FINE series PURE
NEW MEGA series

Safety & Clean Technology
Fujikin’s Class 1 cleanrooms feature cutting-edge technology throughout, and must achieve the most rigorous standards of cleanliness. Products manufactured in this environment are guaranteed to meet the most stringent requirements and to be of the highest quality.
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NEW MEGA Series

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NEW MEGA-ONE® LA

New Low-pressure Pneumatically-actuated Valves

The NEW MEGA-ONE® LA 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 an industry standard valve with superior sealing performance, remarkable durability and compactness, and particle- and dead-space-free performance. This valve has the same performance as the MEGA-ONE® LA, but is more compact and durable.

- Color-coded labels differentiate between normally open (blue) and normally closed (red) valves, thereby simplifying identification.
- The simplified actuator design makes it more compact.
- Durability of over 4 million cycles (ø6.35)
- Excellent gas displacement characteristics. (1.48cc total volume for the male UJR version.)
- EP treatment is standard for all wetted surfaces. UP treatment is optional.
- Extremely durable nickel-cobalt alloy diaphragm
- Standard seat material is PCTFE. Polyimide/PFA seat material is also available.
Specifications and Materials

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Nominal Diameter</th>
<th>Maximum Operating Pressure</th>
<th>Fluid Temperature Range</th>
<th>Maximum Cv* (with N2 gas at 20°C)</th>
<th>Actuation Pressure</th>
<th>Supply Air Connection</th>
<th>End Connection</th>
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</thead>
<tbody>
<tr>
<td>6.35</td>
<td>9.52 &amp; 12.7</td>
<td>1 MPa</td>
<td>-10 to 80°C</td>
<td>0.3</td>
<td>0.4 to 0.6 MPa</td>
<td>M6 x 0.8</td>
<td>UJR, UPG, F900, tube stub</td>
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</tbody>
</table>

- Theoretical leak rate: External leak: < 5 x 10^-12 Pa·m³/sec.
- Tested leak rate: External leak: < 5 x 10^-9 Pa·m³/sec.
- Durability of over 4 million cycles (Φ6.35), and over 2 million cycles (Φ9.52), respectively, under test conditions.

<table>
<thead>
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<th>Materials</th>
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<th>Material</th>
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<td>Diaphragm</td>
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</tr>
<tr>
<td>Seat</td>
<td>PCTFE (standard)</td>
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<tr>
<td>Actuator</td>
<td>Aluminum alloy (alumite coated)</td>
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</table>

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

Temperature/Pressure Rating

* All valves are helium leak tested. 
* Depends on the configuration of the body.

Part Number Designation

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

FPR-ND[ ]-71-6.35 [ ] [ ]-[ ]-[ ]-[ ]

- A: 1 MPa maximum operating pressure
- B: End Connection Size
  - 6.35: 1/4”[5]
  - 9.52: 3/8”[5]
  - 12.7: 1/2”[5](UJR connections have a 9.52 mm port diameter)
- C: Stainless steel direct diaphragm valve
- D: 7: UJR/UPG end connection
  - 9: F900 end connection
  - 5: Tube stub end connection
- E: TB: 3-way valve*
  - CL: 2-way, corner left valve*
- F: PP: Normally open
  - PPR: Normally closed
- G: Blank: Male UJR on both ends
  - UG: UPG end connection
  - BW: Butt weld
- H: Blank: Male UJR inlet / Female UJR outlet
- I: UP: UP treatment*
  - PS: Cr3O treatment*
  - FD: Fluorine passivation*
- J: -2: Female UJR on both ends
  - -3: Male 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

For the most up-to-date product information, visit Fujkin’s website (http://www.fujkin.co.jp/).

#### Figure 1
![Figure 1]

#### Figure 2
![Figure 2]

#### Figure 3
![Figure 3]

#### Figure 4
![Figure 4]

#### Figure 5
![Figure 5]

#### Figure 6
![Figure 6]

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</table>

* See Figure 1 for dimension keys not shown in other figures.
**OPTIONS**

**Block Valve**
FBNVD-6.35-2B3-DGO
Block valve design allows for:
- Compact tubing arrangement
- Dead-space-free configuration.
In addition to our standard 2-actuator, 3-port block, we also offer custom block valves according to customers’ specifications.

**Tube Stub Length**
FPR-ND-51-6.35BW-AWE
Customers may specify tube stub length.

**Proximity Sensor**
FPR-UDDF-71RS2-9.52
An electrical signal confirms the open or closed position of the valve.
(MEGA Series)

**Limit Switch**
FPR-UDDF-71LS-6.35-NL
An electrical signal confirms the open or closed position of the valve.
(MEGA Series)

**IGS Valves**
FPR-UDDFA-21-6.35UGF-APD
MEGA Series valves are available for surface-mount Integrated Gas Systems.
(MEGA Series)

The photos on this page depict examples of each product type.
NEW MEGA-ONE® LS
New Low-pressure Switching Manual Valves

The NEW MEGA-ONE® LS is a quarter turn diaphragm valve for ultra-pure, flammable, or toxic fluid lines in semiconductor manufacturing equipment and facilities. Unique features include an internal spring that assures uniform sealing performance and a direct diaphragm construction that makes the NEW MEGA-ONE® LS an industry standard valve with superior sealing performance, remarkable durability, compactness, and particle- and dead-space-free performance. This valve’s redesigned handle increases ease of use.

- Valve open or closed position is visible at a glance.
- User-friendly handle.
- Durability of over 20,000 cycles.

1. Accurate valve position indicator
2. Flow indicators prevent misoperation.

Different color handles are available to facilitate fluid identification.

Panel mount model available.

Excellent gas displacement characteristics.
(1.48cc total volume for the male 6.35 UJR version.)

Highly durable nickel-cobalt alloy diaphragm.

EP treatment is standard for all wetted surfaces.
UP treatment is optional.

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

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Nominal Diameter</th>
<th>Maximum Operating Pressure</th>
<th>Fluid Temperature Range</th>
<th>Maximum Cv* (with He gas at 20°C)</th>
<th>End Connection</th>
</tr>
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<tbody>
<tr>
<td>6.35</td>
<td>9.52 &amp; 12.7</td>
<td>1 MPa</td>
<td>-10 to 80°C</td>
<td>0.3</td>
<td>UJR, UPG, F900, tube stub</td>
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<tr>
<td>* Theoretical leak rate: External leak: ≤ 5 x 10^-14 Pa·m³/sec</td>
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<td>* Seat leak: ≤ 5 x 10^-16 Pa·m³/sec</td>
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<td>* All valves are helium leak tested.</td>
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<tr>
<td>* Durability of over 20,000 cycles under test conditions.</td>
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Materials

<table>
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<tr>
<td>Body*</td>
<td>SUS316L</td>
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<tr>
<td>Diaphragm</td>
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<tr>
<td>Seat Packing</td>
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<td>Handle</td>
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</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.

FUND L [ ]-71G -6.35 [ ] [ ] [ ]

A B C D E F G H I J K

- A: Blank: Male UJR on both ends
- B: Female UJR on both ends
- C: UPG end connection
- D: UG end connection
- E: BW: Butt weld
- F: Open/closed indicator
- G: 1 MPa maximum operating pressure
- H: 7: UJR/UPG end connection
- I: 9: F900 end connection
- J: 5: Tube stub end connection
- K: 6:35: 1/4" NPT
- 3: 8:3/8" NPT
- 7: 2: 1/2" NPT

* Optional or made-to-order.
Dimensions

For the most up-to-date product information, visit Fujkin’s website (http://www.fujkin.co.jp/).

### Table of Dimensions

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Figure</th>
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* See Figure 1 for dimension keys not shown in other figures.
OPTIONS

**Handle Colors**

A letter in place of “*” indicates handle color:
- Blue = B
- Green = G
- Yellow = Y
- Red = R

**FBNDV-6.3S-OB3-2P-DGO**

**Block Valve**

Block valve design allows for:
- Compact tubing arrangement
- Dead-space-free configuration.

In addition to our standard 2-actuator, 3-port block, we also offer custom block valves according to customers’ specifications.

**Toggle Valve**

**FUNSDBCX-21G-6.3SUGC**

The handle for this valve can be toggled with a single touch. This option is ideal for valves that are opened and closed frequently.

**Integrated Lock-out / Tag-out (LOTO) Valve**

**FUNDL-71GT-6.35**

This option may be selected as a safety precaution. This valve incorporates an open/close indicator into the LOTO device.

**IGS Valves**

**FUDDFL-21-6.35UGF-APD**

MEGA Series valves are available for surface-mount Integrated Gas Systems. (MEGA Series)

The photos on this page depict examples of each product type.
NEW MEGA-ONE® LM

New Low-pressure Manual Valve

The NEW MEGA-ONE® LM offers manual operation for ultra-pure, flammable, or toxic fluid lines in semiconductor manufacturing equipment and facilities. Direct diaphragm construction makes the NEW MEGA-ONE® LM an industry standard valve with superior sealing performance, remarkable durability, compactness, and particle- and dead-space-free performance. This valve has the same performance as the MEGA-ONE® LM, but is more compact and durable.

Efficient and compact

Other handle colors are available.

Valve open or closed position is easily visible at a glance.

Open
Closed

Excellent gas displacement characteristics.
(1.48cc total volume for the male UJR version.)

* The panel nut has been eliminated in this simplified, compact design.

EP treatment is standard for all wetted surfaces. UP treatment is optional.

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

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Nominal Diameter</th>
<th>Maximum Operating Pressure</th>
<th>Fluid Temperature Range</th>
<th>Maximum Cv* (with H₂ gas at 20°C)</th>
<th>End Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.35</td>
<td>1 MPa</td>
<td>-10 to 80°C</td>
<td>0.3</td>
<td>UJR, UPG, F900, tube stub</td>
<td></td>
</tr>
<tr>
<td>9.52 &amp; 12.7</td>
<td></td>
<td></td>
<td>0.65</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Theoretical leak rate: External leak: < 5 x 10⁻₁² Pa·m³/sec.  
  Tested leak rate: External leak: < 5 x 10⁻¹⁸ Pa·m³/sec.  
  Seat leak: < 5 x 10⁻¹⁸ 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 Packing</td>
<td>PCTFE (standard)</td>
</tr>
<tr>
<td>Handle</td>
<td>ADC12</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

![Temperature/Pressure Rating Graph]

**PCTFE seat**  
**Polyimide/PFA seat**

## Part Number Designation

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

**FUND [ ]-71G -6.35 [ ] [ ] [ ]- [ ]**

**A**  
**B**  
**C**  
**D**  
**E**  
**F**  
**G**  
**H**  
**I**  
**J**  

**End Connection Size**  
6.35: 1/4"  
9.52: 3/8"  
12.7: 1/2" (UJR connections have a 9.52mm port diameter)

**E**  
Open/closed indicator

**D**  
1: 1 MPa maximum operating pressure

**C**  
UJR/UPG end connection

**B**  
4-way valve

**A**  
Stainless steel direct diaphragm valve

- **UP**: UP treatment*  
- **PS**: Cr₂O₃ treatment*  
- **FD**: Fluorine passivation*  
- **Blank**: PCTFE seat
- **PI**: Polyimide seat*  
- **PA**: PA seat*  
- **J**: Female UJR on both ends  
- **I**: Male UJR inlet / Female UJR outlet  
- **H**: Male UJR on both ends  
- **G**: UPG end connection  
- **F**: Butt weld

* Optional or made-to-order.

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

* For the most up-to-date product information, visit Fujikin’s website [here](http://www.fujikin.co.jp/).

---

**Figure 1**

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**Figure 2**

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**Figure 3**

---

**Figure 4**

---

**Figure 5**

---

**Figure 6**

---

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Figure</th>
<th>L</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
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<th>H</th>
<th>D</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<td>20.2</td>
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<td>FUND-71G-12.7UG-2</td>
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<td>20.2</td>
<td>20.2</td>
<td>35</td>
</tr>
</tbody>
</table>

* *See Figure 1 for dimension keys not shown in other figures.*
OPTIONS

**Handle Colors**  GT-HL-FUND-**T**
A letter in place of "**T**" indicates handle color:
Blue=B, Green=G, Yellow=Y, and Red=R

**Block Valve**
FBNDL-6.3S-0B3-2P-CJL
Block valve design allows for:
- Compact tubing arrangement
- Dead-space-free configuration.
In addition to our standard 2-actuator, 3-port block, we also offer custom block valves according to customers’ specifications.

**3-Port Distribution Valve**  FUNDTB-51G-12.7x9.52JR-FHZ
Used for facility bulk gas lines, and can support all line sizes.

**Tube Stub Length**  FUND-51G-6.35BW-KAG
Customers may specify tube stub length.

**Combination 3-way Corner Valve**
Compared to the conventional block valve, the combination 3-way corner valve offers a shorter delivery time and reduced cost.
NEW MEGA-MINI LA

New Compact Low-pressure Pneumatically-actuated Valve

The NEW MEGA-MINI LA offers pneumatic operation for ultra-pure, flammable, or toxic fluid lines in semiconductor manufacturing equipment and facilities. Direct diaphragm construction makes the NEW MEGA-MINI LA an industry standard valve with superior sealing performance, remarkable durability, compactness, and particle- and dead-space-free performance.

This valve has the same performance as the MEGA-MINI LA, but is more compact and durable.

Color-coded labels differentiate between normally open (blue) and normally closed (red) valves, thereby simplifying identification.

● The simplified actuator design makes it more compact.
● Durability of over 4 million cycles.

Compact Ø35 actuator offers space savings without sacrificing performance.

Excellent gas displacement characteristics.
(0.84cc total volume for the 6.35 male UJR version.)

EP treatment is standard for all wetted surfaces.
UP treatment is optional.

Highly durable nickel-cobalt alloy diaphragm.

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

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Nominal Diameter</th>
<th>Maximum Operating Pressure</th>
<th>Fluid Temperature Range</th>
<th>Maximum Cv* (with N₂ gas at 20°C)</th>
<th>Actuation Pressure</th>
<th>Supply Air Connection</th>
<th>End Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td>6.35</td>
<td>1 MPa</td>
<td>-10 to 80°C</td>
<td>0.05</td>
<td>0.4 to 0.6 MPa</td>
<td>M5×0.8</td>
<td>UJR, UPG, F900, tube stub</td>
</tr>
</tbody>
</table>

- Theoretical leak rate: External leak: < 5 × 10⁻¹² Pa·m³/sec
- Tested leak rate: External leak: < 5 × 10⁻⁸ Pa·m³/sec
- Depends on the configuration of the body.

<table>
<thead>
<tr>
<th>Materials</th>
<th>Part</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body*</td>
<td>SUS316L</td>
<td></td>
</tr>
<tr>
<td>Diaphragm</td>
<td>Nickel-cobalt alloy</td>
<td></td>
</tr>
<tr>
<td>Seat Packing</td>
<td>PCTFE (standard)</td>
<td></td>
</tr>
<tr>
<td>Actuator</td>
<td>Aluminum alloy (alumite coated)</td>
<td></td>
</tr>
</tbody>
</table>

- Materials other than SUS316L, double-melt are also available. Consult with Fujikin for use outside the specification range.
- All valves are helium leak tested.
- Durability of over 4 million cycles under test conditions.

Part Number Designation

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

FPR-NSD [□] -71 -6.35 [□] [□] [□] -[□] -[□] -[□]

- A: FP: Normally open
  FPR: Normally closed

- B: Stainless steel compact direct diaphragm valve

- C: TB: 3-way valve*
  CL: 2-way, corner left valve*

- D: 7: UJR/UPG end connection
  S: Tube stub end connection

- E: 1: 1 MPa maximum operating pressure

- F: End Connection Size
  3.2: 1/8" NS
  6.35: 1/4" NS

- G: Blank: Male UJR inlet / Female UJR outlet

- H: Blank: Male UJR on both ends
  UP: UP end connection
  BW: Butt weld

- I: PI: Polymide seat*
  PA: PFA seat*
  PS: C18Ni treatment*
  FDI: Fluorone passivation*

- J: UP: UP treatment*

- Optional or made-to-order.

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

*For the most up-to-date product information, visit Fujikin’s website (http://www.fujikin.co.jp/).

#### Table of Dimensions

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Figure</th>
<th>L</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
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<th>H</th>
<th>D</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<td>45.2</td>
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<tr>
<td>FP(R)-NSD-71-3.2UG</td>
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<td>12</td>
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<td>FP(R)-NSD-71-3.2UG-2</td>
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<td>45.2</td>
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<td>13</td>
<td>13</td>
<td>21</td>
</tr>
</tbody>
</table>

(Unit: mm)

*See Figure 1 for dimension keys not shown in other figures.
OPTIONS

1/8” UPG Automatic Valve  FPR-NSD-71-3.2UG
Ideal for low-volume lines. Dead-space-free 1/8” UPG end connection.

1/8” UPG Block Valve  
FBNSPW-2B3-000
Block valve design allows for:
- Compact tubing arrangement
- Dead-space-free configuration.
In addition to our standard 2-actuator, 3-port block, we also offer custom block valves according to customers’ specifications.

Proximity Sensor  
FPR-SD-71RS2-6.35
An electrical signal confirms the open or closed position of the valve.
The non-contact proximity sensor offers unsurpassed safety.
(MEGA Series)

Limit Switch  
FPR-SD-71LS-6.35
An electrical signal confirms the open or closed position of the valve.
(MEGA Series)

IGS Valves  
FPR-SDA-21-8.35UGF-APD
MEGA Series valves are available for surface-mount Integrated Gas Systems.
(MEGA Series)

The photos on this page depict examples of each product type.
NEW MEGA-MINI HA

New Compact High-pressure Pneumatically Actuated Valve

The NEW MEGA-MINI HA offers pneumatic operation for high-pressure ultra-pure, flammable, or toxic fluid lines in semiconductor manufacturing equipment and facilities. Direct diaphragm construction makes the NEW MEGA-MINI HA an industry standard valve with superior sealing performance, remarkable durability, compactness, and particle- and dead-space-free performance. This valve has the same performance as the MEGA-MINI HA, but is more compact and durable.

- The simplified actuator design makes it more compact.
- Durability of over 400,000 cycles.
- Valves with high-pressure gas certification available.

Unique actuator design results in a highly-compact pneumatic valve for high-pressure applications.

Highly durable nickel-cobalt alloy diaphragm.

Excellent gas displacement characteristics.
(0.92cc total volume for the male UJR version.)

EP treatment is standard for all wetted surfaces.

Standard seat material is PCTFE. Polyimide seat material is also available.
## Specifications and Materials

<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>
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<tbody>
<tr>
<td>3.2</td>
<td>20.5 MPa</td>
<td>-10 to 40°C</td>
<td>0.05</td>
<td>0.4 to 0.6 MPa</td>
<td>M5×0.8</td>
<td>UJR, UPG, tube stub</td>
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<td>6.35</td>
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<td></td>
<td>0.1</td>
<td></td>
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</table>

- Theoretical leak rate: External leak: < 5 x 10⁻¹² Pa·m³/sec
- Tested leak rate: External leak: < 5 x 10⁻¹⁰ Pa·m³/sec
- * Depends on the configuration of the body.

<table>
<thead>
<tr>
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<th>Part</th>
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<td>Body*</td>
<td>SUS316L (double-melt)</td>
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<td>Diaphragm</td>
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<tr>
<td>Actuator</td>
<td>Aluminum alloy (alumite coated)</td>
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Consult with Fujikin for use outside the specification range.

## Part Number Designation

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

**FPR-NSD[ ]-7 21-6.35 [ ][ ][ ]-316LP-[ ][ ]-**

**A**
- FPR. Normally closed

**B**
- Stainless steel compact direct diaphragm valve

**C**
- 3-way valve*  
  TL (TR): left (right) 3-way valve*  
  CL (CR): 2-way, corner left (right) valve*

**D**
- End Connection Size  
  3.2: 1/8"NPT  
  6.35: 1/4"NPT

**E**
- 21.0 MPa maximum operating pressure

**F**
- 7: UJR/UPG end connection  
  5: Tube stub end connection

**G**
- Blank: Male UJR on both ends  
  UG: UPS end connection  
  BW: Butt weld

**H**
- Blank: PCTFE seat  
  PI: Polyimide seat*

**I**
- Blank: Female UJR on both ends  
  PS: CrO₃ treatment*  
  FD: Fluorine passivation*

**J**
- 2: Female UJR on both ends  
  3: Male UJR inlet / Female UJR outlet

* Optional or made-to-order.

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

* For the most up-to-date product information, visit Fujikin’s website (http://www.fujikin.co.jp/).

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<tr>
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<th>L2</th>
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</table>

(Units: mm)

* See Figure 1 for dimension keys not shown in other figures.

OPTIONS

High-pressure Gas Certification

Safety is assured for special high-pressure and toxic gas lines. This valve is tested and approved by the Japanese government agency that regulates high-pressure applications. The valve couplings (N-II) can also be certified and approved in the same manner.

Specific customer specifications may also be accommodated.

* Use the order specification for recognized high-pressure gas products on page 33 to place orders.

The photos on this page depict examples of each product type.
Standard Configurations

**Corner Valves**

- FPR-NSDCL-721-6.35-2-316LP
- FPR-NSDCR-721-6.35-2-316LP

**3-way Valves**

- FPR-NSDTLO-721-6.35-2-316LP
- FPR-NSDTB-721-6.35-2-316LP
- FPR-NSDTR-721-6.35-2-316LP
- FPR-NSDTL-721-6.35-2-316LP

**4-way Valves**

- FPR-NSDXT-721-6.35-2-316LP
- FPR-NSDXB-721-6.35-2-316LP

**Block Valves**

- FBNSDV-721-6.35-2B3-316LP-BHB
- FBNSDV-721-6.35-2B3-316LP-BHM
- FBNSDV-721-6.35-2B3-316LP-BHJ
- FBNSDV-721-6.35-2B3-316LP-BHI

* A variety of configurations are possible. Please contact Fujikin for more information.
NEW MEGA-MINI HM

New Compact High-pressure Manual Valve

The NEW MEGA-MINI HM is a manual operation diaphragm valve for ultra-pure, flammable, or toxic fluid lines in semiconductor manufacturing equipment and facilities. Direct diaphragm construction makes the NEW MEGA-MINI HM an industry standard valve with superior sealing performance, remarkable durability, compactness, and particle- and dead-space-free performance.

- Durability of over 20,000 cycles.
- Valves with high-pressure gas certification available.

Valve open or closed position is easily visible at a glance.

Open

Closed

Highly durable nickel-cobalt alloy diaphragm.

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

All wetted surfaces undergo UP treatment as standard.

Standard seat material is PCTFE. Polyimide seat material is also available.
Specifications and Materials

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Nominal Diameter</th>
<th>Maximum Opening Pressure</th>
<th>Fluid Temperature Range</th>
<th>Maximum Cv* (with N2 gas at 20°C)</th>
<th>End Connection</th>
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<td>6.35</td>
<td>20.5 MPa</td>
<td>-10 to 40°C</td>
<td>0.1</td>
<td>UJR, UPG, tube stub</td>
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</table>

- Theoretical leak rate: External leak: < 5 x 10^-12 Pa·m³/sec
- Tested leak rate: External leak: < 5 x 10^-15 Pa·m³/sec
- Seat leak: < 5 x 10^-12 Pa·m³/sec
- Seat leak: < 5 x 10^-14 Pa·m³/sec

* Depends on the configuration of the body.

Materials

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<tr>
<th>Part</th>
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<tr>
<td>Body</td>
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<tr>
<td>Diaphragm</td>
<td>Nickel-cobalt alloy</td>
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<tr>
<td>Seat Packing</td>
<td>PCTFE (standard)</td>
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<tr>
<td>Handle</td>
<td>ADC12</td>
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</table>

Temperature/Pressure Rating

[Graph showing temperature and pressure rating]

Consult with Fujikin for use outside the specification range.

Part Number Designation

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

FUNSD [□□]-7 21G-6.35 [□□□□□]-316LP-[□□]-[□□]

A
B
C
D
E
F
G
H
I
J

A: Stainless steel direct diaphragm valve
B: 3-way valve*
C: 7: UJR/UPG end connection
D: 5: Tube stub end connection
E: 21: 20.5 MPa maximum operating pressure
F: G: Open/closed indicator
G: Blank: Male UJR on both ends
H: UG: UPG end connection
I: BW: Butt weld
J: -2: Female UJR on both ends
K: -3: Male UJR inlet / Female UJR outlet
L: -4: 00
M: -5
N: -6
O: -7
P: -8
Q: -9
R: -0
S: -1
T: -2
U: -3
V: -4
W: -5
X: -6
Y: -7
Z: -8

* Optional or made-to-order.

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**

*For the most up-to-date product information, visit Fujikin’s website (http://www.fujikin.co.jp/).*

![Figure 1](image1)

**Figure 1**

![Figure 2](image2)

**Figure 2**

![Figure 3](image3)

**Figure 3**

![Figure 4](image4)

**Figure 4**

![Figure 5](image5)

**Figure 5**

![Figure 6](image6)

**Figure 6**

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</tbody>
</table>

*Units: mm*

*See Figure 1 for dimension keys not shown in other figures.*

**OPTIONS**

**High-pressure Gas Certification**

Safety is assured for special high-pressure and toxic gas lines. This valve is tested and approved by the Japanese government agency that regulates high-pressure applications. The valve couplings (N-II) can also be certified and approved in the same manner. Specific customer specifications may also be accommodated.

*Use the order specification for recognized high-pressure gas products on page 33 to place orders.*

*The photos on this page depict examples of each product type.*
Standard Configurations

**Corner Valves**

- FUNSDCL-721G-6.35-2-316LP
- FUNSDCR-721G-6.35-2-316LP

**3-way Valves**

- FUNSDTL0-721G-6.35-2-316LP
- FUNSDTB-721G-6.35-2-316LP
- FUNSDT-721G-6.35-2-316LP
- FUNSDTR-721G-6.35-2-316LP
- FUNSDTRO-721G-6.35-2-316LP

**4-way Valves**

- FUNSDX-721G-6.35-2-316LP
- FUNSDXT-721G-6.35-2-316LP

**Quarter-turn High-pressure Switching Valve (Optional)**

- NEW MEGA MINI HQ

This quarter-turn valve enables its open/closed position to be identified easily at a glance.

* A variety of configurations are possible. Please contact Fujikin for more information.
Additional Information

● Inner Surface Treatment

1. Products with ULTRA EXTREME PURE (UP) Special Internal Treatment
   By utilizing a special polishing technology to first remove work-affected and work-hardened layers from the metal surfaces, UP treated products attain a pure metal surface with an extremely uniform passivated film. The surface roughness is kept below 0.1 μm Ra, with an average roughness of 0.1 mm or less. Additionally, final cleaning is performed in a Class 1 cleanroom to completely remove particles and impurities, and to assure a thoroughly clean product.
   UP treatment is compatible with Hastelloy® and other corrosion-resistant materials.
   UP treatment is standard with the MEGA-MINI and MEGA-M Series, and is optional with the MEGA-ONE® and NEW MEGA Series products.

2. Products with Cr2O3 Treatment (CRPS)
   100% Cr2O3 treated products have a film – a Cr2O3 passivation layer – formed on the stainless steel surface through a special base layer treatment and heat treatment. This offers:
   1. Superior corrosion resistance as compared to halogen-based gases.
   2. Less outgassing of moisture, etc.: with the excellent dry-down characteristics of the material, equipment start-up time can be shortened.
   3. Non-catalytic behavior is observed with hydrogen compound gases – such as SiH4 and B2H6 – which decompose at low temperatures through surface catalytic effect. This enables stable delivery to the point of use.

3. Products with BK Treatment (CRPX)
   BK treatment involves heat-treating the mirror-finish stainless steel surface in an inert gas environment. Components that undergo BK treatment are more corrosion resistant, evidence less outgassing, and have excellent dry-down characteristics.

4. Products with Fluorine Passivation (FP)
   FP products are given a chemically stable fluorine passivation layer through a reaction between the stainless steel surface and F2 gas when heat treatment is applied. Recent advances in micro-fabrication technology and the increased use of excimer laser steppers have required an increase in F2 use as well. Since F2 gas is extremely reactive – and will react with stainless steel surfaces – it will be consumed and therefore affect the F2 concentration. This, in turn, affects the oscillation frequency of the excimer laser.

● Seat Material

1. PCTFE (Polychlorotrifluoroethylene)
   Standard seat material in the MEGA-ONE®, MEGA-MINI and NEW MEGA Series products.

2. PI (Polyimide) and PA (PFA)
   A recommended option for non-standard temperatures and fluids.

● Permeation Leak across the Seat
   Soft-sealing valves with resin seats may experience permeation leak, whereby gas diffuses through the resin. The degree to which leakage occurs varies according to factors such as the type of gas used, the fluid pressure, and the type of resin in the seat. Monitor accordingly. For more information, please contact Fujikin.

● Body and Diaphragm Material
   Hastelloy®
   For services that require exceptional corrosion resistance, Hastelloy C-22 may be specified as an optional material for valve bodies and diaphragms.

● Proximity Sensors and Limit Switches
   When verification of open or closed position is required on pneumatically-actuated valves, proximity sensors or limit switches that output an electrical signal to an external unit are optionally available. Valves with a limit switch may be substituted for proximity sensor valves.

● Handle Colors
   Handles may be specified in a wide variety of optional colors.
# NEW MEGA SERIES COMPARISON TABLE

<table>
<thead>
<tr>
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- : Standard feature
- ▲ : Optional

*1: Standard only when F900 is selected as the end connection.
Part Number Designation

The part number varies according to valve configuration, flow direction, and end connections.

### 2-way Valves

Example: FPR-ND-71-6.35

<table>
<thead>
<tr>
<th>A</th>
<th>Configuration (top view)</th>
<th>Flow Diagram (top view)</th>
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## Corner Valves

Example : FPR-NDCL-71-6.35

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Example : FPR-NDCR-71-6.35

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### Part Number Designation

The part number varies according to valve configuration, flow direction, and end connections.

## 3-way Valves

Example: FPR-NSDTB-71-6.35

Example: FPR-NSDTR-71-6.35

Example: FPR-NSDTL-71-6.35

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<tr>
<td>-6</td>
<td><img src="image11" alt="Diagram" /></td>
<td><img src="image12" alt="Diagram" /></td>
</tr>
<tr>
<td>-7</td>
<td><img src="image13" alt="Diagram" /></td>
<td><img src="image14" alt="Diagram" /></td>
</tr>
<tr>
<td>-8</td>
<td><img src="image15" alt="Diagram" /></td>
<td><img src="image16" alt="Diagram" /></td>
</tr>
</tbody>
</table>
# Valves with High-pressure Gas Certification Specifications

<table>
<thead>
<tr>
<th>Allocation No.</th>
<th>Attached Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial No.</td>
<td>Code No.</td>
</tr>
<tr>
<td>Customer</td>
<td>Code No.</td>
</tr>
<tr>
<td>End User</td>
<td>Code No.</td>
</tr>
<tr>
<td>Target System Name</td>
<td>Type of Test Performed</td>
</tr>
<tr>
<td>Equipment Category</td>
<td>Delivery Date</td>
</tr>
<tr>
<td>Product Number</td>
<td>Quantity</td>
</tr>
<tr>
<td>Additions to Product Number</td>
<td>Drawing No.</td>
</tr>
</tbody>
</table>

### Normal Pressure

<table>
<thead>
<tr>
<th>Normal Pressure</th>
<th>Min.</th>
<th>Max.</th>
<th>Design Temperature</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Operating Pressure</td>
<td>°C to °C</td>
<td>°C</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

### Design Pressure

<table>
<thead>
<tr>
<th>Design Pressure</th>
<th>MPa</th>
<th>MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-pressure Certification Test</td>
<td>No</td>
<td>Pal</td>
</tr>
<tr>
<td>High-pressure Recertification Test</td>
<td>Yes</td>
<td>Pal</td>
</tr>
</tbody>
</table>

### Type of Gas

- Toxic, Flammable, Toxic and Flammable, Special High-pressure, Other
- Non-toxic, Air, Nitrogen, Helium, Oxygen, Hydrogen, Carbon dioxide, Argon, Other |
- Special, Monosilane, Phosphine, Arsine, Diborane, Hydrogen selenide, Monogermine, Disilane |
- Inflammable, Ammonia, Carbon monoxide, Other |
- Toxic, Hydrogen chloride, Chlorine, Hydrogen bromide, Other |

### Material

- SUS316 or SUS304 or SUS316L or SUS316L or SUS314 or C3604B or C37718 |

### Other Special Specifications:

- Target system has leak detector? Yes / No
- Valve used for toxic gas (special high-pressure gas) has a leak port? Yes / No

**Notes:**
- Fill in all items within bold lines.
- 1: Enter the name of the product's end user. If the product will be delivered via a set/apparatus maker, please include their names also.
- 2: Enter the name of high-pressure gas system or processing equipment, etc.
- 3: Circle the one that applies.
- 4: Valves with threaded fittings to be used in high-pressure equipment for toxic gases (as per the General Provision, Article 2-21) are subject to identification as one of the following categories: N (valves) or N (fitting), If applicable, circle both N and N (circle only Z (combined equipment)) if within the specification range of Z (combined equipment).

### Order No.

### Project No.

### Documents Submitted

- Test Report (Authorized Tester) 1 copy
- Test Certificate (N-II excluded) Copies
- Instruction Manual (N-II only) Copies
- Delivery Specifications Copies
- Mill Certificate Copies
- Calculations of Wall Thickness Strength Copies
- Fujikin Design Specification (standard) Copies
- Design Specifications Copies
- Inspection Procedures Copies

### Seal of Approval

### Sales Representative

### C T D

### T D C

### M F D

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*Fujikin Incorporated*