

### DESCRIPTION

#### A94-1 CHECK VALVE WITH CONTROLLED OPENING

Primarily used on the discharge of pumps, the Model A94-1 can be used anywhere reverse flow must be prevented and where it is important to control surges when pumps are started.

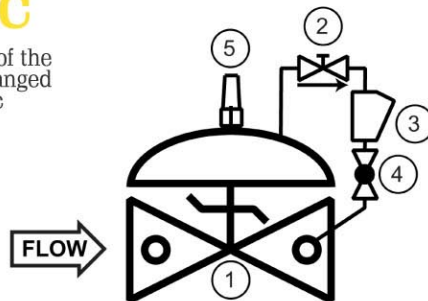
### SERIES FEATURES

- Valve closes quickly on pressure reversal
- Adjustable opening speed
- Valve position indicator standard
- Can be maintained without removal from the line
- Factory tested

### SCHEMATIC

The Model A94-1 consists of the following components, arranged as shown on the schematic diagram:

- 1.) Basic Control Valve
- 2.) Flow Control Valve
- 3.) Y-strainer
- 4.) Isolation Ball Valve
- 5.) Visual Indicator (Optional)

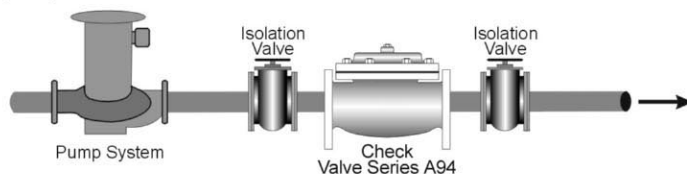


### OPERATION

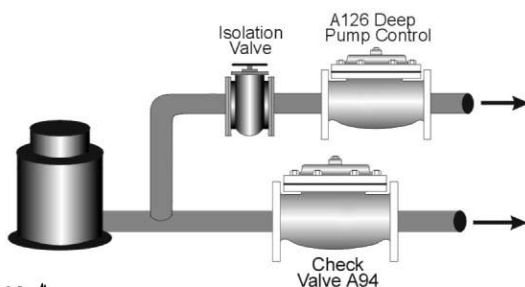
The Model A94-1 is an on/off valve that opens to allow flow when inlet pressure is greater than outlet pressure and closes when outlet is greater than inlet. The opening speed is adjustable via a flow control valve, slowly transitioning flow into the line to reduce pump start surges. Closing speed remains quick to minimize reverse flow. The valve is equipped with a position indicator that allows you to observe the rate of opening during adjustment. Opening and closing is accomplished by routing fluid into and out of the diaphragm chamber.

### RECOMMENDED INSTALLATION

Equipped with a controlled opening speed, pump discharge pressure is gradually introduced to the system, thus protecting the pump from reverse flow.



Used in conjunction with the Model A126, the Series A94 provides start up and shutdown surge protection for deep well pumps.

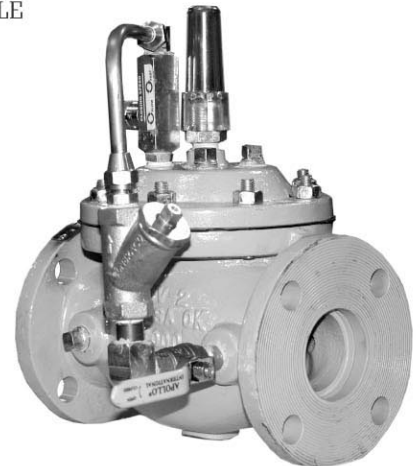


**Sizes:** GLOBE/ANGLE

Threaded Ends:  
1 1/4" - 3"

Grooved Ends:  
1 1/2" - 4"

Flanged Ends:  
1 1/4" - 24" (globe);  
1 1/4" - 16" (angle)



### SIZING GUIDELINES

Check valves are normally line size; however for best surge protection, the flow velocity should not exceed 15 ft/sec.

SIZE	1 1/4"-1 1/2"	2"	2 1/2"	3"	4"	6"
FLOW @ 15FT/SEC GPM	70-95	150	225	345	600	1350

SIZE	8"	10"	12"	14"	16"	24"
FLOW @ 15FT/SEC GPM	2350	3675	5250	6300	8250	18750

### MAX. PRESSURE

END CONNECTIONS	DUCTILE IRON	STEEL/STN STL	BRONZE
Threaded	640 psi	640 psi	500 psi
Grooved	300 psi	300 psi	300 psi
150# Flanged	250 psi	285 psi	225 psi
300# Flanged	640 psi	740 psi	500 psi

### TEMPERATURE RANGE

(Valve Elastomers)

Buna-N -40° F - 180°F; Viton 0° F - 400°F; EPDM 0° F - 300°F

### STANDARD MATERIALS

Consult factory for others.

**Body/Bonnet:** Ductile Iron (epoxy coated), Carbon Steel (epoxy coated), Stainless Steel, B61 Bronze, Others available (consult factory)

**Seat Ring:** Bronze B61, Stainless Steel

**Stem:** Stainless Steel, Monel

**Spring:** Stainless Steel

**Diaphragm:** Nylon Reinforced, Buna-N, Viton, EPDM

**Seat Disc:** Buna-N, Viton, EPDM

**Speed Control:** Brass, Stainless Steel

**Pilot:** Bronze, Stainless Steel

Other pilot system components: Bronze/Brass, All Stainless Steel

**Tubing & Fittings:** Copper/Brass, Stainless Steel

### SPECIFICATIONS

The check valve shall be installed on the discharge of the booster pump. It shall open when upstream pressure exceeds downstream pressure, and close tightly when downstream pressure exceeds upstream pressure to prevent back flow. The opening speed of the valve shall be adjustable. The valve shall include a visual indicator assembly.

#### DESIGN

The check valve shall be a single-seated, line pressure operated, diaphragm actuated, pilot controlled globe valve. The valve shall seal by means of a corrosion-resistant seat and a resilient, rectangular seat disc. These, and other parts, shall be replaceable without removing the valve from the line. The stem of the main valve shall be guided top and bottom by integral bushings. Alignment of the body, bonnet and diaphragm assembly shall be by precision dowel pins. The diaphragm shall not be used as a seating surface, nor shall the pistons be used as an operating means. The pilot system shall be furnished complete and installed on the main valve. It shall include an opening speed control, a Y-strainer and isolation ball valves. The check valve shall be operationally and hydrostatically tested prior to shipment.

#### MATERIALS OF CONSTRUCTION

The main valve body and bonnet shall be ductile iron per ASTM A536, Grade 65-45-12. All ferrous surfaces shall be coated with 4 mils of epoxy. The main valve seat ring shall be bronze per ASTM B61. Elastomers (diaphragms, resilient seats and O-rings) shall be Buna-N. The opening speed control and isolation ball valves shall be brass, and control line tubing shall be copper.

#### OPERATING CONDITIONS

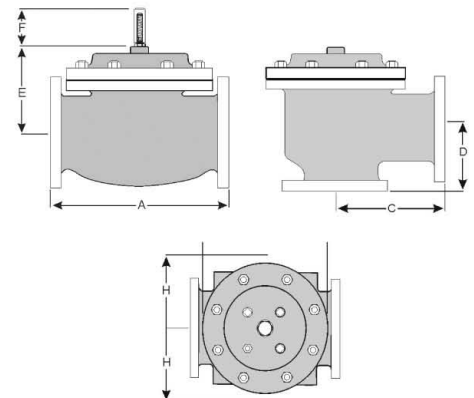
The check valve shall be suitable for a maximum inlet pressure of <X> psi and a maximum forward flow rate of <X> gpm.

#### ACCEPTABLE PRODUCTS

The check valve shall be a <size> Model A94-1, <globe pattern, angle pattern>, with <150# flanged, 300# flanged, threaded, grooved> end connections, as manufactured by Conbraco Industries, Matthews, NC.

U.S. DIMENSIONS - INCHES													
DIM	END CONN.	1 1/4-1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	24
A	SCREWED	8 3/4	9 7/8	10 1/2	13	--	--	--	--	--	--	--	--
	GROOVED	8 3/4	9 7/8	10 1/2	13	15 1/4	--	--	--	--	--	--	--
	150# FLGD	8 1/2	9 3/8	10 1/2	12	15	17 3/4	25 3/8	29 3/4	34	39	40 3/8	62
	300# FLGD	8 3/4	9 7/8	11 1/8	12 3/4	15 5/8	18 5/8	26 3/8	31 1/8	35 1/2	40 1/2	42	63 3/4
C	SCREWED	4 3/8	4 3/4	6	6 1/2	--	--	--	--	--	--	--	--
	GROOVED	4 3/8*	4 3/4	6	6 1/2	7 5/8	--	--	--	--	--	--	--
	150# FLGD	4 1/4	4 3/4	6	6	7 1/2	10	12 11/16	14 7/8	17	--	20 13/16	--
	300# FLGD	4 3/8	5	6 3/8	6 3/8	7 13/16	10 1/2	13 3/16	15 9/16	17 3/4	--	21 5/8	--
D	SCREWED	3 1/8	3 7/8	4	4 1/2	--	--	--	--	--	--	--	--
	GROOVED	3 1/8*	3 7/8	4	4 1/2	5 5/8	--	--	--	--	--	--	--
	150# FLGD	3	3 7/8	4	4	5 1/2	6	8	11 3/8	11	--	15 11/16	--
	300# FLGD	3 1/8	4 1/8	4 3/8	4 3/8	5 13/16	6 1/2	8 1/2	12 1/16	11 3/4	--	16 1/2	--
E	ALL	6	6	7	6 1/2	8	10	11 7/8	15 3/8	17	18	19	27
F	ALL	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	6 3/8	6 3/8	6 3/8	6 3/8	6 3/8	8
H	ALL	10	11	11	11	12	13	14	17	18	20	20	28 1/2

\*GROOVED END NOT AVAILABLE IN 1 1/4"



For maximum efficiency, the Apollo control valve should be mounted in a piping system so that the valve bonnet (cover) is in the top position. Other positions are acceptable but may not allow the valve to function to its fullest and safest potential. In particular, please consult the factory before installing 8" and larger valves, or any valves with a limit switch, in positions other than described. Space should be taken into consideration when mounting valves and their pilot systems.

#### Special Functions

- 000= No Opening or Closing Speed
- 001= Opening Speed
- 002= Closing Speed
- 003= Opening & Closing Speed
- 017= Lift Check

\*Specify Media, Flow Rate, Voltage and Pressure Setting.

#### Model Number

**A 9 4 G 0 0 1 0 2 0 1 1 1 1**

#### Valve Type / Connection

- A=Angle / Flanged ANSI 150 Class
- B=Angle / Flanged ANSI 300 Class
- C=Angle / Threaded (1-1/4 - 3")
- E=Angle / Grooved Ends (1-1/2 - 4")
- F=Angle / Flanged 300clsX150cls
- G=Globe / Flanged ANSI 150cls
- H=Globe / Flanged ANSI 300cls
- J=Globe / Threaded Ends (1-1/4 - 3")
- V=Globe / Grooved Ends (1-1/2 - 4")

#### Valve Size

- 012= 1 - 1/4"
- 015= 1 - 1/2"
- 020= 2"
- 025= 2 1/2"
- 030= 3"
- 040= 4"
- 060= 6"
- 080= 8"
- 100= 10"
- 120= 12"
- 140= 14"
- 160= 16"
- 240= 24"

#### Seat Ring Material

- 1=Bronze, B61
- 2=Stainless Steel

#### Body & Bonnet Material

- 1=Ductile Iron
- 2=Cast Steel
- 4=Bronze
- 7=Stainless Steel

#### Elastomers

- 1=Buna-N
- 2=Viton
- 3=EPDM

#### Pilot, Fittings, Tube MATERIAL

CODE	PILOT	FTGS	TUBE
1	BZ	BRS	CU
4	SS	BRS	CU
8	SS	SS	SS
9	BZ	SS	SS