The actual flow is dependent upon electrical command signal and valve pressure drop. The flow for a given valve pressure drop can be calculated using the square root function for sharp edge orifices:

\[ Q = Q_N \sqrt{\frac{\Delta p}{\Delta p_N}} \]

- \( Q \) [gpm] = calculated flow
- \( Q_N \) [gpm] = rated flow
- \( \Delta p \) [psi] = actual valve pressure drop
- \( \Delta p_N \) [psi] = rated valve pressure drop

Once the restoring torque becomes equal to the torque from the magnetic forces, the armature/flapper assembly moves back to the neutral position and the spool is held open in a state of equilibrium until the command signal changes to a new level.

In summary, the spool position is proportional to the input current and with constant pressure drop across the valve, flow to the load is proportional to the spool position.
**Operating Pressure**
- ports P,T,A and B up to 3,000 psi

**Temperature Range**
- Fluid: -40° to 275°F
- Ambient: -40° to 275°F

**Seal Material**
- Viton others on request

**Operating Fluid**
- Compatible with common hydraulic fluids, other fluids on request.
- Recommended viscosity 60-450 SUS @ 100°F

**System Filtration:**
- High pressure filter (without bypass, but with dirt alarm) mounted in the main flow and if possible, directly upstream of the valve.

**Class of Cleanliness:**
- The cleanliness of the hydraulic fluid greatly effects the performance (spool positioning, high resolution) and wear (metering edges, pressure gain, leakage) of the servovalve.

**Recommended Cleanliness Class**
- For normal operation ISO 4406 < 14/11
- For longer life ISO 4406 < 13/10

**Filter Rating**
- recommended
  - For normal operation β₁₀ ≥ 75 (10 µm absolute)
  - For longer life β₁₀ ≥ 75 (5 µm absolute)

**Installation Operations**
- Any position, fixed or moveable.

**Vibration**
- 30 g, 3 axes

**Weight**
- 2.0 lb [.09 kg]

**Degree of Protection**
- EN50529P: class IP65, with mating connector mounted.

**Shipping Plate**
- Delivered with an oil sealed shipping plate.

**Valve Flow Diagram**
- Valve flow for maximum valve opening (100% command signal) as a function of the valve pressure drop.
771/2/3 SERIES
TECHNICAL DATA

Model... Type
Mounting Pattern
Valve Body Version

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Mounting Pattern</th>
<th>Valve Body Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>771</td>
<td>ISO 10372 - 02 - 02 - 0 - 92</td>
<td>4-way</td>
</tr>
<tr>
<td>771</td>
<td>2-stage with spool–bushing assembly</td>
<td></td>
</tr>
<tr>
<td>773</td>
<td>Nozzle/Flapper, Highflow</td>
<td>Internal only</td>
</tr>
</tbody>
</table>

Pilot Stage
Pilot Connection
Optional, Internal or External
Rated Flow
(±10%) at Δp = 1,000 psi

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>Amplitude Ratio (dB)</th>
<th>Phase Lag (degrees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>±100%</td>
<td>±40%</td>
</tr>
<tr>
<td>200</td>
<td>±100%</td>
<td>±40%</td>
</tr>
<tr>
<td>300</td>
<td>±100%</td>
<td>±40%</td>
</tr>
<tr>
<td>500</td>
<td>±100%</td>
<td>±40%</td>
</tr>
<tr>
<td>1000</td>
<td>±100%</td>
<td>±40%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>Amplitude Ratio (dB)</th>
<th>Phase Lag (degrees)</th>
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<tr>
<td>300</td>
<td>±100%</td>
<td>±40%</td>
</tr>
<tr>
<td>500</td>
<td>±100%</td>
<td>±40%</td>
</tr>
<tr>
<td>1000</td>
<td>±100%</td>
<td>±40%</td>
</tr>
</tbody>
</table>

Response Time*
Threshold%
Hysteresis%
Null Shift
at ΔT = 100°F
Null Leakage Flow*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>6</td>
<td>&lt; 0.5</td>
<td>&lt; 3.0</td>
<td>&lt; 2.0</td>
<td>0.35</td>
</tr>
<tr>
<td>2.5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.0</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.0</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.0</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Measured at 1,000 psi pilot or operating pressure

Typical characteristic curves with ±40% and ±100% input signal, measured at 3,000 psi operating pressure.
The mounting manifold must conform to ISO 10372-03-03-0-92. Surface to which valve is mounted requires a $\Delta\Delta$ finish, flat within 0.002[0.05] TIR.

For External Null Adjust:
Flow out of Port B will increase with clockwise rotation of null adjust screw ($\frac{1}{8}$ hex key).

For External Null Adjust:
Flow bias is continually varied for a given port as the null adjust is rotated.
**Rated current and coil resistance**
A variety of coils are available for 771/2/3 Series Servovalves, which offer a wide choice of rated current. See Table 1.

**Coil connections**
A four-pin electrical connector (that mates with an MS3106F14S-2S) is standard. All four torque motor leads are available at the connector so external connections can be made for series, parallel or differential operation.

**Servoamplifier**
The servovalve responds to input current, therefore, a servoamplifier that has high internal impedance (as obtained with current feedback) should be used. This will reduce the effects of coil inductance and will minimize changes due to coil resistance variations.

---

**ELECTRICAL CONNECTIONS**
(Examples with typical 771/2/3 series coils)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel</td>
<td>Series</td>
<td>Single</td>
<td></td>
</tr>
<tr>
<td>A, B, C, D</td>
<td>A, B, C, D</td>
<td>A, B, C, D</td>
<td></td>
</tr>
<tr>
<td>100 ±15</td>
<td>400 ±7.5</td>
<td>200 ±15</td>
<td></td>
</tr>
<tr>
<td>±0.23</td>
<td>±0.23</td>
<td>±0.045</td>
<td></td>
</tr>
<tr>
<td>A and C (+)</td>
<td>A (+), D (-)</td>
<td>A (+), B (-)</td>
<td></td>
</tr>
<tr>
<td>B and D (-)</td>
<td>B and C connected</td>
<td>or C (+), D (-)</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Before applying electrical signals the pilot stage has to be pressurized.

**TABLE 1**

<table>
<thead>
<tr>
<th>Nominal Resistance Per Coil at 77°F (25°C) [Ω]</th>
<th>Recommended Rated Current–mA</th>
<th>Approximate Coil Inductance*–Henrys</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Parallel, Differential or Single Coil Operation</td>
<td>Series Coils</td>
</tr>
<tr>
<td>80</td>
<td>±40</td>
<td>±20</td>
</tr>
<tr>
<td>200</td>
<td>±15</td>
<td>±7.5</td>
</tr>
<tr>
<td>1000</td>
<td>±8</td>
<td>±4</td>
</tr>
</tbody>
</table>

* Measured at 50 Hz
### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Type Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>771, 772, 773</td>
<td>* • • • •</td>
</tr>
</tbody>
</table>

#### Optional Feature
- K Intrinsically safe

#### Model Designation
- Assigned at the factory

#### Factory Identification (Revision Level)
- Valve Version
  - S Standard response

#### Rated Flow
- Q-N [gpm] at ∆p N = 1,000 psi
  - Standard
  - High Response
  - 04 1 771 series only
  - 10 2.5 771 series only
  - 19 5.0 772 series only
  - 38 10.0 772 series only
  - 57 15.0 773 series only

#### Maximum Operating Pressure p_a and Body Material
- F 3,000 psi aluminum

#### Main Spool Type
- O 4-way / axis cut / linear
- D 4-way / ±10% overlap / linear
- X Special

#### Preferred configurations highlighted.
- All combinations may not be available.
- Options may increase price and delivery.
- Technical changes are reserved.

### 771/2/3 SERIES

#### ORDERING INFORMATION

#### SPARE PARTS AND ACCESSORIES

<table>
<thead>
<tr>
<th>O-Rings (included in delivery), for P.T.A and B</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>771</td>
<td>FPM 85 Shore</td>
<td>Moog P/N</td>
</tr>
<tr>
<td>772</td>
<td>ID 0.239 x 0.070</td>
<td>42082-007</td>
</tr>
<tr>
<td>773</td>
<td>ID 0.364 x 0.070</td>
<td>42082-013</td>
</tr>
<tr>
<td></td>
<td>ID 0.426 x 0.070</td>
<td>42082-022</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mating Connector, waterproof IP 65 (not included in delivery)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>771 and 772</td>
<td>A01704-1K1</td>
<td></td>
</tr>
<tr>
<td>773</td>
<td>A01704-2K1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flushing Block, 771 and 772</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>771 and 772</td>
<td>.190-32 NF x 2.0 long (4 pcs.)</td>
<td>C39674-132</td>
</tr>
<tr>
<td>773</td>
<td>.250-20 NC x 2.25 long (4 pcs.)</td>
<td>A31324-136Z</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field Replaceable Filter Kit, B52555RK54K1</th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### Signals for 100% Spool Stroke
- 4 ±4 mA series
- H ±7.5 mA series
- L ±20 mA series
- N ±30 mA series
- Z ±100 mA series
- Y Special signal (see spec. sheet)

### Valve Connector
- A Connector C1 (A) – side (RH)
- B Connector C2 (B) – side (LH)
- X Special connector

### Seal Material
- V Fluorocarbon
- N NBR (Buna)
- Others on request

### Pilot Connections and Pressure
- Pressure [psi] Supply
  - A 250 to 3,000 internal

### Spool Position without Electrical Signal
- M Mid position

### Pilot Stage
- F Standard dynamics

### Technical Changes are Reserved.
Australia Mulgrave
Brazil São Paulo
China Hong Kong
  Shanghai
Denmark Copenhagen
England Tewkesbury
Finland Espoo
France Rungis
Germany Böblingen
India Bangalore
Ireland Ringaskiddy
Italy Brescia
  Malnate
Japan Hiratsuka
Korea Seoul
Luxembourg Luxembourg City
Philippines Baguio
Singapore Singapore
Spain Orio
Sweden Askim
USA East Aurora