Triple Duty® Valves
Centrifugal Pump Accessories
Performance Curves in Metric Units
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MATERIALS OF CONSTRUCTION

Body: NPT & flanged models ........................................... Cast iron, ASTM A-126, B
  Grooved models ....................................................... Ductile iron, ASTM A-395
Seat ........................................................................ Brass, ASTM B-584, C93200
Seat insert ................................................................. EPDM
Disc ............................................................................ Bronze, ASTM B-584, C84400
Stem: Flanged & grooved models ..................................... Stainless steel, ASTM A-582, T416
  NPT models .............................................................. Brass, ASTM B-16, C36000
Spring ........................................................................ Stainless steel, ASTM A-313, T302
Packing ......................................................................... Teflon-Graphite

OPERATING DATA

Maximum working pressure
  Cast iron models ....................................................... 175 lb/in² (11.9 Bars)
  Ductile iron models ................................................... 300 lb/in² (20.4 Bars)
Maximum operating temperature ...................................... 250°F (121°C)

TYPICAL SPECIFICATION (All Models)

Furnish and install as shown on plans, a (select one: straight, angle or straight-angle) ______ pattern valve designed to perform the functions of a non-slam check valve, throttling valve, shutoff valve and calibrated balancing valve.

The valve shall be of heavy-duty (select one: cast iron [NPT & flanged models only] or ductile iron [grooved models only] ______ iron construction with (select one: NPT connections per ANSI B1.20.1-83 suitable for 175 psi [11.9 bars] working pressure [NPT models only], 125 psi [8.5 bars] ANSI flanged connections suitable for 175 psi [11.9 bars] working pressure, or standard cut grooved connections suitable for working pressures up to 300 psi [20.4 bars] [straight pattern models only]) ______ connections for operating temperatures up to 250°F. (121°C). The valve shall be fitted with a bronze seat, replaceable bronze disc with EPDM seat insert, (select one: stainless steel [flanged & grooved models only] or brass [NPT models only]) ______ stem, and chatter preventing stainless steel spring. The valve design shall permit repacking under full system pressure.

The valve Cv rating at the 100% stem rise position shall not be less than (refer to the Cv value shown in column "B" for the required valve) ______ .

The valve shall be equipped with brass readout valves (with integral check valve) to facilitate taking differential pressure readings across the orifice for accurate system balance.

Each valve shall be Bell & Gossett Model No. 3D-______, _______ pattern Triple Duty Valve.
PART No. 132121  MODEL No. 3DS-2S
PART No. 132150  MODEL No. 3DS-2G

FOR SYSTEM BALANCING

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION

FOR SYSTEM PRESSURE DROP

MAXIMUM RECOMMENDED FLOW 30 M³/HR
PART No. 132122  MODEL No. 3DS-2¹/₂S
PART No. 132151  MODEL No. 3DS-2¹/₂G

FOR SYSTEM BALANCING

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

FOR SYSTEM PRESSURE DROP

MAXIMUM RECOMMENDED FLOW 45 M³/HR
PART No. 132123  MODEL No. 3DS-3S
PART No. 132152  MODEL No. 3DS-3G

FOR SYSTEM BALANCING

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

MAXIMUM RECOMMENDED FLOW 65 M³/HR
PART No. 132124  MODEL No. 3DS-4S
PART No. 132153  MODEL No. 3DS-4G

FOR SYSTEM BALANCING

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

MAXIMUM RECOMMENDED FLOW 115 M³/HR
PART No. 132126  MODEL No. 3DS-6S
PART No. 132155  MODEL No. 3DS-6G

FOR SYSTEM BALANCING

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

ΔP METERS OF WATER

CAPACITY: M³/HR

FOR SYSTEM PRESSURE DROP

CAPACITY: M³/HR

MAXIMUM RECOMMENDED FLOW 260 M³/HR
PART No. 132127  MODEL No. 3DS-8S
PART No. 132156  MODEL No. 3DS-8G

FOR SYSTEM BALANCING

MINIMUM READING OF 9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

CAPACITY: M³/HR

FOR SYSTEM PRESSURE DROP

MAXIMUM RECOMMENDED FLOW 460 M³/HR
PART No. 132128  MODEL No. 3DS-10S
PART No. 132157  MODEL No. 3DS-10G

FOR SYSTEM BALANCING

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

\[\Delta P\] METERS OF WATER

FOR SYSTEM PRESSURE DROP

MAXIMUM RECOMMENDED FLOW 720 M\(^3\)/HR
PART No. 132129  MODEL No. 3DS-12S
PART No. 132158  MODEL No. 3DS-12G
FOR SYSTEM BALANCING

MINIMUM READING OF 0.9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

FOR SYSTEM PRESSURE DROP

MAXIMUM RECOMMENDED FLOW 1035 M³/HR
PART No. 132120   MODEL No. 3DS-14S

FOR SYSTEM BALANCING

MINIMUM READING OF .9 METER OF
PRESSURE DROP REQUIRED FOR
ACCURATE FLOW DETERMINATION.

FOR SYSTEM PRESSURE DROP

MAXIMUM RECOMMENDED FLOW 1260 M³/HR
PART No. 132131  MODEL No. 3D-2S

FOR SYSTEM BALANCING

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

MAXIMUM RECOMMENDED FLOW 30 M³/HR
PART No. 132132 MODEL No. 3D-2½S

FOR SYSTEM BALANCING

MINIMUM READING OF 0.9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

FOR SYSTEM PRESSURE DROP

MAXIMUM RECOMMENDED FLOW 45 M³/HR
PART No. 132133  MODEL No. 3D-3S

FOR SYSTEM BALANCING

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

MAXIMUM RECOMMENDED FLOW 65 M³/HR
PART No. 132135  MODEL No. 3D-5S

FOR SYSTEM BALANCING

10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

ΔP METERS OF WATER

CAPACITY: M³/HR

FOR SYSTEM PRESSURE DROP

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

ΔP METERS OF WATER

CAPACITY: M³/HR

MAXIMUM RECOMMENDED FLOW 180 M³/HR
PART No. 132136  MODEL No. 3D-6S

FOR SYSTEM BALANCING

\[ \Delta p \text{ METERS OF WATER} \]

\[ \text{CAPACITY: } \text{M}^3/\text{HR} \]

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

FOR SYSTEM PRESSURE DROP

\[ \Delta p \text{ METERS OF WATER} \]

\[ \text{CAPACITY: } \text{M}^3/\text{HR} \]

MAXIMUM RECOMMENDED FLOW 260 M\(^3\)/HR
PART No. 132138  MODEL No. 3D-10S

FOR SYSTEM BALANCING

MINIMUM READING OF .9 METER OF PRESSURE DROP REQUIRED FOR ACCURATE FLOW DETERMINATION.

FOR SYSTEM PRESSURE DROP

MAXIMUM RECOMMENDED FLOW 720 M³/HR
USEFUL PUMP FORMULAS

Pressure (PSI) = \( \frac{\text{Head (Feet)} \times \text{Specific Gravity}}{2.31} \)

Head (Feet) = \( \frac{\text{Pressure (PSI)} \times 2.31}{\text{Specific Gravity}} \)

Vacuum (Inches of Mercury) = \( \text{Dynamic Suction Lift (Feet)} \times 0.883 \times \text{Specific Gravity} \)

Horsepower (Brake) = \( \frac{\text{GPM} \times \text{Head (Feet)} \times \text{Specific Gravity}}{3960 \times \text{Pump Efficiency}} \)

Horsepower (Water) = \( \frac{\text{GPM} \times \text{Head (Feet)} \times \text{Specific Gravity}}{3960} \)

Efficiency (Pump) = \( \frac{\text{Horsepower (Water)}}{\text{Horsepower (Brake)}} \times 100 \text{ Per Cent} \)

NPSH (Available) = Positive Factors — Negative Factors

**Affinity Laws: Effect of change of speed or impeller diameter on centrifugal pumps.**

<table>
<thead>
<tr>
<th>GPM Capacity</th>
<th>Ft. Head</th>
<th>BHP</th>
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<tr>
<td>( Q_2 = \frac{D_2}{D_1} \times Q_1 )</td>
<td>( H_2 = \left( \frac{D_2}{D_1} \right)^2 H_1 )</td>
<td>( P_2 = \left( \frac{D_2}{D_1} \right)^3 P_1 )</td>
</tr>
<tr>
<td>( Q_2 = \frac{\text{RPM}_2}{\text{RPM}_1} \times Q_1 )</td>
<td>( H_2 = \left( \frac{\text{RPM}_2}{\text{RPM}_1} \right)^2 H_1 )</td>
<td>( P_2 = \left( \frac{\text{RPM}_2}{\text{RPM}_1} \right)^3 P_1 )</td>
</tr>
</tbody>
</table>

Where \( Q = \text{GPM}, H = \text{Head}, P = \text{BHP}, D = \text{Impeller Dia.}, \text{RPM} = \text{Pump Speed} \)
Xylem |ˈzɪləm|

1) The tissue in plants that brings water upward from the roots; 2) a leading global water technology company.

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