Disk Damper

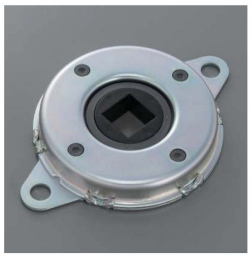
Bi-Directional | Uni-Directional

Fixed Type | Adjustable type | Serrated pitching

FDT-47A/FDN-47A Series

RoHS Compliant

●Products specification might be changed without notice.

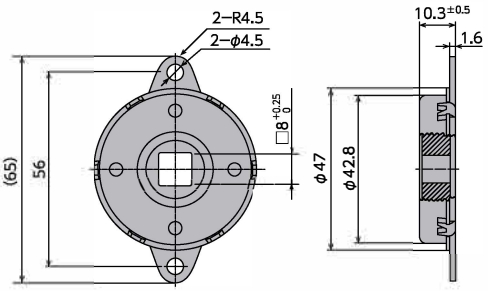


* Max. rotation speed 50rpm
* Max. cycle rate 12cycle /min
* Operating temperature −10~50℃
* Weight FDT- 47A : 50g
  FDN- 47A : 55g
* Main body material Iron (SPFC)
* Rotating (shaft) material Nylon (with glass)
* Oil typel Silicone oil

Specifications

Model	Rated torque	Damping direction
FDT-47A-502	0.5±0.15 N·m(5±1.5 kgf·cm)	Both directions
FDT-47A-103	1±0.2 N·m(10±2 kgf·cm)	Both directions
FDT-47A-163	1.6±0.3 N·m(16±3 kgf·cm)	Both directions
FDT-47A-203	2±0.3 N·m(20±3 kgf·cm)	Both directions
FDN-47A-R502	0.5±0.15 N·m (5±1.5 kgf·cm)	Clockwise direction
FDN-47A-L502		Counter-clockwise direction
FDN-47A-R103	1±0.2 N·m (10±2 kgf·cm)	Clockwise direction
FDN-47A-L103		Counter-clockwise direction
FDN-47A-R163	1.6±0.3 N·m (16±3 kgf·cm)	Clockwise direction
FDN-47A-L163		Counter-clockwise direction
FDN-47A-R203	2±0.3 N·m (20±3 kgf·cm)	Clockwise direction
FDN-47A-L203		Counter-clockwise direction

Note) Rated torque is measured at a rotation speed of 20rpm at 23°C±3°C



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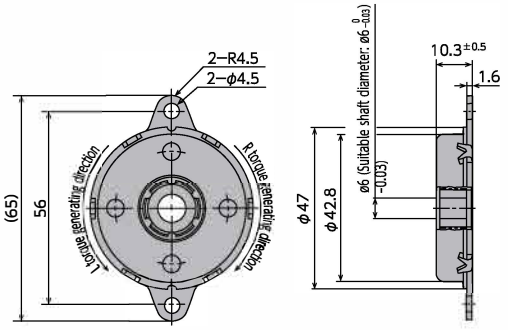


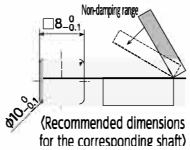
<FDN-47A-R／L※※※>

How to Use the Damper

1. Dampers may generate torque in both directions, clockwise, or counter-clockwise.
2. Please make sure that a shaft attached to a damper has a bearing, as the damper itself is not fitted with one.
3. Please refer to the recommended dimensions below when creating a shaft for FDN-47A. Not using the recommended shaft dimensions may cause the shaft to slip out.

Shaft's external dimensions	φ 6 −0 −0.03
Surface hardness	HRC55 or higher
Quenching depth	0.5mm or higher
Surface roughness	1.0Z or lower
Chamfer end (Damper insertion side)	C0.2~C0.3 (or R0.2~R0.3)

4. To insert a shaft into FDN-47A, insert the shaft while spinning it in the idling direction of the one-way clutch. (Do not force the shaft in from the regular direction. This may damage the oneway clutch.)
5. When using FDT-47A, please ensure that a shaft with specified angular dimensions is inserted in the damper's shaft opening. A wobbling shaft and damper shaft may not allow the lid to slow down properly when closing. Please see the diagrams to the right for the recommended shaft dimensions for a damper.
6. Please contact us when a continuous rotation is planned.

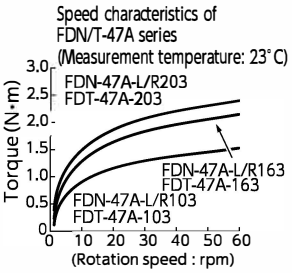


(Recommended dimensions for the corresponding shaft)

Damper Characteristics

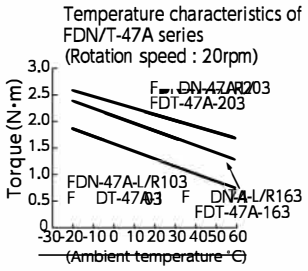
1. Speed characteristics

A disk damper's torque varies according to the rotation speed. In general, as shown in the graph to the right, the torque increases as the rotation speed increases, and the torque decreases as the rotation speed decreases. Torque at 20rpm is shown in this catalogue. In a closing lid, the rotation speed is slow when the lid begins to close, resulting in the generation of torque that is smaller than the rated torque.



2. Temperature characteristics

Damper torque (rated torque in this catalogue) varies according to the ambient temperature. As the temperature increases, the torque decreases, and as the temperature decreases, the torque increases. This is because the viscosity of the silicone oil inside the damper varies according to the temperature. The graph to the right illustrates the temperature characteristics



Disk Damper

Bi-Directional | Uni-Directional

Fixed Type | Adjustable type | Self-adjusting

FDT-57A/FDN-57A Series

RoHS Compliant

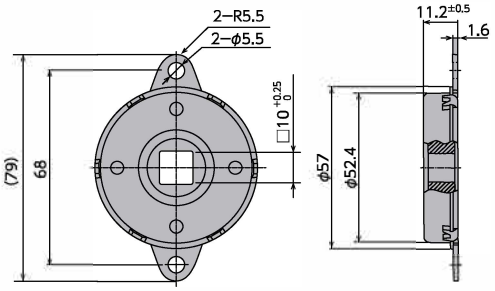
●Products specification might be changed without notice.

* Max. rotation speed 50rpm
* Max. cycle rate 12cycle /min
* Operating temperature −10~50℃
* Weight FDT-57A : 75g
  FDN-57A : 94g
* Main body material Iron (SPFC)
* Rotating (shaft) material Nylon (with glass)
* Oil typel Silicone oil

Specifications

Model	Rated torque	Damping direction
FDT-57A-303	3±0.4 N·m (30±4 kgf·cm)	Both directions
FDT-57A-403	4±0.5 N·m (40±5 kgf·cm)	Both directions
FDT-57A-503	4.7±0.5 N·m (47±5 kgf·cm)	Both directions
FDN-57A-R303	3±0.4 N·m (30±4 kgf·cm)	Clockwise direction
FDN-57A-L303		Counter-clockwise direction
FDN-57A-R403	4±0.5 N·m (40±5 kgf·cm)	Clockwise direction
FDN-57A-L403		Counter-clockwise direction
FDN-57A-R553	5.5±0.6 N·m (55±6 kgf·cm)	Clockwise direction
FDN-57A-L553		Counter-clockwise direction

Note) Rated torque is measured at a rotation speed of 20rpm at 23°C±3°C



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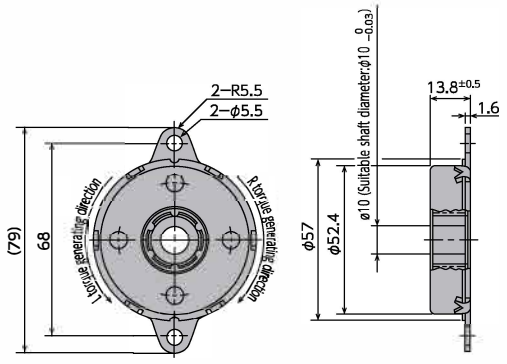


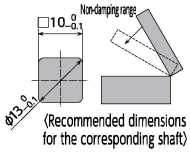
<FDN-57A-R／L※※※>

How to Use the Damper

1. Dampers may generate torque in both directions, clockwise, or counter-clockwise.
2. Please make sure that a shaft attached to a damper has a bearing, as the damper itself is not fitted with one.
3. Please refer to the recommended dimensions below when creating a shaft for FDN-57A. Not using the recommended shaft dimensions may cause the shaft to slip out.

Shaft's external dimensions	ϕ 10 $^{0}_{-0.03}$
Surface hardness	HRC55 or higher
Quenching depth	0.5mm or higher
Surface roughness	1.0Z or lower
Chamfer end (Damper insertion side)	C0.2~C0.3 (orR0.2~R0.3)

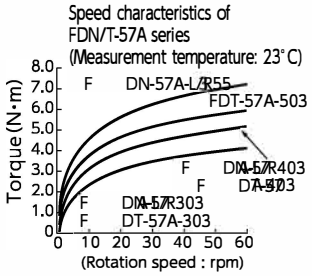
4. To insert a shaft into FDN-57A, insert the shaft while spinning it in the idling direction of the one-way clutch. (Do not force the shaft in from the regular direction. This may damage the oneway clutch.)
5. When using FDT-57A, please ensure that a shaft with specified angular dimensions is inserted in the damper's shaft opening. A wobbling shaft and damper shaft may not allow the lid to slow down properly when closing. Please see the diagrams to the right for the recommended shaft dimensions for a damper.
6. Please contact us when a continuous rotation is planned.



Damper Characteristics

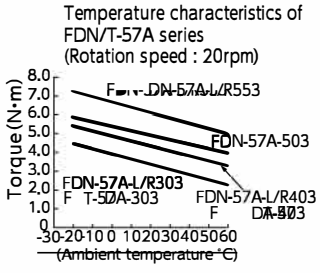
①1. Speed characteristics

A disk damper's torque varies according to the rotation speed. In general, as shown in the graph to the right, the torque increases as the rotation speed increases, and the torque decreases as the rotation speed decreases. Torque at 20rpm is shown in this catalogue. In a closing lid, the rotation speed is slow when the lid begins to close, resulting in the generation of torque that is smaller than the rated torque.



2. Temperature characteristics

Damper torque (rated torque in this catalogue) varies according to the ambient temperature. As the temperature increases, the torque decreases, and as the temperature decreases, the torque increases. This is because the viscosity of the silicone oil inside the damper varies according to the temperature. The graph to the right illustrates the temperature characteristics



Disk Damper

Bi-Directional | Uni-Directional

Fixed Type | Adjustable type | Self-adjusting

FDT-63A/FDN-63A Series

RoHS Compliant

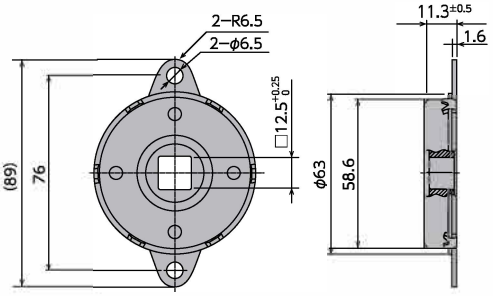
●Products specification might be changed without notice.

* Max. rotation speed 50rpm
* Max. cycle rate 12cycle /min
* Operating temperature −10~50℃
* Weight FDT-63A : 92g
  FDN-63A : 115g
* Main body material Iron (SPFC)
* Rotating (shaft) material Nylon (with glass)
* Oil typel Silicone oil

Specifications

Model	Rated torque	Damping direction
FDT-63A-403	4±0.5 N·m (40±5 kgf·cm)	Both directions
FDT-63A-533	5.3±0.6 N·m (53±6 kgf·cm)	Both directions
FDT-63A-703 FDT-63B-703	6.7±0.7 N·m (67±7 kgf·cm)	Both directions
FDN-63A-R453	4.5±0.5 N·m (45±5 kgf·cm)	Clockwise direction
FDN-63A-L453		Counter-clockwise direction
FDN-63A-R603	6±0.6 N·m (60±6 kgf·cm)	Clockwise direction
FDN-63A-L603		Counter-clockwise direction
FDN-63A-R903	8.5±0.8 N·m (85±8 kgf·cm)	Clockwise direction
FDN-63A-L903		Counter-clockwise direction

Note) Rated torque is measured at a rotation speed of 20rpm at 23°C±3°C
63B has a slotted rotating shaft opening



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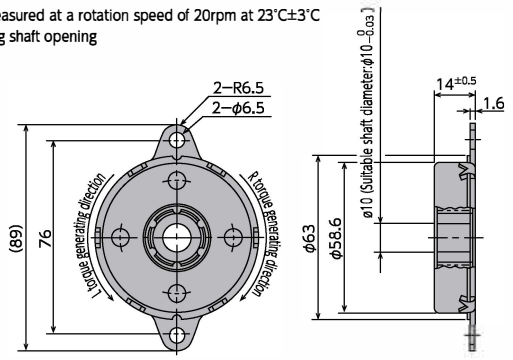


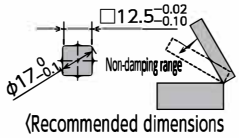
<FDN-63A-R/L※※※>

How to Use the Damper

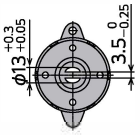
1. Dampers may generate torque in both directions, clockwise, or counter-clockwise.
2. Please make sure that a shaft attached to a damper has a bearing, as the damper itself is not fitted with one.
3. Please refer to the recommended dimensions below when creating a shaft for FDN-63A. Not using the recommended shaft dimensions may cause the shaft to slip out.
4. To insert a shaft into FDN-63A, insert the shaft while spinning it in the idling direction of the one-way clutch. (Do not force the shaft in from the regular direction. This may damage the one-way clutch.)

Shaft's external dimensions	ϕ 10 $^{0}_{-0.03}$
Surface hardness	HRC55 or higher
Quenching depth	0.5mm or higher
Surface roughness	1.0Z or lower
Chamfer end (Damper insertion side)	C0.2~C0.3 (orR0.2~R0.3)

5. When using FDT-63A, please ensure that a shaft with specified angular dimensions is inserted in the damper's shaft opening. A wobbling shaft and damper shaft may not allow the lid to slow down properly when closing. Please see the diagrams to the right for the recommended shaft dimensions for a damper.
6. A damper shaft connecting to a part with slotted groove is also available. The slotted groove type is excellent for usage with spiral springs
7. Please contact us when a continuous rotation is planned.



〈Recommended dimensions for the corresponding shaft〉

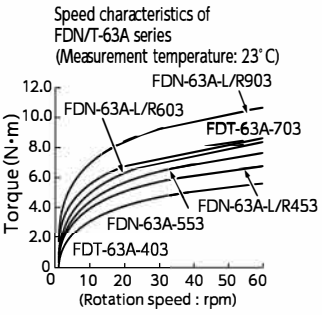


〈FDT-63B-703〉

Damper Characteristics

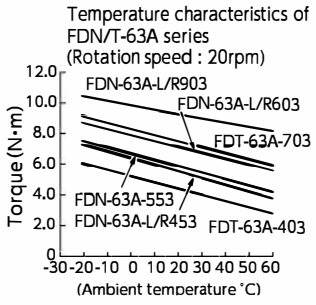
1. Speed characteristics

A disk damper's torque varies according to the rotation speed. In general, as shown in the graph to the right, the torque increases as the rotation speed increases, and the torque decreases as the rotation speed decreases. Torque at 20rpm is shown in this catalogue. In a closing lid, the rotation speed is slow when the lid begins to close, resulting in the generation of torque that is smaller than the rated torque.



2. Temperature characteristics

Damper torque (rated torque in this catalogue) varies according to the ambient temperature. As the temperature increases, the torque decreases, and as the temperature decreases, the torque increases. This is because the viscosity of the silicone oil inside the damper varies according to the temperature. The graph to the right illustrates the temperature characteristics



Disk Damper

Bi-Directional | Uni-Directional

Fixed Type | Adjustable type | Self-adjusting

FDT-70A/FDN-70A Series

RoHS Compliant

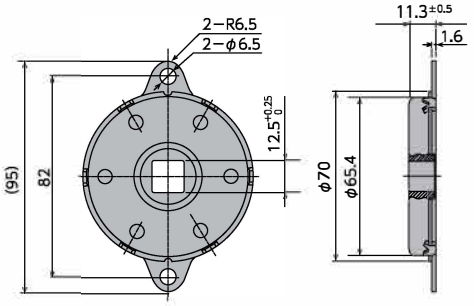
●Products specification might be changed without notice.

Specifications

Model	Rated torque	Damping direction
FDT-70A-903	8.7±0.8 N·m (87±8 kgf·cm)	Both directions
FDT-70B-903		
FDN-70A-R114	11±1.1 N·m (110±11 kgf·cm)	Clockwise direction
FDN-70A-L114		Counter-clockwise direction

Note) Rated torque is measured at a rotation speed of 20rpm at 23°C±3°C
70B has a slotted rotating shaft opening

* Max. rotation speed 50rpm
* Max. cycle rate 12cycle /min
* Operating temperature −10~50℃
* Weight FDT-70A : 112g
  FDN-70A : 136g
* Main body material Iron (SPFC)
* Rotating (shaft) material Nylon (with glass)
* Oil typel Silicone oil



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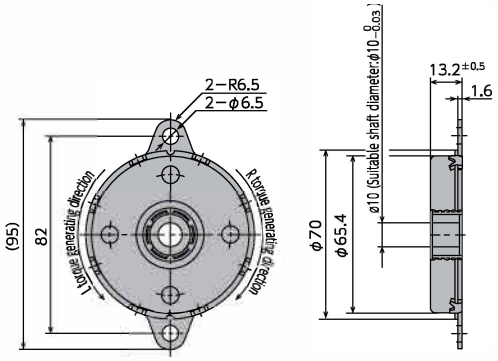


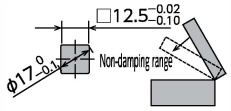
<FDN-70A-R／L114>

How to Use the Damper

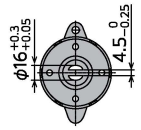
1. Dampers may generate torque in both directions, clockwise, or counter-clockwise.
2. Please make sure that a shaft attached to a damper has a bearing, as the damper itself is not fitted with one.
3. Please refer to the recommended dimensions below when creating a shaft for FDN-70A. Not using the recommended shaft dimensions may cause the shaft to slip out.
4. To insert a shaft into FDN-70A, insert the shaft while spinning it in the idling direction of the one-way clutch. (Do not force the shaft in from the regular direction. This may damage the one-way clutch.)

Shaft's external dimensions	$\phi 10_{-0.03}^{0}$
Surface hardness	HRC55 or higher
Quenching depth	0.5mm or higher
Surface roughness	1.0Z or lower
Chamfer end (Damper insertion side)	C0.2~C0.3 (or R0.2~R0.3)

5. When using FDT-70A, please ensure that a shaft with specified angular dimensions is inserted in the damper's shaft opening. A wobbling shaft and damper shaft may not allow the lid to slow down properly when closing. Please see the diagrams to the right for the recommended shaft dimensions for a damper.
6. A damper shaft connecting to a part with slotted groove is also available. The slotted groove type is excellent for usage with spiral springs
7. Please contact us when a continuous rotation is planned.



〈Recommended dimensions for the corresponding shaft〉

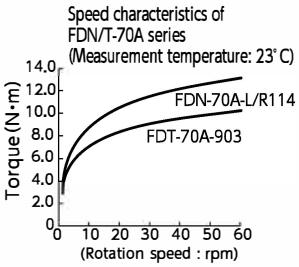


〈FDT-70B-903〉

Damper Characteristics

1. Speed characteristics

A disk damper's torque varies according to the rotation speed. In general, as shown in the graph to the right, the torque increases as the rotation speed increases, and the torque decreases as the rotation speed decreases. Torque at 20rpm is shown in this catalogue. In a closing lid, the rotation speed is slow when the lid begins to close, resulting in the generation of torque that is smaller than the rated torque.



2. Temperature characteristics

Damper torque (rated torque in this catalogue) varies according to the ambient temperature. As the temperature increases, the torque decreases, and as the temperature decreases, the torque increases. This is because the viscosity of the silicone oil inside the damper varies according to the temperature. The graph to the right illustrates the temperature characteristics