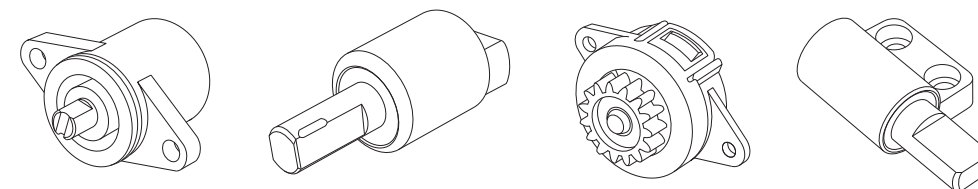


T O K



ROTARY DAMPERS

PRODUCT CATALOG | ENGLISH VERSION

Contents

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Outline

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Types of rotary dampers (Horizontal use, Vertical use, Continuous rotation)

•

How to estimate the torque required for a partial rotation angle damper

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Product families

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Products overview

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Product introduction

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Type	Torque		*O.D.	Page	Type	Torque		*O.D.	Page
	[N·m]	(lbf·in)	[mm]			[N·m]	(lbf·in)	[mm]	
TD73	0.05 to 0.29	(0.44 to 2.57)	Ø 11	7 - 8	TD42	4.90 to 8.83	(43.37 to 78.15)	Ø 40.2	39 - 40
TD60	0.49 to 1.96	(4.34 to 17.35)	-	9 - 10	TD89	5.0 to 10.0	(44.25 to 88.51)	Ø 26	41 - 42
TD27/28	0.49 to 1.96	(4.34 to 17.35)	Ø 22	11 - 14	TD75	0.10 to 0.29	(0.89 to 2.57)	Ø 11	43 - 44
TD54	0.78 to 1.96	(6.90 to 17.35)	Ø 20	15 - 16	TD38	0.15 to 0.59	(1.33 to 5.22)	Ø 22	45 - 46
TD56	0.98 to 2.94	(8.67 to 26.02)	Ø 18	17 - 18	TD99 *V	1.00 to 2.00	(8.85 to 17.70)	Ø 18	47 - 48
TD99 *H	0.98 to 1.96	(8.67 to 17.35)	Ø 18	19 - 20	TD148	0.10 to 0.30	(0.89 to 2.66)	Ø 11	49 - 50
SR3	1.00	(8.85)	-	21 - 22	TD99 *H&V	1.00 to 2.00	(8.85 to 17.70)	Ø 18	51 - 52
TD100	1.00 to 3.00	(8.85 to 26.55)	Ø 16	23 - 24	TD136	0.002	(0.018)	Ø 10	53 - 54
TD112	1.50 to 3.00	(13.28 to 26.55)	Ø 18	25 - 26	TD101	0.0025 to 0.004	(0.022 to 0.035)	Ø 6	55 - 56
TD118	1.50 to 3.50	(13.28 to 30.98)	Ø 19.8	27 - 28	TD102	0.0025 to 0.015	(0.022 to 0.133)	Ø 14.9	57 - 58
TD69	1.50 to 4.00	(13.28 to 35.40)	Ø 20	29 - 30	TD130	0.004	(0.035)	Ø 10	59 - 60
TD22	2.45 to 3.92	(21.68 to 34.69)	Ø 16.2	31 - 32	TD88	0.01 to 0.04	(0.09 to 0.35)	Ø 15	61 - 62
TD133	3.00	(26.55)	Ø 20	33 - 34	TD62	0.03 to 0.20	(0.27 to 1.77)	Ø 28	63 - 64
TD129	3.50 to 4.00	(30.98 to 35.40)	Ø 16	35 - 36	TD96	0.05 to 0.15	(0.44 to 1.33)	Ø 25	65 - 66
TD90	3.50 to 5.00	(30.98 to 44.25)	-	37 - 38	TD58	0.30 to 1.60	(2.66 to 14.16)	Ø 34	67 - 68

*O.D.: Outer diameter *H: Horizontal use *V: Vertical use *H&V: Horizontal & Vertical use

■

Precautions for use

.....

P 69

•

Warning

•

Caution

■

FAQs

.....

P 70 - 72

Outline

Rotary dampers operate the applications gently.

The viscous resistance of the oil filled in the rotary damper provides the following advantages:

- Control of sudden operation
- Noise reduction
- Impact mitigation
- Safety enhancement

You can select rotary dampers from among the following three product groups according to your application:
Partial rotation angle damper for horizontal and vertical uses, and continuous rotation dampers.

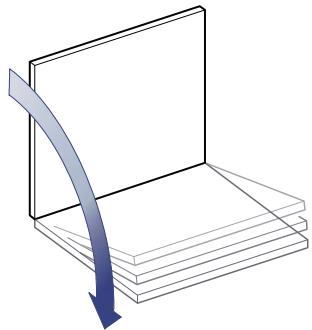
Types of rotary dampers

Partial rotation

Continuous rotation



Horizontal use
Range of motion:
Limited



Torque Low High

Horizontal use is applied to the case where the final position of a moving object (application) becomes horizontal.

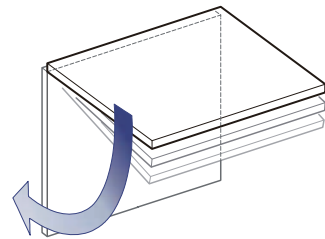
A rotary damper is placed at the rotation center, and the rotary damper torque increases gradually as the position becomes horizontal.

■ Applications

- Dust boxes
- Toilet seat covers
- Piano lids
- TV console doors
- Industrial refrigerator doors



Vertical use
Range of motion:
Limited



Torque High Low

Vertical use is applied to the case where the final position of a moving object (application) is suspended vertically.

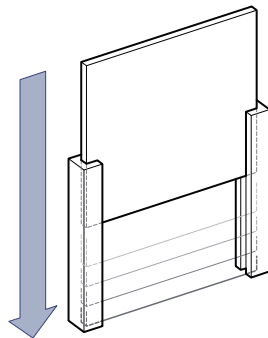
A rotary damper is placed at the rotation center, and the rotary damper torque becomes the largest at the horizontal position and then decreases gradually.

■ Applications

- Bakery shelves
- Range hoods
- Vending machines
- Shower sheets
- Cat doors



Continuous rotation
Range of motion:
No limit



Torque Low Low

This method is used to slow the movement of free fall, as well as the pop-up operation, by means of a spring, using the rack and pinion mechanism.

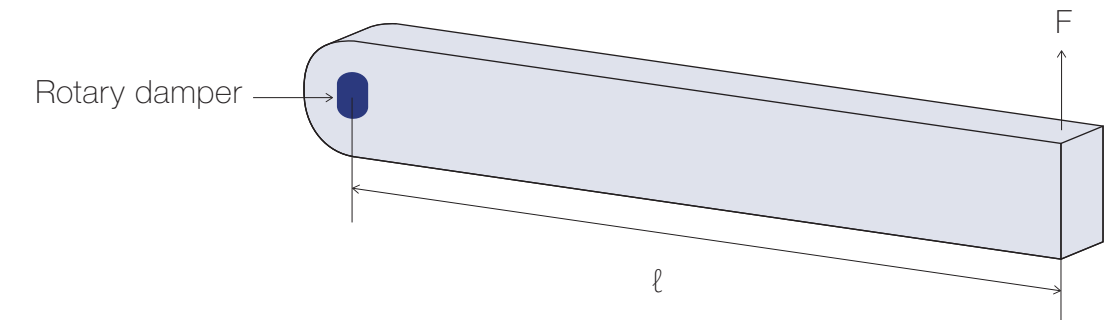
This enables the operation of a moving object at constant speed.

■ Applications

- Drink dispenser
- Sliding doors
- Cord rewinding
- Flush buttons
- Drink holders

How to estimate required torque for a partial rotation angle damper

Calculating based on the lifting force & length of application



Torque calculation formula $T [\text{N}\cdot\text{m}] = F \times l$

T: Torque $[\text{N}\cdot\text{m}]$

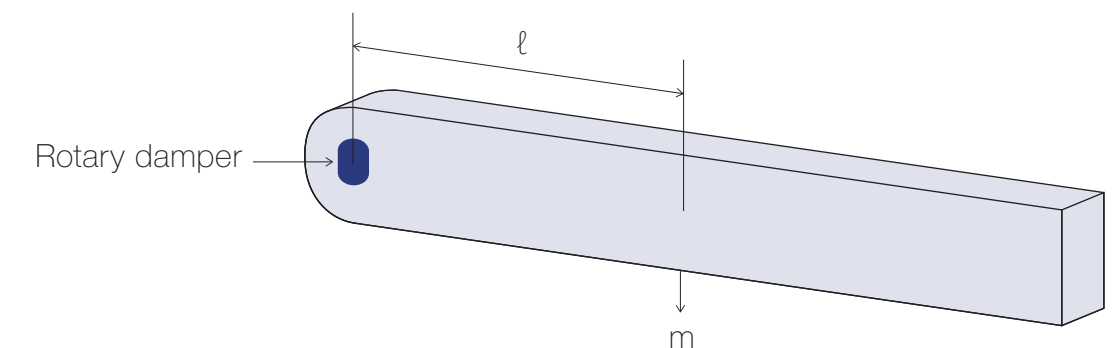
l : Length from the fulcrum to the end $[\text{m}]$

F: Lifting force at the lid end $[\text{N}]$

Example) Required torque for F: 2.0 N and l : 0.5 m

$$T = 2.0 \times 0.5 = 1.0 \text{ N}\cdot\text{m}$$

Calculating based on the weight & gravity center of application



Torque calculation formula $T [\text{N}\cdot\text{m}] = m \times g \times l$

T: Torque $[\text{N}\cdot\text{m}]$

m: Mass $[\text{kg}]$

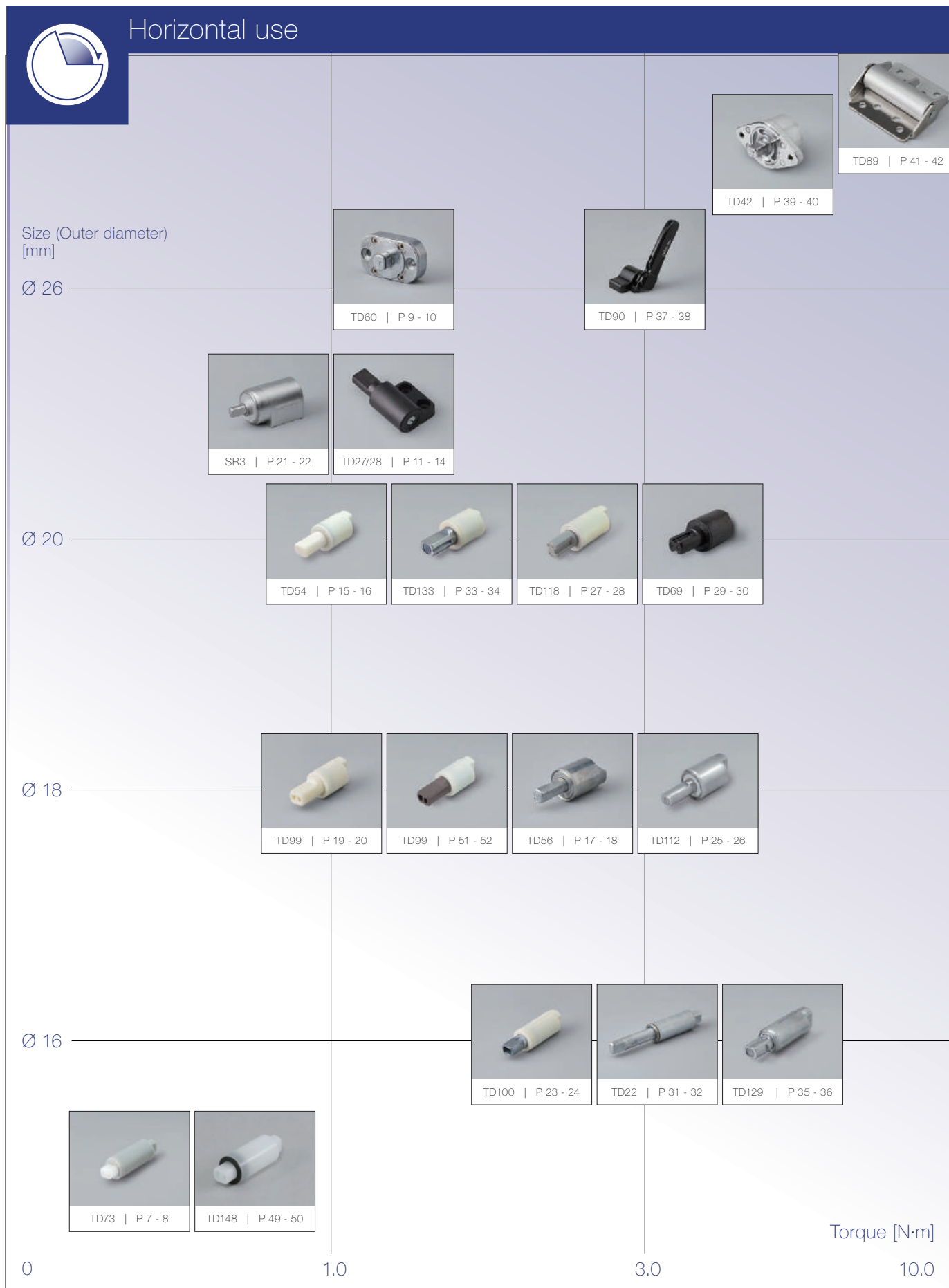
g: Gravitational acceleration is defined as 9.8 m/s^2

l : Length from the fulcrum to the gravity center $[\text{m}]$

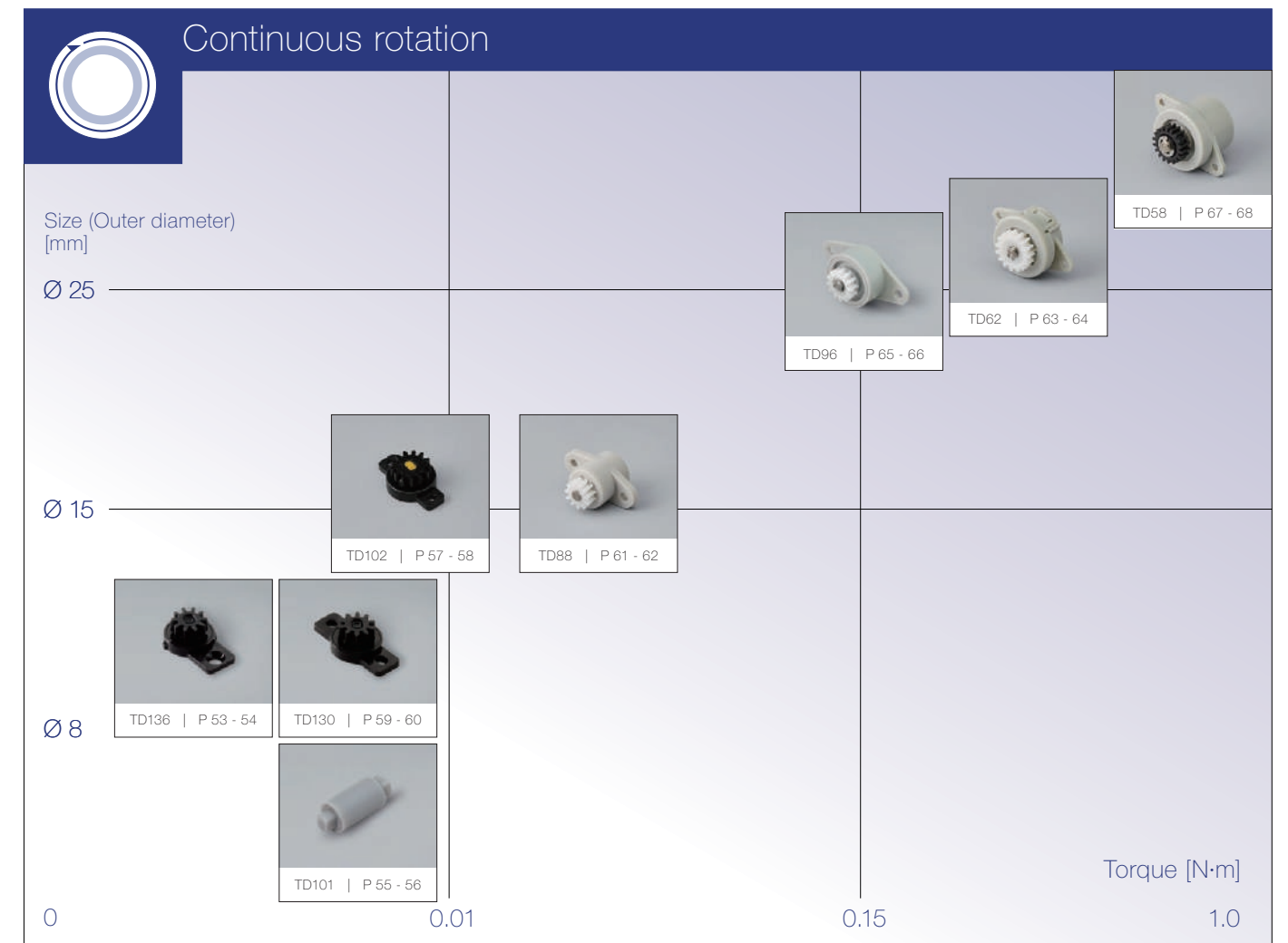
Example) Required torque for m: 0.408 kg and l : 0.25 m

$$T = 0.408 \times 9.8 \times 0.25 = 1.0 \text{ N}\cdot\text{m}$$

Product families



Product families



Index

Partial rotation angle damper

- Horizontal use type
- Vertical use type
- Horizontal & Vertical use type



TD73
Horizontal use type
Torque: 0.05 to 0.29 N·m

P 7 - 8



TD27/28
Horizontal use type
Torque: 0.49 to 1.96 N·m
(Torque adjustment function)

P 11 - 14



TD56
Horizontal use type
Torque: 0.98 to 2.94 N·m

P 17 - 18



SR3
Horizontal use type
Torque: 1.0 N·m
(Automatic torque adjustment function)

P 21 - 22



TD112
Horizontal use type
Torque: 1.5 to 3.0 N·m

P 25 - 26



TD69
Horizontal use type
Torque: 1.5 to 4.0 N·m

P 29 - 30



TD133
Horizontal use type
Torque: 3.0 N·m

P 33 - 34

Continuous rotation damper

- Continuous rotation type



TD60
Horizontal use type
Torque: 0.49 to 1.96 N·m

P 9 - 10



TD54
Horizontal use type
Torque: 0.78 to 1.96 N·m

P 15 - 16



TD99
Horizontal use type
Torque: 0.98 to 1.96 N·m

P 19 - 20



TD100
Horizontal use type
Torque: 1.0 to 3.0 N·m

P 23 - 24



TD118
Horizontal use type
Torque: 1.5 to 3.5 N·m

P 27 - 28



TD22
Horizontal use type
Torque: 2.45 to 3.92 N·m

P 31 - 32



TD129
Horizontal use type
Torque: 3.5 to 4.0 N·m

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Index



TD90
Horizontal use type
Torque: 3.5 to 5.0 N·m

P 37 - 38



TD89
Horizontal use type
Torque: 5.0 to 10.0 N·m

P 41 - 42



TD38
Vertical use type
Torque: 0.15 to 0.59 N·m

P 45 - 46



TD148
Horizontal & Vertical use type
Torque: 0.10 to 0.30 N·m

P 49 - 50



TD136
Continuous rotation type
Torque: 2.0 mN·m

P 53 - 54



TD102
Continuous rotation type
Torque: 2.5 to 15.0 mN·m

P 57 - 58



TD88
Continuous rotation type
Torque: 10.0 to 40.0 mN·m

P 61 - 62



TD96
Continuous rotation type
Torque: 50.0 to 150.0 mN·m

P 65 - 66



TD42
Horizontal use type
Torque: 4.90 to 8.83 N·m

P 39 - 40



TD75
Vertical use type
Torque: 0.10 to 0.29 N·m

P 43 - 44



TD99
Vertical use type
Torque: 1.0 to 2.0 N·m

P 47 - 48



TD99
Horizontal & Vertical use type
Torque: 1.0 to 2.0 N·m

P 51 - 52



TD101
Continuous rotation type
Torque: 2.5 to 4.0 mN·m

P 55 - 56



TD130
Continuous rotation type
Torque: 4.0 mN·m

P 59 - 60



TD62
Continuous rotation type
Torque: 30.0 to 200.0 mN·m

P 63 - 64



TD58
Continuous rotation type
Torque: 0.3 to 1.6 N·m

P 67 - 68

Product lineup



Product image



TD73A



TD73B

Features

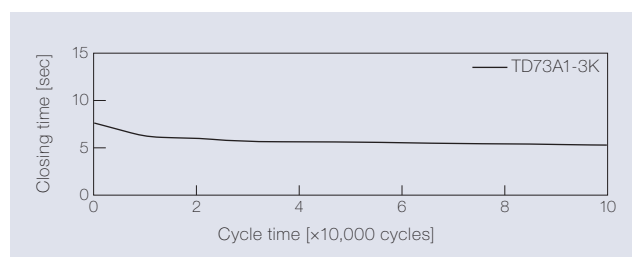
- The smallest horizontal use damper(Ø 11 mm)
- The form of the TD73 is symmetrical, so it can be inserted in either direction
- Gray color makes the product inconspicuous
- Best-selling products

Product name	Torque [N·m] (lb·in)	Damping direction	Shaft color
TD73A1-0.5K	0.05 (0.44)	CW	Natural
TD73A1-1K	0.10 (0.89)		
TD73A1-2K	0.20 (1.77)		
TD73A1-3K	0.29 (2.57)		

Product name	Torque [N·m] (lb·in)	Damping direction	Shaft color
TD73B1-0.8K	0.08 (0.71)	CCW	Gray
TD73B1-1K	0.10 (0.89)		
TD73B1-2K	0.20 (1.77)		
TD73B1-3K	0.29 (2.57)		

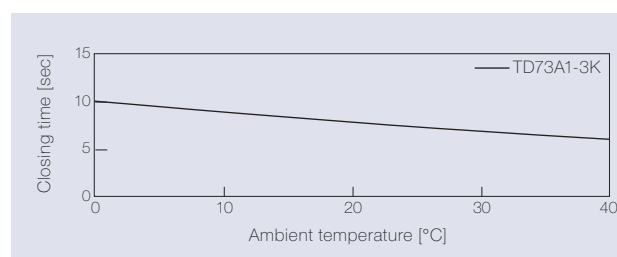
Product specifications

Durability



Torque	0.29 N·m (2.57 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	100,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

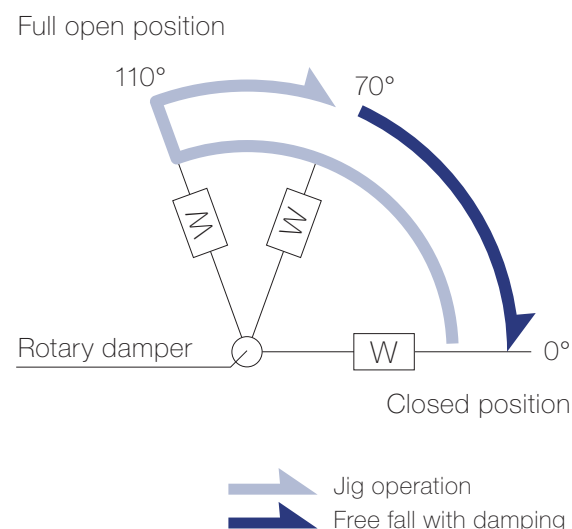
All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

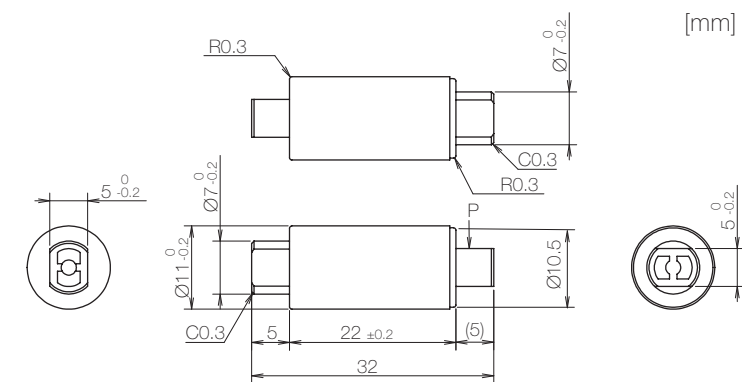
* Horizontal plane: 0°

Inspection specification before shipping

Type	Preset torque [N·m] (lb·in)	Closing time
0.5K	0.05 (0.44)	2 to 10 sec
0.8K	0.08 (0.71)	
1K	0.10 (0.89)	
2K	0.20 (1.77)	5 to 15 sec
3K	0.29 (2.57)	



Product information



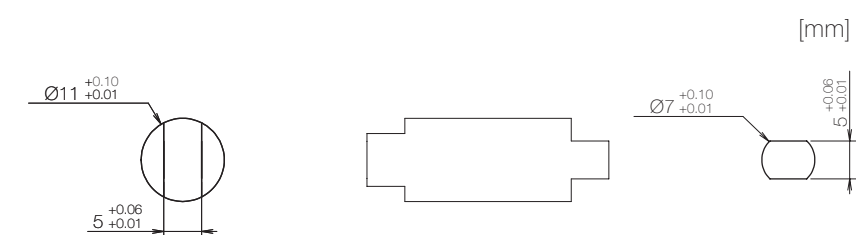
* General tolerance: ±0.3

- Opening angle: 110°
- Product weight: Approx. 3 g
- Allowable radial load (P): 29.4 N

Main materials

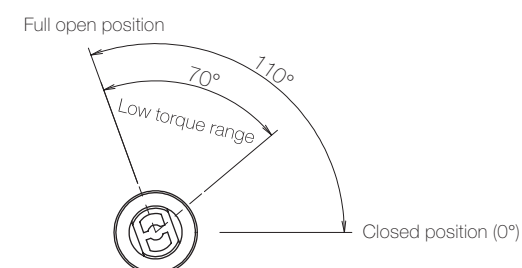
Housing	Plastic (POM)
Cap	Plastic (POM)
Shaft	Plastic (POM)

Dimensions related to mounting

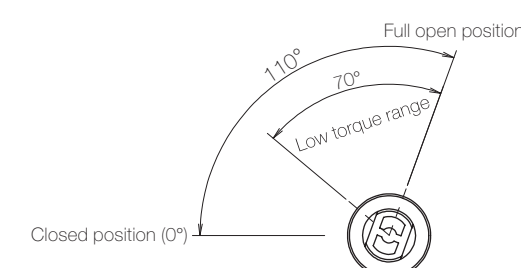


Opening angle

TD73A



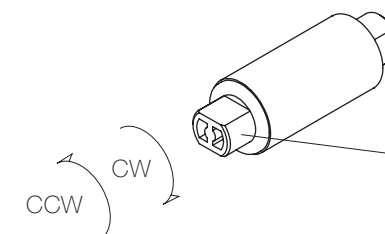
TD73B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Shaft color
CW	Natural
CCW	Gray

Product lineup



Product image



TD60A



TD60B

Features

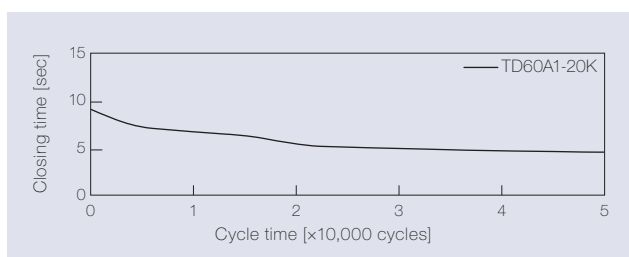
- The thinnest products for horizontal use
- Space-saving design
- High rigidity achieved by the use of zinc alloy

Product name	Torque [N·m] (lbf·in)	Damping direction
TD60A1-5K	0.49 (4.34)	CW
TD60A1-10K	0.98 (8.67)	
TD60A1-15K	1.47 (13.01)	
TD60A1-20K	1.96 (17.35)	

Product name	Torque [N·m] (lbf·in)	Damping direction
TD60B1-5K	0.49 (4.34)	CCW
TD60B1-10K	0.98 (8.67)	
TD60B1-15K	1.47 (13.01)	
TD60B1-20K	1.96 (17.35)	

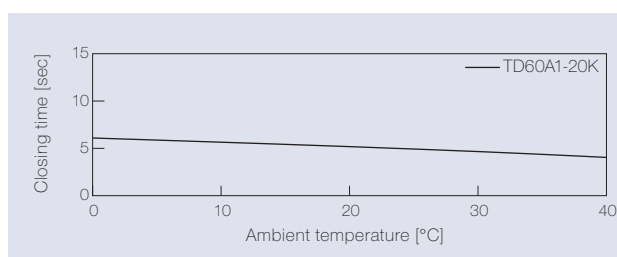
Product specifications

Durability



Torque	1.96 N·m (17.35 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

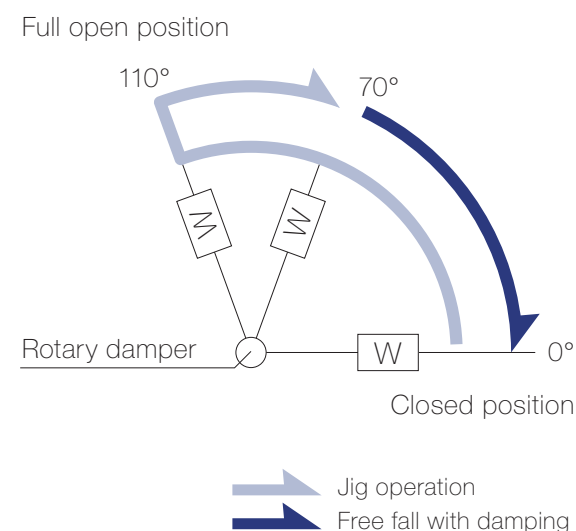
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft.)

All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

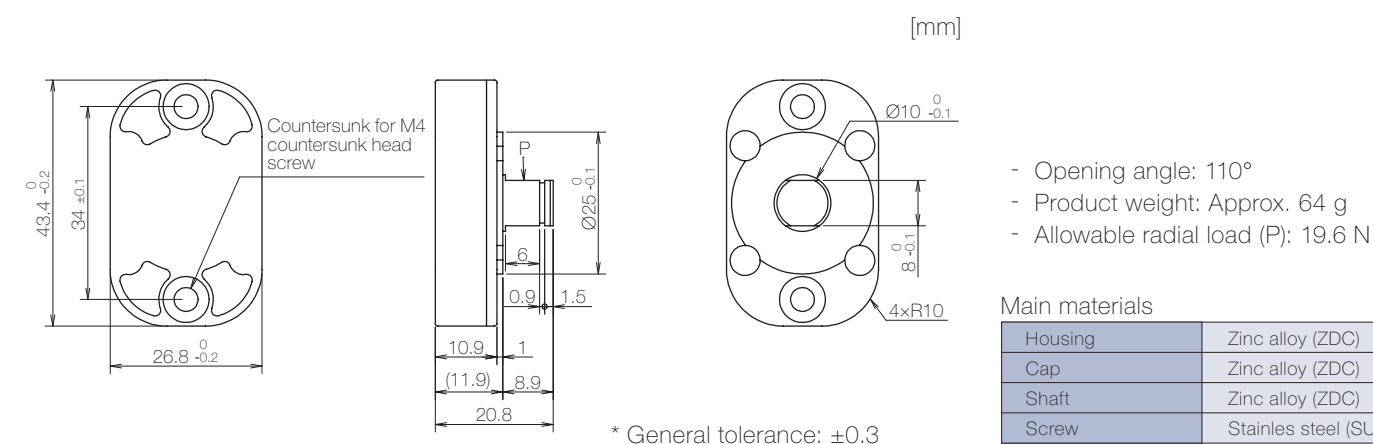
* Horizontal plane: 0°



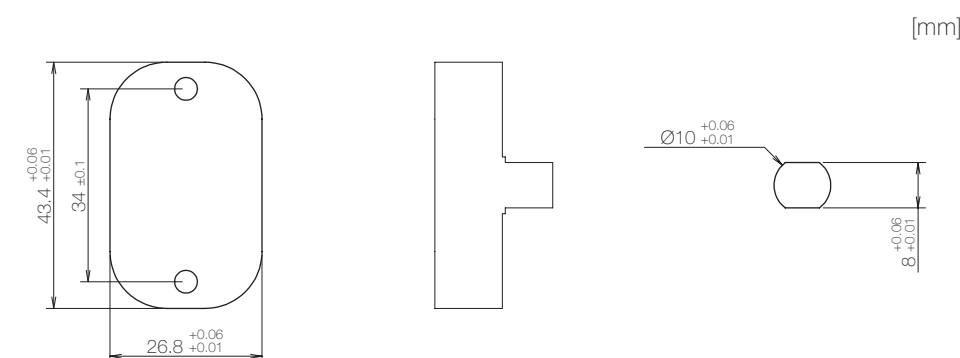
Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
5K	0.49 (4.34)	5 to 15 sec
10K	0.98 (8.67)	
15K	1.47 (13.01)	
20K	1.96 (17.35)	3 to 12 sec

Product information

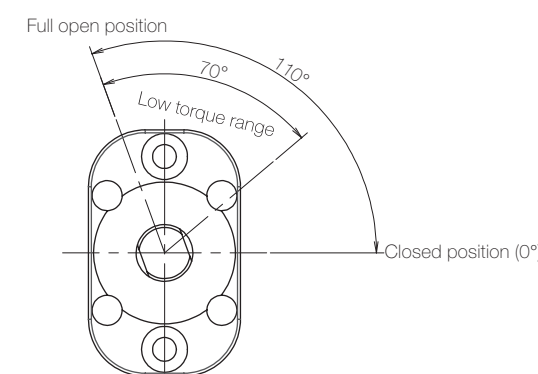


Dimensions related to mounting

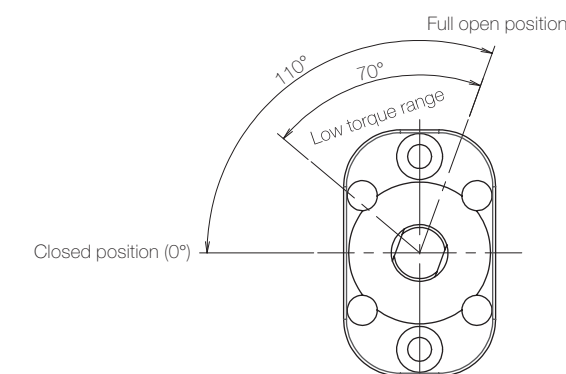


Opening angle

TD60A



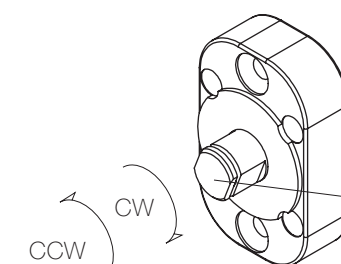
TD60B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Engraved mark
CW	CW
CCW	CCW

Product lineup



Product image



TD27



TD28

Features

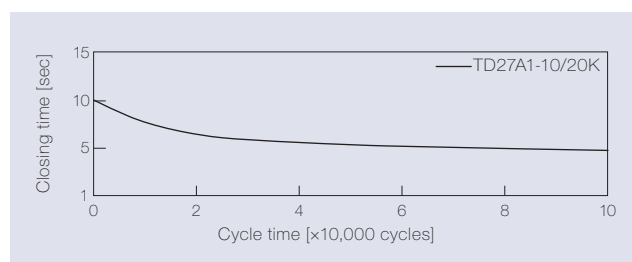
- Equipped with torque adjustment function
- A dedicated bracket enables the use of this product as a rotary damper hinge

Product name	Torque [N·m] (lb·in)	Damping direction
TD27A1-5/13K	0.49 (4.34) to 1.27 (11.24)	CW
TD27B1-5/13K		CCW
TD27A1-10/20K	0.98 (8.67) to 1.96 (17.35)	CW
TD27B1-10/20K		CCW

Product name	Torque [N·m] (lb·in)	Damping direction
TD28A1-5/13K	0.49 (4.34) to 1.27 (11.24)	CW
TD28B1-5/13K		CCW
TD28A1-10/20K	0.98 (8.67) to 1.96 (17.35)	CW
TD28B1-10/20K		CCW

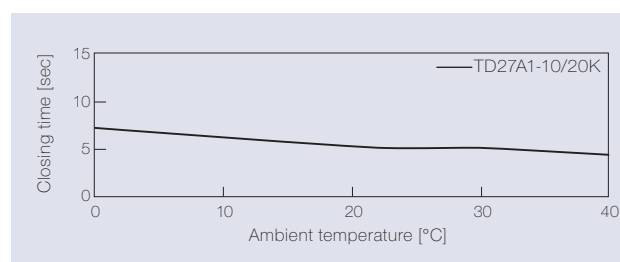
Product specifications

Durability



Torque	1.96 N·m(17.35 lb·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	100,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

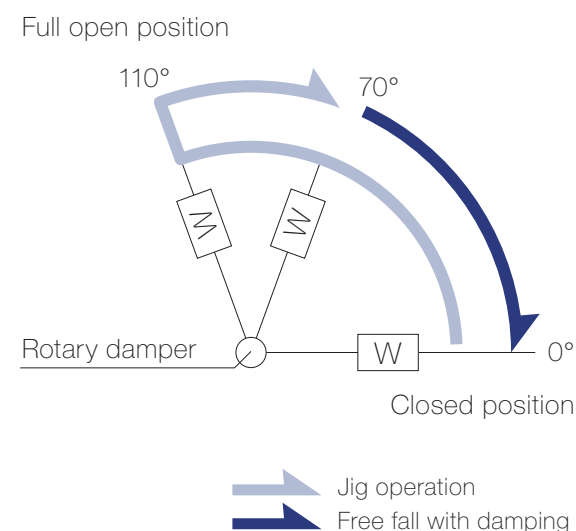
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft.)

All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

* Horizontal plane: 0°

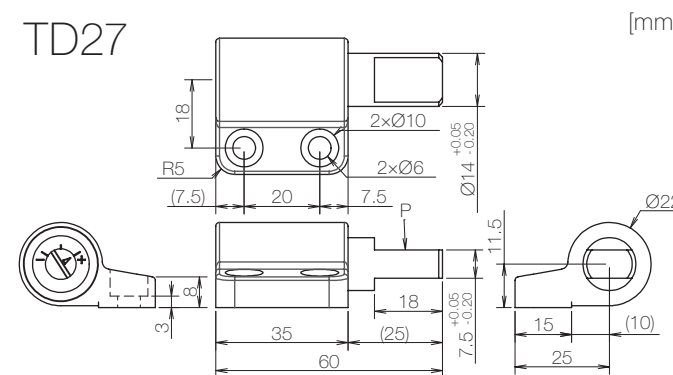


Inspection specification before shipping

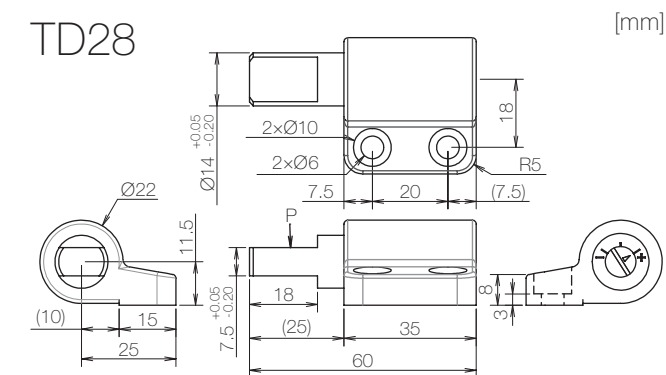
Type	Preset torque [N·m] (lb·in)	Closing time
5/13K	1.27 (11.24)	3 to 15 sec
10/20K	1.96 (17.35)	

Product information

TD27



TD28



- Opening angle: 110°
- Product weight: Approx. 30 g
- Allowable radial load (P): 29.4 N

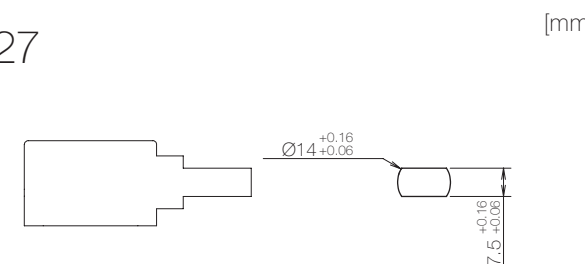
* General tolerance: ±0.2

Main materials

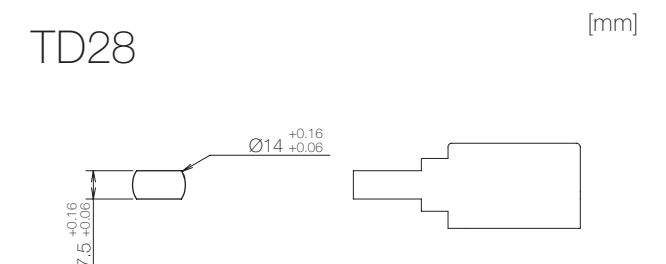
Housing	Plastic (PBT)
Cap	Plastic (PBT)
Shaft	Plastic (PBT)

Dimensions related to mounting

TD27

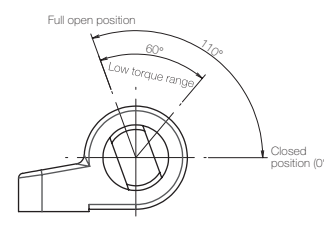


TD28

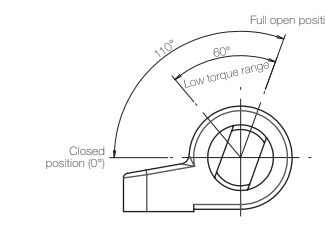


Opening angle

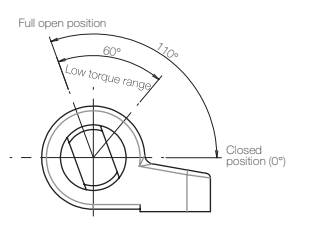
TD27A



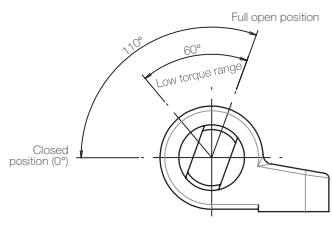
TD27B



TD28A



TD28B



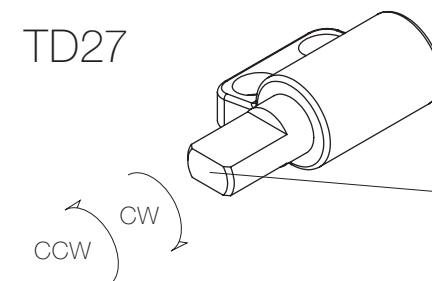
* Shaft position at the time of shipping: Closed position

* The adjustment slot position at the time of shipping: Max. torque

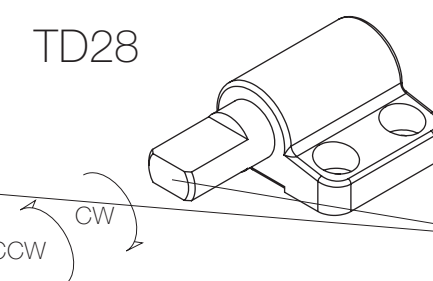
Damping directions

Rotation directions of the shaft to which torque is applied

TD27



TD28



* Housing secured / Shaft rotatable

Damping direction	Engraved mark
CW	R
CCW	L

Product lineup



Product image



TD54A



TD54B

Features

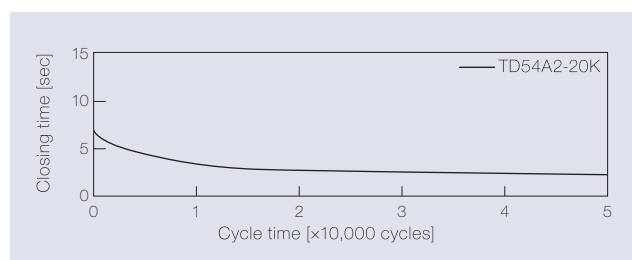
- Made with chemical-resistant PBT plastic is used
- 100% plastic version of TD133

Product name	Torque [N·m] (lb·in)	Damping direction	Shaft color
TD54A2-8K	0.78 (6.90)	CW	Natural
TD54A2-10K	0.98 (8.67)		
TD54A2-15K	1.47 (13.01)		
TD54A2-20K	1.96 (17.35)		

Product name	Torque [N·m] (lb·in)	Damping direction	Shaft color
TD54B2-8K	0.78 (6.90)	CCW	Fog blue
TD54B2-10K	0.98 (8.67)		
TD54B2-15K	1.47 (13.01)		
TD54B2-20K	1.96 (17.35)		

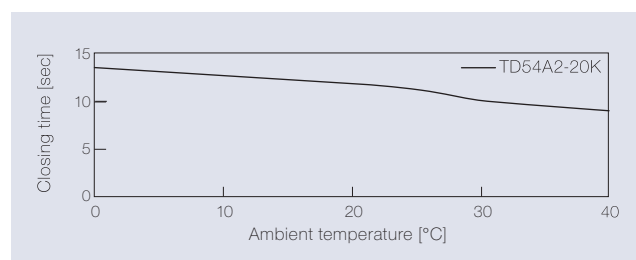
Product specifications

Durability



Torque	1.96 N·m (17.35 lb·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

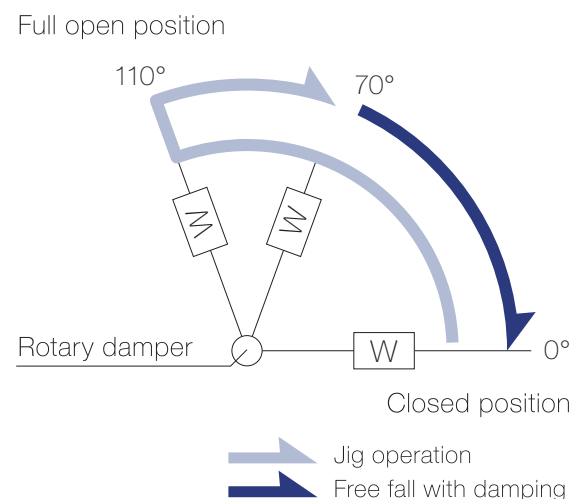
All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

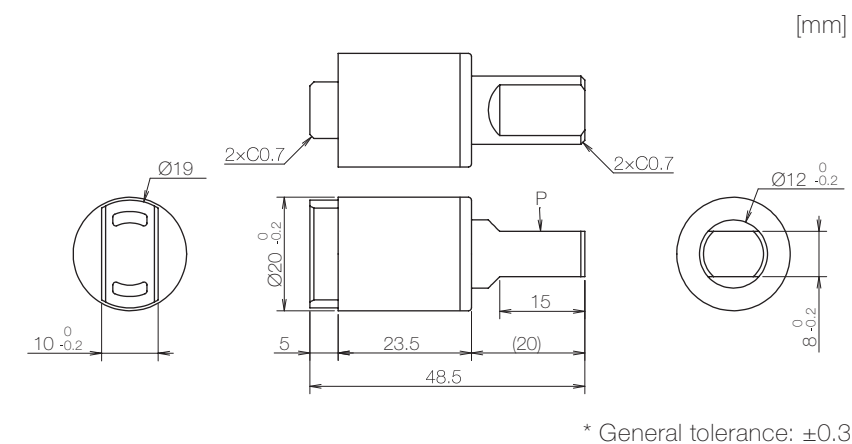
* Horizontal plane: 0°

Inspection specification before shipping

Type	Preset torque [N·m] (lb·in)	Closing time
8K	0.78 (6.90)	5 to 20 sec
10K	0.98 (8.67)	
15K	1.47 (13.01)	
20K	1.96 (17.35)	



Product information

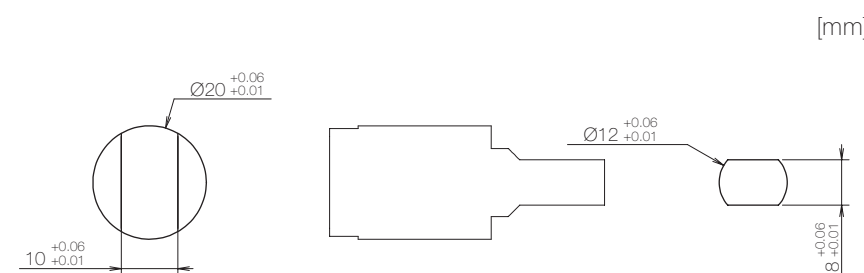


- Opening angle: 110°
- Product weight: Approx. 13 g
- Allowable radial load (P): 29.4 N

Main materials

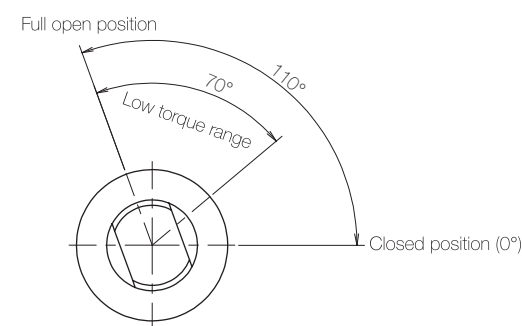
Housing	Plastic (PBT)
Cap	Plastic (PBT)
Shaft	Plastic (PBT)

Dimensions related to mounting

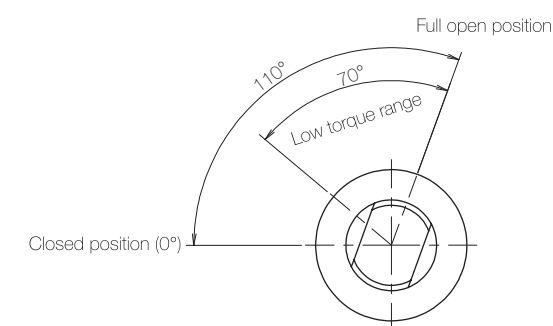


Opening angle

TD54A



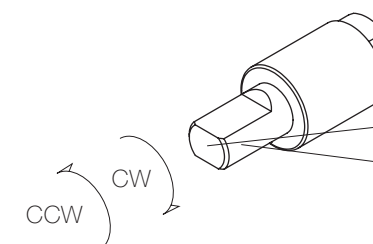
TD54B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Engraved mark
CW	CW
CCW	CCW

Damping direction	Shaft color
CW	Natural
CCW	Fog blue

Product lineup



Product image



TD56A



TD56B

Features

- High rigidity achieved by the use of zinc alloy
- Superior damping responsiveness
- The thin shaft
- Using the attachment, the form of TD56 will be the same as TD99

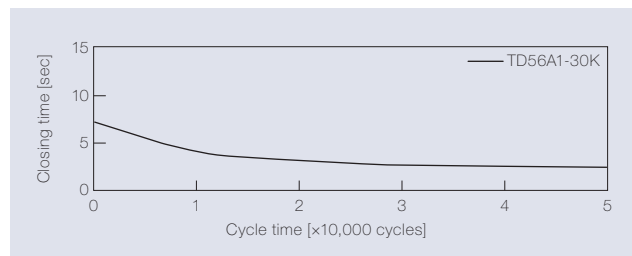
Product name	Torque [N·m] (lbf·in)	Damping direction
TD56A1-10K	0.98 (8.67)	CW
TD56A1-15K	1.47 (13.01)	
TD56A1-20K	1.96 (17.35)	
TD56A1-25K	2.45 (21.68)	
TD56A1-30K	2.94 (26.02)	

Product name	Torque [N·m] (lbf·in)	Damping direction
TD56B1-10K	0.98 (8.67)	CCW
TD56B1-15K	1.47 (13.01)	
TD56B1-20K	1.96 (17.35)	
TD56B1-25K	2.45 (21.68)	
TD56B1-30K	2.94 (26.02)	

The products with the attachment have "-AT" at the end of the product name.

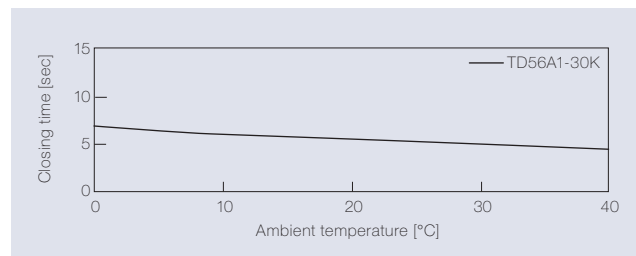
Product specifications

Durability



Torque	2.94 N·m (26.02 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

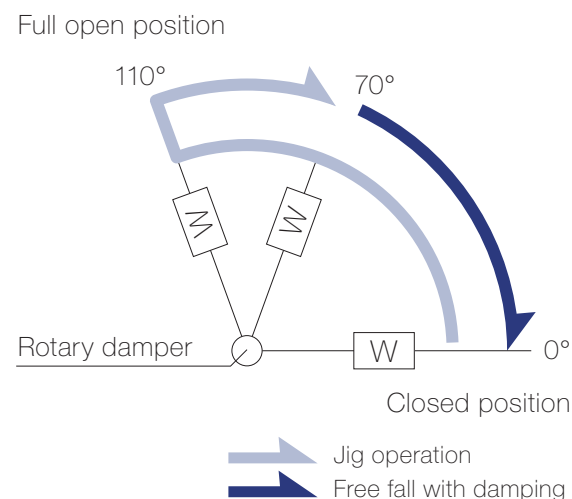
All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

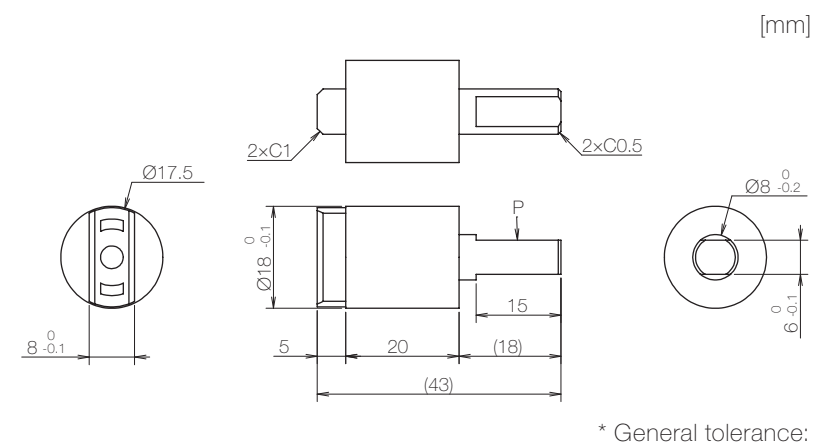
* Horizontal plane: 0°

Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
10K	0.98 (8.67)	3 to 10 sec
15K	1.47 (13.01)	
20K	1.96 (17.35)	
25K	2.45 (21.68)	
30K	2.94 (26.02)	



Product information



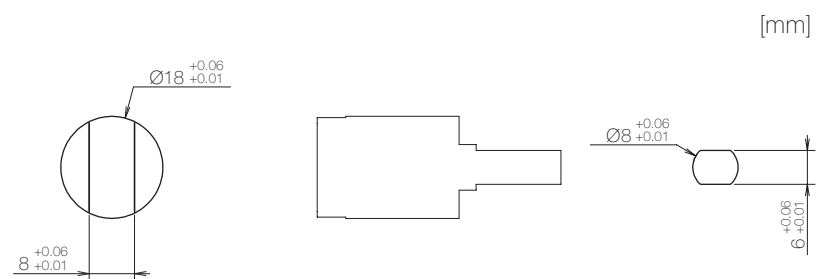
* General tolerance: ±0.3

- Opening angle: 110°
- Product weight: Approx. 30 g
- Allowable radial load (P): 29.4 N

Main materials

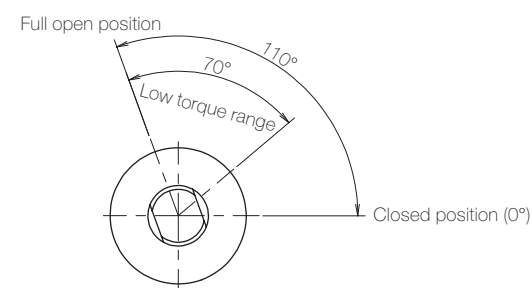
Housing	Zinc alloy (ZDC)
Cap	Zinc alloy (ZDC)
Ring screw	Zinc alloy (ZDC)

Dimensions related to mounting

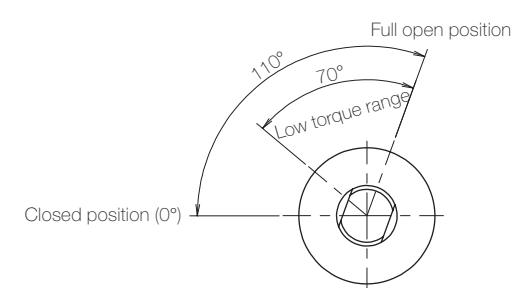


Opening angle

TD56A



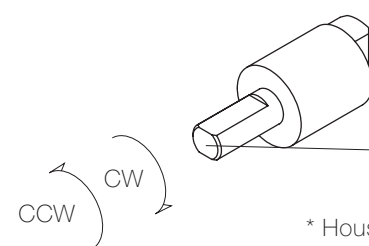
TD56B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Engraved mark
CW	CW
CCW	CCW

Product lineup



Product image



TD99A



TD99B

Features

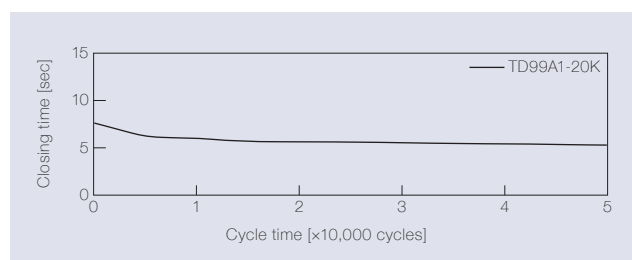
- Made with chemical-resistant PBT plastic is used
- Best-selling products
- The most popular damper design
- TD99 series is identifiable by the shaft color

Product name	Torque [N·m] (lbf·in)	Damping direction	Shaft color
TD99A1-10K	0.98 (8.67)	CW	Natural
TD99A1-15K	1.47 (13.01)		
TD99A1-20K	1.96 (17.35)		

Product name	Torque [N·m] (lbf·in)	Damping direction	Shaft color
TD99B1-10K	0.98 (8.67)	CCW	Black
TD99B1-15K	1.47 (13.01)		
TD99B1-20K	1.96 (17.35)		

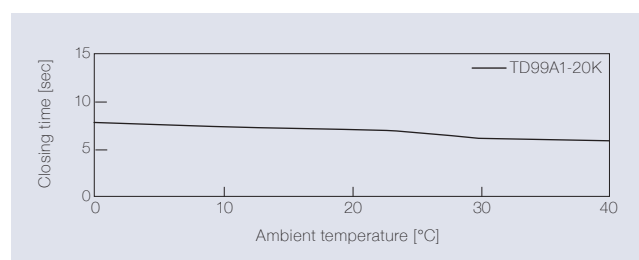
Product specifications

Durability



Torque	1.96 N·m (17.35 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

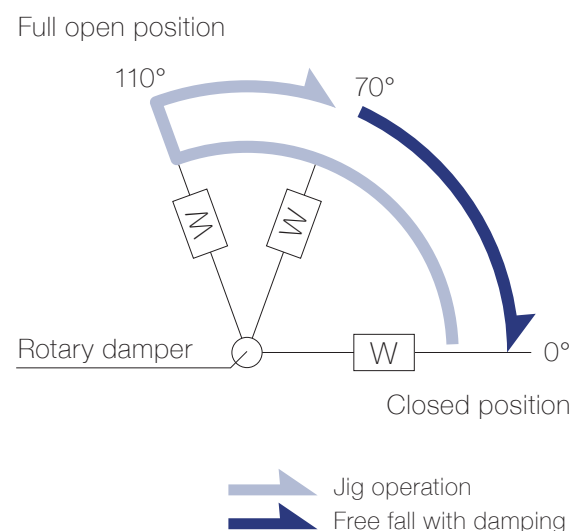
All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

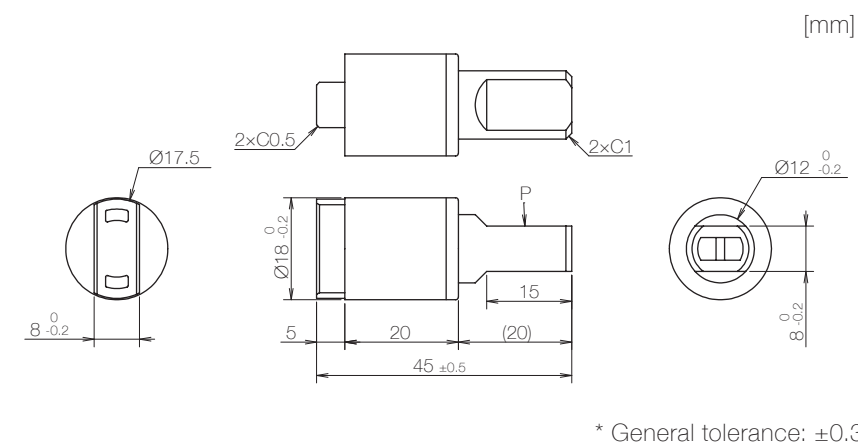
* Horizontal plane: 0°

Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
10K	0.98 (8.67)	5 to 15 sec
15K	1.47 (13.01)	
20K	1.96 (17.35)	3 to 12 sec



Product information

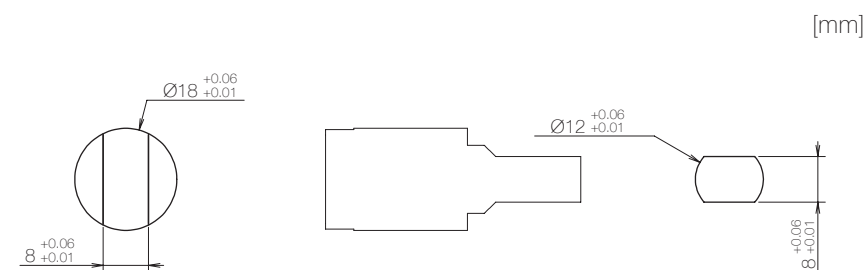


- Opening angle: 110°
- Product weight: Approx. 10 g
- Allowable radial load (P): 29.4 N

Main materials

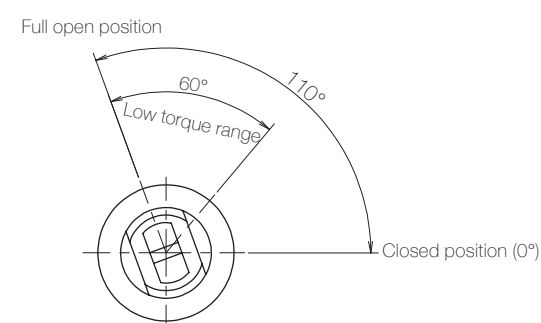
Housing	Plastic (PBT)
Cap	Plastic (PBT)
Shaft	Plastic (PBT)

Dimensions related to mounting

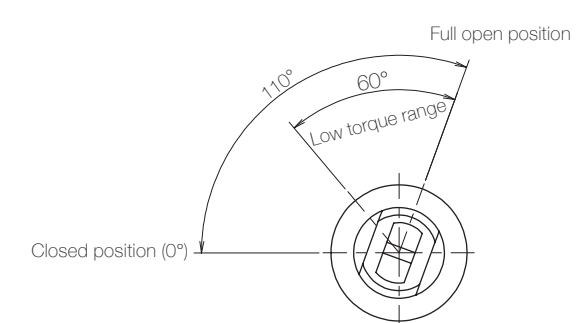


Opening angle

TD99A



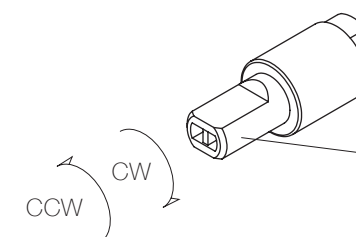
TD99B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Shaft color
CW	Natural
CCW	Black

Product lineup



Product image



SR3-01-A



SR3-02-B

Features

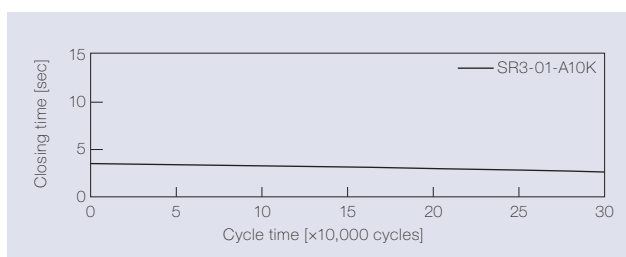
- Automatic torque adjustment (Applicable to 1 N·m or smaller)
- Small variation in closing time
- Durable for 300,000 cycles

Product name	Torque [N·m] (lbf·in)	Damping direction
SR3-01-A10K	1.0 (8.85)	CW

Product name	Torque [N·m] (lbf·in)	Damping direction
SR3-02-B10K	1.0 (8.85)	CCW

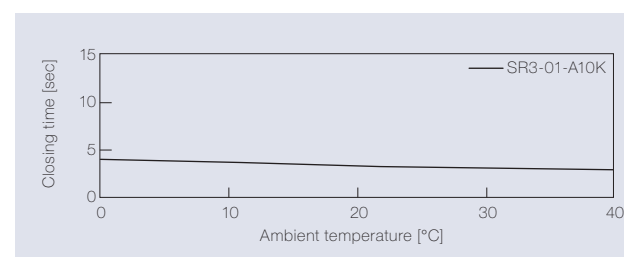
Product specifications

Durability



Torque	1.0 N·m (8.85 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	300,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

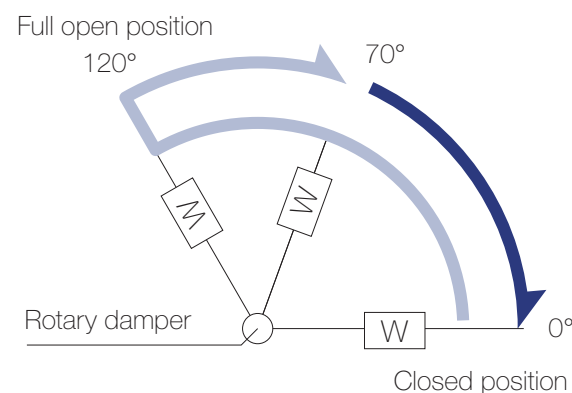
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

All rotary dampers are managed by the following closing time test.



Test mode [120° → 70° (Pause) → (Free fall with damping) → 0°]

* Horizontal plane: 0°

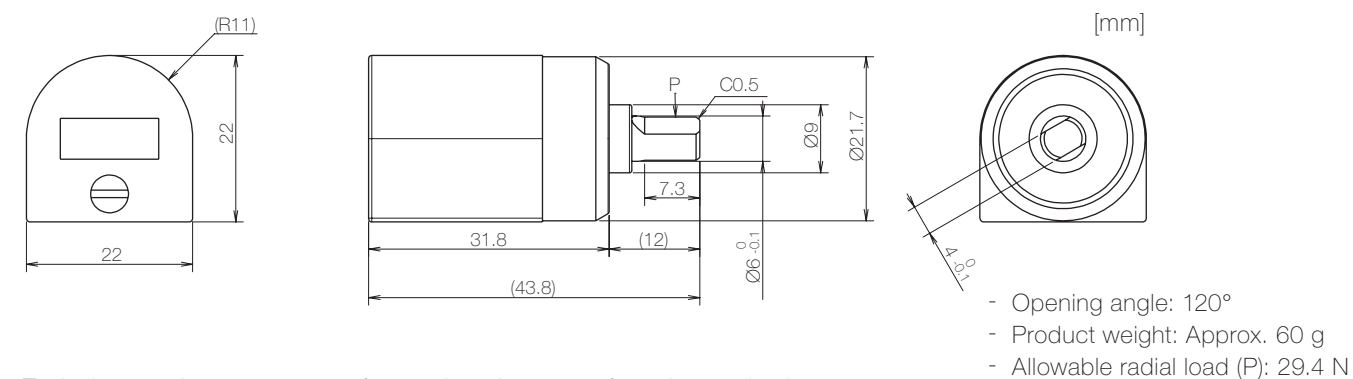


Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
10K	1.0 (8.85)	1.5 to 6 sec

 Jig operation
 Free fall with damping

Product information



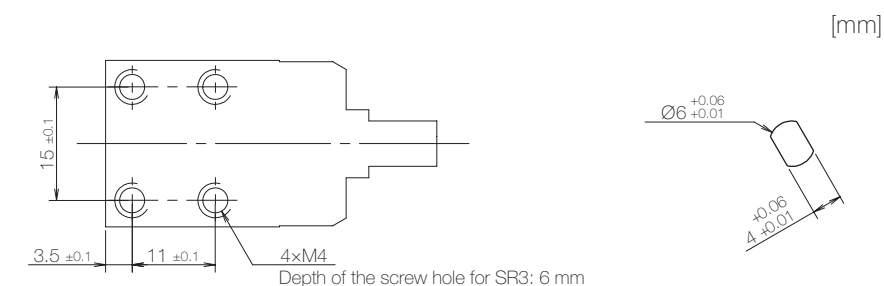
Typical rotary dampers operate faster when the torque from the application is higher than the preset torque and slower when the torque from the application is lower than the preset torque. However, SR3 maintains a constant damping speed through automatic torque adjustment.

Main materials

Housing	Zinc alloy (ZDC)
Cap	Zinc alloy (ZDC)
Shaft	Stainless steel (SUS)
Screw	Zinc alloy (ZDC)

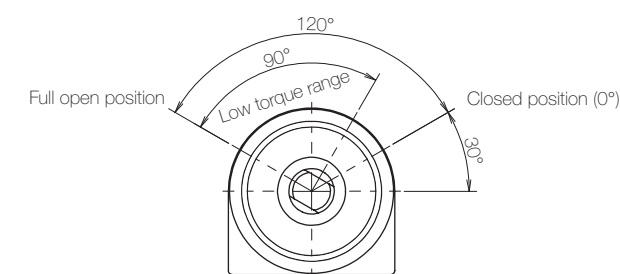
* General tolerance: ±0.2

Dimensions related to mounting

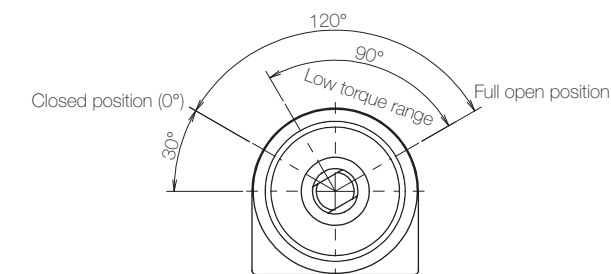


Opening angle

SR3-01-A



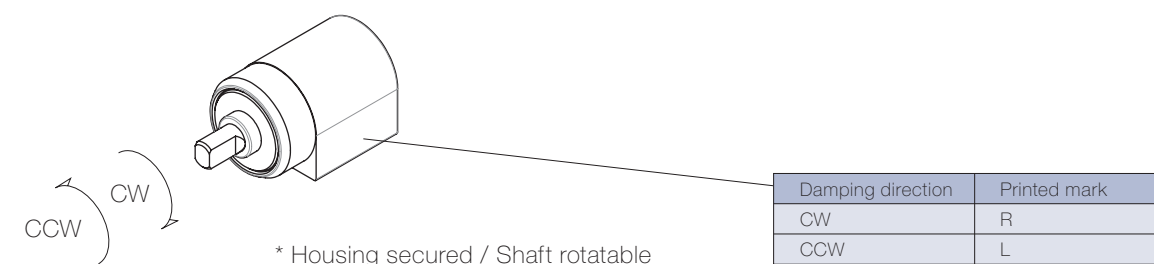
SR3-02-B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



Damping direction	Printed mark
CW	R
CCW	L



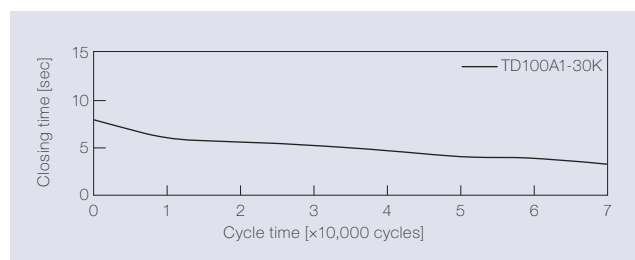
TD100A

TD100B

- High torque with Ø 16 mm damper (Up to 3 N·m)
- High rigidity achieved by the use of zinc alloy for the shaft
- Adding an option, quick release system: SR14, makes it easy to attach/detach the rotary damper

Product name	Torque IN·m (lb·in)	Damping direction	Cap color
TD100B1-10K	1.0 (8.85)	CCW	Black
TD100B1-15K	1.5 (13.28)		
TD100B1-20K	2.0 (17.70)		
TD100B1-25K	2.5 (22.13)		
TD100B1-30K	3.0 (26.55)		

Durability



Torque	3.0 N•m (26.55 lbf•in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	70,000 cycles

Ambient temperature [°C]	Closing time [sec]
0	8.5
10	8.0
20	7.8
30	7.2
40	6.5

Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

As the torque of partial rotation angle dampers is not consistent, the closing time measurement t_{ijg} is used for the performance tests.

[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

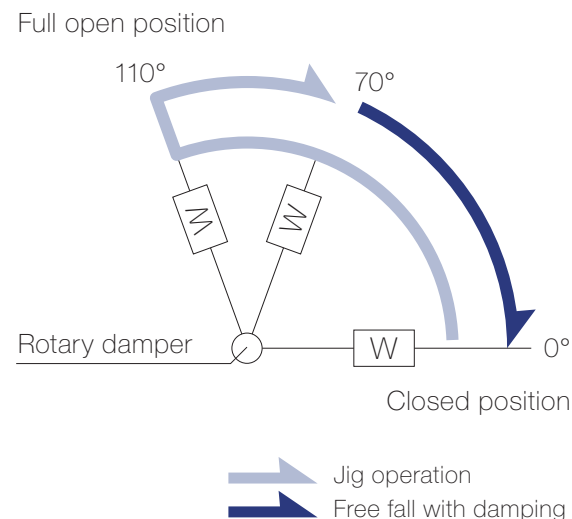
All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

* Horizontal plane: 0°

Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
10K	1.0 (8.85)	3 to 12 sec
15K	1.5 (13.28)	
20K	2.0 (17.70)	
25K	2.5 (22.13)	
30K	3.0 (26.55)	



Technical drawing of a mechanical part with three views: front, side, and top. The front view shows a circular cross-section with a diameter of $\varnothing 15$ and two curved slots. The side view shows a cylindrical body with a diameter of $\varnothing 16 \pm 0.2$, a total length of 50, and a central hole of length 24. The top view shows a circular cross-section with a diameter of $\varnothing 10 \pm 0.2$ and a central rectangular slot. Dimensions are given in millimeters [mm].

- Opening angle: 110°
- Product weight: Approx. 22 g
- Allowable radial load (P): 19.6 N

Main materials

Housing	Plastic (PBT)
Cap	Plastic (PBT)
Shaft	Zinc alloy (ZDC)

* General tolerance: ± 0.3

* The shaft has 2 grooves which identify the damping direction.

Technical drawing of a shaft with three different diameters and their tolerances. The dimensions are given in millimeters [mm].

- The leftmost section has a diameter of $\varnothing 16$ with a tolerance of $+0.26 / +0.21$.
- The middle section has a diameter of $\varnothing 10$ with a tolerance of $+0.06 / +0.01$.
- The rightmost section has a diameter of $\varnothing 7$ with a tolerance of $+0.06 / +0.01$.

TD100A

Full open position

110°

80°

Low torque range

Closed position (0°)

TD100B

Full open position

110°

80°

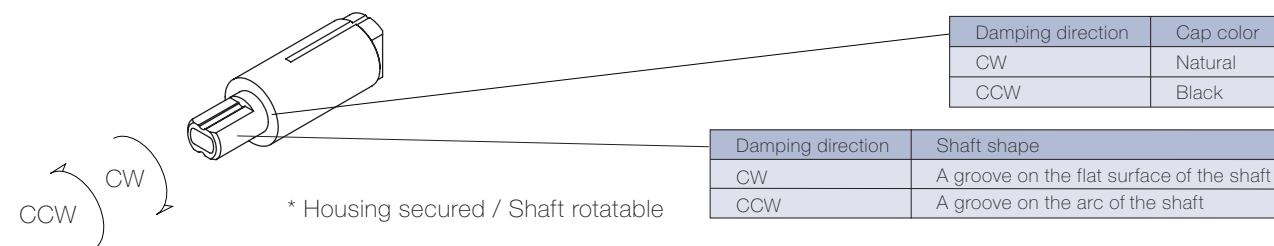
Low torque range

Closed position (0°)

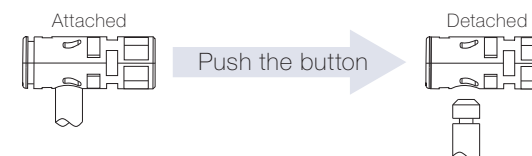
*Shaft position at the time of shipping: Closed position

*Shaft position at the time of shipping: Closed position

Rotation directions of the shaft to which torque is applied



SR14 is the quick release system that can be attached to and detached from the pin. It can be attached to the shaft with a single touch, and pressing the button detaches it from the pin easily. PBT plastic is used to ensure chemical resistance.



-Product weight: Approx. 6 g

Main materials

Case	Plastic (PBT)
Button	Plastic (PBT)

Product lineup



Product image



TD112A



TD112B

Features

- Compact design made with zinc alloy
- Shaft is thinner than that of plastic rotary dampers
- High rigidity achieved by the use of zinc alloy
- High torque up to 3 N·m
- Using the attachment, the form of TD112 will be the same as TD99

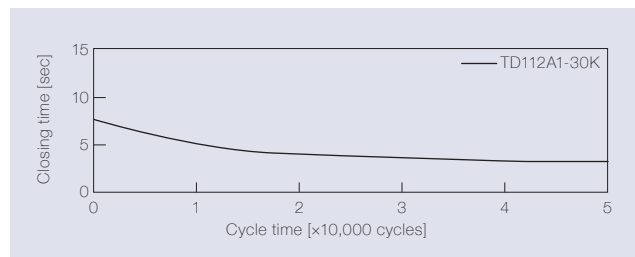
Product name	Torque [N·m] (lbf·in)	Damping direction	Cap color
TD112A1-15K	1.5 (13.28)	CW	Natural
TD112A1-20K	2.0 (17.70)		
TD112A1-25K	2.5 (22.13)		
TD112A1-30K	3.0 (26.55)		

Product name	Torque [N·m] (lbf·in)	Damping direction	Cap color
TD112B1-15K	1.5 (13.28)	CCW	Black
TD112B1-20K	2.0 (17.70)		
TD112B1-25K	2.5 (22.13)		
TD112B1-30K	3.0 (26.55)		

Long shaft is also available (Shaft length 15mm → 22mm) The products with the attachment have "-AT1" at the end of the product name.

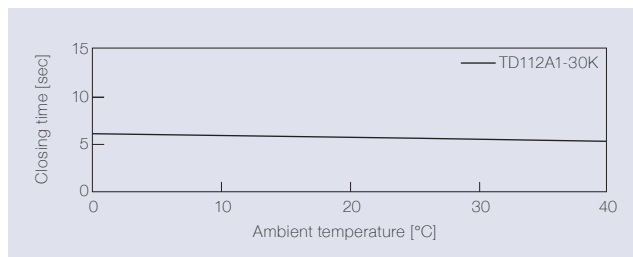
Product specifications

Durability



Torque	3.0 N·m (26.55 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

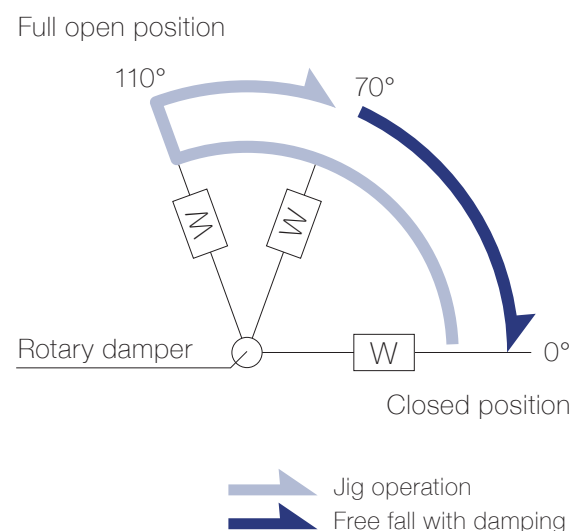
All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

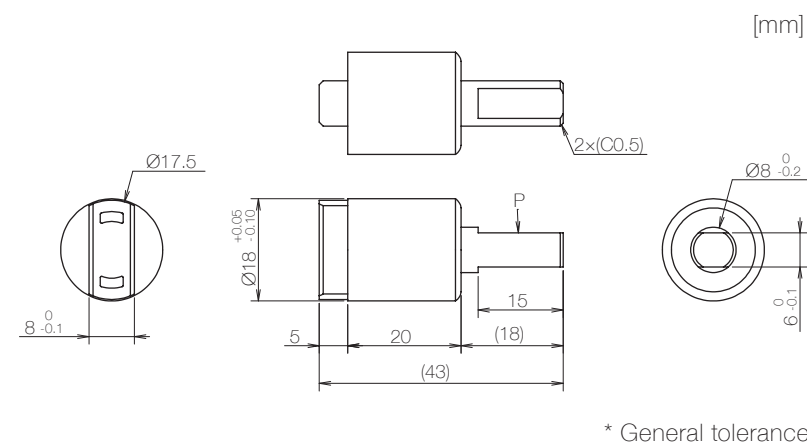
* Horizontal plane: 0°

Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
15K	1.5 (13.28)	3 to 10 sec
20K	2.0 (17.70)	
25K	2.5 (22.13)	
30K	3.0 (26.55)	



Product information

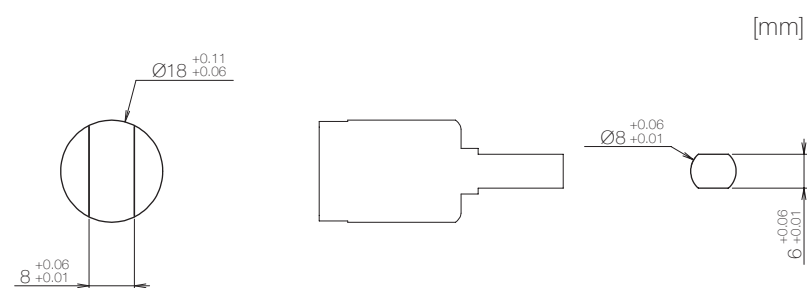


- Opening angle: 110°
- Product weight: Approx. 30 g
- Allowable radial load (P): 19.6 N

Main materials

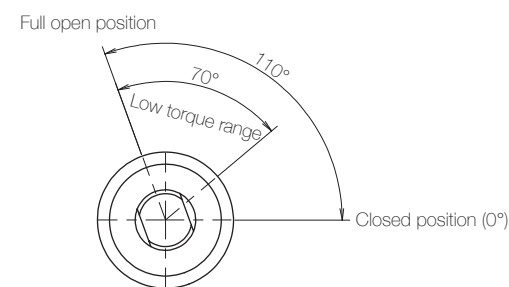
Housing	Zinc alloy(ZDC)
Cap	Plastic (PBT)
Shaft	Zinc alloy (ZDC)

Dimensions related to mounting

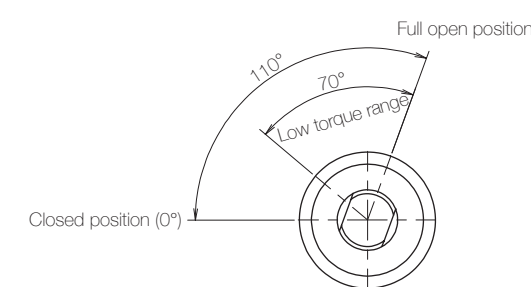


Opening angle

TD112A



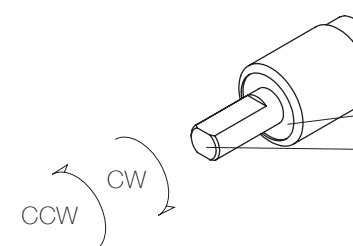
TD112B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Cap color
CW	Natural
CCW	Black

Damping direction	Engraved mark
CW	CW
CCW	CCW

Product lineup



Product image



TD118A



TD118B

Features

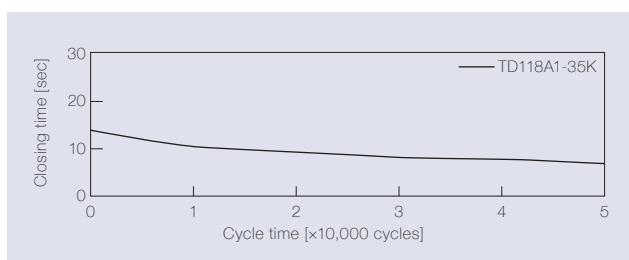
- The products with the highest torque (3.5 N·m) among our plastic rotary dampers
- Outer diameter of \varnothing 19 mm

Product name	Torque [N·m] (lbf·in)	Damping direction
TD118A1-15K	1.5 (13.28)	CW
TD118A1-20K	2.0 (17.70)	
TD118A1-25K	2.5 (22.13)	
TD118A1-30K	3.0 (26.55)	
TD118A1-35K	3.5 (30.98)	

Product name	Torque [N·m] (lbf·in)	Damping direction
TD118B1-15K	1.5 (13.28)	CCW
TD118B1-20K	2.0 (17.70)	
TD118B1-25K	2.5 (22.13)	
TD118B1-30K	3.0 (26.55)	
TD118B1-35K	3.5 (30.98)	

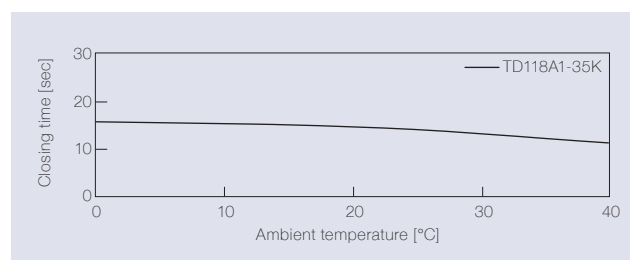
Product specifications

Durability



Torque	3.5 N·m (30.98 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

All rotary dampers are managed by the following closing time test.

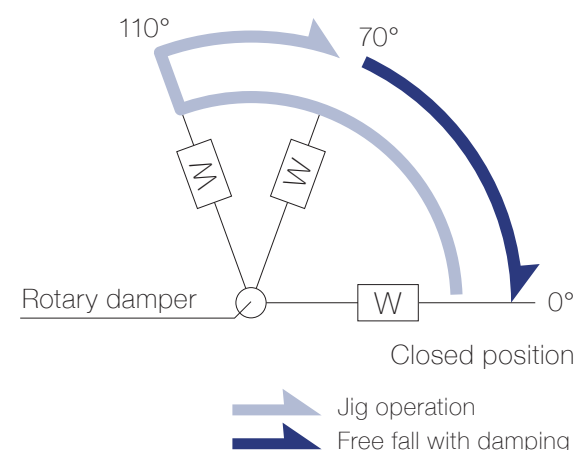
Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

* Horizontal plane: 0°

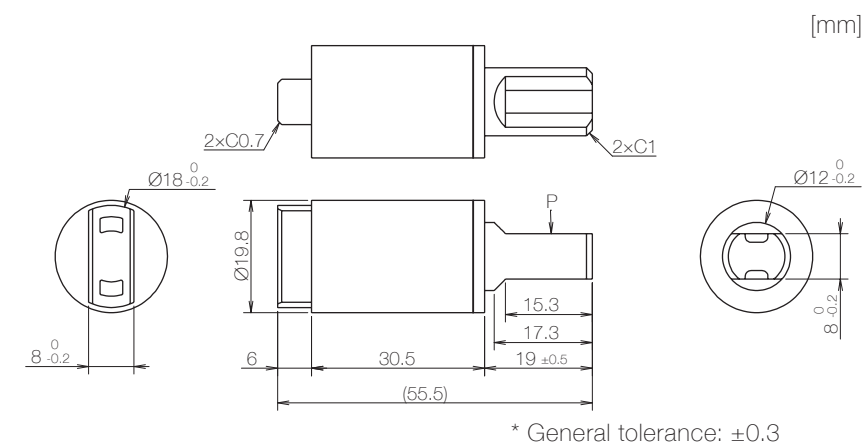
Inspection specification before shipping

Type	Preset torque [N·m](lbf·in)	Closing time
15K	1.5 (13.28)	6 to 20 sec
20K	2.0 (17.70)	
25K	2.5 (22.13)	
30K	3.0 (26.55)	
35K	3.5 (30.98)	

Full open position



Product information

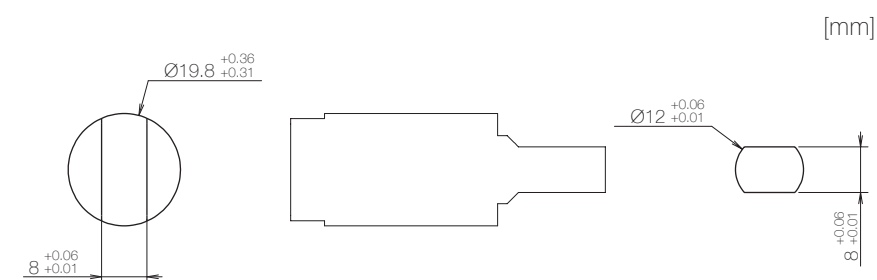


- Opening angle: 110°
- Product weight: Approx. 16 g
- Allowable radial load (P): 19.6 N

Main materials

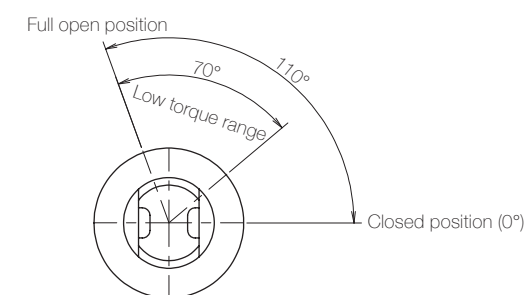
Housing	Plastic (PBT)
Cap	Plastic (PBT)
Shaft	Plastic (PA)

Dimensions related to mounting

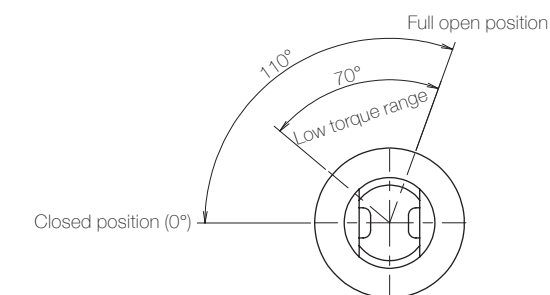


Opening angle

TD118A



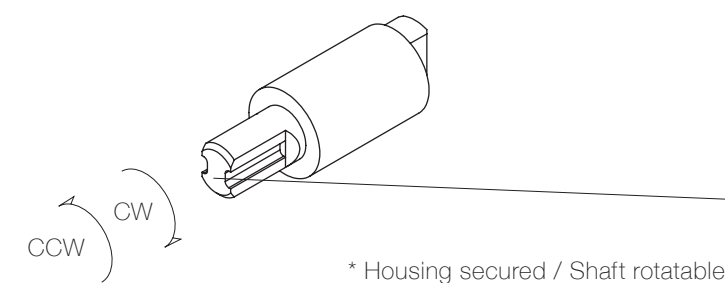
TD118B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



Damping direction	Engraved mark
CW	CW
CCW	CCW

Product lineup



Product image



TD69A



TD69B

Features

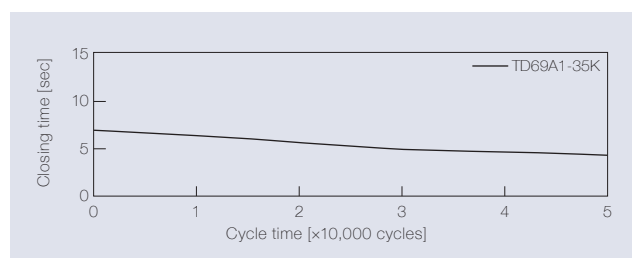
- Made with super engineering plastic (PEI)
- Wide temperature range for operation (-5°C to 80°C)
- Made with chemical-resistant
- Highest torque with Ø 20 mm damper (Up to 4 N·m)

Product name	Torque [N·m] (lbf·in)	Damping direction	Operating temperature range [°C](°F)
TD69A1-15K	1.5 (13.28)	CW	-5 to 80 (23 to 176)
TD69A1-20K	2.0 (17.70)		
TD69A1-25K	2.5 (22.13)		
TD69A1-30K	3.0 (26.55)		
TD69A1-35K	3.5 (30.98)		-5 to 50 (23 to 122)
TD69A1-40K	4.0 (35.40)		0 to 40 (32 to 104)

Product name	Torque [N·m] (lbf·in)	Damping direction	Operating temperature range [°C](°F)
TD69B1-15K	1.5 (13.28)	CCW	-5 to 80 (23 to 176)
TD69B1-20K	2.0 (17.70)		
TD69B1-25K	2.5 (22.13)		
TD69B1-30K	3.0 (26.55)		
TD69B1-35K	3.5 (30.98)		-5 to 50 (23 to 122)
TD69B1-40K	4.0 (35.40)		0 to 40 (32 to 104)

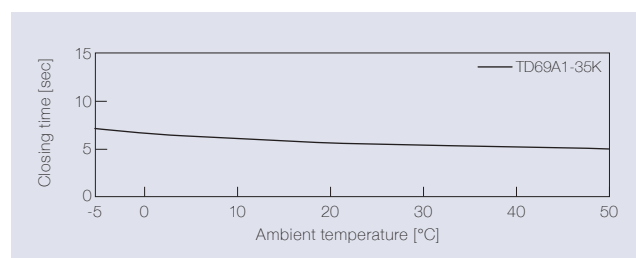
Product specifications

Durability



Torque	3.5 N·m (30.98 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	Excluding TD69A1/B1-40K
	50,000 cycles
	TD69A1/B1-40K
	20,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

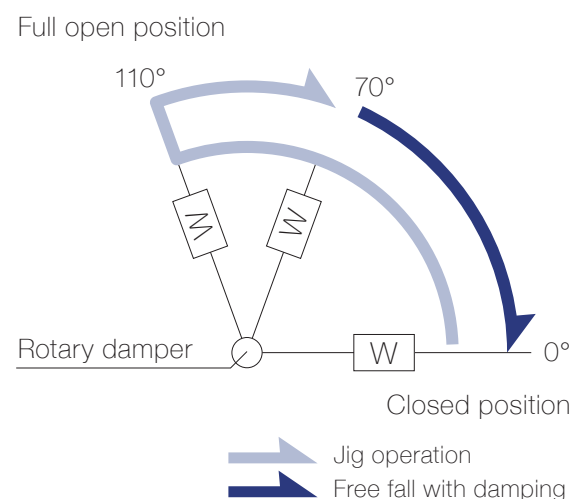
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

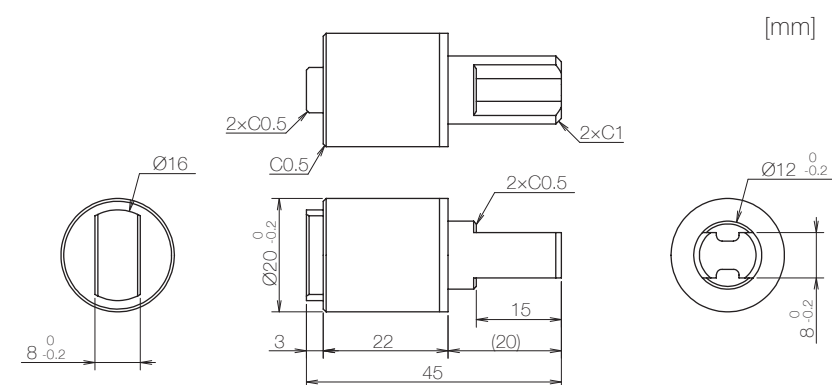
* Horizontal plane: 0°



Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
15K	1.5 (13.28)	3 to 12 sec
20K	2.0 (17.70)	
25K	2.5 (22.13)	
30K	3.0 (26.55)	
35K	3.5 (30.98)	
40K	4.0 (35.40)	

Product information



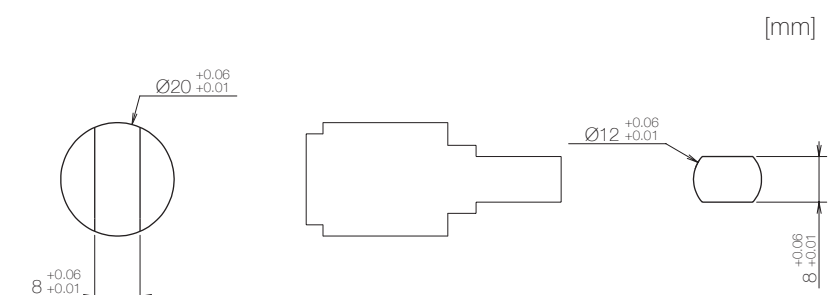
* General tolerance: ±0.3

- Opening angle: 110°
- Product weight: Approx. 12 g
- Allowable radial load (P): 29.4 N

Main materials

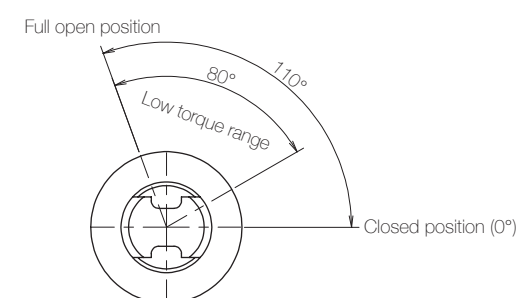
Housing	Plastic (PEI)
Cap	Plastic (PEI)
Shaft	Plastic (PEI)

Dimensions related to mounting

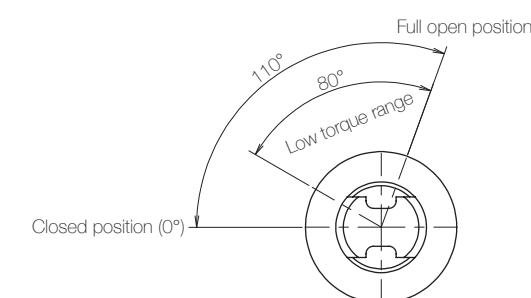


Opening angle

TD69A



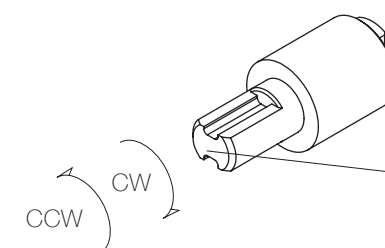
TD69B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Engraved mark
CW	CW
CCW	CCW

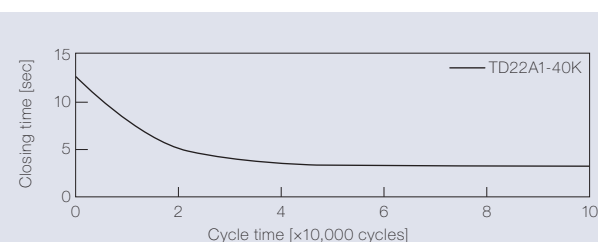


TD22B

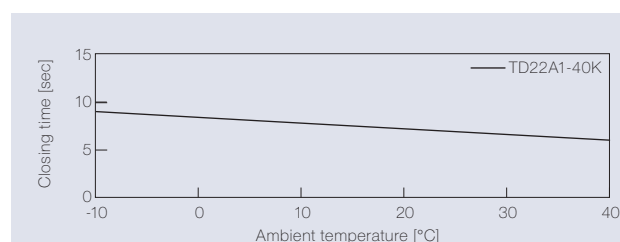
- Slim design with long mounting shaft
- Outer diameter of Ø 16,2 mm
- High torque (Up to 4 N•m)
- Durable for 100,000 cycles
- Wide temperature range for operation (-10°C to 40°C)

Product name	Torque [N·m] (lb·in)	Damping direction
TD22B1-25K	2.45 (21.68)	CCW
TD22B1-35K	3.43 (30.36)	
TD22B1-40K	3.92 (34.69)	

Durability



Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

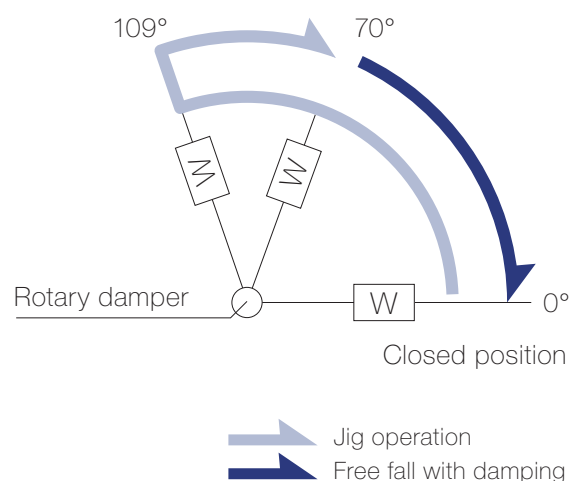
All rotary dampers are managed by the following closing time test.

Test mode [109° → 70° (Pause) → (Free fall with damping) → 0°]

* Horizontal plane: 0°

Inspection specification before shipping

ull open position



Technical drawing of a 109° opening angle ball joint. The drawing includes a side view and two end views. The side view shows a shaft with a diameter of $\varnothing 16.2 \pm 0.1$, a length of 10, a shoulder with a diameter of $\varnothing 10 \pm 0.3$, and a ball joint with a length of 8. The ball joint has a radius of R5 and a fillet radius of R1.5. The end views show the hexagonal opening with a diameter of 9 ± 0.1 and a width of 10 with a tolerance of $+0.05/-0.10$. The opening angle is 109°.

- Opening angle: 109°
- Product weight: App.
- Allowable radial load: App.

* General tolerance: ± 0.2

Main materials	
Housing	Zinc alloy (ZDC)
Ring screw	Stainless steel (SUS)
Shaft	Zinc alloy (ZDC)

Technical drawing of a shaft with a hexagonal hole, showing three views: front, side, and end view. Dimensions are in mm.

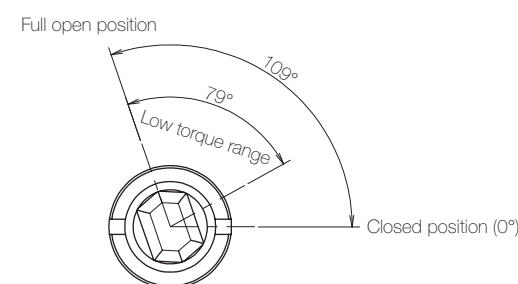
Front View (Left): Shows a circular shaft with a hexagonal hole. The hole's width is dimensioned as $10.05^{+0.06}_{+0.01}$. The shaft's outer diameter is dimensioned as $\varnothing 16.3^{+0.06}_{+0.01}$. The hole's depth is dimensioned as $9^{+0.06}_{+0.01}$ with a note (4).

Side View (Middle): Shows the shaft's profile, including a central section with a larger diameter and a smaller diameter section on the right.

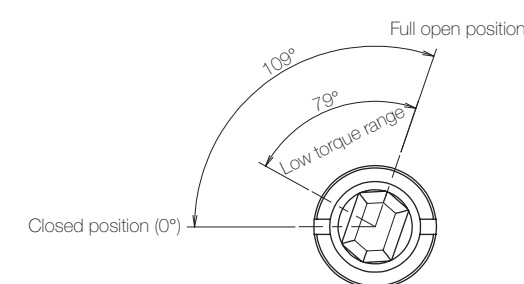
End View (Right): Shows the circular end of the shaft with a diameter dimensioned as $\varnothing 10^{+0.06}_{+0.01}$. The hole's depth is dimensioned as $7^{+0.06}_{+0.01}$.

Opening angle

TD22A



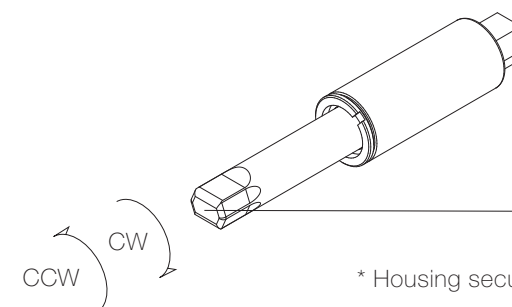
TD22B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Engraved mark
CW	R
CCW	L

Product lineup



Product image



TD133A



TD133B

Features

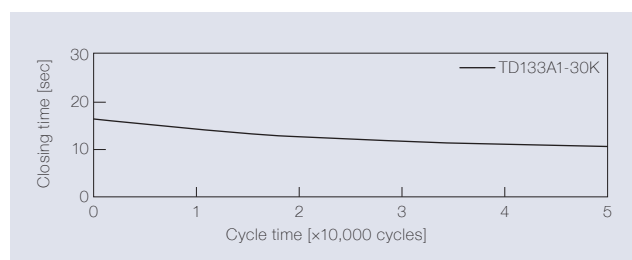
- Replaceable design with TD69
- Zinc alloy is applied for the shaft
- High torque with $\varnothing 20$ mm damper (Up to 3 N·m)

Product name	Torque [N·m] (lbf·in)	Damping direction
TD133A1-30K	3.0 (26.55)	CW

Product name	Torque [N·m] (lbf·in)	Damping direction
TD133B1-30K	3.0 (26.55)	CCW

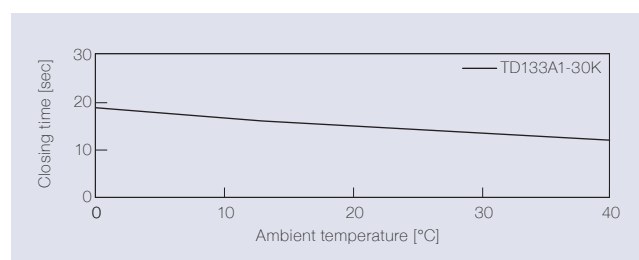
Product specifications

Durability



Torque	3.0 N·m (26.55 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

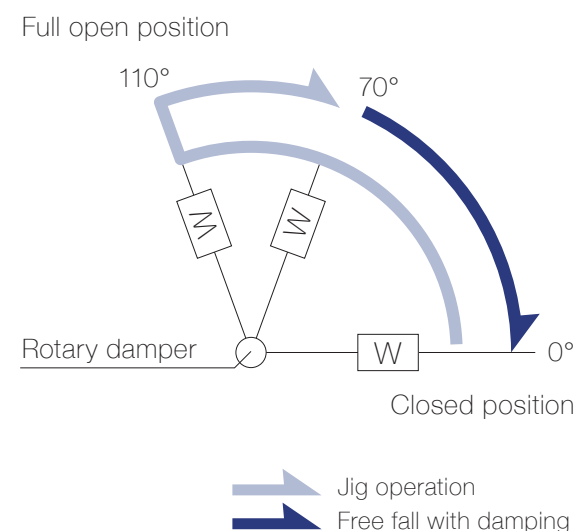
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

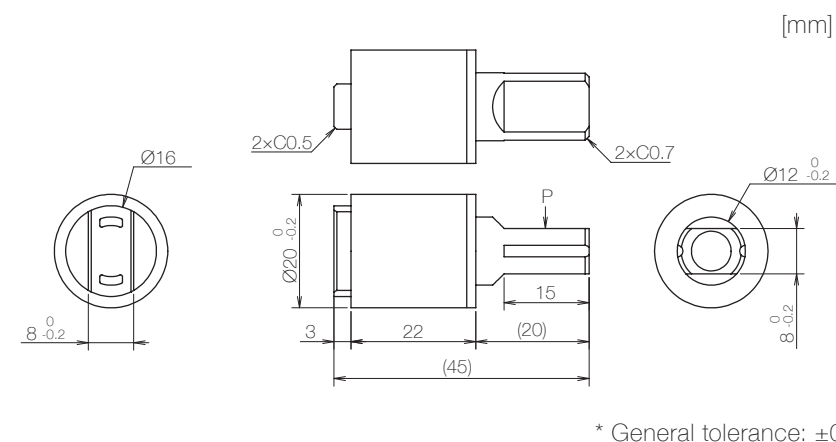
* Horizontal plane: 0°



Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
30K	3.0 (26.55)	5 to 20 sec

Product information

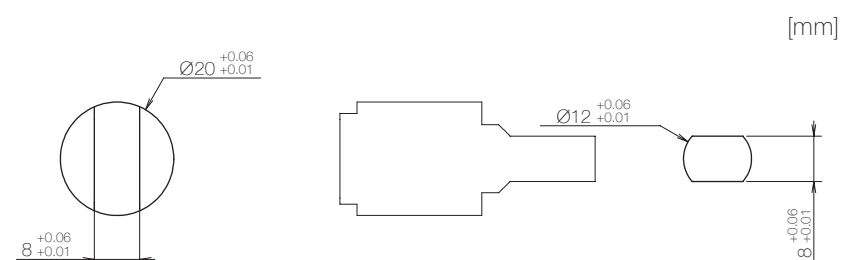


- Opening angle: 110°
- Product weight: Approx. 30 g
- Allowable radial load (P): 29.4 N

Main materials

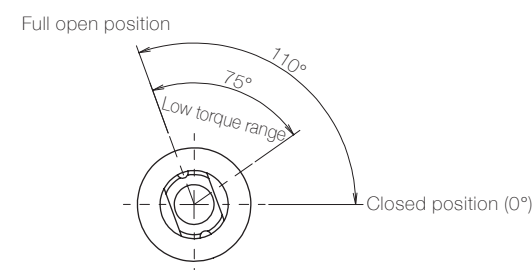
Housing	Plastic (PBT)
Cap	Plastic (PBT)
Shaft	Zinc alloy (ZDC)

Dimensions related to mounting

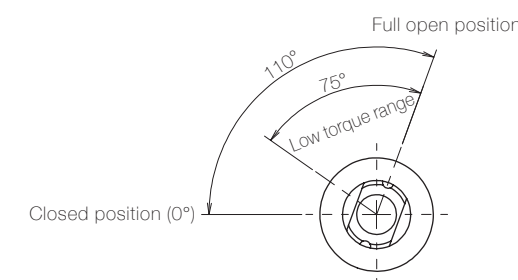


Opening angle

TD133A



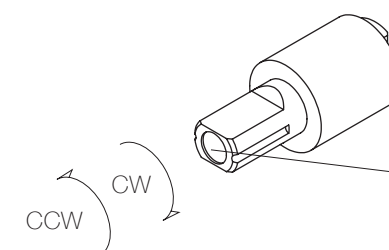
TD133B



* Shaft position at the time of shipping: Open position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Engraved mark
CW	CW
CCW	CCW

Product lineup



Product image



TD129A



TD129B

Features

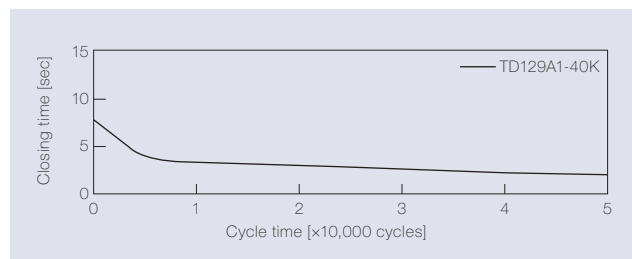
- Highest torque with $\varnothing 16$ mm damper (Up to 4 N·m)
- High rigidity achieved by the use of zinc alloy

Product name	Torque [N·m] (lbf·in)	Damping direction
TD129A1-35K	3.5 (30.98)	CW
TD129A1-40K	4.0 (35.40)	

Product name	Torque [N·m] (lbf·in)	Damping direction
TD129B1-35K	3.5 (30.98)	CCW
TD129B1-40K	4.0 (35.40)	

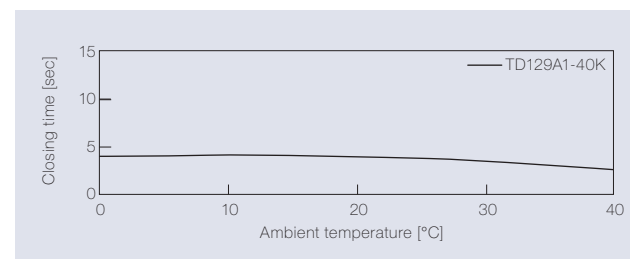
Product specifications

Durability



Torque	4.0 N·m (35.40 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

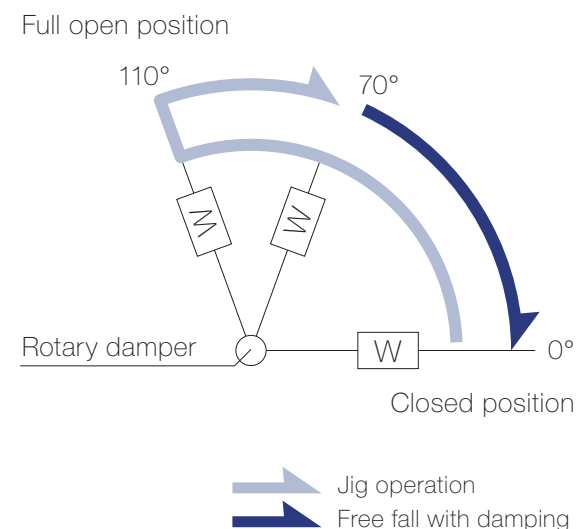
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

All rotary dampers are managed by the following closing time test.

Test mode [110° → 70° (Pause) → (Free fall with damping) → 0°]

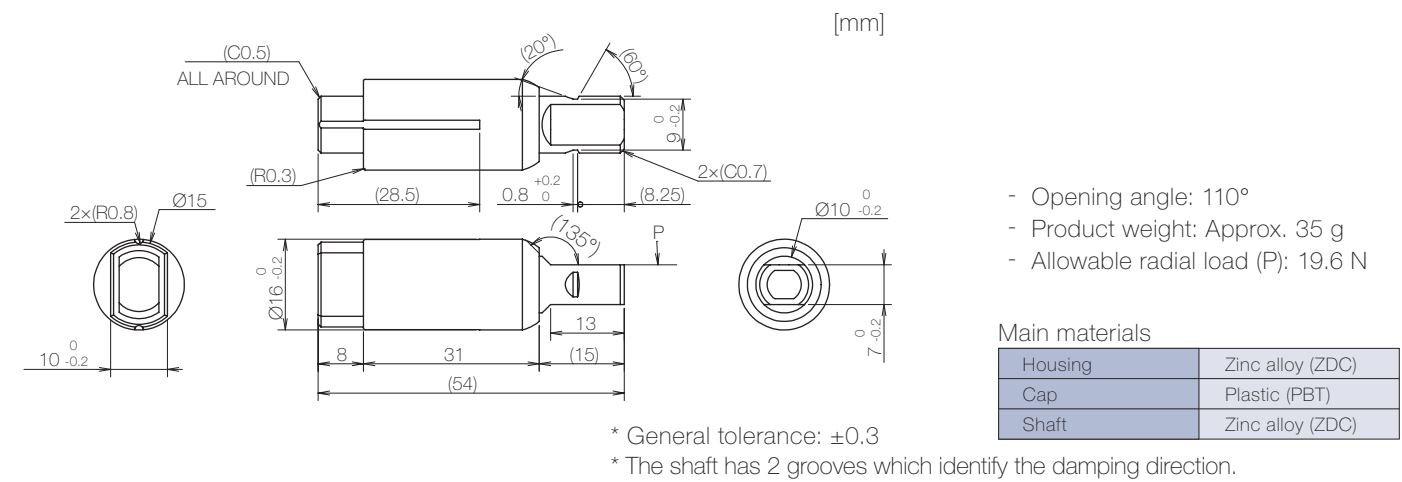
* Horizontal plane: 0°



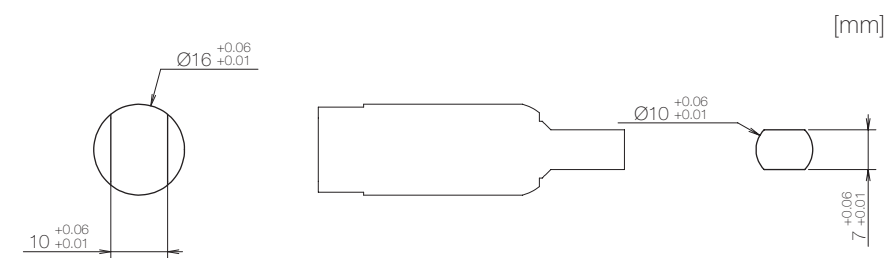
Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
35K	3.5 (30.98)	5 to 15 sec
40K	4.0 (35.40)	3 to 15 sec

Product information

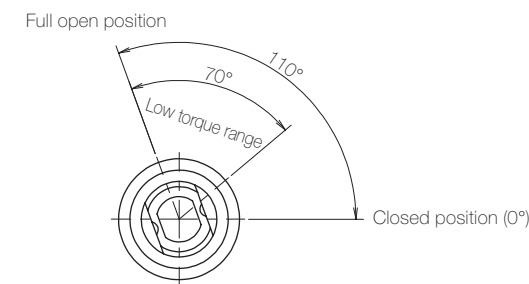


Dimensions related to mounting

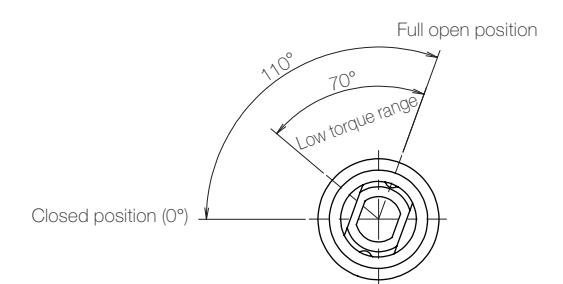


Opening angle

TD129A



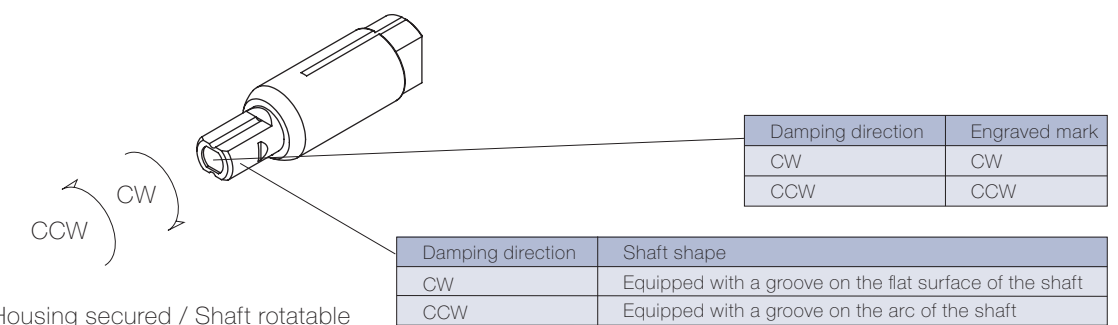
TD129B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



Product lineup



Product image

●Black ●Gold ○White ●Silver



Mounting part

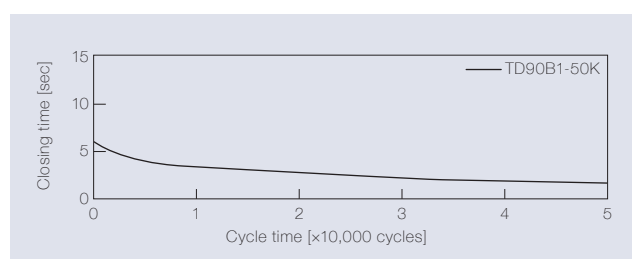
Features

- This product has been developed for additional mounting on piano key lids without damping function
- Removing the load returns the arm to its default position automatically
- 4 color variations are available

Product name	Torque [N·m] (lbf·in)	Damping direction
TD90B1-35K	3.5 (30.98)	CCW
TD90B1-50K	5.0 (44.25)	

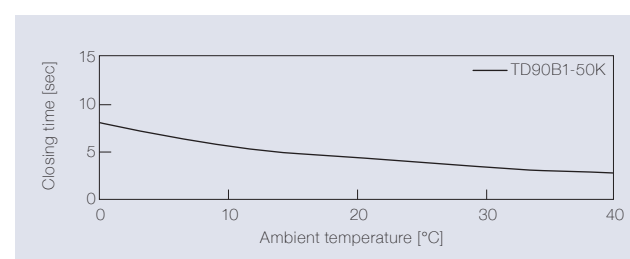
Product specifications

Durability



Torque	5.0 N·m (44.25 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

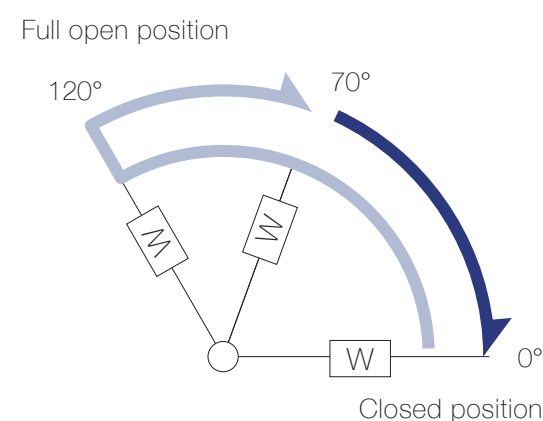
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

All rotary dampers are managed by the following closing time test.

Test mode [120° → 70° (Pause) → (Free fall with damping) → 0°]

* Horizontal plane: 0°

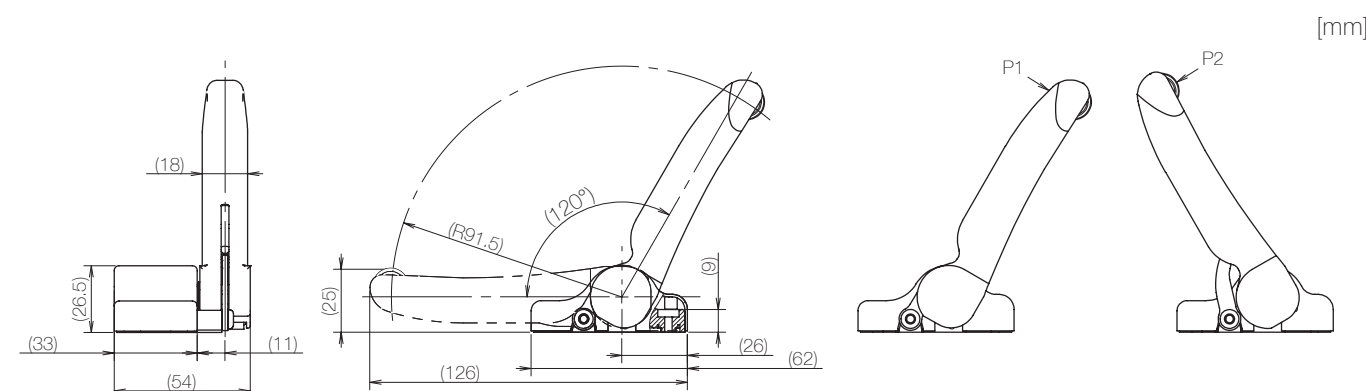


Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
35K	3.5 (30.98)	2 to 10 sec
50K	5.0 (44.25)	2 to 7 sec

➡ Jig operation
➡ Free fall with damping

Product information



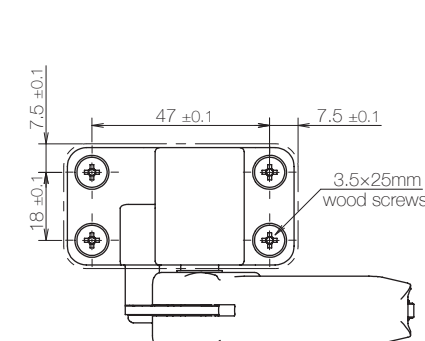
- Opening angle: 120°
(The arm returns from the closed position to the 90° or larger position automatically)
- Product weight: Approx. 124 g
- Allowable radial load: (P1) 50 N, (P2) 45 N

* General tolerance: ±0.3

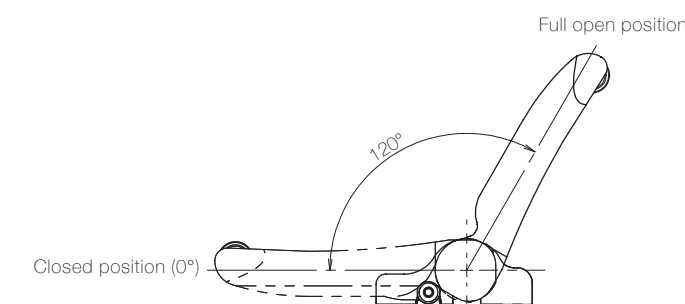
Main materials

Rotary dampers	Plastic (POM)
Rotary dampers cover	Plastic (ABS)
Arm	Zinc alloy (ZDC)
Arm-cover	Plastic (ABS)

Dimensions related to mounting

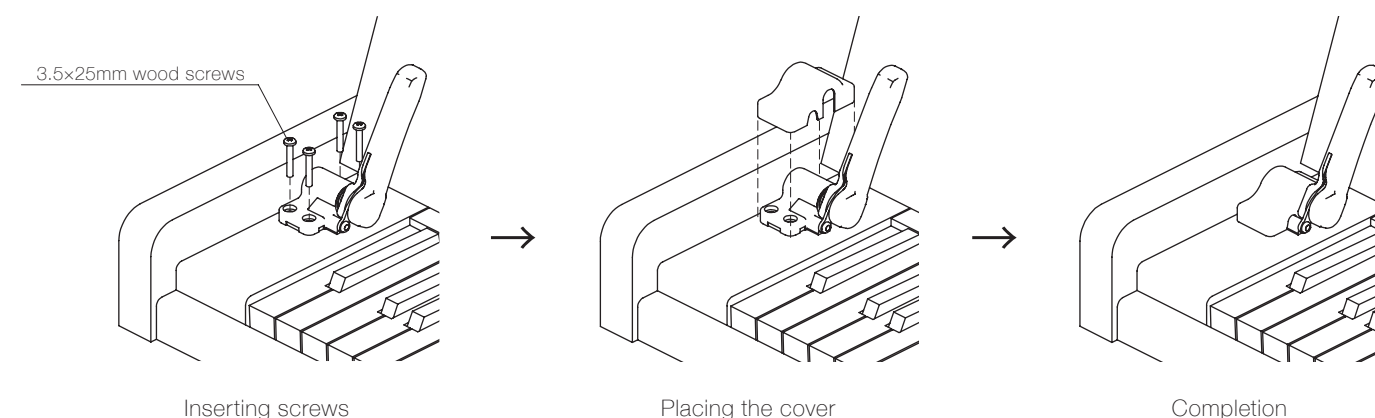


Opening angle



* Arm position at the time of shipping: Open position

Mounting method with screws (Sold separately)



Attention

- Install the damper (TD90) in the position where the key-block operates correctly.
- Be careful not to damage the damper (TD90) or the piano when installing the damper (TD90) on the piano.
- Secure the damper in the position where the arm-cover does not hit a fall board.
- By separating the installation position from the rotation axis of a fall board, the closing time of a fall board becomes longer.

Product lineup



Product image



TD42A



TD42B

Features

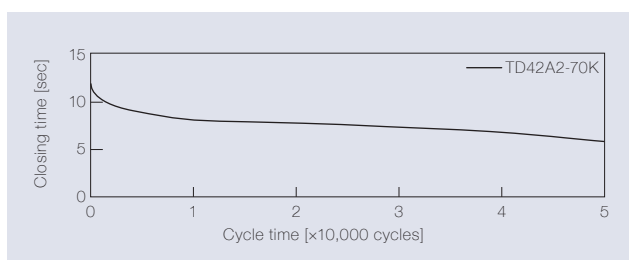
- High rigidity achieved by the use of zinc alloy
- Higher torque with horizontal use dampers (Up to 8.8 N·m)
- Superior damping responsiveness

Product name	Torque [N·m] (lbf·in)	Damping direction
TD42A2-50K	4.90 (43.37)	CW
TD42A2-70K	6.86 (60.72)	
TD42A2-90K	8.83 (78.15)	

Product name	Torque [N·m] (lbf·in)	Damping direction
TD42B2-50K	4.90 (43.37)	CCW
TD42B2-70K	6.86 (60.72)	
TD42B2-90K	8.83 (78.15)	

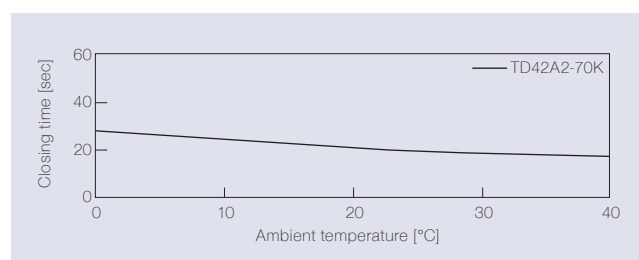
Product specifications

Durability



Torque	6.86 N·m (60.72 lbf·in)
Radial load	N/A
Angle range of closing time	60 to -30 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	Excluding TD42A2/B2-90K
	TD42A2/B2-90K

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

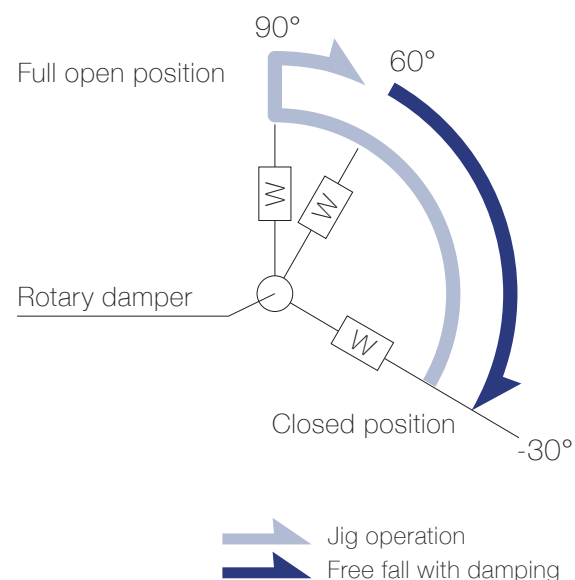
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

All rotary dampers are managed by the following closing time test.

Test mode [90° → 60° (Pause) → (Free fall with damping) → -30°]

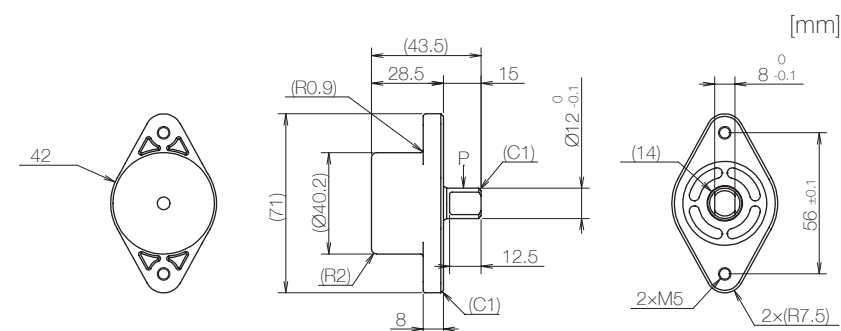
* Horizontal plane: 0°



Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
50K	4.90 (43.37)	5 to 25 sec
70K	6.86 (60.72)	
90K	8.83 (78.15)	

Product information



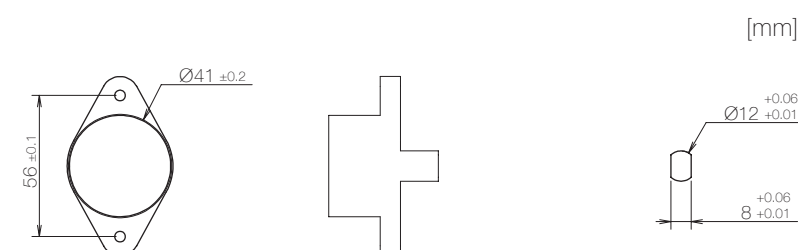
* General tolerance: ±0.2

- Opening angle: 120°
- Product weight: Approx. 220 g
- Allowable radial load (P): 9.8 N

Main materials

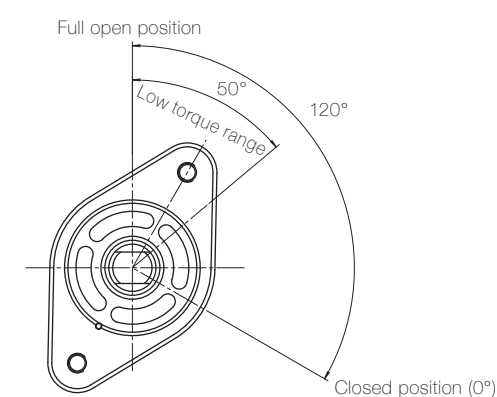
Housing	Zinc alloy (ZDC)
Ring screw	Zinc alloy (ZDC)
Shaft	Zinc alloy (ZDC)

Dimensions related to mounting

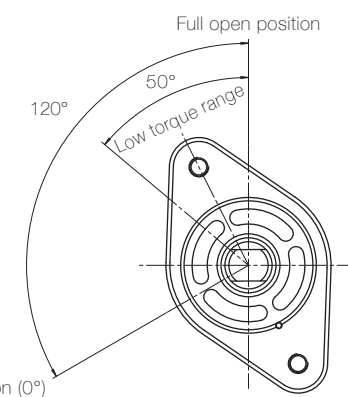


Opening angle

TD42A



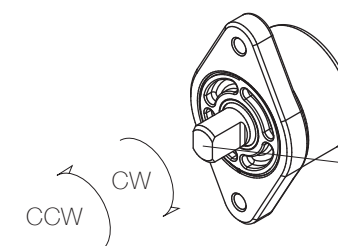
TD42B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Engraved mark
CW	CW
CCW	CCW



Horizontal use

RoHS compliant

Product lineup



Product image

Features

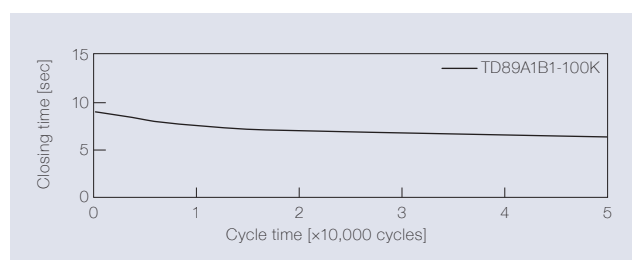
- TD89 generates a torque of 10 N·m, which is the largest among our products
- The hinge type design facilitates easy mounting
- Its exterior is made of stainless steel and painted zinc alloy
- The shaft is chromate-treated to prevent rust

Product name	Torque [N·m] (lbf·in)	Damping direction
TD89A1B1-50K	5.0 (44.25)	Unidirectional

Product name	Torque [N·m] (lbf·in)	Damping direction
TD89A1B1-100K	10.0 (88.51)	Unidirectional

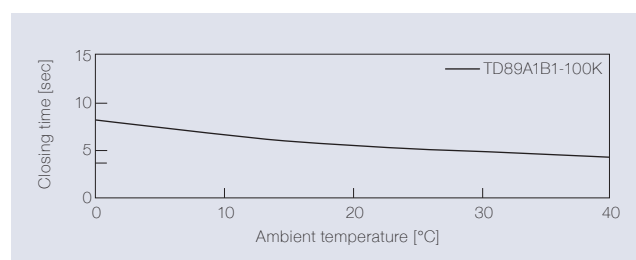
Product specifications

Durability



Torque	10.0 N·m (88.51 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As this product uses two rotary dampers, the damper performance of each rotary damper is checked before assembling them into a hinge form. As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

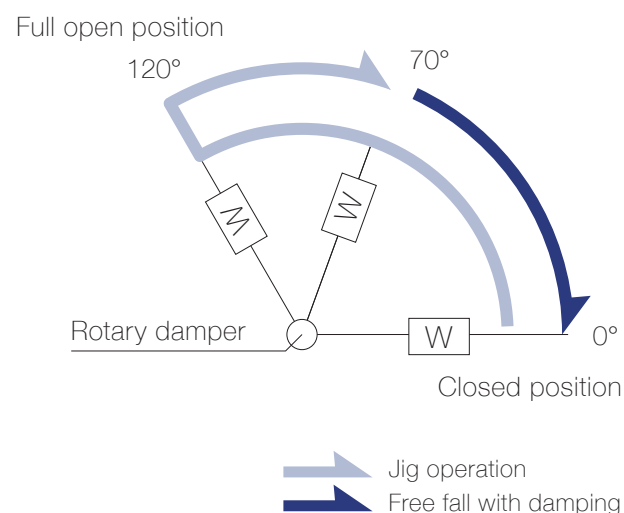
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft.)

All rotary dampers are managed by the following closing time test.

Test mode [120° → 70° (Pause) → (Free fall with damping) → 0°]

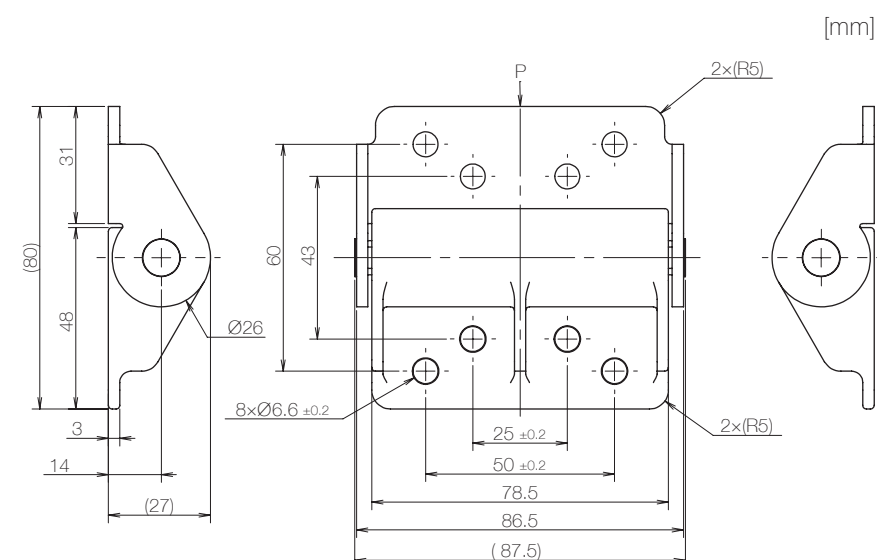
* Horizontal plane: 0°



Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
50K	5.0 (44.25)	3 to 12 sec
100K	10.0 (88.51)	

Product information



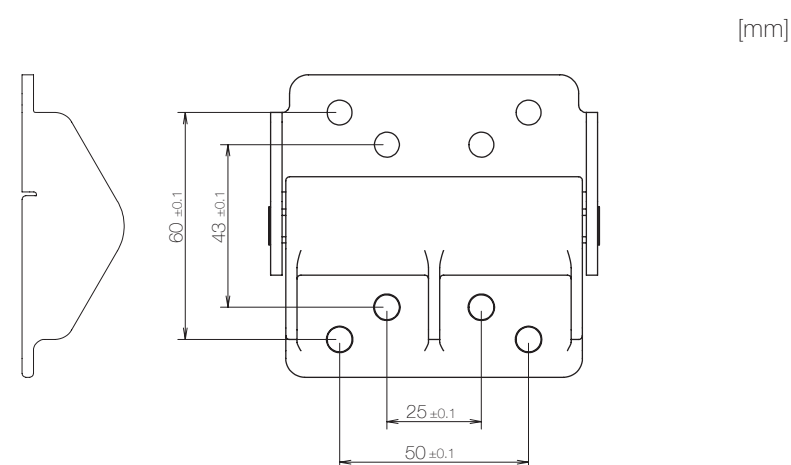
* General tolerance: ±0.5

- Opening angle: 120°
- Product weight: Approx. 365 g
- Allowable radial load (P): 58.8 N

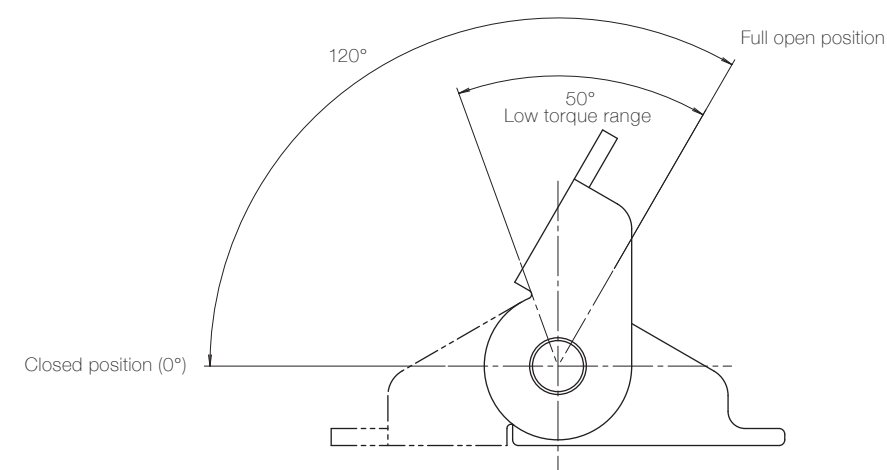
Main materials

Hinge housing	Zinc alloy (ZDC)
Hinge bracket	Stainless steel (SUS)

Dimensions related to mounting



Opening angle



* Shaft position at the time of shipping: Closed position

Product lineup



Product image



TD75A



TD75B

Features

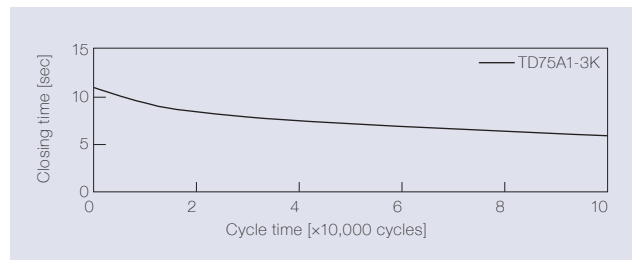
- The smallest vertical use damper (Ø 11 mm)
- Allowable opening angle of 180°
- Durable for 100,000 cycles

Product name	Torque [N·m] (lbf·in)	Damping direction
TD75A1-1K	0.10 (0.89)	CW
TD75A1-2K	0.20 (1.77)	
TD75A1-3K	0.29 (2.57)	

Product name	Torque [N·m] (lbf·in)	Damping direction
TD75B1-1K	0.10 (0.89)	CCW
TD75B1-2K	0.20 (1.77)	
TD75B1-3K	0.29 (2.57)	

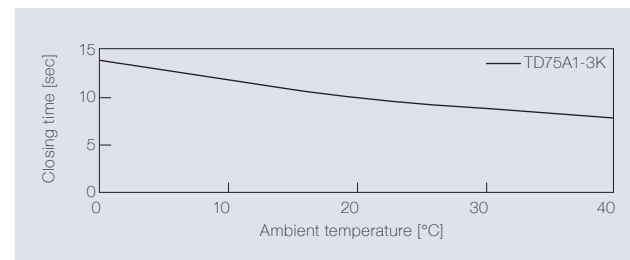
Product specifications

Durability



Torque	0.29 N·m (2.57 lbf·in)
Radial load	N/A
Angle range of closing time	160 to 10 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	100,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

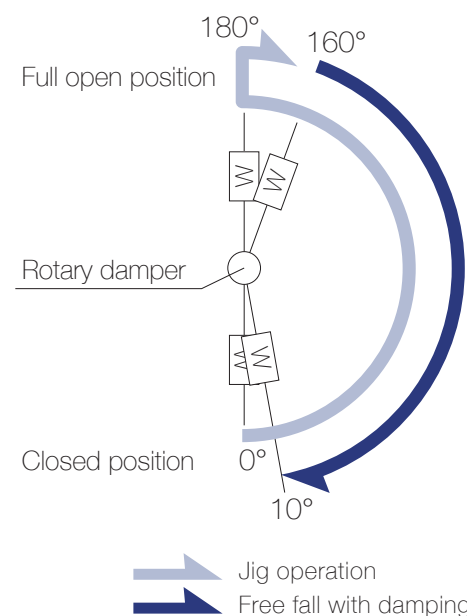
All rotary dampers are managed by the following closing time test.

Test mode [180° → 160° (Pause) → (Free fall with damping) → 10°]

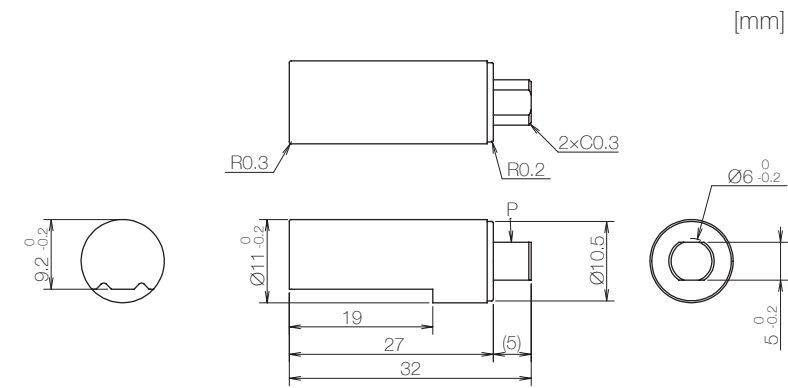
* Horizontal plane: 90°

Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
1K	0.10 (0.89)	5 to 15 sec
2K	0.20 (1.77)	
3K	0.29 (2.57)	



Product information



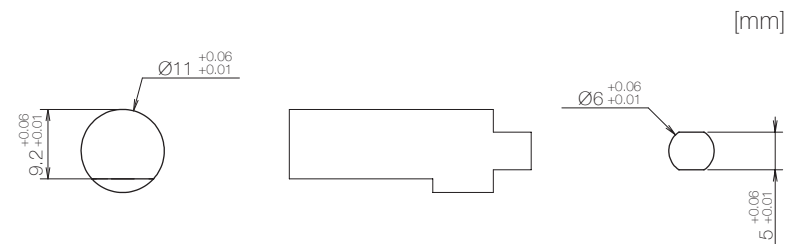
* General tolerance: ±0.3

- Opening angle: 180°
- Product weight: Approx. 7 g
- Allowable radial load (P): 29.4 N

Main materials

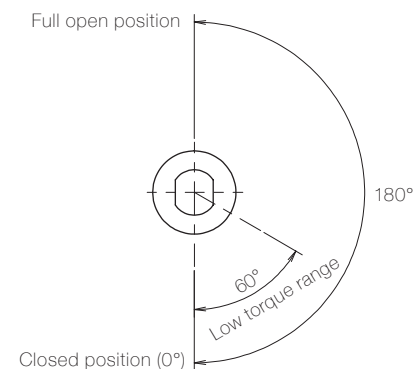
Housing	Plastic (POM)
Cap	Plastic (POM)
Shaft	Zinc alloy (ZDC)

Dimensions related to mounting

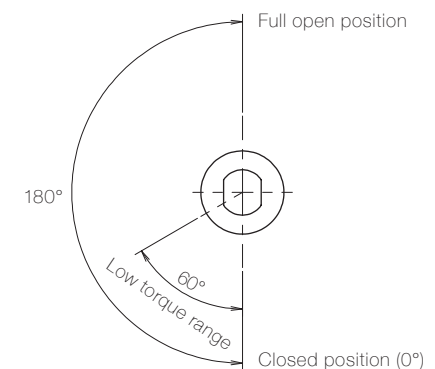


Opening angle

TD75A



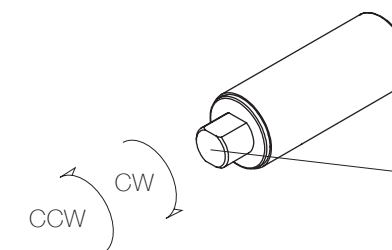
TD75B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Engraved mark
CW	CW
CCW	CCW

Product lineup



Product image



TD38A



TD38B

Features

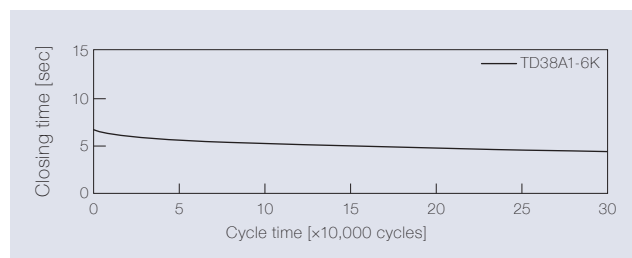
- Longselling vertical use type rotary dampers
- Allowable opening angle of 180°
- Durable for 300,000 cycles
- Wide temperature range for operation (-15°C to 60°C)

Product name	Torque [N·m] (lbf·in)	Damping direction	Housing color	Cap color
TD38A1-1.5K(R)	0.15 (1.33)	CW	Brown	Black
TD38A1-3K(R)	0.29 (2.57)		Black	Black
TD38A1-6K(R)	0.59 (5.22)		Purple	Black

Product name	Torque [N·m] (lbf·in)	Damping direction	Housing color	Cap color
TD38B1-1.5K(L)	0.15 (1.33)	CCW	Brown	Purple
TD38B1-3K(L)	0.29 (2.57)		Black	Purple
TD38B1-6K(L)	0.59 (5.22)		Purple	Purple

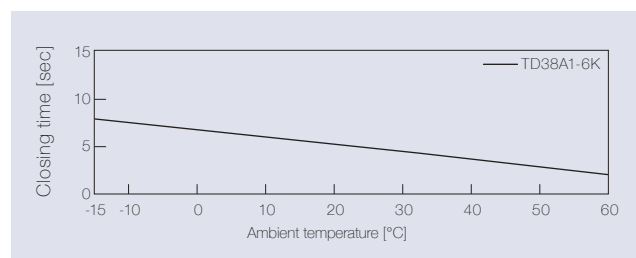
Product specifications

Durability



Torque	0.59 N·m (5.22 lbf·in)
Radial load	N/A
Angle range of closing time	160 to 10 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	300,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent the closing time measurement jig is used for the performance tests.

[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft.)

All rotary dampers are managed by the following closing time test.

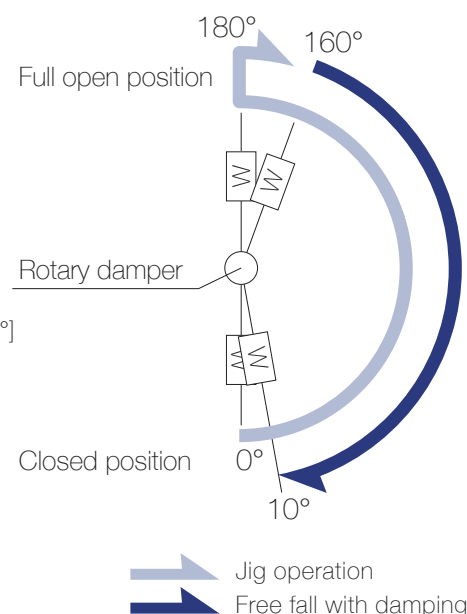
Durability test mode [160° → (Free fall with damping) → 0°]

Shipping inspection mode [180° → 160° (Pause) → (Free fall with damping) → 10°]

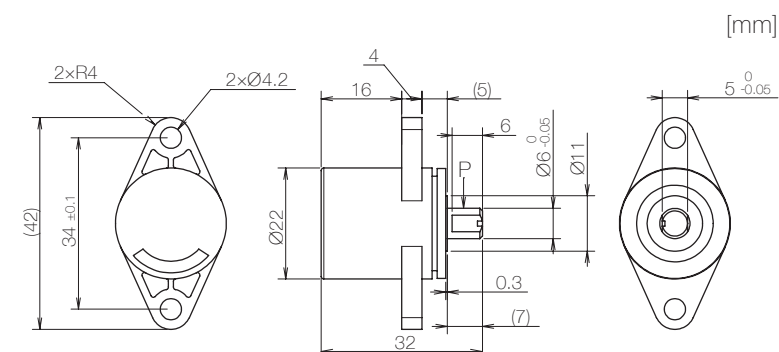
* Horizontal plane: 90°

Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
1.5K	0.15 (1.33)	2 to 10 sec
3K	0.29 (2.57)	
6K	0.59 (5.22)	



Product information



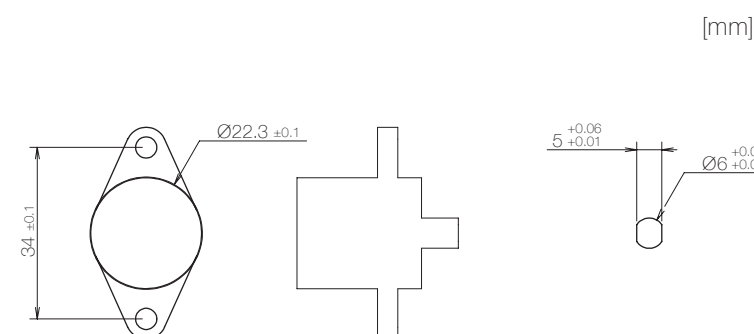
* General tolerance: ±0.3

- Opening angle: 180°
- Product weight: Approx. 20 g
- Allowable radial load (P): 29.4 N

Main materials

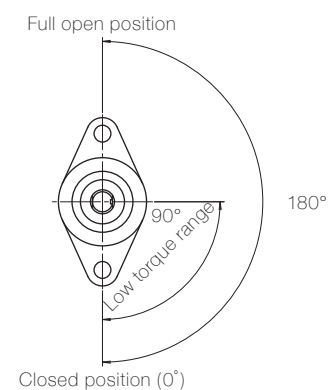
Housing	Plastic (POM)
Cap	Plastic (POM)
Shaft	Zinc alloy (ZDC)

Dimensions related to mounting

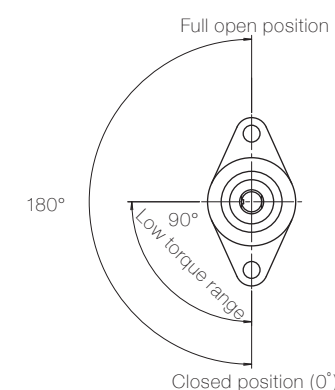


Opening angle

TD38A



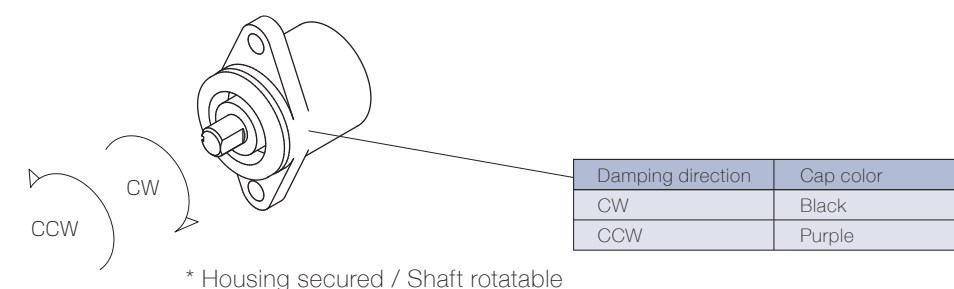
TD38B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Product lineup



Product image



TD99A



TD99B

Features

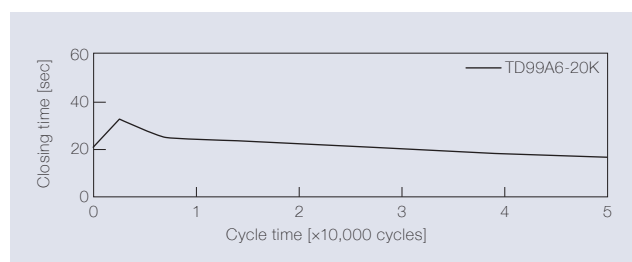
- The most popular damper design
- Vertical use version of TD99
- TD99 series is identifiable by the shaft color

Product name	Torque [N·m] (lbf·in)	Damping direction	Shaft color
TD99A6-10K	1.0 (8.85)	CW	Light blue
TD99A6-15K	1.5 (13.28)		
TD99A6-20K	2.0 (17.70)		

Product name	Torque [N·m] (lbf·in)	Damping direction	Shaft color
TD99B6-10K	1.0 (8.85)	CCW	Blue
TD99B6-15K	1.5 (13.28)		
TD99B6-20K	2.0 (17.70)		

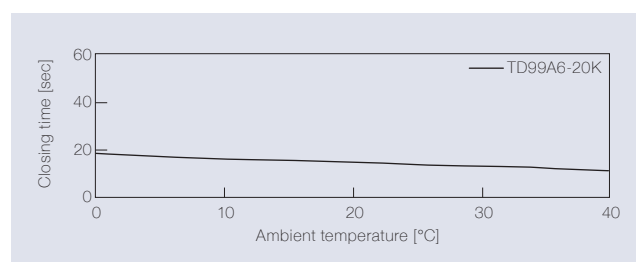
Product specifications

Durability



Torque	2.0 N·m (17.70 lbf·in)
Radial load	N/A
Angle range of closing time	90 to 5 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

[Operation during measurement]

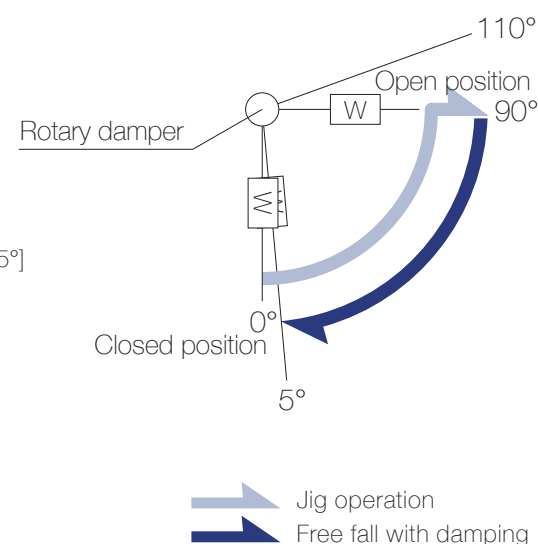
(Secures the housing of a rotary damper and moves its shaft)

All rotary dampers are managed by the following closing time test.

Durability test mode [5° → 90° (Pause) → (Free fall with damping) → 5°]

Shipping inspection mode [0° → 90° (Pause) → (Free fall with damping) → 5°]

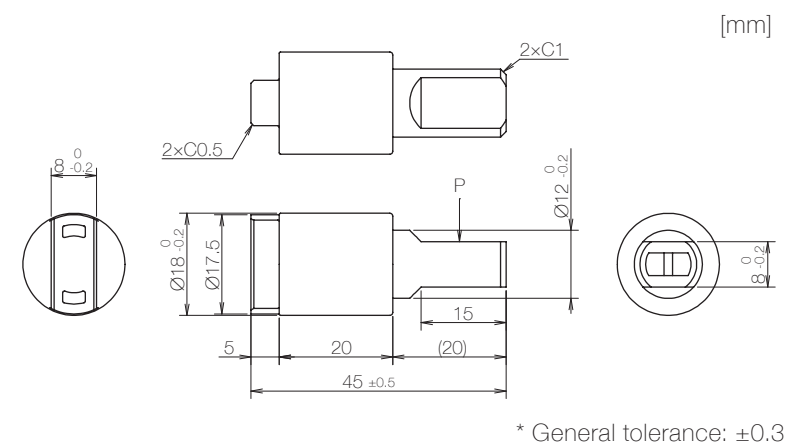
* Horizontal plane: 90°



Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
10K	1.0 (8.85)	5 to 20 sec
15K	1.5 (13.28)	
20K	2.0 (17.70)	

Product information

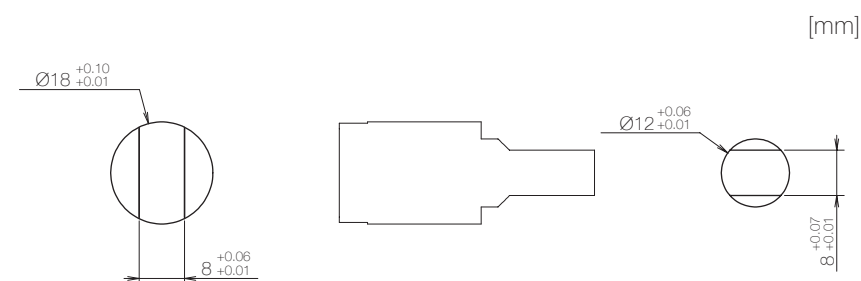


- Opening angle: 110°
- Product weight: Approx. 10 g
- Allowable radial load (P): 29.4 N

Main materials

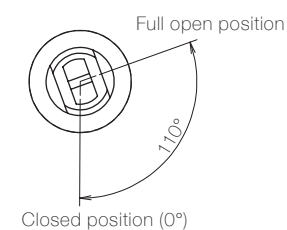
Housing	Plastic (PBT)
Cap	Plastic (PBT)
Shaft	Plastic (PA)

Dimensions related to mounting

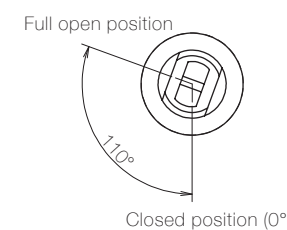


Opening angle

TD99A



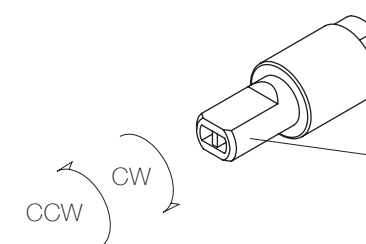
TD99B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Shaft color
CW	Light blue
CCW	Blue



TD148

Horizontal and Vertical use

RoHS compliant

Product lineup



Product image



TD148A



TD148B

Features

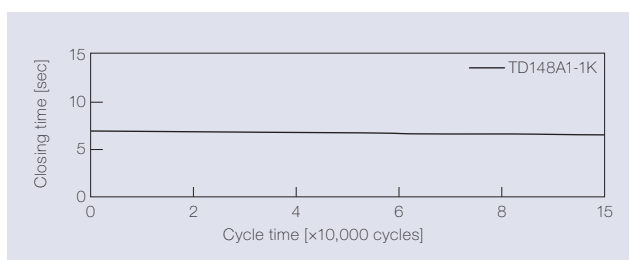
- The form of the TD148 is symmetrical, so it can be inserted in either direction
- The smallest partial rotation angle damper (Ø 11 mm)
- Equal in shape to and different in operation feeling from TD73
- Best-selling products

Product name	Torque [N·m] (lbf·in)	Damping direction	Shaft color
TD148A1-1K	0.10 (0.89)	CW	Natural
TD148A1-2K	0.20 (1.77)		
TD148A1-3K	0.30 (2.66)		

Product name	Torque [N·m] (lbf·in)	Damping direction	Shaft color
TD148B1-1K	0.10 (0.89)	CCW	Sky blue
TD148B1-2K	0.20 (1.77)		
TD148B1-3K	0.30 (2.66)		

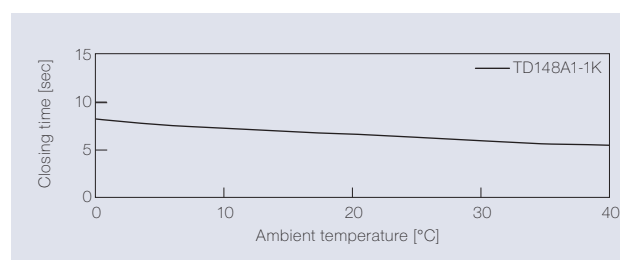
Product specifications

Durability



Torque	0.10 N·m (0.89 lbf·in)
Radial load	N/A
Angle range of closing time	70 to 0 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	150,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

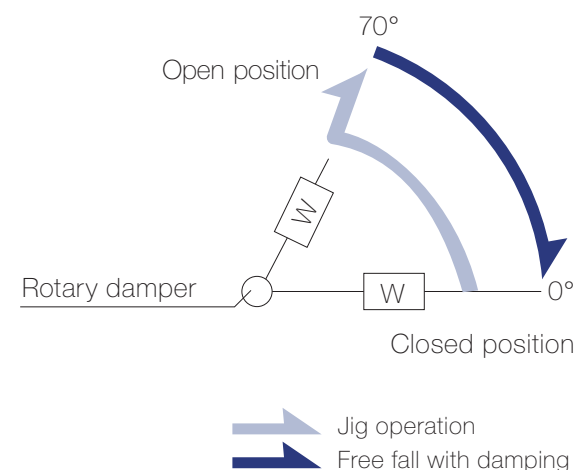
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

All rotary dampers are managed by the following closing time test.

Test mode [70° (Pause) → (Free fall with damping) → 0°]

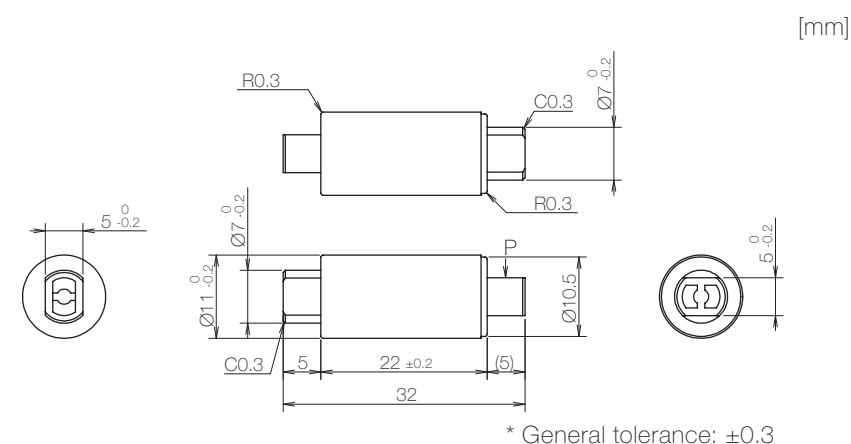
* Horizontal plane: 0°



Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
1K	0.10 (0.89)	2 to 15 sec
2K	0.20 (1.77)	
3K	0.30 (2.66)	

Product information

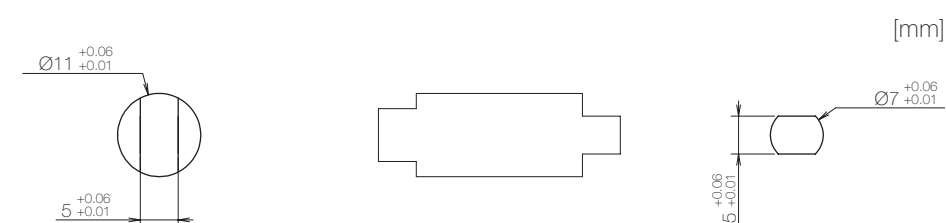


- Opening angle: 110°
- Product weight: Approx. 3 g
- Allowable radial load (P): 29.4 N

Main materials

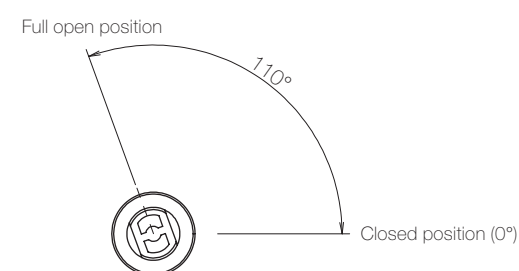
Housing	Plastic (POM)
Cap	Plastic (POM)
Shaft	Plastic (POM)

Dimensions related to mounting

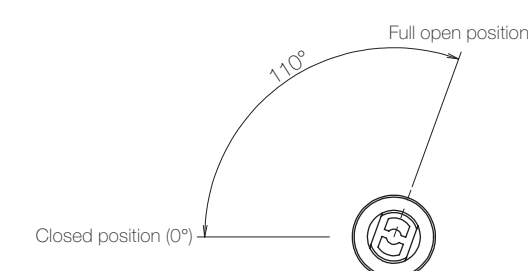


Opening angle

TD148A



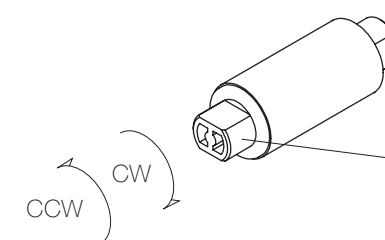
TD148B



* Shaft position at the time of shipping: Closed position

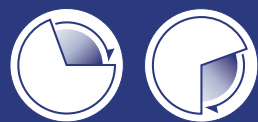
Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Shaft color
CW	Natural
CCW	Sky blue



TD99

Horizontal and Vertical use

RoHS compliant

Product lineup



Product image



TD99A



TD99B

Features

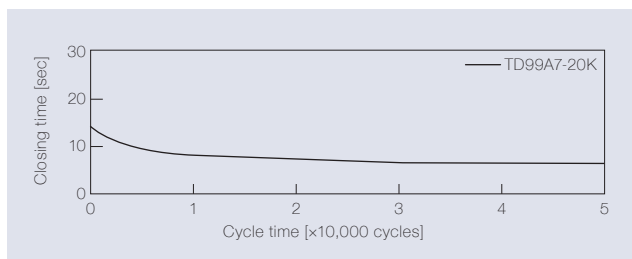
- Made with chemical-resistant PBT plastic is used
- Capable of achieving high torque at all opening angles
- TD99 series is identifiable by the shaft color

Product name	Torque [N·m] (lbf·in)	Damping direction	Shaft color
TD99A7-10K	1.0 (8.85)	CW	North brown
TD99A7-15K	1.5 (13.28)		
TD99A7-20K	2.0 (17.70)		

Product name	Torque [N·m] (lbf·in)	Damping direction	Shaft color
TD99B7-10K	1.0 (8.85)	CCW	Coffee brown
TD99B7-15K	1.5 (13.28)		
TD99B7-20K	2.0 (17.70)		

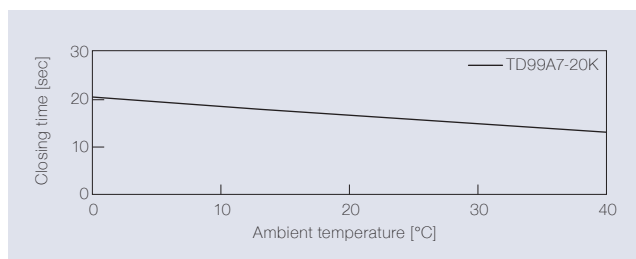
Product specifications

Durability



Torque	2.0 N·m (17.70 lbf·in)
Radial load	N/A
Angle range of closing time	65 to -45 deg.
Temperature	23 ± 2°C (73.4 ± 35.6°F)
Durability	50,000 cycles

Temperature characteristics



Measured according to the performance management testing method shown below after leaving in each designated ambient temperature for over one hour.

Performance management testing method

As the torque of partial rotation angle dampers is not consistent, the closing time measurement jig is used for the performance tests.

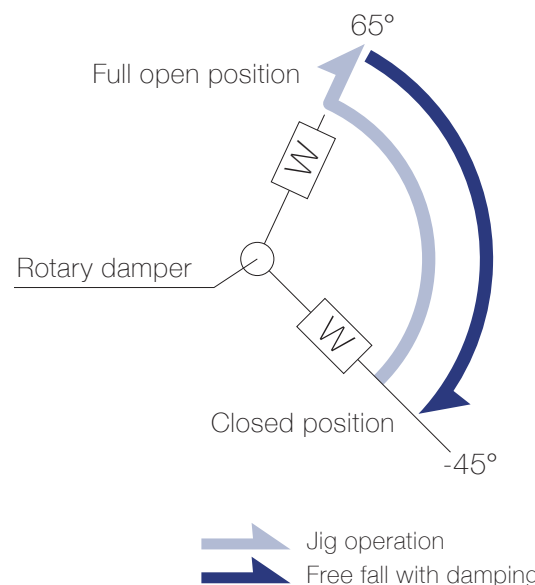
[Operation during measurement]

(Secures the housing of a rotary damper and moves its shaft)

All rotary dampers are managed by the following closing time test.

Test mode [-45° → 65° (Pause) → (Free fall with damping) → -45°]

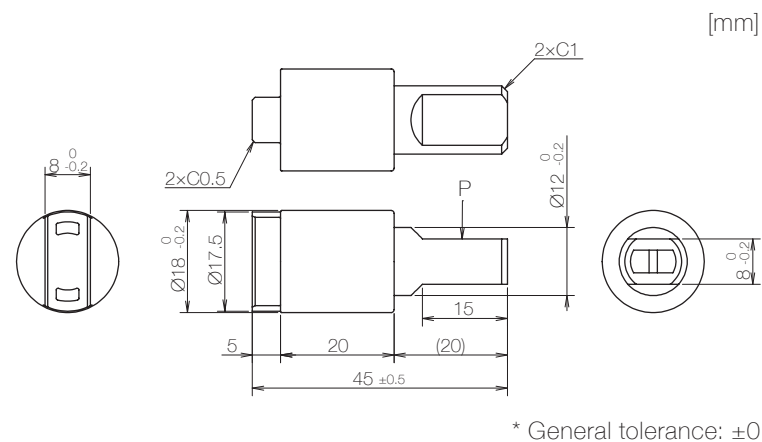
* Horizontal plane: 0°



Inspection specification before shipping

Type	Preset torque [N·m] (lbf·in)	Closing time
10K	1.0 (8.85)	5 to 20 sec
15K	1.5 (13.28)	
20K	2.0 (17.70)	

Product information



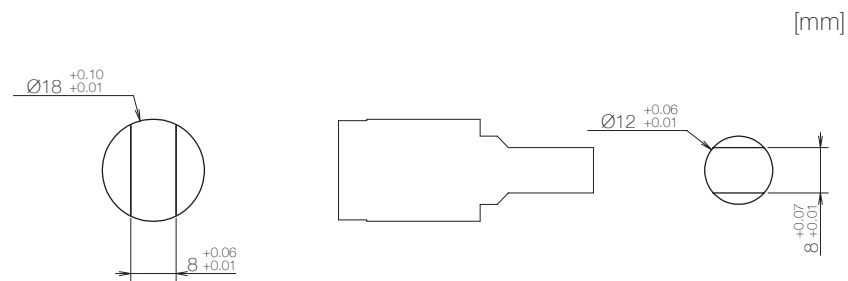
* General tolerance: ±0.3

- Opening angle: 110°
- Product weight: Approx. 10 g
- Allowable radial load (P): 29.4 N

Main materials

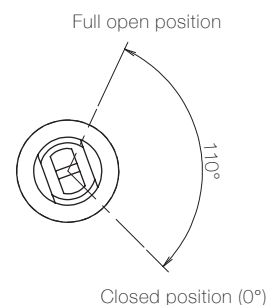
Housing	Plastic (PBT)
Cap	Plastic (PBT)
Shaft	Plastic (PBT)

Dimensions related to mounting

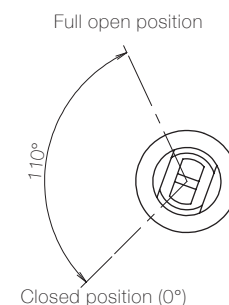


Opening angle

TD99A



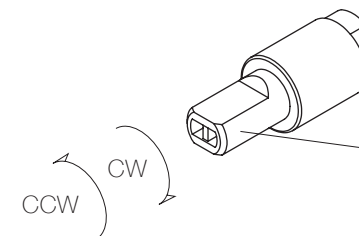
TD99B



* Shaft position at the time of shipping: Closed position

Damping directions

Rotation directions of the shaft to which torque is applied



* Housing secured / Shaft rotatable

Damping direction	Shaft color
CW	North brown
CCW	Coffee brown

Product lineup



Product image

Features

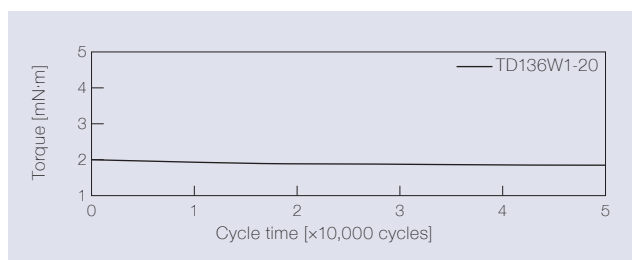
- Outer mounting diameter of $\varnothing 10$ mm (Ultra-small diameter and thin type)
- Bidirectional rotary damper
- The mounting flange corresponds to the bottom face
- Only the housing shape is different from that of the TD130

Product name	Torque [mN·m] (lbf·in)	Damping direction
TD136W1-20	2.0 ± 0.7 (0.02 ± 0.01)	Bidirectional

The torque of all rotary dampers is measured at a rotational speed of 20 min⁻¹.
One direction rotary dampers are not available.

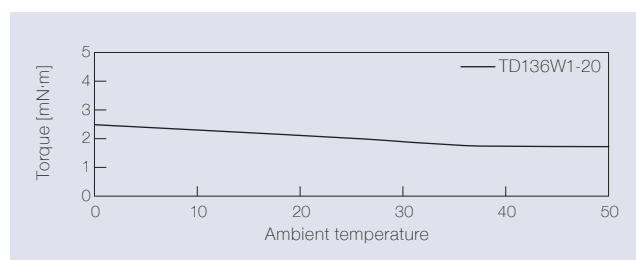
Product specifications

Durability



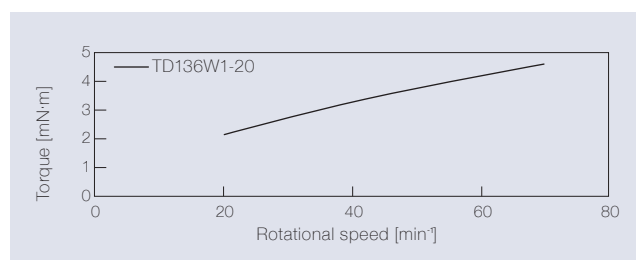
Measurement of torque at a rotation speed of 20 min⁻¹

Temperature characteristics



The torque achieved during rotation at 20 min⁻¹ in the designated ambient temperature is shown.

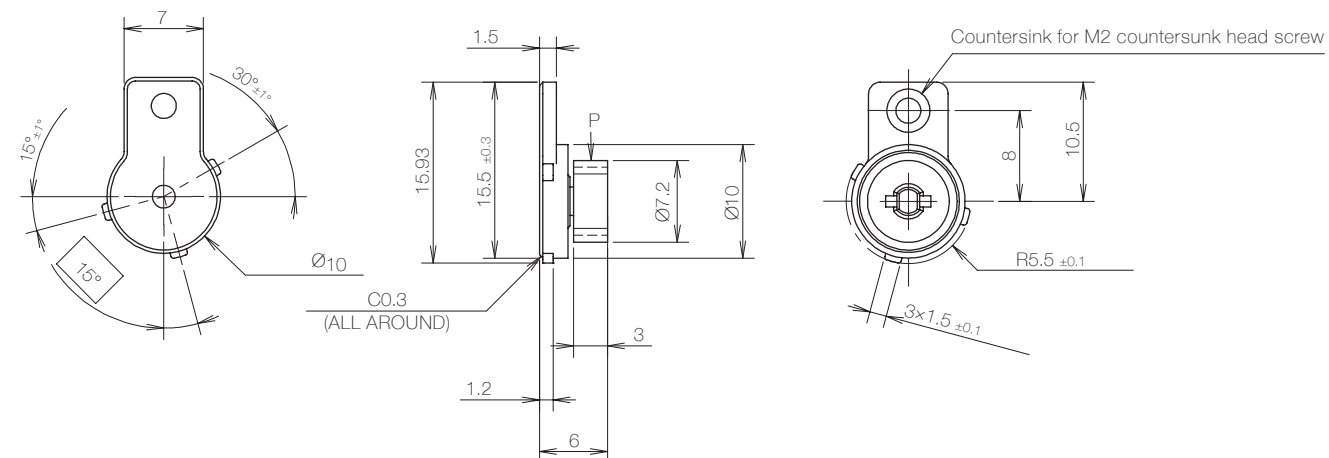
Speed characteristics



Test method	CW & CCW rotation test
Operation mode	Continuous twist rotation at 360°
Test speed	10 cycles / min
Radial load	N/A
Thrust load	N/A
Damper rotation frequency	One rotation in the CW and CCW directions, respectively
Durability	50,000 cycles

Product information

[mm]



* General tolerance: ± 0.2

Gear specifications

Type	Standard spur gear
Tooth profile	Involute and full depth tooth
Module	0.6
Pressure angle	20°
Number of teeth	10
P.C.D.[mm]	$\varnothing 6$
Addendum modification	—
Base tangent length/Number	2.74 / 2

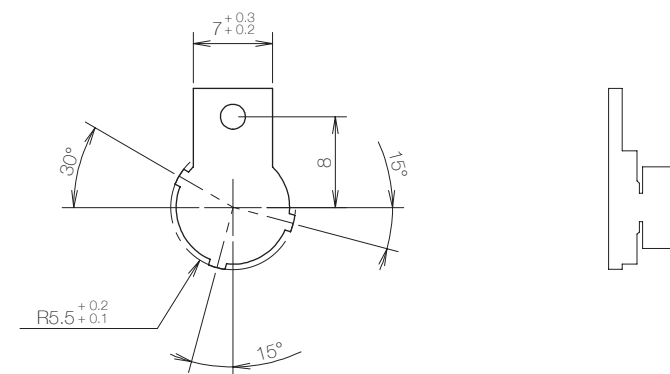
- Product weight: Approx. 0.4 g
- Allowable radial load (P): 2.0 N

Main materials

Housing	Plastic (PC)
Cap	Plastic (PC)
Gear	Plastic (POM)
Shaft	Plastic (POM)

Dimensions related to mounting

[mm]



Product lineup



Product image

Features

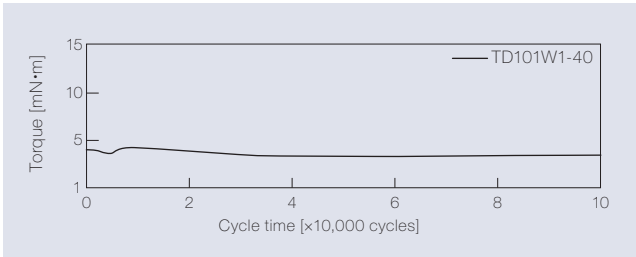
- Outer product diameter of Ø 6 mm (Ultra compact)
- Bidirectional rotary damper
- Made with impact-resistant polycarbonate (PC) plastic
- Due to its gray color, the product is inconspicuous after mounting

Product name	Torque [mN•m] (lbf•in)	Damping direction
TD101W1-25	2.5 ^{+1.3} _{-0.8} (0.02 ± 0.01)	Bidirectional
TD101W1-40	4.0 ± 2.2 (0.04 ± 0.02)	

The torque of all rotary dampers is measured at a rotational speed of 30 min⁻¹.
One direction rotary dampers are not available.

Product specifications

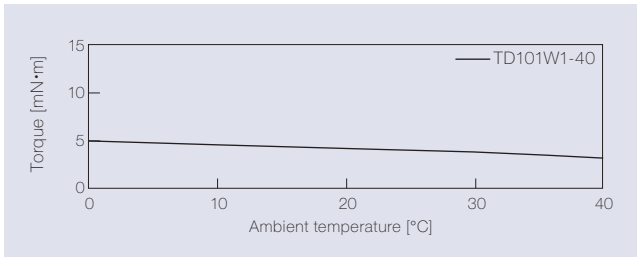
Durability



Measurement of torque at a rotation speed of 30 min⁻¹

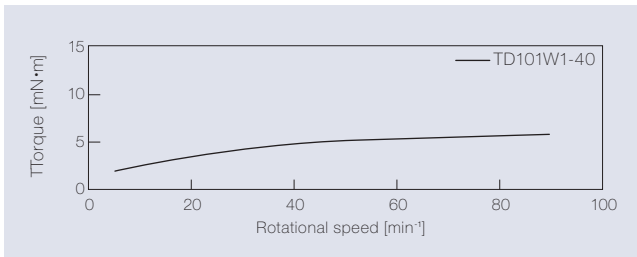
Test method	CW & CCW rotation test
Operation mode	Rotation in the CW direction for 2 seconds → Suspension for 1 second → Rotation in the CCW direction for 2 seconds → Suspension for 1 second
Rotation speed	30 min ⁻¹
Damper rotation frequency	One rotation in the CW and CCW directions, respectively
Durability	100,000 cycles

Temperature characteristics

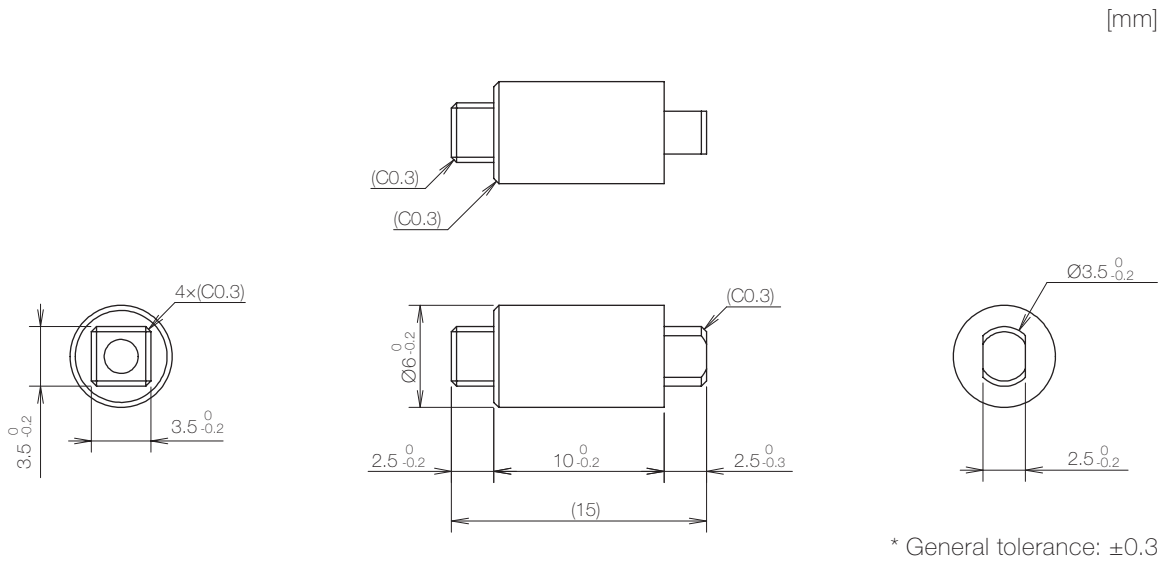


The torque achieved during rotation at 30 min⁻¹ in the designated ambient temperature is shown.

Speed characteristics



Product information

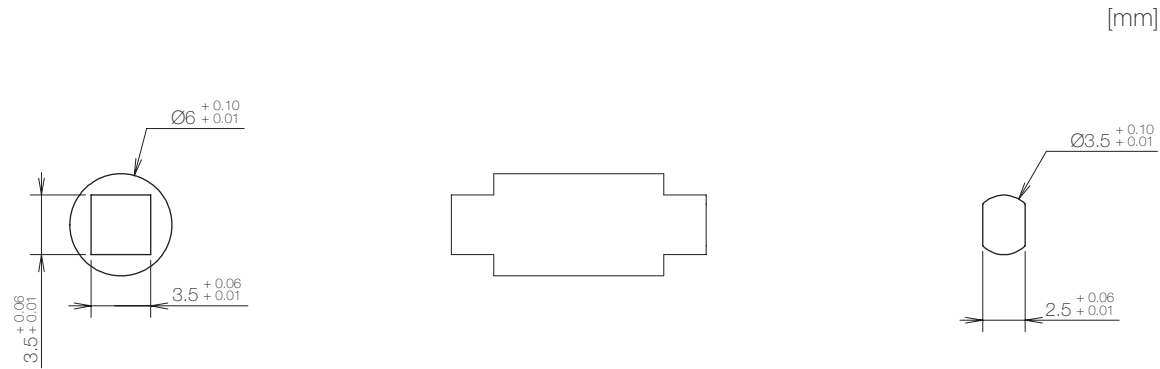


- Product weight: Approx. 0.5 g

Main materials

Housing	Plastic (PC)
Shaft	Plastic (PC)

Dimensions related to mounting



Product lineup



Features

- Outer mounting diameter of $\varnothing 14.9$ mm (Small diameter and thin type)
- Bidirectional rotary damper
- The mounting flange corresponds to the bottom face
- The shaft colors enable identification of the torque

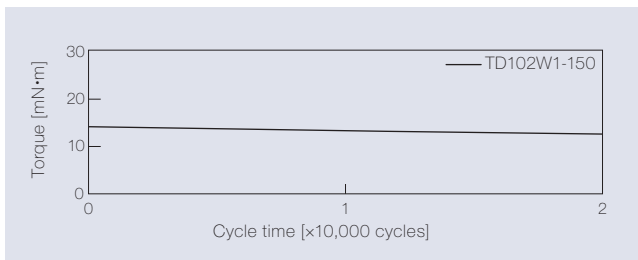
Product name	Torque [mN·m] (lbf·in)	Damping direction	Shaft color
TD102W1-25	2.5 ± 1.0 (0.02 ± 0.01)	Bidirectional	White
TD102W1-40	4.0 ± 1.0 (0.04 ± 0.01)		Yellow
TD102W1-60	6.0 ± 1.5 (0.05 ± 0.01)		Purple

Product name	Torque [mN·m] (lbf·in)	Damping direction	Shaft color
TD102W1-80	8.0 ± 1.5 (0.07 ± 0.01)	Bidirectional	Green
TD102W1-120	12.0 ± 2.0 (0.11 ± 0.02)		Black
TD102W1-150	15.0 ± 2.5 (0.13 ± 0.02)		Red

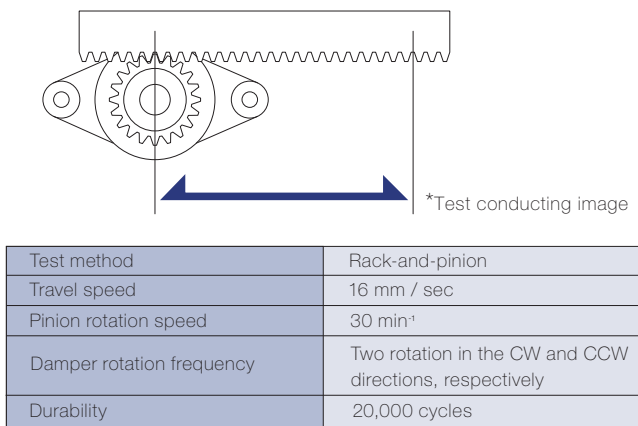
The torque of all rotary dampers is measured at a rotational speed of 20 min⁻¹.
 The products without gear have “(G-L)” at the end of the product name.
 One direction rotary dampers are not available.

Product specifications

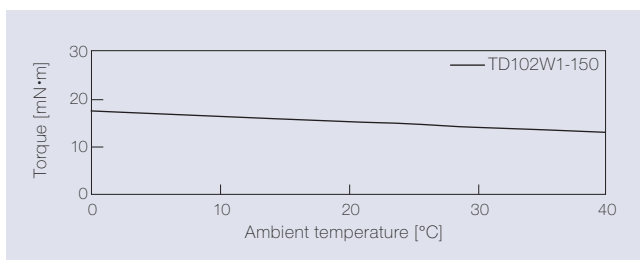
Durability



Measurement of torque at a rotation speed of 20 min⁻¹

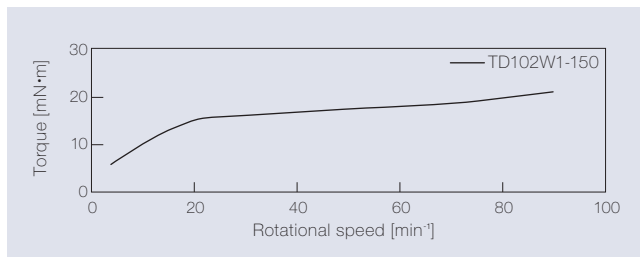


Temperature characteristics



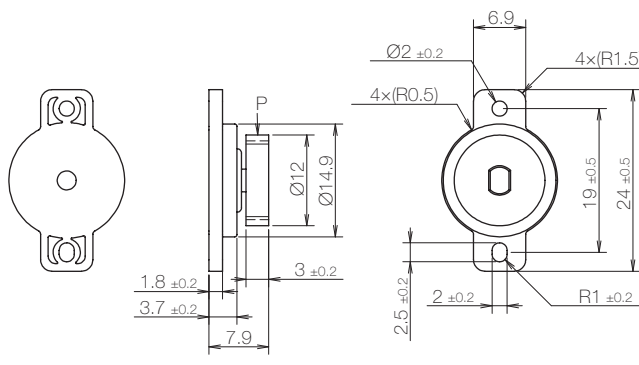
The torque achieved during rotation at 20 min⁻¹ in the designated ambient temperature is shown.

Speed characteristics

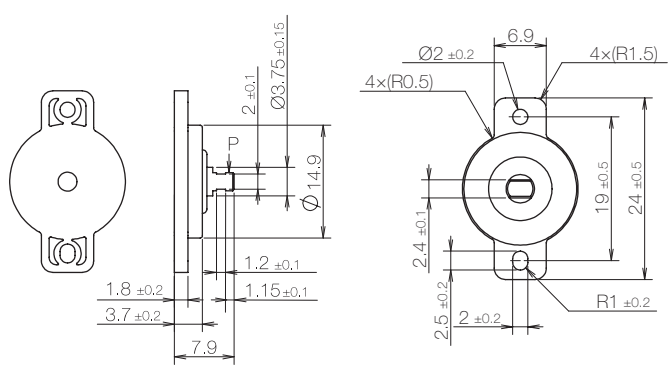


Product information

TD102



TD102 (G-L)



* General tolerance: ± 0.3

Gear specifications

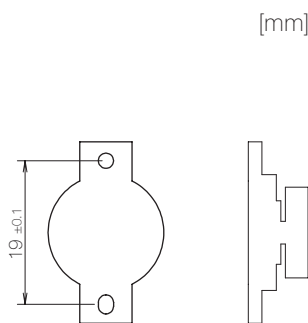
Type	Standard spur gear
Tooth profile	Involute and full depth tooth
Module	0.8
Pressure angle	20°
Number of teeth	13
P.C.D[mm]	$\varnothing 10.4$
Addendum modification	–
Base tangent length/Number	3.68 / 2

- Product weight: Approx. 1.5 g (With gear)
- Allowable radial load (P): 2.0 N

Main materials

Housing	Plastic (PC)
Cap	Plastic (PC)
Gear	Plastic (POM)
Shaft	Plastic (POM)

Dimensions related to mounting



Product lineup



Product image

Features

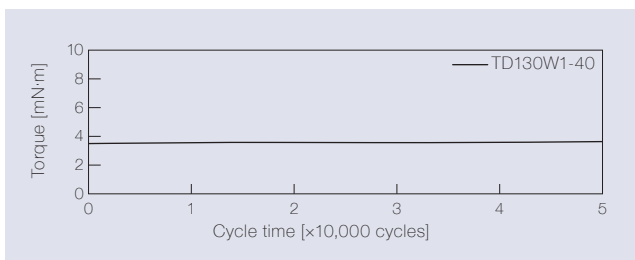
- Outer mounting diameter of $\varnothing 10$ mm (Ultra-small diameter and thin type)
- Bidirectional rotary damper
- The mounting flange corresponds to the bottom face
- Only the housing shape is different from that of the TD136

Product name	Torque [mN·m] (lbf·in)	Damping direction
TD130W1-40	4.0 ± 1.0 (0.04 ± 0.01)	Bidirectional

The torque of all rotary dampers is measured at a rotational speed of 20 min^{-1} .
One direction rotary dampers are not available.

Product specifications

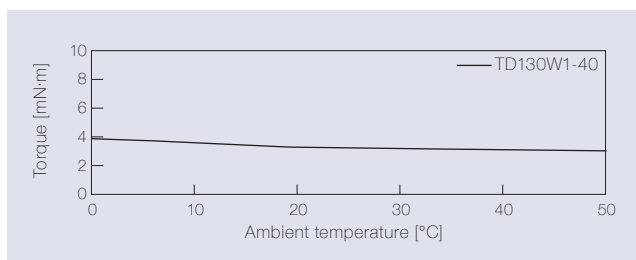
Durability



Measurement of torque at a rotation speed of 20 min^{-1}

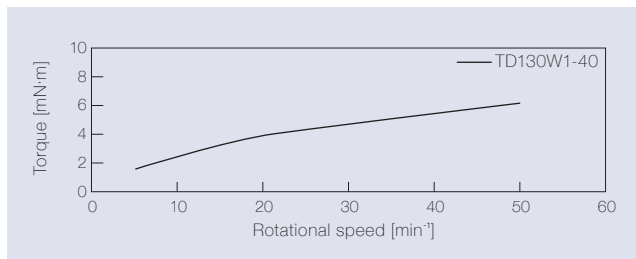
Test method	CW & CCW rotation test
Operation mode	Continuous twist rotation at 360°
Test speed	10 cycles / min
Radial load	N/A
Thrust load	N/A
Damper rotation frequency	One rotation in the CW and CCW directions, respectively
Durability	50,000 cycles

Temperature characteristics

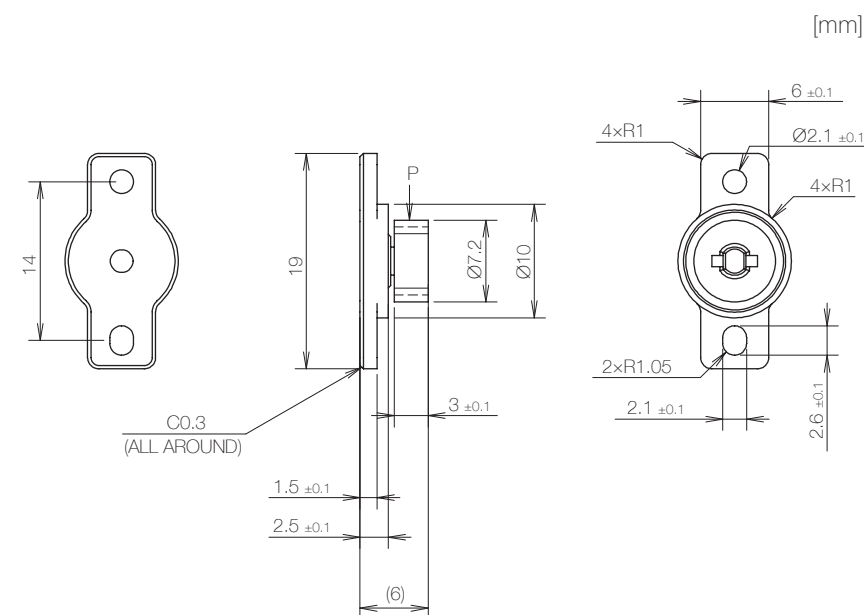


The torque achieved during rotation at 20 min^{-1} in the designated ambient temperature is shown.

Speed characteristics



Product information



Gear specifications

Type	Standard spur gear
Tooth profile	Involute and full depth tooth
Module	0.6
Pressure angle	20°
Number of teeth	10
P.C.D[mm]	$\varnothing 6$
Addendum modification	—
Base tangent length/Number	2.74 / 2

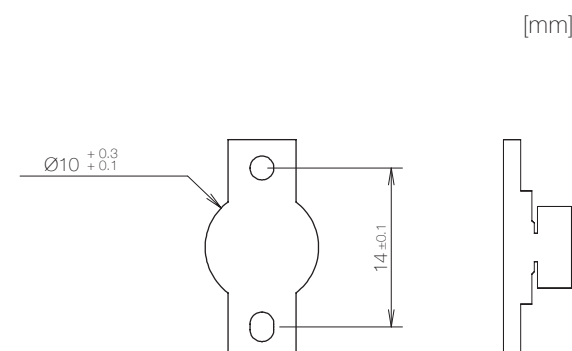
* General tolerance: ± 0.2

- Product weight: Approx. 0.4 g
- Allowable radial load (P): 2.0 N

Main materials

Housing	Plastic (PC)
Cap	Plastic (PC)
Gear	Plastic (POM)
Shaft	Plastic (POM)

Dimensions related to mounting



Product lineup



Product image



TD88(G-L)

Features

- Outer mounting diameter of $\varnothing 15$ mm
- One direction rotary damper
- Facilitates easy centering during mounting
- High durability

Product name	Torque [mN·m] (lbf·in)	Damping direction	Cap color
TD88R1-100	10.0 \pm 5 (0.09 \pm 0.04)	CW	Dark gray
TD88R1-200	20.0 \pm 8 (0.18 \pm 0.07)		
TD88R1-300	30.0 \pm 9 (0.27 \pm 0.08)		
TD88R1-400	40.0 \pm 10 (0.35 \pm 0.09)		

Product name	Torque [mN·m] (lbf·in)	Damping direction	Cap color
TD88L1-100	10.0 \pm 5 (0.09 \pm 0.04)	CCW	Gray
TD88L1-200	20.0 \pm 8 (0.18 \pm 0.07)		
TD88L1-300	30.0 \pm 9 (0.27 \pm 0.08)		
TD88L1-400	40.0 \pm 10 (0.35 \pm 0.09)		

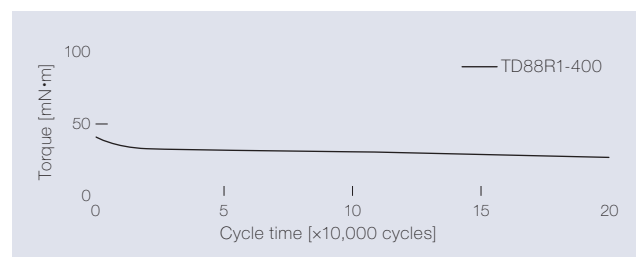
The torque of all rotary dampers is measured at a rotational speed of 30 min⁻¹.

The products without gear have "(G-L)" at the end of the product name.

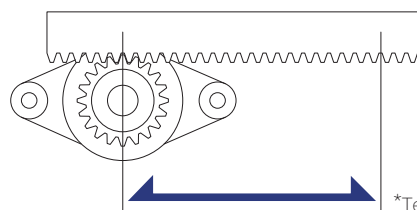
Bidirectional TD88 rotary dampers are not available.

Product specifications

Durability



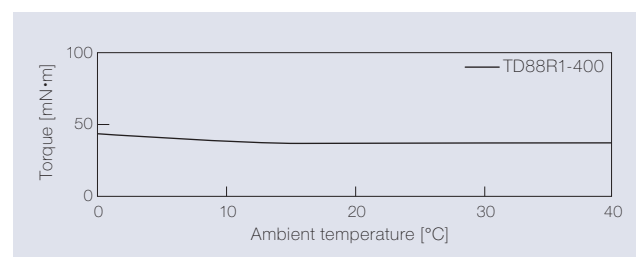
Measurement of torque at a rotation speed of 30 min⁻¹



*Test conducting image

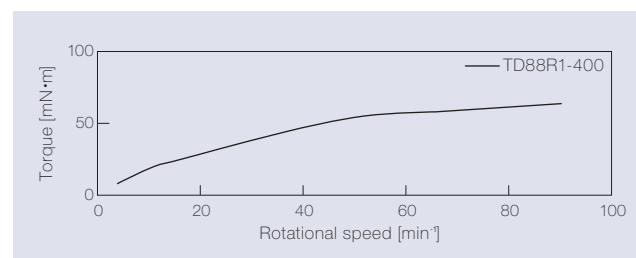
Test method	Rack-and-pinion
Travel speed	14 mm / sec
Pinion rotation speed	30 min ⁻¹
Damper rotation frequency	One rotation in the CW and CCW directions, respectively
Durability	200,000 cycles

Temperature characteristics



The torque achieved during rotation at 30 min⁻¹ in the designated ambient temperature is shown.

Speed characteristics



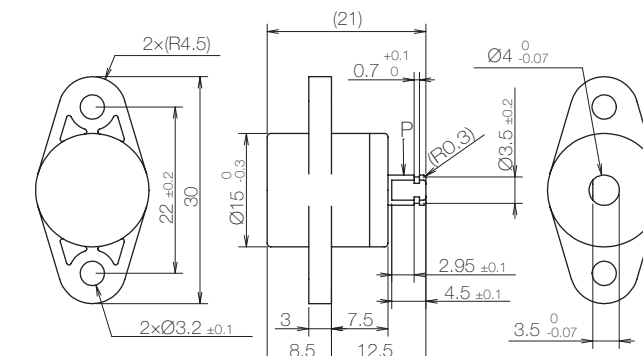
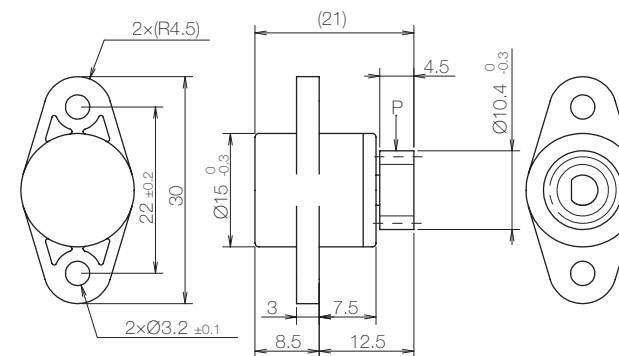
Product information

TD88

[mm]

TD88(G-L)

[mm]



* General tolerance: ± 0.3

Gear specifications

Type	Standard spur gear
Tooth profile	Involute and full depth tooth
Module	0.8
Pressure angle	20°
Number of teeth	11
P.C.D[mm]	$\varnothing 8.8$
Addendum modification	—
Base tangent length / Number	3.67 / 2

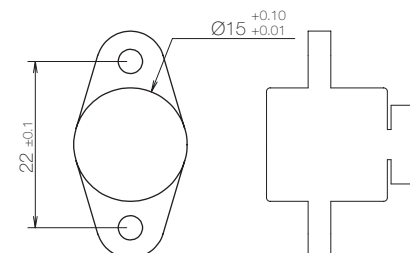
- Product weight: Approx. 7 g (With gear)
- Allowable radial load (P): 5.0 N

Main materials

Housing	Plastic (PC)
Cap	Plastic (PC)
Gear	Plastic (POM)
Shaft	Stainless steel (SUS)

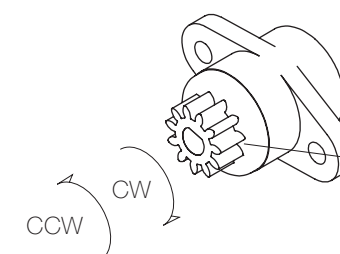
Dimensions related to mounting

[mm]



Damping directions

Damping direction of the shaft



Damping direction	Cap color
CW	Dark gray
CCW	Gray

Product lineup



Product image



TD62(G-L)



TD62W



TD62W(G-L)

Features

- Middle torque range of our continuous rotation dampers
- Outer mounting diameter of $\varnothing 25$ mm
- Facilitates easy centering during mounting
- A wide variety of torques

Product name	Torque [mN·m] (lbf·in)	Damping direction	Cap color
TD62R1-300	30.0 ± 9 (0.27 \pm 0.08)	CW	Dark gray
TD62R1-600	60.0 ± 15 (0.53 \pm 0.13)		
TD62R1-900	90.0 ± 18 (0.80 \pm 0.16)		
TD62R1-1500	150.0 ± 30 (1.33 \pm 0.27)		
TD62R1-2000	200.0 ± 40 (1.77 \pm 0.35)		

Product name	Torque [mN·m] (lbf·in)	Damping direction	Cap color
TD62L1-300	30.0 ± 9 (0.27 \pm 0.08)	CCW	Gray
TD62L1-600	60.0 ± 15 (0.53 \pm 0.13)		
TD62L1-900	90.0 ± 18 (0.80 \pm 0.16)		
TD62L1-1500	150.0 ± 30 (1.33 \pm 0.27)		
TD62L1-2000	200.0 ± 40 (1.77 \pm 0.35)		

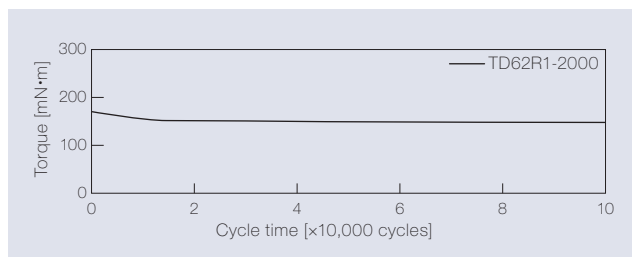
The torque of all rotary dampers is measured at a rotational speed of 30 min⁻¹.

The products without gear have "(G-L)" at the end of the product name.

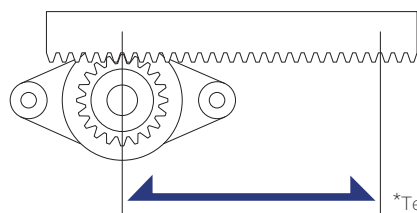
Bidirectional type products have "W" instead of "R" (or "L") in their names.

Product specifications

Durability



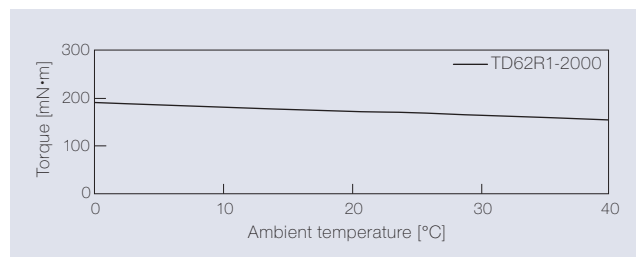
Measurement of torque at a rotation speed of 30 min⁻¹



*Test conducting image

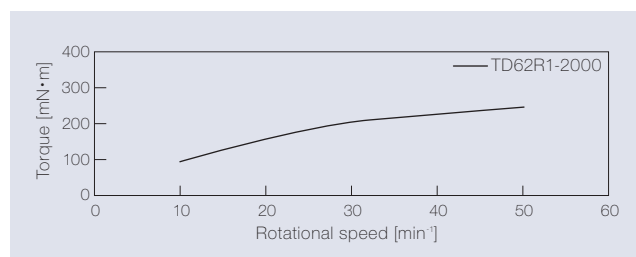
Test method	Rack-and-pinion
Travel speed	24 mm / sec
Pinion rotation speed	30 min ⁻¹
Damper rotation frequency	One rotation in the CW and CCW directions, respectively
Durability	100,000 cycles

Temperature characteristics



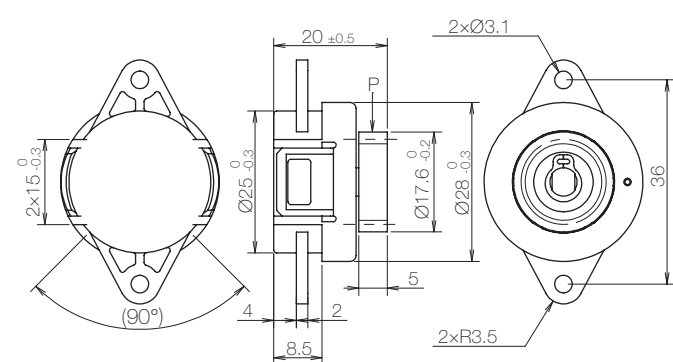
The torque achieved during rotation at 30 min⁻¹ in the designated ambient temperature is shown.

Speed characteristics

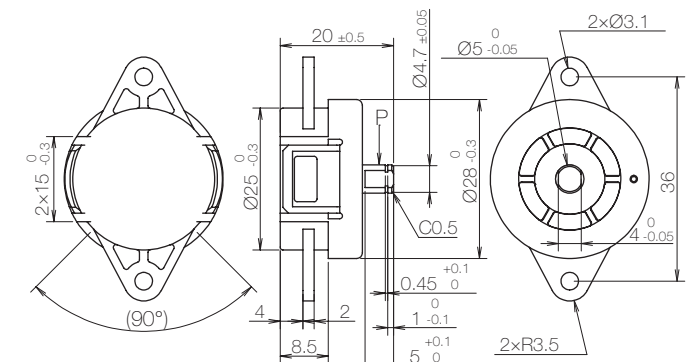


Product information

TD62



TD62 (G-L)



* The dimensions of the shaft of bidirectional type products are different from the one shown in the catalog. Please contact us.

* General tolerance: ± 0.3

Gear specifications

Type	Standard spur gear
Tooth profile	Involute and full depth tooth
Module	1
Pressure angle	20°
Number of teeth	15
P.C.D[mm]	$\varnothing 15$
Addendum modification	+0.3
Base tangent length/Number	4.84 / 2

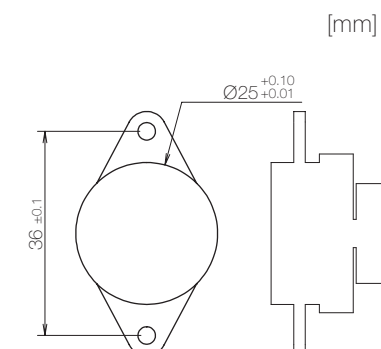
- Product weight: Approx. 15 g (With gear)

- Allowable radial load (P): 13.4 N

Main materials

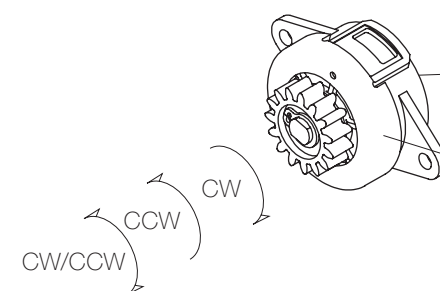
Housing		Plastic (POM)
Cap		Plastic (POM)
Gear		Plastic (POM)
Shaft	CW	Stainless steel (SUS)
	CCW	
	Bidirectional	

Dimensions related to mounting



Damping directions

Damping direction of the shaft



Damping direction	Printed mark
CW	R
CCW	L
Bidirectional	W

Damping direction	Cap color
CW	Dark gray
CCW	Gray
Bidirectional	Dark gray

Product lineup



Product image



TD96(G-L)

Features

- Outer mounting diameter of $\varnothing 25$ mm
- One direction rotary damper
- The mounting flange corresponds to the bottom face

Product name	Torque [mN·m] (lbf·in)	Damping direction	Cap color
TD96R1-500	50.0 \pm 10 (0.44 \pm 0.09)	CW	Dark gray
TD96R1-1000	100.0 \pm 20 (0.89 \pm 0.18)		
TD96R1-1500	150.0 \pm 30 (1.33 \pm 0.27)		

Product name	Torque [mN·m] (lbf·in)	Damping direction	Cap color
TD96L1-500	50.0 \pm 10 (0.44 \pm 0.09)	CCW	Gray
TD96L1-1000	100.0 \pm 20 (0.89 \pm 0.18)		
TD96L1-1500	150.0 \pm 30 (1.33 \pm 0.27)		

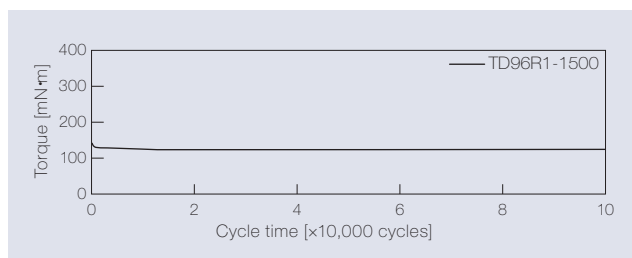
The torque of all rotary dampers is measured at a rotational speed of 20 min⁻¹.

The products without gear have "(G-L)" at the end of the product name.

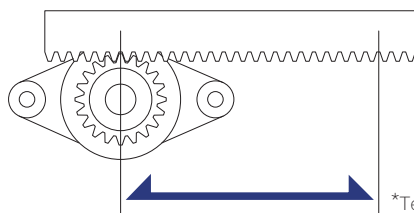
Bidirectional TD96 rotary dampers are not available.

Product specifications

Durability



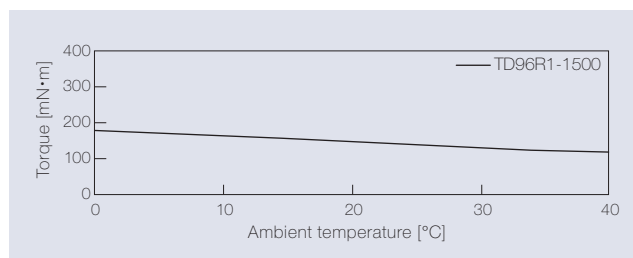
Measurement of torque at a rotation speed of 20 min⁻¹



*Test conducting image

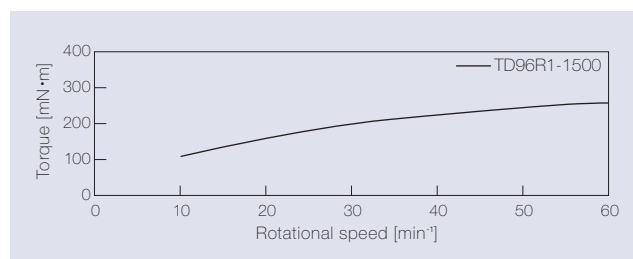
Test method	Rack-and-pinion
Travel speed	20 mm / sec
Pinion rotation speed	30 min ⁻¹
Damper rotation frequency	One rotation in the CW and CCW directions, respectively
Durability	100,000 cycles

Temperature characteristics



The torque achieved during rotation at 20 min⁻¹ in the designated ambient temperature is shown.

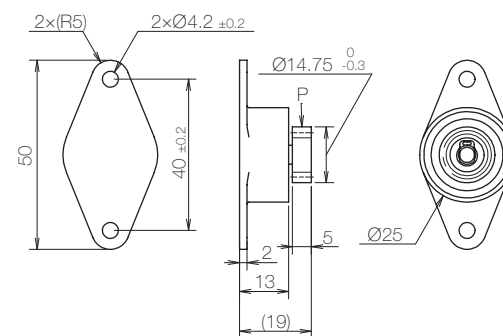
Speed characteristics



Product information

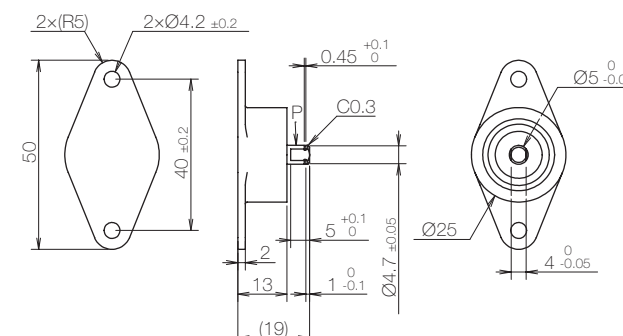
TD96

[mm]



TD96 (G-L)

[mm]



* General tolerance: ± 0.3

Gear specifications

Type	Standard spur gear
Tooth profile	Involute and full depth tooth
Module	1
Pressure angle	20°
Number of teeth	12
P.C.D[mm]	$\varnothing 12$
Addendum modification	+0.375
Base tangent length / Number	4.85 / 2

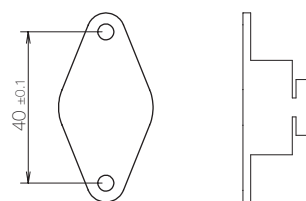
- Product weight: Approx. 13 g (With gear)
- Allowable radial load (P): 13.4 N

Main materials

Housing	Plastic (PC)
Cap	Plastic (PC)
Gear	Plastic (POM)
Shaft	Stainless steel (SUS)

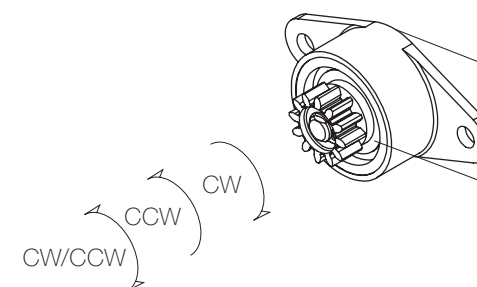
Dimensions related to mounting

[mm]



Damping directions

Damping direction of the shaft



Damping direction	Printed mark
CW	R
CCW	L

Damping direction	Cap color
CW	Dark gray
CCW	Gray

Product lineup



Product image



TD58(G-L)



TD58W



TD58W(G-L)

Features

- Highest torque among our continuous rotation dampers
- Outer mounting diameter of $\varnothing 31$ mm
- Facilitates easy centering during mounting
- A wide variety of torques
- Best-selling continuous rotation

Product name	Torque [N·m] (lbf·in)	Damping direction	Cap color
TD58R1-3K	0.3 ± 0.06 (2.66 \pm 0.53)	CW	Dark gray
TD58R1-5K	0.5 ± 0.10 (4.43 \pm 0.89)		
TD58R1-8K	0.8 ± 0.16 (7.08 \pm 1.42)		
TD58R1-16K	1.6 ± 0.32 (14.16 \pm 2.83)		

Product name	Torque [N·m] (lbf·in)	Damping direction	Cap color
TD58L1-3K	0.3 ± 0.06 (2.66 \pm 0.53)	CCW	Gray
TD58L1-5K	0.5 ± 0.10 (4.43 \pm 0.89)		
TD58L1-8K	0.8 ± 0.16 (7.08 \pm 1.42)		
TD58L1-16K	1.6 ± 0.32 (14.16 \pm 2.83)		

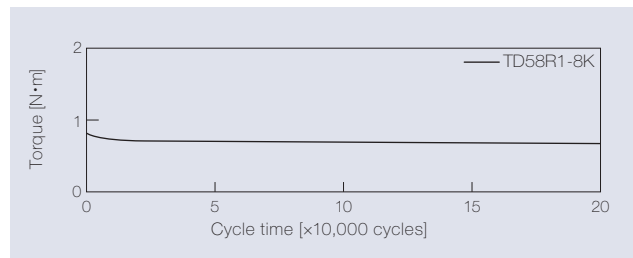
The torque of all rotary dampers is measured at a rotational speed of 30 min⁻¹.

The products without gear have "(G-L)" at the end of the product name.

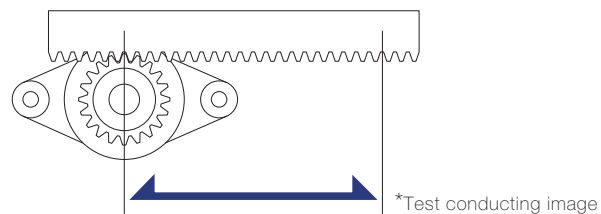
Bidirectional type products have "W" instead of "R" (or "L") in their names.

Product specifications

Durability

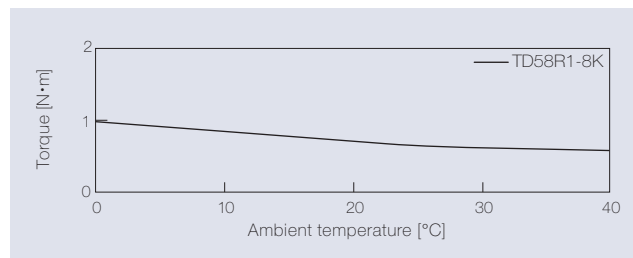


Measurement of torque at a rotation speed of 30 min⁻¹



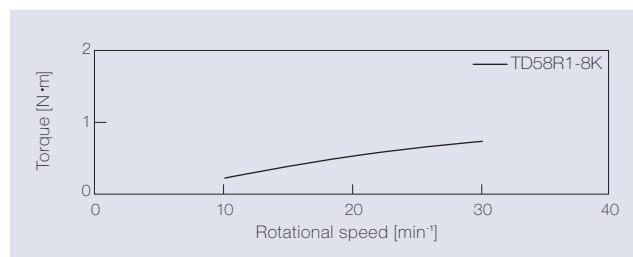
Test method	Rack-and-pinion	
Travel speed	28 mm / sec	
Pinion rotation speed	30 min ⁻¹	
Damper rotation frequency	One rotation in the CW and CCW directions, respectively	
Durability	Excluding TD58R1/L1-16K	200,000 cycles
	TD58R1/L1-16K	10,000 cycles

Temperature characteristics



The torque achieved during rotation at 30 min⁻¹ in the designated ambient temperature is shown.

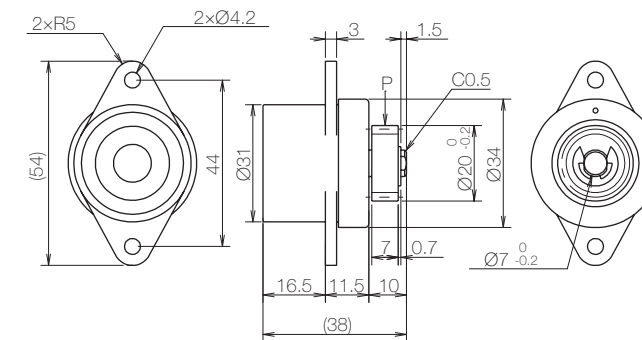
Speed characteristics



Product information

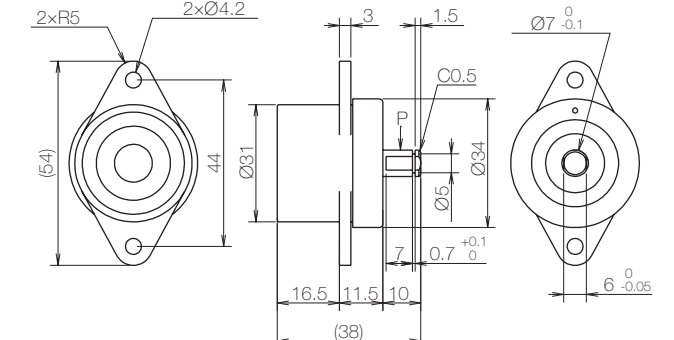
TD58

[mm]



TD58(G-L)

[mm]



* General tolerance: ± 0.3

Gear specifications

Type	Standard spur gear
Tooth profile	Involute and full depth tooth
Module	1
Pressure angle	20°
Number of teeth	18
P.C.D[mm]	$\varnothing 18$
Addendum modification	—
Base tangent length / Number	7.63 / 3

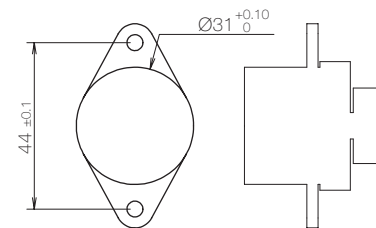
- Product weight: Approx. 42 g (With gear)
- Allowable radial load (P): 13.4 N

Main materials

Housing	Plastic (POM)	
Cap	Plastic (POM)	
Gear	Plastic (POM)	
Shaft	CW	Hardening steel
	CCW	(Electroless nickel-plated)
	Bidirectional	Zinc alloy (ZDC)

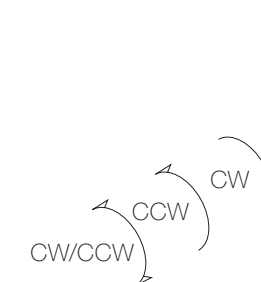
Dimensions related to mounting

[mm]



Damping directions

Damping direction of the shaft



Damping direction	Printed mark
CW	R
CCW	L
Bidirectional	W

Damping direction	Cap color
CW	Dark gray
CCW	Gray
Bidirectional	Dark gray

Precautions for use

Read before use.

⚠ Warning

Precautions to prevent injury and accidents.

■ **Improper use could lead to damage and breakage.**

Carefully read the specifications and precautions for the rotary dampers and carry out the initial performance verification, durability test, and environment test to sufficiently verify the quality and safety of the product to which the rotary damper is mounted.

■ **Disassembly, modification, reworking, and repair of rotary dampers could cause an accident.**

Disassembling, modifying, reworking, or repairing rotary dampers is prohibited.
A deterioration in performance or strength may lead to a malfunction or an accident.

■ **Do not use beyond the product specifications and ratings.**

Using the rotary dampers outside the range of their product specifications could cause an accident.

■ **Do not set on fire.**

Setting fire to a rotary damper could cause a fire or an explosion.

■ **Do not use rotary dampers as stopper.**

Be sure to place a stopper to prevent the opening/closing angle of the rotary damper from exceeding its allowable limit.

■ **Do not use the rotary damper if it is found to be defective.**

The performance of the rotary damper may be insufficient, leading to an accident.

⚠ Caution

Describes the precautions for using the rotary dampers safely and correctly.

■ **Secure sufficient strength of the peripheral component to which the rotary damper is mounted.**

Consider the safety factor of the component to which the rotary damper is mounted, based on the load torque, to prevent it from breaking.

■ **Do not use outside the range of the operating temperature.**

If the range of the operating temperature is exceeded, the part strength of the rotary damper varies, and sufficient performance cannot be achieved.

■ **Do not apply a load exceeding the preset torque.**

Any use under a load exceeding the specified torque described on the specification sheet of each rotary damper or under an external force that operates the opening/closing angle of the rotary damper in 1.0 second or less could cause breakage.

■ **Avoid attaching an organic solvent (such as thinner and ether) or using it in a corrosive atmosphere.**

Organic solvents could melt or decrease the strength of the components of the rotary dampers.

■ **Treat as industrial waste when disposing.**

For environmental preservation, dispose of according to the law concerning waste treatment and cleaning.

FAQs

About rotary dampers

Q: Please tell what "CW/CCW" means in terms of the direction.

A: The direction of rotation of the shaft in which torque is generated.

When looking from the shaft side with the housing fixed, torque is generated:

- if the shaft is rotated clockwise – CW (R)
- if the shaft is rotated counterclockwise – CCW (L)
- in both directions – CW & CCW

Q: What kind of oil is used?

A: Silicone oil.

Q: Although the direction of rotation of the shaft of the rotary damper is shown in the catalog, what will happen if the housing is rotated?

A: The direction of rotation in which torque is generated is the opposite.

If the shaft direction of rotation as described in the catalog is CW, rotating the housing in the CCW direction generates torque. The torque characteristics are the same as the ones that can be obtained when the shaft is rotated.

Q: Can partial-rotation-angle rotary dampers produce a damping effect from bidirectional rotation?

A: Yes, they can.

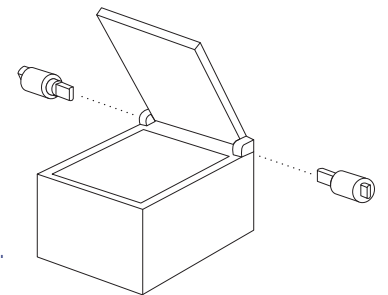
Q: Will the torque value be doubled if two rotary dampers are mounted to an application?

A: Yes, it will.

Example: The torque of the lid: 2.0 N•m

Mount the rotary dampers onto both sides of the lid in a way such that the shaft faces inward.

- TD99A1-10K (1.0 N•m in the CW direction)
- TD99B1-10K (1.0 N•m in the CCW direction)



Q: I'd like to know about the places and methods of use for the products in detail.

A: The operations of the products are explained on our website in detail.

Please search for "TOK Applications" and refer to the Application page.

FAQs

About torque

Q: What is the torque management condition for the continuous-rotation rotary dampers described in the catalog?

A: The basic measurement condition is 30 min-1 in a thermoneutral ($23 \pm 2^{\circ}\text{C}$) environment.

Q: Why do the incoming products behave differently from the graph shown in the catalog?

A: The graph shows typical values, and its operation is not guaranteed.
All products shall comply with the product specifications specified by TOK.

Q: Can rotary dampers, which are applicable to any other torque than as described in the catalog, be fabricated?

A: It's on a case-by-case basis. Please contact us.

Q: Is it possible to fabricate rotary dampers whose torque values are odd, but not nice round values, such as 5K, 10K, 15K, and 20K?

A: Although the torque values can be adjusted more or less, the unit price increases because of customization.

About the tests of rotary dampers

Q: Is it possible to carry out a new test that is not carried out by TOK?

A: It is almost possible.
There may be an additional cost depending on the test conditions.
(Example: A case where the test cannot be carried out with existing equipment or where it takes a long time to carry out the test)

About prices

Q: Does the product price vary depending on the torque value, even within the same product series?

A: Some products with relatively higher torque have higher prices, even within the same product series.

Q: What is the difference in price between the products in the catalog and the ones not in the catalog?

A: As it depends on the specifications and quantity of the product that a customer desires, please contact us.

FAQs

About purchase

Q: Are you selling products online?

A: No, we are not. There are TOK branch offices in Japan, China, the USA, and Germany.
Please contact each TOK office to purchase our products.

Q: Please advise about the minimum order quantity (MOQ).

A: The MOQ is 10 pcs.

Q: Please advise about the payment conditions.

A: Payment is T. T. remittance in advance.

Q: Please advise about trade terms.

A: The trade terms for the first order are EXW TOKYO.
For products in mass production quantities, trade terms are discussed separately (TBD).

Q: What kind of currencies do you handle?

A: Japanese yen and US dollars.

Q: Do you have local distributors?

A: We have distributors in Asia and Germany.
We can ship products from TOK bases in Japan, China, and the United States.

About production

Q: How long is the lead time before delivery?

A: The products in stock are shipped within one week after receipt of payment.
Anytime products are out of stock, we estimate the lead time, so please contact us.

Q: How long is the lead time for fabrication of a mold?

A: As a rough indication, it takes approximately three months before submission of a mold sample.







Q: Please advise about production bases.

A: We have factories in Japan (Yamanashi) and China (Shanghai and Shenzhen).
In our factories in China, production is implemented according to Japanese management criteria.
Only mass production is implemented in our factories in China, and small-lot production is implemented in Japan.

Q: Please advise about packing method.

A: Please contact us, because it varies depending on the product type and quantity sold.

Sales office

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	TOK Europe GmbH Oststr. 54, 40211 Düsseldorf Germany t: +49-211-9350-131 (English/Japanese) • e: europe@tok-inc.com

Factory

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	Shanghai TOK Precision Damper Bearing Co.,Ltd <u>Shanghai Factory</u> Bldg2, 3 Yanghebang Road, Jiuting Town, Songjiang District, Shanghai, China 201615 t: +86-21-6769-6773 (English/Japanese/Mandarin) • web: shtok.1688.com
	TOK Precision Component (Shenzhen) Co.,Ltd <u>Shenzhen Factory</u> 1-1 1-5 Yanbao Street, Zhongxin, Village, Pingdi Town, Long gang District, China t: +86-755-8994-3116 (Japanese/Mandarin) • web: shop1403801654111.1688.com