FINE series PURE
High Durability Valve series

KIWAMI
The Height of Excellence

FPR-NHD-71-6.35
FPR-NHD-71-9.52
FSR-SD-71-6.35

Safety & Clean Technology

Fujikin. Incorporated
MEGA-ONE LA NHD

High Durability Low-pressure Pneumatic Valves

The NEW MEGA-ONE LA NHD is a pneumatically-actuated diaphragm valve for ultra-pure, flammable, or toxic fluid lines for all types of semiconductor equipment and facilities. The direct diaphragm construction makes the NEW MEGA-ONE LA NHD an industry standard valve with superior sealing performance, remarkable durability and compactness, and particle- and dead-space-free performance. Technology developed through extensive experience has resulted in higher endurance and response.

- Durability tested to over 30 million cycles
- High Cv value

Highly durable nickel-cobalt alloy diaphragm

Pneumatic solenoid valve also available for higher speed response

EP treatment is standard for all wetted surfaces. Optional UP treatment is also available

Standard seat material is PCTFE. Polyimide/PFA seat material is also available.
Specifications / Materials / Performance

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Nominal Diameter</th>
<th>Maximum Operating Pressure</th>
<th>Fluid Temperature Range</th>
<th>Maximum Cv*</th>
<th>Actuation Pressure</th>
<th>Supply Air Connection</th>
<th>End Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.35</td>
<td>1 MPa</td>
<td>-10 to + 80 °C</td>
<td>0.4</td>
<td>0.45 to 0.6 MPa</td>
<td>M5x0.8</td>
<td>UJR, UPG, F900, tube stub</td>
</tr>
<tr>
<td></td>
<td>9.52</td>
<td></td>
<td></td>
<td>0.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Theoretical leak rate: External leak: < 5 x 10^-3 Pa·m³/sec, Seat leak: < 5 x 10^-5 Pa·m³/sec
- Tested leak rate: External leak: < 5 x 10^-5 Pa·m³/sec, Seat leak: < 5 x 10^-8 Pa·m³/sec
- * Depends on the configuration of the body.

Materials

<table>
<thead>
<tr>
<th>Part</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body*</td>
<td>SUS316L</td>
</tr>
<tr>
<td>Diaphragm</td>
<td>Nickel-cobalt alloy</td>
</tr>
<tr>
<td>Seat</td>
<td>PTFE</td>
</tr>
<tr>
<td>Actuator</td>
<td>A5056</td>
</tr>
</tbody>
</table>

* Materials other than SUS316L double-melt are also available. Consult with Fujikin for use outside the specification range.

Temperature/Pressure Rating

Part Number Designation

Please use the part number designations below when placing an order.

FPR-NHD[---]71[---]6.35[---][---][---][---]

A B C D E F G H I J K

- A: FPR: Normally-closed
- B: 3-way valve
- C: CL: 2-way, corner left valve
- D: 7: UJR / UPG end connection
- E: 1: 1MPa maximum operating pressure
- F: SV: Solenoid valve* RS: Proximity sensor*
- G: End Connector Size 6.35: 1/4"* 9.52: 3/8"* 12.7: 1/2"* (UJR connections have a 9.52 port diameter)
- H: Blank: Male UJR on both ends
- I: Blank: PTFE seat
- J: PA: PFA seat* PI: Polyimide seat*
- K: UG: UPG end connection
  BW: Butt weld
  TH: Cartridge heater insertion slot provided

Actual shipped items may have additional designations (such as #A, #B) in the part number. These indicate production history and do not indicate a change in function or dimensions.
High Durability Valves

High durability technology (patent pending)
Technological advances have improved the service life of these valves. Valve now has a durability of over 30 million cycles.

High Cv
Structural revisions have increased the Cv value over earlier products of the same size.

Stability and consistency
Lift and Cv are tested on all valves.

Same standardized face-to-face dimensions as the MEGA-ONE and NEW MEGA-ONE (Only for Ø6.35 UJR fitting)
Existing lines can be upgraded.

High-temperature fluid model also available
Valves can withstand temperatures up to 200°C when equipped with PFA or polyimide seats.
IGS-compatible models available

UPG end connections available
Ideal for liquefied gases. Dead-space free.

Options

Solenoid-operated Pneumatic Valve (Optional)
Valve start time is 5 msec, while valve response
time is 20 msec or less.

Sensor Support (Optional)
Valve ON/OFF status can be electrically output.

Flow Rate Stabilization Valve (patent pending) (Optional)
Used with high-temperature applications, this valve minimizes fluctuations and maintains a stable flow rate.
Compact Direct-Acting Diaphragm Electronic Valves (ECV®)

The ECV® is the world’s first electrically-actuated direct diaphragm valve for specialty and ultra-pure gases. The use of a powerful solenoid made from innovative new materials has enabled actuator miniaturization and, at the same time, high-speed opening and closing.

It features the same (approximately 5 msec) response time as earlier pneumatic actuators.

* Response time is defined as the interval between the sending of the signal and the completion of the request.

- Durability of over 4 million cycles.
  (A high durability model has been tested to 10 million cycles.)
- Because of the powerful solenoid, valve opening and closing is 20 times faster than with standard pneumatic valves.

Dedicated solenoid driver eliminates the use of pneumatic controllers.

Cap with proximity sensor is available.

Highly durable nickel-cobalt alloy diaphragm.

All wetted surfaces are UP treated.

Excellent gas displacement characteristics. (0.84cc total volume for the male UJR version).

Standard seat material is PCTFE. Polyimide and PFA are also available for fluid temperatures up to 200°C. (Actuator: Maximum ambient temperature: 80°C)
**Response** (interval between the sending of the signal and the completion of the request)

- Fully closed → Fully open
  - Approximately 3.5 msec (Valve actuation time is < 2 msec.)
- Fully open → Fully closed
  - Approximately 5 msec (Valve actuation time is < 3 msec.)

**Specifications**

<table>
<thead>
<tr>
<th>Valve</th>
<th>Nominal Diameter</th>
<th>Maximum Operating Pressure</th>
<th>Maximum Cv *1</th>
<th>Fluid Temperature Range</th>
<th>End Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.35</td>
<td>1 MPa</td>
<td>0.1</td>
<td>-10 to + 80°C</td>
<td>UJR, UPG, Wseal</td>
<td></td>
</tr>
</tbody>
</table>

- Theoretical leak rate: External leak: < 5 x 10⁻¹⁰ Pa·m³/sec, Seat leak: < 5 x 10⁻⁷ Pa·m³/sec
- Tested leak rate: External leak: < 5 x 10⁻⁹ Pa·m³/sec, Seat leak: < 5 x 10⁻⁶ Pa·m³/sec

- All valves are helium leak tested.
- *1: Depends on the configuration of the body.
- *2: Polyimide/PA seat allows use with fluids up to 200°C

**Dedicated solenoid driver**

<table>
<thead>
<tr>
<th>Supply Voltage</th>
<th>Operating Signal</th>
<th>Maximum Number of Valves Per Solenoid Driver</th>
<th>Minimum Valve Opening/Closing Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 100 to 240V</td>
<td></td>
<td>8</td>
<td>0.4 sec (8 valves), 0.2 sec (&gt; 4 valves)</td>
</tr>
</tbody>
</table>

A variety of input signal types are supported.

Note 1: Solenoid driver also available for operating several valves continuously at high speed. Note 2: UL - or CE-compliant 4-channel solenoid driver also available.

**Part Number Designation**

FSR-SD-71 [ ]-6.35 [ ]-[ ]-[ ]-[ ]

- A: Solenoid
- B: R: Normally closed, Blank: Normally open
- C: HT: High-temperature
- D: US: UPG end connection
- E: F: PI: Polyimide seat *, PA: PFA seat *
  - Blank: Male UJR on both ends, Female UJR on both ends

Actual shipped items may have additional designations (such as #A, #B) in the part number. These indicate production history and do not indicate a change in function or dimensions.

**Dimensions (FSR-SD-71-6.35)** (Units: mm)

![Dimensions Diagram]

**Standard 8-channel Solenoid Driver**

![Driver Diagram]