700R / 705R
Basic Hydraulic Valve

CONTROL VALVES BERMAD

Description / Operation

The Model 700R / 705R Basic Hydraulic Valve is a hydraulically operated, diaphragm actuated globe valve in the oblique (Y) pattern design. The valve is comprised of two major components: the body /seat assembly and the actuator assembly.

The actuator assembly is unitized and is removable from the body as a single unit. The actuator assembly contains both a lower and upper control chamber and by simply plugging and/or venting the orifice plugs in the bottom chamber separating partition the basic valve can be either a single chamber control valve, Model 705R, or a double chamber control valve, Model 700R. The diaphragm sub-assembly in both single and double chambers versions is center guided which provides a seat area with no obstructions.

The 700R Series Reduced Port Control Valves provides, ***economicl advantages*** along with ***improved flow*** and higher ***resistance to cavitation damage.***

The Model 700R Basic Valve operates independently of valve differential pressure. The double chambered diaphragm actuator always has full differential pressure to develop maximum power and immediate reaction. The upper control chamber is pressurized to close the valve and vented to open it. The lower control chamber usually is vented to atmosphere, but can be pressurized to power the valve open. The Model 705R Basic Valve uses differential pressure to power the diaphragm actuator open or closed. The lower control chamber is connected through a fixed orifice to the downstream pressure, which serves to cushion the closing of the valve. The upper control chamber has varying pressure usually produced by the combined action of a regulating pilot and a constant restricted orifice. This varying pressure modulates the valve to open or close.

The Model 700R / 705R basic hydraulic control valve is available in a wide range of materials, sizes, pressure ratings, and end connections and in either single or double chamber versions is used as the main valve in all of the 700 Series on/off, pressure, flow and level models.

Technical Data

Specifications

- **Valve Pattern:** "Y"
- **Sizes:** 3" – 12"
- **End Connections:**
  2"-3": threaded BSP/NPT
  3"-12": flanged ISO/BS/ANSI
- **Temperature Range:** Water up to 80°C (180°F)
- **Materials:**
  Main valve body and actuator:
  Cast Iron, Ductile Iron, Polyester-coated
  Main valve trim: Stainless steel,
  bronze, coated steel
  Diaphragm and seals: Synthetic rubber
  Options: Nitrile; Buna-N; EPDM

(Other materials and coatings available on request, i.e. epoxy coating).

Purchace Specification

The Model 700R / 705R Basic Hydraulic Valve is a hydraulically operated, diaphragm actuated globe valve.

Main Valve

The main valve shall be a center guided diaphragm actuated globe valve of oblique (Y) pattern design. The body and cover shall be cast iron, ASTM A- 126 Class B, with bronze seat. The internal and external surfaces of the valve body shall be fusion bonded coated. End connections shall meet the ANSI, ISO, DIN, JIS or other internationally recognized standard required. The body shall have a replaceable non-threaded seat ring that is held in place by set screws which tighten into a body groove. This seat should be accessible and serviceable without removing the valve from the pipeline. The seat area shall have an unobstructed flow opening with no stem guides, bearings or supporting ribs.

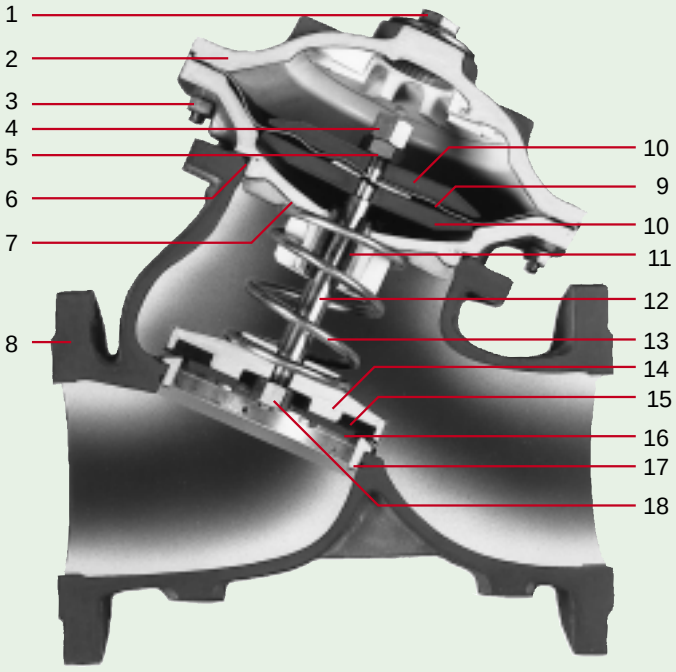
Actuator

The actuator assembly shall be a double chamber design with a separating partition between the lower surface of the diaphragm and the main valve. The entire actuator assembly consisting of the seal disk, valve shaft and bearing, diaphragm assembly, separating partition and top cover must be removable from the valve as a single unit. The control chamber between the diaphragm and the separating partition shall be capable of being open to or isolated from the valve internal body pressure. The stainless steel valve shaft shall be guided throughout its travel by a bearing in the separating partition. The replaceable resilient seal shall be rectangular in cross section and contained on three and one half sides. A lip shall be provided on the seal disk outside edge to lock the seal in place. The actuator assembly must be capable of accepting a V-port throttling plug by simply bolting the device to the seal disk.

Operating Pressure Range: Cast and Ductile Iron Standards

Standard	Class	Pressure Range		
		Units	Max.	Min.
ISO/DIN/BS 4504	16	kg/cm^2	16	0.7
BS 10	D	psi	200	10
ANSI B16.1	125	psi	175	10
ANSI B16.42	150	psi	250	10

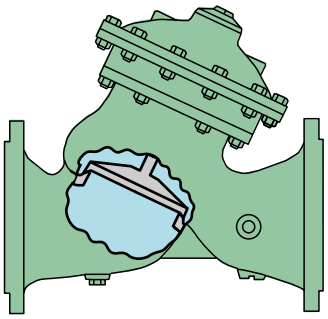
Valve Assembly, Parts and Materials List

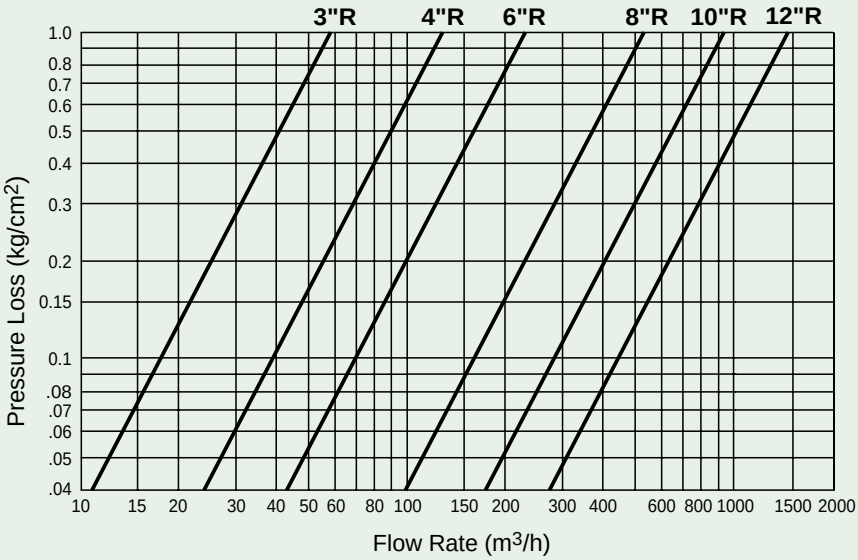


1	Cover plug	Bronze
2	Cover	Cast Iron / Ductile Iron
3	Cover bolt & nut	Galvanized Steel
4	Shaft indicator lock nut	S.S. 303
5	Shaft nut	S.S. 303
6	Valve body "O" ring	Buna N
7	Separating partition	Cast Iron / Ductile Iron
8	Valve body	Cast Iron / Ductile Iron
9	Diaphragm	NBR Nylon Reinforced
10	Diaphragm washers	Coated Steel
11	Shaft bearing	Bronze
12	Shaft	S.S. 303
13	Spring	S.S. 302
14	Seal disc	Cast Iron/Steel
15	Seal disc seal	Buna N/NR
16	Seal disc washer	Bronze
17	Valve seat (removable)	Bronze/S.S.
18	Seal disc nut	S.S. 303

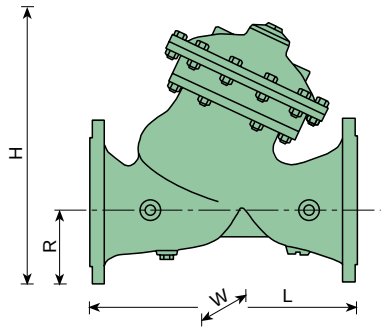
Flow Chart

Flat Disc (Standard)





Dimensions and Weights



	Size	3"R	4"R	6"R	8"R	10"R	12"R
	Dimen.	mm	mm	mm	mm	mm	mm
ANSI 125;150 ISO 10; 16	L	250	264	335	500	605	725
	W	200	223	280	340	405	480
	R	100	112	140	170	202	240
	H	257	321	390	520	613	724
	Weight	15 kg	30 kg	50 kg	95 kg	160 kg	280 kg
ANSI 250;300 ISO 20; 25	L	264	279	353	524	637	762
	W	200	250	316	375	444	510
	R	104	125	158	188	222	255
	H	262	334	408	538	633	739
	Weight	18 kg	35 kg	60 kg	105 kg	185 kg	315 kg

Flow Factor

Size		3"	4"	6"	8"	10"	12"
"Y" R	Cv	68	152	260	616	1100	1715
	Kv	60	130	220	530	930	1460

For V-Port Plug Cv (Kv) multiply by: 0.65

Cv or **Kv** = $\frac{Q}{\sqrt{\Delta P / S}}$ **Kv** = 0.856 **Cv**

Cv = Flow factor: gpm at 1psi drop
Kv = Flow factor: m^3/h at 1 kg/cm^2 drop
Q = Flow: gpm – m^3/h
ΔP = Pressure drop: psi – kg/cm^2
S = Specific gravity: water = 1

Helpful Hints and Option

The **Model 700R / 705R** basic hydraulic valve can be supplied with numerous options including:

Stainless Steel Seat (T) for aggressive fluids.

Delrin Shaft Bearing (R) for applications requiring no bronze components.

Position Indicator (I) Shows the position of the actuator assembly. Easily installed in the field.

Mechanical Closure (M) Limits the opening of the valve and allows the valve to be manually closed.

Lift Spring (L) Mechanically holds the valve partially open without hydraulic opening force.

V-Port Plug (V) Provides more accurate, stable and smooth response to changing flows and pressures while reducing noise and vibration. It allows a very wide flow range with relatively high pressure reduction.

When combined with control pilots, solenoids and/or other control accessories applications for the **Model 700R / 705R** include:

Electric Remote Control Valve - Model 710R opens and closes drip-tight in response to an electrical signal supplied to a solenoid pilot valve.

Pressure Reducing Valve - Model 720R reduces higher upstream pressure to a lower preset downstream pressure regardless of changes in inlet pressure and or flow rates.

Pressure Reducing & Pressure Sustaining Valve - Model 723R has two independent functions. It maintains a constant outlet pressure regardless of fluctuating flow rates and/or varying inlet pressure and it sustains a pre-set minimum upstream pressure.

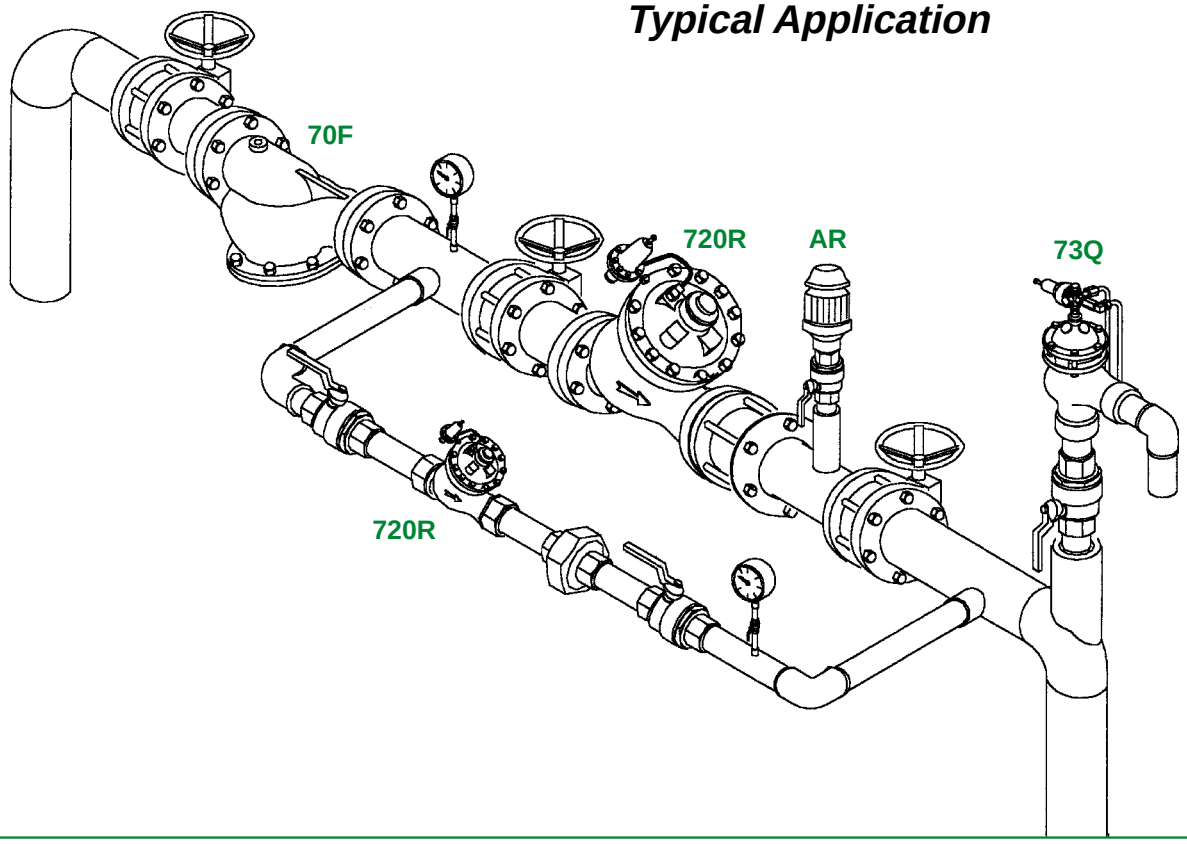
Pressure Relief / Sustaining Valve - Model 730R relieves excess pressure or sustains a minimum upstream back pressure.

Surge Anticipating Control Valve - Model 735R protects pumps and pipelines from pressure surge damage resulting from the sharp flow velocity changes associated with pump starting and stopping and especially with abrupt pump stoppages caused by power failures.

Modulating Float Control Valve - Model 750R-60 and Model 750R-67 maintain a constant water level in reservoirs and storage tanks.

Two Level, Non-Modulating Float Control Valve - Model 750R-66 controls the low water and high water level in reservoirs and storage tanks.

Typical Application



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