Soft Absorber

FES Series

Type Descriptions

F E S – 1 2 1 5

① ② ③

① Series name
② Mounting screw size (metric coarse screw thread)
③ Max. stroke

Product Description

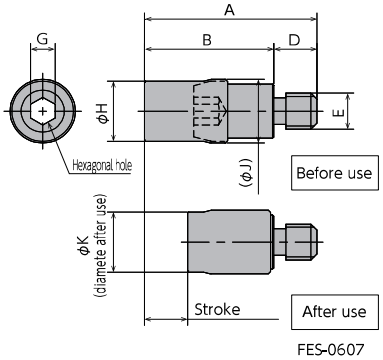
The emergency stopper, available for only one-time use, is designed to urgently stop in runway of the devices with an linear motor or servomotor.
Absorbs the energy using the plastic deformation of metal. Differs from the general hydraulic pressure shock absorber, impervious to an oil leak.
Designed more compact than a hydraulic pressure shock absorber with the similar absorption capacity.
Also, a rebound, frequently seen in a rubber stopper, does not occur and the excellent absorption characteristics cause no damage to the device.

Specifications

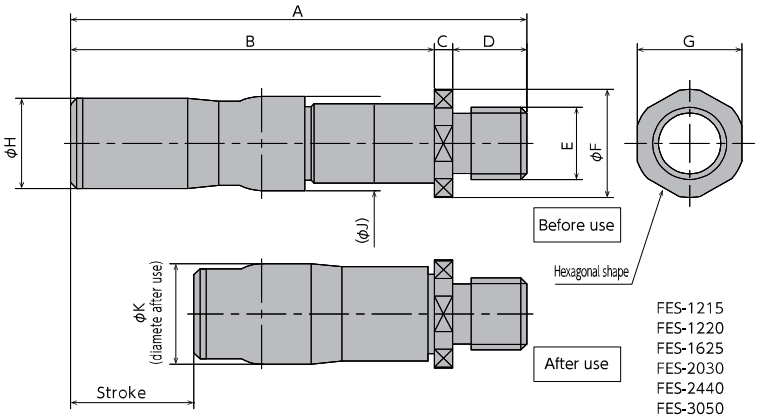
Model	Max. absorption energy J(kgf·m)	Maximum stroke mm	Range of impact rate m/s	Max. drag N(kgf)	Range of operating temperature ℃	Mass g
FES-0607	7(0.7)	7	3以下	2,500(255)	−25～60	9
FES-1215	45(4.6)	15		6,500(663)		50
FES-1220	80(8.2)	20		8,500(867)		70
FES-1625	160(16.3)	25		9,500(969)		100
FES-2030	450(45.9)	30		27,000(2,755)		300
FES-2440	1,000(102)	40		45,000(4,592)		650
FES-3050	1,800(183.7)	50		60,000(6,122)		1,200

Dimensions

Model	A	B	C	D	E	F	G	H	J	K
FES-0607	28	21	–	7	M6×1	–	4	10	10.6	10.6
FES-1215	62	47	3	12	M12×1.75	15	14	14	14.6	15.4
FES-1220	74	59	3	12	M12×1.75	18	17	15	15.7	16.7
FES-1625	89	70	3	16	M16×2	19	17	15	16.5	17.5
FES-2030	109	84	5	20	M20×2.5	30	27	26	27.8	28.8
FES-2440	138	107	6	25	M24×3	40	36	33	36.7	37.7
FES-3050	172	134	8	30	M30×3.5	50	46	41	45	46



FES-0607



FES-1215
FES-1220
FES-1625
FES-2030
FES-2440
FES-3050

●Products specification might be changed without notice.

Selection Method

1. Based on the equations for the selection, please calculate the kinetic energy (E1) of the application to be used and tentatively select the model with grater maximum absorption energy than the calculated energy value.

* According to the expected number of units to be used (n), multiply the maximum absorption energy by n.

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2. Calculate the stroke of the tentatively selected model (St) based on the stroke equations and the table of coefficient for each model, and calculate the thrusting energy (E2) using the equations for the selection.

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3. Confirm that the total energy (E) and stroke (St) calculated above meet the specifications of the tentatively selected model. When the specifications are met, the selection is complete. If not, please calculate again with another model with greater maximum absorption energy.

Equations for the Selection

With thrust (horizontal)

$$E_1=\frac{1}{2}MV^2 \qquad E_2=F\times St$$

$$St=\frac{1}{2}MV^2\times\frac{1}{((\text{max. drag}\times n\times\text{coefficient})-F}$$

$$E=E_1+E_2$$

Without thrust (horizontal)

$$E_1=\frac{1}{2}MV^2$$

$$E=E_1$$

You can calculate the approximate stroke using the equations below (no need to use the equation of E2 = F × St).

$$St=\frac{1}{2}MV^2\times\frac{1}{\text{max. drag}\times n\times\text{coefficient}}$$

For free fall

$$E_1=M\cdot g\cdot H \qquad E_2=M\cdot g\cdot St$$

$$St=\frac{1}{2}MV^2\times\frac{1}{(\text{max. drag}\times n\times\text{coefficient})-(M\times g)}$$

$$E=E_1+E_2$$

Equations to calculate a stroke

Equations to calculate St (stroke) of E2=F×St

$$St=\frac{1}{2}MV^2\times\frac{1}{\text{max. drag}\times n\times\text{coefficient}-F}$$

Number of FES | Thrust

Table of coefficient for each model

Model	Stroke mm	Max. absorption energy J	Max. drag N	Coefficient
FES–0607	7	7	2,500	0.5
FES–1215	15	45	6,500	0.7
FES–1220	20	80	8,500	0.7
FES–1625	25	160	9,500	0.7
FES–2030	30	450	27,000	0.6
FES–2440	40	1,000	45,000	0.7
FES–3050	50	1,800	60,000	0.7

Product Characteristics

* Excellent absorption characteristic
* Compact with large absorption capacity
* Usable without an external stopper
* Maintenance-free
* Little changes in the characteristics with operating temperature

How to Mount

Tightening torque when attaching N•m (kg•f m)	
FES-0607	9(0.9)
FES-1215	61.4(6.26)
FES-1220	66.5(6.78)
FES-1625	107(10.9)
FES-2030	315(32.1)
FES-2440	564(57.6)
FES-3050	1,125(114.7)

* Attach the product with tightening torque above using the hexagonal part of the main unit.
* Using another part to attach the product causes insufficient tightening or damage.
* When using in a place where vibration easily causes loosening, take measures so that loosening does not occur.

FES-0607		
Material	SUS	
Surface treatment	Main unit	Bright quenching

FES-1215、1220、1625、2030、2440、3050		
Material	Carbon steel	
Surface treatment	Cap	Galvanized
	Main unit	Nitriding treatment

Precautions for Use

* Do not use this product without carefully reading the attached owner's manual.
* 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 catalog.)
* 2 or more of this product can be used in parallel.
* Ensure that an eccentric load is not applied to the product.
* You can use the product only once. Not available repeatedly.