

FINE series PURE

# High Durability Valve series

KIWAMI

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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

Pneumatic solenoid valve also available for higher speed response



Highly durable nickel-cobalt alloy diaphragm

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

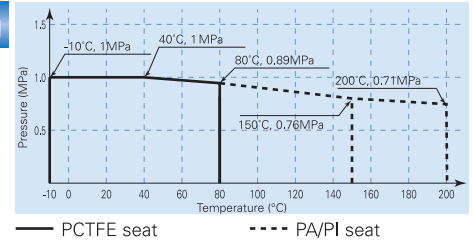
Specifications	Nominal Diameter	Maximum Operating Pressure	Fluid Temperature Range	Maximum Cv* (with N <sub>2</sub> gas at 20°C)	Actuation Pressure	Supply Air Connection	End Connection
	6.35	1 MPa	-10 to +80 °C	0.4	0.45 to 0.6 MPa	M5x0.8	UJR, UPG, F900, tube stub
	9.52			0.6			

- Theoretical leak rate: External leak: <math>5 \times 10^{-12}</math> Pa·m<sup>3</sup>/sec. Seat leak: <math>5 \times 10^{-12}</math> Pa·m<sup>3</sup>/sec
- Tested leak rate: External leak: <math>5 \times 10^{-10}</math> Pa·m<sup>3</sup>/sec. Seat leak: <math>5 \times 10^{-10}</math> Pa·m<sup>3</sup>/sec
- \* Depends on the configuration of the body.
- All valves are helium leak tested.

Materials	Part	Material
	Body*	SUS316L
	Diaphragm	Nickel-cobalt alloy
	Seat	PCTFE
	Actuator	A5056

\* 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
FPR: Normally-closed	Stainless steel direct diaphragm valve	TB: 3-way valve CL: 2-way, corner left valve	7: UJR / UPG end connection 9: F900 end connection 5: Tube stub end connection	1: 1MPa maximum operating pressure	SV: Solenoid valve* RS: Proximity sensor*	End Connector Size 6.35: 1/4"OD 9.52: 3/8"OD 12.7: 1/2"OD (UJR connections have a 9.52 port diameter.)	Blank: Male UJR on both ends -2: Female UJR on both ends -3: Male UJR inlet / Female UJR outlet UG: UPG end connection BW: Butt weld	Blank: PCTFE seat PA: PFA seat* PI: Polyimide seat*	TH: Cartridge heater insertion slot provided	UP: UP treatment* PS: Cr <sub>2</sub> O <sub>3</sub> treatment* FD: Fluorine passivation*

\*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.



# 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.

# High Durability

IGS-compatible models available

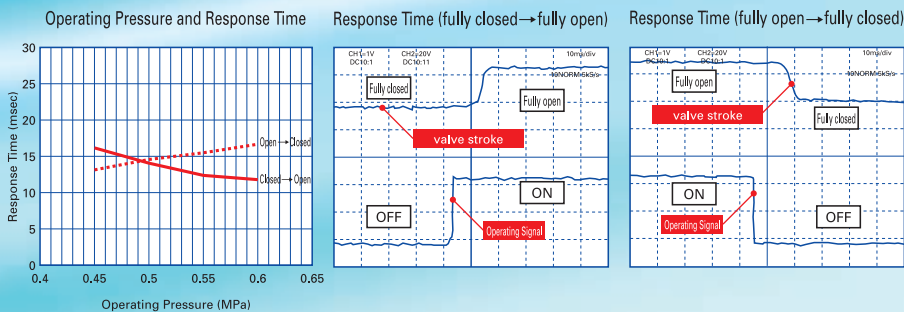
UPG end connections available

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.

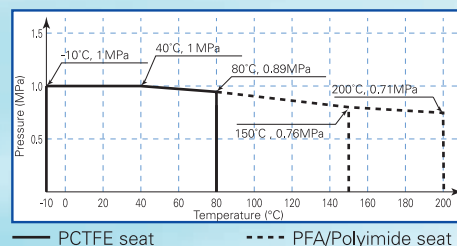


Sensor Support (Optional)

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.

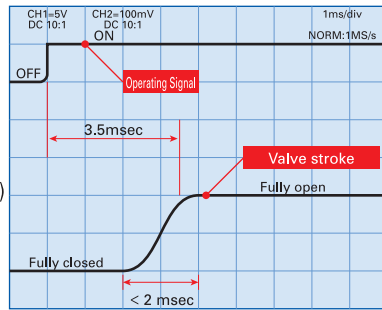
Excellent gas displacement characteristics, (0.84cc total volume for the male UJR version).

Standard seat material is PCTFE. Polyimide and PFA are also available for fluid temperatures up to 200°C. (Actuator: Maximum ambient temperature: 80°C)

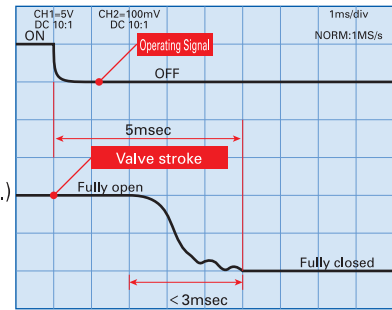


## Response (interval between the sending of the signal and the completion of the request)

● 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

Valve	Nominal Diameter	Maximum Operating Pressure	Maximum Cv *1	Fluid Temperature Range	End Connection
	6.35	1 MPa	0.1	-10 to +80°C *2	UJR, UPG, Wseal
● Theoretical leak rate: External leak: <math>5 \times 10^{-12}</math> Pa·m <sup>3</sup> /sec. Seat leak: <math>5 \times 10^{-12}</math> Pa·m <sup>3</sup> /sec ● Tested leak rate: External leak: <math>5 \times 10^{-10}</math> Pa·m <sup>3</sup> /sec. Seat leak: <math>5 \times 10^{-10}</math> Pa·m <sup>3</sup> /sec		● All valves are helium leak tested. *1: Depends on the configuration of the body. *2: Polyimide/PFA seat allows use with fluids up to 200°C			
Dedicated solenoid driver	Supply Voltage	Operating Signal	Maximum Number of Valves Per Solenoid Driver	Minimum Valve Opening/Closing Interval	
	AC 100 to 240V	A variety of input signal types are supported.	8	0.4 sec (8 valves), 0.2 sec (>4 valves)	

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.

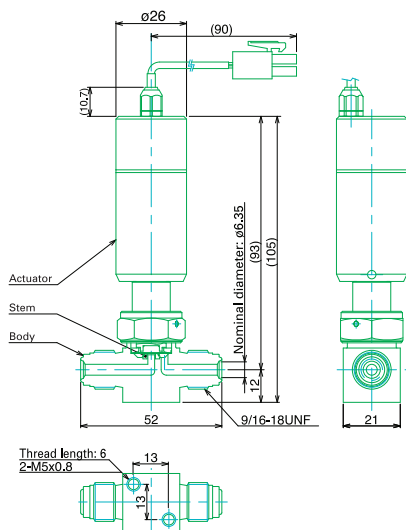
## Part Number Designation

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

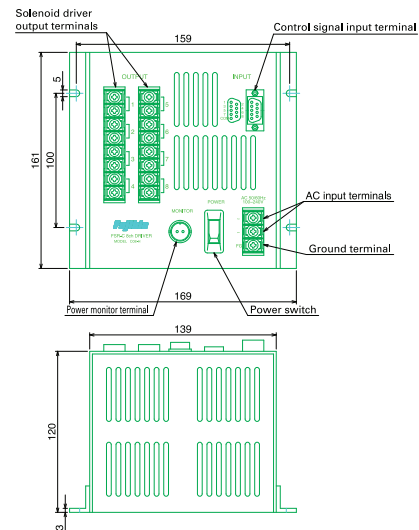
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
S: Solenoid	R: Normally closed Blank: Normally open	HT: High-temperature	UG: UPG end connection	Blank: Male UJR on both ends 2: Female UJR on both ends	PI: Polyimide seat * PA: PFA seat *
*: Optional or made-to-order					

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



## Standard 8-channel Solenoid Driver



**Fujikin®**



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**Fujikin® Carp® Group**

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The Year 2005  
The 1st Monozukuri (manufacturing)  
Nippon Grand Awards  
: Excellence Prize