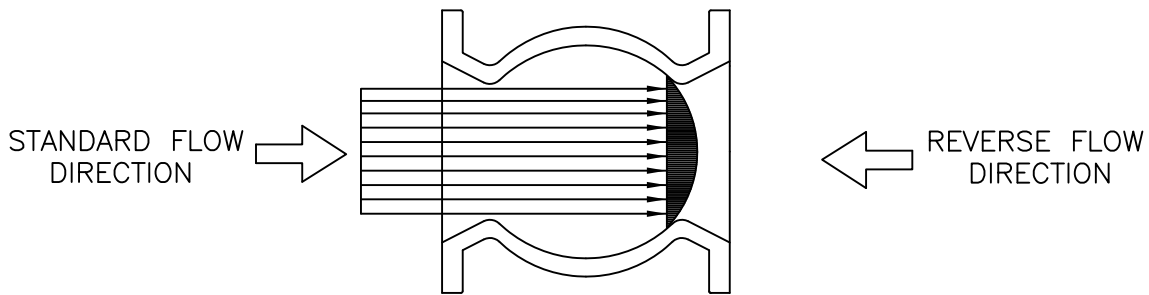
Chromium	19
Nickel	9.0 – 12.0
Molybdenum	2.0 – 3.0
Silicon	2

BUNA- N RUBBER (Acrylonitrile-Butadiene)

Physical and Mechanical Properties

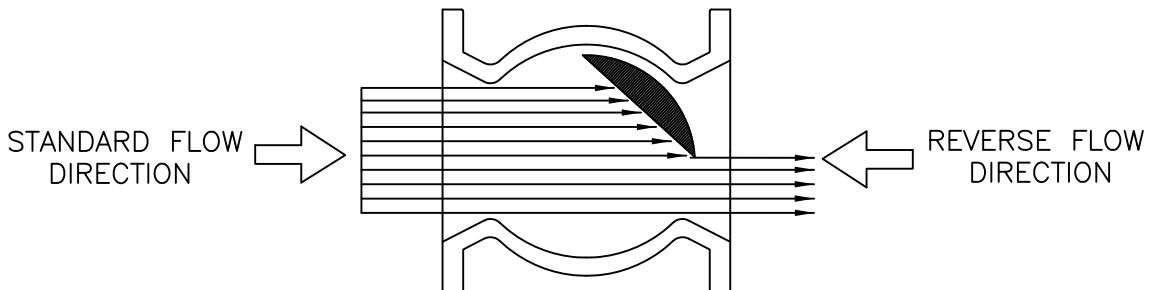
Tensile strength	1,475 psi
Elongation	238%
Hardness (Shore A)	70
Compression set (Method B, 22 hrs. @ 150 F.)	18.70%
Specific Gravity	1.24

CLOSED



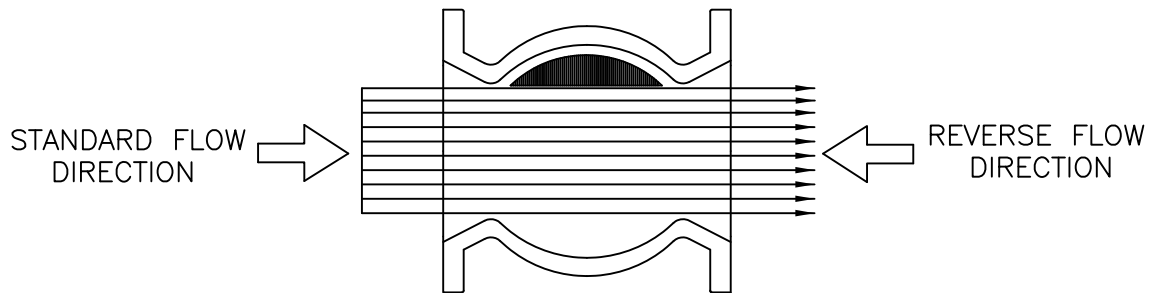
As the plug component is rotated to valve closure, the offset condition of the plug causes the seating surface to move axially downstream into the nickel. This results in a high seating force thereby crushing trapped solids and resulting in a bubble-tight seal. The upstream pressure acting on the convex side of the plug further improves the bubble-tight seal.

OPENING



Upon opening the valve, the initial rotation of the plug causes the resilient seating surface to move axially away from the nickel seat in the body. This action minimizes wear and scraping of the resilient seat, thereby improving the life of the valve. The plug can be positioned at any position between open and closed for throttling applications.

OPEN



In the full-open position, the plug is rotated out of the main fluid stream as shown. This allows for high capacity flow through the valve.

FLOW DIRECTION DESIGNATION

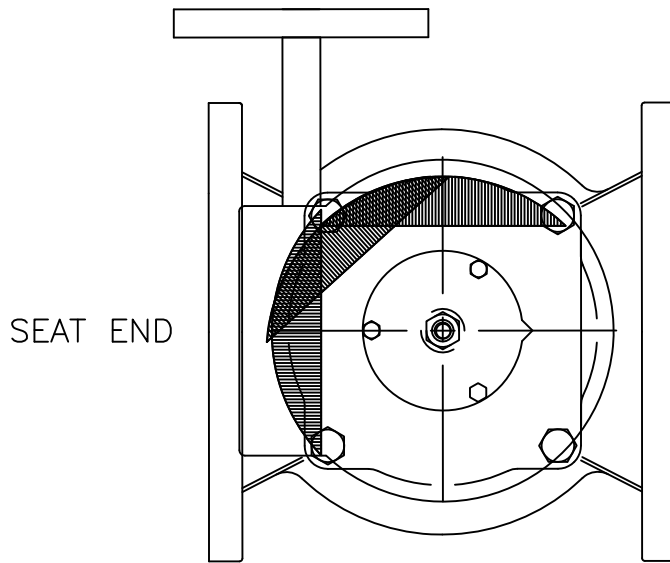
Valves 3" through 8" are available with lever actuators. Geared actuators are recommended on 6" and larger valves. It is also recommended that valves installed in pipelines with high velocity or where water hammer conditions can be caused by sudden valve shut-off that geared actuators be installed. Lever actuators can only be used for pressure ratings of 100 psi maximum and 25 psi in the reverse flow conditions. Standard valves are tested to rated working pressure in "Standard flow direction" and 35psi in "reverse flow direction".

M&H VALVE COMPANY
ANNISTON, ALABAMA
A DIVISION OF MCWANE INC.

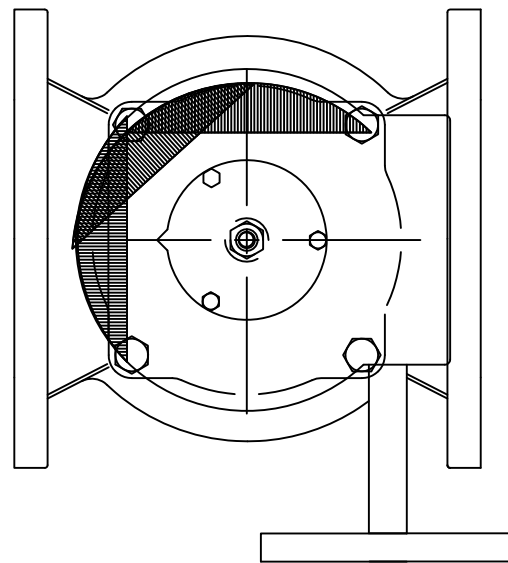
DWN: TRIJ
DATE: 9/1/12
DWG. NO.
PV-5

3" THRU 24"
C517-STYLE 1820
ECCENTRIC PLUG VALVE
FLOW DESIGNATION

OPTIONAL MOUNTING POSITION



SEAT END



STANDARD MOUNTING POSITION

ACTUATOR MOUNTING POSITION AS VIEWED FROM THE TOP OF THE VALVE

M&H VALVE COMPANY
ANNISTON, ALABAMA
A DIVISION OF MCWANE INC.

DWN: TRIJ
DATE: 9/1/12
DWG. NO. PV-6

4" THRU 24"
C517-STYLE 1820
ECCENTRIC PLUG VALVE
OPERATION ORIENTATION OPTION

VALVE SIZE	PORT AREA %	Cv
3"	85	335
4"	88	565
6"	87	1210
8"	89	2050
10"	81	3100
12"	84	4170
14"	84	5460
16"	84	7420
18"	83	9675
20"	89	12920
24"	71	17670

FLOW IN GPM (GALLONS PER MINUTE) TO EQUAL A 1 PSI PRESSURE DROP

SIZING FORMULA

$$(1) \text{ CV} = \frac{Q}{\sqrt{\Delta}}$$

$$(2) Q = C\sqrt{\Delta}$$

$$(3) \Delta = \left(\frac{Q}{\text{CV}}\right)^2$$

SYMBOL DEFINITIONS

Cv = VALVE SIZING COEFFICIENT

P = PRESSURE DROP, POUNDS PER SQUARE INCH (PSI)

Q = FLOW, GALLONS PER MINUTE (GPM)

M&H VALVE COMPANY
ANNISTON, ALABAMA
A DIVISION OF MCWANE INC.

DWN: TRIJ

DATE: 9/1/12

DWG. NO.
PV-7

3" THRU 24"
C517-STYLE 1820
ECCENTRIC PLUG VALVE
CV VALUES

GEAR OPERATORS WITH 2" SQUARE NUTS, 150 Ft. -LB. Max. Input Torque
Consult factory for Reverse Flows above 50 psig.

VALVE SIZE	50 PSIG	75 PSIG	100 PSIG	125 PSIG	150 PSIG	175 PSIG
4"	U10N	U10N	U10N	U10N	U10N	U10N
6"	U10N	U10N	U10N	U10N	U10N	U10N
8"	U10N	U10N	U10N	U10N	U10N	U10N
10"	U10N	U10N	U10N	U10N	U10N	U10N
12"	U10N	U10N	U10N	U70N	U70N	U70N
14"	U90N	U90N	U90N	U90N	U90N	---
16"	U90N	U90N	U90N	U90N	U100N	---
18"	U100N	U100N	U100N	U100N	U100N	---
20"	U100N	U100N	U100N	U100N	U100N	---
24"	U100N	U100N	U100N	U160N	U160N	---

URNS

U10N = 1KE / OP NUT BURIED SERVICE	10
U70N = 7KE / OP NUT BURIED SERVICE	13.5
U90N = 9KE / OP NUT BURIED SERVICE	16
U100N = 10KE 2.5 / OP NUT BURIED SERVICE	29
U160N = 16KE / OP NUT BURIED SERVICE	90

GEAR OPERATORS WITH HANDWHEELS & 80 LB. MAX, RIM PULL
CONSULT FACTORY FOR REVERSE FLOWS ABOVE 50 PSIG.

VALVE SIZE	50 PSIG	75 PSIG	100 PSIG	125 PSIG	150 PSIG	175 PSIG
4"	A110	A110	A110	A110	A110	A110
6"	A110	A110	A110	A110	A110	A110
8"	A110	A110	A110	A110	A110	A110
10"	A118	A118	A118	A118	A118	A118
12"	A118	A118	A118	A718	A718	A718
14"	A924	A924	A924	A924	A930	---
16"	A1024	A1024	A1024	A1024	A1624	---
18"	A1024	A1024	A1024	A1030	A1624	---
20"	A1024	A1024	A1030	A1624	A1624	---
24"	A1024	A1030	A1630	A1630	A1630	---

URNS

A110 = 1KE / 10" HANDWHEEL	10	A930 = 9KE / 30" HANDWHEEL	16
A118 = 1KE / 18" HANDWHEEL	10	A1024 = 10KE 2.5 / 24" HANDWHEEL	29
A718 = 7KE / 18" HANDWHEEL	13.5	A1030 = 10KE 2.5 / 30" HANDWHEEL	29
A924 = 9KE / 24" HANDWHEEL	16	A1624 = 10KE 6 / 24" HANDWHEEL	29
		A1630 = 16KE / 30" HANDWHEEL	90

URNS

M&H VALVE COMPANY
ANNISTON, ALABAMA
A DIVISION OF MCWANE INC.

DWN: TRIJ

DATE: 9/1/12

DWG. NO.
PV-8

4" THRU 24"
C517-STYLE 1820
ECCENTRIC PLUG VALVE
WORM GEAR ACTUATOR
SELECTION CHART