



Soft Silent Safety

FL Series (M12~M16)

RoHS Compliant

Multiple-Orifice

Adjustable



<Characteristics>

- With an adjustable multiple-orifice structure, an optimal impact absorption can be achieved by making adjustments, even under variable operating conditions.
- This product is a long-stroke type that is suitable for high-speed (3m/s) collisions.

<Specifications>

Model		FL-1214H-□	FL-1417H-□	FL-1620H-□
Max. absorption energy	J (kgf-m)	5.4 (0.55)	14.7 (1.5)	17.6 (1.8)
Stroke	mm	14	17	20
Max. equivalent mass	kg (kgf)	30 (30)	50 (50)	60 (60)
Range of impact rate	m/s	0.3~3	0.3~3	0.3~3
Max. drag	N (kgf)	1156 (118)	2646 (270)	2646 (270)
Max. cycle rate	cycle/min	60	60	60
Max. absorption energy per minute	J/min (kgff-m/min)	98 (10)	176 (18)	235 (24)
Recovering power of the piston rod	N (kgf)	12.7 (1.3) or lower	15.7 (1.6) or lower	19.6 (2.0) or lower
Operating temperature	°C	-5~70	-5~70	-5~70
Mass: (S type)	g	46	80	124
(C type)	g	49	85	136

Note) Insert S in the □ to order without a cap, and insert C in the □ to order with a cap (R if ordering urethane cap).

<Key to Model Number>

FL - 16 20 H - C

With/Without cap

S: Without cap

C: With cap

Performance classification

H: For high speed (Impact rate 0.3~3m/s)

Stroke

(indicated in mm)

External screw size

(indicated in mm)

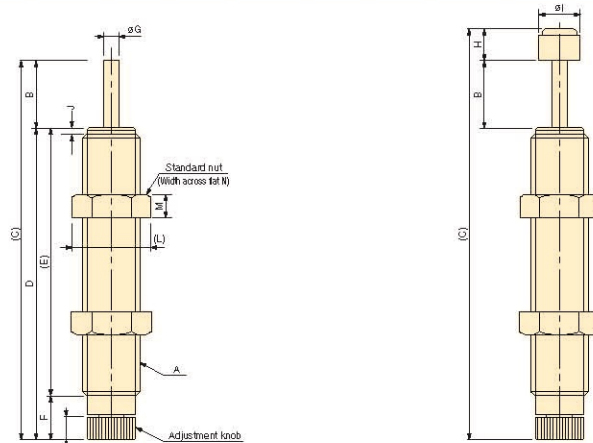
Series name

<Precautions for Use>

- * Do not use this product without carefully reading the attached owner's manual.
- * We recommend that you use it with an external stopper (Stopper nut OP-020**).
- * Ensure that sufficient mounting strength is secured for this product. (As a guideline, it should be 2 to 3 times the maximum drag listed in the catalogue.)
- * Do not use this product in a vacuum or a location where it may come in contact with oil.
- * Ensure that an eccentric load is not applied to the soft absorber. (Allowable eccentric angle: $\pm 2.5^\circ$)

<Adjustment Method>

- * To adjust, turn the adjustment knob located at the bottom of the main unit.
- * Because the adjustment can be done in an analog manner, a value between two integers on the indicator can be set.
- * Once the adjustment is complete, secure with a lock screw using the attached hex wrench.

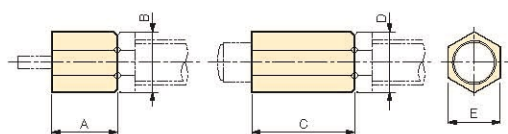


<Dimensions>

Model	A	B	C	D	E	F	øG	H	øI	J	K	L	M	N
FL-1214H-S	M12X1.0	14	84	70	59.5	10.5	3.5	—	—	1.5	5	16.2	4	14
FL-1214H-C			92					8	8					
FL-1417H-S	M14X1.5	17	105	88	77.8	10.2	4	—	—	1.5	5	19.6	6	17
FL-1417H-C			115					10	10					
FL-1620H-S	M16X1.5	20	128	108	93.5	14.5	5	—	—	—	4.4	20	6	19
FL-1620H-C			143					15	13.5					

<Optional Parts>

Stopper nut OP-020**-□



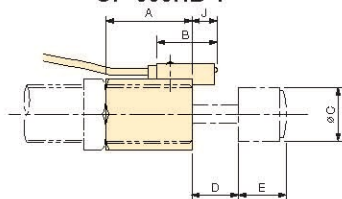
Note) When attaching, make sure that the side without a bearing chamfer is the impact surface.

<Dimensions>

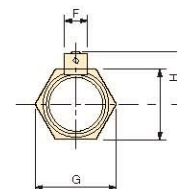
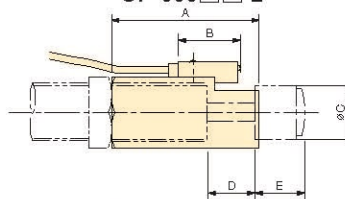
Model	Without cap OP-020□□-S		With cap P-020□□-C		E	Applicable model	Mass g	
	A	B	C	D				
OP-020KB-S-C	12	16.2	16	16.2	14	FL-1214H	S	6
							C	8
OP-020RB-S-C	12	19.6	20	19.6	17	FL-1417H	S	10
							C	17
OP-020HB-S-C	15	21.9	30	21.9	19	FL-1620H	S	15
							C	28

Holder with a switch

OP-030HB-1



OP-030□□-2



Note) For switch specifications and precautions for use, please refer to page 73.

Note) A holder with a switch cannot be used with the FL-1417 series.

<Dimensions>

Model	A	B	øC	D	E	F	G	H	I	J	Applicable model	Mass g
OP-030KB-2	29	21	8	14	8	8	19.6	13.1	16	—	FL-1214H-C	38
OP-030HB-1	25	21	13.5	20	15	8	21.9	15.5	19	9	FL-1620H-C	36
OP-030HB-2	40	21	13.5	20	15	8	21.9	15.5	19	—	FL-1620H-C	46

*Standard nuts are sold separately as well.

For FL-1214: M12 nut For FL-1417: M14 nut For FL-1620: M16 nut