



**AURORA<sup>®</sup>** 1030 AND 1040 SERIES  
SUCTION DIFFUSERS,  
COMBINATION AND TRIPLE DUTY VALVES



# AURORA® 1030 AND 1040 SERIES

## Suction Diffusers, Combination and Triple Duty Valves

Designed for Direct Mounting on the Suction Flange of Horizontal and Vertical Pumps.

### Aurora Suction Diffuser Design:

Model SD: Supplied with cast iron body and ANSI-125/PN16 flanges.

Model SDG: Supplied with ductile iron body with grooved inlet connection and ANSI-125/PN16 outlet flange.

Model SDH: Supplied with ductile iron body and ANSI-250/PN25 flanges

### Model SD, SDG and SDH Suction Diffusers.

### Four-function Pump Fitting.

#### 90° Elbow:

Mounting the Suction Diffuser on any pump suction turns the piping 90°, replacing an elbow. In addition, the Suction Diffuser can be rotated to any position allowed by the pump suction bolts, from vertical to horizontal.

#### In-Line Strainer:

The stainless steel strainer has free area of at least 250% of pipe sectional area. A disposable fine-mesh strainer is installed for start-up cleaning.

#### Reducing Elbow:

The Suction Diffuser connects same size piping to the pump suction, but can also connect to inlet piping one size larger than the pump suction, eliminating a reducing elbow.

#### Diffuser Vanes:

Flow stabilizing vanes on the outlet allow the Suction Diffuser to bolt directly to the pump, saving the space and cost of a long straight pipe length.

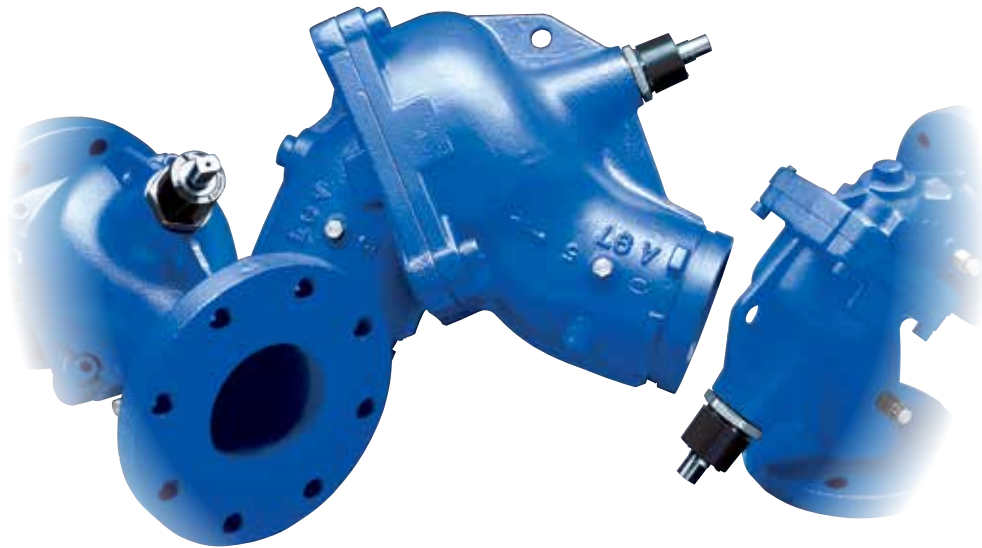


# Designed for Installation on the Discharge Side of Centrifugal Pumps

## Model 3DV Triple Duty Combination Valves:

**Model 3DV:** Triple Duty valve is supplied with hard (cast-in) flanges.

**Model 3DV-G:** Triple Duty valve is supplied with grooved port connections, designed for Aurora® flange adapters or standard grooved pipe fittings.



## Model 3DV Triple Duty Combination Valves:

### Drip-tight Shut-Off Valve:

The Aurora Triple Duty valve is designed and tested for drip-tight isolation at 150% of maximum working pressure.

### Non-slam Check Valve:

The Aurora Triple Duty valve incorporates a spring closure design that closes the valve in a controlled manner, protecting the valve from slamming due to a reversal in flow caused by gravity or recirculation from a parallel pump.

### Flow Throttling Valve:

The Aurora Triple Duty valve uses a plug and disc design which is the most effective valve type for combining throttling of flow and isolation. Other design valves may be effective for throttling or isolation, but not both.

### Convertible Body Design:

The Aurora Triple Duty convertible body design permits the valve to be changed on-site from straight to angle configuration.

# Valve Features

- Fewer components required as redundant fittings are eliminated.
- Fewer connections required with Aurora's multipurpose fittings.
- Less installation time required by reducing the number of fittings.
- Less installation space required as pump inlet spool piece is eliminated.

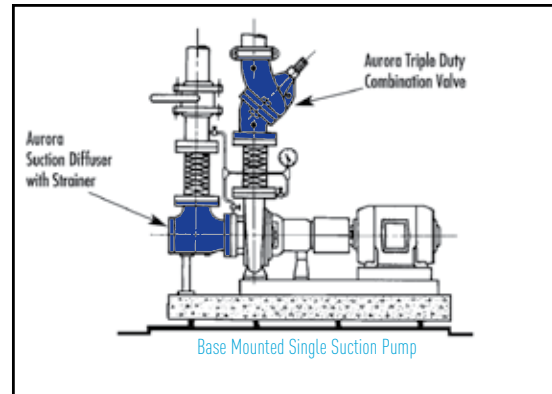
## Reduce Field Installation and Materials Costs:

Components eliminated using Aurora Triple Duty valves and Suction Diffuser strainer for base mounted single and double suction pump installations and vertical in-line installations:

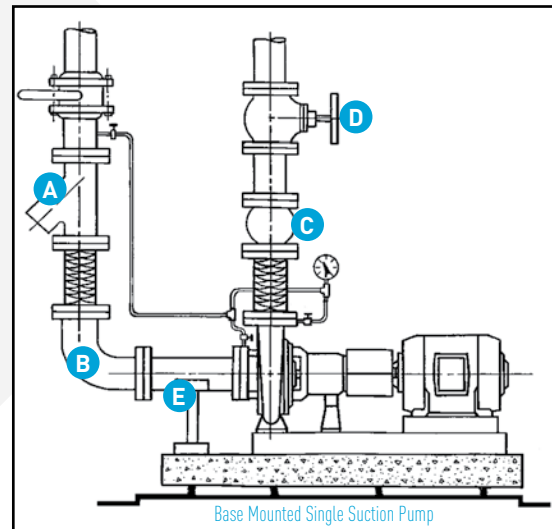
- A.** "Y" Strainer
- B.** Suction Long Radius Elbow
- C.** Discharge Check Valve
- D.** Discharge Globe Valve
- E.** Suction Spool Piece

In addition, use of the 3DV-G style eliminates three welded flange connections.

## Aurora® Method



## Conventional Method



# Materials of Construction

## Suction Diffuser Body.

Cast iron, or ductile iron, with ANSI or PN16 flanges. Same size ports are available with oversized inlet flange to eliminate reducer.

## Diffuser Vanes.

Stabilizing vanes reduce turbulence, thereby creating optimum flow conditions and minimizing stress on pump components.

## Strainer.

1/8" (3 mm) perforated stainless steel, star-shaped for added strength, designed to provide large free flow area to reduce pressure drop.

## Start-up Strainer.

Removable fine-mesh strainer, furnished as a standard item, helps prevent mechanical seal or instrument damage during initial run period.

Optional magnet to help eliminate free floating metallic particles from system.

Removable cover, with O-ring, enables easy access to strainer.

Aurora® Model SD Suction Diffuser



## Suction Diffusers

Model	Body	Cover	Strainer 1/8" (3 mm) Perforations	Fine-Mesh Strainer	Guide Vanes
SD	Cast Iron	Ductile Iron	Stainless Steel	Galvanized Steel	Cast Iron
SDG, SDH	Ductile Iron	Ductile Iron	Stainless Steel	Galvanized Steel	Ductile Iron

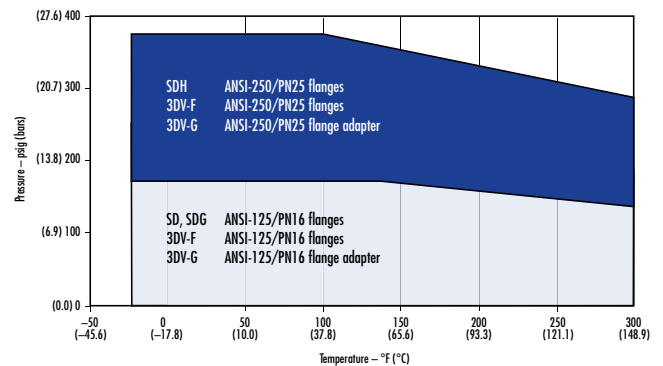
## Triple Duty Valves

Model	Body	Disc	Stem & Spring	Seat & O-Ring	Port Fitting
3DV ANSI-125/PN16	Cast Iron	Bronze	Stainless Steel	EPDM	Brass
3DV ANSI-250/PN25	Ductile Iron	Bronze	Stainless Steel	EPDM	Brass
3DV-G	Ductile Iron	Bronze	Stainless Steel	EPDM	Brass

## Combination Valves

1" Straightway:	Bronze Body
1-1/4"-2" Straight-Angle:	Iron Body/Bronze Fittings
Working Pressure:	125 psig (1103 kPa)
Max. Operating Temperature:	250°F (121°C)

## Suction Diffuser and Triple Duty Pressure/Temp. Parameters



# Technical Information

## Design Benefits.

- Reduced field installation and material costs.
- Cast iron or ductile valve body with hard flanges, or ductile iron valve body with standard grooved ends.
- Eliminates requirement for two separate valves on pump discharge and, in some cases, a 90° elbow.
- 3DV-G eliminates three welded flange connections.
- Soft seat to ensure tight shut-off.
- Spring-closure design uses a non-slam silent check valve feature for vertical mounting.
- Flow measurement and pump throttling capabilities.
- Temperature measurement capability.
- Spring-closure design check valve prevents gravity or reverse circulation when pump is not operating.
- Bonnet O-ring can be replaced under full system pressure by back seating of valve stem.
- Suitable for maximum working pressure up to 375 psi (26 bars) and temperatures up to 300°F (150°C).
- Valve seat can be changed in the field without use of special tools.
- Low pressure drop due to “Y” pattern valve design.
- Valve CV designed to ASHRAE flow recommendations for quiet system operation.

## Flow Indicator Scale.

Mounting the Suction Diffuser on any pump suction turns the piping 90°, replacing an elbow. In addition, the Suction Diffuser can be rotated to any position allowed by the pump suction bolts, from vertical to horizontal.

## Hard Flanged Body or Flange Adapter.

The hard flanged body or the combination of the Aurora flange adapter and Triple Duty body, equipped with the unique anti-rotation lugs, ensures a rigid pump installation.



Aurora® Model 3DV-GA Triple Duty Valve

- |                                  |  |
|----------------------------------|--|
| <b>A.</b> Anti-rotation Lugs     | <b>F.</b> Resilient Seat   |
| <b>B.</b> Flow Indicator Scale   | <b>G.</b> Stainless Steel Stem   |
| <b>C.</b> Stainless Steel Spring | <b>H.</b> Bonnet O-ring  |
| <b>D.</b> Seat Gasket            | <b>I.</b> Flow/Temperature Measurement Ports Drain Connection (on opposite side) |
| <b>E.</b> Bronze Disk            |  |



Flow Indicator Scale



Aurora Flange Adapter



Gasket



# Typical Specifications – Pump Trim

## Suction Diffusers.

Furnish and install on the suction of each pump an Aurora® Suction Diffuser, with outlet flow stabilizing guide vanes, removable stainless steel strainer, fine-mesh start-up strainer and plugged inlet gauge tapping.

**For 150 psig/PN16 flanged pipe** – Supply valve with cast iron body with ANSI-125/PN16 flanged ports.

**For 150 psig grooved systems** – Supply valve with ductile iron body with grooved inlet connection and ANSI-125/PN16 outlet flange.

**For 300 psig/PN25 flanged pipe** – Supply valves with ductile iron body and ANSI-250/PN25 flanged ports.

The mechanical contractor shall inspect the strainer prior to activating the pump and, further, shall remove the fine-mesh start-up strainer after a short running period (24 hours maximum). Space shall be provided for removal of the strainer and connection of a blow-down valve.

## Triple Duty Valves.

Furnish and install on the discharge side of each pump an Aurora Model 3DV Triple Duty Combination Valve. Each valve is to incorporate the following three functions in one body: Tight shut-off, spring-closure type silent non-slam check and effective throttling with flow measurement capability. The body shall have (2) 1/4" NPT connections on each side of the valve seat. Two connections to have brass pressure and temperature metering ports, with Nordel™ check valves and gasketed caps. Two other connections to be supplied with brass drain plugs. Metering ports are to be interchangeable with drain ports to allow for measurement flexibility when installed in tight locations. The valve disc shall be bronze plug & disc type with high impact engineered

resin seat to ensure tight shut-off and silent check operation. The valve stem shall be stainless steel with flat surfaces provided for adjustment with open-end wrench.

## For Grooved Piping:

Valve body shall be ductile iron with grooved ends and Aurora anti-rotation lugs on the inlet and outlet of the body. Flange adapters, where necessary, are to be Aurora ANSI-125/PN16 or ANSI-250/PN25 ductile iron flanges with anti-rotation lugs and EPT gaskets.

## For Welded Flange Piping:

**For 150 psig/PN16 flanges** – Valve body shall be cast iron with ANSI-125/PN16 flanged ports.

**For 300 psig/PN25 flanges** – Valve body shall be ductile iron with ANSI-250/PN25 flanged ports.

The valve shall be selected and installed in accordance with the manufacturer's instructions and be suitable for the pressure and temperature specified.

## Insulation (Available for 2.5" – 6"/65 – 150 Triple Duty Valves).

Each valve shall be furnished with a preformed removable PVC insulation jacket to meet ASTM D1784 Class 14253-C, MEA #7-87, ASTM-E-84 and ASTM136 with a flame spread rating of 25 or less and a smoke development rating of 50 or less. There will be provided sufficient mineral fiberglass insulation to meet ASHRAE 90.1-1989 specifications in operating conditions with maximum fluid design operating temperature range of 141°F – 200°F (60°C – 93°C) and mean rating temperature of 125°F (52°C).

# Combination Valves for Hydronic Heating

## Quiet Operation...No Chattering Flow Conditions...No Rattling.

- Stop gravity flow when circulator is not running
- Summer operation
- For use with an indirect water heater



Aurora® Combination Valves are designed to prevent gravity circulation in a Hydronic System when the circulating pump is not running. When the pump starts, the Combination Valve opens automatically to permit circulation of water in the heating system. If gravity flow is required for any reason, such as electric power failure, the valve may be opened manually.

Aurora Combination Valves are an essential part of a hot water heating system when domestic water is heated from an indirect heater in the boiler. In summer, when no heat is required and the heating pump is not running, the Combination Valve prevents gravity flow in the system.

In addition to permitting year-round use of the indirect water heater, Aurora Combination Valves, in conjunction with the room thermostat and circulating pump, help to regulate building temperatures when the heating system is in operation.

Aurora Combination Valves, sizes 3/4" through 2", are available in Iron Straight-Angle Type for horizontal or vertical installation in various piping designs. A 1" Bronze Straightway Type is available for use with copper tubing.

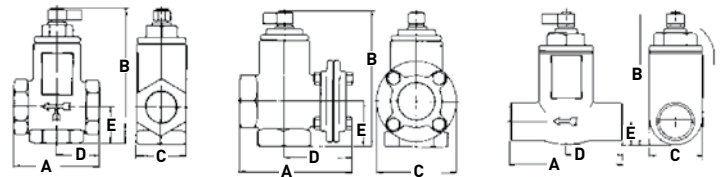
## Easy to Clean.

It is not necessary to remove Aurora Combination Valves from the line for cleaning.

- Simply:
- unscrew top cap
  - remove valve mechanism
  - clean out all foreign matter
  - replace cap

When installing, leave sufficient clearance from center line of valve to ceiling, to facilitate cleaning.

Sizes to 1 1/2" .....leave 5" clearance  
Size 2" .....leave 9" clearance



## Combination Valves

Size	Connections	Dimensions in Inches				
		A	B	C	D	E
<b>STRAIGHT-ANGLE</b>						
10403DV1.25CI	Screwed 3 Ends	4	6 1/2	2 1/4	2	1 1/8
10403DV1.5CI	Screwed 3 Ends	5	7 1/4	3	2 1/2	2 1/4
10403DV2CI	Flanged 1 Screwed 2 Ends	6 1/8	7 1/2	4 3/8	4	2 3/8
<b>STRAIGHTWAY – BRONZE</b>						
10403DV1B	Sweat 2 Ends	3 3/4	4 3/8	1 1/8	1 1/8	3/4



800 AIRPORT ROAD, NORTH AURORA, ILLINOIS 60542 WWW.AURORAPUMP.COM

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