



▲ Model 94-1QC

The Model 94-1QC non-surge check valve is a simple on/off valve which effectively minimizes pump start up surges. The 94-1QC opens at an adjustable speed to allow forward flow and closes quickly and tightly to prevent reverse flow.

## SERIES FEATURES

- Opens slowly on pump start
- Closes quickly on pump shut-down
- Visual indicator enables operator to determine valve position at a glance
- Can be maintained without removal from the line

## OPERATION

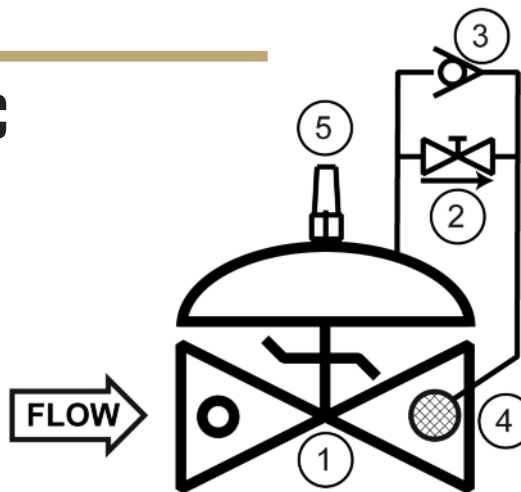
The 94-1QC operates on the balance between the inlet pressure, acting under the seat of the valve, and the downstream pressure, acting on the diaphragm via the hydraulic lines. When the inlet pressure is the greater of the two forces, the valve opens at the rate set by the opening speed control (2). When the downstream pressure is greater, the valve is forced fully closed through the check valve (3) and the free-flow direction of the opening speed control.

## COMPONENTS

The Model 94-1QC consists of the following components, arranged as shown on the schematic diagram:

- 1.) Model 65 Basic Control Valve
- 2.) Model 141-3 Flow Control Valve (opening speed control)
- 3.) Model 141-1 Check Valve
- 4.) Model 123 Inline Strainer
- 5.) 155 Visual Indicator

## SCHEMATIC



## RECOMMENDED INSTALLATION

Install the valve with adequate space above and around the valve to facilitate servicing. Refer to the Dimension Table.

Valve should be installed with the bonnet (cover) at the top, particularly 8" (DN200) and larger valves, and any valve with a limit switch.

Shut-off valves should be installed upstream and downstream of the control valve. These are used to isolate the valve during start-up and maintenance.

## SIZING

The 94-1QC is normally sized to match the line size; however, in no case should the maximum velocity exceed 4.5 meters/second, as shown below.

## MAX. PRESSURE

(The pressures listed here are maximum working pressures at 37.78°C)

END CONNECTIONS	DUCTILE IRON	STEEL WCB	STEEL LCB	Stn. STEEL	ALUMINUM
Threaded	44.1 bar	44.1 bar	44.1 bar	44.1 bar	19.7 bar
Grooved	20.7 bar	20.7 bar	20.7 bar	20.7 bar	13.8 bar
150# Flanged	17.2 bar	19.7 bar	18.4 bar	19.0 bar	19.7 bar
300# Flanged	44.1 bar	51.0 bar	48.0 bar	49.6 bar	----

SIZE, DN	32-40	50	65	80	100	150	200	250	300	350	400	600
MAX FLOW, M <sup>3</sup> /HR	20	34	48	78	136	307	510	705	1020	1225	1635	4260

# Model 94-1QC (Aviation Fueling) METRIC



## SIZES

Screwed Ends -	1 1/4" - 3" (DN32 thru DN80)
Grooved Ends -	1 1/2" - 4" (globe) (DN40 thru DN100) 1-1/2" - 4" (angle) (DN40 thru DN100)
Flanged Ends -	1 1/4" - 24" (globe) (DN32 thru DN600) 1 1/4" - 16" (angle) (DN32 thru DN400)

## FLUID OPERATING TEMPERATURE RANGE

Buna-N	-40°C to 82.22°C
Viton	-6.67°C to 110°C
Fluorosilicone	-40°C to 65.56°C
EPDM	-17.78°C to 110°C

**MATERIALS** Consult factory for others.

**Body/Bonnet:** Ductile Iron (epoxy coated), Carbon Steel (epoxy coated), Stainless Steel, Aluminum

**Seat Ring:** Stainless Steel, Bronze

**Stem:** Stainless Steel, Monel

**Spring:** Stainless Steel

**Diaphragm:** Buna-N, Viton, (Nylon reinforced)

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

**Pilot:** Stainless Steel, Bronze

**Other pilot system components:**

Stainless Steel, Bronze/Brass

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

## SPECIFICATIONS (Typical Aviation Fueling Application)

The non-surge check valve shall function to prevent pump start-up surges and reverse flow by opening slowly after pump start and closing quickly when the pump stops. Valve opening speed shall be adjustable.

### DESIGN

The non-surge 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, installed on the main valve and include an opening speed control, pilot check valves and an inline strainer. The non-surge check valve shall be operationally and hydrostatically tested prior to shipment.

### MATERIALS OF CONSTRUCTION

The main valve body and bonnet shall be ductile iron. All ferrous surfaces shall be coated with 4 mils of epoxy. The main valve seat ring shall be stainless steel. Elastomers (diaphragms, resilient seats and O-rings) shall be Buna-N. The opening speed control, check valves, and control line tubing shall be stainless steel.

### OPERATING CONDITIONS

The non-surge check valve shall be suitable for a flow rate of  $<X> \text{ m}^3/\text{hr}$  at maximum pressures of  $<X> \text{ bar psi}$ .

### ACCEPTABLE PRODUCTS

The non-surge check valve shall be a  $<\text{size}>$  Model 94-1QC,  $<\text{globe pattern, angle pattern}>$ , with  $<150\# \text{ flanged, } 300\# \text{ flanged, threaded, grooved}>$  end connections, as manufactured by OCV Control Valves, Tulsa, Oklahoma, USA.

METRIC DIMENSIONS - M.M.

DIM	END CONN.	DN32-DN40	DN50	DN65	DN80	DN100	DN150	DN200	DN250	DN300	DN350	DN400	DN600
A	SCREWED	222	251	267	330	---	---	---	---	---	---	---	---
	GROOVED	222	251	267	330	387	508	---	---	---	---	---	---
	150# FLGD	216	238	267	305	381	451 **	645	756	864	991	1026	1575
	300# FLGD	222	251	283	324	397	473 **	670	791	902	1029	1067	1619
C ANGLE	SCREWED	111	121	152	165	---	---	---	---	---	---	---	---
	GROOVED	111*	121	152	165	194	---	---	---	---	---	---	---
	150# FLGD	108	121	152	152	191	254	322	378	432	---	529	---
	300# FLGD	111	127	162	162	198	267	335	395	451	---	549	---
D ANGLE	SCREWED	79	98	102	114	---	---	---	---	---	---	---	---
	GROOVED	79*	98	102	114	143	---	---	---	---	---	---	---
	150# FLGD	76	98	102	102	140	152	203	289	279	---	398	---
	300# FLGD	79	105	111	111	148	165	216	306	298	---	419	---
E	ALL	152	152	178	165	203	254	302	391	432	457	483	686
F	ALL	98	98	98	98	98	98	162	162	162	162	162	203
H	ALL	254	279	279	279	305	330	356	432	457	508	508	724

\*GROOVED END NOT AVAILABLE IN DN32

\*\*Note: for military fueling valves, 6" (DN150) 150# flanges have 20" (20 mm) face to face dimensions and 6" (DN150) 300# flanges have 21" (533.4 mm) face to face dimensions.

## CE Markings

Applies to fuel valves installed in the European Union in accordance with the Pressure Equipment Directive, 97/23/EC

CE-marked valves are available in LCB steel and CF8M stainless steel only

OCV is registered to the PED through Det Norske Veritas

The following valves will be CE-marked:

- 6" (DN150) and larger valves, 150# and 300# class, liquid fuel only
- 2" (DN50) thru 4" (DN100) valves, 300# class, liquid fuel
- 1 1/4" (DN32) thru 4" (DN100) valves, 300# class, LPG or Butane service
- 4" (DN100) and smaller valves in Class 150# (liquids) are furnished under SEP with no CE-mark

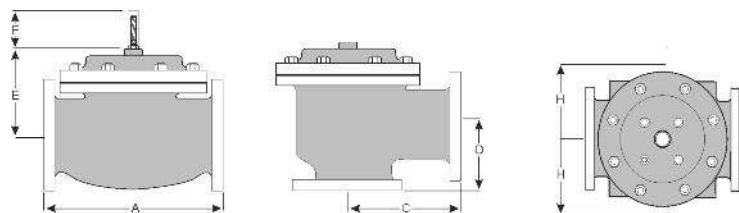
For maximum efficiency, the OCV control valve should be mounted in a piping system so that the valve bonnet (cover) is in the top position. Other positions are acceptable but may not allow the valve to function to its fullest and safest potential. In particular, please consult the factory before installing 8" (DN200) 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.

A routine inspection & maintenance program should be established and conducted yearly by a qualified technician. Consult our factory @ 1-918-627-1942 for parts and service.

## How to order your Model 94-1QC valve

When ordering please provide:

Fluid to be controlled - Model Number - Size - Globe or Angle - End Connection - Body Material - Trim Material - Special Requirements / Installation Requirements



QUALITY SYSTEM  
REGISTERED TO  
ISO 9001

phone: (918)627.1942 • fax: (918)622.8916 • 7400 East 42nd Place, Tulsa, Oklahoma 74145  
email: sales@controlvalves.com • website: www.controlvalves.com