

2017 edition

CAT : No.100-03E-D

Valves & Fittings for Ultra High-Pressure Hydrogen Gas

SUS316 Standard (Possible to make by the ASTM A471 SUS316L also)
Please refer to the material list of each valve equipment for parts.
SUH660 available also



99.9 MPa
Flow Control Valves



99.9 MPa Stop Valves
(Cylinder Diameter
160mm Type)



99.9 MPa
Manual Valves



99.9 MPa
Filters



Union Tees



50 MPa
Manual Valves
with UPG®
Fittings



99.9 MPa Check Valves

UJUN Type
Coned-and-threaded
connection
High Pressure Type



Union Elbows

UPG® Fittings

Internet
"Beyond the Flow"
of Things™

Fujikin Carp Group

We welcome customer feedback for all of our products and services.

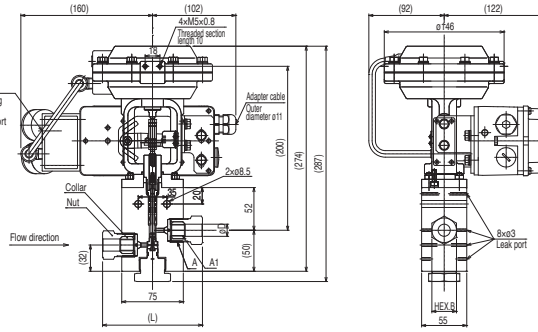


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Valves

99.9 MPa Flow Control Valves (Compact Type)



Features

1. Precise flow control for ultra high-pressure hydrogen gas.
2. Flow coefficient (Cv Value) can be selected and replaced from a large variety of disc & sheats.
3. Compact
4. Smart positioner with communications function can be available.
5. ATEX Explosion proof compliant products (self-declaration)

Specifications

Design Pressure	99.9 MPa
Design Temperature	85 °C
Fluid Temperature Range	-40 to +85 °C

Note: When using in a pre cool line, when ordering, please contact **Fujikin**

Materials

Parts	Materials
Body	SUS316
Seat	SUS316+Co base alloy
Stem	SUS316+Co base alloy
Gland Packing	PVDF+PFA
Packing Gland Bush	SUS304

Dimensions, Ordering No.

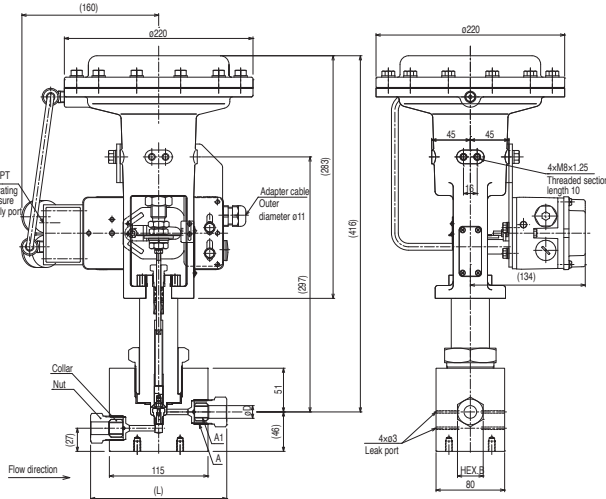
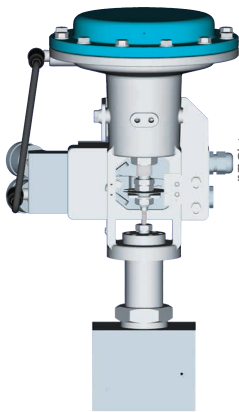
Nominal Diameter	Nut Threads (valve body side)	Collar Threads (tube side)	L Collar and nut insertion reference dimensions	HEX.B	Cv Value MAX.	Ordering No.
6.35	9/16-18UNF	(Left) 1/4-28UNF	99	17	0.1	E32M3R4-7100-6.35-N28.5-CN
9.52	3/4-16UNF	(Left) 3/8-24UNF	107	22	0.15	E32M3R4-7100-9.52-N28.5-CN
14.2	1 1/8-12UNF	(Left) 9/16-18UNF	121	30	0.25	E32M3R4-7100-14.2-N28.5-CN

*: 60,000 psi type

Other

Stop Valves without positioner also available.

99.9 MPa Flow Control Valves (High Cv Value Type)



Features

1. Precise flow control for ultra high-pressure hydrogen.
2. Flow coefficient (Cv Value) can be selected and replaced from a large variety of disc & sheats.
3. Smart positioner with communications function can be available.

Specifications

Design Pressure	99.9 MPa
Design Temperature	85 °C
Usage Fluid Temperature Range	-40 to +85 °C

Note: When using in a pre cool line, when ordering, please contact **Fujikin**

Materials

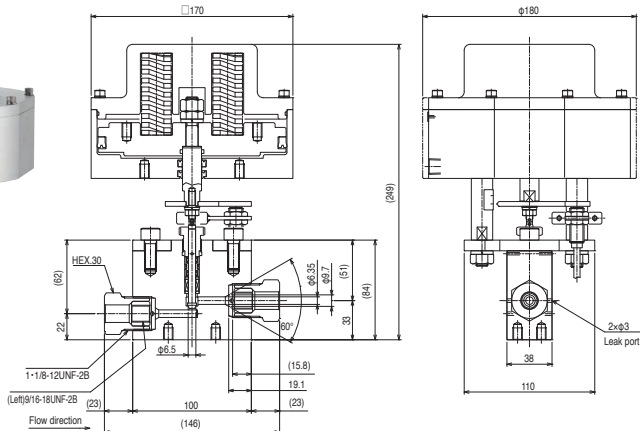
Parts	Materials
Body	SUS316
Seat	SUS316+Co base alloy
Disc	SUS316+Co base alloy
Stem	SUH660
Gland Packing	PVDF+PFA
Gland Nut	SUS316

Dimensions, Ordering No.

Nominal Diameter	Nut Threads (valve body side)	Collar Threads (tube side)	L Collar and nut insertion reference dimensions	HEX.B	Cv Value MAX.	Ordering No.
14.2	1 1/8-12UNF	(Left) 9/16-18UNF	161	30	0.5	E32M2R2-7100W-14.2-40-N28.5-CN

*: 40,000 psi type

99.9 MPa Stop Valves (Cylinder Diameter 160mm Type)



Features

1. Full-bore type [accommodates port diameter equal to or greater than the inner diameter of 14.2 (40,000psi) size (ø6.35)]
2. No usage restrictions on flow direction and differential pressure.

Specifications

Design Pressure	99.9 MPa
Design Temperature	85 °C
Usage Fluid Temperature Range	-40 to +85 °C
Operating Pressure	0.5 to 0.7MPa
Cv Value(MAX.)	1 *

*: At operating pressure 0.6 MPa

Note: When using in a pre cool line, when ordering, please contact **Fujikin**

Materials

Parts	Materials
Body	SUS316
Disc	SUH660
Gland Packing	PVDF+PFA
Actuator	A5056 (amongst others)

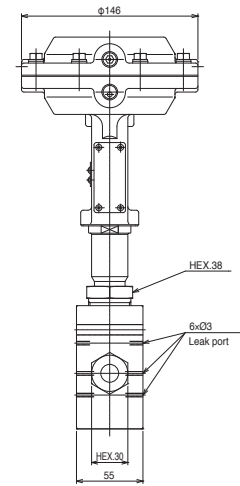
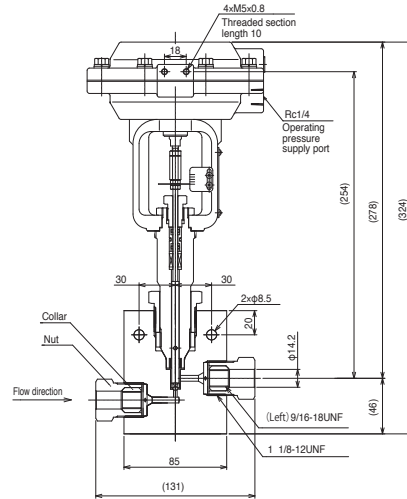
Ordering No. C160-UH-7100-14.2-40-N28.5-CN



Caution

All wetted parts of Valves, Unions and Fittings in this catalog should be with non-corrosive gases only.

99.9 MPa Stop Valves (For Low Temperature)



Features

1. No usage restrictions on flow direction and differential pressure
2. ATEX Explosion proof compliant products (self-declaration)

Specifications

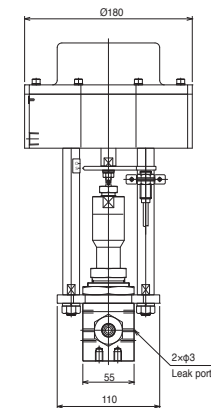
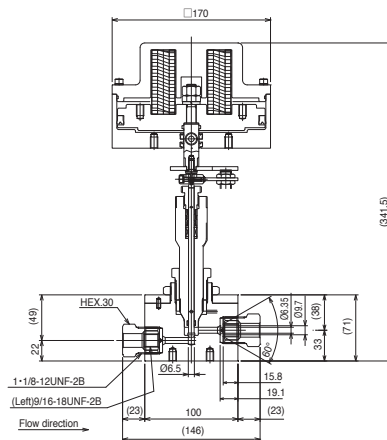
Design Pressure	99.9 MPa
Design Temperature	85 °C
Usage Fluid Temperature Range	-40 to +85 °C
Operating Pressure	0.4 MPa
Cv Value	0.25

Materials

Parts	Materials
Body	SUS316
Lid	SUS316
Stem	SUH660
Gland Packing	PVDF+PFA
Gland Nut	SUS304

Ordering No. M3R4-7100C-14.2-N28.5-DGK

99.9 MPa Stop Valves (For Low Temperature, Cylinder Diameter 160mm Medium Shaft Type)



Features

1. Full-bore type [accommodates port diameter equal to or greater than the inner diameter of 14.2 (40,000psi) size (ø6.35)]
2. No usage restrictions on flow direction and differential pressure

Specifications

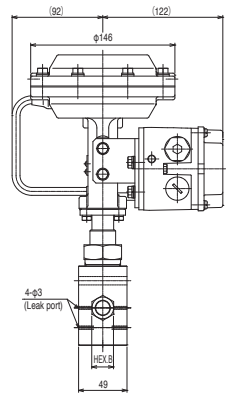
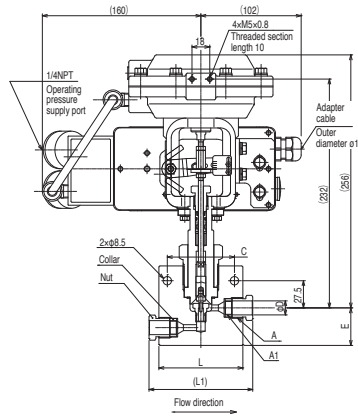
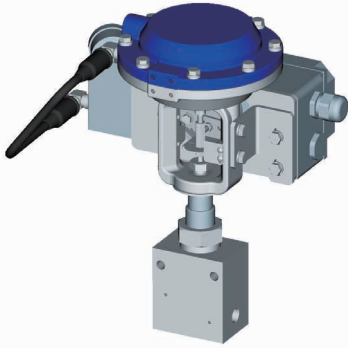
Design Pressure	99.9 MPa
Design Temperature	85 °C
Usage Fluid Temperature Range	-40 to +85 °C
Operating Pressure	0.5~0.7MPa
Cv Value	1

Materials

Parts	Materials
Body	SUS316
Disc	SUH660
Gland Packing	PVDF+PFA
Actuator	A5056, other

Ordering No. C160-UH-7100C-14.2-40-N28.5-CN

50 MPa Flow Control Valves (Compact Type)



Features

1. Precise flow control for ultra high-pressure hydrogen gas.
2. Flow coefficient (Cv Value) can be selected and replaced from a large variety of disc sheets.
3. Compact
4. Smart positioner with communications function can be available.

Specifications

Design Pressure	50 MPa
Design Temperature	85 °C
Fluid Temperature Range	-40 to +85 °C

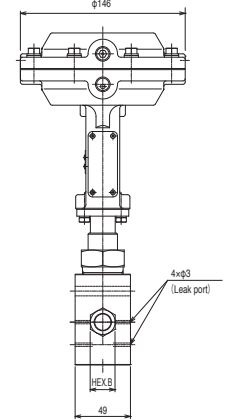
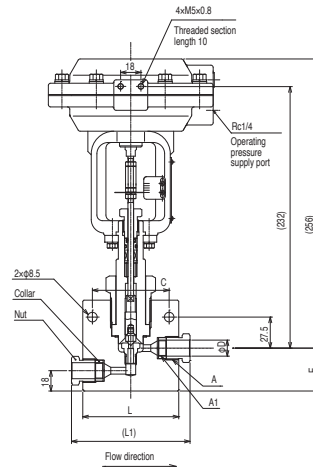
Materials

Parts	Materials
Body	SUS316
Seat	SUS316+Co base alloy
Disc	SUS316+Co base alloy
Stem	SUS316
Gland Packing	PVDF+PFA
O-ring	HNBR

Dimensions, Ordering No.

Nominal Diameter	Nut Threads (valve body side)	Collar Threads (tube side)	L	L1 Collar and nut insertion reference dimensions	C	E	HEX.B	Cv Value MAX.	Ordering No.
	A	A1							
6.35	7/16-20UNF	(Left)1/4-28UNF	70	88	26.5	36	14	0.15	E32M3R4-750-6.35-N28.5
9.52	9/16-18UNF	(Left)3/8-24UNF	70	88	26.5	36	17	0.35	E32M3R4-750-9.52-N28.5
14.2	13/16-16UNF	(Left)9/16-18UNF	85	105	34	38	22	0.5	E32M3R4-750-14.2-N28.5

50 MPa Stop Valves



Features

1. Compact

Specifications

Design Pressure	50 MPa
Design Temperature	85 °C
Fluid Temperature Range	-40 to +85 °C

Materials

Parts	Materials
Body	SUS316
Seat	SUS316+Co base alloy
Disc	SUS316+Co base alloy
Stem	SUS316
Gland Packing	PVDF+PFA
O-ring	HNBR

Dimensions, Ordering No.

Nominal Diameter	Nut Threads (valve body side)	Collar Threads (tube side)	L	L1 Collar and nut insertion reference dimensions	C	E	HEX.B	Cv Value MAX.	Ordering No.
	A	A1							
6.35	7/16-20UNF	(Left)1/4-28UNF	70	88	26.5	36	14	0.15	M3R4-750-6.35-N28.5
9.52	9/16-18UNF	(Left)3/8-24UNF	70	88	26.5	36	17	0.35	M3R4-750-9.52-N28.5
14.2	13/16-16UNF	(Left)9/16-18UNF	85	105	34	38	22	0.5	M3R4-750-14.2-N28.5

Accessories for Automatic Valves

Regulators with Filter



Features

Regulating required air supply pressure for Flow Control Valves.

Specifications		Manufacturer, Model No.	
		Samson K.K.	SSS Co., Ltd.
Supply Pressure	Max. 240 kPa	4708-53	XR-104
	400 kPa		XR-108
Major Specifications	Ambient Temp. *1	-25 to +80 °C	-20 to +83 °C
	Air Connecting Port	1/4NPT	Rc1/4 (Pressure gauge: Rc1/8)
	Filter Element	Polyprene bonded material Element: 20 µm	Polyprene bonded material Element: 5 µm
	Max Supply Pressure	1.2 MPa	0.9 MPa
	Weight	0.48 Kg	0.26 Kg

*1: Indicates usage temperature of Regulators . Ambient Temperature when affixed to valve may vary between -10 and 60 °C.

Solenoid Valves



Explosion Proof Construction	Item Numbers	Types	Makers	Features
ExdIICT6	MOOU-8-E22POA-SA	—	KANEKO SANGYO CO., LTD	<ul style="list-style-type: none"> Pressure-resistant & Explosion Proof Type Outdoor Prevention Drop IP67 Changerble by manual operation Various Explosion Proof Standard
Ex e mb IIC	WBLPG551A005MS	Direct Mount Type 3-Way	ASCO JAPAN Co., Ltd	<ul style="list-style-type: none"> Safety & Resin Filling Explosion Proof Type Hydrogen Explosion Proof Type Ex e mb IIC. Outdoor Prevention Drop IP67 Applicable to Manifold Type
	WBLPG551A017MS	Direct Mount Type 4-Way		
	WBLPG551A001MS	NAMUR Type 3,4-Way		
Ex ia IIC T4	CFSCISG551C505MO	Direct Mount Type 3-Way	ASCO JAPAN Co., Ltd	<ul style="list-style-type: none"> Intrinsically Safe Explosion Proof Type Hydrogen Explosion Proof Type Ex ia IIC T4. Outdoor Prevention Drop IP67 Certain operation by spring return Type
	CFSCISG551C517MO	Direct Mount Type 4-Way		
	CFSCISG551C501MO	NAMUR Type 3,4-Way		

*: When ordering, please specify explosion-proof construction and power supply specification.

Proximity Switch, Controller

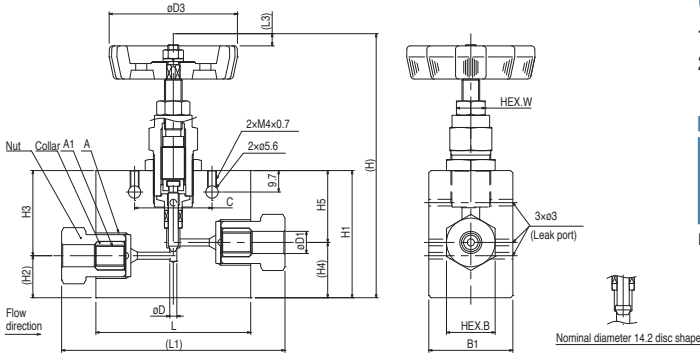


Features

1. Output electrical signals indicating open or close status of valves.
2. Uses a two-wire DC system to allow for long-distance wiring highly resistant to noise.

Item	Model No. IDEC Corporation	Explosion-proof Construction
Proximity switch	BI2-G12-Y1	ExiaIICT6
Controller	IM1-12EX-R	[Exia]IIC

99.9 MPa Compact Manual Valves



Features

1. Compact and with Durable Manual Valves
2. With Lock Nut

Specifications

Design Pressure	99.9 MPa
Design Temperature	85 °C
Fluid	-40 to
Temperature Range	+85 °C

Note: When using in a pre cool line, when ordering, please contact **Fujikin**

Materials

Part	Materials
Body	SUS316
Disc	SUH660
Stem	SUS316
Gland Packing	PVDF+PFA
Gland Nut	SUS316
Handle	ADC12

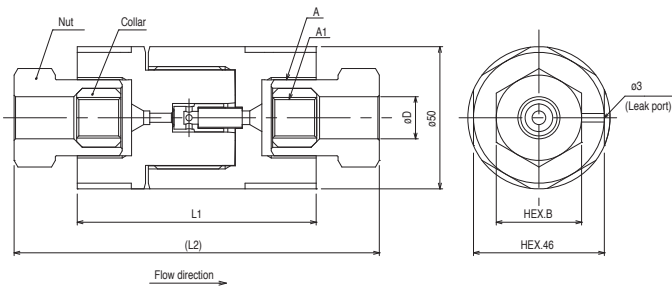
Dimensions, Ordering No.

Nominal Diameter	Orifice Diameter	Nut Threads (valve body side)	Collar Threads (tube side)	Interfacial Distance		Full-open Height	Lift	Handle Diameter	B	B1	C	W	H1	H2	H3	H4	H5	Cv Value MAX.	Mass (approx.) (kg)	Ordering No.
D1*	D	A	A1	L	L1	H	L3	D3												
6.35	3.2	9/16-18UNF	(Left)1/4-28UNF	70	94	118.5	5	58	17	38	35	13	57.5	19	38.5	25	32.5	0.14	1.2	UH-7100L-6.35-N28.5-CN
9.52	3.2	3/4-16UNF	(Left)3/8-24UNF	70	102	118.5	5	58	22	38	35	13	57.5	19	38.5	25	32.5	0.23	1.2	UH-7100L-9.52-N28.5-CN
14.2	6	1 1/8-12UNF	(Left)9/16-18UNF	78	124	138	5	88	30	38	40	19	64	22	42	33	31	0.85	1.6	UH-7100L-14.2-40-N28.5-CN

*: 60,000 psi (nominal diameter: 6.35, 9.52), 40,000 psi (nominal diameter: 14.2)

Check Valves, Filters

99.9 MPa Line Check Valves



Features

1. Compact, in-line type
2. Little pressure drop due to optimal flow pass

Specifications

Design Pressure	99.9 MPa
Design Temperature	85 °C
Fluid	-40 to +85 °C*1
Temperature Range	

*1: Please consult usage (extreme temperature such as -253°C, Liquid Hydrogen temperature)

Cracking Pressure: Max of 6.86 kPa
Range of Operating Differential Pressure (Counter Pressure): Min of 10 MPa

Note: When using in a pre cool line, when ordering, please contact **Fujikin**

Materials

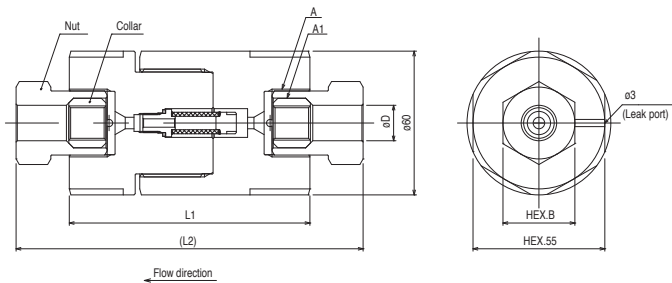
Part	Materials
Body A	SUS316
Body B	SUS316
Disc	PEEK
Spring	SUS316

Dimensions, Ordering No.

Nominal Diameter	Nut Threads (valve body side)	Collar Threads (tube side)	B	Interfacial Distance		Mass (approx.) (kg)	Ordering No.
				L1	L2		
6.35	9/16-18UNF	(Left)1/4-28UNF	17	70	94	1.2	UCL-7100-6.35-N28.5-CN
9.52	3/4-16UNF	(Left)3/8-24UNF	22	84	116	1.4	UCL-7100-9.52-N28.5-CN
14.2	1 1/8-12UNF	(Left)9/16-18UNF	30	84	130	1.3	UCL-7100-14.2-N28.5-CN

*2: 60,000 psi (also make 40,000 psi type)

99.9 MPa Filters



Features

1. Compact, in-line type
2. Little pressure drop due to optimal flow pass
3. Filter size from 2, 5 and 10 µm

Specifications

Design Pressure	99.9 MPa
Design Temperature	85 °C
Fluid	-40 to
Temperature Range	+85 °C

Note: When using in a pre cool line, when ordering, please contact **Fujikin**

Materials

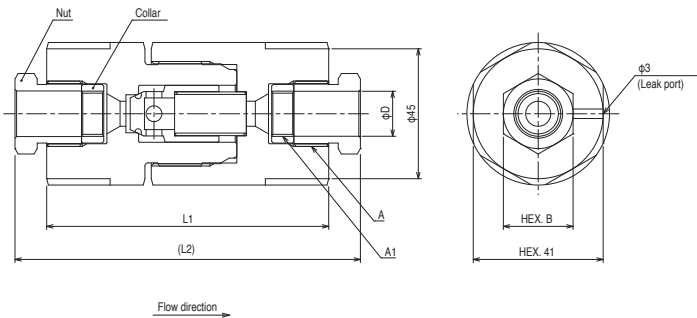
Part	Materials
Body A	SUS316
Body B	SUS316
End A	SUS316
End B	SUS316
Element	SUS316
Packing	PTFE

Dimensions, Ordering No.

Nominal Diameter	Nut Threads (valve body side)	Collar Threads (tube side)	D	B	Interfacial Distance		Mass (approx.) (kg)	Ordering No.
					L1	L2		
6.35	9/16-18UNF	(Left)1/4-28UNF	2.4	17	84	108	2	UFL-7100-6.35-*1-N28.5-CN
9.52	3/4-16UNF	(Left)3/8-24UNF	3.2	22	100	132	2.4	UFL-7100-9.52-*1-N28.5-CN
14.2	1 1/8-12UNF	(Left)9/16-18UNF	4.8	30	100	146	2.4	UFL-7100-14.2-*1-N28.5-CN

*: 60,000 psi (also make 40,000 psi type) *1: Filter particle size (in microns) goes here

50 MPa Line Check Valves



Features

1. Compact, in-line type
2. Little pressure drop due to optimal flow pass

Specifications

Design Pressure	50 MPa
Design Temperature	85 °C
Fluid Temperature Range	-40 to +85 °C*1

Cracking Pressure:	Max of 6.86 kPa
Range of Use	
Differential Pressure (Counter Pressure):	Min of 10 MPa

*1: Please consults for remove -253 °C (liquid hydrogen temperature).

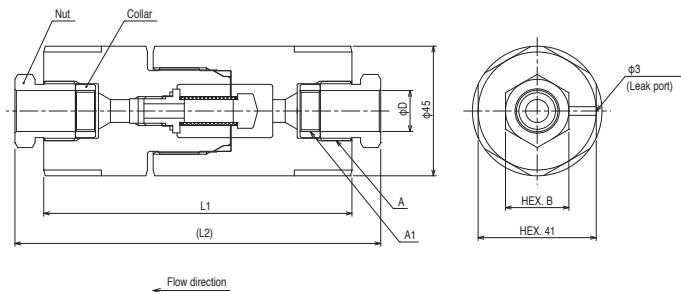
Materials

Part	Materials
Body A	SUS316
Body B	SUS316
Disc	SUS316
Spring	SUS316

Dimensions, Ordering No.

Nominal Diameter D	Nut Threads (filter body side) A	Collar Threads (tube side) A1	B	Interfacial Distance		Mass (approx.) (kg)	Ordering No.
				L1	L2		
6.35	7/16-20UNF	(Left)1/4-28UNF	14	89	107	0.9	UCL-750-6.35-N28.5-CN
9.52	9/16-18UNF	(Left)3/8-24UNF	17	89	107	1.1	UCL-750-9.52-N28.5-CN
14.2	13/16-16UN	(Left)9/16-18UNF	22	89	109	1.0	UCL-750-14.2-N28.5-CN

50 MPa Filters



Features

1. Compact, in-line type
2. Little pressure drop due to optimal flow pass
3. Filter size from 2, 5 and 10 μm

Specifications

Design Pressure	50 MPa
Design Temperature	85 °C
Fluid Temperature Range	-40 to +85 °C

Materials

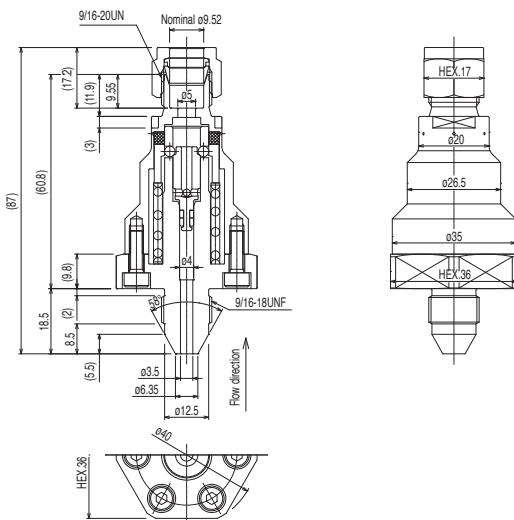
Part	Materials
Body A	SUS316
Body B	SUS316
End A	SUS316
End B	SUS316
Element	SUS316
Packing	PTFE

Dimensions, Ordering No.

Nominal Diameter D	Nut Threads (valve body side) A	Collar Threads (tube side) A1	B	Interfacial Distance		Mass (approx.) (kg)	Ordering No.
				L1	L2		
6.35	7/16-20UNF	(Left)1/4-28UNF	14	107	125	1.1	UFL-750-6.35-★1-N28.5-CN
9.52	9/16-18UNF	(Left)3/8-24UNF	17	107	125	1.3	UFL-750-9.52-★1-N28.5-CN
14.2	13/16-16UN	(Left)9/16-18UN	22	107	127	1.2	UFL-750-14.2-★1-N28.5-CN

*1: Filter particle size (in microns) goes here

Pressure Relief Device (PRD)



Specifications (example)

Design Pressure	95 MPa
Design Temperature	85 °C

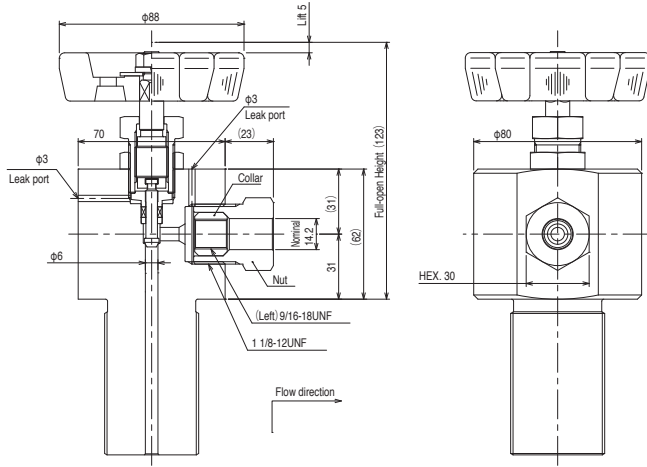
Materials (example)

Parts	Materials
Body A	SUS316L
Disc	SUS316L

This safety valves can be produced by any materials conforming to applicable standards.

Ordering No. URF-795-6.35-DSH (example)

Container Valves



Features

1. Compact and with Durable Manual Valves
2. We will produce an interface with a container in the specified shape.

Specifications

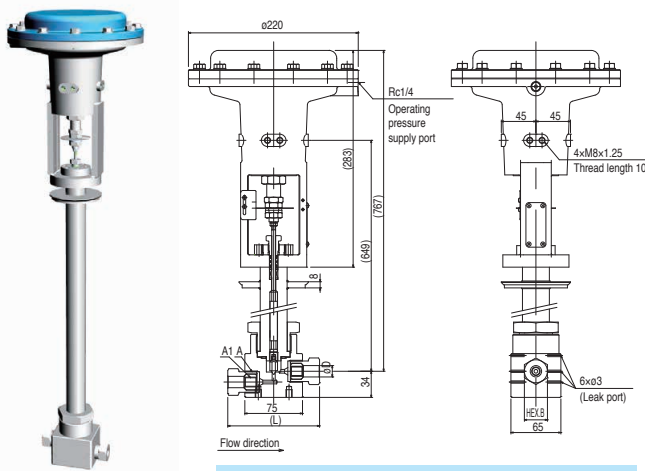
Design Pressure	99.9 MPa
Design Temperature	85 °C
Fluid Temperature Range	-40 to +85 °C
Cv	0.85

Materials

Part	Materials
Body	SUS316
Disc	SUH660
Stem	SUS316
Gland Packing	PVDF+PFA
Gland Nut	SUS316
Handle	ADC12

- **Ordering No.** UH-8100-14.2-40-N28.5-*** (example)

Ultra Low Temperature Valves for Liquefied Hydrogen (Automatic Operation Valves)



Manual Valves and Check Valves for low temperature are also available.

Features

1. Allows control of ultra high-pressure hydrogen
2. Also compatible with smart positioner (communications capable) equipped types

Specifications

Design Pressure	99.9 MPa
Design Temperature	85 °C
Fluid Temperature Range	-253 to +85 °C

Materials

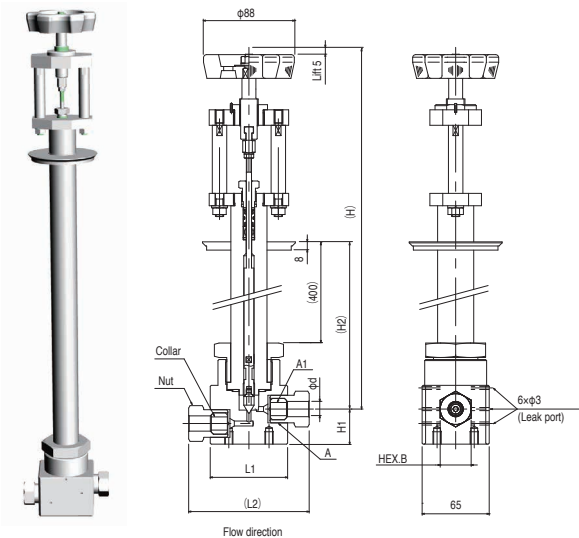
Parts	Materials
Body	SUS316
Disc	SUS316+Ni-Cr alloy
Stem	SUH660
Gland Packing	PVDF+PFA
Gland Nut	SUS316

- **Other Stop Valves without positioner also available.**

Dimensions, Ordering No.

Nominal Diameter *	Nut Threads (valve body side)	Collar Threads (tube side)	L Collar and nut insertion reference dimensions	HEX.B	Cv Value MAX.	Ordering No.
6.35	9/16-20UNF	(Left)1/4-28UNF	99	17	0.1	M2R2-7100CW-6.35-28.5-CN
9.52	3/4-16UNF	(Left)3/8-24UNF	107	22	0.15	M2R2-7100CW-9.52-28.5-CN
14.2	1 1/8-12UNF	(Left)9/16-18UNF	121	30	0.5	M2R2-7100CW-14.2-28.5-CN

Ultra Low Temperature Valves for Liquefied Hydrogen (Manual Valves)



Features

1. Allows control of ultra high-pressure hydrogen

Specifications

Design Pressure	99.9 MPa
Design Temperature	85 °C
Fluid Temperature Range	-253 to +85 °C

Materials

Parts	Materials
Body	SUS316
Disc	SUS316+Ni-Cr alloy
Stem	SUH660
Gland Packing	PVDF+PFA
O-ring	HNBR

Dimensions, Ordering No.

Nominal Diameter D1 *	Nut Threads (valve body side)	Collar Threads (tube side)	Interfacial Distance	Full-open Height	B	H1	H2	Cv Value MAX.	Ordering No.
6.35	9/16-18UNF	(Left)1/4-28UNF	L1 70 L2 94	H 643	17	20	400	0.15	ULH-7100C-6.35-010-N28.5-CN
9.52	3/4-16UNF	(Left)3/8-24UNF	L1 70 L2 102	H 643	22	20	400	0.25	ULH-7100C-9.52-009-N28.5-CN
14.2	1 1/8-12UNF	(Left)9/16-18UNF	L1 75 L2 121	H 646	30	34	464	0.5	ULH-7100C-14.2-007-N28.5-CN

*: 60,000 psi (also make 40,000 psi type)

Fittings

Features

1. Metal seal construction, extremely airtight.
2. No need to weld due to screwed to tube end.

Note: Please refer to No.5-6 on page 10 for dimensions and precision of tube threading and cone machining.

Specifications

Maximum operating pressure and temperature are changeable according to the materials and thickness of the tubes. Please contact **Fujikin** before ordering.



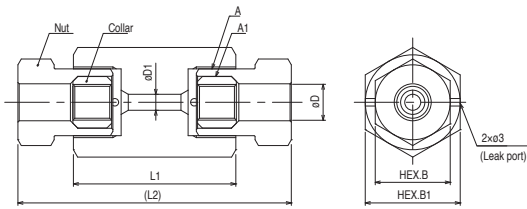
UJUN Type (Max. Working Pressure 99.9 MPa Over)

Coned-and-threaded Connection High-Pressure (HP) Type

Body

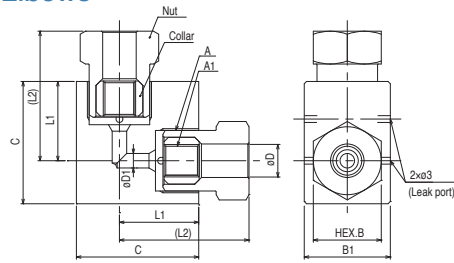
Note 1: Nominal diameter 6.35 and 9.52 are for the 60,000 psi type, and nominal diameter 14.2 is for the 40,000 psi type.
 Note 2: A nominal diameter of 14.2 for the 60,000 psi type is also manufactured. Please specify your preference when ordering.

Straight Union



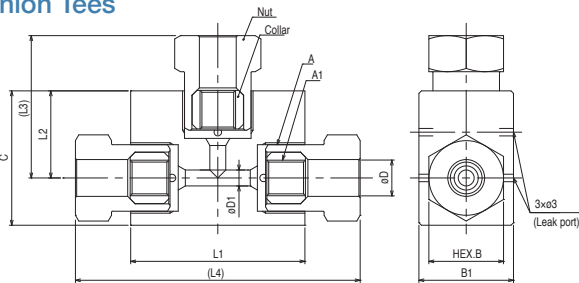
Tube Outer Diameter D	Nut Thread A	Tube Thread A1	L1	L2	D1	B	B1	Ordering No.
6.35	9/16-18UNF	(Left)1/4-28UNF	40	64	2.4	17	24	UJUN-F-6.35-N28.5-CN
9.52	3/4-16UNF	(Left)3/8-24UNF	55	87	3.2	22	27	UJUN-F-9.52-N28.5-CN
14.2	1-1/8-12UNF	(Left)9/16-18UNF	65	111	6.4	30	38	UJUN-F-14.2-40-N28.5-CN

Union Elbows



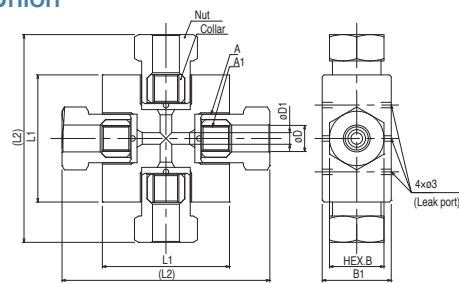
Tube Outer Diameter D	Nut Thread A	Tube Thread A1	C	L1	L2	D1	B	B1	Ordering No.
6.35	9/16-18UNF	(Left)1/4-28UNF	34.5	22.5	34.5	2.4	17	24	UJUN-L-6.35-N28.5-CN
9.52	3/4-16UNF	(Left)3/8-24UNF	41	27.5	43.5	3.2	22	27	UJUN-L-9.52-N28.5-CN
14.2	1-1/8-12UNF	(Left)9/16-18UNF	54	35	58	6.4	30	38	UJUN-L-14.2-40-N28.5-CN

Union Tees



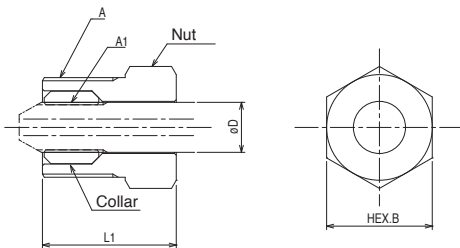
Tube Outer Diameter D	Nut Thread A	Tube Thread A1	C	L1	L2	L3	L4	D1	B	B1	Ordering No.
6.35	9/16-18UNF	(Left)1/4-28UNF	34.5	45	22.5	34.5	69	2.4	17	24	UJUN-T-6.35-N28.5-CN
9.52	3/4-16UNF	(Left)3/8-24UNF	41	55	27.5	43.5	87	3.2	22	27	UJUN-T-9.52-N28.5-CN
14.2	1-1/8-12UNF	(Left)9/16-18UNF	54	70	35	58	116	6.4	30	38	UJUN-T-14.2-40-N28.5-CN

Cross Union



Tube Outer Diameter D	Nut Thread A	Tube Thread A1	L1	L2	D1	B	B1	Ordering No.
6.35	9/16-18UNF	(Left)1/4-28UNF	45	69	2.4	17	24	UJUN-X-6.35-N28.5-CN
9.52	3/4-16UNF	(Left)3/8-24UNF	55	87	3.2	22	27	UJUN-X-9.52-N28.5-CN
14.2	1-1/8-12UNF	(Left)9/16-18UNF	70	116	6.4	30	38	UJUN-X-14.2-40-N28.5-CN

Collar & Nut



Tube Outer Diameter D	Nut Thread A	Tube Thread A1	L1	B	Ordering No.
6.35	9/18-18UNF	(Left)1/4-28UNF	21	17	UJUN-6.35CN
9.52	3/4-16UNF	(Left)3/8-24UNF	29	22	UJUN-9.52CN
14.2	1 1/8-12UNF	(Left)9/16-18UNF	38	30	UJUN-14.2CN

Materials

Parts	Materials
Body	SUS316
Nut	ASTM A276 316 *
Collar	ASTM A276 316 *

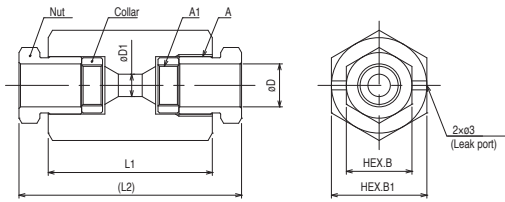
*: for Nominal diameter 14.2, we use JIS-compliant materials.

UJU Type (Max. Working Pressure 50 MPa)

Coned-and-threaded Connection Medium Pressure (MP) Type

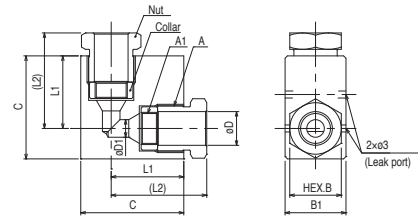
Body

■ Straight Union



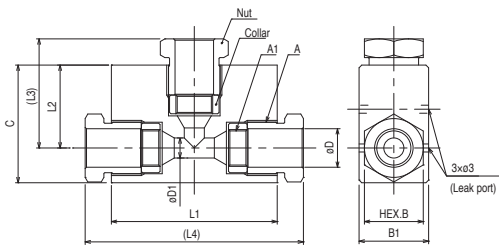
Tube Outer Diameter D	Nut Thread A	Tube Thread A1	L1	L2	D1	B	B1	Ordering No.
6.35	7/16-20UNF	(Left)1/4-28UNF	35	53	2.8	14	19	UJU-F-6.35-N28.5-CN
9.52	9/16-18UNF	(Left)3/8-24UNF	45	63	3.5	17	26	UJU-F-9.52-N28.5-CN
14.2	13/16-16UN	(Left)9/16-18UNF	55	75	7.5	22	32	UJU-F-14.2-N28.5-CN

■ Union Elbows



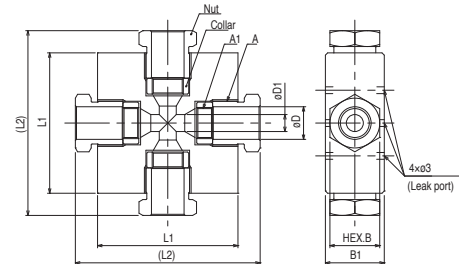
Tube Outer Diameter D	Nut Thread A	Tube Thread A1	L1	L2	D1	C	B	B1	Ordering No.
6.35	7/16-20UNF	(Left)1/4-28UNF	20	29	2.8	29	14	18	UJU-L-6.35-N28.5-CN
9.52	9/16-18UNF	(Left)3/8-24UNF	25.5	34.5	3.5	36	17	20	UJU-L-9.52-N28.5-CN
14.2	13/16-16UN	(Left)9/16-18UNF	31	41	7.5	44	22	26	UJU-L-14.2-N28.5-CN

■ Union Tees



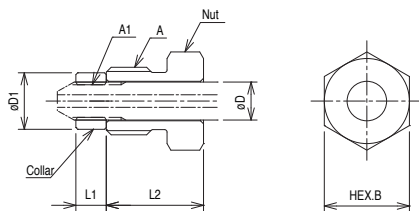
Tube Outer Diameter D	Nut Thread A	Tube Thread A1	L1	L2	L3	L4	D1	C	B	B1	Ordering No.
6.35	7/16-20UNF	(Left)1/4-28UNF	40	20	29	58	2.8	29	14	18	UJU-T-6.35-N28.5-CN
9.52	9/16-18UNF	(Left)3/8-24UNF	51	25.5	34.5	69	3.5	36	17	20	UJU-T-9.52-N28.5-CN
14.2	13/16-16UN	(Left)9/16-18UNF	62	31	41	82	7.5	44	22	26	UJU-T-14.2-N28.5-CN

■ Cross Union



Tube Outer Diameter D	Nut Thread A	Tube Thread A1	L1	L2	D1	B	B1	Ordering No.
6.35	7/16-20UNF	(Left)1/4-28UNF	40	58	2.8	14	18	UJU-X-6.35-N28.5-CN
9.52	9/16-18UNF	(Left)3/8-24UNF	51	69	3.5	17	20	UJU-X-9.52-N28.5-CN
14.2	13/16-16UN	(Left)9/16-18UNF	62	82	7.5	22	26	UJU-X-14.2-N28.5-CN

Collar & Nut



Tube Outer Diameter D	Nut Thread A	Tube Thread A1	D1	L1	L2	B	Ordering No.
6.35	7/16-20UNF	(Left)1/4-28UNF	9.2	5	16	14	UJU-6.35CN
9.52	9/16-18UNF	(Left)3/8-24UNF	12.2	5.5	18	17	UJU-9.52CN
14.2	13/16-16UN	(Left)9/16-18UNF	18.5	7	21	22	UJU-14.2CN

Materials

Parts	Materials
Body	SUS316
Nut	SUS316
Collar	ASTM A276 316 *

*: for Nominal diameter 9.52 and 14.2, we use JIS-compliant materials.

Piping Installation Guidelines

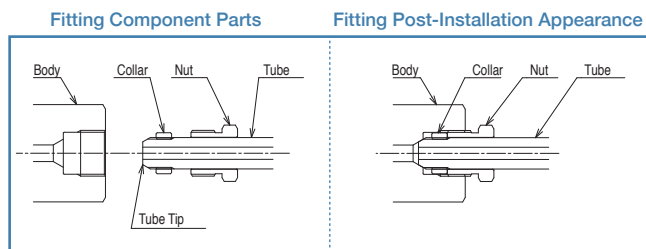
1. Introduction

- 1-1. Our stainless steel high pressure and medium pressure fittings are carefully designed and manufactured, and subjected to strict quality control, down to the smallest detail utilizing the technical expertise we have built up over many years as precision fittings manufacturers, and we therefore ask that care be taken when installing and utilizing those products.
- 1-2. Any installation of piping utilizing stainless steel high pressure and medium pressure fittings should be carried out by a person or persons thoroughly familiar and experienced with those fittings.
- 1-3. Stainless steel high pressure and medium pressure fittings should not be used in locations subject to excessively repetitive conditions, vibrations, impacts, pulsations, etc.
- 1-4. Customers who will be repeatedly using the same product should inform **Fujikin** when there is a change in usage condition or method in order to avoid any problems before they arise.

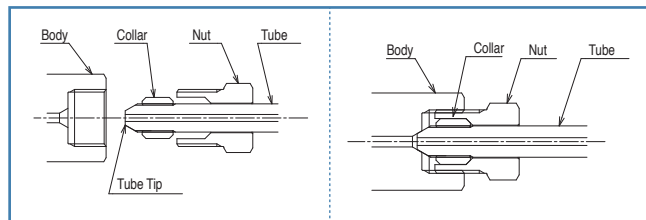
2. Basic Structural Overview

- 2-1. The fittings have concentric conical-shaped body and tube seal sections as well as a precisely finished surface, making them highly airtight coned-and-threaded-type fittings which also utilize a metallic seal method.
- 2-2. The basic structural components are comprised of a stainless steel body, collars, nuts and connecting tubes.
- 2-3. The sealing principle of the fittings involves tightening the nuts using a wrench, etc., to tightly affix the cone tip-processed tube to the body.

■ Fitting Structural Drawing



UJU-N28.5 Type



UJUN-N28.5 Type

3. Design Specifications

3-1. Maximum Operating Pressure, Temperature Range

Medium pressure fitting (Part No.: UJU-N28.5):

Max. 50 MPa, -40°C to +250°C *

High pressure fitting (Part No.: UJUN-N28.5):

Max. 110 MPa, -40°C - +250°C *

*: Varies according to the materials and thickness of the tubes used.
Please contact **Fujikin** before ordering.

3-2. Body Material

SUS316

3-3. Nominal Diameter 6.35, 9.52, 14.2

3-4. Hydrogen gas and other gases and liquids which are non-corrosive to stainless steel, and which are the primary constituent material, may be used.

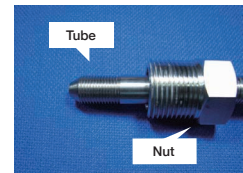


4. Important Considerations for Selections

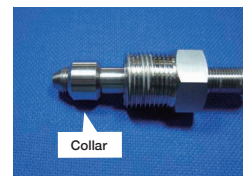
Incorrect device selection and handling can lead to system problems and accidents. It is therefore important to fully consider the compatibility of devices with the systems in which they are used, as well as the conditions under which they are used, as the authority and responsibility for device selection left up to the customer. Also, it is important to have a full understanding of the specification range of a given device before utilizing it.

5. Fitting Installation Guidelines (Installation guidelines are the same for UJUN and UJU)

- 5-1. Assemble the parts of the fitting according to each step as below. Perform cone processing of the tube tip according to the figure on the next page.

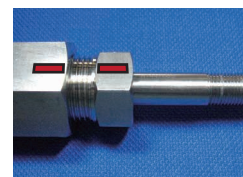


- 5-2. Put the nut onto the tube and then affix the threaded section of the tube tip to the collar. (The tube threading is left-handed.) Please remember this when affixing.)
Apply a small amount of fluorinated grease to the tube tip.

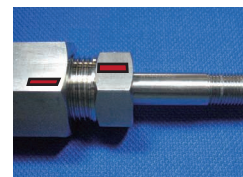


- 5-3. Screw the collar with your fingers until it cannot turn any further and one or two thread ridges are visible on the tube tip side.

- 5-4. Screw the tube and nut together into the fitting (valve) body. Then, put a match marking * on the body and the nut. This represents the zero point for tightening. (*: The red lines in the photograph)

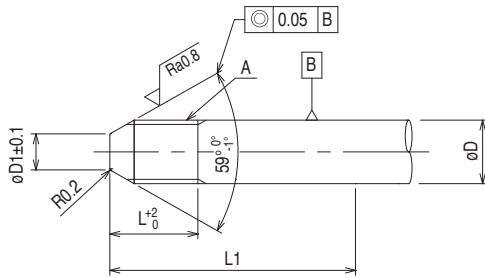


- 5-5. Using a wrench, tighten the nut by a 1/8 - 1/6 turn from the zero point. (When tightening the nut, always make sure to hold the body in place.)
No further tightening is needed.



Nominal Diameter	Tightening Torque (N·m)	
	UJUN Type High Pressure (HP) Type	UJU Type Medium Pressure (MP) Type
6.35	21	14
9.52	43	25
14.2	90	40

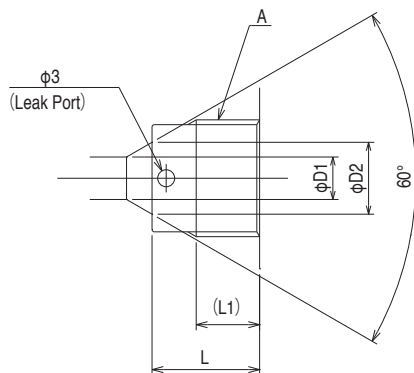
5-6. Tube Tip Processing Dimensions



Nominal Diameter D	Fitting Types (psi)	Tube Tip Processing Dimensions			Required Min. Straight Tube Length ★3	Accessory Part No. ★4	
		A ★2	D1	L		Collar	Nut
6.35	20,000	(Left)1/4-28UNF	3.6	8.8	35	UJU-6.35C	UJU-6.35N-EFP
9.52	20,000	(Left)3/8-24UNF	6.4	11.2	40	UJU-9.52C	UJU-9.52N-AFS
14.2	20,000	(Left)9/16-18UNF	10.3	12.7	50	UJU-14.2C	UJU-14.2N
6.35	60,000	(Left)1/4-28UNF	3.2	14.3	40	UJUN-6.35C	UJUN-6.35N
9.52	60,000	(Left)3/8-24UNF	5.6	19.1	50	UJUN-9.52C	UJUN-9.52N
14.2	40,000	(Left)9/16-18UNF	7.9	24	70	UJU-14.2C	UJU-14.2N
	60,000		7.2	24			

- ★1: After cutting the tube with an appropriate tool, please perform tube tip as above to the above length.
- ★2: Regarding thread grade, processing should be performed at 2A or higher.
- ★3: When bending tube, please keep straight tube above length as L1 or more.
- ★4: If you use other parts, please consult with **Fujikin** in advance.
- ★: Please consult with **Fujikin** about coned-and-threaded machining also.

5-7. Mechanical Finished Dimensions (Female Thread Side)



Nominal Dia.	Fitting Types	A	L	L1	D1	D2
6.35	20,000psi	7/16-20UNF	12.7	7.1	2.8	4.8
9.52	20,000psi	9/16-18UNF	15.8	9.7	3.5	7.9
14.2	20,000psi	13/16-16UN	19	11.2	7.5	12.7
6.35	60,000psi	9/16-18UNF	11.2	9.7	2.4	4.3
9.52	60,000psi	3/4-16UNF	15.8	13.5	3.2	6.6
14.2	40,000psi	1-1/8-12UNF	19.1	15.8	4.8	9.7
	60,000psi				6.4	



6. Caution Regarding Installation

- 6-1. Please use tubes and fittings without scratches in the tube end and sealing area of fittings.
- 6-2. After cutting the tube, please remove burr of the cut cross-section; also, make sure the cross-section is at a right angle to the long axis of the tube.

7. Removal and Re-tightening Procedure

- 7-1. To remove, use a wrench or other appropriate tool to turn the nut half-rotations in a anti-clockwise direction.
- 7-2. When re-tightening, the guidelines are exactly the same as those given in Item 5.

Note 1: If you accidentally drop the fitting part, please check the body and tube seal section for scratches or any adhering material before using.

If a scratch is discovered, please replace the part, because it will cause leakage.

If adhering material is discovered, lightly wipe the part with a clean cloth until the material is completely removed.

Do not use an organic solvent when cleaning, as this will also remove the lubricant from the seal section.

Note 2: Please make sure to use a suitable wrench to a hexagonal nut.

Note 3: When disassembling, please protect the sealing part of fittings to avoid scratch.



8. Caution After Piping

- 8-1. After piping, check all sections again to ensure that joined sections are not loose and that fittings are mounted in the prescribed manner.
- 8-2. After the stainless steel high-pressure/medium-pressure fittings and tube are joined, the person performing installation should conduct a final check of overall air-tightness.
- 8-3. If you change tube orientation after all joining has been completed, only do so after first loosening the nut. Adjusting the tube's orientation without first loosening the nut can scratch the fitting seal's surface.
- 8-4. When purging gas, ensure beforehand that the nut is not loose. Loosening the nut when the system is under high pressure can result in a sudden and dangerous venting of the liquid inside the system from the spaces between the body leak port and the nut and sleeve.



9. Troubleshooting Here

Proper installation of this fitting will ensure no leakage occurs; however, performing installation in locations where it is difficult to assemble and joins parts or which are at an extreme angle can, on rare occasions, result in leakage.

In such cases, first release the pressure and then perform a 1/16th turn tightening. If this does not resolve the problem, release the pressure again, disassemble the fitting, check the body and tube tip seal surfaces for scratches or adhering material, and then re-tightening the fitting according to the guidelines.

If a scratch is discovered, please replace the part, as not doing so could result in leakage.

If adhering foreign matter is discovered, lightly wipe the part with a clean cloth until it is completely removed. Do not use an organic solvent or other agent when cleaning, as this will also remove the lubricant from the seal section.

Adapters

Features

1. Metal seal construction makes it extremely airtight
2. No need to weld due to screwed to tube end.

Note: Please refer to No.5-6 at page 10 for dimensions and precision of tube threading and cone machining.

Specifications

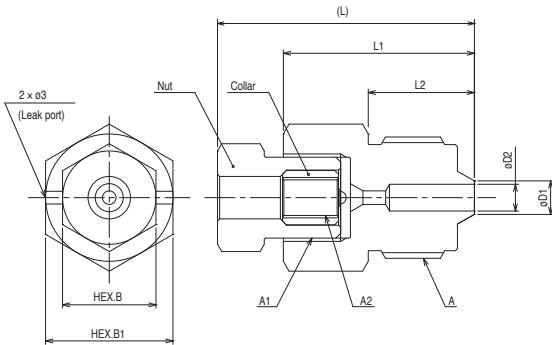
Maximum operating pressure and temperature are changeable according to the materials and thickness of the tubes. Please contact **Fujikin** before ordering.

Materials

Part	Materials
Body	SUS316
Nut	ASTM A276 316 *
Collar	ASTM A276 316 *

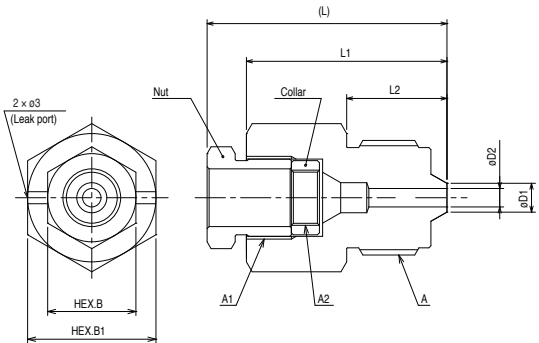
*: JIS-compliant materials are used for nominal diameter 14.2.

Male (HP) × Female (HP)



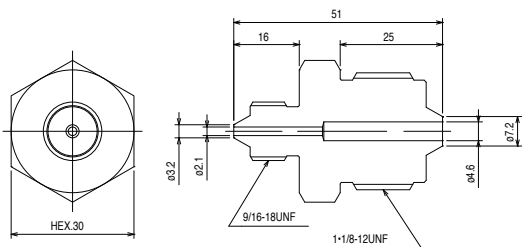
Nominal Diameter 1	Thread A	Nominal Diameter 2	Body Thread A1	Tube Thread A2	L	L1	L2	D1	D2	B	B1	Ordering No.
14.2	1-1/8-12UNF	6.35	9/16-18UNF	(Left)1/4-28UNF	52	40	25	7.9	6.3	17	30	UJB-14.2HPX6.35HP-N28.5-CN
14.2	1-1/8-12UNF	9.52	3/4-16UNF	(Left)3/8-24UNF	61	45	25	7.9	6.3	22	30	UJB-14.2HPX9.52HP-N28.5-CN

Male (HP) × Female (MP)



Nominal Diameter 1	Thread A	Nominal Diameter 2	Body Thread A1	Tube Thread A2	L	L1	L2	D1	D2	B	B1	Ordering No.
6.35	9/16-18UNF	6.35	7/16-20UNF	(Left)1/4-28UNF	45	36	16	3.2	2.1	14	21	UJB-6.35HPX6.35MP-N28.5-CN
9.52	3/4-16UNF	9.52	9/16-18UNF	(Left)3/8-24UNF	49	40	20	5.6	3.2	17	24	UJB-9.52HPX9.52MP-N28.5-CN
14.2	1-1/8-12UNF	14.2	13/16-16UN	(Left)9/16-18UNF	55	45	25	7.2	4.6	22	30	UJB-14.2HPX14.2MP-N28.5-CN

Male (HP) × Male (HP) (Different Diameter)



Ordering No.	UJN-14.2HPX6.35HP-N28.5
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Note: Please consult **Fujikin** about different connections.

UPG® High Performance Metal Gasket Fittings for Ultra High-Pressure Hydrogen Gas



Features

1. Superior Reliability

- Ultimate leak rate: less than 1/1000 trillion cc per second (less than 1cc per 30 million years!)
- Seal integrity guaranteed even after 100 removals and assembly. (Gasket replacement is recommended for production line)

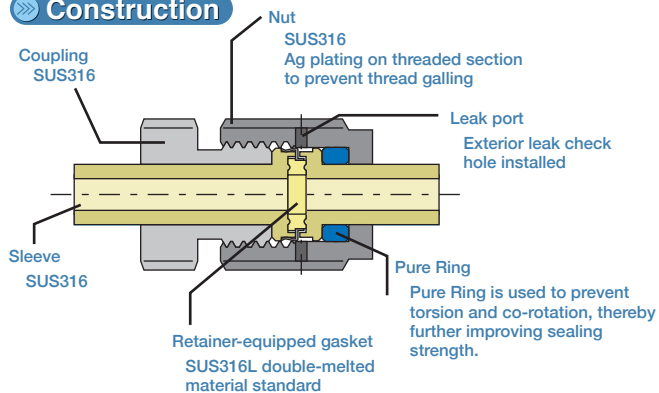
2. Superior Installation and Operability

- Axial space not needed for device removal/assembly.
- Installation guidelines allow for torque management in addition to rotation management; has a built-in over-tightening prevention mechanism

3. Superior Scalability

- Offers a broad range of applications, from ultra high pressure to high vacuum and ultra-low temperature
- Enhanced resistance to vibration effects thanks to a separation of the seal section and the section receiving external pressure

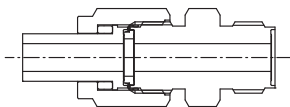
Construction



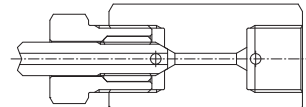
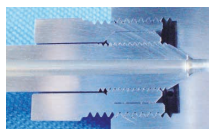
Comparison with Coned-and-threaded connection

Construction

UPG®

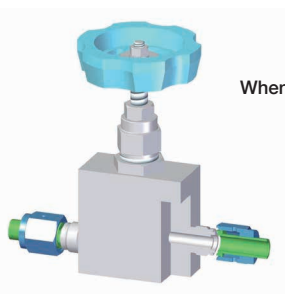


Coned-and-threaded connection

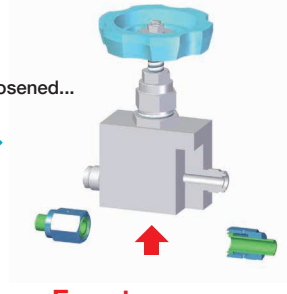


Removability

UPG®

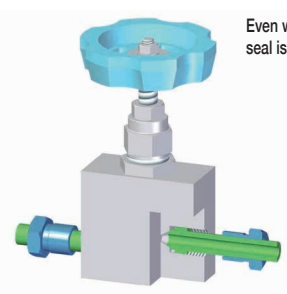


When nut is loosened...



Easy to remove

Coned-and-threaded connection



Even when the nut is loosened, the tip of the fitting seal is narrow and requires extra space to be removed.



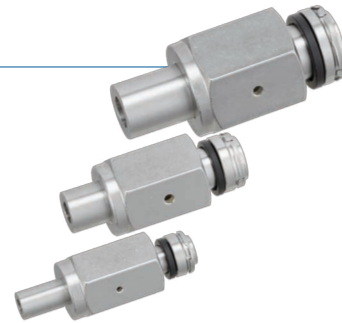
Difficult to remove



Max. Working Pressure 95 MPa

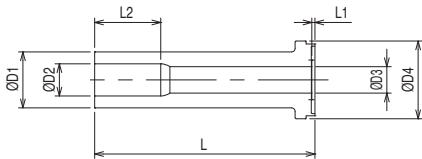
Specifications and Materials

Pressure Range	Vacuum - 95 MPa (planned expansion up to 99.9 MPa)
Temperature Range	-45 to +250 °C
Nominal Diameter	6.35, 9.52, 12.7
Main Materials	Fluid contact section SUS316



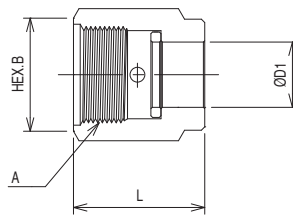
Dimensional Drawings

Sleeve



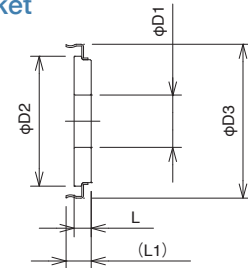
Nominal Diameter D1	D2	D3	D4	L	L1	L2	Ordering No.
6.35	3.5	3.2	9.75	50	0.7	15	UPG-6.35S-95M-L50-HRX19
9.52	5.12	4.35	12.95	50	0.7	15	UPG-9.52S-95M-L50-HRX19
12.7	7.3	6	17.7	50	0.7	15	UPG-12.7S-95M-L50-HRX19

Nut



Nominal Diameter	D	A	B	L	Ordering No.
6.35	6.5	7/16-20UNEF	14	21.5	UPG-6.35N-95M
9.52	9.7	9/16-20UNF	17	22.5	UPG-9.52N-95M
12.7	12.9	3/4-20UN	22	25	UPG-12.7N-95M

Gasket



Nominal Diameter	D1	D2	D3	L	L1	Ordering No.
6.35	3.2	7.5	9.8	1.96	2.48	UPG-6.35G-95M
9.52	4.35	10.9	12.95	1.96	2.88	UPG-9.52G-95M
12.7	6	14.9	17.65	1.96	2.88	UPG-12.7G-95M

Max. Working Pressure 50 MPa

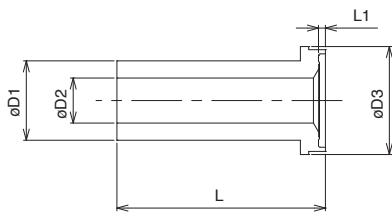
Specifications and Materials

Pressure Range	Vacuum - 50 MPa
Temperature Range	-45 to +250 °C
Nominal Diameter	6.35, 9.52, 12.7
Main Materials	Fluid contact section SUS316



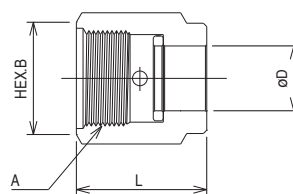
Dimensional Drawings

Sleeve



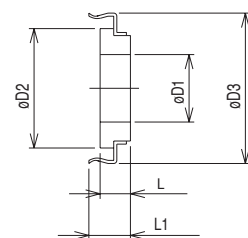
Nominal Diameter D1	D2	D3	L	L1	Ordering No.
6.35	3.9	9.8	23	0.7	UPG-6.35S-L23-50M-N28.5
9.52	5.4	13	25	0.7	UPG-9.52S-L25-50M-N28.5
12.7	8	17.7	28.5	0.7	UPG-12.7S-L28-50M-N28.5

Nut



Nominal Diameter	D	A	B	L	Ordering No.
6.35	6.5	7/16-20UNF	14	17.5	UPG-6.35N-50M
9.52	9.7	9/16-20UNF	17	19.5	UPG-9.52N-50M
12.7	12.9	3/4-20UNEF	22	23	UPG-12.7N-50M

Gasket



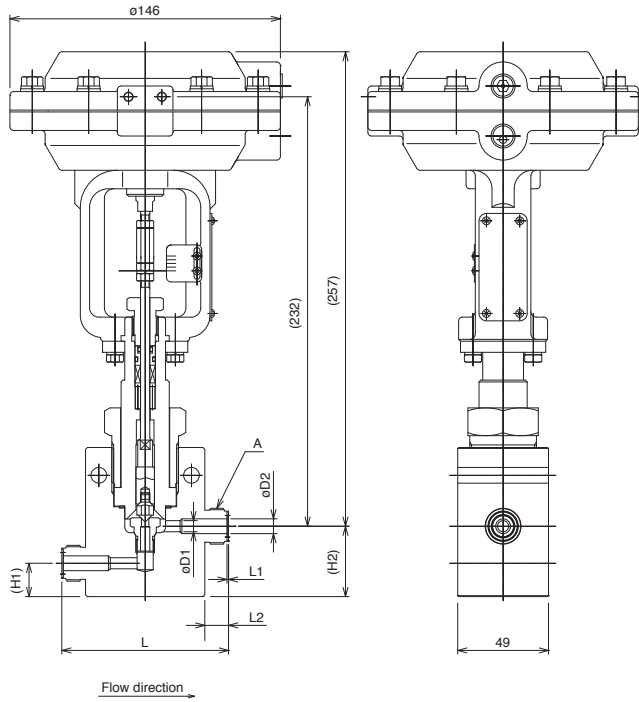
Nominal Diameter	D1	D2	D3	L	L1	Ordering No.
6.35	4.4	7.5	9.8	1.96	2.48	UPG-6.35G
9.52	7.5	10.9	12.95	1.96	2.88	UPG-9.52G
12.7	10.2	14.9	17.65	1.96	2.88	UPG-12.7G

Automatic Valves, Manual Valves with UPG® Fittings

Features

1. Fittings are installed without load for surrounding piping by adopting unique metal gasket-type.

Automatic Valve



Specifications

Design Pressure	50 MPa
Design Temperature	85 °C
Fluid Temperature Range	-40 to +85 °C

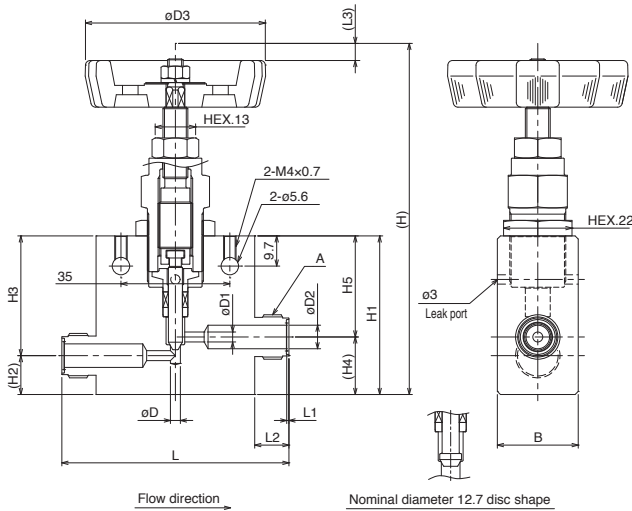
Materials

Parts	Materials
Body	SUS316
Seat	SUS316+Co base alloy
Disc	SUS316+Co base alloy
Stem	SUS316
Gland Packing	PFA+PVDF
O-ring	HNBR

Dimensions, Ordering No.

Nominal Diameter	Connection				Thread	Interfacial Distance	H1	H2	Cv Value MAX.	Mass (approx.) (kg)	Ordering No.
	D1	D2	L1	L2							
6.35	2.8	3.9	0.83	10	7/16-20UNF	85	36	18	0.15	4	M3R4-750-6.35UPG-N28.5
9.52	3.2	5.4	0.83	11	9/16-20UN	87	36	18	0.15	4	M3R4-750-9.52UPG-N28.5
12.7	6	8	0.83	12.8	3/4-20UNEF	90	38	18	0.5	4	M3R4-750-12.7UPG-N28.5

Manual Valve



Specifications

Design Pressure	50 MPa
Design Temperature	85 °C
Fluid Temperature Range	-40 to +85 °C

Materials

Parts	Materials
Body	SUS316
Disc	SUH660
Stem	SUS316
Gland Packing	PVDF+PFA
Gland Nut	SUS316
Handle	ADC12

Dimensions, Ordering No.

Nominal Diameter	Orifice Diameter	Nut connection					Thread	Interfacial Distance	Full-open Height	Lift	Handle Diameter	B	H1	H2	H3	H4	H5	Cv Value MAX.	Mass (approx.) (kg)	Ordering No.
		D	D1	D2	L1	L2														
6.35	3.2	2.8	3.9	0.7	10	7/16-20UNF	71	113	5	58	26	51	12.5	38.5	18.5	32.5	0.18	0.7	UH-750L-6.35UPG-N28.5	
9.52	3.2	3.2	5.4	0.7	11	9/16-20UN	73	113	5	58	26	51	12.5	38.5	18.5	32.5	0.23	0.7	UH-750L-9.52UPG-N28.5	
12.7	6	6	8	0.7	12.8	3/4-20UNEF	78	121	5	68	26	57	15	42	26	31	0.85	0.85	UH-750L-12.7UPG-N28.5	

Line Check Valves, Filters with UPG® Fittings

50 MPa Line Check Valves

Features

1. Compact, in-line type
2. Little pressure drop to optimal flow pass

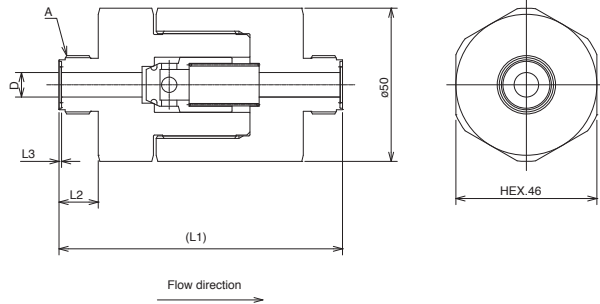
Specifications

Design Pressure	50 MPa
Design Temperature	85 °C
Fluid Temperature Range	-40 to +85 °C

Cracking Pressure: max. 6.86 KPa
 Range of Use
 Flow Vol.: min. 40 m³/H (Normal)
 Differential Pressure
 (Counter Pressure): min. 10 MPa

Materials

Parts	Materials
Body A	SUS316
Body B	SUS316
Disc	SUS316+Co base alloy
Spring	SUS316



Dimensions, Ordering No.

Nominal Diameter	Nut connection			Thread	Interfacial Distance	Mass (approx.) (kg)	Ordering No.
	D	L2	L3				
6.35	3.9	10	0.7	7/16-20UNF	87	1	UCL-750-6.35UPG-N28.5
9.52	5.4	11	0.7	9/16-20UN	89	1.1	UCL-750-9.52UPG-N28.5
12.7	8	12.8	0.7	3/4-20UNEF	93	1.1	UCL-750-12.7UPG-N28.5

50 MPa Filters

Features

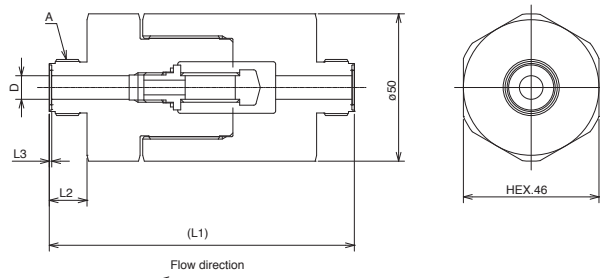
1. Compact, in-line type
2. Little pressure drop to optimal flow pass
3. Filter size from 2, 5 and 10 µm

Specifications

Design Pressure	50 MPa
Design Temperature	85 °C
Fluid Temperature Range	-40 to +85 °C

Materials

Parts	Materials
Body A	SUS316
Body B	SUS316
End A	SUS316
End B	SUS316
Element	SUS316
Packing	PTFE



Dimensions, Ordering No.

Nominal Diameter	Nut connection			Thread	Interfacial Distance	Mass (approx.) (kg)	Ordering No.
	D	L2	L3				
6.35	3.9	10	0.7	7/16-20UNF	98	1.1	UFL-750-6.35UPG-★-N28.5
9.52	5.4	11	0.7	9/16-20UN	100	1.2	UFL-750-9.52UPG-★-N28.5
12.7	8	12.8	0.7	3/4-20UNEF	104	1.2	UFL-750-12.7UPG-★-N28.5

★: Filter particle size (in microns) goes here

Various Change Couplers for UPG®

Specifications

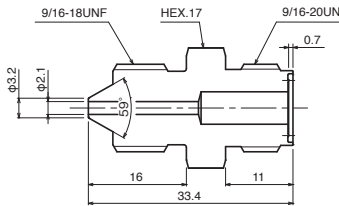
Maximum operating pressure and temperature are changeable according to the materials and thickness of the tubes. Please contact **Fujikin** before ordering.

Materials

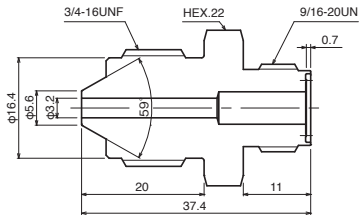
SUS316

UPG® x Coned-and-Threaded Connection (HP) Male Type

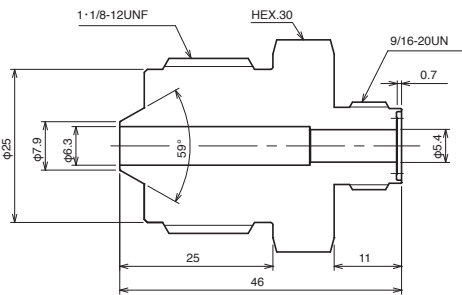
■ UPG-9.52X6.35HP-N28.5



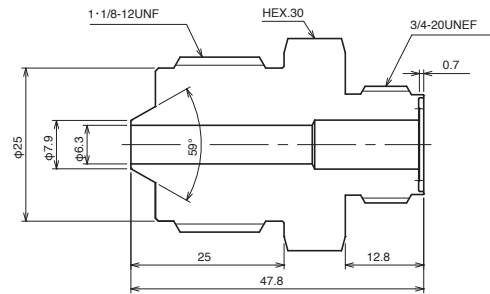
■ UPG-9.52X9.52HP-N28.5



■ UPG-9.52X14.2HP-N28.5

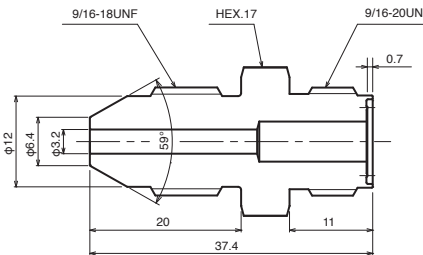


■ UPG-12.7X14.2HP-N28.5

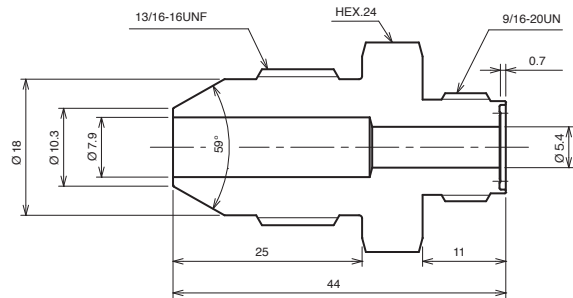


UPG® x Coned-and-Threaded Connection (MP) Male Type

■ UPG-9.52X9.52MP-N28.5



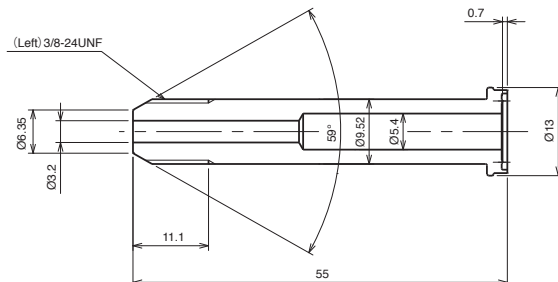
■ UPG-9.52X14.2MP-N28.5



Coned-and-Threaded Connection (MP) Female Type x UPG® Sleeve Type

■ UPG-9.52SX3/8-24UNF-50M-N28.5

A collar and a Nut for Coned-and threaded Connection Type, and a UPG® Female Nut are separate sale.



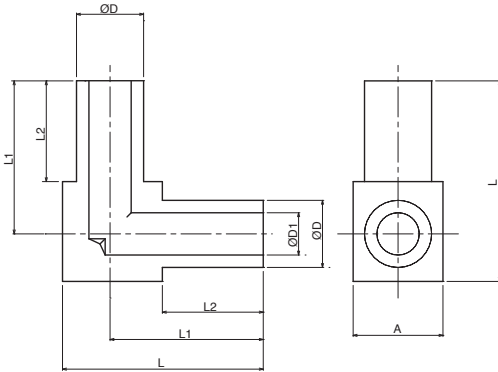
Note: Please consult **Fujikin** about different connections.

Weld Fittings

Specifications and Materials

Design Pressure	50MPa
Fluid Temperature Range	-40 to +85°C
Materials	SUS316

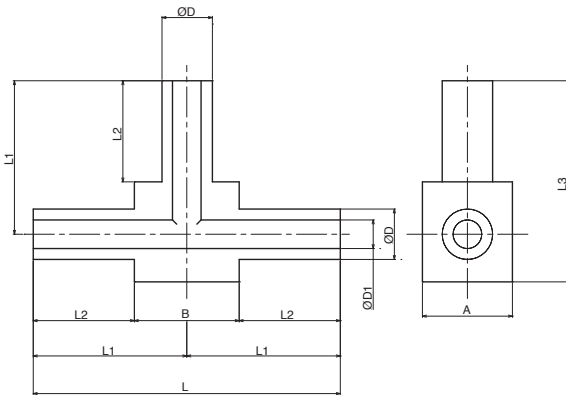
Weld Fittings-Elbow



Dimensions, Ordering No.

Nominal Diameter (D)	D1	L	L1	L2	A	Ordering No.
6.35	3.9	31	25	19.1	11	UJL-6.35-50M-N28.5
9.52	5.4	38	29	19.1	17	UJL-9.52-50M-N28.5
12.7	8	38	29	19.1	17	UJL-12.7-50M-N28.5

Weld Fittings-Tee



Dimensions, Ordering No.

Nominal Diameter (D)	D1	L	L1	L2	L3	A	B	Ordering No.
6.35	3.9	50	25	19.1	31	11	11.8	UJT-6.35-50M-N28.5
9.52	5.4	58	29	19.1	38	17	19.8	UJT-9.52-50M-N28.5
12.7	8	58	29	19.1	38	17	19.8	UJT-12.7-50M-N28.5

Note: Please consult **Fujikin** about different connections.

Fujikin will also proactively work overseas standard and certifications.

PROVIDER POWER UNIT

WHAT is PROVIDER?

0.7MPa Operating Air pressure which is available in any plant move the PISTON.



Discharge high pressure continuously
150MPa (N2 GAS)
500MPa (Liquid)
3 series(Model:JHP, MG, ML)

JHP series: Small body, compact (for Intermittent drive)

MG, ML series: for continuous drive

Specifications

Max. Discharge Pressure(MPa)	Operating Temperature(°C)
500 (Liquid)	5 - 40 *
150 (N2 Gas)	
Please contact us if you need other type of gases.	

*: Even more hotness is sometimes practicable by the gas kind, so please consult **Fujikin**

Features

- **Pressure Set:**
Once you set operation pressure between 0.1 - 0.7 MPa, automatically max. pressure is available.
- **Explosion Proof:**
as only air is use.
- **Wetted parts:**
Suitable material & oil free type is available.
- **Double action cylinder: discharge big volume outlet.**
- **Stable Action:**
Balancing of Inlet & outlet pressure keeps set pressure. No trouble against over load
- **Low Noise Drive:**
This system uses only air and use no motor. Silencer reduce the air vent noise.
- **Low Price:**
because of no motor like compressor type.



Please use in the room of temperature 5 - 40°C.

Products Line Up

PROVIDER series kept responding to the customer's needs, and the rich product line-up is made even.

JHP Series: Small, Compact, for intermittent drive.

MG, ML Series: For continuous drive, (Oil free, for liquid, etc.)



for Gas



for Liquid



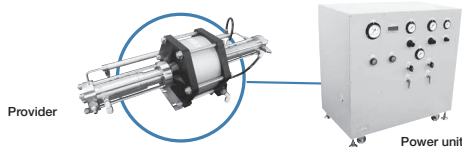
MG Series for GAS



ML Series
for Liquid/ Double action type

POWER UNIT

Equipped with all functions necessary to operating PROVIDER.



Power unit includes all necessary equipments to produce high pressure like:
Provider, Air-regulator, Air-filter, Pressure gauge, Exhaust & Inlet pressure control valves, strainer.

Compact ! Light Weight! Transportable !

APPLICATION

Typical Use Example

PROVIDER is using widely by the high performance beyond the expectation.

- Test under high pressure safety regulation for tank, pressure resistant, air tightness, destructive test.
- For test of plant piping, instrumentation line pressure resistant, air tightness.
- As test equipment for plant pressure gauge, bourdon gauge.
- For molding bellows, valve.
- For oil pressure equipment.
- For high pressure boost.

Fluid

Gases :

Air, N2, He, H2, O2, others

Liquids :

Water, Oil, Organic Solvent, (MNP, Methanol), etc.

When it's for gases besides Air and N₂, it'll be the different specification, so please consult **Fujikin**.

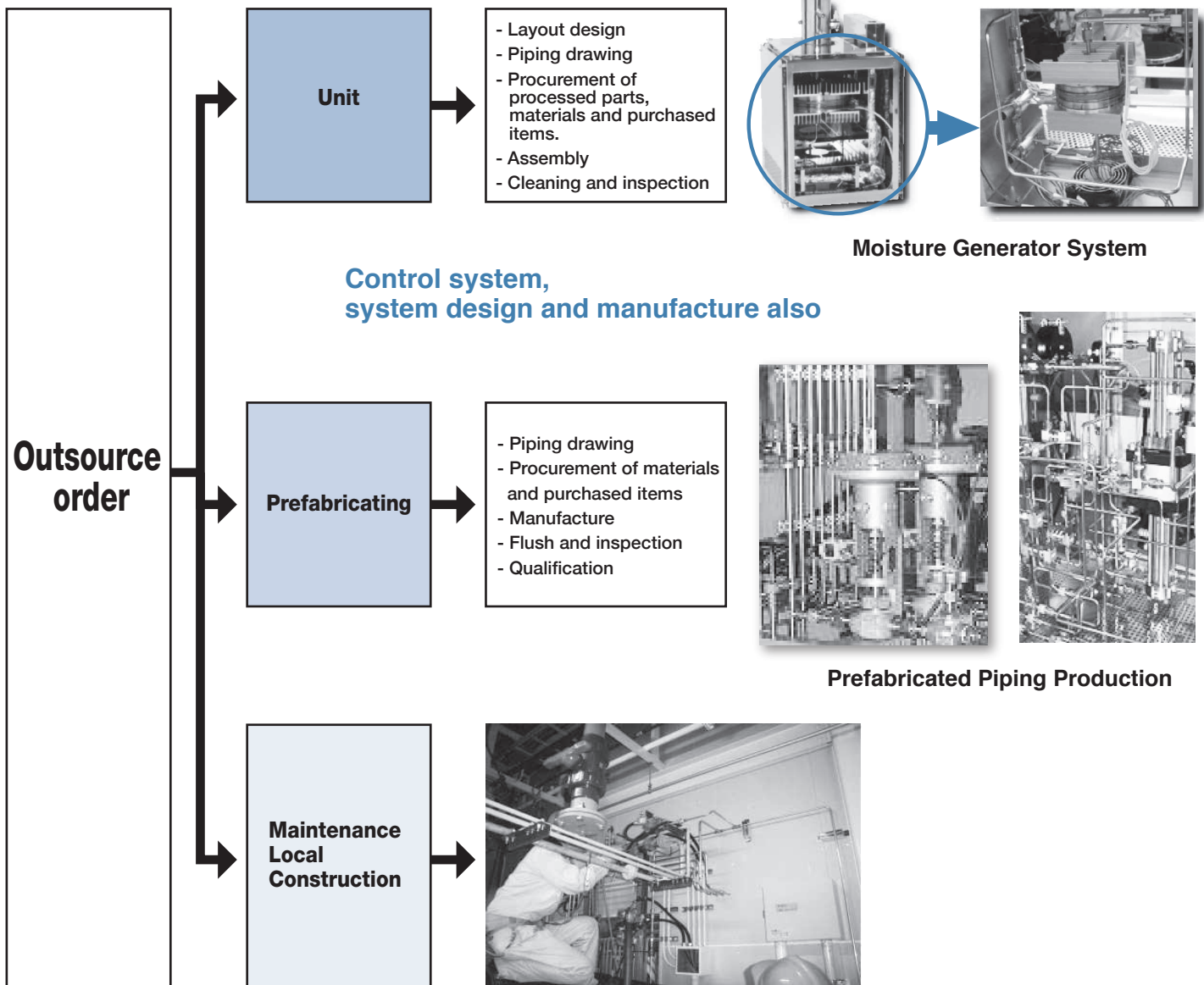
To contribute to preservation of law and order,
safety and stable driving of hydrogen related equipment,
Fujikin also works on substantiality of customer service aggressively.

ESUSOC

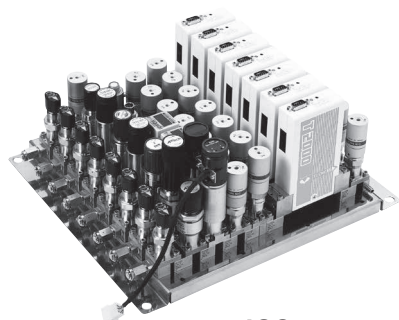
(abbreviations: Engineering Services Unit Solutions Company)

Fujikin can provide customer support in all aspects from design to production, launching, modification and maintenance, utilizing No.1 capability and experience of flow control technology and high pressure gas certification.

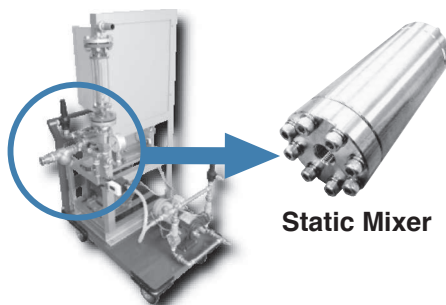
Engineering services, equipment/ piping design and production



If you have trouble with unit or piping,
please contact **Fujikin**® local office by all means !

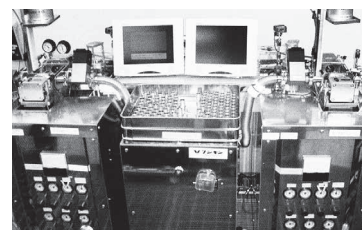


IGS®
(Integrated Gas System)



Material Dilution Unit

Static Mixer



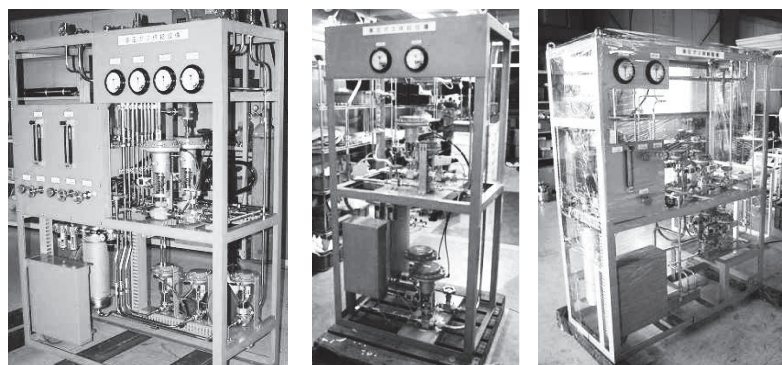
Automatic Leak Inspection System

Other unit system available example by ESUSOC

Gas valve stands

System that provides high pressure gas during the production in large furnace process

This can control gas supply by using **Fujikin** control valve called Minucon, which has been approved Ministry Certificate in Japan. High pressure gas piping shall be designed based on Ministry Certificate in Japan.



Rich manufacturing experience and cutting edge technology

Fujikin can respond to customers' request in various system including Integrated Gas System, Moisture Generator System, static mixer-dispensing unit, prefabricated piping and etc., utilizing our extensive manufacturing experiences and flow control technology in each industry that we've cultivated so far.

Please be free to contact **Fujikin** for production or sales of systems utilizing some elements based on customer's technology.

Flow Control Problem Solutions Company

ESUSOC

(abbreviations: Engineering Services
Unit Solutions Company)

 **Fujikin Carp Group**

Integrated Solutions

We can propose packaged products of instrumentation piping for **Hydrogen** station and etc..

Fujikin and **NAGANO KEIKI co.,LTD.** joint proposal.

Advantage

Compactness

Reduced number of parts

Connect Point reduction

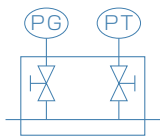
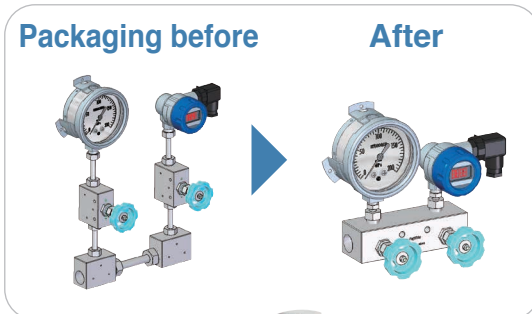
Reduced number of works

Fujikin contributes to security and safety and security of the instruments.

Piping example ①

Packaging before

After



Flow chart

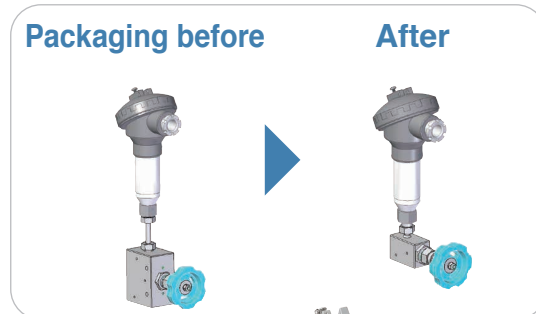
- Manual valve: **2 sets** → **Manifold type**
- Hi-press. fitting: **2 pcs** → **0 pce**
- Hi-press. piping: **5 pcs** → **2 pcs adapter**
- Connection part: **10** → **4**
- Fitting construction part: **10** → **4**
- Tightness test: **10** → **4**

Reduced

Piping example ②

Packaging before

After



Flow chart

- Hi-press. piping: **1** → **0**
- Fitting construction: **2** → **1**
- Tightness test: **2** → **1**

Reduced

Cv Value Calculation

Please confirm the necessary Cv Value suited to the intended use (process valves, meter master valves, etc.) before selecting an appropriate valves. Also, if there is a large difference between the flow channel diameter and piping diameter, please multiply the Cv value for the valve unit by revising coefficient Fp to determine the revised Cv Value (CvR).

What is Cv Value?

Cv Value is a capacity coefficient for valves and other devices. It is defined in the Japanese Industrial Standards (JIS) as "the flow volume expressed in US gal/min of clear water at 60°F (15°C) through a valve within a particular operating range with a pressure differential of 1 lb/inch² (= 1 psi)."

■ Cv Value Calculation

Differential Pressure Conditions		$P_2 > \frac{P_1}{2}$	$P_2 \leq \frac{P_1}{2}$	Explanation of Symbols
Liquid	General	$Cv = 0.366 Q_L \sqrt{\frac{G_L}{P_1 - P_2}}$	Same as left	
	High Viscosity ★1	$Cv = 0.366 Q_L K_v \sqrt{\frac{G_L}{P_1 - P_2}}$	Same as left	
Gas		$Cv = \frac{Q_G}{4140} \sqrt{\frac{G_G (273+t)}{(P_1 - P_2) P_2}}$	$Cv = \frac{Q_G}{2070 P_1} \sqrt{G_G (273+t)}$	
Steam	Saturated Water Vapor	$Cv = \frac{Q_s}{197.8 \sqrt{(P_1 - P_2) P_2}}$	$Cv = \frac{Q_s}{98.91 P_1}$	
	Heated Water Vapor	$Cv = \frac{Q_s}{197.8 \sqrt{(P_1 - P_2) P_2}} (1 + 0.0013S)$	$Cv = \frac{Q_s}{98.91 P_1} (1 + 0.0013S)$	
	Wet Steam	$Cv = \frac{Q_s X}{197.8 \sqrt{(P_1 - P_2) P_2}}$	$Cv = \frac{Q_s X}{98.91 P_1}$	

★1: For liquids, if kinematic viscosity is 20 mPa·s or more and calculated Cv value is 0.01 or less, viscosity correction calculation is required. Please contact Fujikin if fluid specifications are needed for viscosity correction.

★2: Please use pressure in the immediate proximity of the valve. Calculations using pressure from a point distant from the valve can produce significant errors due to the effects of piping pressure loss, etc.

■ Piping Revising Calculation

$$F_p = \left\{ 1 + \frac{\left\{ 1.5 \left(1 - \left(\frac{d}{D} \right)^2 \right) \right\}^2 \times \left(\frac{C_v}{d^2} \right)^2}{0.00214} \right\}^{-\frac{1}{2}}$$

F_p: Piping revising coefficient
 C_v: Valve capacity coefficient for normal piping
 d: Valve inner diameter (mm)
 D: Pipe inner diameter (mm)

■ Revising Cv Value (CvR) Calculation

$$CvR = F_p \cdot C_v$$



Cv Value calculation provides the standard used in valve selection; so, please use as a reference value. It is possible that fixed piping conditions, usage conditions or other factors can cause actual values to differ from calculated values.



Fujikin Carp Group



The Year 2013 Prime Minister's Prize
The 5th Monodzukuri Nippon Grand Award
Overseas Operation "Excellence Prize"

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