

FRT-E2

Rotary Dampers

Small and lightweight for finest braking

The damping direction of the smallest ACE FRT-E2 rotary dampers with plastic body is rotating on both sides. They can brake directly in the pivot point or linear through a gear and gear rack. ACE rotary dampers are maintenance-free and ready-to-install.



Technical Data

Construction size: Ø 10 mm

Rotational speed max.: 50 rpm

Lifetime: 50,000 cycles (1 cycle = 360° left-hand, 360° right-hand). Even after this time, the dampers still produce over approx. 80 % of their original damping moment. The service life may be significantly higher or lower, depending on the application.

Operating temperature range: 0 °C to +50 °C

Pressure angle: 20°

Material: Outer body, Shaft, Gear: Plastic

Mounting: In any position

Tooth: Involute gearing

P.C.D.: 6 mm

No. of teeth: 10

Module: 0.6

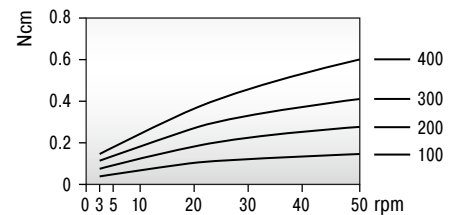
Mounting information: No axial or radial forces may be induced via the shaft.

Safety instructions: Do not use rotary dampers as supports. Provide an external guide or support.

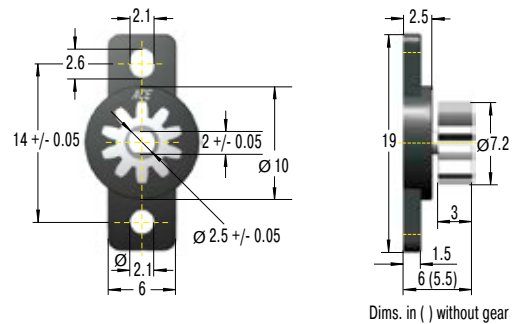
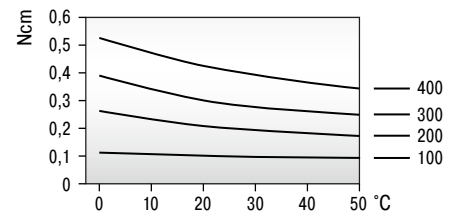
On request: Special designs available on request. Toothed plastic racks (modules 0.5 to 1.0) are available for the rotary dampers with pinions.

Characteristics

At 23 °C ambient temperature



At 20 rpm rotational speed



Performance

TYPES	¹ Damping torque Ncm	Damping direction	Gear	Weight kg
FRT-E2-100	0.10 +/- 0.05	bidirectional	without	0.00032
FRT-E2-200	0.20 +/- 0.07	bidirectional	without	0.00032
FRT-E2-300	0.30 +/- 0.08	bidirectional	without	0.00032
FRT-E2-400	0.40 +/- 0.10	bidirectional	without	0.00032
FRT-E2-100-G1	0.10 +/- 0.05	bidirectional	with	0.00041
FRT-E2-200-G1	0.20 +/- 0.07	bidirectional	with	0.00041
FRT-E2-300-G1	0.30 +/- 0.08	bidirectional	with	0.00041
FRT-E2-400-G1	0.40 +/- 0.10	bidirectional	with	0.00041

¹ The indicated damping torque refers to a rotational speed of 20 rpm and an ambient temperature of 23 °C.

FRT-G2 Rotary Dampers

Small and lightweight for finest braking

The damping direction of the ACE FRT-G2 product family with plastic body is rotating on both sides. The small rotary dampers can brake directly in the pivot point or linear through a gear and gear rack. ACE rotary dampers are maintenance-free and ready-to-install.



Technical Data

Construction size: Ø 15 mm

Rotational speed max.: 50 rpm

Lifetime: 50,000 cycles (1 cycle = 360° left-hand, 360° right-hand). Even after this time, the dampers still produce over approx. 80 % of their original damping moment. The service life may be significantly higher or lower, depending on the application.

Operating temperature range: 0 °C to +50 °C

Pressure angle: 20°

Material: Outer body, Shaft, Gear: Plastic

Mounting: In any position

Tooth: Involute gearing

P.C.D.: 7 mm

No. of teeth: 14

Module: 0.5

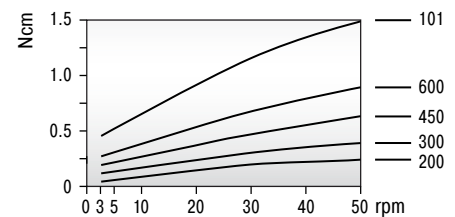
Mounting information: No axial or radial forces may be induced via the shaft.

Safety instructions: Do not use rotary dampers as supports. Provide an external guide or support.

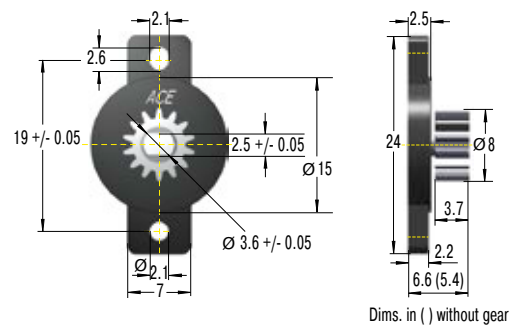
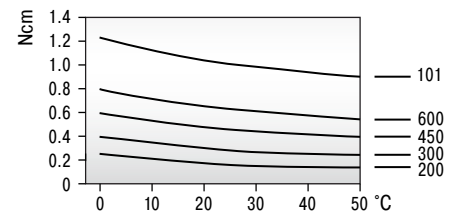
On request: Special designs available on request. Toothed plastic racks (modules 0.5 to 1.0) are available for the rotary dampers with pinions.

Characteristics

At 23 °C ambient temperature



At 20 rpm rotational speed



Performance				
TYPES	¹ Damping torque Ncm	Damping direction	Gear	Weight kg
FRT-G2-200	0.20 +/- 0.07	bidirectional	without	0.00060
FRT-G2-300	0.30 +/- 0.08	bidirectional	without	0.00060
FRT-G2-450	0.45 +/- 0.10	bidirectional	without	0.00060
FRT-G2-600	0.60 +/- 0.12	bidirectional	without	0.00060
FRT-G2-101	1.00 +/- 0.20	bidirectional	without	0.00060
FRT-G2-200-G1	0.20 +/- 0.07	bidirectional	with	0.00080
FRT-G2-300-G1	0.30 +/- 0.08	bidirectional	with	0.00080
FRT-G2-450-G1	0.45 +/- 0.10	bidirectional	with	0.00080
FRT-G2-600-G1	0.60 +/- 0.12	bidirectional	with	0.00080
FRT-G2-101-G1	1.00 +/- 0.20	bidirectional	with	0.00080

¹ The indicated damping torque refers to a rotational speed of 20 rpm and an ambient temperature of 23 °C.

FRT-C2 and FRN-C2 Rotary Dampers

Flexible and cost efficient use

The damping direction of the simple FRT-C2 and FRN-C2 is either right, left or two-sided rotation. These ACE rotary dampers with plastic body can decelerate directly in the pivot point or linear through a gear and gear rack. ACE rotary dampers are maintenance-free and ready-to-install.



Technical Data

Construction size: Ø 15 mm

Rotational speed max.: 50 rpm

Lifetime: 50,000 cycles (1 cycle = 360° left-hand, 360° right-hand). Even after this time, the dampers still produce over approx. 80 % of their original damping moment. The service life may be significantly higher or lower, depending on the application.

Operating temperature range: 0 °C to +50 °C

Pressure angle: 20°

Material: Outer body, Gear: Plastic; Shaft: Plastic, steel

Mounting: In any position

Tooth: Involute gearing

P.C.D.: 8.8 mm

No. of teeth: 11

Module: 0.8

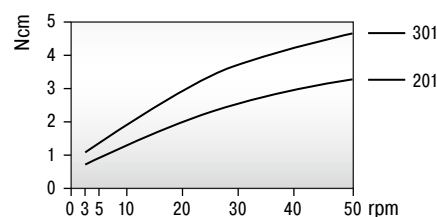
Mounting information: No axial or radial forces may be induced via the shaft.

Safety instructions: Do not use rotary dampers as supports. Provide an external guide or support.

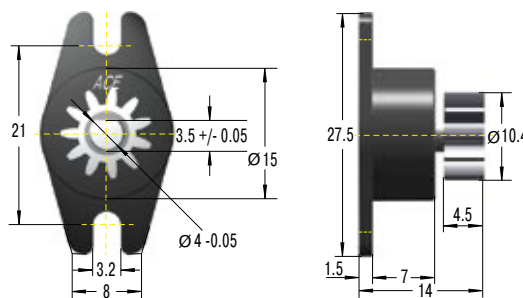
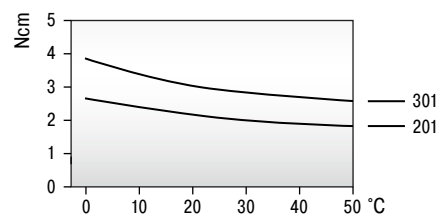
On request: Special designs available on request. Toothed plastic racks (modules 0.5 to 1.0) are available for the rotary dampers with pinions.

Characteristics

At 23 °C ambient temperature



At 20 rpm rotational speed



Performance

TYPES	¹ Damping torque Ncm	Damping direction	Gear	Weight kg
FRT-C2-201	2 +/- 0.6	bidirectional	without	0.002
FRT-C2-301	3 +/- 0.8	bidirectional	without	0.002
FRT-C2-201-G1	2 +/- 0.6	bidirectional	with	0.002
FRT-C2-301-G1	3 +/- 0.8	bidirectional	with	0.002
FRN-C2-R201	2 +/- 0.6	right	without	0.002
FRN-C2-R301	3 +/- 0.8	right	without	0.003
FRN-C2-R201-G1	2 +/- 0.6	right	with	0.002
FRN-C2-R301-G1	3 +/- 0.8	right	with	0.004
FRN-C2-L201	2 +/- 0.6	left	without	0.002
FRN-C2-L301	3 +/- 0.8	left	without	0.003
FRN-C2-L201-G1	2 +/- 0.6	left	with	0.002
FRN-C2-L301-G1	3 +/- 0.8	left	with	0.003

¹ The indicated damping torque refers to a rotational speed of 20 rpm and an ambient temperature of 23 °C.

FRT-D2 and FRN-D2 Rotary Dampers

Flexible and cost efficient use

The damping direction of the ACE FRT-D2 and FRN-D2 rotary dampers with plastic body is either the right, left or two-sided rotation. They can decelerate directly in the pivot point or linear through a gear and gear rack. ACE rotary dampers are maintenance-free and ready-to-install.



Technical Data

Construction size: Ø 25 mm

Rotational speed max.: 50 rpm

Lifetime: 50,000 cycles (1 cycle = 360° left-hand, 360° right-hand). Even after this time, the dampers still produce over approx. 80 % of their original damping moment. The service life may be significantly higher or lower, depending on the application.

Operating temperature range: 0 °C to +50 °C

Pressure angle: 20°

Material: Outer body, Gear: Plastic; Shaft: Plastic, steel

Mounting: In any position

Tooth: Involute gearing (addendum modification coefficient: +0.375)

P.C.D.: 12 mm

No. of teeth: 12

Module: 1

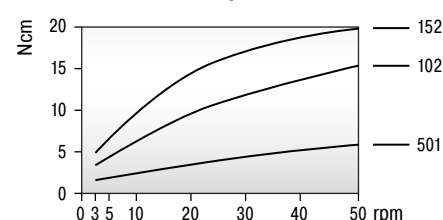
Mounting information: No axial or radial forces may be induced via the shaft.

Safety instructions: Do not use rotary dampers as supports. Provide an external guide or support.

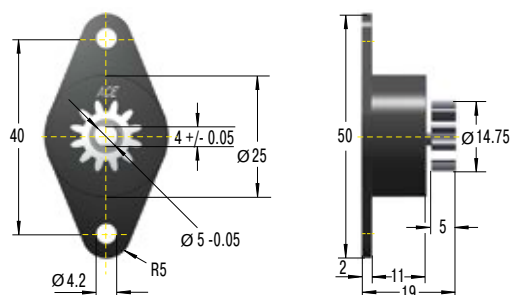
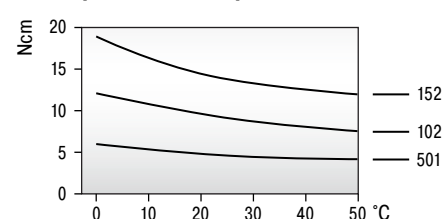
On request: Special designs available on request. Toothed plastic racks (modules 0.5 to 1.0) are available for the rotary dampers with pinions.

Characteristics

At 23 °C ambient temperature



At 20 rpm rotational speed



Performance

TYPES	¹ Damping torque Ncm	Damping direction	Gear	Weight kg
FRT-D2-102	10 +/- 2	bidirectional	without	0.008
FRT-D2-152	15 +/- 3	bidirectional	without	0.008
FRT-D2-501	5 +/- 1	bidirectional	without	0.008
FRT-D2-102-G1	10 +/- 2	bidirectional	with	0.009
FRT-D2-152-G1	15 +/- 3	bidirectional	with	0.009
FRT-D2-501-G1	5 +/- 1	bidirectional	with	0.009
FRN-D2-R102	10 +/- 2	right	without	0.012
FRN-D2-R152	15 +/- 3	right	without	0.012
FRN-D2-R501	5 +/- 1	right	without	0.012
FRN-D2-R102-G1	10 +/- 2	right	with	0.012
FRN-D2-R152-G1	15 +/- 3	right	with	0.012
FRN-D2-R501-G1	5 +/- 1	right	with	0.012
FRN-D2-L102	10 +/- 2	left	without	0.012
FRN-D2-L152	15 +/- 3	left	without	0.012
FRN-D2-L501	5 +/- 1	left	without	0.012
FRN-D2-L102-G1	10 +/- 2	left	with	0.012
FRN-D2-L152-G1	15 +/- 3	left	with	0.012
FRN-D2-L501-G1	5 +/- 1	left	with	0.012

¹ The indicated damping torque refers to a rotational speed of 20 rpm and an ambient temperature of 23 °C.

Continuous Rotation

FRT-F2/K2 and FRN-F2/K2 Rotary Dampers

For very long service life extension

The damping direction of FRT F2/K2 and FRN-F2/K2 is either the right, left or two-sided rotation. With a damping torque of up to 400 Ncm, this product family can even handle heavy components. These ACE rotary dampers can decelerate directly in the pivot point or linear through a gear and gear rack. They are maintenance-free and ready-to-install.



Technical Data

Construction size: Ø 40 mm

Rotational speed max.: 50 rpm

Lifetime: 50,000 cycles (1 cycle = 360° left-hand, 360° right-hand). Even after this time, the dampers still produce over approx. 80 % of their original damping moment. The service life may be significantly higher or lower, depending on the application.

Operating temperature range: 0 °C to +50 °C

Material: Outer body: Plastic; Shaft: Steel

Mounting: In any position

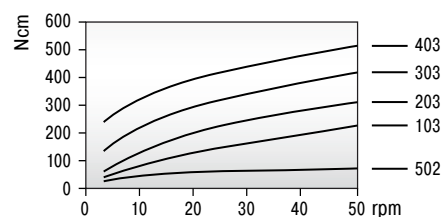
Mounting information: No axial or radial forces may be induced via the shaft.

Safety instructions: Do not use rotary dampers as supports. Provide an external guide or support.

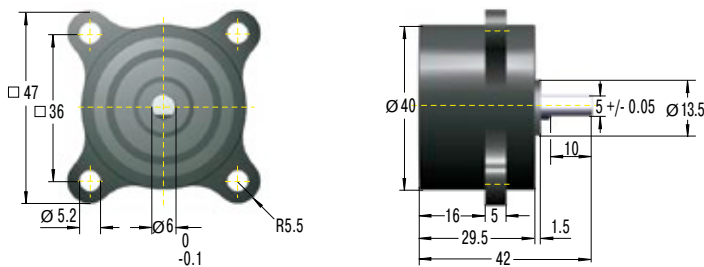
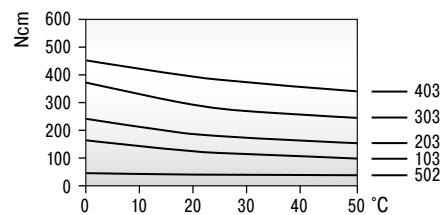
On request: Special designs available on request.

Characteristics

At 23 °C ambient temperature



At 20 rpm rotational speed



Performance

TYPES	¹ Damping torque Ncm	Damping direction	Weight kg
FRT-K2-502	50 +/- 10	bidirectional	0.080
FRT-K2-103	100 +/- 20	bidirectional	0.080
FRT-F2-203	200 +/- 40	bidirectional	0.110
FRT-F2-303	300 +/- 80	bidirectional	0.115
FRT-F2-403	400 +/- 100	bidirectional	0.115
FRN-K2-R502	50 +/- 10	right	0.057
FRN-K2-R103	100 +/- 20	right	0.057
FRN-F2-R203	200 +/- 40	right	0.090
FRN-K2-L502	50 +/- 10	left	0.057
FRN-K2-L103	100 +/- 20	left	0.057
FRN-F2-L203	200 +/- 40	left	0.090

¹ The indicated damping torque refers to a rotational speed of 20 rpm and an ambient temperature of 23 °C.

FFD Rotary Dampers

Precise braking without oil

In comparison to other rotary dampers, the ACE FFD product family does not need any fluid to generate the damping torque, but rather works on the principle of friction. That means temperature or speed changes have virtually no influence on the damping torque. The FFD is available in two different body variants and two types of bearings. ACE rotary dampers are maintenance-free and ready-to-install.



Technical Data

Construction size: Ø 25 to 30 mm

Rotational speed max.: 30 rpm

Lifetime: 30,000 cycles (1 cycle = 360° left-hand, 360° right-hand). Even after this time, the dampers still produce over approx. 80 % of their original damping moment. The service life may be significantly higher or lower, depending on the application.

Operating temperature range: -10 °C to +60 °C

Material: Outer body: Plastic

Mounting: In any position

Information to the shaft: Ø +0 / -0.03

Hardness > HRC55, surface smoothness RZ<1µm

Mounting information: Turn the shaft in the opposite direction to the brake direction to avoid damaging the freewheel mount. No axial or radial forces may be induced via the shaft.

Safety instructions: Do not use rotary dampers as supports. Provide an external guide or support.

On request: Special designs available on request.

Ordering Example

FFD-25-FS-L-102

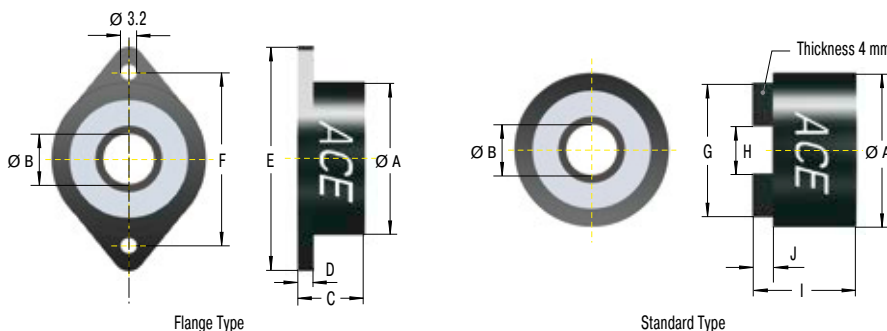
Friction Damper _____
 Body Ø _____
 Mounting Style (flange = F, standard = S) _____
 Model (standard = S, high = W) _____
 Damping Direction (right = R, left = L) _____
 Damping Torque see chart _____

Complete details required when ordering

- Damping torque 102 = 0.1 Nm
- Damping torque 502 = 0.5 Nm
- Damping torque 103 = 1.0 Nm
- Damping torque 153 = 1.5 Nm
- Damping torque 203 = 2.0 Nm
- Damping torque 253 = 2.5 Nm
- Damping torque 303 = 3.0 Nm
- Note dimension C.

Model Type Prefix

- FS = Mounting Style with Flange, Model standard
- FW = Mounting Style with Flange, Model high
- SS = Mounting Style Standard, Model standard
- SW = Mounting Style Standard, Model high
- Combinations with W for higher damping torque.



Performance and Dimensions

TYPES	¹ Damping torque Nm	Damping direction	Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	J mm	Weight kg
FFD-25SS	0.1/0.5/1.0	right or left	SS	25	6	13	3	42	34	21	6.2	16	4	0.014
FFD-28SS	0.1/0.5/1.0	right or left	SS	28	8	13	3	44	36	24	8.2	16	4	0.013
FFD-30SS	0.1/0.5/1.0/1.5	right or left	SS	30	10	13	3	46	38	26	10.2	16	4	0.019
FFD-25FS	0.1/0.5/1.0	right or left	FS	25	6	13	3	42	34	21	6.2	16	4	0.014
FFD-28FS	0.1/0.5/1.0	right or left	FS	28	8	13	3	44	36	24	8.2	16	4	0.013
FFD-30FS	0.1/0.5/1.0/1.5	right or left	FS	30	10	13	3	46	38	26	10.2	16	4	0.017
FFD-25SW	1.0/1.5/2.0	right or left	SW	25	6	19	3	42	34	21	6.2	22	4	0.014
FFD-28SW	1.0/1.5/2.0	right or left	SW	28	8	19	3	44	36	24	8.2	22	4	0.014
FFD-30SW	1.5/2.0/2.5/3.0	right or left	SW	30	10	19	3	46	38	26	10.2	22	4	0.019
FFD-25FW	1.0/1.5/2.0	right or left	FW	25	6	19	3	42	34	21	6.2	22	4	0.014
FFD-28FW	1.0/1.5/2.0	right or left	FW	28	8	19	3	44	36	24	8.2	22	4	0.013
FFD-30FW	1.5/2.0/2.5/3.0	right or left	FW	30	10	19	3	46	38	26	10.2	22	4	0.031

¹ The indicated damping torque refers to a rotational speed of 20 rpm and an ambient temperature of 23 °C.

FDT Rotary Dampers

The flat disc brake for two-sided damping

The damping direction of the flat constructive ACE rotary damper FDT with robust steel body is two-sided rotation. It can brake directly in the pivot point of the square receptacle. ACE rotary dampers are maintenance-free and ready-to-install.



Technical Data

Construction size: Ø 47 to 70 mm

Rotational speed max.: 50 rpm

Lifetime: 50,000 cycles (1 cycle = 360° left-hand, 360° right-hand). Even after this time, the dampers still produce over approx. 80 % of their original damping moment. The service life may be significantly higher or lower, depending on the application.

Operating temperature range: -10 °C to +50 °C

Material: Outer body: Steel; Output shaft sleeve: Nylon

Mounting: In any position

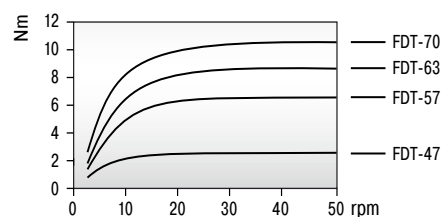
Mounting information: No axial or radial forces may be induced via the shaft.

Safety instructions: Do not use rotary dampers as supports. Provide an external guide or support.

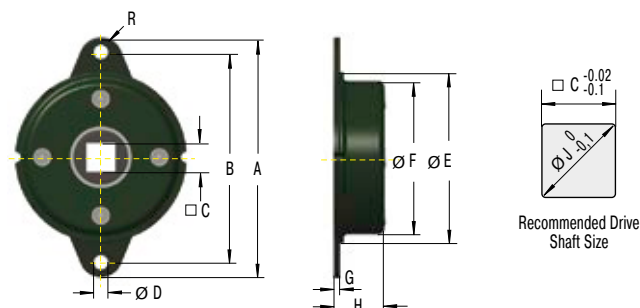
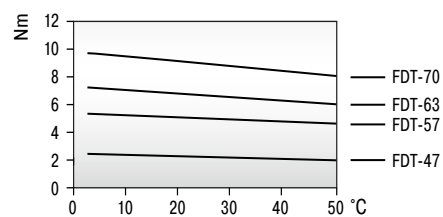
On request: Special designs available on request.

Characteristics

At 23 °C ambient temperature



At 20 rpm rotational speed



Performance and Dimensions

TYPES	¹ Damping torque Nm	Damping direction	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	R mm	J mm	Weight kg
FDT-47	2.0 +/- 0.3	bidirectional	65	56	8	4.5	47	42.8	1.6	10.3	4.5	10	0.050
FDT-57	4.7 +/- 0.5	bidirectional	79	68	10	5.5	57	52.4	1.6	11.2	5.5	13	0.075
FDT-63	6.7 +/- 0.7	bidirectional	89	76	12.5	6.5	63	58.6	1.6	11.3	6.5	17	0.095
FDT-70	8.7 +/- 0.8	bidirectional	95	82	12.5	6.5	70	65.4	1.6	11.3	6.5	17	0.110

¹ The indicated damping torque refers to a rotational speed of 20 rpm and an ambient temperature of 23 °C.

FDN Rotary Dampers

The flat disc brake for one direction of rotation

The damping direction of the flat, strong FDN rotary dampers with steel body can be either right or left rotation. They can brake directly in the pivot point. ACE rotary dampers are maintenance-free and ready-to-install.



Technical Data

Construction size: Ø 47 to 70 mm

Rotational speed max.: 50 rpm

Lifetime: 50,000 cycles (1 cycle = 360° left-hand, 360° right-hand). Even after this time, the dampers still produce over approx. 80 % of their original damping moment. The service life may be significantly higher or lower, depending on the application.

Operating temperature range: -10 °C to +50 °C

Material: Outer body: Steel

Mounting: In any position

Information to the shaft:

FDN-47: Ø 6 +0 / -0.03

FDN-57 to FDN-70: Ø 10 +0 / -0.03

Hardness > HRC55, surface smoothness $R_z < 1 \mu\text{m}$

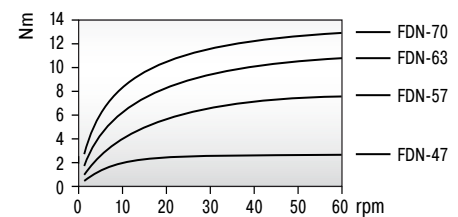
Mounting information: Turn the shaft in the opposite direction to the brake direction to avoid damaging the freewheel mount. No axial or radial forces may be induced via the shaft.

Safety instructions: Do not use rotary dampers as supports. Provide an external guide or support.

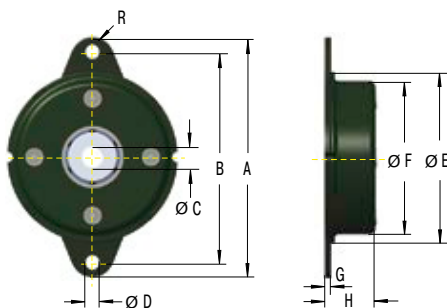
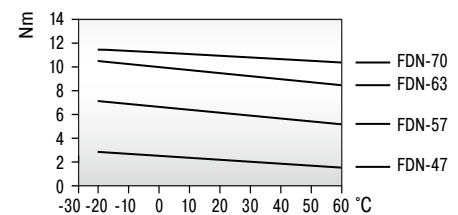
On request: Special designs available on request.

Characteristics

At 23 °C ambient temperature



At 20 rpm rotational speed



Performance and Dimensions

TYPES	Damping torque		Damping direction	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	R mm	Weight kg
	¹ Damping torque	Nm											
FDN-47-R	2.0 +/- 0.3		right	65	56	6	4.5	47	42.8	1.6	10.3	4.5	0.055
FDN-57-R	5.5 +/- 0.3		right	79	68	10	5.5	57	52.4	1.6	14	5.5	0.095
FDN-63-R	8.5 +/- 0.8		right	89	76	10	6.5	63	58.6	1.6	13.9	6.5	0.115
FDN-70-R	11.0 +/- 1.0		right	95	82	10	6.5	70	65.4	1.6	13	6.5	0.135
FDN-47-L	2.0 +/- 0.3		left	65	56	6	4.5	47	42.8	1.6	10.3	4.5	0.055
FDN-57-L	5.5 +/- 0.3		left	79	68	10	5.5	57	52.4	1.6	14	5.5	0.095
FDN-63-L	8.5 +/- 0.8		left	89	76	10	6.5	63	58.6	1.6	13.9	6.5	0.115
FDN-70-L	11.0 +/- 1.0		left	95	82	10	6.5	70	65.4	1.6	13	6.5	0.135

¹ The indicated damping torque refers to a rotational speed of 20 rpm and an ambient temperature of 23 °C.