



FLUEREX (Karman Vortex Flow Sensor)

WFK2 Series

Small body

● Flow rate range: 0.4 to 5, 1.6 to 20, 4 to 50 L/min



Specifications

Item		WFK2-005	WFK2-020	WFK2-050	
Connection	Port size	Rc, G, NPT			
	Port material	Stainless steel			
Working conditions	Applicable fluid	Pure water, industrial water Fluorine liquid proof option: Fluorinert™ (FC-3283, FC-40), Galden® (HT135, HT200) Novec™ 7300, Opteon™ SF10 (*8)			
	Max. working press	MPa	1.0		
	Proof pressure	MPa	1.5		
	Manual valve (cock) internal leakage	mL/min	0		
	Manual valve (cock) allowable back press	MPa	0.3		
	Ambient temperature	°C	0 to 50 (85%RH or less, no condensation)		
	Fluid temp (*1)	°C	Standard: 1 to 95 Fluorine-based liquid compatible option: -10 to 95		
	Flow	Flow rate range	L/min	0.4 to 5	1.6 to 20
Repeatability (*2)		Analog output accuracy: ±2.5%F.S. Display accuracy: ±2.5%F.S.±1digit (min. display unit)			
Temp characteristics (*2) (*3)		±5% F.S.(25°C standard, 10 to 50°C)			
Low flow cut		5% of F.S.			
Accumulated flow range (*4)		99,999L or 99999m³ (unit selectable) Resets when the power is turned OFF			
Integrated pulse rate (*4)		L/pulse	0.1, 0.5, 1	0.1, 0.5, 1, 10	0.5, 1, 10, 50
Pressure loss (when the fluid is water)		MPa	0.07 (F.S.)	0.05 (F.S.)	0.05 (F.S.)
Temp	Response time (*5)	sec	0.25, 0.5, 1, 5, 10 (Initial value 1)		
	Measurement temp	°C	-10 to 100		
	Accuracy	°C	0 to less than 50: analog output accuracy ±2, display accuracy ±2±1digit (min. display unit 1) 50 to 100: analog output accuracy ±3, display accuracy ±3±1digit (min. display unit 1)		
Output	Display	2-screen LCD display, instantaneous flow rate: 3 digits, liquid temp: 2 digits, integrated flow: 5 digits, with screen rotation			
	Analog output (*6)	Standard: DC0 to 5V/1 to 5V Option: 4 to 20mA DC, 0 to 10VDC/1 to 10V			
	Switch output	NPN or PNP open collector output (can be switched from settings)			
		Max. load current	50mA		
		Max. applied voltage	30 VDC		
	Internal voltage drop	2.0 V or less			
Power supply voltage		Analog output standard: 12 to 24 VDC ±10%, analog output option: 24 VDC ±10%			
Current consumption (*7)		50 mA or less			
Mount	Mounting orientation	Unrestricted in vertical/horizontal direction			
	Straight piping section	None			
	Degree of protection	IP 65 or equiv.			
	Weight	g	3/8 (Rc, G, NPT): approx. 320, with manual valve (cock) approx. 510, with manual valve (needle) approx. 820 1/2 (Rc, G, NPT): approx. 320, with manual valve (cock) approx. 510, with manual valve (needle) approx. 820 3/4 (Rc, G, NPT): Approx. 400, with manual valve (cock) Approx. 590, with manual valve (needle) Approx. 880		

*1: For fluorine liquids, the fluid temperature range which can be measured differs depending on the fluid type. Refer to the measurable fluid temperature range graph.

*2: Accuracy is the average value over 10 sec (for conditions not containing air bubbles). F.S. stands for full scale flow rate.

*3: This temperature characteristics are when the fluid is water. For fluorine liquids, check the range of the corresponding kinematic viscosity.

*4: The integrating flow is a calculated (ref) value. It is reset when the power is turned OFF. Errors may occur between the integrating flow display and integrated pulse output.

*5: The time to attain 70% of the original output after the normal flow rate (used) drops instantly to 0.

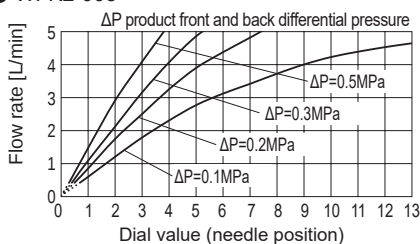
*6: Check the allowable load on the wiring method page.

*7: Current for when 24 VDC is connected, and no load is applied. Please note that the current consumption changes depending on the load connection status.

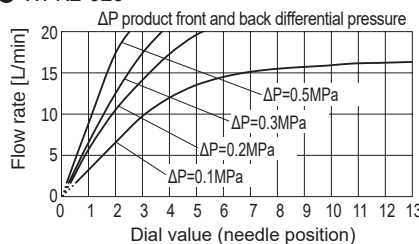
*8: Fluorinert™ and Novec™ are trademarks of 3M Corporation. Galden® is a registered trademark of Solvay Specialty Polymers Japan. Opteon™ is a trademark of Chemours-Mitsui Fluoroproducts Co., Ltd.

Manual valve (needle) flow characteristics (When the fluid is water)

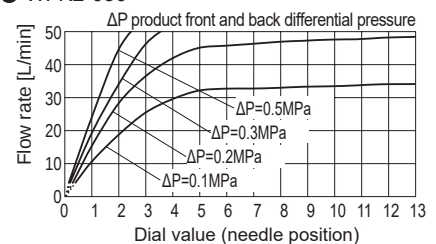
● WFK2-005



● WFK2-020



● WFK2-050



* Internal leakage occurs even when the number of rotations of the needle valve is 0 (fully closed).

* For fluorine liquid, refer to "Conversion of needle flow characteristics" on page 17.

How to order

WFK2 - 005 AA A A N - A C -

A Flow rate range

B Port size

C IO-Link/ Analog output

D Display unit

Precautions for model No. selection

*1: Display unit code B is for overseas use and cannot be used in Japan.

*2: When selecting manual valve codes A and B (with manual valve) and the included bracket is selected, 2 sets of brackets are included.

*3: Type with manual valve (cock) cannot be selected for the option code SF (fluorine-based liquid compatible).

*4: Cable attachment cannot be selected for option (ATEX compliant).

*5: Refer to "Option (ATEX compatible)" on page 18 for details on specifications.

[Example of model No.]

WFK2-005AAAAAN-AC

A Flow rate range: 0.4 to 5L/min

B Port size: Rc3/8

C IO-Link analog output:

Switch/analog output
DC0 to 5V/DC1 to 5V

D Display unit: L/min L m³ °C

E Manual valve: sensor only

F Option: standard cable included

G Option: bracket included

E Manual valve

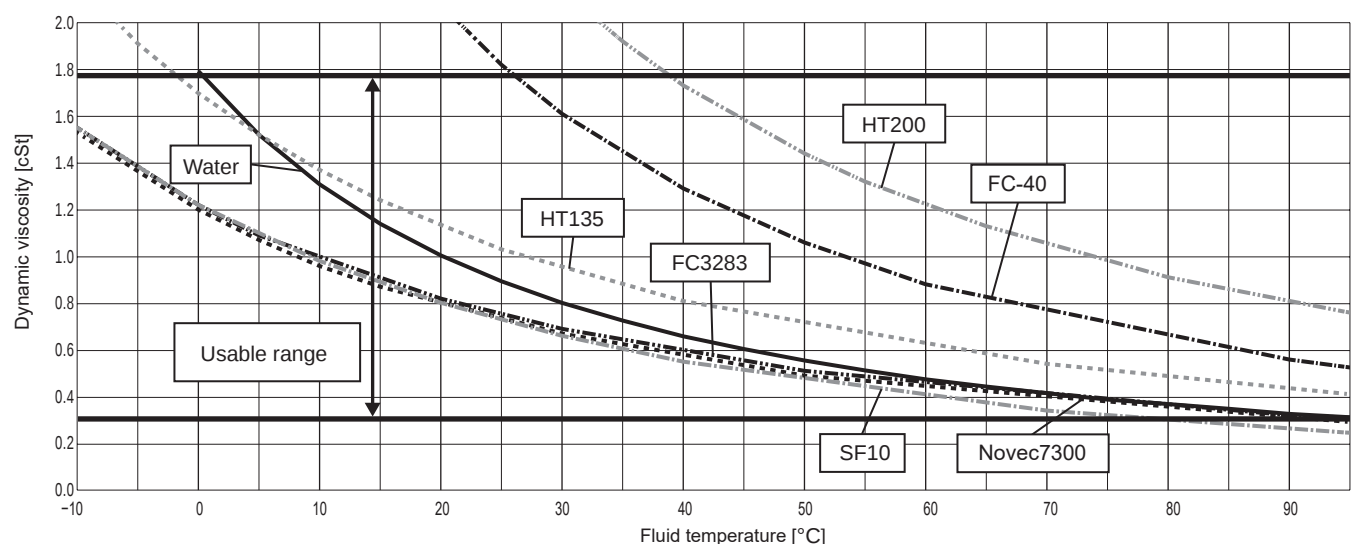
F Option
(cable included)

G Option
(bracket included)

H Option
(other)

Code	Description
A Flow rate range	
005	0.4 to 5L/min
020	1.6 to 20L/min
050	4 to 50L/min
B Port size	
AA	Rc 3/8
AB	G 3/8
AC	NPT 3/8
BA	Rc 1/2
BB	G 1/2
BC	NPT 1/2
CA	Rc 3/4
CB	G 3/4
CC	NPT 3/4
C IO-Link/ Analog output	
* "D""E""F" is the analog output specs for when not using IO-Link	
A	Switch/analog output DC0 to 5V/DC1 to 5V
B	Switch/analog output DC4 to 20mA
C	Switch/analog output DC0 to 10V/DC1 to 10V
D	DC0 to 5V/DC1 to 5V for IO-Link
E	DC4 to 20mA for IO-Link
F	DC0 to 10V/DC1 to 10V for IO-Link
D Display unit	
A	L/min L m ³ °C
B	L/min, US gal/min L, m ³ , US gal °C, °F *1
E Manual valve	
N	Sensor only
A	With manual valve (cock) *2, *3
B	With manual valve (needle) *2
F Option (cable included) *4	
Blank	None
A	Standard cable (M12/4-conductor 3 m) included
B	Both ends connector cable (M12/4-conductor 3 m) included
G Option (bracket included)	
Blank	None
C	Bracket included *2
H Option (other)	
Blank	None
EX	ATEX compliant *4, *5
SF	Compatible with fluorine liquids *3

Measurable fluid temperature range





FLUEREX (Karman Vortex Flow Sensor)

WFK2 Series

Large body

● Flow rate range: 8 to 100/20 to 250L/min



Specifications

Item		WFK2-100	WFK2-250
Connection	Port size	Rc, G, NPT	1, 1 1/4, 1 1/2
	Port material	Stainless steel	
Working conditions	Applicable fluid	Pure water, industrial water	
	Max. working press	MPa	1.0
	Proof pressure	MPa	1.5
	Ambient temperature	°C	0 to 50 (85% RH or less, no condensation)
	Fluid temperature	°C	1 to 95
Flow	Flow rate range	L/min	8 to 100 20 to 250
	Repeatability (*1)	Analog accuracy: $\pm 2.5\%$ F.S. Display accuracy: $\pm 2.5\%$ F.S. ± 1 digit (min. display unit)	
	Temp characteristics (*1)	$\pm 5\%$ F.S. (base temperature 25°C, 10 to 50°C)	
	Low flow cut	5% of F.S.	
	Accumulated flow range (*2)	99,999 L or 99,999 m ³ (unit selectable), reset when the power is turned OFF.	
	Integrated pulse rate (*2)	L/pulse	1, 10, 50, 100 10, 50, 100
	Pressure loss	MPa	0.05 (at F.S.) 0.03 (at F.S.)
	Response time (*3)	sec	0.25, 0.5, 1, 5, 10 (Initial value 1)
Temp	Measurement temp	°C	0 to 100
	Accuracy	°C	0 to 50: analog accuracy ± 2 , display accuracy $\pm 2 \pm 1$ digit (min. display unit 1) 50 to 100: analog accuracy ± 3 , display accuracy $\pm 3 \pm 1$ digit (min. display unit 1)
Output	Display	2-screen LCD display, instantaneous flow rate: 3 digits, water temperature: 2 digits, integrating flow: 5 digits, with screen rotation	
	Analog output (*4)	Standard: 0 to 5 VDC/1 to 5 VDC, option: 4 to 20 mA DC, 0 to 10 VDC/1 to 10 VDC	
	Switch output	NPN or PNP transistor open collector output (can be switched from settings)	
	Max. load current	50mA	
	Max. applied voltage	30 VDC	
	Internal voltage drop	2.0 V or less	
Power supply voltage		Analog output standard: 12 to 24 VDC $\pm 10\%$, analog output option: 24 VDC $\pm 10\%$	
Current consumption (*5)		50 mA or less	
Mount	Mounting orientation	Unrestricted in vertical/horizontal direction	
	Straight piping section	IN side: 10 D, OUT side: 5 D	
	Degree of protection	IP65 or equiv.	
	Weight	g	1 (Rc, G, NPT): approx. 870 1 1/4 (Rc, G, NPT): approx. 1,010 1 1/2 (Rc, G, NPT): approx. 1,100

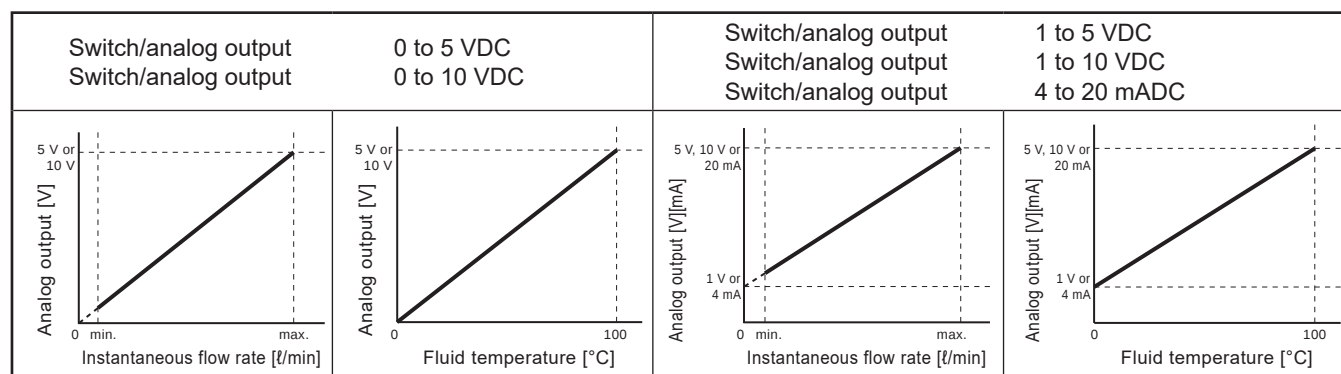
*1: Accuracy is the average value over 10 sec (for conditions not containing air bubbles). F.S. stands for full scale flow rate.

*2: The integrating flow is a calculated (reference) value. It is reset when the power is turned OFF. Errors may occur between the integrating flow display and integrated pulse output.

*3: The time to attain 70% of the original output after the normal flow rate (used) drops instantly to 0.

*4: Check the allowable load on the wiring method page.

*5: Current for when 24 VDC is connected, and no load is applied. The current consumption will vary depending on how the load is connected.



Note: Output value without adjustment of original range analog output or span.

How to order

WFK2 - 100 DA A A N - A C -

A Flow rate range

B Port size

C IO-Link analog output

D Display unit

E Manual valve

F Option (cable included)

G Bracket (bracket included)

H Option (other)

Precautions for model No. selection

*1: Display unit code B is for overseas use and cannot be used in Japan.

*2: Cable attachment cannot be selected for option (ATEX compatible).

*3: Refer to "Option (ATEX compatible)" on page 18 for details on specifications.

[Example of model No.]

WFK2-100DAAAN-AC

A Flow rate range: 8 to 100L/min

B Port size: Rc1

C IO-Link/Analog output:
Switch/analog output
0 to 5VDC/1 to 5VDC

D Display unit: L/min L m³ °C

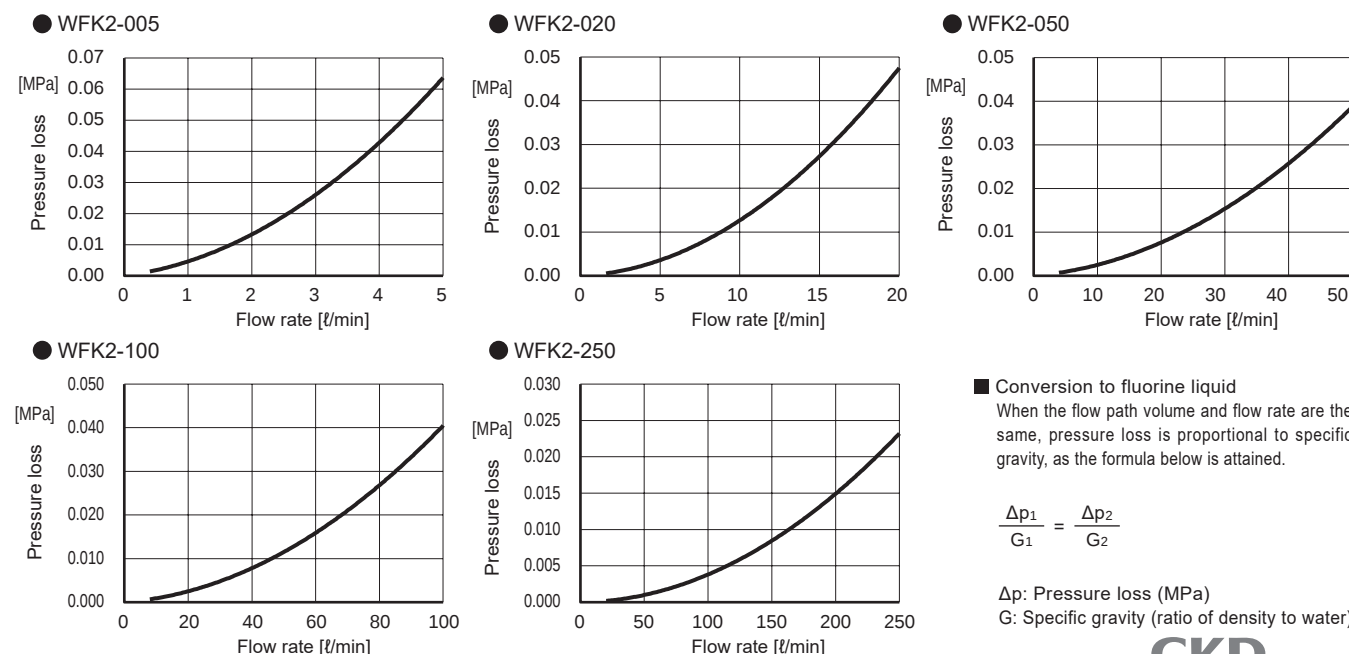
E Manual valve: Sensor only

F Option: Standard cable included

G Option: Bracket included

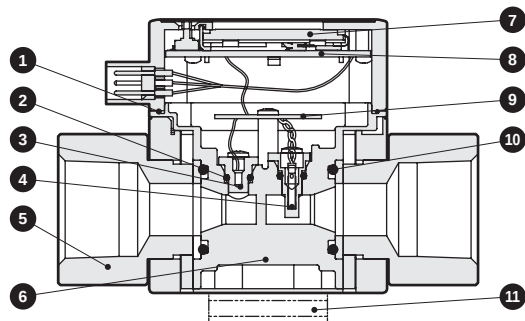
Code	Description				
A Flow rate range					
100	8 to 100L/min				
250	20 to 250L/min				
B Port size					
DA	Rc 1	DB	G 1	DC	NPT 1
EA	Rc 1 1/4	EB	G 1 1/4	EC	NPT 1 1/4
FA	Rc 1 1/2	FB	G 1 1/2	FC	NPT 1 1/2
C IO-Link analog output					
* "D""E""F" is the analog output specifications for when not using IO-Link					
A	Switch/analog output 0 to 5VDC/1 to 5VDC				
B	Switch/analog output 4 to 20mA DC				
C	Switch/analog output 0 to 10VDC/1 to 10VDC				
D	0 to 5VDC/1 to 5VDC for IO-Link				
E	4 to 20mA DC for IO-Link				
F	0 to 10VDC/1 to 10VDC for IO-Link				
D Display unit					
A	L/min L m ³ °C				
B	L/min us gal/min L m ³ us gal °C °F *1				
E Manual valve					
N	Sensor only				
F Option (cable included) *2					
Blank	None				
A	Standard cable (M12/4-conductor 3 m) included				
B	Both ends connector cable (M12/4-conductor 3 m) included				
G Option (bracket included)					
Blank	None				
C	Bracket included				
H Option (other)					
Blank	None				
EX	ATEX supported *3				

Pressure loss (when the fluid is water)

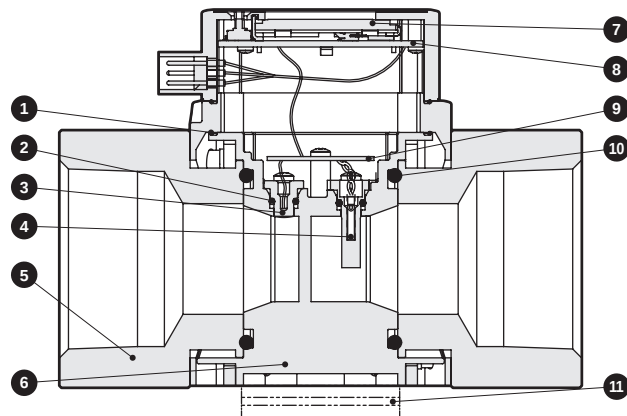


Internal structure and parts list

● WFK2-005, 020, 050



● WFK2-100, 250

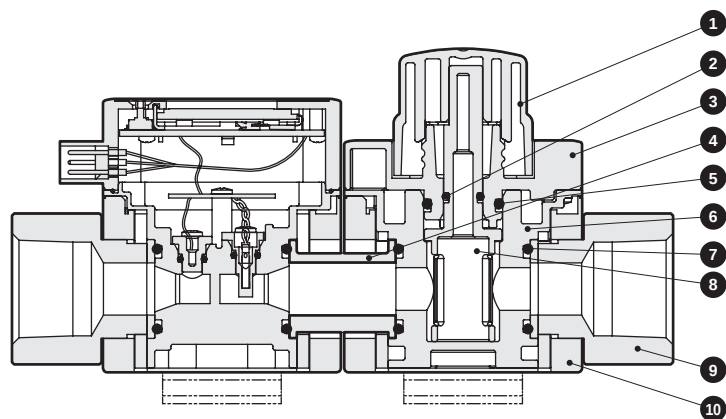


Cannot be disassembled

Part No.	Part name	Material	Qty.	Part No.	Part name	Material	Qty.
1	Packing	FKM	Fluoro rubber	1 or 2	7	Liquid crystal	1
2	O-ring	*1 FKM	Fluoro rubber	2	8	CPU board	1
3	Temperature sensor	SUS316L	Thermistor	1	9	Sensor board	1
4	Karman's vortex street detection sensor	PPS resin	Piezoelectric element	1	10	O-ring	*1 FKM
5	Attachment	SUS304 or SCS13	2	11	Bracket (option)	SUS304 or SPCC	(1)
6	Sensor body	PPS resin	1				

* The wetted parts are ②, ③, ④, ⑤, ⑥ and ⑩.
*1: EPDM (ethylene propylene diene rubber) when fluorine-based liquid is supported.

● WFK2-005, 020, 050****A (cock)

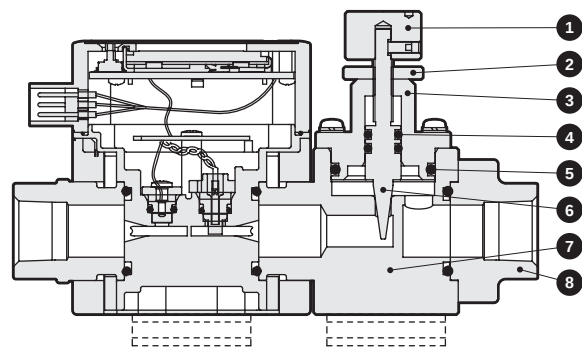


Cannot be disassembled

Part No.	Part name	Material	Qty.
1	Handle	POM resin	1
2	O-ring	FKM	Fluoro rubber
3	Stuffing	PPS resin	1
4	Spacer	SUS304 or SCS13	1
5	O-ring	FKM	Fluoro rubber
6	Cock body	PPS resin	1
7	O-ring	FKM	Fluoro rubber
8	Cock	PPS resin	1
		FKM	Fluoro rubber
9	Attachment	SUS304 or SCS13	2
10	External case	PBT resin	1

* The wetted parts are ②, ③, ④, ⑤, ⑥, ⑦, ⑧ and ⑨.

● WFK2-005, 020, 050****B (needle)



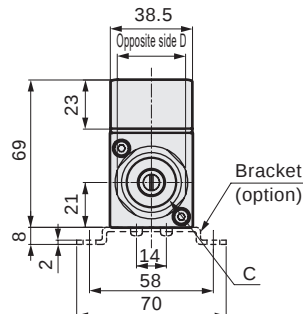
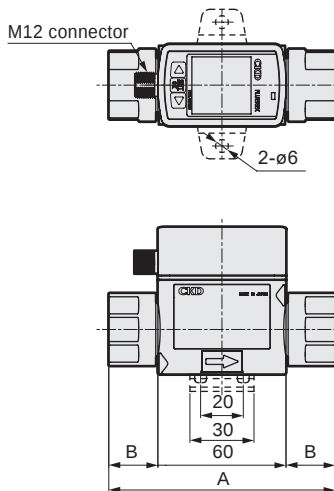
Cannot be disassembled

Part No.	Part name	Material	Qty.
1	Knob	Aluminum	1
2	Lock nut	SUS303	1
3	Needle guide	SUS304	1
4	O-ring	*1 FKM	Fluoro rubber
5	O-ring	*1 FKM	Fluoro rubber
6	Needle	SUS304	1
7	Needle body	SUS304	1
8	Attachment	SUS304 or SCS13	1

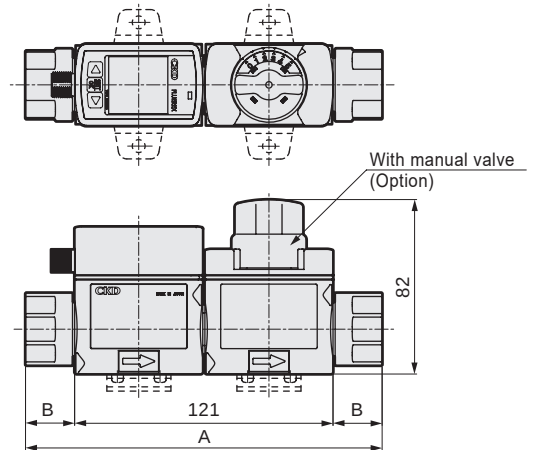
* The wetted parts are ③, ④, ⑤, ⑥, ⑦ and ⑧.
*1: EPDM (ethylene propylene diene rubber) when fluorine-based liquid is supported.

Dimensions

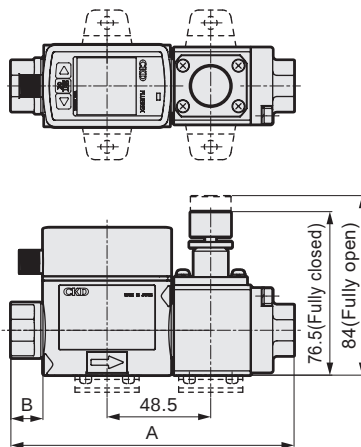
● WFK2-005, 020, 050



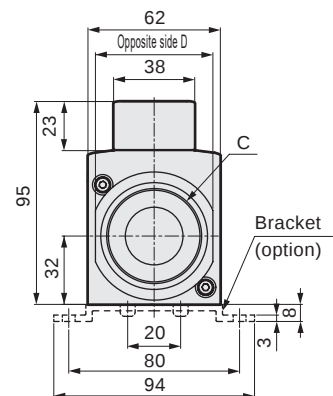
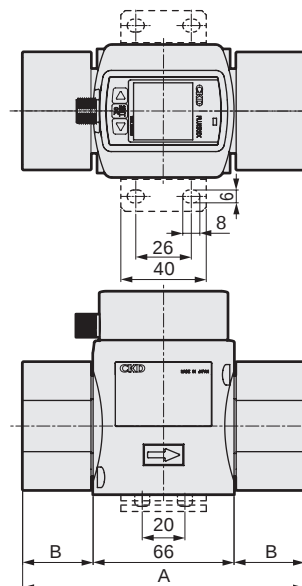
● With manual valve (cock)



● With manual valve (needle)



● WFK2-100, 250



Model No.	A	B	C	Opposite side D	Model No.	A	B	C	Opposite side D
WFK2-[*1]A[*3]**N	90	15	Rc3/8	24	WFK2-[*1]A[*3]**A	151	15	Rc3/8	24
WFK2-[*1]B[*3]**N	90	15	Rc1/2	27	WFK2-[*1]B[*3]**A	151	15	Rc1/2	27
WFK2-[*1]C[*3]**N	106	23	Rc3/4	32	WFK2-[*1]C[*3]**A	167	23	Rc3/4	32
WFK2-[*2]D[*3]**N	106	20	Rc1	46	WFK2-[*1]B[*3]**B	132.5	15	Rc3/8	24
WFK2-[*2]E[*3]**N	125	29.5	Rc1 1/4	50	WFK2-[*1]A[*3]**B	132.5	15	Rc1/2	27
WFK2-[*2]F[*3]**N	132	33	Rc1 1/2	55	WFK2-[*1]C[*3]**B	148.5	23	Rc3/4	32

[*1]: Select from 005, 020, and 050
 [*2]: Select from 100, 250
 [*3]: Select from A, B, and C (the Dimensions of the G screw and NPT screw are the same)

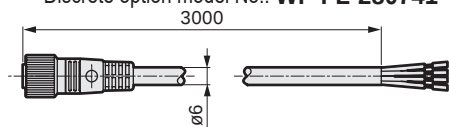
Optional dimensions

● Cable option

Common for WFK2

● Standard cable

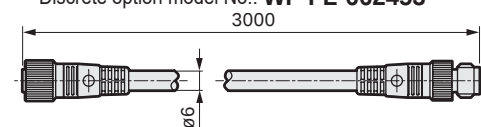
Discrete option model No.: **WF-FL-280741**



Finished outer diameter 6mm, core 0.5mm², insulated outer diameter 1.9mm

● Double ended connector cable

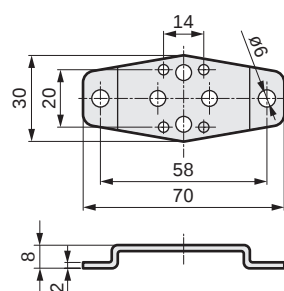
Discrete option model No.: **WF-FL-662453**



● Bracket option

WFK2-005, 020, 050

Discrete option model No.: **WF-FL-315544**



WFK2-100, 250

Discrete option model No.: **WF-FL-636342**

