

Shock absorber

NCK Series

● Max. absorbed energy: 1 to 200 J

RoHS CAD

Specifications

Item			NCK							
Series			0.1	0.3	0.7	1.2	2.6	7	12	20
Type/Classification			Spring return without adjuster							
Max. energy absorption		J	1	3	7	12	26	70	120	200
O.D. thread size		mm	M8x0.75		M10x1.0	M12x1.0	M14x1.5	M20x1.5	M25x1.5	M27x1.5
Stroke		mm	4.5	6	8	10	15	20	25	30
Max. absorbed energy per hour		kJ/hr	4.8	6.3	12.6	21.6	39.0	84.0	86.4	108.0
Max. colliding speed		m/s	1.0	1.5		2.0		2.5	3.0	
Max. operating frequency		Cycle/min.	80	35	30		25	20	12	9
Ambient temperature		°C	-10 (14°F) to 80 (176°F)							
Max. load (resistance)		N	525	1150	2010	2750	4000	7980	10950	15380
Return time		S	0.3 or less					0.4 or less		0.5 or less
Weight		kg	0.009	0.012	0.02	0.04	0.07	0.2	0.3	0.45
Return spring force	When extended	N	2.9		2.0	2.9	5.9	9.8	16.3	
	When compressed	N	4.5		4.3	5.9	11.8	21.6	33.3	33.9

Note: The speed and absorption capacity of the shock absorber vary depending on the ambient temperature. Values given in the above specifications are for room temperature.

How to order

NCK - 00 - 0.7 - N1

- Ⓐ Mounting
- Ⓑ Series
- Ⓒ Option *1

Code	Description
Ⓐ Mounting	
00	Basic
FA	Flange
Ⓑ Series (max. energy absorption)	
0.1	1 J
0.3	3 J
0.7	7 J
1.2	12 J
2.6	26 J
7	70 J
12	120 J
20	200 J
Ⓒ Option	
Blank	Standard
N1	With stop nut
C	Capped

⚠ Precautions for model No. selection

*1: 3 hexagon nuts are provided for N1 specifications products.

[Example of model No.]

NCK-00-0.7-N1

Model: Shock absorber

Ⓐ Mounting : Basic
Ⓑ Series : Max. energy absorption 7 J
Ⓒ Option : With stop nut

How to order options

● Flange bracket (1 pc.)

NCK - 0.7 - FA

● Stop nut + hexagon nut (each 1 pc.)

NCK - 0.7 - N1

● Hexagon nut (1 pc.)

NCK - 0.7 - NT

Code	Series (max. energy absorption)
0.1	1 J
0.3	3 J
0.7	7 J
1.2	12 J
2.6	26 J
7	70 J
12	120 J
20	200 J

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

NCK - ··· - P4*

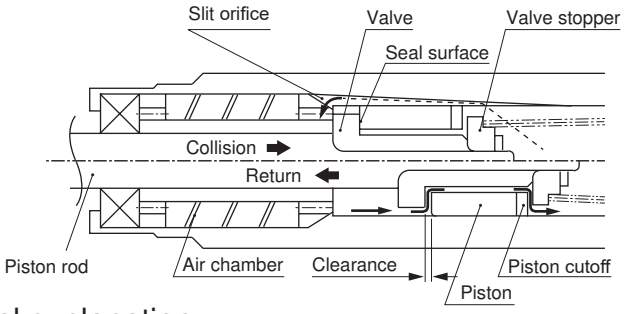
● Design compatible with rechargeable battery manufacturing process

* Contact CKD for details.

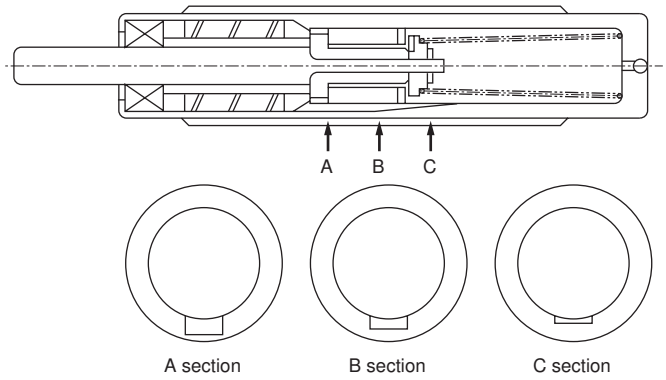
Operational explanation

(1) Collision
When the workpiece collides with the piston rod, the oil in the tube pushed by the piston is simultaneously pressurized. The pressurized oil passes through grooves on CKD's original slit orifice, and flows toward the oil chamber with an air chamber. The piston is further pressed in by cylinder thrust or workpiece weight, etc., but the area of the slit orifice gradually decreases, so that even higher resistance is generated. These series of operations are done continuously to stop the workpiece smoothly.

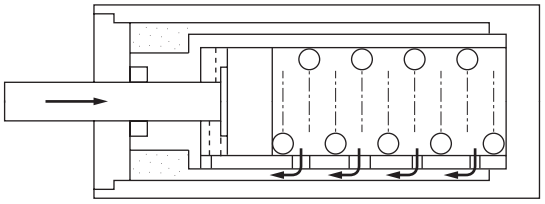
(2) Return
When released from the workpiece, the piston returns with the integrated spring. At this time it moves from the seal to the valve stopper, so that the oil return flow path is opened by the cutoff section on the piston. Oil passes through this flow path and the slit orifice and returns to the state before the workpiece collided. In this state, the system is on standby for the next workpiece collision.



Structural explanation

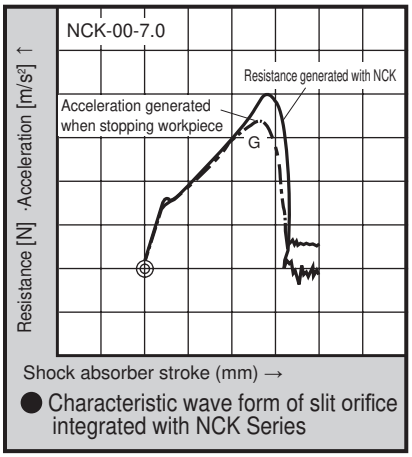


1. The slit orifice smoothly changes (decreases) as the piston moves as shown above.
This structure enables an ideal "stop" when used with a hydraulic damper, but as manufacturing is difficult, it has not been integrated in other brands. CKD has handled this tough issue with linear stopping performance as shown in Fig.1.



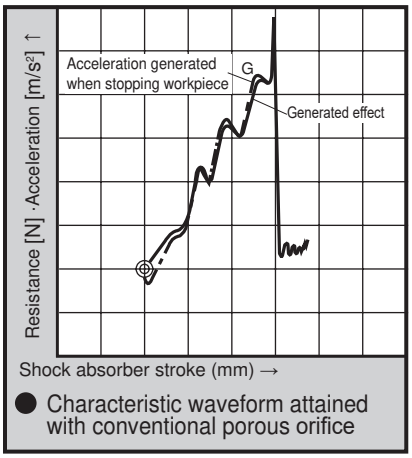
2. Generally, the dual tube shown above is used for the orifice area as a structure that changes with piston movement. Multiple small orifice holes in the inner pipe are closed as the piston moves. In this structure, performance via hole positioning precision is greatly affected, and resistance changes with each orifice, preventing smooth operation as shown in Fig. 2.

Fig. 1

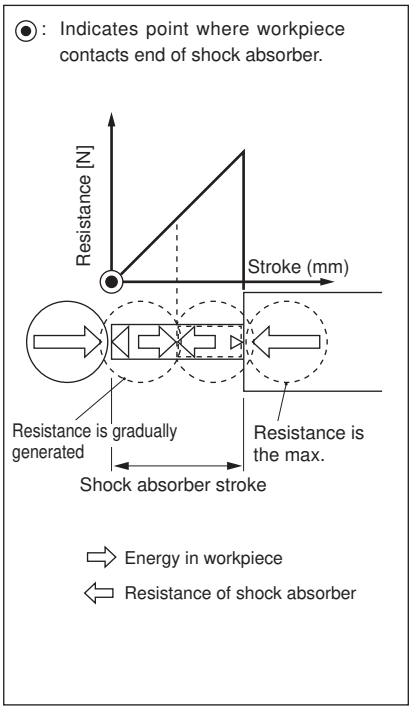


● Characteristic wave form of slit orifice integrated with NCK Series

Fig. 2

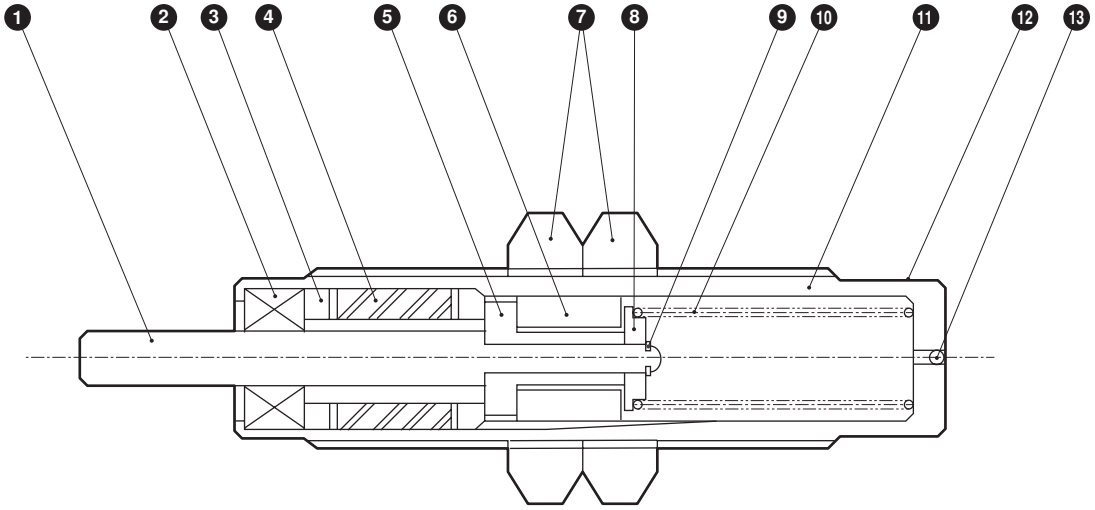


● Characteristic waveform attained with conventional porous orifice

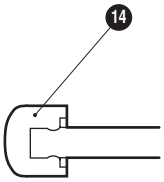


Internal structure and parts list

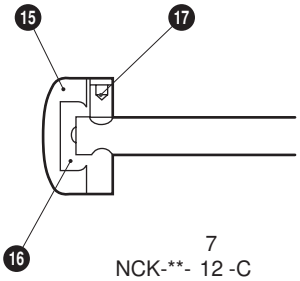
● Basic (without cap)



● Capped



0.1
0.3
NCK-**- 0.7 -C
1.2
2.6



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NCK-**- 12 -C
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Cannot be disassembled

Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod	Steel	Industrial chrome plating	10	Spring	Piano wire	
2	Oil seal	Special nitrile rubber		11	Damper case	Steel	Chrome plating
3	Rod guide	Copper alloy		12	Label	Polyester film	
4	Air chamber	Nitrile rubber		13	Ball	Alloy steel	
5	Valve	Steel		14	Damper cushion	Polyamide resin	Black
6	Piston	Cast iron		15	Damper cushion	Polyester resin	Black
7	Hexagon nut	Steel	Zinc plated	16	Cushion stopper	Steel	Zinc plated
8	Valve stopper	Steel		17	Hexagon socket set screw	Steel	
9	E type snap ring	Steel for spring	Zinc plated				