



HIGH PRESSURE MOTOR VALVES

1 & 2 HPMV

APPLICATIONS:

For discharge of liquid or gas from vessels, separators, treaters, knockouts and other similar liquid accumulators.

For back pressure or pressure reducing applications with pressure pilots.

FEATURES:

- Compact design
- O Ring sealed seat
- Valve travel indicator
- Field reversible topworks
- Teflon packed stuffing box

TOPWORKS:

Standard topworks have an effective diaphragm area of approximately 30 square inches for 1" and 65 square inches for 2" motor valves.

Unless otherwise specified, all HPMV's will be furnished with ductile topworks, steel topworks available. Specify when ordering.

SPRINGS:

The 1"HPMV springs are available for diaphragm pressures of 10, 20, and 30 psig.

The 2"HPMV springs are available for diaphragm pressures of 15, 20, and 30 psig.

Unless otherwise specified, all 1" HPMV's with 1/2" INNER VALVES get 30 psig spring others get 20 psig. spring, all 2" HPMV's will be furnished with springs as follows 1000 & 2000 psig. W.P. valves, 20 lb. springs and 4000 psig. W.P. valves, 30 lb. springs.

Top Adjusting Screw may be adjusted to vary the spring tension slightly; this affects pressure required to actuate valve.

STEM TRAVEL:

- 1" HPMV - 1/2" maximum
- 2" HPMV - 3/4" maximum

ACTUATOR WORKING PRESSURE:

- 10-30 psig normal (see spring ranges)
- 45 psig maximum

WORKING PRESSURE:

- 1" HPMV - 4000 psig
- 2" HPMV - 1000, 2000 & 4000 psig

INNER VALVE SIZES:

- 1" HPMV - 1/8", 3/16", 1/4", 3/8", & 1/2"
- 2" HPMV - 1/4", 3/8", 1/2", 3/4" & 1"
- 2" HPMV - 7/16", 5/8" & 7/8"

CAPACITIES:

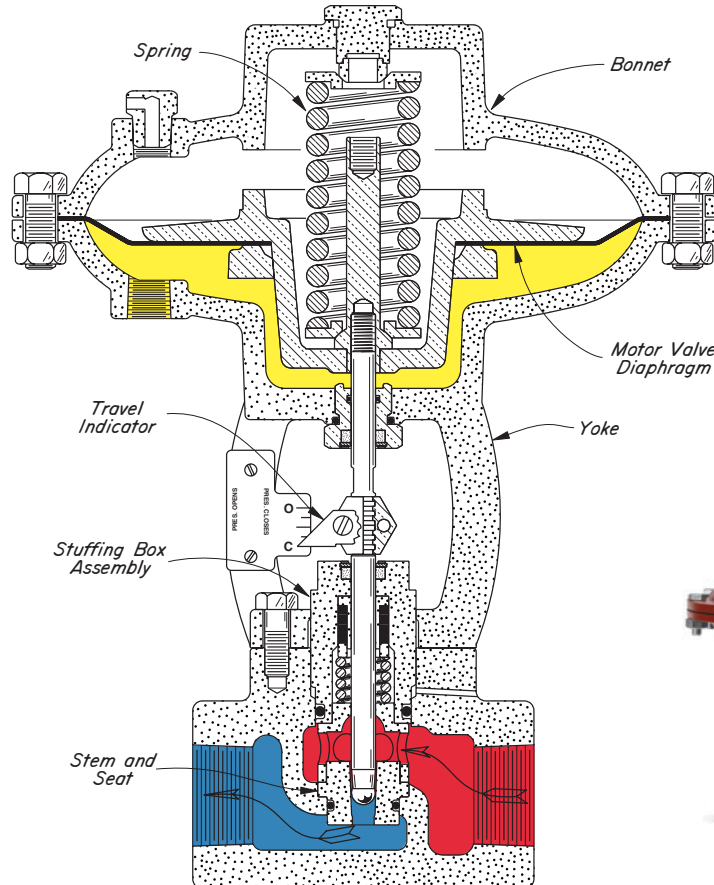
Refer to the Table of Contents

INNER VALVE SPECIFICATIONS:

The 1" HPMV standard valve plugs consists of a carbide ball rigidly connected to a 303 stainless steel stem. Standard seats are made of heat treated tool steel.

The 2" HPMV standard valve plugs for 1/2" and smaller consist of a carbide ball rigidly connected to a 303 stainless steel stem. Standard valve plugs for 3/4" and 1" consist of a hardened high chrome alloy ball rigidly connected to a 303 stainless steel stem. Standard seats are made of heat treated tool steel.

Inner valves can be made from a wide selection of materials. Specify when ordering.



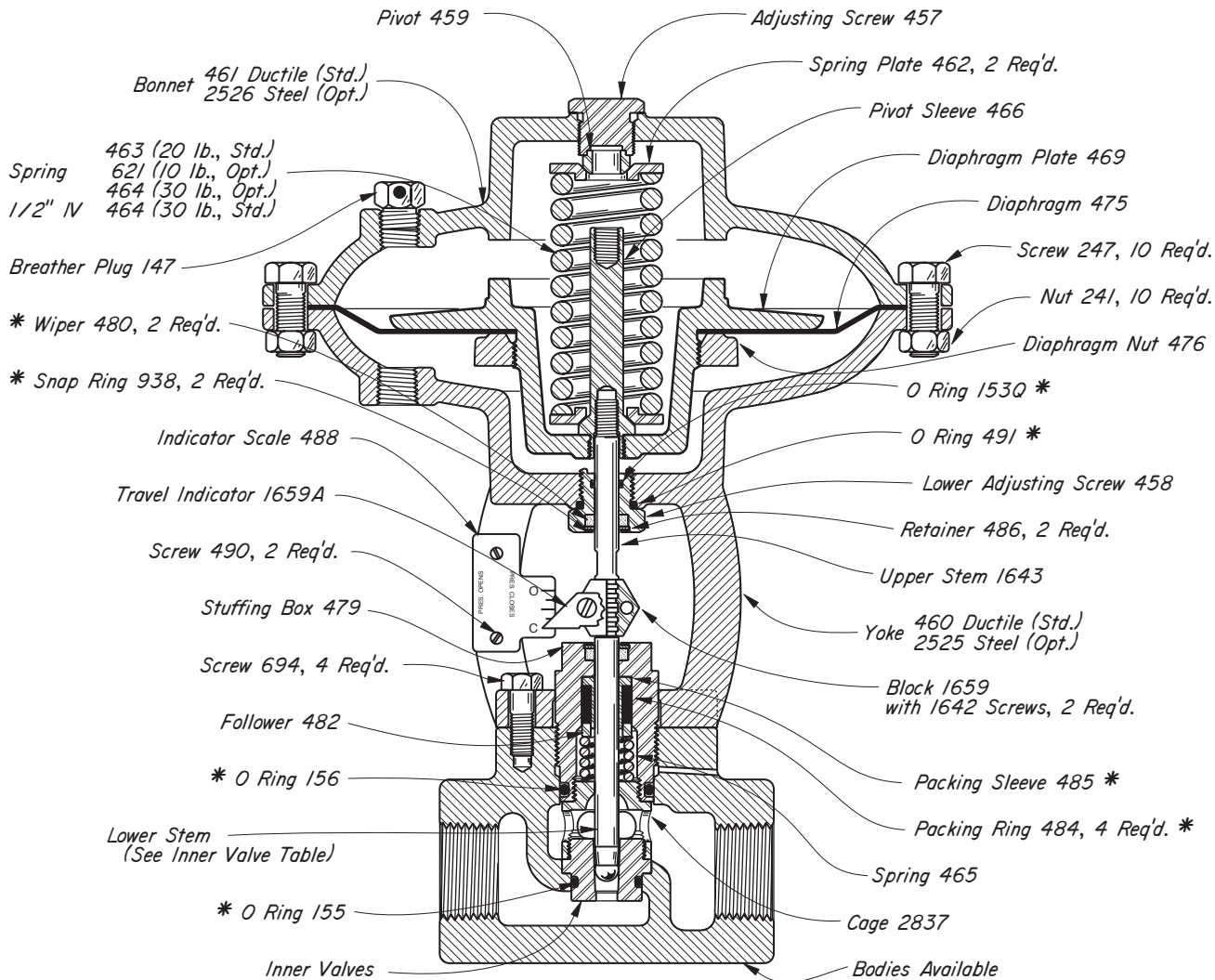
- Motor Valve Diaphragm Assembly
- Motor Valve Diaphragm Pressure
- Upstream Pressure
- Downstream Pressure



HIGH PRESSURE MOTOR VALVES



1 HPMV STEEL BODY DUCTILE TOPWORKS



SEAT SIZE	STANDARD SEATS D-2 TOOL STEEL
	TRIM SET NO.
1/8"	T2842
3/16"	T2841
1/4"	T2840
3/8"	T2838
1/2"	T2839

Seat Removal Tool 3032
(Available at extra cost)

BODY TYPE	SCREWED	
	BODY	W.P.
THRU	452	4000 psig
ANGLE	453	4000 psig

THRU VALVES AVAILABLE:

CAT. NO.	INNER VALVE	VALVE	MAX W.P.	KIT
EAE	1/8"	1400 SMT PO 1/8 IV	4000	RFA
EAF	3/16"	1400 SMT PO 3/16 IV	4000	RFA
EAG	1/4"	1400 SMT PO 1/4 IV	4000	RFA
EAH	3/8"	1400 SMT PO 3/8 IV	4000	RFA
EAI	1/2"	1400 SMT PO 1/2 IV	4000	RFA
EAK	1/2"	1400 SMT PC 1/2 IV	4000	RFA

NOTE: All standard HPMV's have a Cat No. Seats, stems, cages, stuffing boxes and valve bodies are available in 316 stainless steel. Inner valves can be made from a wide selection of materials. Specify when ordering.

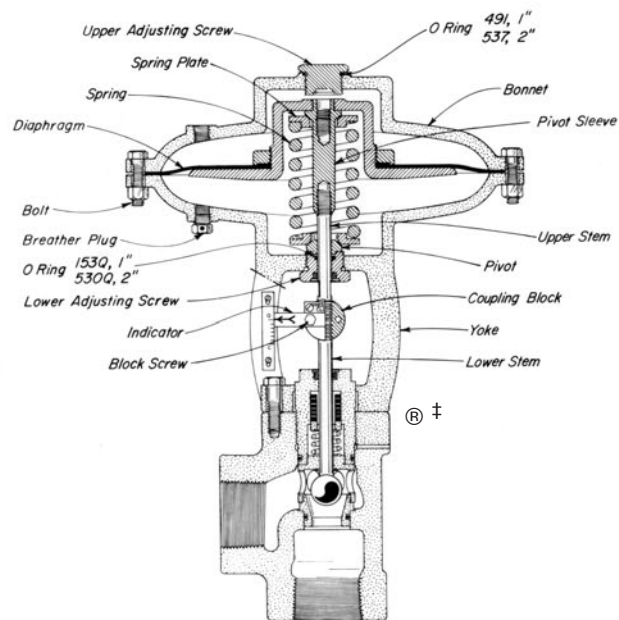
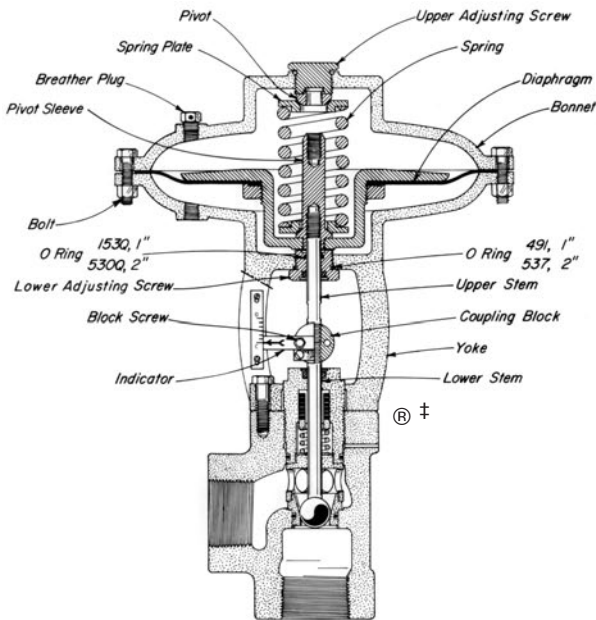
ANGLE VALVES AVAILABLE:

CAT. NO.	INNER VALVE	VALVE	MAX W.P.	KIT
EAA	1/4"	1400 SMA PO 1/4 IV	4000	RFA
EAB	3/8"	1400 SMA PO 3/8 IV	4000	RFA
EAC	1/2"	1400 SMA PO 1/2 IV	4000	RFA

Flanged bodies are available. Specify when ordering.
For dimensions refer to Table of Contents. Flanged dimensions available on request.

*These are recommended spare parts and are stocked as repair kits.

CONVERSION INSTRUCTIONS



PRESSURE CLOSING to PRESSURE OPENING:

Remove BLOCK SCREWS, TRAVEL INDICATOR and COUPLING BLOCK. Remove UPPER ADJUSTING SCREW, BOLTS, and BONNET. Lift out Diaphragm Assembly (Crosshatched). Remove SPRING, SPRING PLATES and PIVOT. Remove LOWER ADJUSTING SCREW. Remove O RINGS, 491 - 1", 537 - 2", from UPPER ADJUSTING SCREW, and inserting in grooves provided in the LOWER ADJUSTING SCREW. Unscrew UPPER STEM and insert in opposite end of PIVOT SLEEVE.

Replace LOWER ADJUSTING SCREW and tighten against YOKE. O RING 491 - 1", 537 - 2", provides the necessary pressure seal. Invert Diaphragm Assembly and replace. Care should be taken when threading the UPPER STEM through the LOWER ADJUSTING SCREW so as not to damage O RING, 153Q - 1", 530Q - 2". Pour approximately one-eighth pint of light weight motor Oil in housing under DIAPHRAGM to provided lubrication for O RING, 153Q - 1", 530Q - 2". Replace SPRING with a SPRING PLATE in each end. UPPER ADJUSTING SCREW opening Thread UPPER ADJUSTING SCREW into BONNET until contact is made with the PIVOT, then tighten two turns. The UPPER ADJUSTING SCREW now becomes the SPRING adjustment. With BLOCK SCREWS through INDICATOR, replace COUPLING BLOCK matching match marks. Move BREATHER PLUG to BONNET (upper Diaphragm Housing). Connect Diaphragm Pressure from PILOT to YOKE (Lower Diaphragm Housing).

PRESSURE OPENING to PRESSURE CLOSING:

Remove BLOCK SCREWS, TRAVEL INDICATOR and COUPLING BLOCK. Remove UPPER ADJUSTING SCREW, BOLTS, and BONNET. Lift out Diaphragm Assembly (Crosshatched). Remove SPRING, SPRING PLATES and PIVOT. lift out the Diaphragm Assembly (Crosshatched). Rotate Diaphragm Assembly when pulling UPPER STEM through LOWER ADJUSTING SCREW so as not to damage O RING, 153Q - 1", and 530Q - 2".

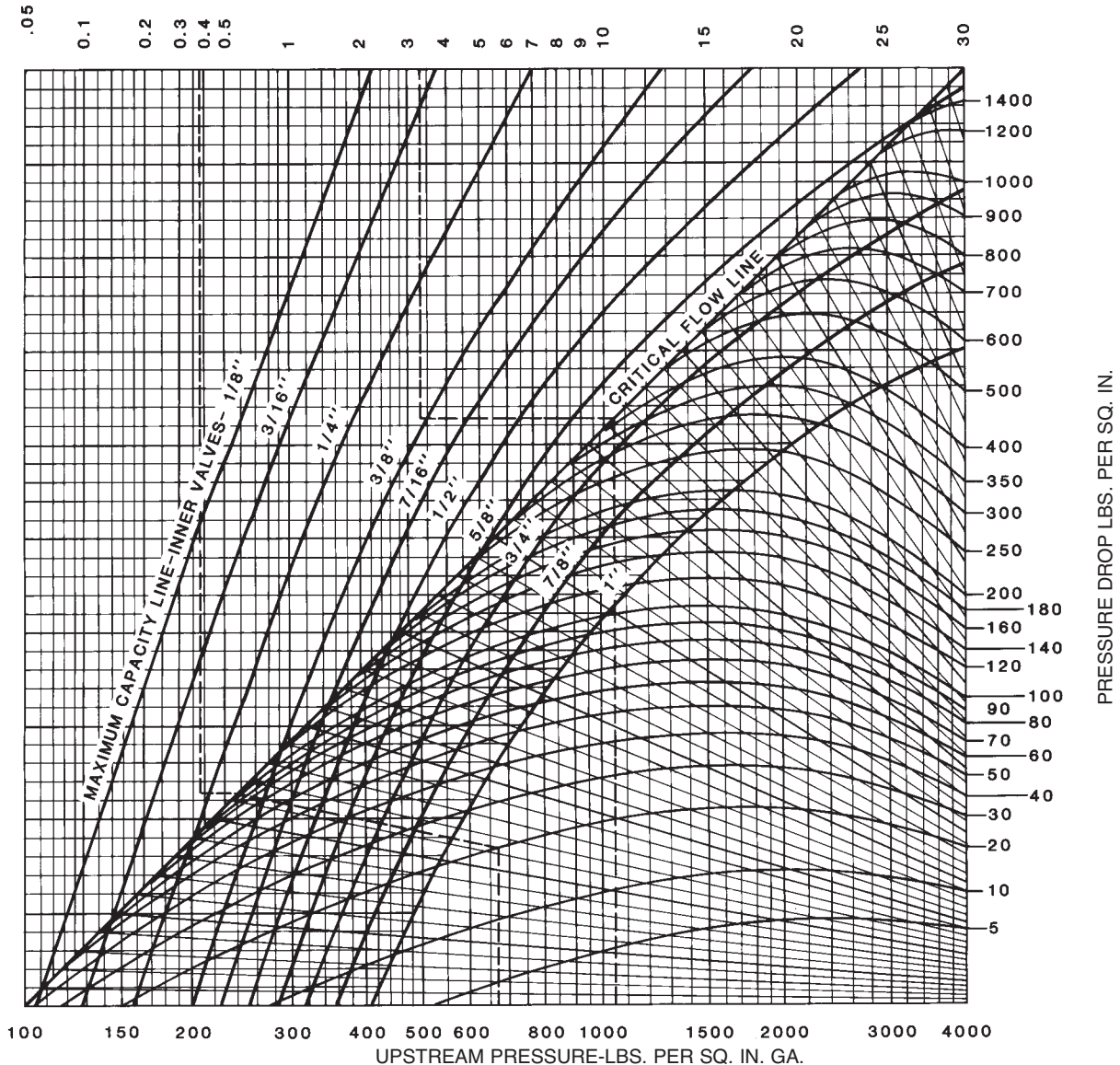
Remove LOWER ADJUSTING SCREW. Remove O RINGS, 491 - 1", 537 - 2", from LOWER ADJUSTING SCREW and insert in grooves provided in UPPER ADJUSTING SCREW. Replace UPPER ADJUSTING SCREW in BONNET and tighten. O RING, 491 - 1", 537 - 2", provides the necessary pressure seal. Unscrew UPPER STEM and replace in opposite end of PIVOT SLEEVE.

Using COUPLING BLOCK, pull LOWER STEM up to open position. Thread LOWER ADJUSTING SCREW in YOKE until end is flush with inside surface of YOKE. Set PIVOT on top of LOWER ADJUSTING SCREW with the beveled surface up. Replace SPRING with a SPRING PLATE in each end.

Invert Diaphragm Assembly from its original position and replace. Be sure UPPER STEM and LOWER STEM meet. With BLOCK SCREWS through INDICATOR, replace COUPLING BLOCK matching match marks. Replace BONNET and BOLTS and INDICATOR is in "Open" position, then tighten one turn. Move BREATHER PLUG to YOKE (Lower Diaphragm Housing). Connect Diaphragm Pressure from PILOT to BONNET (Upper Diaphragm Housing).



VOLUME-MILLIONS CU. FT. PER 24 HOURS - 65 SP. GR. AT 14.4 & 60°



Gas capacities are based on pressures taken immediately upstream from the valve in a wide open position. Indicated volumes have been corrected for supercompressibility.

HOW TO USE CHART: PRESSURE DROP LESS THAN CRITICAL FLOW with: UPSTREAM PRESSURE 670 pounds gauge; PRESSURE DROP 20 pounds; VOLUME 380,000 Cu. Ft. per 24 hours.

Locate 670 at bottom of chart. Project a vertical line to intersect the 20 pound PRESSURE DROP line, and using sloping GUIDE LINES, project this point to the CRITICAL FLOWLINE. A horizontal line drawn through this point intersects all INNER VALVE lines at the maximum capacity is 0.43 millions of 430,000 Std. Cu. Ft. per 24 hours. A 3/8" is 0.78 and a 1/2" is 1.43. Select the inner valve size for the desired over-capacity.

CRITICAL FLOW with: UPSTREAM PRESSURE 1050 pounds gauge. PRESSURE DROP 600 pounds. VOLUME 3.3 millions per 24 hours.

Locate 1050 at bottom of chart. Project a vertical line to intersect the CRITICAL FLOW LINE. A horizontal line drawn through this point intersects all INNER VALVE LINES at the maximum capacity of each for the above conditions. A 3/8" inner valve maximum capacity is 3.4 millions and a 1/2" is 6.4 millions. Select the inner valve size for the desired over-capacity.

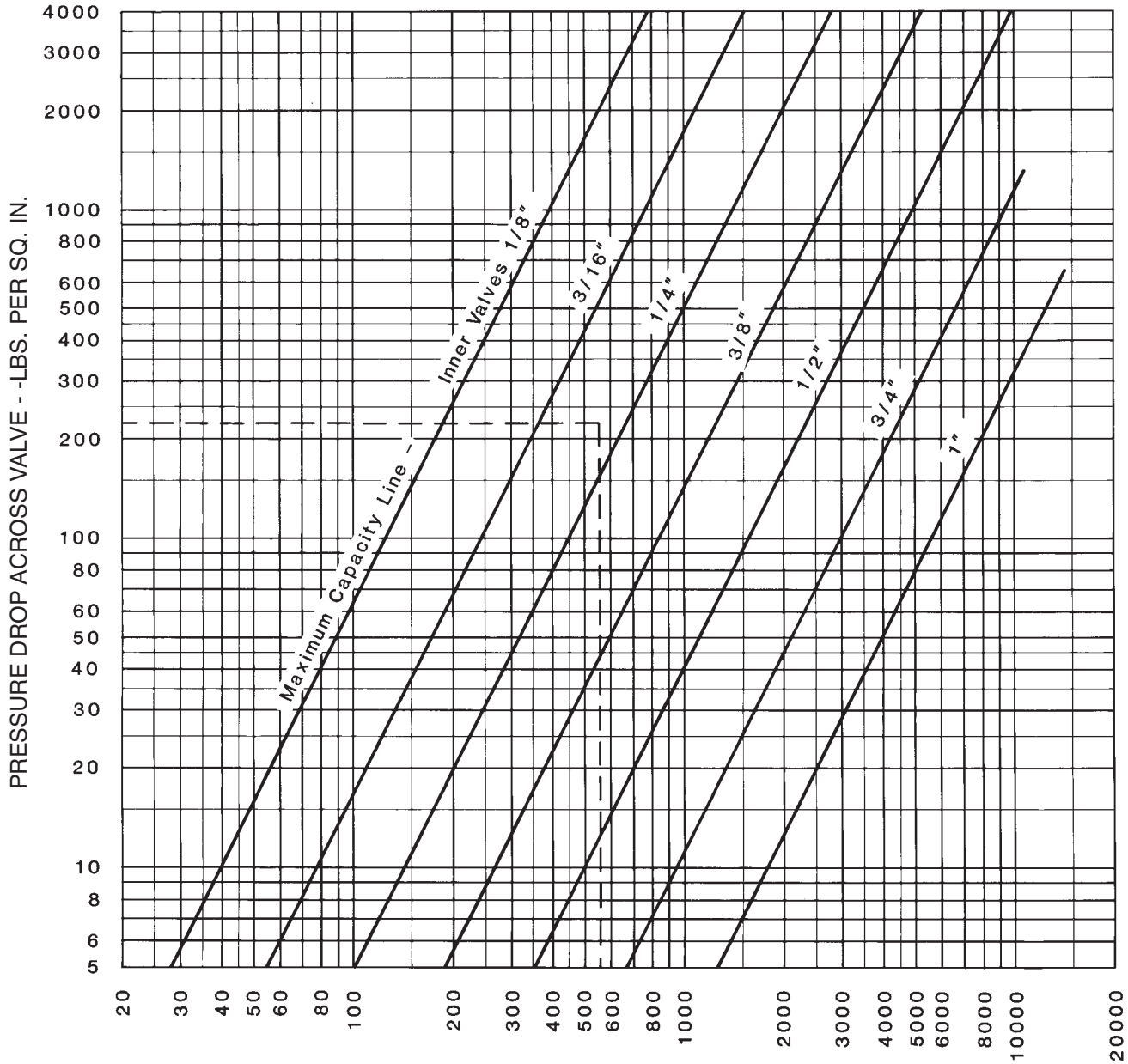
*For Gravity correction multiply above capacities by $\sqrt{.65/G}$; where G equals specific gravity of gas.

See Liquid Capacity Chart for maximum pressure drops on large inner valves.

Flow rates are for steady flow conditions over a 24-hour period. Corrections should be made to deal with intermittent flow conditions.



STEADY FLOW RATE - BARRELS WATER PER 24 HOURS



A good rule to follow when sizing liquid valves discharging from any kind of accumulator is to assume a volume at least twice that expected under steady flow conditions.

HOW TO USE CHART: Assume that it is desired to handle 275 barrels of water per day under steady flow conditions with a 225 psi pressure drop across the valve. Using the rule above we will use a volume of 550 barrels. The intersection of the 550 barrel line and the 225 psi pressure drop line lies between the 3/16" and 1/4" inner valve lines. Since the inner valve lines indicated maximum capacities, we must therefore select the 1/4" inner valve size to handle this volume.

*For gravity correction multiply above capacities by \sqrt{G} ; where G equals specific gravity of flowing liquid.

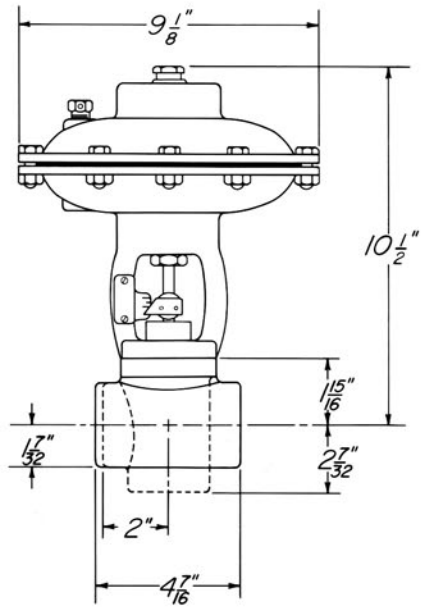
MAXIMUM PRESSURE DROP for LARGE INNER VALVES

1" MOTOR VALVES			2" MOTOR VALVES		
I.V.	THROTTLE	RELIEF	I.V.	THROTTLE	RELIEF
1/2"	1200	2400	1"	650	1300
3/8"	1850	3700	3/4"	1350	2700

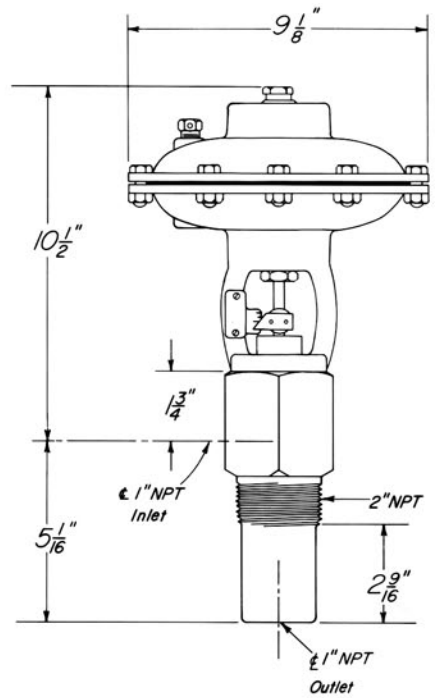
Above values are for valves furnished with standard springs for 20 psi diaphragm pressure.

NOTE: Flow rates are for steady flow conditions over a 24-hour period. Corrections should be made to deal with intermittent flow conditions.

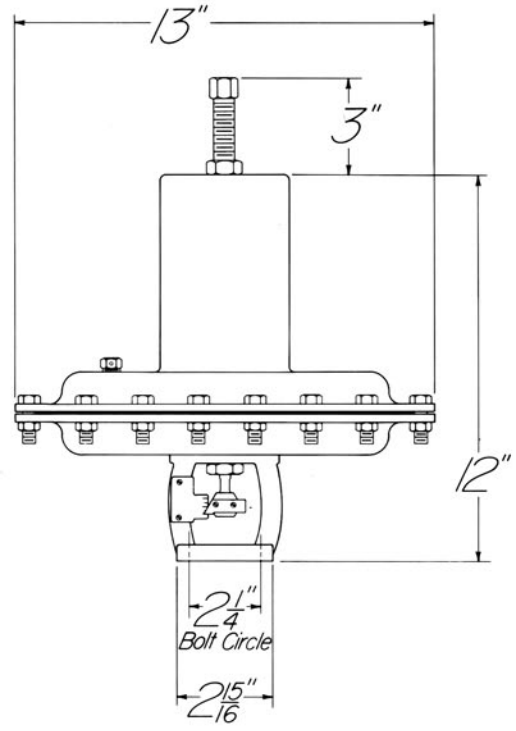
1" HPMV



1" SMS



1" -65 TOPWORKS



1" -65 SMS TOPWORKS

