NHN®
Closing Solutions

SLIDING
DOOR CLOSER

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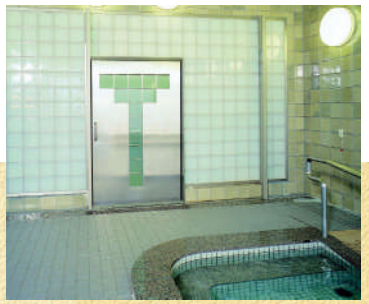

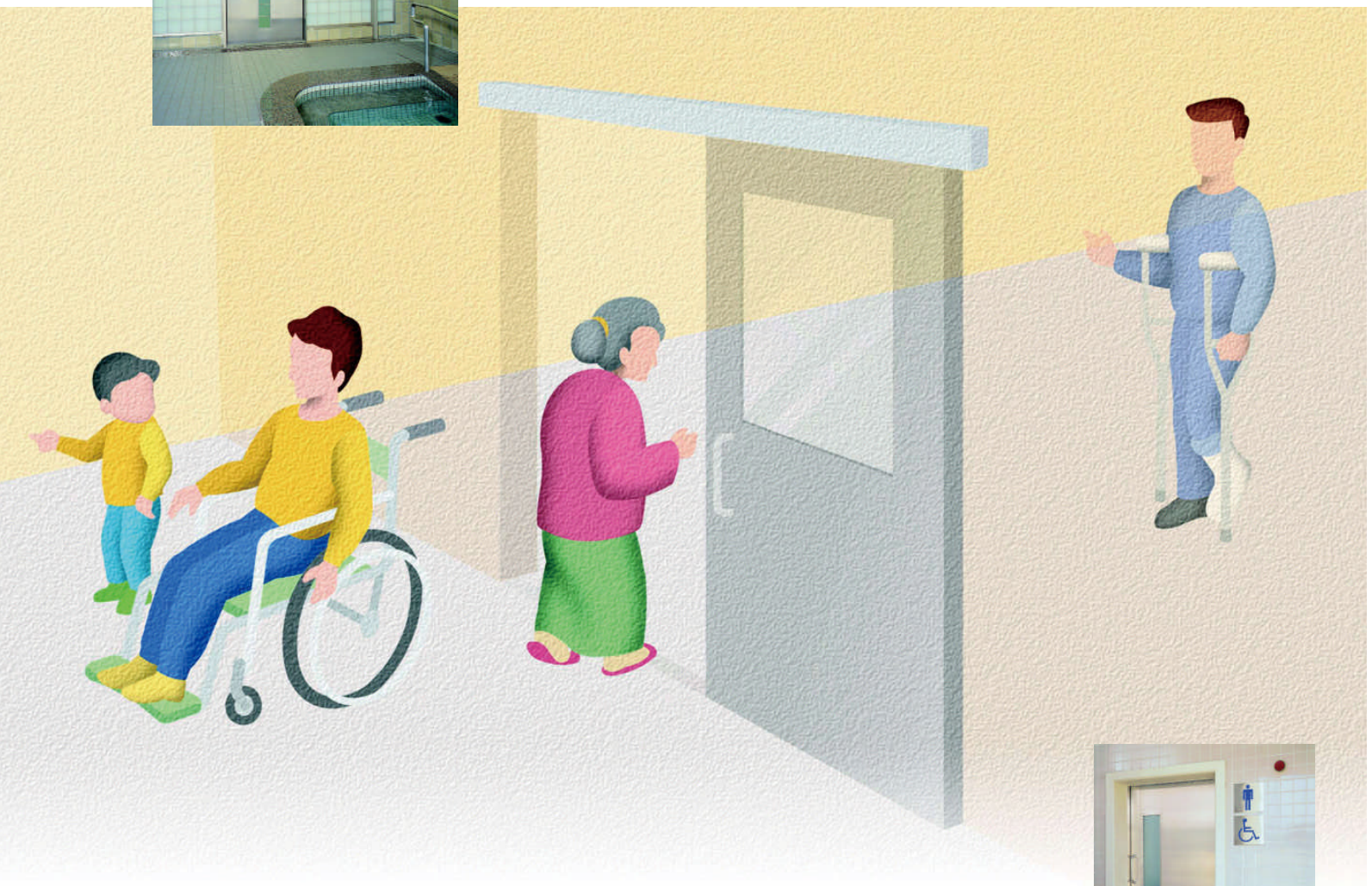

User-friendly technology

NHN offers a comprehensive range of manual sliding closer system to cater for the widely varying demand of home, work and daily life.

NHN SLIDING CLOSER

C O N T E N T S

● TS Series

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TS-F TYPE

FEATURES

Compact

The whole mechanism is placed in a door frame 150mm high by 70mm deep. This compactness provides greater freedom of installation in limited space.

Safe

The newly developed hydraulic gear-pump breaking system controls the door closing with utmost reliability, allowing people to enter and exit safely.

Optional features

Provide advanced functions to meet the additional needs.

• Hold-open function

To hold the door open at the required position. The position and torque can be adjusted easily with a screwdriver.

• Back check

To cushion the slide opening and prevent damage to the door and frame when the door is opened violently.

Easy handling

Opening force as small as 64N(0.65kg) allows the handicapped, the elderly, and children to enter. The opening and closing force can be adjusted within the range of +/-15% with the torque spring.

Easy installation

As all the components are simply mounted on the rail, installation is easy without the need for post-installation readjustment, which assures stable operation.

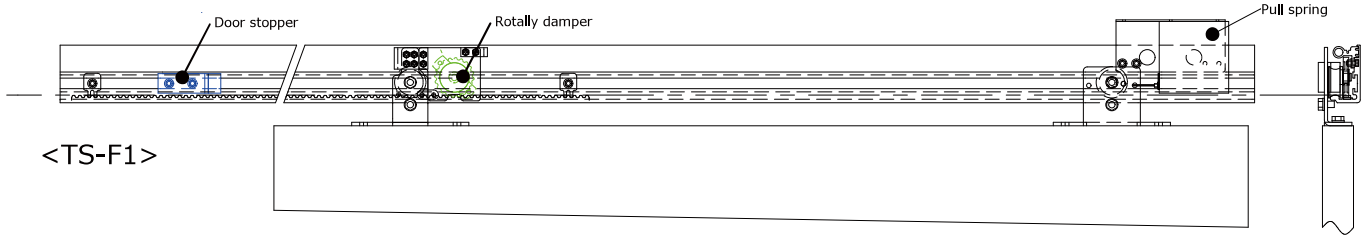
MODEL

Door control device	Model	MAX. Door Width	Door weight (kg:max)	Door stroke (mm:max)	Initial opening force (N.m)
Rotary damper	TS-F1-40	2000 mm	40	2,000	10
	TS-F1-80		80		14
Shock absorber	TS-F2-40	2000 mm	40	2,000	10
	TS-F2-80		80		14
Rotary damper & Shock absorber	TS-F3-40	2000 mm	40	2,000	10
	TS-F3-80		80		14

SPECIFICATION

Door closing control	Rotary damper, Shock absorber
Closing speed adjustment	Regular zone, cushioning zone
Closing speed control	By hydraulic braking system
Closing force control	By torque spring
Operating conditions	Temperature : -10 to +50 ℃ Humidity: 30-85% RH (no harmful air-borne chemicals)

OUTLINE



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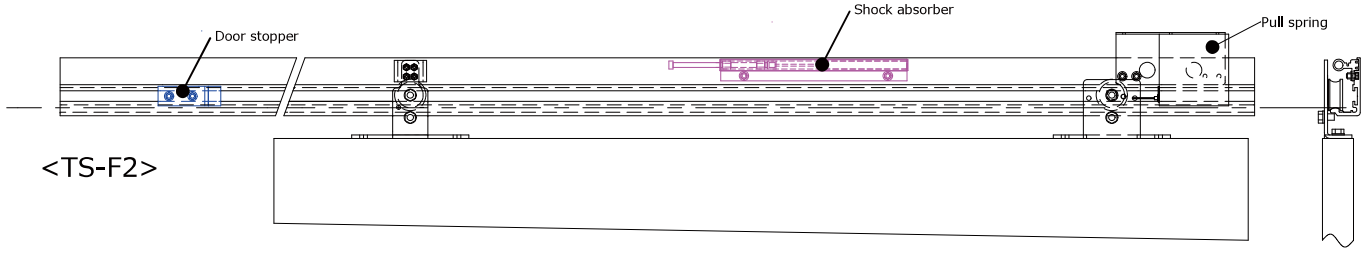

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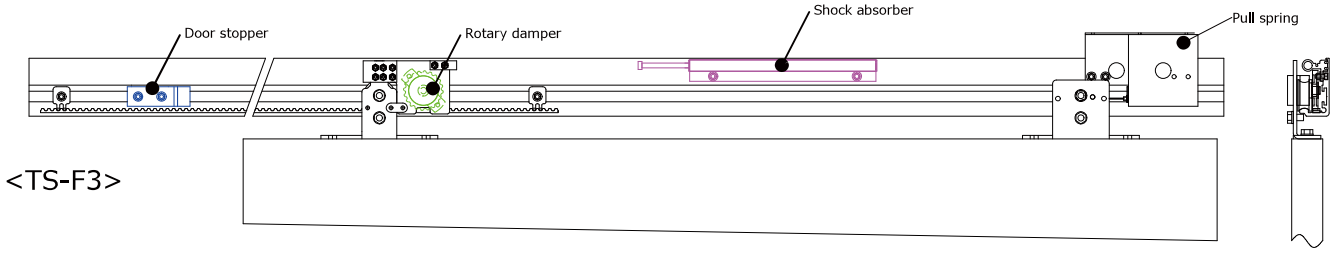

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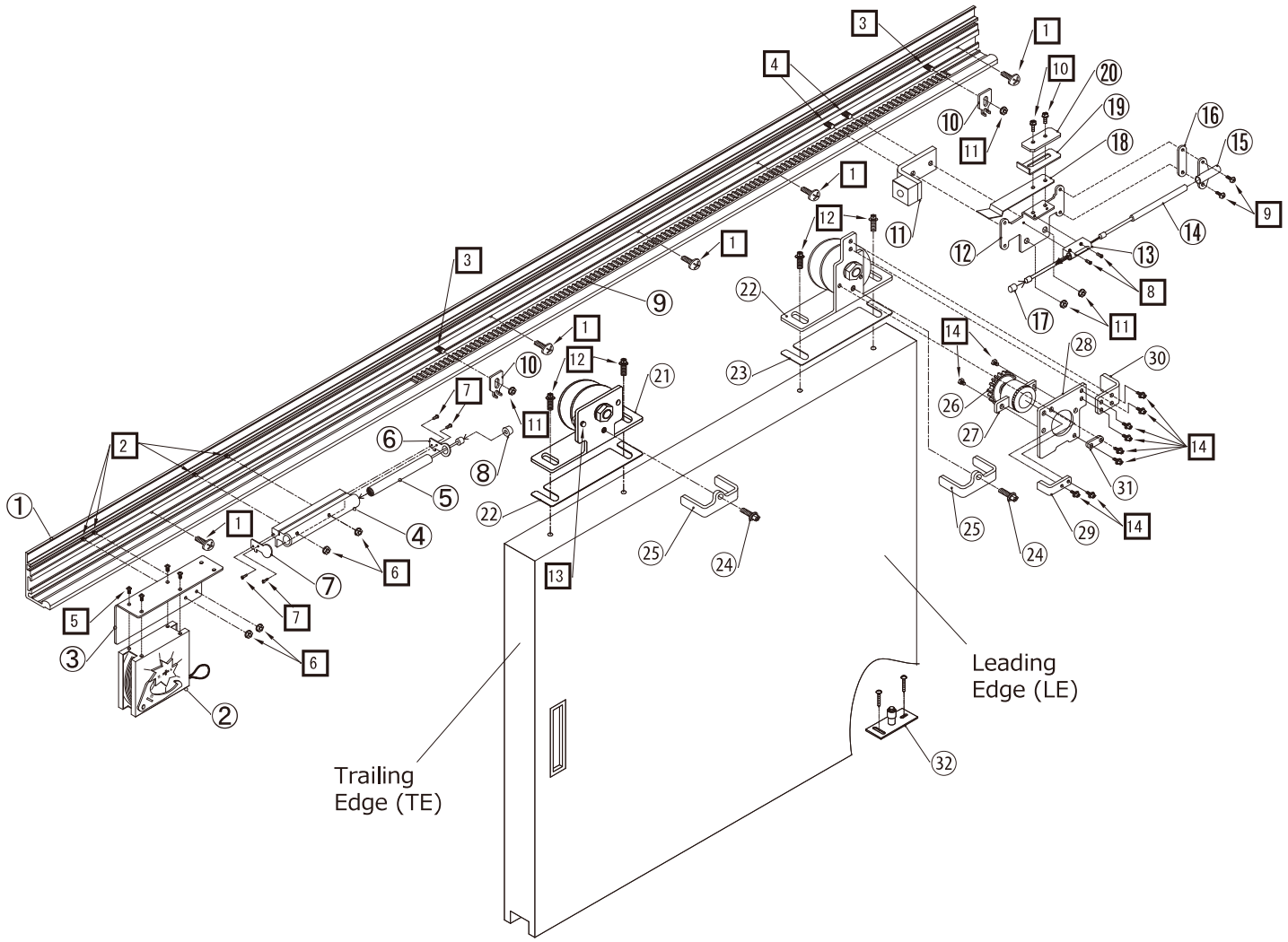
COMPONENT



No.	Part Name	QTY
1	Guide Rail	1
2	CF Spring	1
3	Spring Bracket	1
4	Damper Guide	1
5	Soft Absorber(blk)	1
6	Cover (w/ hole)	1
7	Cover (w/ hole)	1
8	Cap End	1
9	Timing Belt	1
10	Lock Plate	2
11	Stopper	1
12	Abs. Bracket(LE)	1
13	Abs. Cap	1
14	Soft Absorber(gr)	1
15	Adapter (white)	1

No.	Part Name	QTY
16	Silencing Cap	1
17	SC-2S Stop Spring	1
18	Adjustment Plate	1
19	Spacer	1
20	Door Bracket (TE)	1
21	Door Bracket (LE)	1
22	Height adj. shim	1
23	Door Guide Bolt	2
24	Door Guide Brkt	2
25	Pulley (w/1-way bearing)	1
26	Rotary Damper	1
27	Damper Bracket	1
28	Damper Stopper (TE)	1
29	Damper Stopper (LE)	1
30	Door Bracket connector	1
31	Guide Roller	1

Fasteners List (indicated by boxed numbers)

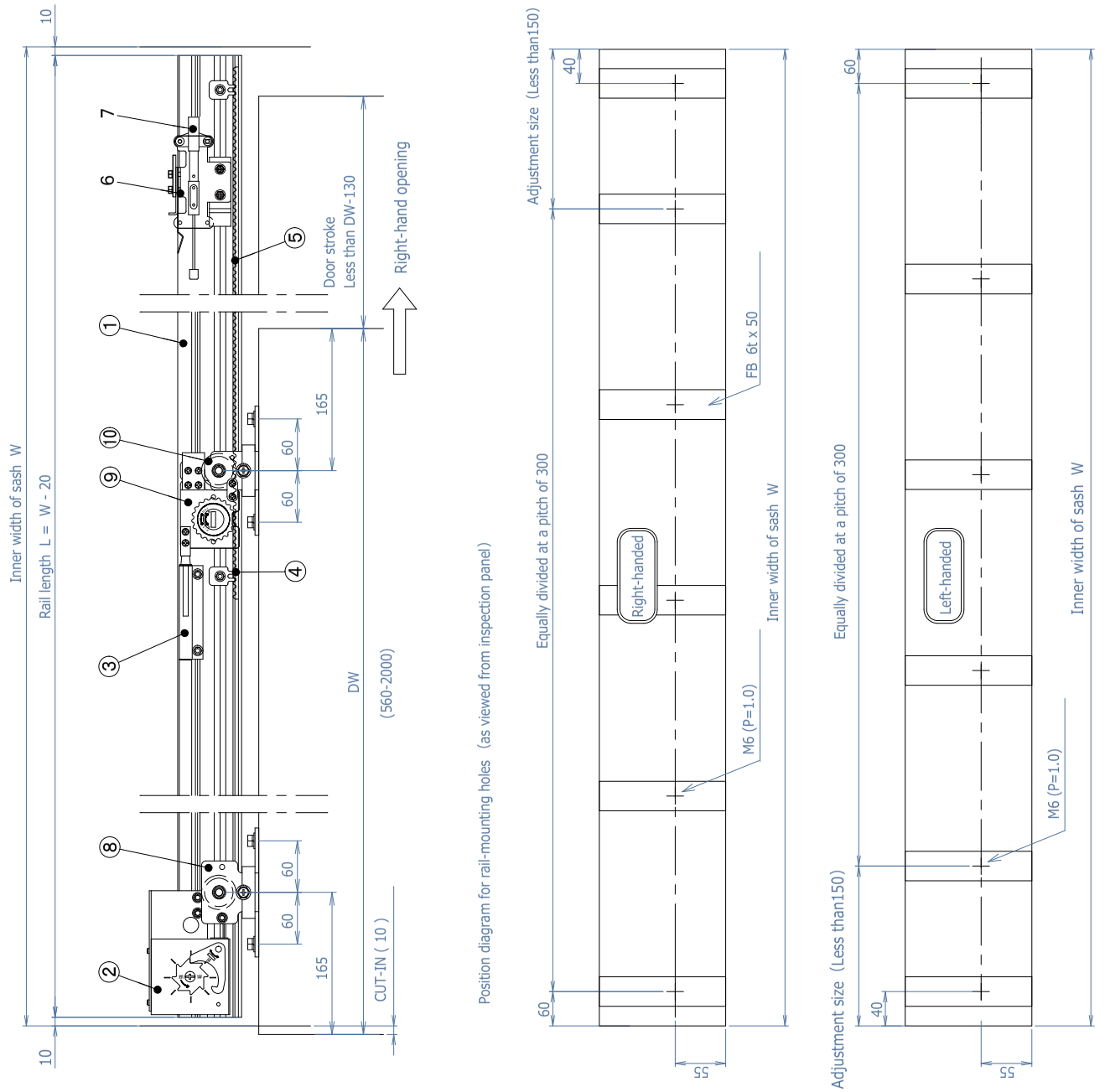
No.	Fastener	Size	QTY
1	Panhead Screw	M6 x 16	2
2	Hex Bolt	M5 × 12	4
3	Flanged Bolt	M8 × 12	4(2)
4	Square Bolt	M6 × 21	(2)
5	Panhead Screw	M4 × 6	4
6	Flanged Nut	M5	4
7	Panhead Screw	M3 × 8	4
8	Cntrsink Screw	M4 × 8	(2)
9	Panhead Screw	M4 × 8	(2)
10	Hex Bolt	M5 × 12	(2)
11	Flanged Nut	M6	4(2)
12	Hex Bolt	M8 × 25	4
13	Hex Bolt	M6 × 25	1
14	Hex Bolt	M5 × 10	(10)

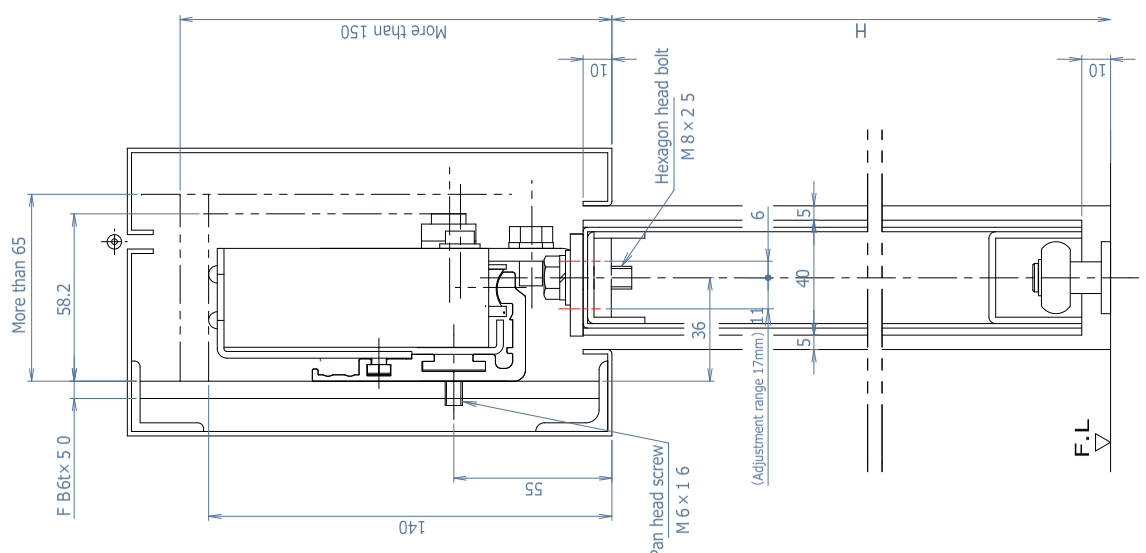
	indicates optional part

* Varies per installation

**Numbers in parenthesis indicate fasteners used to fasten optional parts

INSTALLATION DIAGRAMS





LIST OF PARTS

Rotary damper

Pull spring

Shock absorber (option)

Back-check device

(with hold open device)

(without hold open device)

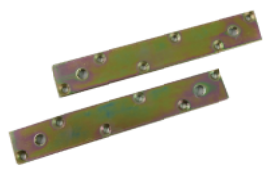
Hanger (TE)

with door guide bracket (option)

Hanger (LE)

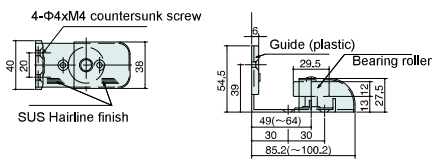
Height adj. plate

Wooden door plate



Guide roller (option)

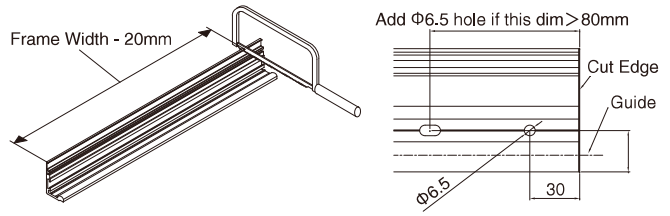
Floor guide (option) LRF-30-S (DT28-41mm)
LRF-30-L (DT40-53mm)



INSTALLATION

① Rail processing

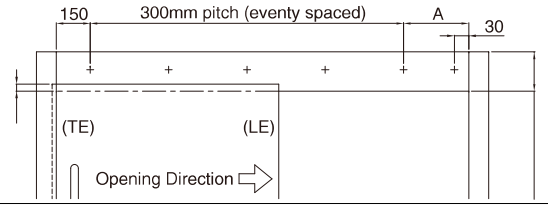
①-1、Cut the rail to a length 20mm shorter than the aluminum sash.
①-2、Position the rail to the orientation in the picture below. Cut the right side of the rail for right-opening doors and the left side for left-opening doors.
①-3、If the distance from the edge of the rail to the first slotted hole is over 80mm open a φ?6.5mm hole 30mm from the edge (see drawing below).



② Tapped holes for rail installation

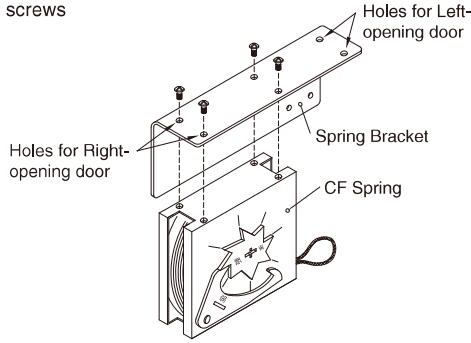
②-1、Open M6x1.0 tapped holes in the locations indicated in the drawing below.
・150mm from the sash nearest to the closing edge of the door
・65mm from the bottom face of the horizontal beam.
(for the case of a 10mm gap between the door and frame).

②-2、If the distance between the last hole (opened at 300mm pitch) and the door frame is larger than 150mm, add a φ?6.5mm hole 30mm from the edge of the rail.



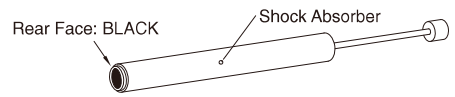
② Mounting of pull spring

③-1、Attach constant force spring to its mounting bracket
・Align holes as shown in the picture and fasten four M4x6 panheaad screws

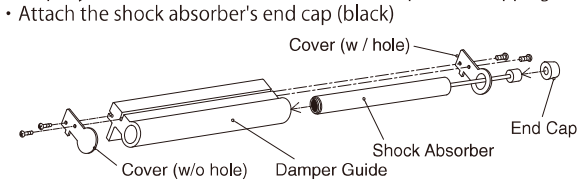


④ Closing-side shock absorber assembly

※Instructions for standard specifications
For instructions on assembling the closing-side shock absorber (L-type) please refer to, "Closing-side shock absorber (L-type) Assembly" (separate document)
④-1、Confirm the color on the back of the shock absorber.
・This color is BLACK for the closing-side shock absorber

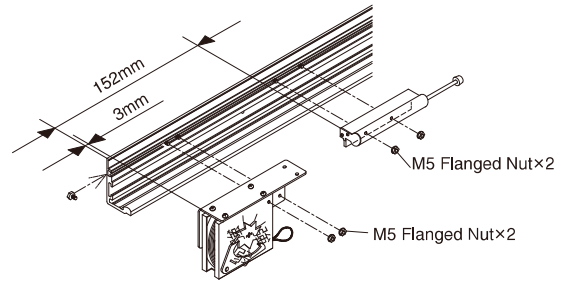


④-2、Insert shock absorber into damper guide and fasten.
・Insert shock absorber from the opening side.
・Properly orient the cover and fasten with M3x8 panhead tapping screws
・Attach the shock absorber's end cap (black)



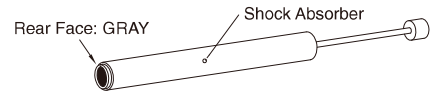
⑤ Attach spring and closing-side shock absorber

⑤-1、Slide four M5x12 hexagon head bolts into the upper groove in the rail.
⑤-2、Attach spring and shock absorber
・Position the constant force spring 3mm from the edge of the rail and fasten with M5 flange nuts
・Position the shock absorber 152mm from the edge of the rail and fasten with M5 flange nuts
※The shock absorber will be adjusted in a later step.

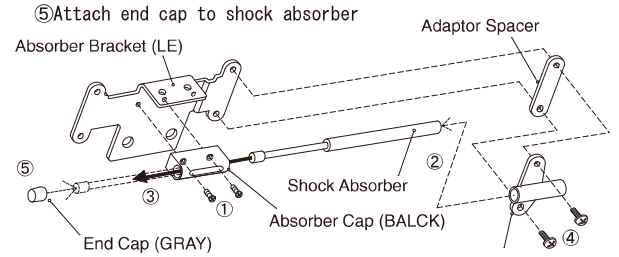


⑥ Opening-side shock absorber assembly

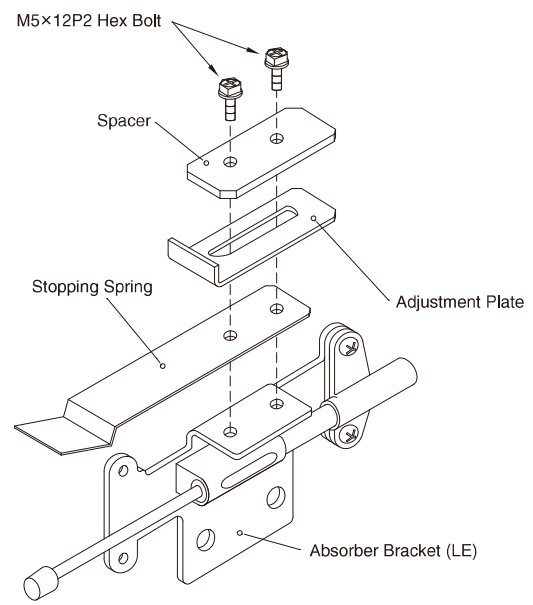
Confirm the color on the back of the shock absorber.
⑥-1、・This color is GRAY for the opening-side shock absorber



⑥-2、Attach shock absorber to the shock absorber mounting bracket
※Assemble in the order below
①Attach the absorber cap with M3x8 panhead screws
②Insert shock absorber into the absorber cap
③Attach shock absorber to absorber cap
④Attach absorber spacer and adapter to absorber bracket using M4x8 panhead screws.
⑤Attach end cap to shock absorber



⑥-3、Attach stopping spring, etc. to absorber bracket (LE)
・As shown in the picture below, attach pars in the following order: absorber bracket, stopping spring, adj. plate, spacer.



INSTALLATION

⑦ Attach the opening-side stopper

⑦–1、Slide two M6x21 square head bolt into the guide rail

⑦–2、Insert stopper through the square bolts and loosely fasten with M6 nuts.
※Do not tighten nuts as the stopper will be adjusted later.
※If optional parts are to be installed refer to step ÖF-3 below.

⑦–3、For installation of Stop Mechanism (LE) (option)
●Align the stop mechanism (assembled in step 6) with the stopper bolts and loosely fasten with M6 nuts.
※Do not tighten as this part will be adjusted later

⑧ Cut and attach timing belt

⑧–1、Calculate the length of the timing belt using the equation below and cut
・Belt Length = 0.75 L (L = length of guide rail)
Ex.: For rail length, L= 2000, cut the timing belt to 0.75*2000 = 1500mm

⑧–2、Attach the timing belt to the guide rail
・Align the right end of the timing belt with the right end of the guide rail and insert the belt into the groove.
・Insert M8x12 flanged bolt into the bolt groove in the rail, turn and hang
・Attach lock flange 40mm from the end of the timing belt, insert through flanged bolt and fasten with M8 flanged nuts locking the belt in place.

⑨ Mounting the guide rail

⑨–1、Attach the guide rail to the frame
・Position the guie rail 10mm from the vertical frame member
・Confirm that the guide rail is parallel with the floor and fasten with M6x16P2 panhead srews

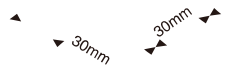
⑩ Door bracket installation

⑩–1、Connect the door with the door brackets using M8 x 60 hexagon head bolts as shown in the drawing below.

※Be sure that the brackets are mounted parallel with the door and not angled (see example below)

⑪ Hang door

⑪–1、Fix the guide roller (option) to the floor.
※Part may vary with specifications, such as door size.



⑪–2、Wipe the roller guide with a dry cloth.
⑪–3、Insert the roller guide between the top of the door and the roller and hang door.
・Operate the door by hand and confirm that the door moves smoothly and is level with the floor.
※If the door's motion is not smooth or the door makes noise during operation, adjust the position of the door bracket.

INSTALLATION

⑫ Connect pull spring

⑫–1、Fasten a hexagon head bolt to the leading door bracket.
・Fasten the bolt so that the head of the bolt is on the same side as the roller
⑫–2、Hang the wire loop on the end of the screw fastened in step ⑫–1

⑬ Mounting of rotary damper

⑬–1、Attach the rotary damper to the door bracket (LE)
※Assemble in the following order
①Confirm the pulley's one-way bearing direction (indicated on the label)
②Attach plastic washer, pulley, plastic washer, set pin to the rotary damper
※Orient the pulley properly (check the pulley's label)
※Turn the pulley while sliding it onto the shaft of the rotary damper
③Attach the rotary damper (assembled in the previous step) to the damper bracket using two M5x10 hex bolts.
④Attach stopper (LE) to the damper bracket (assembled in the previous step) using two M5x10 hex bolts.
⑤Attach the damper bracket (from the previous step), to the door bracket connector, and damper stopper to the door bracket (LE) using two M5x10 P3 hex bolts.
※Ensure that the pulley and timing belt are properly mated during installation

⑭ Door guide bracket (bolt) installation

⑭–1、Attach the door guide bolt and door guide bracket (option)

⑮ Back-check device position/force adjustment

⑮–1、Fully open the door, move the stopper so it touches the door and fasten
・If there is clearance between the door and the frame in the fully open position, consult with the customer before adjusting the stopper

⑮–2、The stop mechanism can be set to three different strength settings
※Consult with the customer before adjusting

⑯ Spring force adjustment

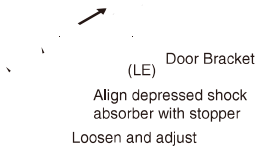
⑯–1、Adjust the spring force
※Position the door in the fully-open position before adjusting to prevent damage to the spring.
●To raise the spring force
・Use a screwdriver to turn the sprocket in the appropriate direction as indicated on the label.
●To lower the spring force
・Move the latch by hand so the sprocket rotates in the opposite direction

Spring strength per # of sprocket revolutions

	HDZ - 340	HDZ - 380
Weak	320g (7 rev)	700g (3 rev)
	360g (3 rev)	760g (2 rev)
	380g (1 rev)	720g (1 rev)
Standard	400g (0 rev)	800g (0 rev)
Strong	420g (1 rev)	860g (1 rev)
	440g (3 rev)	880g (3 rev)
	480g (8 rev)	900g (5 rev)
Max # of turns	12 rev	8 rev

⑰ Closing-side shock absorber adjustment

⑰–1、Adjust the position of the closing-side shock absorber
▪ Move the door to the fully-open position
▪ Loosen the nuts on the closing-side shock absorber
▪ Position the leading door bracket so it is touching the shock absorber's rod in the fully depressed state, and re-tighten the nuts
▪ Open the door by hand and release. Check the effectiveness of the brake



⑱ Closing speed adjustment

⑱–1、Using the dial on the rotary damper (on the trailing door bracket), adjust the closing speed to the standard setting.
▪ Adjust the dial so that the closing time from the door's fully open position to fully closed position is between six to eight seconds.
※Double check the instructions while performing adjustments from steps ⑮ through ⑱