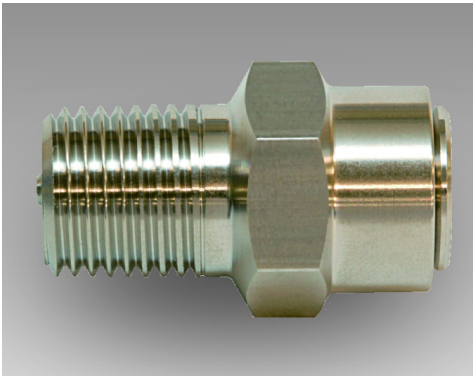


# Relief Valves

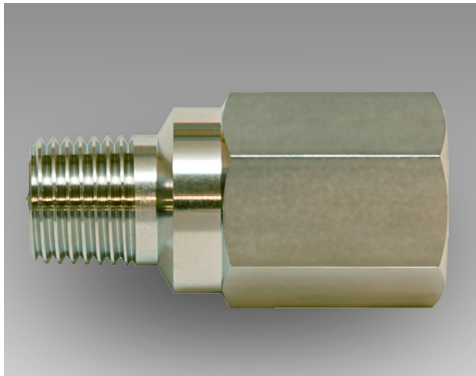
## FRA series

Low pressure atmospheric open model.



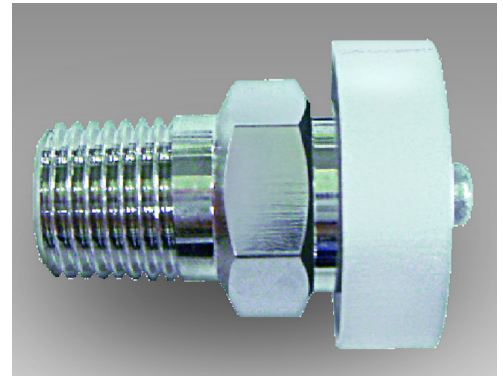
## FRL series

Low pressure inline model.



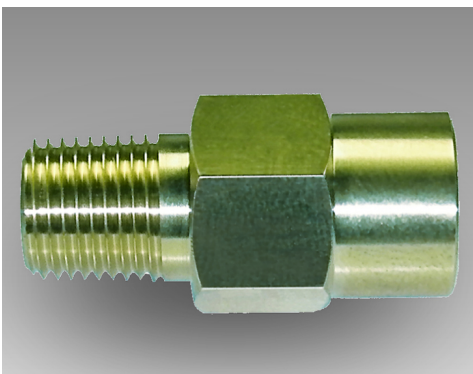
## FRC series

Deflector cap (low pressure air relief) model.



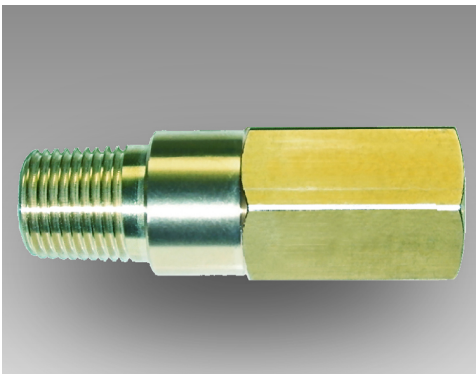
## FRHA series

High Pressure Atmospheric Open model.



## FRHL series

High pressure in-line model. Corresponds to compressed air and liquid.



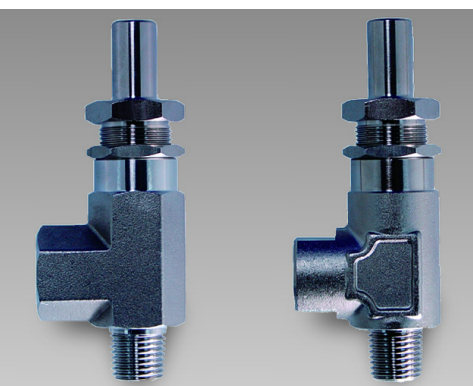
## FRM1 series

External cracking pressure adjustment model.



## FRM2 series

External cracking pressure adjustment model. It can also be used for solvents.



## VR1 series

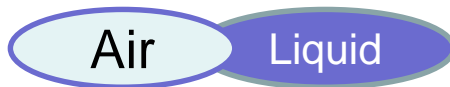
Low Pressure atmospheric Open model.





## “FRA” series

Low pressure atmospheric open model.



### ■ Features

- High precision cracking performance ,high sealability.
- Small and light design is ideal for fluid that exhaust to outside.
- Various port sizes.
- Cracking pressure’s setting is done before delivering.



### ■ Applications

- Machine Tools : Milling machine, NC lathe, laser processing machine etc.
- Industrial furnace : General industrial furnace, heating furnace, vacuum furnace, etc.
- Medical : Endoscope washing device, oxygen concentrator, anesthesia machine etc.
- Analysis equipment: Measurement equipment, component gas analysis, gas analyzer etc.
- Battery : Household fuel cell, secondary battery, gas engine etc.
- Water (liquid) treatment: Pure water production, pure water recycling.
- Gas generator related: Compressor, compact pressure vessel, various gas generator etc.
- Others: Oxygen capsule, gasoline measuring instrument, forklift etc.

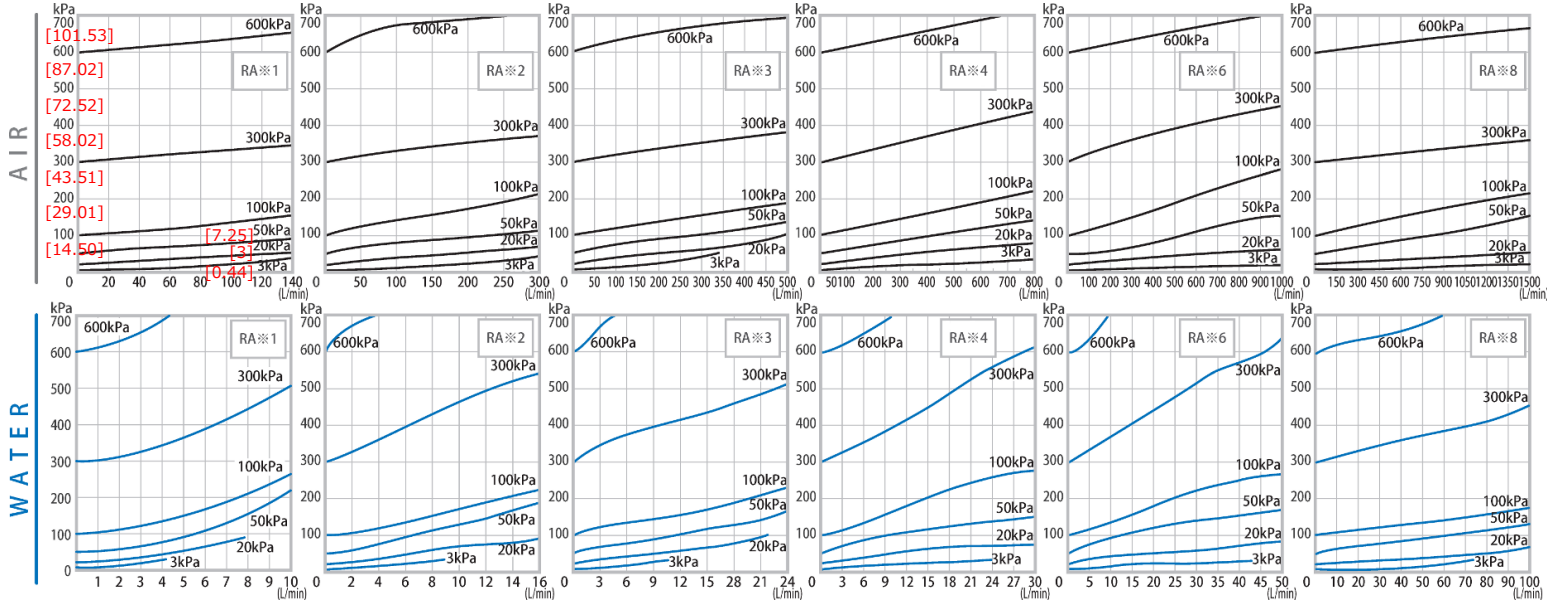
### ■ Specification

Pressure resistance MPa [psi]	1.62 [234.96]	Operating temperature range °C[°F]	Pursuant to seal material
Pipe port	R1/8~R1	Cracking pressure kPa [psi]	3~1080 [0.44 ~156.64]
Body material	Brass / SUS316		※Port size 1/8’s pressure range is 3~970kPa [0.44~140.69psi]
Seal material	FKM(standard)		※Pressure range 3~29kPa [0.44~4.21psi] is option order.
Comment	<ul style="list-style-type: none"> <li>■ Brass bodies are nickel plating.</li> <li>■ In case of setting pressure is under 5kPa [0.73psi], pipe port is turned up.</li> </ul>		

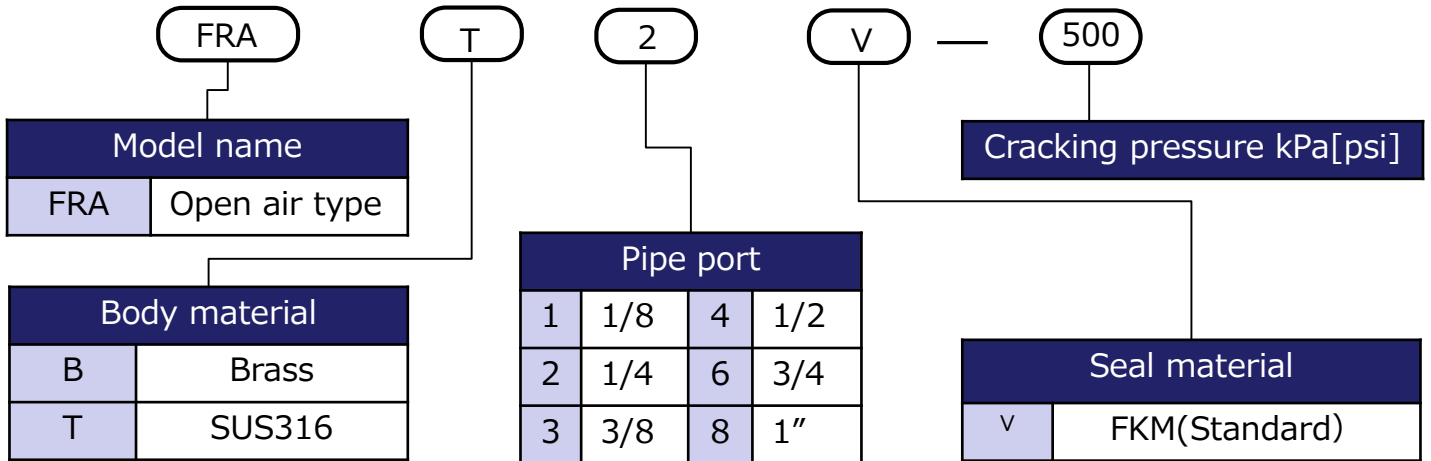


# FUJIKURA COMPOSITES

## Characteristic



## Model designation



**Caution**  
Please order setting pressure at kPa.

Example) In case of 0.05MPa(50kPa) < 50 >  
In case of 1MPa(1000kPa) < 1000 >

※Please inquire about other materials.

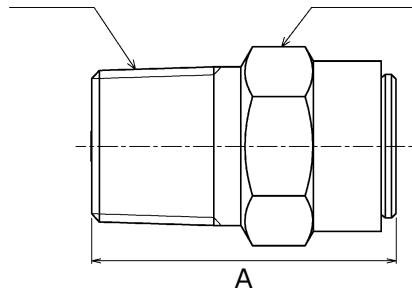
※When operating temperature ranges are more than 100°C[212°F] or less or -20°C[-4°F], please contact us.



# FUJIKURA COMPOSITES

## ■ Size

Pipe port



HEX (Opposite side)

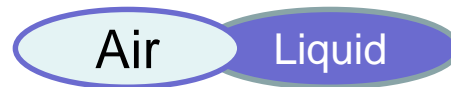
<mm> [inch]

Pipe port(R)	A	HEX (Opposite side)
1/8	<25.5±2.0> [1.00±0.08]	<13.0> [0.51]
1/4	<31.0±2.0> [1.22±0.08]	<17.0> [0.67]
3/8	<33.0±2.0> [1.30±0.08]	<19.0> [0.75]
1/2	<44.8±3.0> [1.76±0.12]	<26.0> [1.02]
3/4	<52.4±3.0> [2.06±0.12]	<29.0> [1.14]
1"	<72.8±3.0> [2.87±0.12]	<38.0> [1.50]



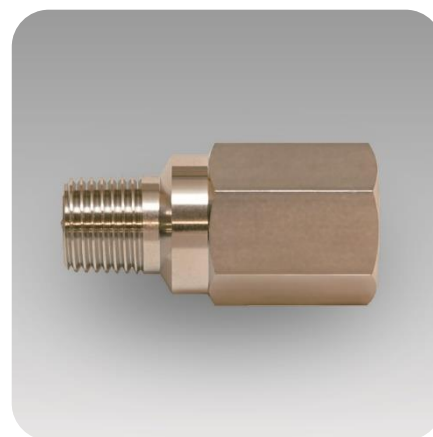
## “FRL” series

Low pressure inline model.



### ■ Features

- High precision cracking performance, high sealability.
- Deflector cap controls direction of blow-out when it reliefs.
- In exposure use environment , FRC reduce the invasion of foreign substance into valve .
- Cracking pressure’s setting is done before delivering.



### ■ Applications

- Machine Tools : Milling machine, NC lathe, laser processing machine etc.
- Industrial furnace : General industrial furnace, heating furnace, vacuum furnace, etc.
- Medical : Endoscope washing device, oxygen concentrator, anesthesia machine etc.
- Analysis equipment: Measurement equipment, component gas analysis, gas analyzer etc.
- Battery : Household fuel cell, secondary battery, gas engine etc.
- Water (liquid) treatment: Pure water production, pure water recycling.
- Gas generator related: Compressor, compact pressure vessel, various gas generator etc.
- Others: Oxygen capsule, gasoline measuring instrument, forklift etc.

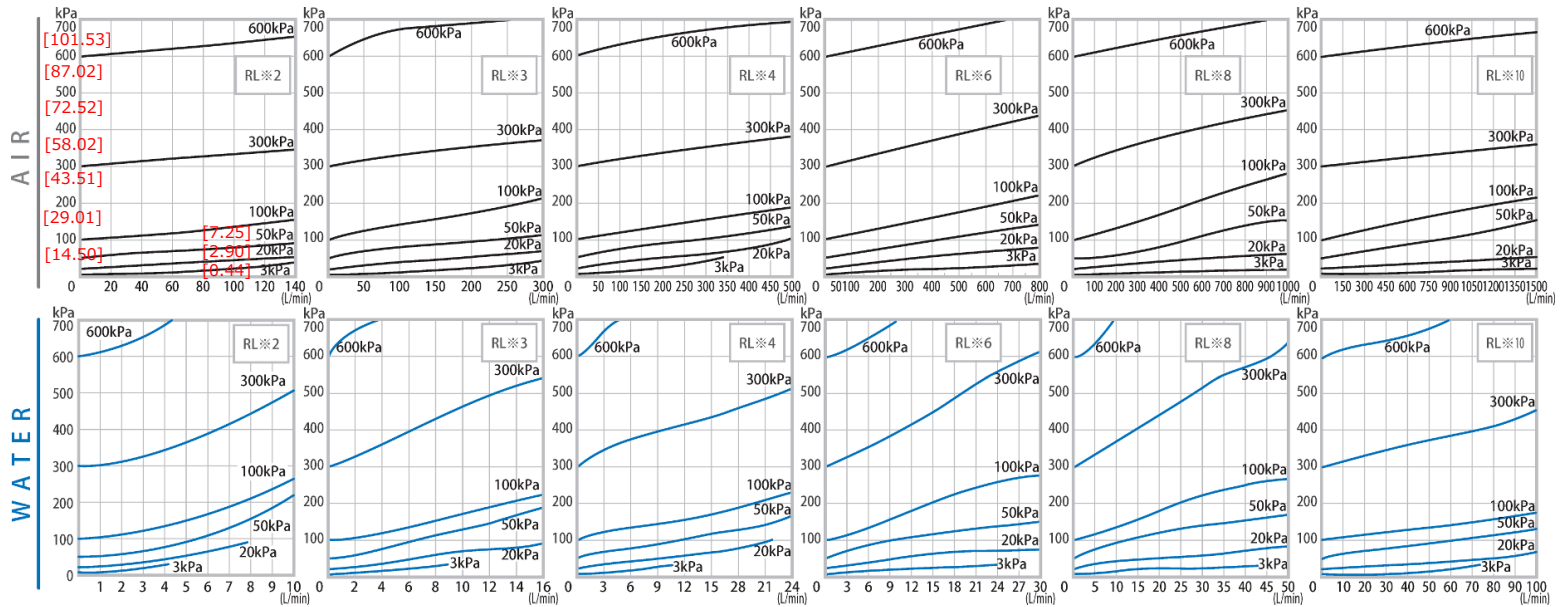
### ■ Specification

Pressure resistance MPa[psi]	1.62 [234.96]	Operating temperature range °C[°F]	Pursuant to seal material
Pipe port	1/4~1-1/4 (In R×Out Rc)	Cracking pressure kPa[psi]	3~1080 [0.44~156.64]
Body material	Brass / SUS316		※Port size 1/8's pressure range is 3~970kPa [0.44~140.69psi]
Seal material	FKM(Standard)		※Pressure range 3~29kPa [0.44~4.21] is option order.
Comment	■ In case of setting pressure is under 5kPa [0.73psi], pipe port is turned up.		

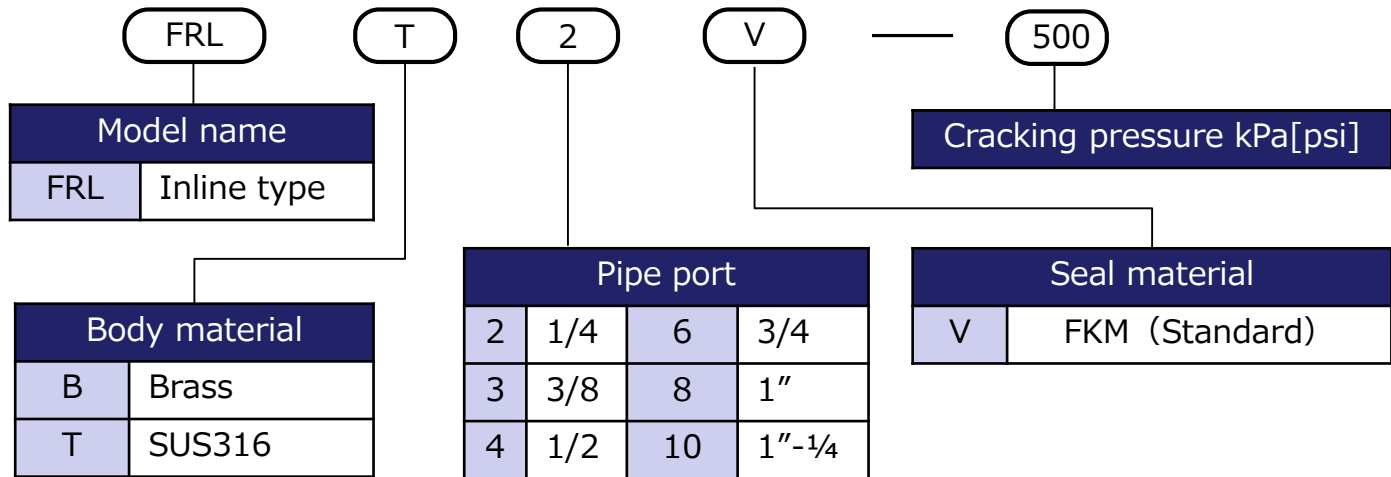


# FUJIKURA COMPOSITES

## Characteristic



## Model designation



Caution  
Please order setting pressure at kPa.

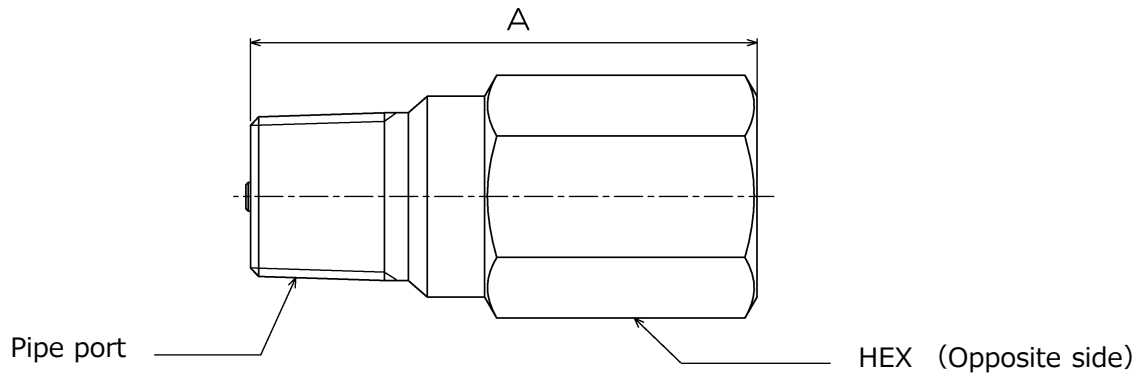
Example) In case of 0.05MPa(50kPa) < 50 >  
In case of 1MPa(1000kPa) < 1000 >

※Please inquire about other materials.

※When operating temperature ranges are more than 100°C[212°F] or less or -20°C[-4°F], please contact us.



## ■ Size



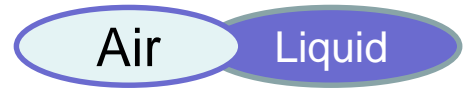
<mm> [inch]

Pipe port (inlet) (R)	A	HEX (Opposite side)
1/8	<41.0> [1.61]	<19.0> [0.75]
1/4	<53.0> [2.09]	<22.0> [0.87]
3/8	<60.0> [2.36]	<27.0> [1.06]
1/2	<69.0> [2.72]	<32.0> [1.26]
3/4	<90.0> [3.54]	<38.0> [1.50]
1"	<115.0> [4.53]	<50.0> [1.97]



## "FRC" series

Deflector cap (low pressure air relief) model.



### ■ Features

- High precision cracking performance, high sealability.
- Deflector cap controls direction of blow-out when it reliefs.
- In exposure use environment, FRC reduce the invasion of foreign substance into valve .
- Cracking pressure's setting is done before delivering.



### ■ Applications

- Machine Tools : Milling machine, NC lathe, laser processing machine etc.
- Industrial furnace : General industrial furnace, heating furnace, vacuum furnace, etc.
- Medical : Endoscope washing device, oxygen concentrator, anesthesia machine etc.
- Analysis equipment: Measurement equipment, component gas analysis, gas analyzer etc.
- Battery : Household fuel cell, secondary battery, gas engine etc.
- Water (liquid) treatment: Pure water production, pure water recycling.
- Gas generator related: Compressor, compact pressure vessel, various gas generator etc.
- Others: Oxygen capsule, gasoline measuring instrument, forklift etc.

### ■ Specification

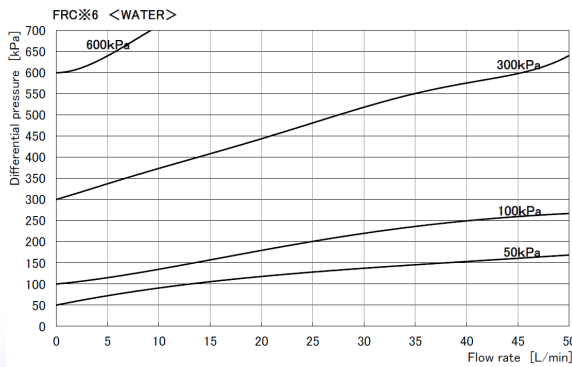
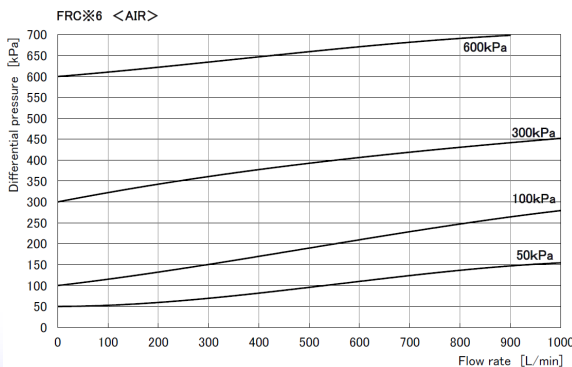
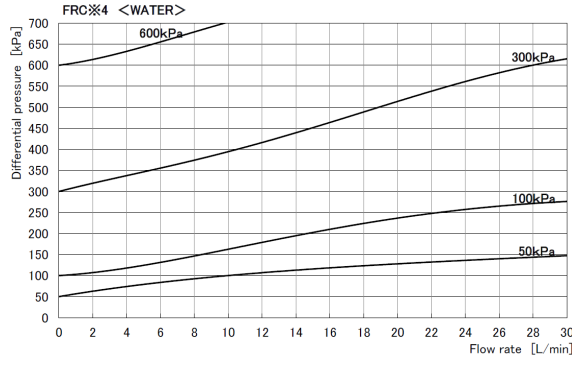
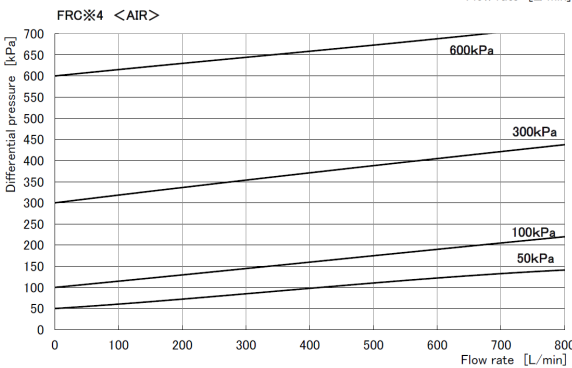
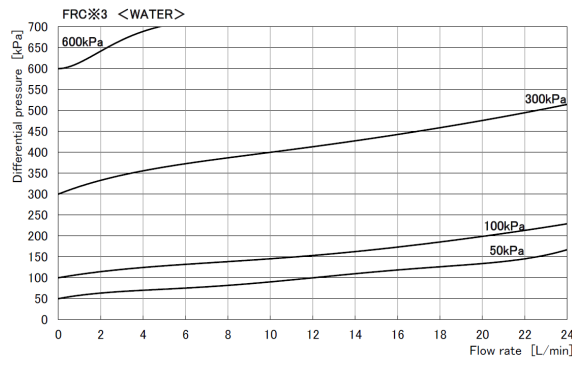
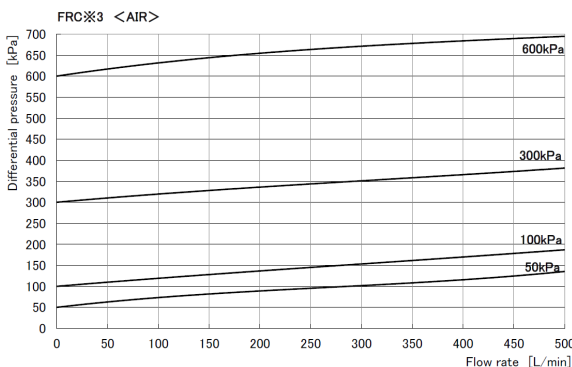
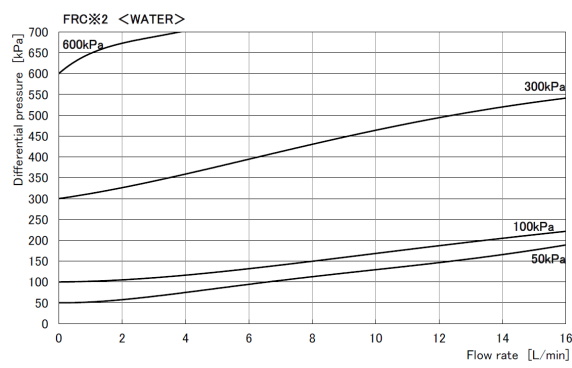
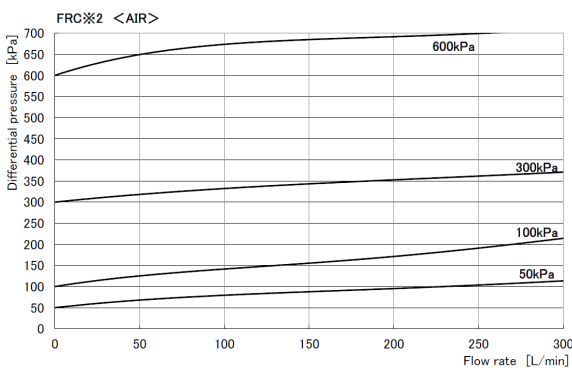
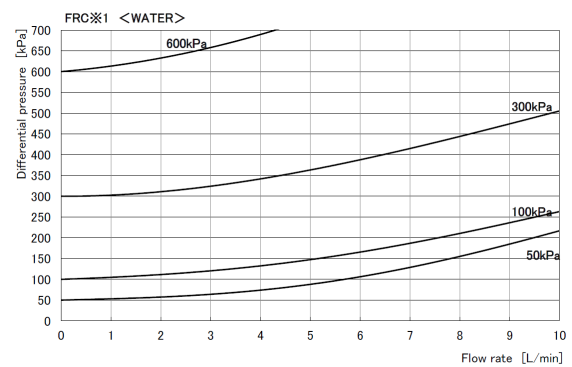
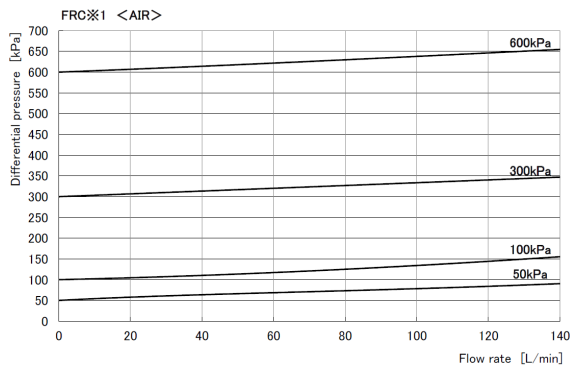
Pipe port	1/4 ~ 1-1/4 (In R)	Cracking Pressure kPa[psi]	30~1080 [4.35 ~156.64] ※Port size 1/8's pressure range is 30~970kPa [4.35~140.69psi]
Body material	Brass / SUS316	Pressure Resistance MPa[psi]	1.62 [234.96]
Seal material	FKM(Standard)	Operating temperature range °C[°F]	Pursuant to seal material
Cap material	Aluminum alloy		
Comment	<ul style="list-style-type: none"> <li>■ In case of mounting, pipe port is upward.</li> <li>■ Brass bodies are nickel plating.</li> </ul>		





# FUJIKURA COMPOSITES

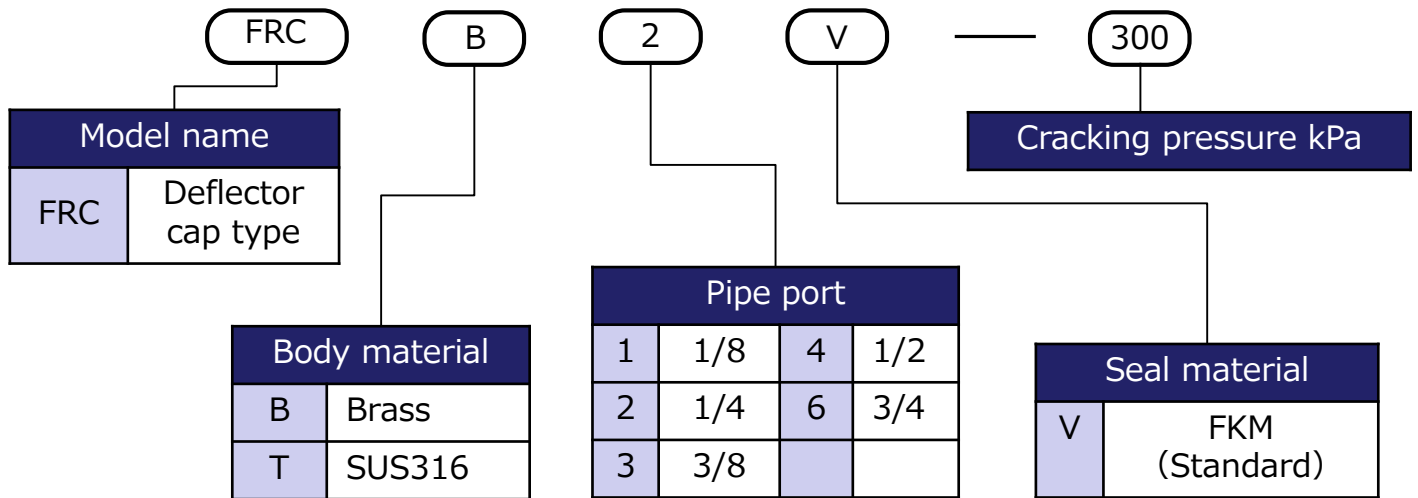
## ■ Characteristic





# FUJIKURA COMPOSITES

## Model designation



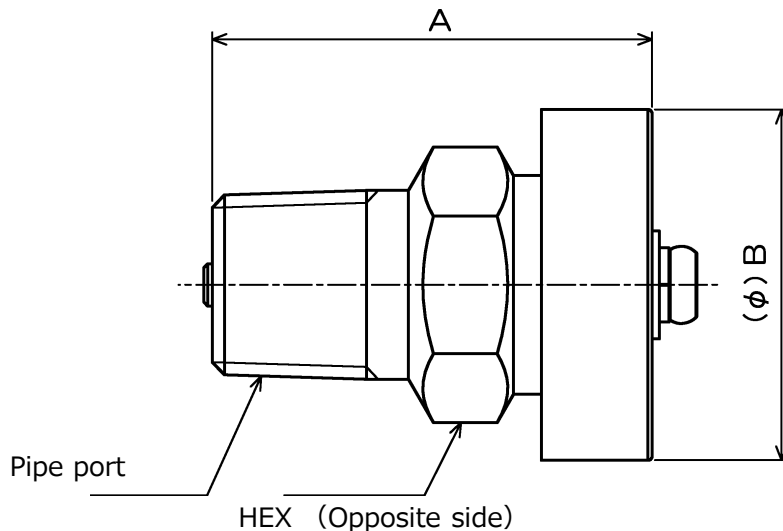
Caution  
Please order setting pressure at kPa.

Example) In case of 0.05MPa(50kPa) < 50 >  
In case of 1MPa(1000kPa) < 1000 >

※Please inquire about other materials.

※When operating temperature ranges are more than 100°C[212°F] or less or -20°C[-4°F], please contact us.

## Size



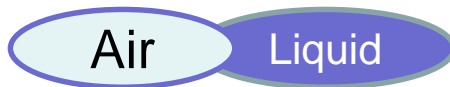
<mm> [inch]

Pipe port (R)	A	B	HEX (Opposite side)
1/8	<26.5> [1.04]	<18.0> [0.71]	<13.0> [0.51]
1/4	<32.0> [1.26]	<25.0> [0.98]	<17.0> [0.67]
3/8	<34.0> [1.34]	<32.5> [1.28]	<19.0> [0.75]
1/2	<45.8> [1.80]	<37.2> [1.46]	<26.0> [1.02]
3/4	<53.4> [2.10]	<37.2> [1.46]	<29.0> [1.14]



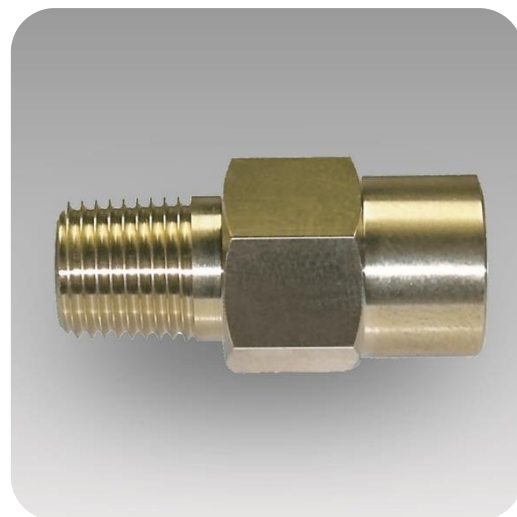
## “FRHA” series

High Pressure Atmospheric Open model.



### ■ Features

- High pressure range.(Max setting pressure:4.2Mpa [609.16psi])
- Small and light weight.
- Cracking pressure’s setting is done before delivering.



### ■ Applications

- Machine Tools : Milling machine, NC lathe, laser processing machine etc.
- Industrial furnace : General industrial furnace, heating furnace, vacuum furnace, etc.
- Medical : Endoscope washing device, oxygen concentrator, anesthesia machine etc.
- Analysis equipment:Measurement equipment, component gas analysis, gas analyzer etc.
- Battery : Household fuel cell, secondary battery, gas engine etc.
- Water (liquid) treatment: Pure water production, pure water recycling.
- Gas generator related: Compressor, compact pressure vessel, various gas generator etc.
- Others: Oxygen capsule, gasoline measuring instrument, forklift etc.

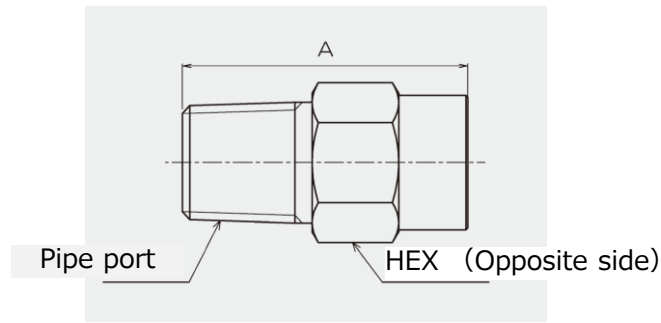
### ■ Specification

Pressure resistance MPa[psi]	6.8 [986.26]	Seal material	FKM (Standard)
Pipe port	1/8, 1/4(In R)	Operating temperature range °C[°F]	Pursuant to Seal material
Body material	Brass / SUS316	Cracking pressure kPa[psi]	1000 ~ 4200 [145.04 ~ 609.16]
Comment	■ When use stainless-model, please contact us.		



# FUJIKURA COMPOSITES

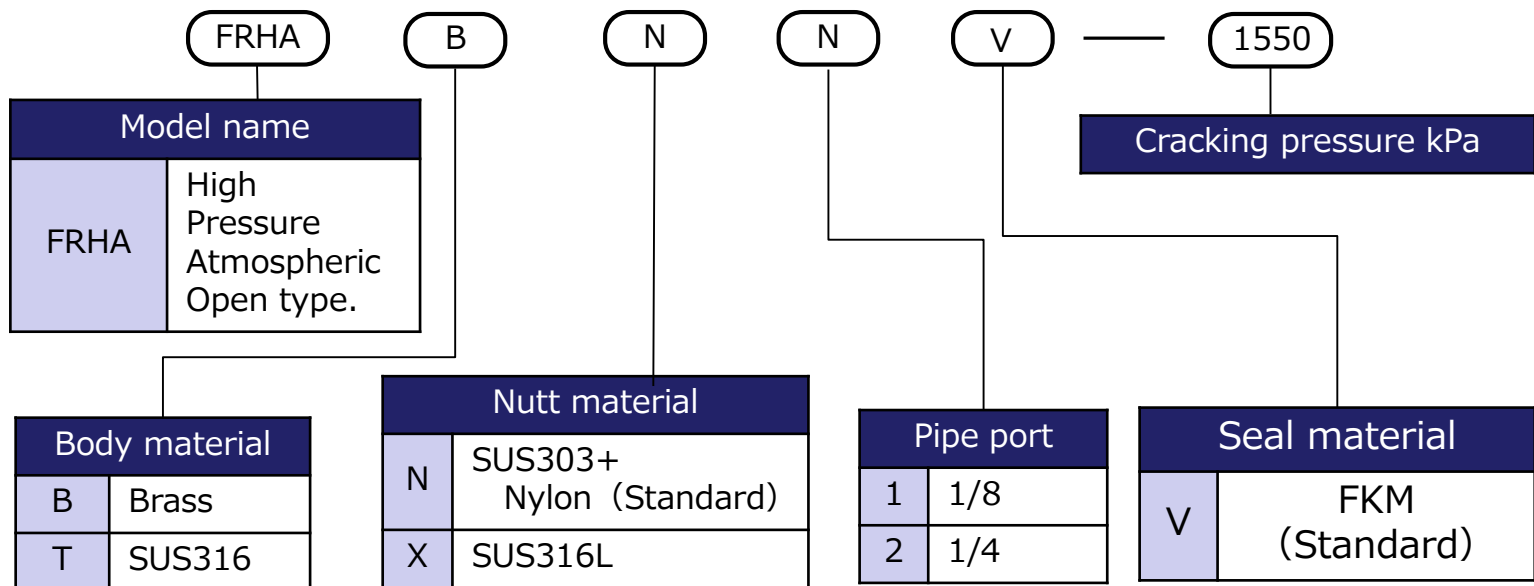
## ■ Size



<mm> [inch]

Pipe port (R)	A	HEX (Opposite side)
1/8	<28> [1.10]	<13.0> [0.51]
1/4	<33> [1.30]	<16.0> [0.63]

## ■ Model designation



Caution  
Please order setting pressure at kPa.

Example) In case of 0.05MPa(50kPa) < 50 >  
In case of 1MPa(1000kPa) < 1000 >

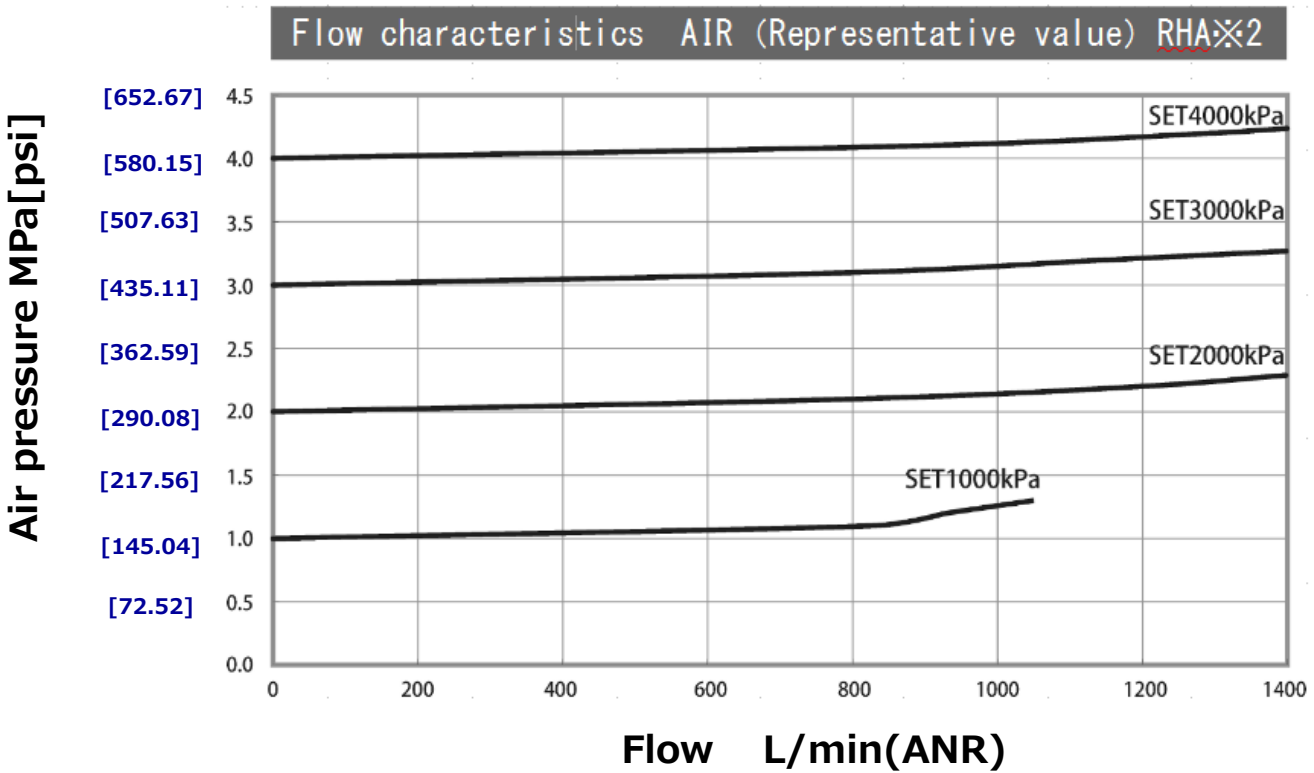
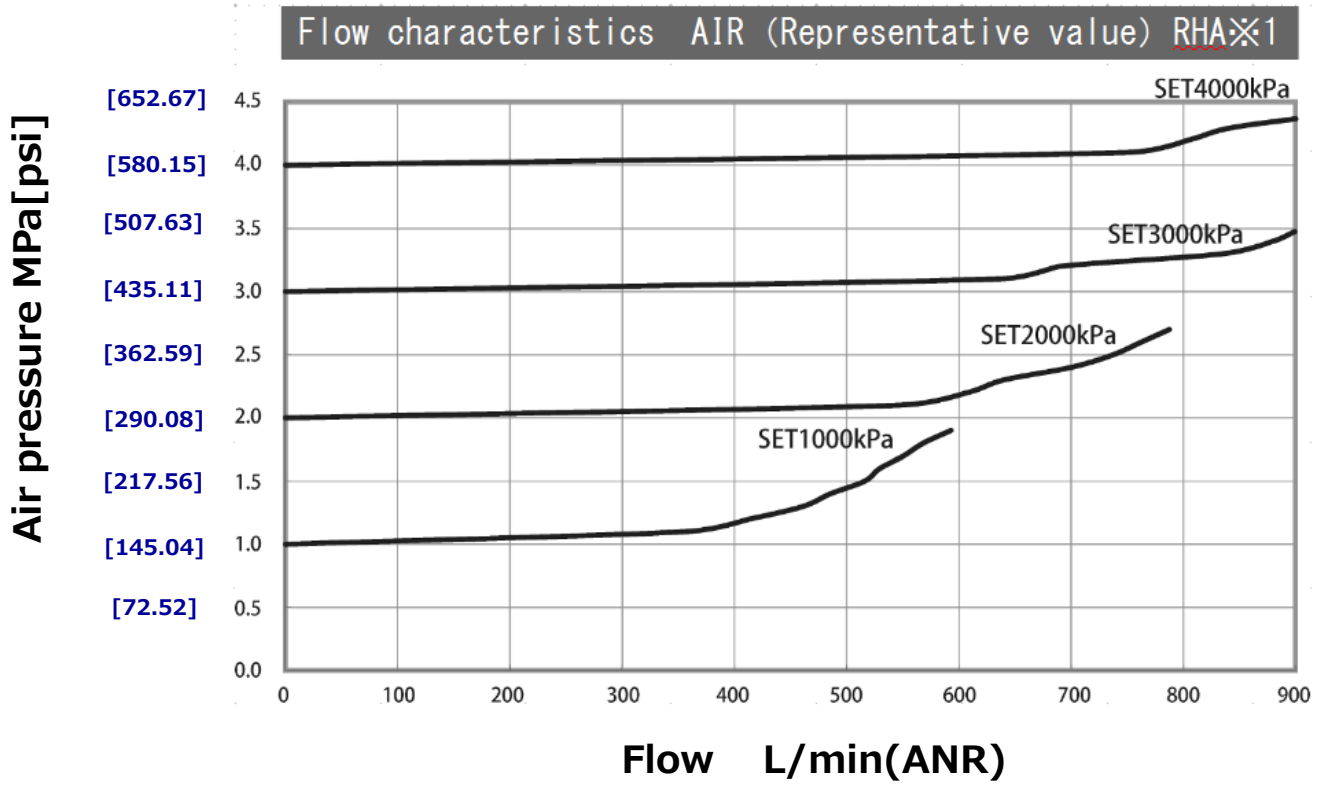
※Please inquire about other materials.

※When operating temperature ranges are more than 100°C[212°F] or less or -20°C[-4°F], please contact us.



# FUJIKURA COMPOSITES

## ■ Characteristic





## “FRHL” series

Air

Liquid

High pressure in-line model. Corresponds to compressed air and liquid.

### ■ Features

- High pressure range.(Max setting pressure:4.2Mpa [609.16psi])
- Connecting outlet port is the best to recover exhaust gas/liquid.
- Cracking pressure's setting is done before delivering.



### ■ Applications

- Machine Tools : Milling machine, NC lathe, laser processing machine etc.
- Industrial furnace : General industrial furnace, heating furnace, vacuum furnace, etc.
- Medical : Endoscope washing device, oxygen concentrator, anesthesia machine etc.
- Analysis equipment: Measurement equipment, component gas analysis, gas analyzer etc.
- Battery : Household fuel cell, secondary battery, gas engine etc.
- Water (liquid) treatment: Pure water production, pure water recycling.
- Gas generator related: Compressor, compact pressure vessel, various gas generator etc.
- Others: Oxygen capsule, gasoline measuring instrument, forklift etc.

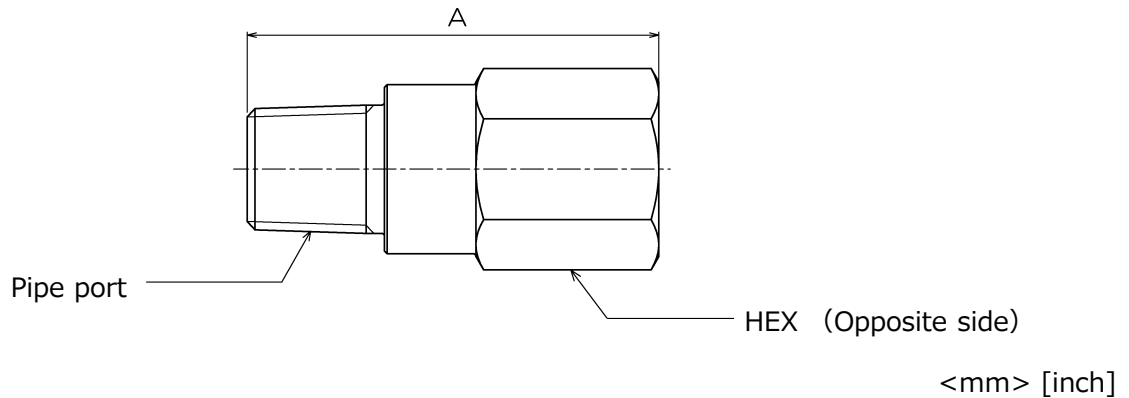
### ■ Specification

Pressure Resistance MPa[psi]	6.8 [986.26]	Seal material	FKM(Standard)
Pipe port	1/8, 1/4 (In R × Out Rc)	Operating temperature range °C[°F]	Pursuant to Seal material
Body material	Brass / SUS316	Cracking Pressure kPa[psi]	1000 ~ 4200 [145.04 ~ 609.16]
Comment	■ When use stainless-model, please contact us.		



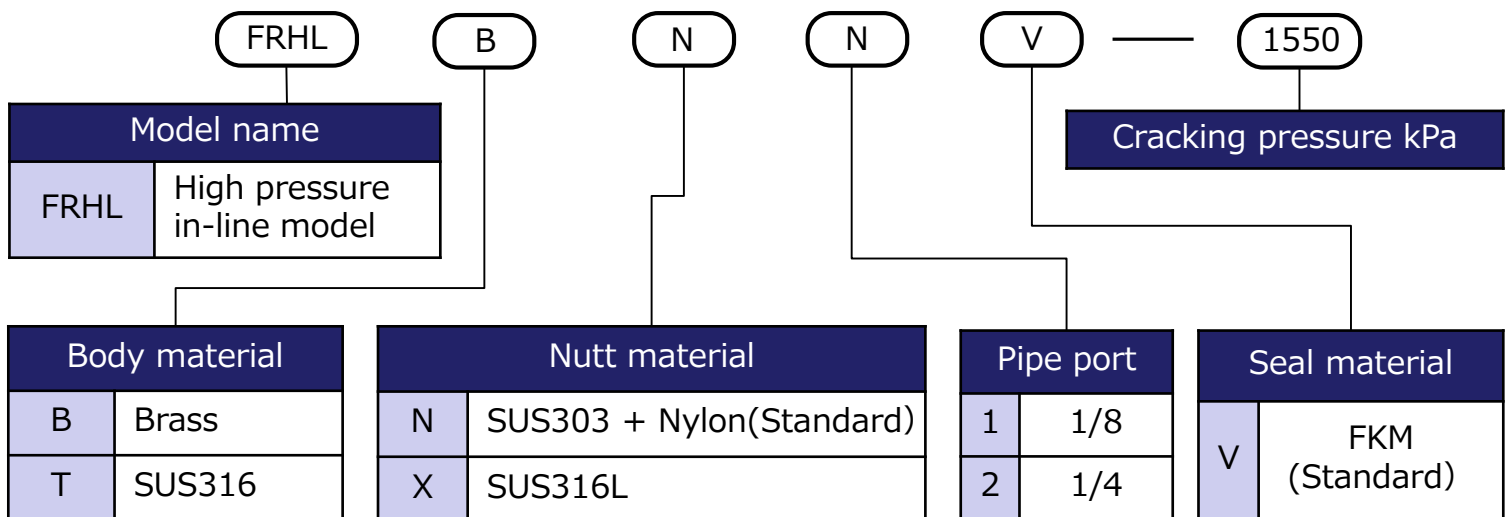
# FUJIKURA COMPOSITES

## ■ Size



Pipe port Inlet(R) × Outlet(R)	A	HEX (Opposite side)
1/8	<37.0> [1.46]	<13.0> [0.51]
1/4	<45.0> [1.77]	<19.0> [0.75]

## ■ Model designation



Caution  
Please order setting pressure at kPa.

Example) In case of 0.05MPa(50kPa) < 50 >  
In case of 1MPa(1000kPa) < 1000 >

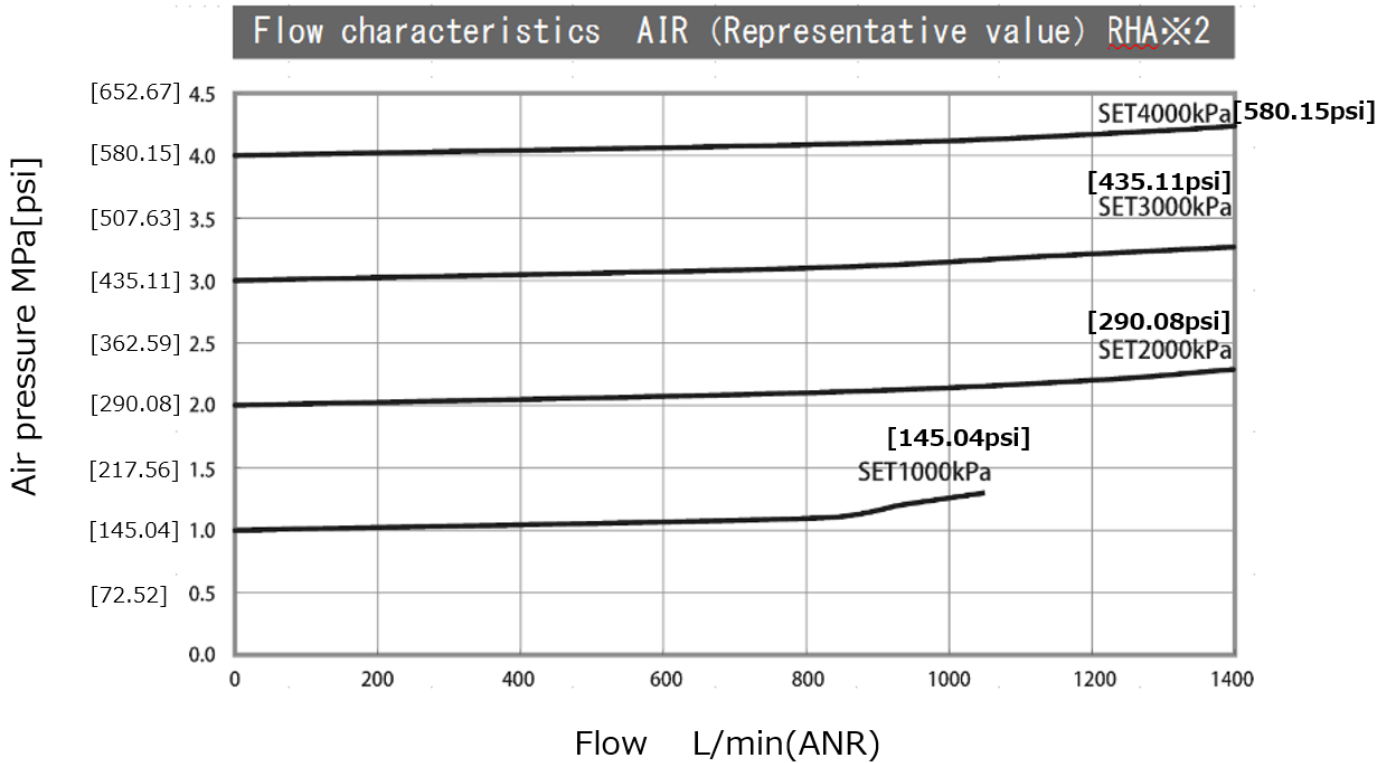
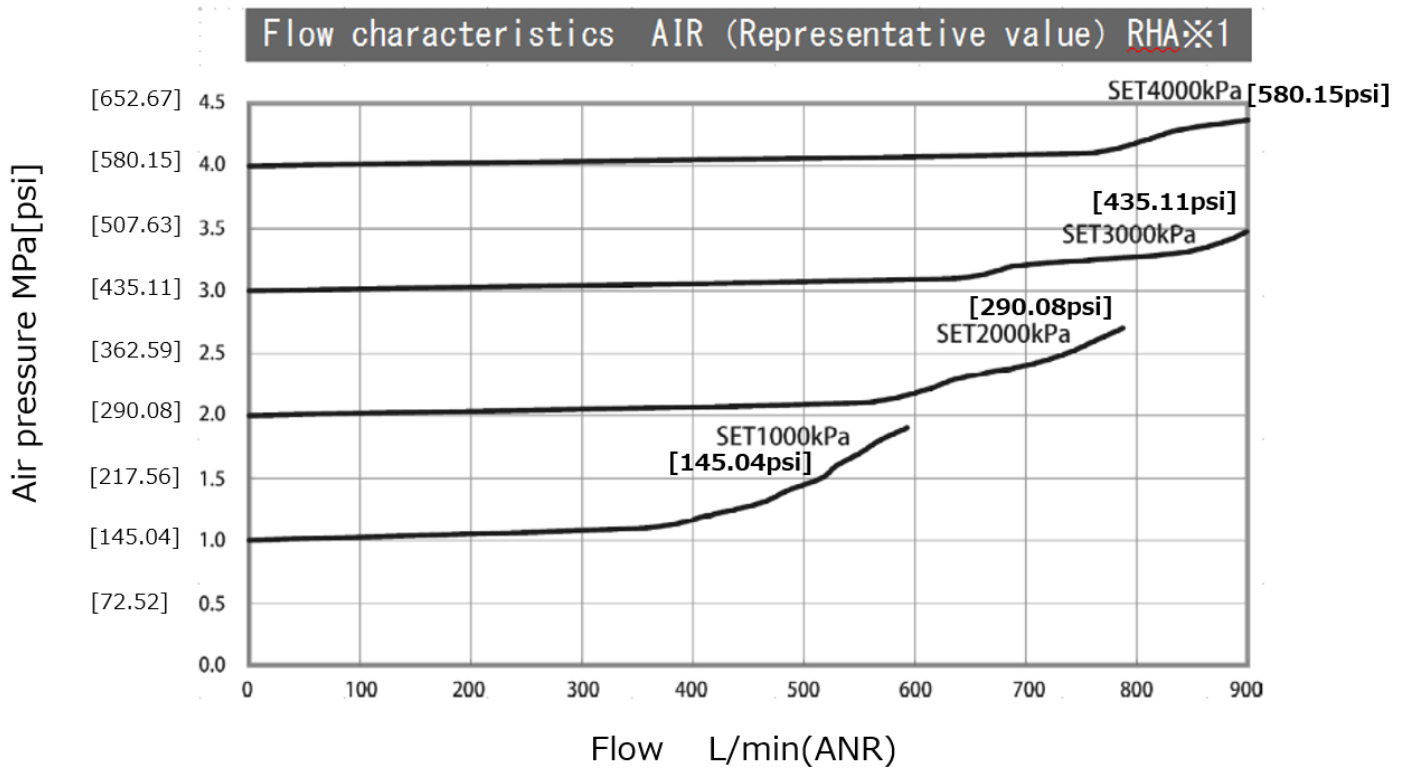
※Please inquire about other materials.

※When operating temperature ranges are more than 100°C[212°F] or less or -20°C[-4°F], please contact us.



# FUJIKURA COMPOSITES

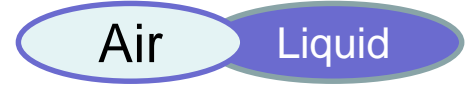
## ■ Characteristic







## “FRM1” series



External cracking pressure adjustment model.

### ■ Features

- Special packing rubber inhibits valve’s vibration.
- Setting of cracking pressure is controllable.  
(Pressure setting is done before shipping)
- Body material is stainless (SUS314), excellent corrosion resistance.
- Liquid available, In-line type, High flow model.



### ■ Applications

- Machine Tools : Milling machine, NC lathe, laser processing machine etc.
- Industrial furnace : General industrial furnace, heating furnace, vacuum furnace, etc.
- Medical : Endoscope washing device, oxygen concentrator, anesthesia machine etc.
- Analysis equipment: Measurement equipment, component gas analysis, gas analyzer etc.
- Battery : Household fuel cell, secondary battery, gas engine etc.
- Water (liquid) treatment: Pure water production, pure water recycling.
- Gas generator related: Compressor, compact pressure vessel, various gas generator etc.
- Others: Oxygen capsule, gasoline measuring instrument, forklift etc.

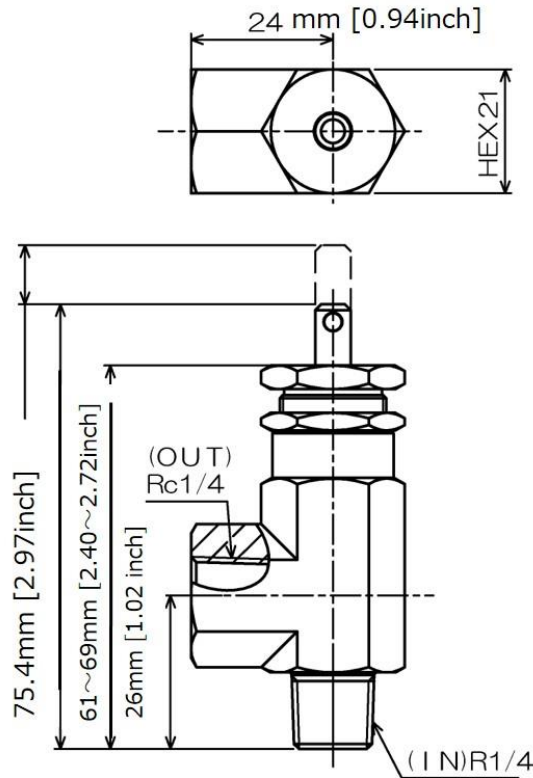
### ■ Specification

Working fluid	Water, Air, Inert gas	Maximum working Pressure MPa[psi]	2.0 [290.08]
Pipe port	1/4(In R × Out Rc)	Cracking pressure Setting range kPa[psi]	50 ~ 1500 [7.25 ~ 217.56]
Body material	Brass / SCS14	Pressure resistance MPa[psi]	3.0 [435.11]
Seal material	FKM(Standard)	Fluid temperature ℃[°F]	0 ~ 90[32 ~ 194] (FKM)
Weight g [pound]	170 [0.37] (FRM1B2V)	Operating temperature ℃[°F]	0 ~ 60 [32 ~ 140]
Comment	<ul style="list-style-type: none"> <li>■ Manual releasing mechanism(pull-ring or toggle lever)are option parts.</li> <li>■ If you need other material or port size, please contact us.</li> <li>■ If you order other fluids, use FRM2.</li> </ul>		



# FUJIKURA COMPOSITES

## Size



## Model designation

FRM1 T 2 V — A — 150 — ※

Model name	
FRM 1	External cracking pressure adjustment type.

Pipe port	
2	1/4

Cracking pressure kPa	
A	50~150kPa [7.25~21.76psi]
B	150~500kPa [21.76~72.52psi]
C	500~1500kPa [72.52~217.56psi]

Body material	
B	Brass
T	SUS316

Seal material/Temperature range		
V	FKM (Standard)	0~90°C [32~194]psi

Option (Manual release part)	
None	None
P	Pull ring
R	(Tugle) Lever

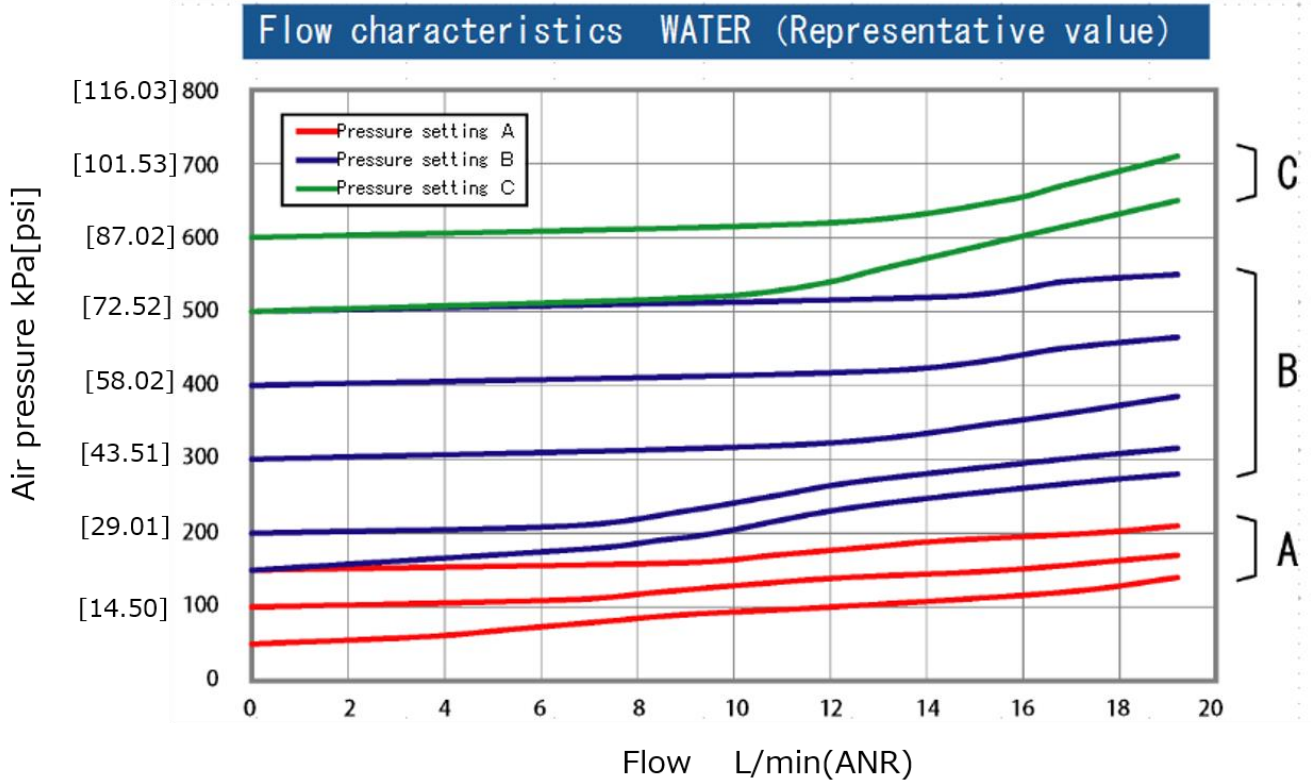
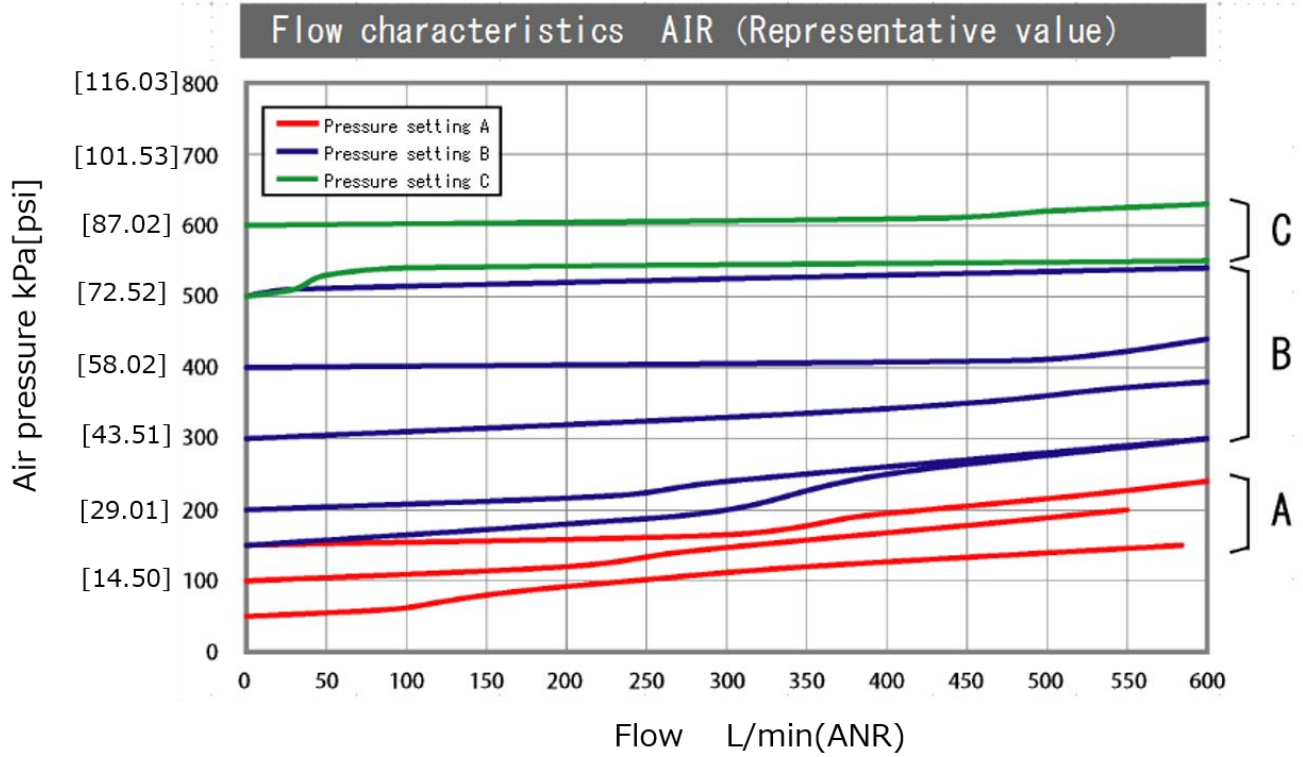
Caution  
Please order setting pressure at kPa.

Example) In case of 0.05MPa(50kPa) < 50 >  
In case of 1MPa(1000kPa) < 1000 >



# FUJIKURA COMPOSITES

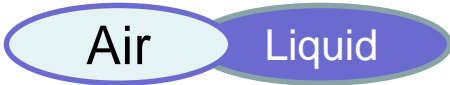
## ■ Characteristic





# FUJIKURA COMPOSITES

## “FRM2” series



External cracking pressure adjustment model. It can also be used for solvents.

### ■ Features

- Designed to reduce risk of outside-leak better than FRM1.
- As seal material. EPDM, kalrez are available in chemical, solvent and corrosive fluid.
- Setting of cracking pressure is controllable.  
(Pressure setting is done before shipping)
- High flow rate model.



### ■ Applications

- Machine Tools : Milling machine, NC lathe, laser processing machine etc.
- Industrial furnace : General industrial furnace, heating furnace, vacuum furnace, etc.
- Medical : Endoscope washing device, oxygen concentrator, anesthesia machine etc.
- Analysis equipment: Measurement equipment, component gas analysis, gas analyzer etc.
- Battery : Household fuel cell, secondary battery, gas engine etc.
- Water (liquid) treatment: Pure water production, pure water recycling.
- Gas generator related: Compressor, compact pressure vessel, various gas generator etc.
- Others: Oxygen capsule, gasoline measuring instrument, forklift etc.

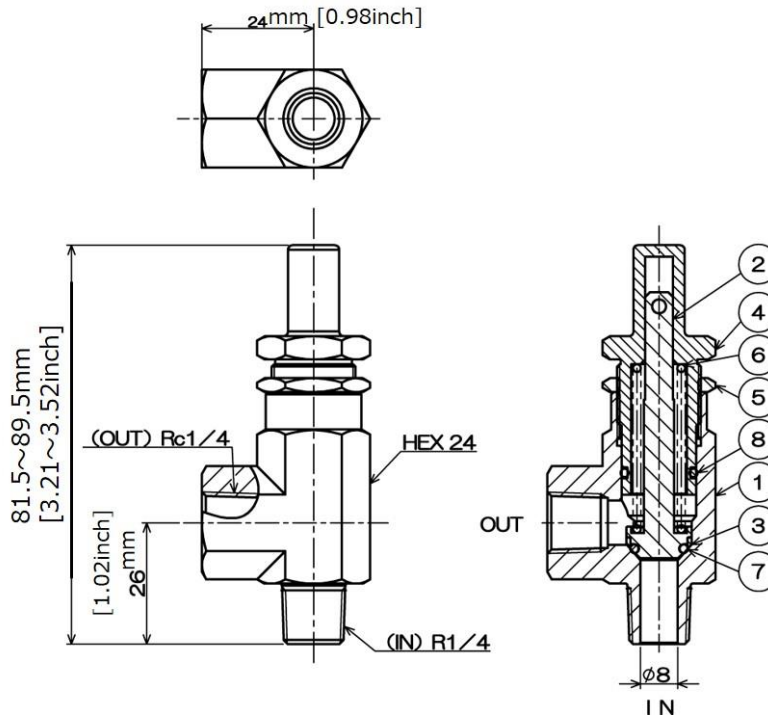
### ■ Specification

Working fluid	Gas or liquid that touching parts are not corroded.	Maximum working Pressure MPa[psi]	2.0 [290.08]
Pipe port	1/4(In R × Out Rc)	Cracking pressure Setting range kPa[psi]	50 ~ 1500 [7.25 ~ 217.56]
Body material	Brass / SCS14	Pressure resistance MPa[psi]	3.0 [435.11]
Seal material	FKM(Standard)	Fluid temperature °C[°F]	0 ~ 90 [32 ~ 194] (FKM)
Weight g[pound]	170 [0.37] (FRM2B2V)	Operating temperature °C[°F]	0 ~ 60 [32 ~ 140]
Comment	<ul style="list-style-type: none"> <li>■ Ordering cracking pressure is unless 50kPa[7.25psi], please contact us.</li> <li>■ If you need other material or port size, please contact us.</li> <li>■ If you need manual release unit, use FRM1.</li> </ul>		



# FUJIKURA COMPOSITES

## Size



## Model designation

FRM2    T    2    V    —    A    —    150

Model name	
FRM2	External cracking pressure adjustment type.

Pipe port	
2	1/4

Pressure setting range	
A	50~150kPa [7.25~21.76psi]
B	150~500kPa [21.76~72.52psi]
C	500~1500kPa [72.52~217.56psi]

Cracking pressure kPa

Body material	
B	Brass
T	SUS316

Seal material		
V	FKM (Standard)	0~90°C [32~194]psi

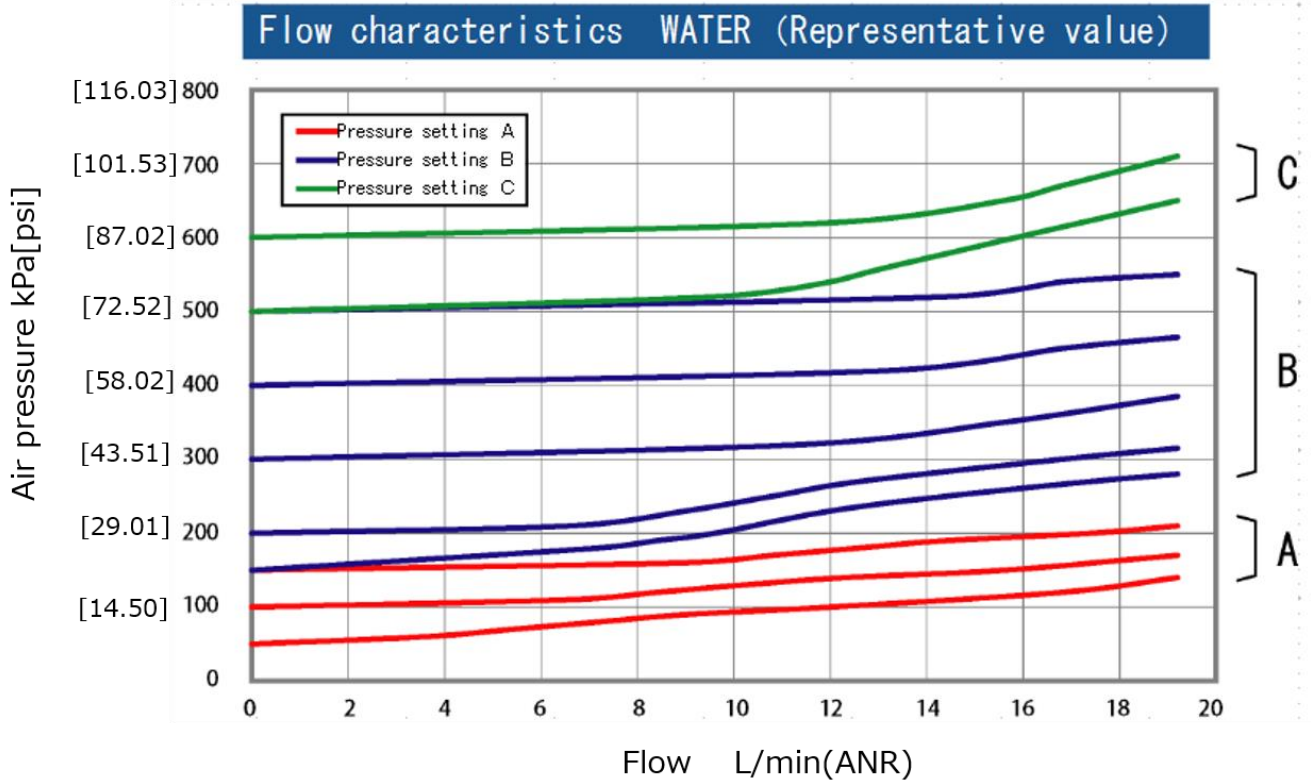
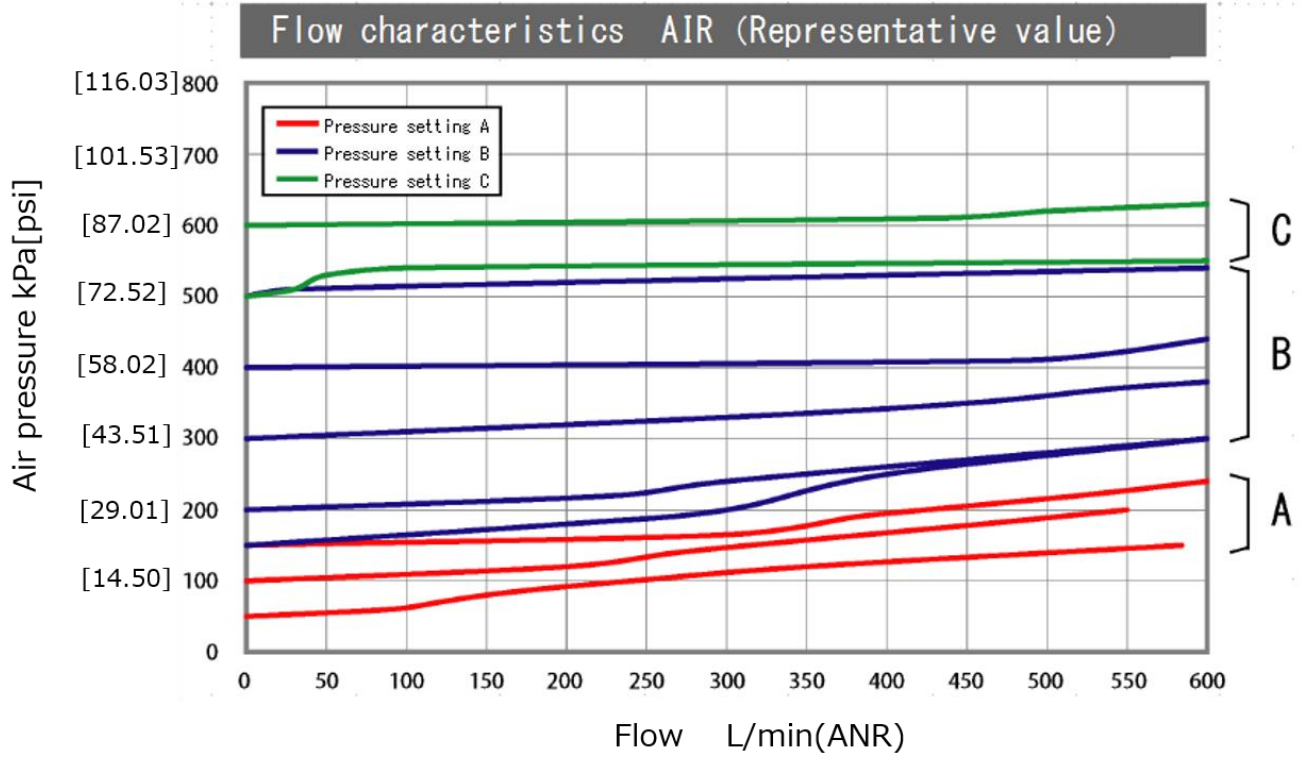
Caution  
Please order setting pressure at kPa.

Example) In case of 0.05MPa(50kPa)    < 50 >  
In case of 1MPa(1000kPa)    < 1000 >



# FUJIKURA COMPOSITES

## ■ Characteristic

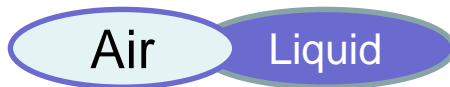




# FUJIKURA COMPOSITES

## “VR1” series

Low Pressure atmospheric Open model.



### ■ Features

- Compact design allowing installation in a space-saving manner.
- The relief pressure is high precision because the difference in opening and closing pressure is small.
- Relief pressure other than the standard specification can be set as custom order.

(Setting pressure range:30~300kPa[4.35~43.5psi])



### ■ Applications

- Machine Tools : Milling machine, NC lathe, laser processing machine etc.
- Industrial furnace : General industrial furnace, heating furnace, vacuum furnace, etc.
- Medical : Endoscope washing device, oxygen concentrator, anesthesia machine etc.
- Analysis equipment: Measurement equipment, component gas analysis, gas analyzer etc.
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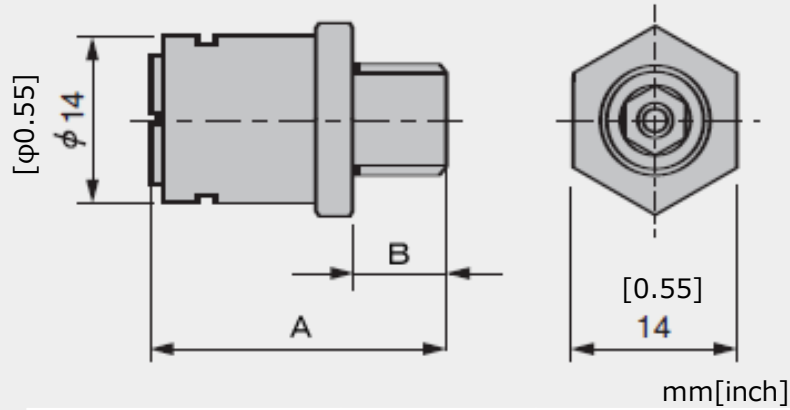
### ■ Specification

Model name	VR1			
Relief pressure	kPa[psi]	50 [7.25]	100 [14.50]	150 [21.76]
Working fluid	Clean compressed air			
Body material	Brass(Electroless Ni plating)			
Rubber material	Fluororubber			
Operating temperature range	℃[°F]	5~60 [41~140]		
Pipe port	Rc	1/8, 1/4		



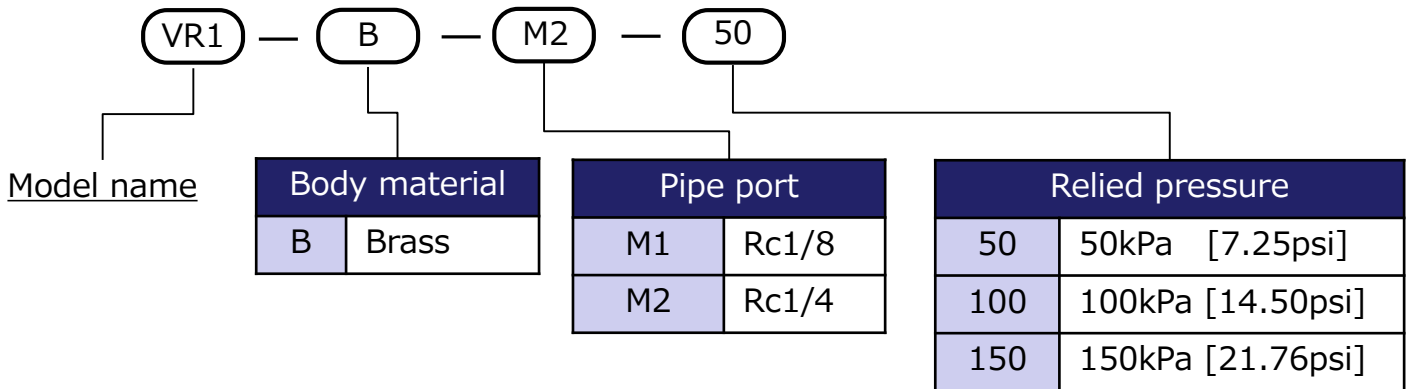
# FUJIKURA COMPOSITES

## Size



Pipe port		A	B
M1	Rc1/8	25 [0.98]	8 [0.31]
M2	Rc1/4	28 [1.10]	11 [0.43]

## Model designation







# FUJIKURA COMPOSITES

## ■ Characteristic

### ■ Relief characteristics

