

Shock absorber FCK Series

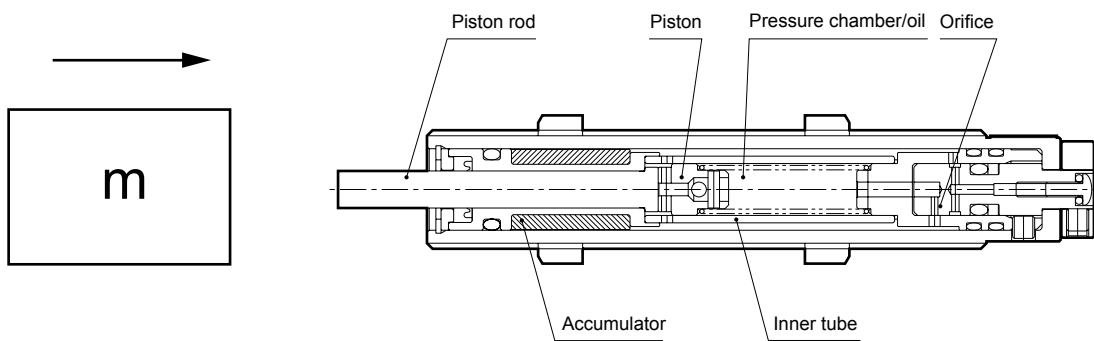
• Max. energy absorption: 1.5 to 720 J



Specifications

Descriptions		FCK														
Series		0.15	0.18	0.3	0.5	0.4	0.6	1	3	5	6.5	8.1	20	40	45	73.5
Type/Classification		Spring return with adjuster														
Max. energy absorption J		1.5	1.8	2.9	4.9	3.9	5.9	9.8	29.4	49	63.7	79.3	196	392	441	720
O.D. thread size mm		M10×1.0		M12×1.0		M14×1.5		M16×1.5	M20×1.5	M25×1.5		M27×1.5	M30×1.5	M36×1.5	M42×1.5	
Stroke length mm		8		10				12	16	30	40	25	35	50		80
Max. absorbed energy per hour kJ/hr		3.5		5.9		8.8		14.1	20.6	29.4	38.2	32.3	70.5	141.1	164.6	264.6
Max. colliding speed	L m/s	0.3 to 1	—	0.3 to 1	—	0.3 to 1	—	0.3 to 1					—	—	—	—
	M m/s	—	0.3 to 2	—	0.3 to 2	—	0.3 to 2	0.3 to 2					0.3 to 2			
	H m/s	—	0.7 to 3	—	0.7 to 3	—	0.7 to 3	0.7 to 3					0.7 to 3			
Max. operating frequency (20°C) Cycle/min.		60											30	10	6	
Ambient temperature °C		-5 (23°F) to 70 (158°F)														
Max. load (resistance)	L N	—		—		—		—		4,900			—		—	
	M N	637		1,470		1,813		2,646	3,528	3,920		6,370	16,660	23,520	27,028	
	H N	—		—		—		—		—			—		—	
Return time S		0.5 or less										1 or less		2 or less		
Weight	Without cap g	26.5		44		68		108	180	406	—	411	710	1300	—	—
	With cap g	27		47		73		117	202	436	459	460	760	1410	1560	2010
Return spring force	When extended N	2.9		4.9		4.5		5.4	12.0	16.6	23.8	16.2	19.6	22.5	24.5	
	When compressed N	5.9		9.8				14.7	18.0	33.1	71.4	27.2	44.1	68.6	83.3	98.0

Operational principle



If an object collides with the piston rod, that action is transmitted to the oil in the pressure chamber enclosed by the piston and inner tube.

Oil in pressure chamber flows out from orifice provided in inner tube.

Resistance F shown by following formula occurs at that time.

$$F = av^2 + bv + cx \text{ (} v \text{ is colliding speed, and } x \text{ is moving stroke. } a, b, \text{ and } c \text{ are constants.)}$$

No. 1 shows the speed square resistance, which is a significant part of the resistance as a whole.

No. 2 shows the viscosity resistance, which is a significant part of the resistance if the colliding speed is low.

Item 3 shows return force of piston rod. (Can usually be ignored, as the value is miniscule compared to Items 1 and 2.)

The product of resistance generated at this time and the piston rod stroke is the shock absorber absorption energy.

The shock absorber realizes ideal impact absorption by controlling Items 1 and 2.

How to order

- Low speed

FCK-L - **0.15** - **C**

- Medium speed

FCK-M - **0.18** - **C**

- High speed

FCK-H - **0.18** - **C**

A Model No.

B Series (max. energy absorption)

C Option
*1

		A Model No.		
		Low speed	Medium speed	High speed
Code	Content	FCK-L	FCK-M	FCK-H
B Series (max. energy absorption)				
0.15	1.5 J	●		
0.18	1.8 J		●	●
0.3	2.9 J	●		
0.4	3.9 J	●		
0.5	4.9 J		●	●
0.6	5.9 J		●	●
1	9.8 J	●	●	●
3	29.4 J	●	●	●
5	49 J	●	●	●
6.5	63.7 J	●	●	●
8.1	79.3 J	●	●	●
20	196 J		●	●
40	392 J		●	●
45	441 J		●	●
73.5	720 J		●	●
C Option				
Blank	Without cap	●	●	●
C	Capped	●	●	●

* 1: No cap is not available for 6.5 (63.7 J), 45 (441 J), 73.5 (720 J).

is not available.

[Example of model No.]

FCK-M-0.18-C

- A** Model No. : Shock absorber medium speed
- B** Series : Max. energy 1.8J
- C** Option : Capped

Specifications for rechargeable battery (Catalog No. CC-1226A)

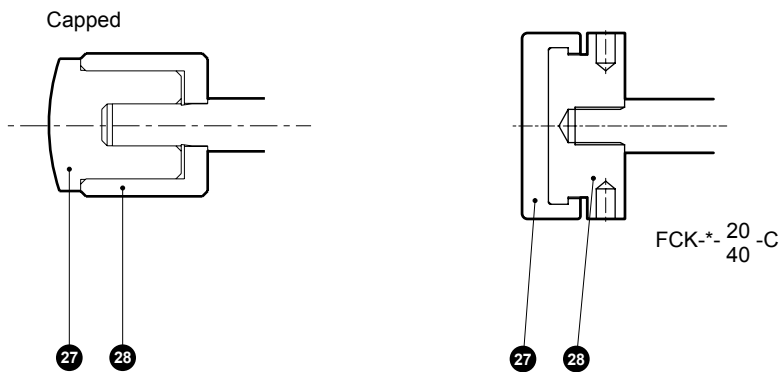
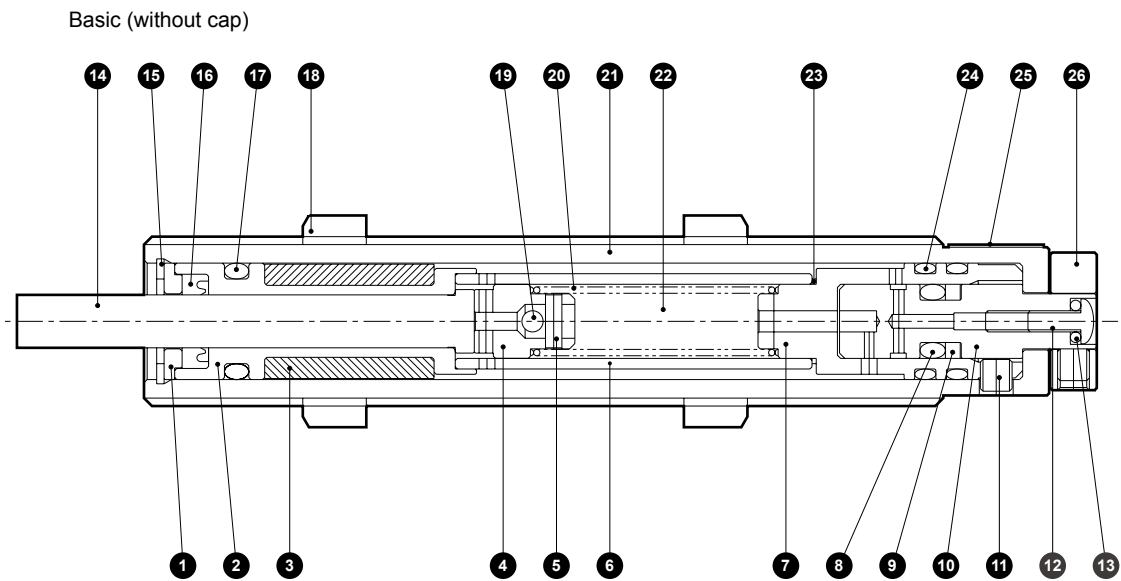
FCK - ... - **P4*** ● Design compatible with rechargeable battery manufacturing process

* Contact CKD for details.

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Internal structure and parts list

● FCK-*.*



Cannot be disassembled

Parts list

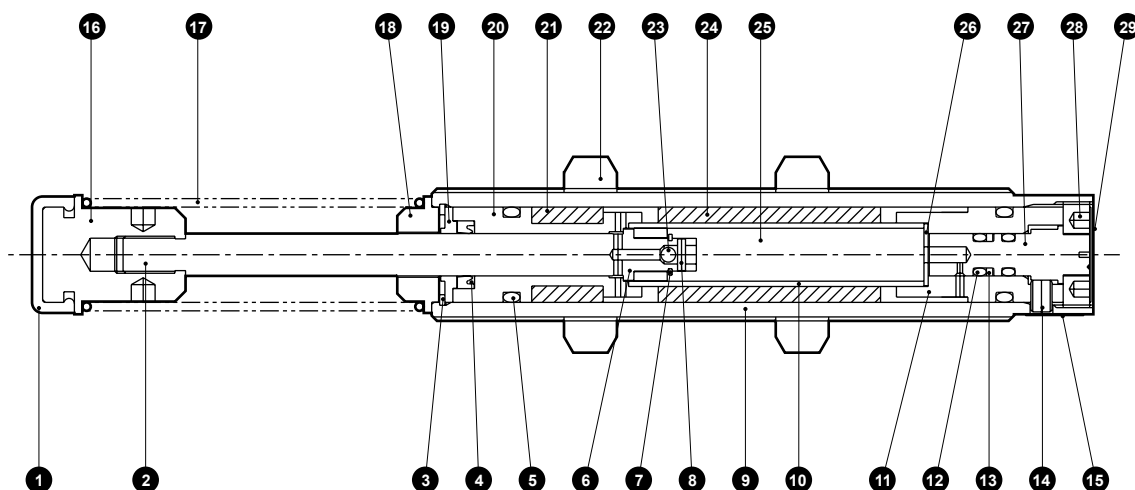
No.	Part name	Material	No.	Part name	Material
1	Packing seal retainer	Copper alloy	15	Snap ring	Steel
2	Guide	Copper alloy	16	U packing	Nitrile rubber
3	Accumulator	Nitrile rubber	17	O-ring	Nitrile rubber
4	Piston	Copper alloy	18	Hexagon nut	Steel
5	Spring pin	Stainless steel	19	Steel ball	Bearing steel
6	Inner tube	Steel	20	Spring	Piano wire
7	Bottom	Copper alloy	21	Outer tube	Steel
8	O-ring	Nitrile rubber	22	Oil	Oil
9	Back up ring	Resin	23	Spacer	Nitrile rubber
10	Adjusting shaft	Copper alloy	24	O-ring	Nitrile rubber
11	Hexagon socket set screw	Alloy steel	25	Product name plate	
12	Cross-recessed set screw	Alloy steel	26	Knob	Copper alloy
13	O-ring	Nitrile rubber	27	Rod cap	Resin *2
14	Piston rod	Alloy steel	28	Reinforcement ring	Steel

*1: Structures differ to some extent by model.

*2: For sizes 20 and 40, urethane rubber is used.

Internal structure and parts list

- 6.5
- FCK-*- 45 -C (Capped)
- 73.5



Cannot be disassembled

Parts list

No.	Part name	Material	No.	Part name	Material
1	Rod cover	Urethane rubber (*2)	16	Spring guide	Steel
2	Piston rod	Alloy steel	17	Spring	Piano wire
3	Snap ring (round R)	Steel	18	Spring guide	Steel
4	U packing	Nitrile rubber	19	Packing seal retainer	Copper alloy
5	O-ring	Nitrile rubber	20	Guide	Copper alloy
6	Piston	Copper alloy	21	Accumulator	Nitrile rubber
7	Snap ring (E)	Steel	22	Hexagon nut	Steel
8	Spring pin	Stainless steel	23	Steel ball	Bearing steel
9	Outer tube	Steel pipe	24	Accumulator	Nitrile rubber
10	Inner tube	Steel pipe	25	Oil	Oil
11	Bottom	Copper alloy	26	Washer	Steel
12	O-ring	Nitrile rubber	27	Adjusting shaft	Copper alloy
13	Back up ring	Resin	28	Holding screw	Steel
14	Hexagon socket set screw	Alloy steel	29	Label for adjustment	Steel
15	Product name plate				

*1: Structures differ to some extent by model.

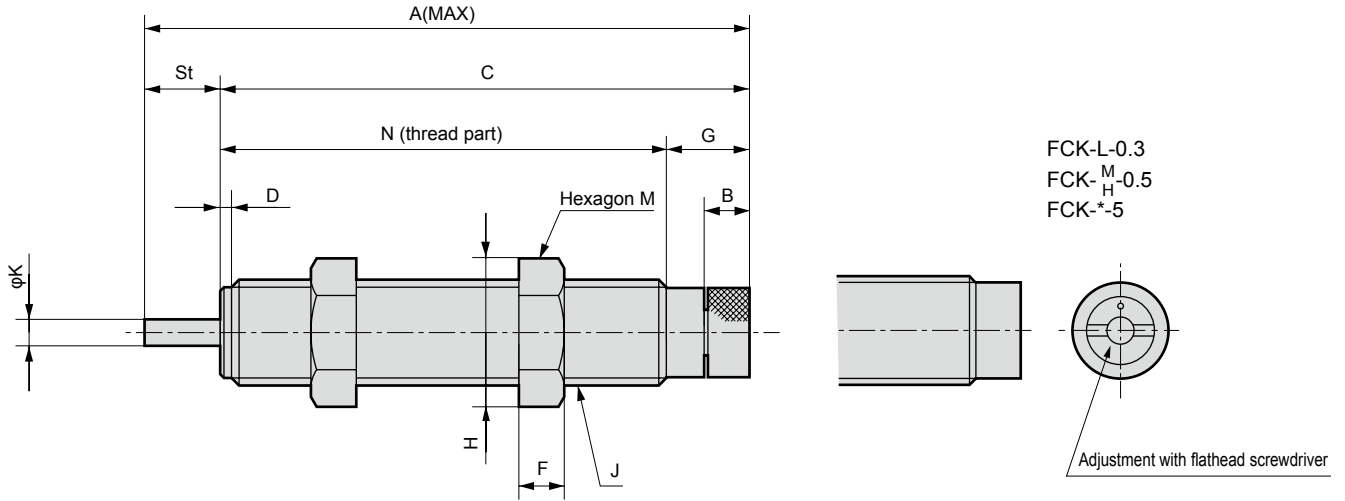
*2: The rod cover (resin) cap cannot be attached to the 45 and 73.5 sizes.

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2/
COVP/IN2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- MSD/
MSDG
- FC*
- STK
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- ShkAbs
- FJ
- FK
- Spd
Contr
- Ending

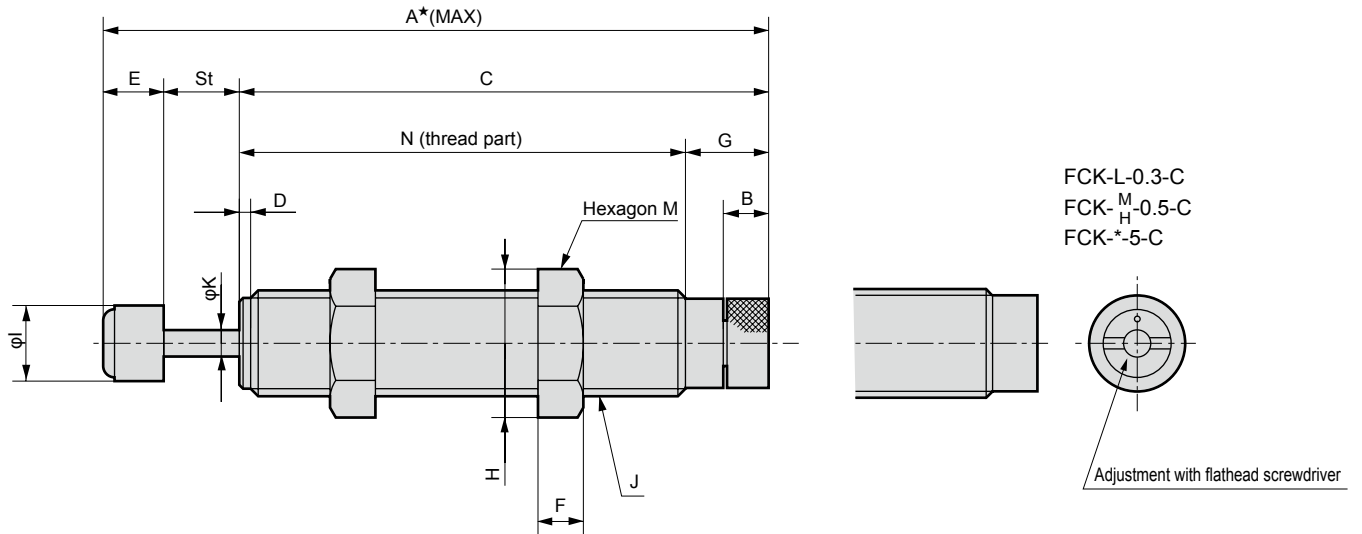
Dimensions



● Standard (FCK-*-*)



● Capped (FCK-*-*-C)



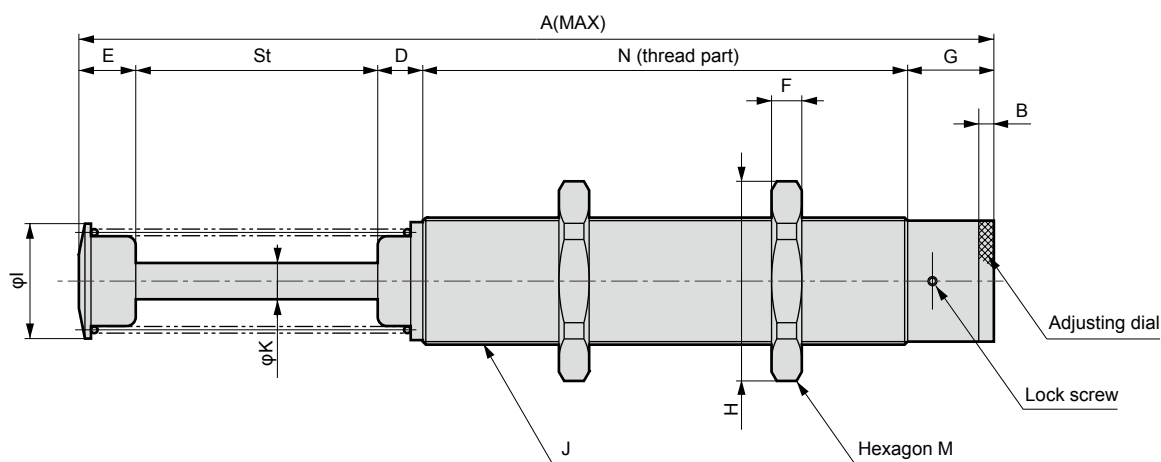
Model No.	A	A*	B	C	St	D	E	F	G	H	I	J	K	N	M
FCK-L-0.15	58.9	65.2	3.5	50.9	8	1.5	6.3	3	8.7	14.2	6	M10×1	2.4	42.2	13
FCK-M-H-0.18															
FCK-L-0.3	76	84	—	66	10	1.5	8	4	5	16.2	8	M12×1	3.5	61	14
FCK-M-H-0.5															
FCK-L-0.4	80	88	6	70	10	1.5	8	6	11	19.6	10	M14×1.5	3.5	59	17
FCK-M-H-0.6															
FCK-*-1	102	117	4.5	90	12	—	15	6	14.5	20	13.5	M16×1.5	5	75.5	19
FCK-*-3	110	127	4	94	16	—	17	8	18	27.7	18	M20×1.5	6	76	24
FCK-*-5	155	173	—	125	30	—	18	10	15	37	22	M25×1.5	8	110	32
FCK-*-8.1	136	156	5	111	25	—	20	10	20	37	24	M27×1.5	8	91	32
FCK-M-H-20	188	206.5	5	153	35	—	18.5	14	25	41.6	27	M30×1.5	10	128	36
FCK-M-H-40	235	254.5	5	185	50	—	19.5	15	25	53.1	33	M36×1.5	12	160	46

Note: The above table * shows low speed (L), medium speed (M), and high speed (H).

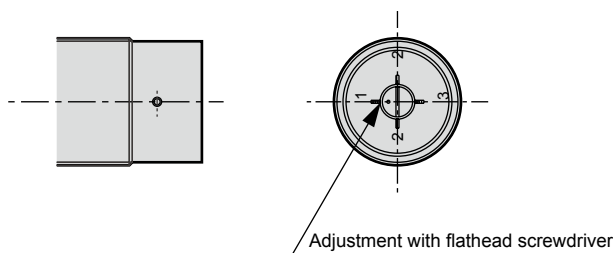
Dimensions



- 6.5
- FCK-* - 45 -C
- 73.5



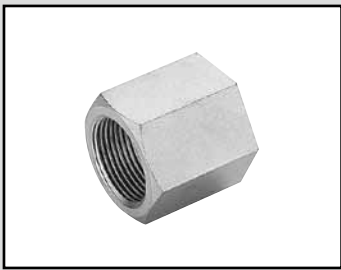
FCK-* -6.5-C
FCK-_M-_H45-C



Model No.	A	B	St	D	E	F	G	H	I	J	K	N	M
FCK-* -6.5-C	200.5	-	40	6.5	29	10	15	37	22	M25×1.5	8	110	32
FCK- _M - _H 45-C	212.5	-	50	7	19	25	23	66	38	M42×1.5	12	113.5	60
FCK- _M - _H 73.5-C	302.5	5	80	15	19	25	28.5	66	38	M42×1.5	12	160	60

Note: The above table * shows low speed (L), medium speed (M), and high speed (H).

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2
- CAV2/COVP/N2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- MSD/MSDG
- FC*
- STK
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- ShkAbs
- FJ
- FK
- Spd Contr
- Ending



Shock absorber FCK Series Option parts

FCK-*-N1/FCK-*-C-N1

(Stopper nut)

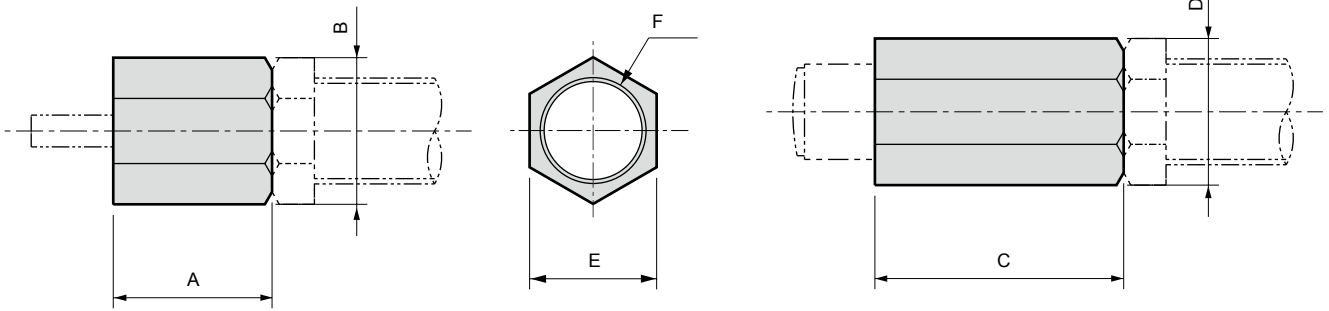


Dimensions



● FCK-*-N1 (for standard)
Material: Steel

● FCK-*-C-N1 (for capped)
Material: Steel



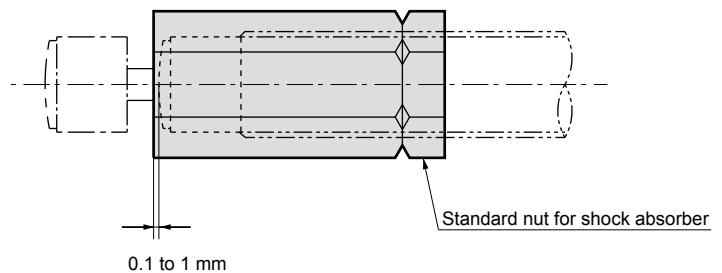
(For standard)

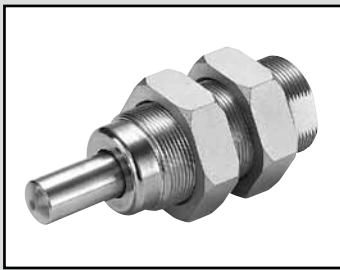
(For capped type)

Model No.	Compatible model	A	B	Weight (g)	Model No.	Compatible model	C	D	E	F	Weight (g)
FCK-0.18-N1	FCK-L-0.15 FCK-M-0.18 FCK-H-0.18	10	15	5	FCK-0.18-C-N1	FCK-L-0.15-C FCK-M-0.18-C FCK-H-0.18-C	16	15	13	M10×1	8
FCK-0.5-N1	FCK-L-0.3 FCK-M-0.5 FCK-H-0.5	12	16.2	5	FCK-0.5-C-N1	FCK-L-0.3-C FCK-M-0.5-C FCK-H-0.5-C	16	16.2	14	M12×1	7
FCK-0.6-N1	FCK-L-0.4 FCK-M-0.6 FCK-H-0.6	12	19.6	9	FCK-0.6-C-N1	FCK-L-0.4-C FCK-M-0.6-C FCK-H-0.6-C	20	19.6	17	M14×1.5	15
FCK-1-N1	FCK-L-1 FCK-M-1 FCK-H-1	15	21.9	13	FCK-1-C-N1	FCK-L-1-C FCK-M-1-C FCK-H-1-C	30	21.9	19	M16×1.5	26
FCK-3-N1	FCK-L-3 FCK-M-3 FCK-H-3	30	27.7	43	FCK-3-C-N1	FCK-L-3-C FCK-M-3-C FCK-H-3-C	47	27.7	24	M20×1.5	68
FCK-5-N1	FCK-L-5 FCK-M-5 FCK-H-5	20	37	62	FCK-5-C-N1	FCK-L-5-C FCK-M-5-C FCK-H-5-C	32	37	32	M25×1.5	99
FCK-8.1-N1	FCK-L-8.1 FCK-M-8.1 FCK-H-8.1	35	37	86	FCK-6.5-C-N1	FCK-L-6.5-C FCK-M-6.5-C FCK-H-6.5-C	50	37	32	M25×1.5	154
FCK-20-N1	FCK-M-20 FCK-H-20	38	41.6	123	FCK-8.1-C-N1	FCK-L-8.1-C FCK-M-8.1-C FCK-H-8.1-C	55	37	32	M27×1.5	135
FCK-40-N1	FCK-M-40 FCK-H-40	45	53.1	286	FCK-20-C-N1	FCK-M-20-C FCK-H-20-C	58	41.6	36	M30×1.5	188
					FCK-40-C-N1	FCK-M-40-C FCK-H-40-C	65	53.1	46	M36×1.5	413

1 When using stopper nut, note the following points.

- For types without cap, attach the stopper nut so that it protrudes 0.1 mm to 1 mm outward along the piston rod from the shock absorber body (cylinder top). For capped types, attach the stopper nut so that it protrudes 0.5 mm to 1 mm plus the cap length outward along the piston rod from the shock absorber body (cylinder section).
- Fix with the standard nut for shock absorber after installing the stopper nut.
- Cannot be used with a deflection angle adaptor.





Shock absorber **FCK Series** Option parts

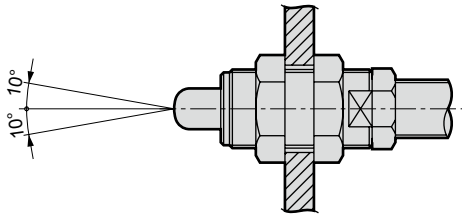
FCK-* -A

(Deflection angle adaptor)



Specifications

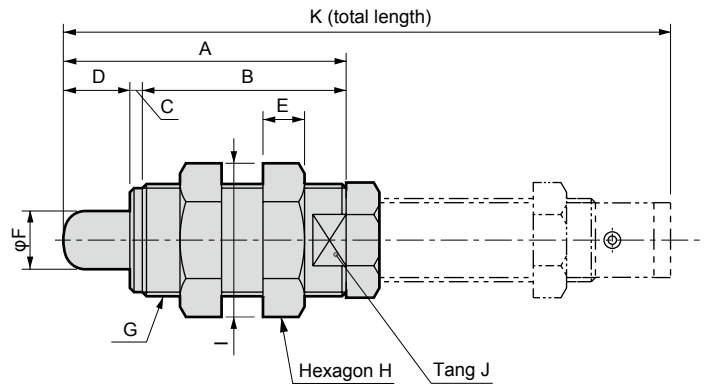
Max. working deflection angle $\pm 10^\circ$



Dimensions



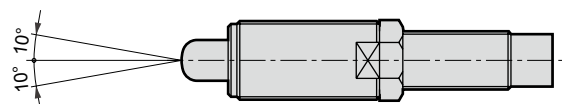
● FCK-* -A



Model No.	Compatible model	A	B	C	D	E	F	G	H	I	J	K	End section material	Weight (g)
FCK-0.18-A	FCK-L-0.15 FCK-M-0.18 FCK-H-0.18	38	28	2	8	6	8	M16×1.5	19	20	13	75.7	Plastic (POM)	37
FCK-0.5-A	FCK-L-0.3 FCK-M-0.5 FCK-H-0.5	48	35	3	10	5	10	M18×1.5	21	24.3	14	97.8		49
FCK-0.6-A	FCK-L-0.4 FCK-M-0.6 FCK-H-0.6	51	38	3	10	7	11	M22×1.5	24	27.7	19	103		83
FCK-1-A	FCK-L-1 FCK-M-1 FCK-H-1	60	45	3	12	7	12	M22×1.5	24	27.7	19	129		81
FCK-3-A	FCK-L-3 FCK-M-3 FCK-H-3	68	49	3	16	10	14	M27×1.5	32	37	24	146	Iron	214
FCK-5-A	FCK-L-5 FCK-M-5 FCK-H-5	107.5	67.5	10	30	15	16	M36×1.5	46	53.1	32	212		630
FCK-8.1-A	FCK-L-8.1 FCK-M-8.1 FCK-H-8.1	97	62	10	25	15	16	M36×1.5	46	53.1	32	188		582
FCK-20-A	FCK-M-20 FCK-H-20	127	82	10	35	15	18	M40×1.5	50	57.7	36	255		838
FCK-40-A	FCK-M-40 FCK-H-40	167	107	10	50	15	20	M45×1.5	55	63.5	41	322		1265

1 When using deflection angle adaptor, note the following points.

- Keep the angle within $\pm 10^\circ$ of the center line of the deflection angle adaptor cap.
- Cannot be used with stopper nut.
- Cannot be used with capped.



SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/
COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/
MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd
Contr
Ending