



Magnetic spring buffer

FBU2 Series

Outer diameter: M8, M12, $\phi 7$, $\phi 12$
Load capacity: 30, 80 g



Specifications

$^{\circ}\text{F} = 9/5 \text{ }^{\circ}\text{C} + 32$

Values at room temperature of 23°C.

Descriptions	FBU2-7D		FBU2-8M		FBU2-12D		FBU2-12M	
	S	H/HV	S		S	H/HV	S	
O.D.	$\phi 7\text{h}7$		M8×0.75		$\phi 12\text{h}7$		M12×1	
Appearance	S/H	HV			S/H	HV		
Buffer pressure	N		0.1 to 0.2		0.1 to 0.2		0.4 to 0.6, 0.9 to 1.1	
Pressure variation Note 1	±15% or less							
Buffer stroke length	2	6	2	6	2	6	16	2
Operating ambient temperature $^{\circ}\text{C}$	5 to 50		5 to 40		5 to 50		5 to 40	
Bearing clearance mm	0.2 or less		0.05 or less		0.2 or less		0.05 or less	
Max. holding torque Note 2 N·cm	0.25 and over (reference value)				Note 3		Note 3	
Return positioning accuracy	X-Y mm	±0.1 or less	±0.05 or less	±0.1 or less	±0.1 or less		±0.05 or less	
	Z mm	±0.1 or less						
Note 4 θ	3 or less							
Load capacity g	30 or less				80 or less			

Note 1: Indicates pressure fluctuations within the stroke. Pressure is not proportional to the stroke.

Note 2: If a rotary torque exceeding the max. holding torque is applied on the moving axis, the moving axis will step out and rotate 180°.

* Holding torque: Force which can return to the original position even if force is applied in θ direction (Fig. 1) and moving axis position deviates.

Note 3: Refer to the table at right for FBU2-12M/12D holding torque.

Note 4: Refer to the figure below (Fig. 1) for return positioning accuracy.

The figure shows buffer return accuracy.

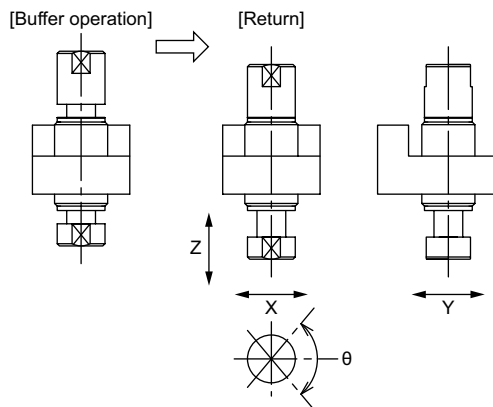
Note 5: Consult with CKD for requirements not complying with specifications.

Note 6: Load capacity indicates the max. load (jig and adsorbend) mounted on the head piece.

(FBU2-12M/12D max. holding torque (reference value))

Pressure (N)	Stroke length (mm)	Holding torque (N·cm)
0.5	2	0.5 or more
	6	0.5 or more
	16	1.2 or more
1	2	1.2 or more
	6	1.2 or more
	16	2.5 or more

Indicates the holding torque at the outer end.



(Fig. 1) Return detailed drawing

How to order

FBU2 - **12D** - **S** - **10** - **6** - **T3** - **H3**

Model No.

A O.D.

B Bearing precision

C Pressure

D Buffer stroke length

E Tailpiece shape

F Head piece shape

[Example of model No.]

O.D. ϕ 12h7 spigot

FBU2-12D-HV-05-6-TB-H5

- A** O.D. : ϕ 12h7 spigot
- B** Bearing precision : Internal flow path high precision
- C** Pressure (N) : 0.5N
- D** Buffer stroke length: 6 mm
- E** Tailpiece shape : Without hole
- F** Head piece shape : M5 female thread depth 4

Model No.			
FBU2-7D	FBU2-8M	FBU2-12D	FBU2-12M

Code	Content	FBU2-7D	FBU2-8M	FBU2-12D	FBU2-12M
A O.D.					
7D	ϕ 7h7 spigot	●			
8M	M8 x 0.75 full thread		●		
12D	ϕ 12h7 spigot			●	
12M	M12 x 1 full thread				●
B Bearing precision					
S	Standard (bearing clearance 0.2 mm or less)	●	●	●	●
H	High precision (bearing clearance 0.05 mm or less)	●		●	
HV	Internal flow path high precision (bearing clearance 0.05 mm or less)	●		●	
C Pressure (N)					
02	0.2	●	●		
05	0.5			●	●
10	1.0			●	●
D Buffer stroke length (mm)					
2	2	●	●	●	●
6	6	●	●	●	●
16	16			●	●
E Tailpiece shape					
TB	Without hole	●	●	●	●
T3	M3 female thread depth 3	●	●	●	●
T5	M5 female thread depth 4			●	●
F Head piece shape					
HB	Without hole	●	●	●	●
H3	M3 female thread depth 3	●	●	●	●
H5	M5 female thread depth 4			●	●

Combination of bearing precision, buffer stroke, tailpiece shape, and head piece shape

		B Bearing precision		
		S	H	HV
D Buffer stroke length	2	●	●	●
	6	●	●	●
	16	●		●
E Tailpiece shape	TB	●	●	●
	T3	●	●	
	T5	●	●	
F Head piece shape	HB	●	●	
	H3	●	●	●
	H5	●	●	●

Model No. of single mounting bracket for spigot

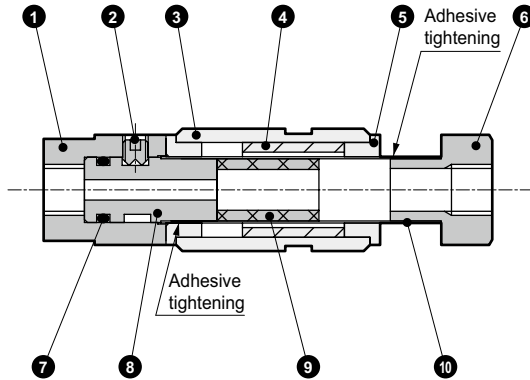
A O.D.	Model No. of single bracket	
	L-type installation	Straight installation
7D	FBU2- 7D-B1	FBU2- 7D-B2
12D	FBU2-12D-B1	FBU2-12D-B2

F.R.L
F (Filtr)
R (Reg)
L (Lub)
PresSW
Shutoff
SlowStart
FmResistFR
Oil-ProhR
MedPresFR
No Cu/ PTFE FRL
Outdrs FR
F.R.L (Related)
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneuR
AirBoost
SpdContr
Silncr
CheckV/ other
Jnt/tube
AirUnt
PrecsCompn
Mech/ ElecPresSw
ContactSW
AirSens
PresSW Cool
AirFloSens/ Contr
WaterRtSens
TotAirSys (Total Air)
TotAirSys (Gamma)
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending

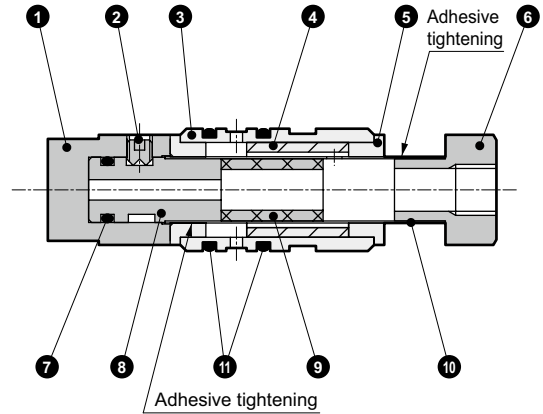
FBU2 Series

Internal structure and parts list

● FBU2-*-S (standard)
 -*H (high precision)



● FBU2-*-HV (precise internal flow path)



No.	Part name	Material	Remarks
1	Tailpiece	Aluminum alloy	Electroless nickel plating
2	Hexagon socket set screw	Stainless steel	
3	Fixed shaft	Stainless steel	
4	Ring magnet	Plastic magnet	
5	Bearing	Fluorine resin	Standard bearing type
		Polyester-based resin	Internal flow path type
6	Head piece	Aluminum alloy	Electroless nickel plating

No.	Part name	Material	Remarks
7	O-ring	Nitrile rubber	
8	Tail joint	Aluminum alloy	Trivalent chromate treatment
9	Ring magnet	Plastic magnet	
10	Guide tube	Stainless steel	
11	O-ring	Nitrile rubber	Internal flow path type
12	Hexagon nut	Carbon steel	Electroless nickeling (full thread only)

Bracket material

Model No.	Material	Remarks
FBU2- 7D-B1	Aluminum alloy	Electroless nickel plating
FBU2- 7D-B2		
FBU2-12D-B1		
FBU2-12D-B2		

Weight

● FBU2-8M /7D

(Unit: g)

Model No.	Fixed section	Movable part (Note 1)	Tailpiece (movable part)		Head piece (movable part)		Bracket (Note 2)		
			TB	T3	HB	H3	B1	B2	
FBU2-8M-S-02-2	5.5	1.2	0.7	0.7	0.4	0.3	8.9	13.1	
FBU2-8M-S-02-6		1.3							
FBU2-7D-S-02-2	2.2	1.2							
FBU2-7D-S-02-6		1.3							
FBU2-7D-H-02-2		1.0							
FBU2-7D-H-02-6									
FBU2-7D-HV-02-2	2.1								
FBU2-7D-HV-02-6									

Note 1: Total weight of movable part = movable part + tailpiece + head piece, product weight = fixed part + movable part + tailpiece + head piece.

Note 2: Plug and set screw are included with bracket.

● FBU2-12M/12D

(Unit: g)

Model No.	Fixed section	Movable part (Note 1)	Tailpiece (movable part)			Head piece (movable part)			Bracket (Note 2)	
			TB	T3	T5	HB	H3	H5	B1	B2
FBU2-12M-S-05/10-2	10.2	2.4	2.2	2.2	2.0	1.2	1.2	1.1	18.3	28.6
FBU2-12M-S-05/10-6		2.5								
FBU2-12M-S-05/10-16	14.0	3.9								
FBU2-12D-S-05/10-2	8.3	2.4								
FBU2-12D-S-05/10-6		2.5								
FBU2-12D-S-05/10-16	12.9	3.9								
FBU2-12D-H-05/10-2	8.1	2.4								
FBU2-12D-H-05/10-6		2.5								
FBU2-12D-HV-05/10-2	7.1	2.4								
FBU2-12D-HV-05/10-6		2.5								

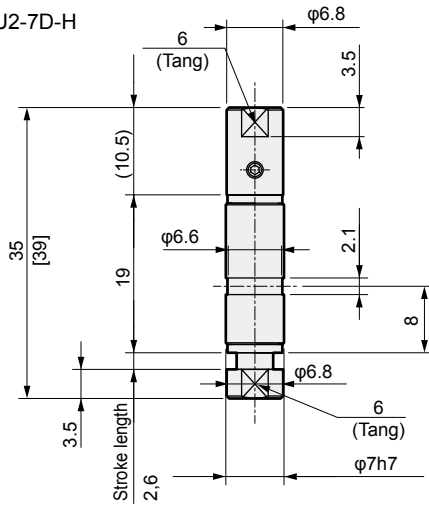
Note 1: Total weight of movable part = movable part + tailpiece + head piece, product weight = fixed part + movable part + tailpiece + head piece.

Note 2: Plug and set screw are included with bracket.

Dimensions (FBU2-7D, FBU2-8M)

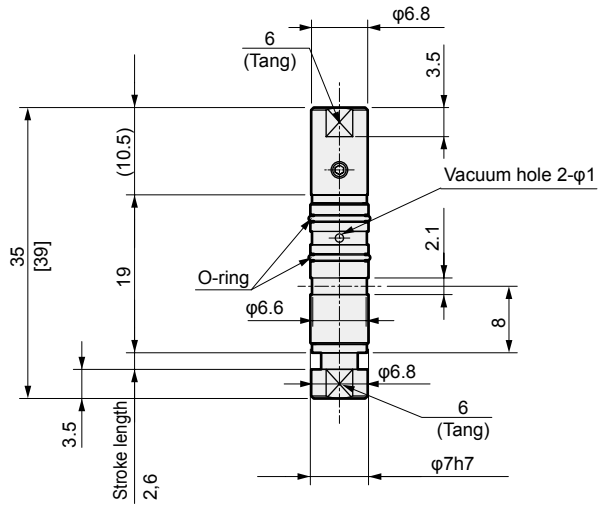


- FBU2-7D-S
- FBU2-7D-H



Note: Values in () are dimensions for the 6-stroke.

- FBU2-7D-HV



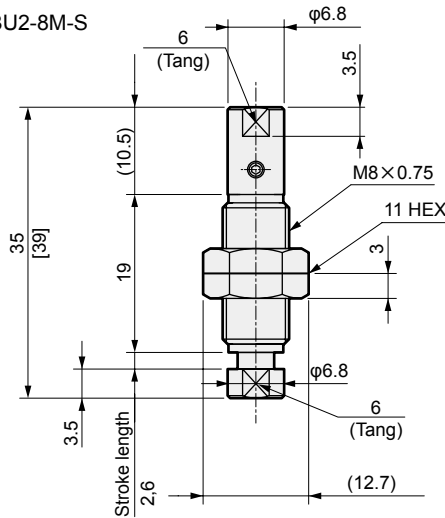
Note: Values in () are dimensions for the 6-stroke.

Note: The O-ring is shipped installed.

Apply a light coat of lubricant, such as grease, to the O-ring to maintain sealing.

Note: Figure dimensions are the same regardless of head piece and tailpiece shape.

- FBU2-8M-S



Note: Values in () are dimensions for the 6-stroke.

F.R.L
F (Filtr)
R (Reg)
L (Lub)
PresSW
Shutoff
SlowStart
FimResistFR
Oil-ProhR
MedPresFR
No Cu/ PTFE FRL
Outdrs FR
F.R.L (Related)
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneuR
AirBoost
SpdContr
Silncr
CheckV/ other
Jnt/tube
AirUnt
PrecsCompn
Mech/ ElecPresSw
ContactSW
AirSens
PresSW Cool
AirFloSens/ Contr
WaterRtSens
TotAirSys (Total Air)
TotAirSys (Gamma)
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending

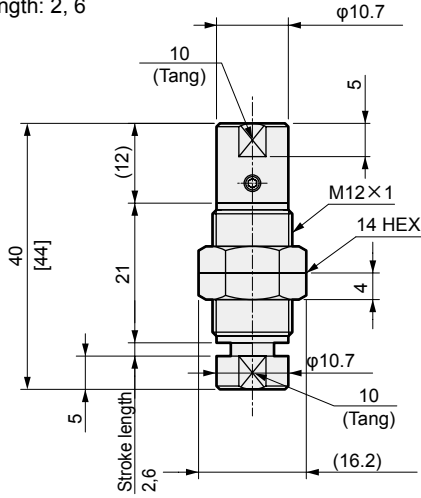


F.R.L
F (Filtr)
R (Reg)
L (Lub)
PresSW
Shutoff
SlowStart
FimResistFR
Oil-ProhR
MedPresFR
No Cu/ PTFE FRL
Outdrs FR
F.R.L (Related)
CompFRL
LgFRL
PrecsR
VacFR
Clean FR
ElecPneuR
AirBoost
SpdContr
Silncr
CheckV/ other
Jnt/tube
AirUnt
PresCompn
Mech/ ElecPresSw
ContactSW
AirSens
PresSW Cool
AirFloSens/ Contr
WaterRtSens
TotAirSys (Total Air)
TotAirSys (Gamma)
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending

Dimensions (FBU2-12M, FBU2-12D)

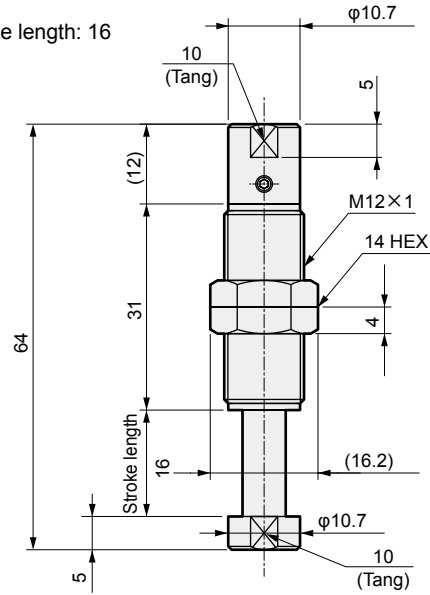
● FBU2-12M-S

Stroke length: 2, 6



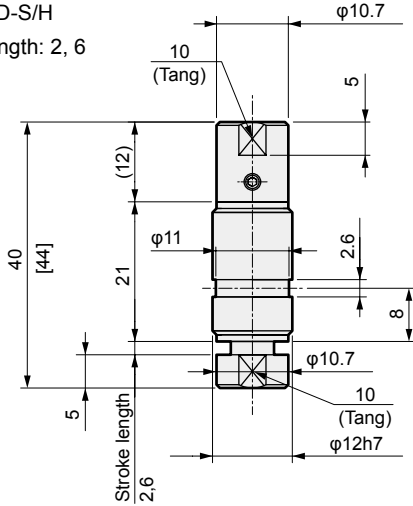
Note: Values in () are dimensions for the 6-stroke.

Stroke length: 16



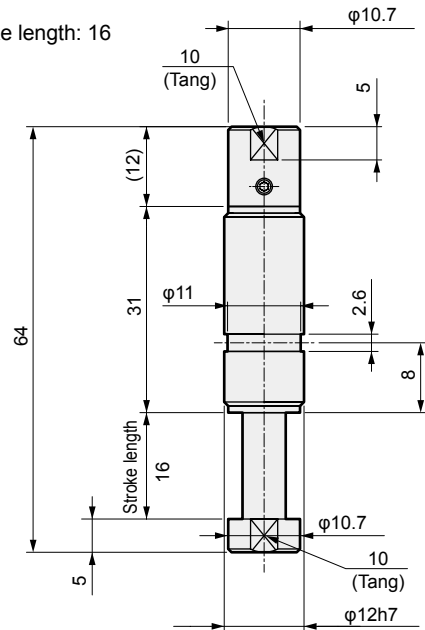
● FBU2-12D-S/H

Stroke length: 2, 6

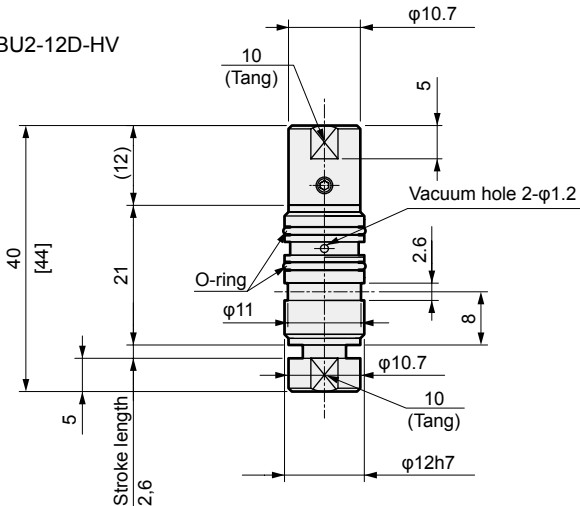


Note: Values in () are dimensions for the 6-stroke.

Stroke length: 16



● FBU2-12D-HV



Note: Values in () are dimensions for the 6-stroke.

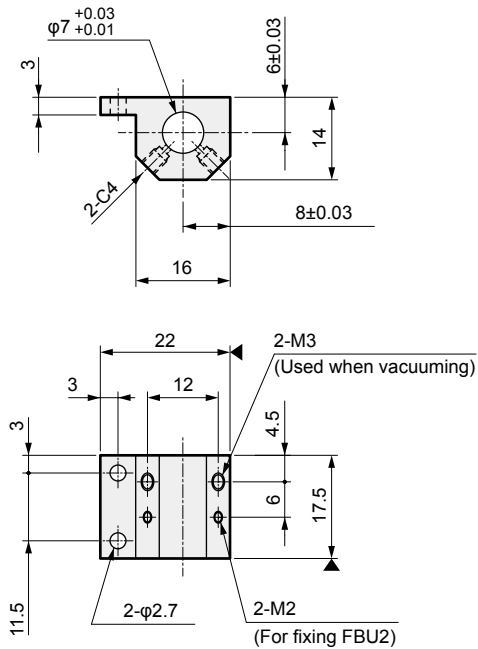
Note: The O-ring is shipped installed. Apply a light coat of lubricant, such as grease, to the O-ring to maintain sealing.

Note: Figure dimensions are the same regardless of head piece and tailpiece shape.

Bracket dimensions

● FBU2-7D-B1

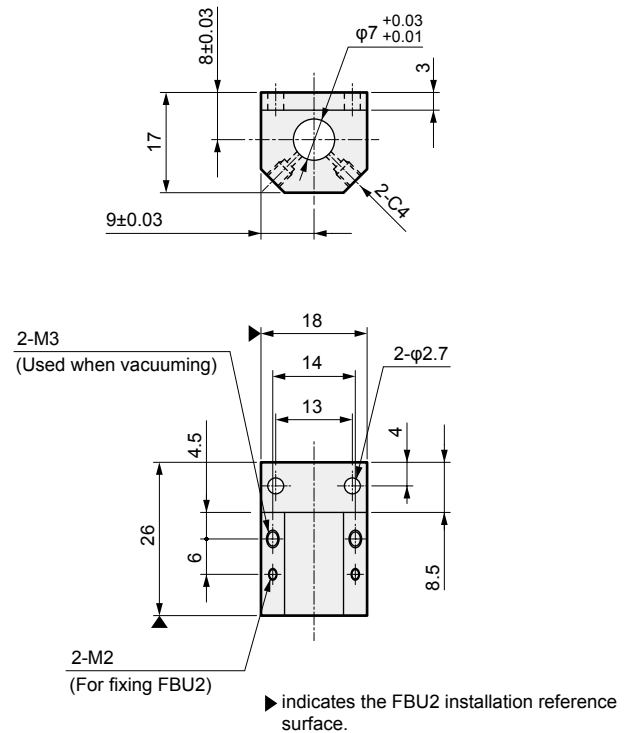
(Attachments: FPL-M3, set screw, M2 x 2)



► indicates the FBU2 installation reference surface.

● FBU2-7D-B2

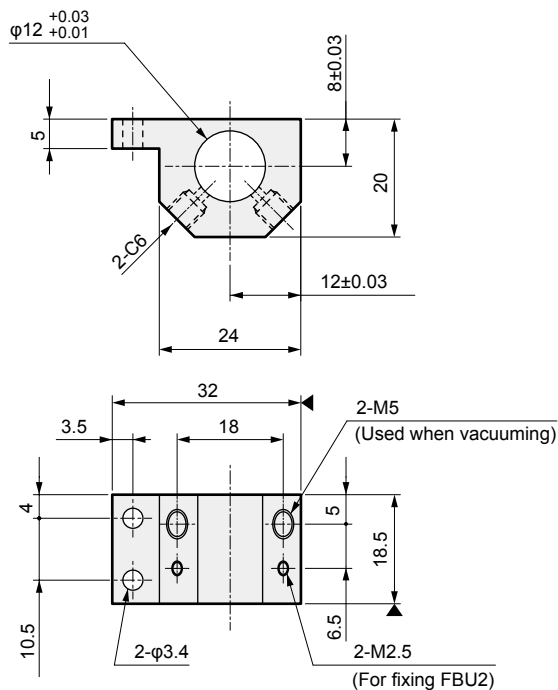
(Attachments: FPL-M3, set screw, M2 x 2)



► indicates the FBU2 installation reference surface.

● FBU2-12D-B1

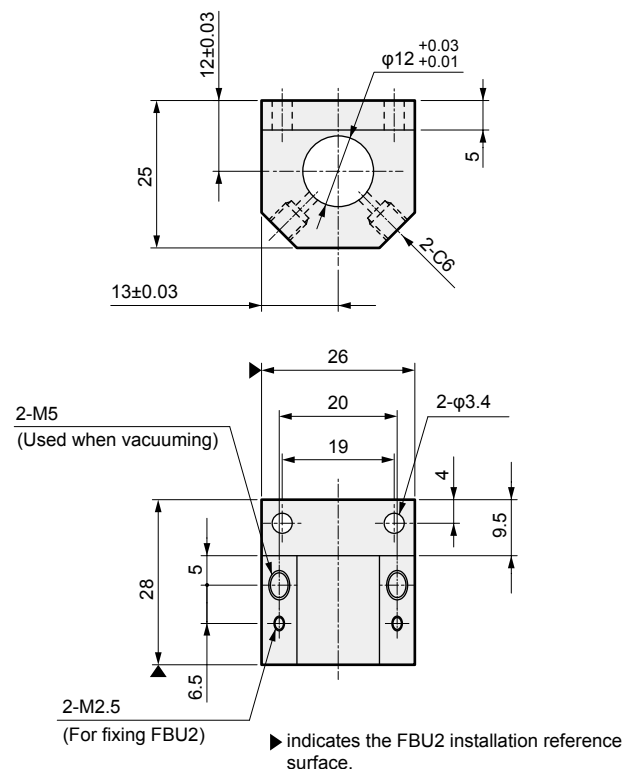
(Attachments: FPL-M5, set screw, M2.5 x 2.5)



► indicates the FBU2 installation reference surface.

● FBU2-12D-B2

(Attachments: FPL-M5, set screw, M2.5 x 2.5)



► indicates the FBU2 installation reference surface.

Note: When using for vacuum, tighten plugs (FPL-M3, M5) in empty screw holes (M3, M5).

F.R.L
F (Filtr)
R (Reg)
L (Lub)
PresSW
Shutoff
SlowStart
FimResistFR
Oil-ProhR
MedPresFR
No Cu/ PTFE FRL
Outdrs FR
F.R.L (Related)
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneuR
AirBoost
SpdContr
Silncr
CheckV/ other
Jnt/tube
AirUnt
PrecsCompn
Mech/ ElecPresSw
ContactSW
AirSens
PresSW Cool
AirFloSens/ Contr
WaterRISens
TotAirSys (Total Air)
TotAirSys (Gamma)
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending



Magnetic spring buffer

FBU2-SU Series

Outer diameter: M12, full thread
Load capacity: 200 g



Specifications

Descriptions		FBU2-SU
O.D.		M12×1
Buffer pressure	N	0.4 to 0.6, 0.9 to 1.1
Pressure variation *1)		±15% or less
Buffer stroke length	mm	2, 6, 16
Operating ambient temperature °C		5 (41°F) to 50 (122°F)
Bearing clearance mm		0.2 or less
Max. holding torque N·cm		*2)
Home return accuracy *3)	X-Y mm	±0.1 or less
	Z mm	±0.1 or less
	θ °	3 or less
Load capacity	g	200 or less

*1: Indicates pressure fluctuations within the stroke. Pressure is not proportional to the stroke.

*2: If a rotary torque exceeding the max. holding torque is applied on the moving axis, the moving axis will step out and rotate 180°.

* Holding torque: Force which can return to the original position even if force is applied in θ direction (Fig. 1) and moving axis position deviates.

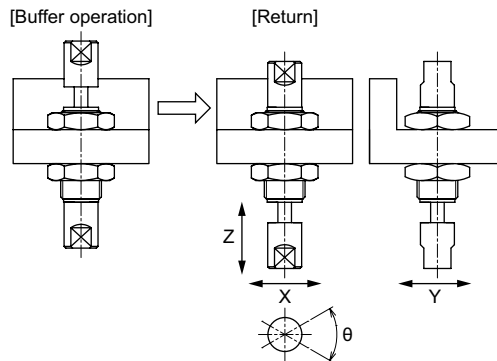
*3: Refer to the figure below for return positioning accuracy. The figure shows buffer return accuracy.

*4: Consult with CKD for requirements not complying with specifications.

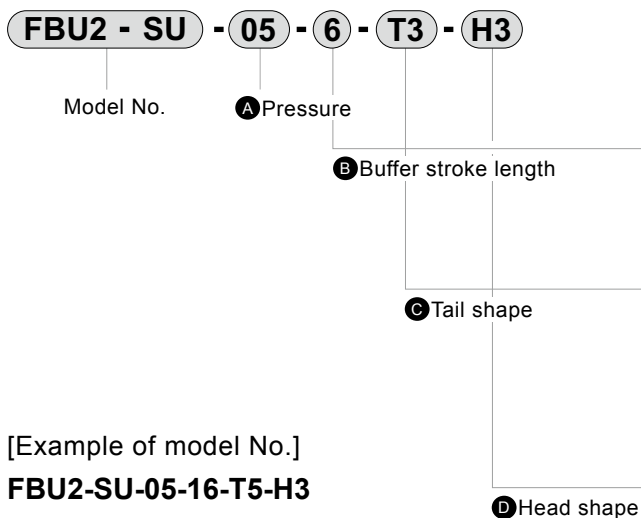
[FBU2-SU max. holding torque (reference value)]

Pressure (N)	Stroke length (mm)	Holding torque (N·cm)
0.5	2	0.5 or more
	6	0.5 or more
	16	1.2 or more
1	2	1.2 or more
	6	1.2 or more
	16	2.5 or more

Indicates the holding torque at the outer end.



How to order



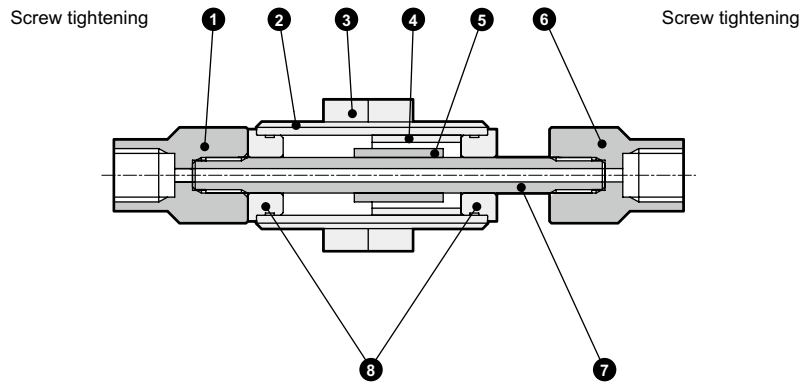
[Example of model No.]

FBU2-SU-05-16-T5-H3

- Ⓐ Pressure (N) : 0.5N
- Ⓑ Buffer stroke length (mm) : 16 mm
- Ⓒ Tail shape : M5 female thread depth 4
- Ⓓ Head shape : M3 female thread depth 3

Code	Content
A Pressure (N)	
05	0.5
10	1.0
B Buffer stroke length (mm)	
2	2
6	6
16	16
C Tail shape	
TB	Without hole
T3	M3 female thread depth 3
T4	M4 female thread depth 4
T5	M5 female thread depth 4
T6	M6 female thread depth 5
D Head shape	
HB	Without hole
H3	M3 female thread depth 3
H4	M4 female thread depth 4
H5	M5 female thread depth 4
H6	M6 female thread depth 5

Internal structure and parts list



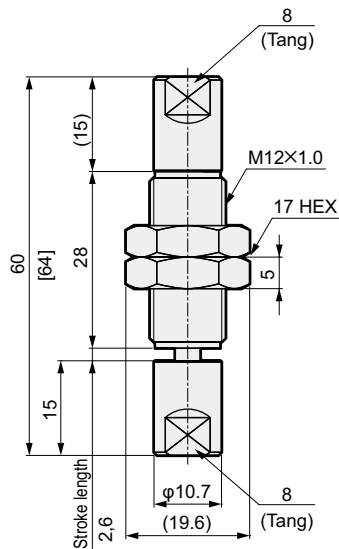
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Adaptor (tail)	Aluminum alloy	Trivalent chromate treatment	5	Ring magnet	Plastic magnet	
2	Fixed shaft	Stainless steel		6	Adaptor (head)	Aluminum alloy	Trivalent chromate treatment
3	Hexagon nut	Steel	Galvanizing trivalent chromate finish	7	Rod	Stainless steel	
4	Ring magnet	Plastic magnet		8	Bearing	Polyphenylene sulfide	Filler addition

Dimensions

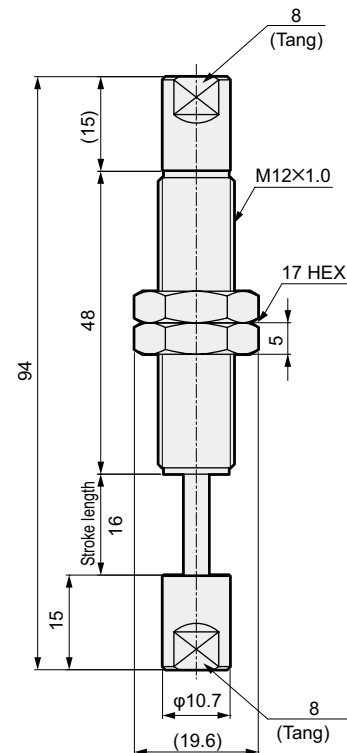
Note: The tang for adaptor (tail) or adaptor (head) is arbitrary.

● FBU2-SU-05/10-6

● FBU2-SU-05/10-16



Note: Values in [] are dimensions for the 6-stroke.



Weight

(Unit: g)

Model No.	Fixed part	Movable part
FBU2-SU-05/10-2	19.1	4.2
FBU2-SU-05/10-6	19.1	4.5
FBU2-SU-05/10-16	25.2	7.9

(Unit: g)

Adaptor				
T/H B	T/H 3	T/H 4	T/H 5	T/H 6
3.4	3.3	3.2	3.1	2.9

*1: Total weight of movable part = movable part + adaptor (tail side) + adaptor (head side),
product weight = fixed part + movable part + adaptor (tail side) + adaptor (head side).

F.R.L
F (Filtr)
R (Reg)
L (Lub)
PresSW
Shutoff
SlowStart
FimResistFR
Oil-ProhR
MedPresFR
No Cu/ PTFE FRL
Outdrs FR
F.R.L (Related)
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneuR
AirBoost
SpdContr
Silncr
CheckV/ other
Jnt/tube
AirUnt
PrecsCompn
Mech/ ElecPresSw
ContactSW
AirSens
PresSW Cool
AirFloSens/ Contr
WaterRtSens
TotAirSys (Total Air)
TotAirSys (Gamma)
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending