

# PRESSURE RESISTANT SHOCK ABSORBERS LINEAR ORIFICE TYPE

## KSHK series



## Specifications

Item	Model	KSHK10×5-01	KSHK10×5-02	KSHK12×6-01	KSHK12×6-02
Maximum absorption capacity	J [ft·lbf]	0.4 [0.295]	0.5 [0.369]	0.8 [0.590]	0.6 [0.443]
Absorption stroke	mm [in]	5 [0.197]		6 [0.236]	
Maximum impact speed	m/s [ft/sec]	0.5 [1.640]	0.8 [2.624]	0.5 [1.640]	0.8 [2.624]
Maximum operating frequency	cycle/min	30			
Operating pressure range	MPa [psi]	0 ~ 0.7 [0 ~ 102]			
Maximum absorption per unit of time	J/min	8		12	
Spring return force	N [lbf]	8.3		14.5	
Angle variation		1° or less			
Operating temperature range <sup>Note</sup>	°C [°F]	0 ~ 60 [32 ~ 140]			

Item	Model	KSHK14×7-01	KSHK14×7-02	KSHK16×8-01	KSHK16×8-02
Maximum absorption capacity	J [ft·lbf]	1.0 [0.738]	1.0 [0.738]	1.6 [1.180]	1.3 [0.959]
Absorption stroke	mm [in]	7 [0.276]		8 [0.315]	
Maximum impact speed	m/s [ft/sec]	0.5 [1.640]	0.8 [2.624]	0.5 [1.640]	0.8 [2.624]
Maximum operating frequency	cycle/min	30			
Operating pressure range	MPa [psi]	0 ~ 0.7 [0 ~ 102]			
Maximum absorption per unit of time	J/min	18		26	
Spring return force	N [lbf]	13.0 [2.923]		13.5 [3.035]	
Angle variation		1° or less			
Operating temperature range <sup>Note</sup>	°C [°F]	0 ~ 60 [32 ~ 140]			

Item	Model	KSHK18×9-01	KSHK18×9-02	KSHK20×10-01	KSHK20×10-02
Maximum absorption capacity	J [ft·lbf]	2.5 [1.844]	2.9 [2.139]	5.0 [3.688]	4.8 [3.540]
Absorption stroke	mm [in]	9 [0.354]		10 [0.394]	
Maximum impact speed	m/s [ft/sec]	0.5 [1.640]	0.8 [2.624]	0.5 [1.640]	0.8 [2.624]
Maximum operating frequency	cycle/min	30			
Operating pressure range	MPa [psi]	0 ~ 0.7 [0 ~ 102]			
Maximum absorption per unit of time	J/min	50		90	
Spring return force	N [lbf]	27.0 [6.070]		29.0 [6.519]	
Angle variation		1° or less		3° or less	
Operating temperature range <sup>Note</sup>	°C [°F]	0 ~ 60 [32 ~ 140]			

Note: With shock absorbers, absorption capacity increases and decreases in accordance with speed and ambient temperature.  
Always use the product within the capacity line range of the selection graph on page 1747.

## Mass

Model	Mass	
	Seal washer, with hexagon nut	Main unit only (-NN: No seal washer, with hexagon nut)
KSHK10×5-01,-02	31 [1.093]	21 [0.741]
KSHK12×6-01,-02	49 [1.728]	35 [1.235]
KSHK14×7-01,-02	76 [2.681]	55 [1.940]
KSHK16×8-01,-02	110 [3.9]	82 [2.892]
KSHK18×9-01,-02	149 [5.3]	113 [4.0]
KSHK20×10-01,-02	207 [7.3]	155 [5.5]

### Seal washer

Model	Mass
MK1-KSHK10	2.0 [0.071]
MK1-KSHK12	3.0 [0.106]
MK1-KSHK14	4.0 [0.141]
MK1-KSHK16	5.0 [0.176]
MK1-KSHK18	4.0 [0.141]
MK1-KSHK20	8.0 [0.282]

### Hexagon nut

Model	Mass
MK2-KSHK10	8 [0.282]
MK2-KSHK12	11 [0.388]
MK2-KSHK14	17 [0.600]
MK2-KSHK16	23 [0.811]
MK2-KSHK18	32 [1.129]
MK2-KSHK20	44 [1.552]

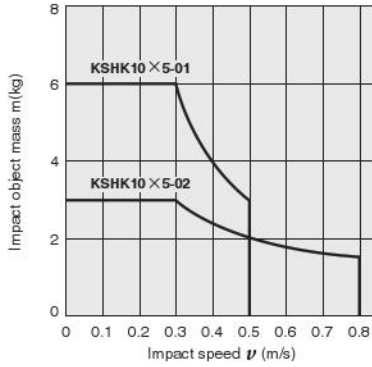
# Selection Guideline

## Precautions when using the selection graph

1. Selection graph data is calculated with 0.5 MPa [73 psi] for the air pressure used in cylinders.
2. Select a shock absorber that is near and inside a capacity line.

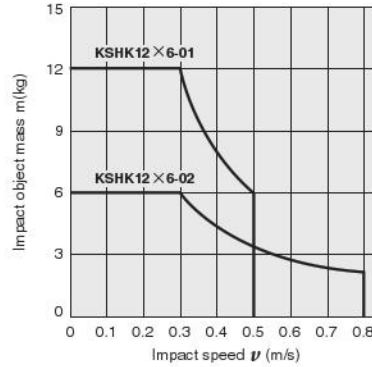
### Selection graph

#### ● KSHK10×5



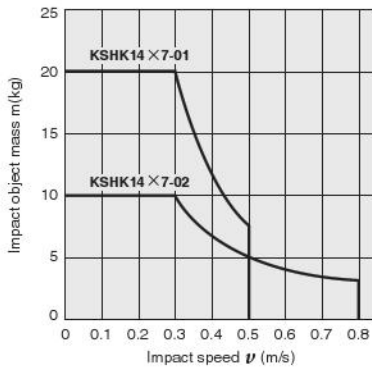
1 kg = 2.205 lb  
1 m/s = 3.28 ft/sec

#### ● KSHK12×6



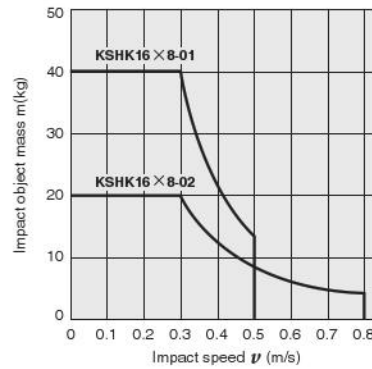
1 kg = 2.205 lb  
1 m/s = 3.28 ft/sec

#### ● KSHK14×7



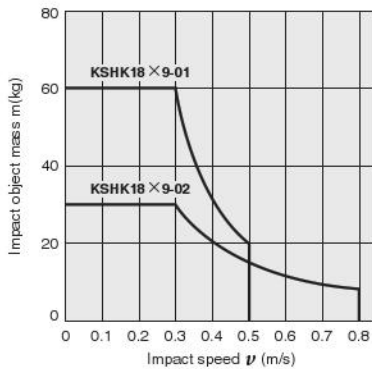
1 kg = 2.205 lb  
1 m/s = 3.28 ft/sec

#### ● KSHK16×8



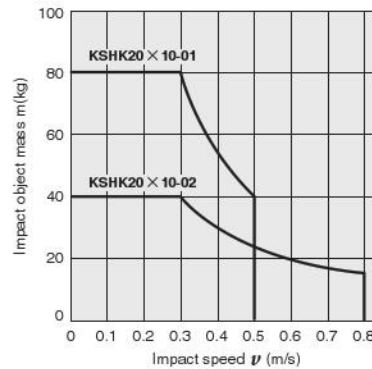
1 kg = 2.205 lb  
1 m/s = 3.28 ft/sec

#### ● KSHK18×9



1 kg = 2.205 lb  
1 m/s = 3.28 ft/sec

#### ● KSHK20×10



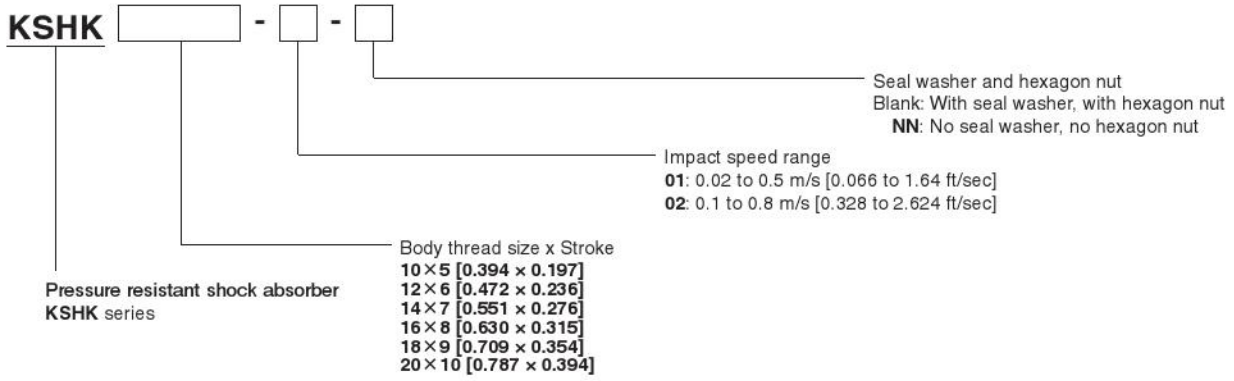
1 kg = 2.205 lb  
1 m/s = 3.28 ft/sec

### Recommended cylinder bores

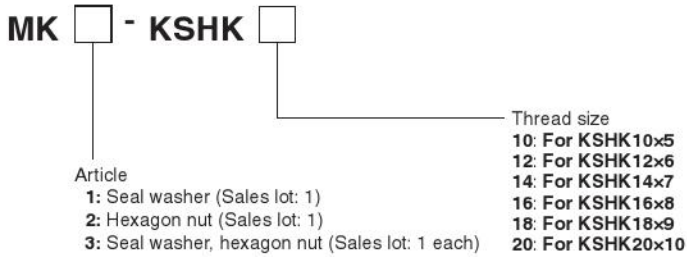
Model	Cylinder bore					
	φ 12 [0.472]	φ 16 [0.630]	φ 20 [0.787]	φ 25 [0.984]	φ 32 [1.260]	φ 40 [1.575]
KSHK10×5	●	●	●			
KSHK12×6		●	●	●		
KSHK14×7		●	●	●		
KSHK16×8			●	●	●	
KSHK18×9				●	●	●
KSHK20×10				●	●	●

Note: The above table shows recommendations. It does not mean that other size cylinders cannot be used.

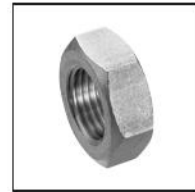
## Order Codes



## Additional Parts

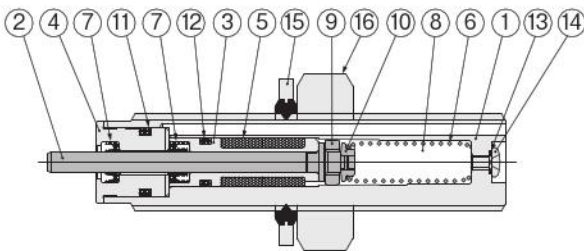


Seal washer  
MK1-KSHK [ ]



Hexagon nut  
MK2-KSHK [ ]

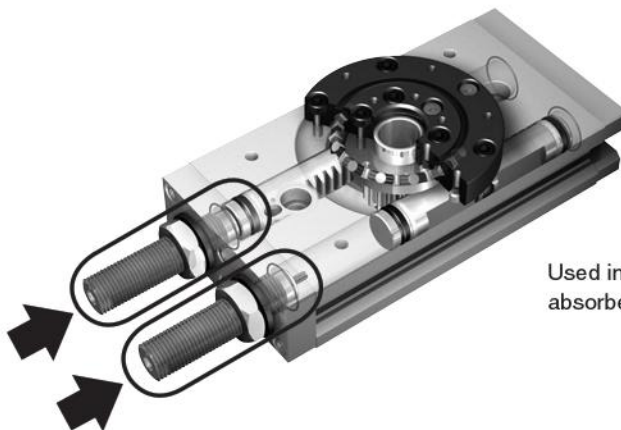
## Inner Construction and Major Parts and Materials



Remark: Depending on size, some components and internal configurations may differ.

No.	Name	Materials
①	Main unit	Copper alloy (nickel plated)
②	Piston rod	Steel (nickel plated)
③	Sleeve	Copper alloy
④	Plug	Stainless steel
⑤	Accumulator	Synthetic rubber
⑥	Spring	Spring steel
⑦	Rod seal	Synthetic rubber
⑧	Oil	Special oil
⑨	Piston ring	Copper alloy
⑩	Collar	Stainless steel, copper alloy
⑪	O-ring	Synthetic rubber (NBR)
⑫	O-ring	Synthetic rubber (NBR)
⑬	O-ring	Synthetic rubber (NBR)
⑭	Screw	Mild steel (zinc, nickel plated)
⑮	Seal washer	Steel + Composite rubber (KSHK18 Stainless steel + Composite rubber)
⑯	Hexagon nut	Stainless steel

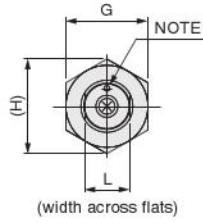
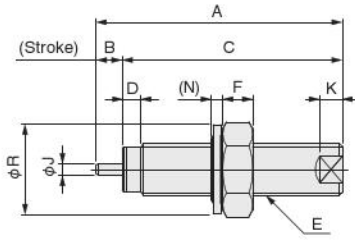
## Example of Use



Used in Koganei flat rotary (RAF) shock absorbers and rotary angle adjustment.

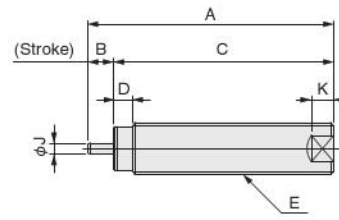
## Dimensions mm [in]

### ●KSHK□×□-□



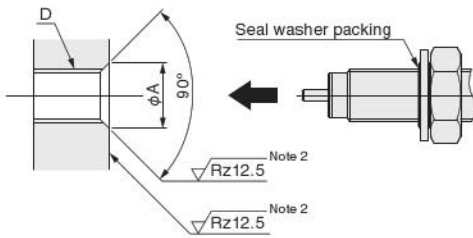
Note: Air passage port. Do not obstruct.

### ●KSHK□×□-□-NN (seal washer, no hexagon nut)



Model	Code	A	B	C	D	E	F	G	H	J	K	L	N	R
KSHK10×5-01,-02		48 [1.890]	5 [0.197]	43 [1.693]	5 [0.197]	M10×1	6 [0.236]	17 [0.669]	19.6 [0.772]	2 [0.079]	5 [0.197]	8 [0.315]	2.4 [0.094]	18 [0.709]
KSHK12×6-01,-02		55 [2.165]	6 [0.236]	49 [1.929]	5 [0.197]	M12×1	7 [0.276]	19 [0.748]	21.9 [0.862]	2.5 [0.098]	5 [0.197]	10 [0.394]	3.2 [0.126]	21 [0.827]
KSHK14×7-01,-02		66 [2.598]	7 [0.276]	59 [2.323]	5 [0.197]	M14×1.5	8 [0.315]	22 [0.866]	25.4 [1.000]	3 [0.118]	6 [0.236]	12 [0.472]	3.2 [0.126]	24 [0.945]
KSHK16×8-01,-02		73 [2.874]	8 [0.315]	65 [2.559]	5 [0.197]	M16×1.5	10 [0.394]	24 [0.945]	27.7 [1.091]	3 [0.118]	7 [0.276]	13 [0.512]	3.2 [0.126]	28 [1.102]
KSHK18×9-01,-02		79 [3.110]	9 [0.354]	70 [2.756]	5 [0.197]	M18×1.5	11 [0.433]	27 [1.063]	31.2 [1.228]	4 [0.157]	7 [0.276]	15 [0.591]	4.5 [0.177]	27 [1.063]
KSHK20×10-01,-02		88 [3.465]	10 [0.394]	78 [3.071]	5 [0.197]	M20×1.5	12 [0.472]	30 [1.181]	34.6 [1.362]	4 [0.157]	8 [0.315]	17 [0.669]	3.2 [0.126]	34 [1.339]

### ■ Pressure resistant shock absorber mounting surface (recommended dimensions)



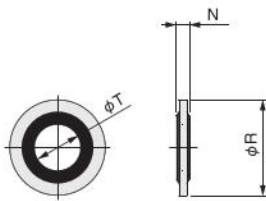
Model	Recommended $\phi A$ <sup>Note 1</sup>	Screw diameter D
KSHK10×5-01,-02	10.4 [0.409]	M10×1
KSHK12×6-01,-02	12.4 [0.488]	M12×1
KSHK14×7-01,-02	14.4 [0.567]	M14×1.5
KSHK16×8-01,-02	16.4 [0.646]	M16×1.5
KSHK18×9-01,-02	18.4 [0.724]	M18×1.5
KSHK20×10-01,-02	20.4 [0.803]	M20×1.5

Note 1: Recommended value  $\phi A$  in the table is the MAX value.

2: The roughness of the surface that contacts the seal washer should be Rz 12.5 or less.

## Additional Parts Dimensions mm [in]

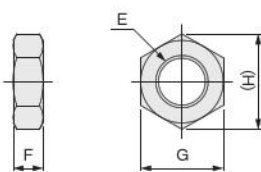
### ● Seal washer: MK1-KSHK □



Model	Code	N	R	T
MK1-KSHK10		2.4 [0.094]	18 [0.709]	8.5 [0.335]
MK1-KSHK12		3.2 [0.126]	21 [0.827]	9.5 [0.374]
MK1-KSHK14		3.2 [0.126]	24 [0.945]	11.5 [0.453]
MK1-KSHK16		3.2 [0.126]	28 [1.102]	13.5 [0.531]
MK1-KSHK18 <sup>Note</sup>		4.5 [0.177]	27 [1.063]	16.5 [0.65]
MK1-KSHK20		3.2 [0.126]	34 [1.339]	17.5 [0.689]

Note: For MK1-KSHK18 only, some shapes may differ.

### ● Hexagon nut:MK2-KSHK □



Model	Code	E	F	G	H
MK2-KSHK10		M10×1	6 [0.236]	17 [0.669]	19.6 [0.772]
MK2-KSHK12		M12×1	7 [0.276]	19 [0.748]	21.9 [0.862]
MK2-KSHK14		M14×1.5	8 [0.315]	22 [0.866]	25.4 [1.000]
MK2-KSHK16		M16×1.5	10 [0.394]	24 [0.945]	27.7 [1.091]
MK2-KSHK18		M18×1.5	11 [0.433]	27 [1.063]	31.2 [1.228]
MK2-KSHK20		M20×1.5	12 [0.472]	30 [1.181]	34.6 [1.362]

# Limited Warranty

KOGANEI CORP. warrants its products to be free from defects in material and workmanship subject to the following provisions.

**Warranty Period** The warranty period is 180 days from the date of delivery.

**Koganei Responsibility** If a defect in material or workmanship is found during the warranty period, KOGANEI CORP. will replace any part proved defective under normal use free of charge and will provide the service necessary to replace such a part.

**Limitations**

- This warranty is in lieu of all other warranties, expressed or implied, and is limited to the original cost of the product and shall not include any transportation fee, the cost of installation or any liability for direct, indirect or consequential damage or delay resulting from the defects.

- KOGANEI CORP. shall in no way be liable or responsible for injuries or damage to persons or property arising out of the use or operation of the manufacturer's product.

- This warranty shall be void if the engineered safety devices are removed, made inoperative or not periodically checked for proper functioning.

- Any operation beyond the rated capacity, any improper use or application, or any improper installation of the product, or any substitution upon it with parts not furnished or approved by KOGANEI CORP., shall void this warranty.

- This warranty covers only such items supplied by KOGANEI CORP. The products of other manufacturers are covered only by such warranties made by those original manufacturers, even though such items may have been included as the components.

The specifications are subject to change without notice.

URL <http://www.koganei.co.jp>

E-mail: [overseas@koganei.co.jp](mailto:overseas@koganei.co.jp)



## KOGANEI CORPORATION

### OVERSEAS DEPARTMENT

3-11-28, Midori-cho, Koganei City, Tokyo 184-8533, Japan  
Tel: 81-42-383-7271 Fax: 81-42-383-7276

### KOGANEI INTERNATIONAL AMERICA, INC.

39300 Civic Center Dr., Suite 280, Fremont, CA 94538, U.S.A.  
Tel: 1-510-744-1626 Fax: 1-510-744-1676

### SHANGHAI KOGANEI INTERNATIONAL TRADING CORPORATION

Room 2606-2607, Tongda Venture Building No.1, Lane 600, Tianshan Road,  
Shanghai, 200051, China  
Tel: 86-21-6145-7313 Fax: 86-21-6145-7323

### TAIWAN KOGANEI TRADING CO., LTD.

Rm. 2, 13F, No88, Sec. 2, Zhongxiao E. Rd., Zhongzheng Dist., Taipei City 100,  
Taiwan (ROC)  
Tel: 886-2-2393-2717 Fax: 886-2-2393-2719

### KOGANEI KOREA CO., LTD.

6F-601, Tower Bldg., 1005, Yeongde0-dong, Giheung-gu, Yongin-si, Gyeonggi-do,  
446-908, Korea  
Tel: 82-31-246-0414 Fax: 82-31-246-0415

### KOGANEI (THAILAND) CO., LTD.

3300/90, Tower B, Elephant Tower, 16th Fl., Phaholyothin Road, Chomphon,  
Chatuchak, Bangkok 10900, Thailand  
Tel: 66-2-937-4250 Fax: 66-2-937-4254

### KOGANEI ASIA PTE. LTD.

69 Ubi Road 1, #05-18 Oxley Bizhub, Singapore 408731  
Tel: 65-6293-4512 Fax: 65-6293-4513