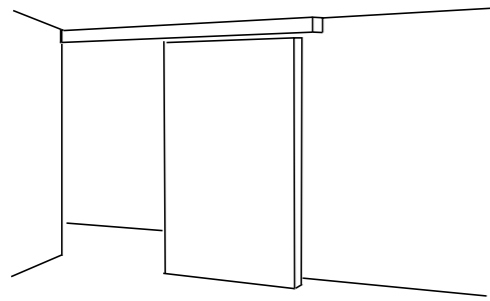


## SELF-CLOSING SLIDING DOOR SYSTEM LM-80 Installation Manual



Before you begin the assembly, read this manual thoroughly for proper installation. Failure to follow the instructions may result in personal injuries. Please retain this manual for future reference.

### Safety Notices

**!** Read the Safety Notices and the Installation Manual to ensure the correct mounting of fittings before you begin these procedures.

#### Be sure to observe these instructions.

Please read and observe all the instructions to ensure safety. In order that the product is used properly and safely, the following marks are indicated to prevent accidents in improper use.

**! Warning** If this symbol is ignored and the equipment is used improperly, there is a danger of death or serious injuries could occur.

**! Caution** If this symbol is ignored and the equipment is used improperly, there is a danger of injuries could occur.

The following symbols are used to define the degree of danger and hazards in addition to above symbols.

	This symbol represents the prohibited matters.
	This symbol represents what must be done.

- !** Be sure to leave the installation of this product only to a qualified professional or retail service engineer. Failure to observe these instructions may cause the product to fall down, resulting in injury or damage.
- !** Check the firmness of the mounting surface and securely fix the product using the provided screws. Insufficient firmness of the surface may cause injury due to fall and breakage of the product.

### Installation Notices

- ⊘ Do not apply the product to the door other than as specified in terms of size and weight.
- ⚠ Sluggish operation of the brake may cause a slam shut of the door, resulting in a danger of having fingers caught or collision or falling accidents. If, due to oil leaks or damage in the parts, the operation could not be improved even by speed adjustment, replace it immediately.
- ⊘ Do not disassemble or modify the device. We do not take any responsibility for any failure of work of the product caused by such disassembly or modification.
- ⚠ Be sure to tighten the mounting screws for the product to prevent any damage and accidents.
- ⊘ Do not drop or hit the product, as these actions may cause malfunction of the product.
- ⊘ This door is self closing. Do not apply excessive force or move the door rapidly. The swift force of a closing door may cause an unexpected accident.
- ⊘ Be careful not to let children hang on the door while playing.
- ⚠ Wipe off all dirt and dust from the rail and door rollers.
- ⚠ Periodically check the product to insure all the screws are not loose. If the looseness is found, tighten it.

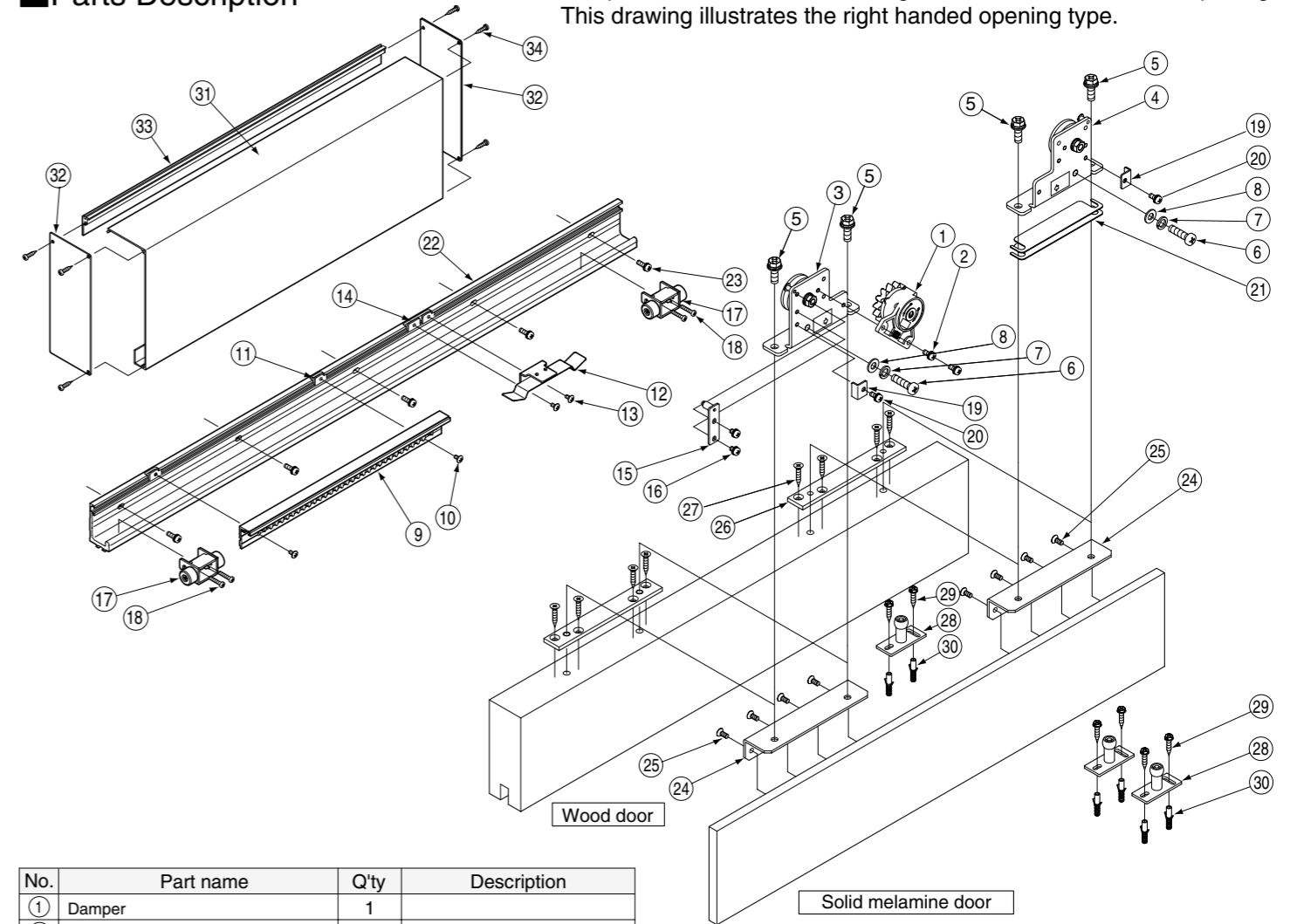
### Specifications, Parts Details

#### Specifications

	Applicable door thickness	Applicable door weight	Applicable door width	Max. door travel	Closing drive system	Control type	Control time	Initial door opening force
Solid melamine door	13mm	30~80kg	700~1200mm	1100mm (when door width 1200 mm)	Rail inclination (3.5/300)	Fluid friction resistance type	7.0 to 11.0 sec (at a door opening distance of 900 mm)	5.4~12.5N
Wood door	28~40mm							

#### Parts Description

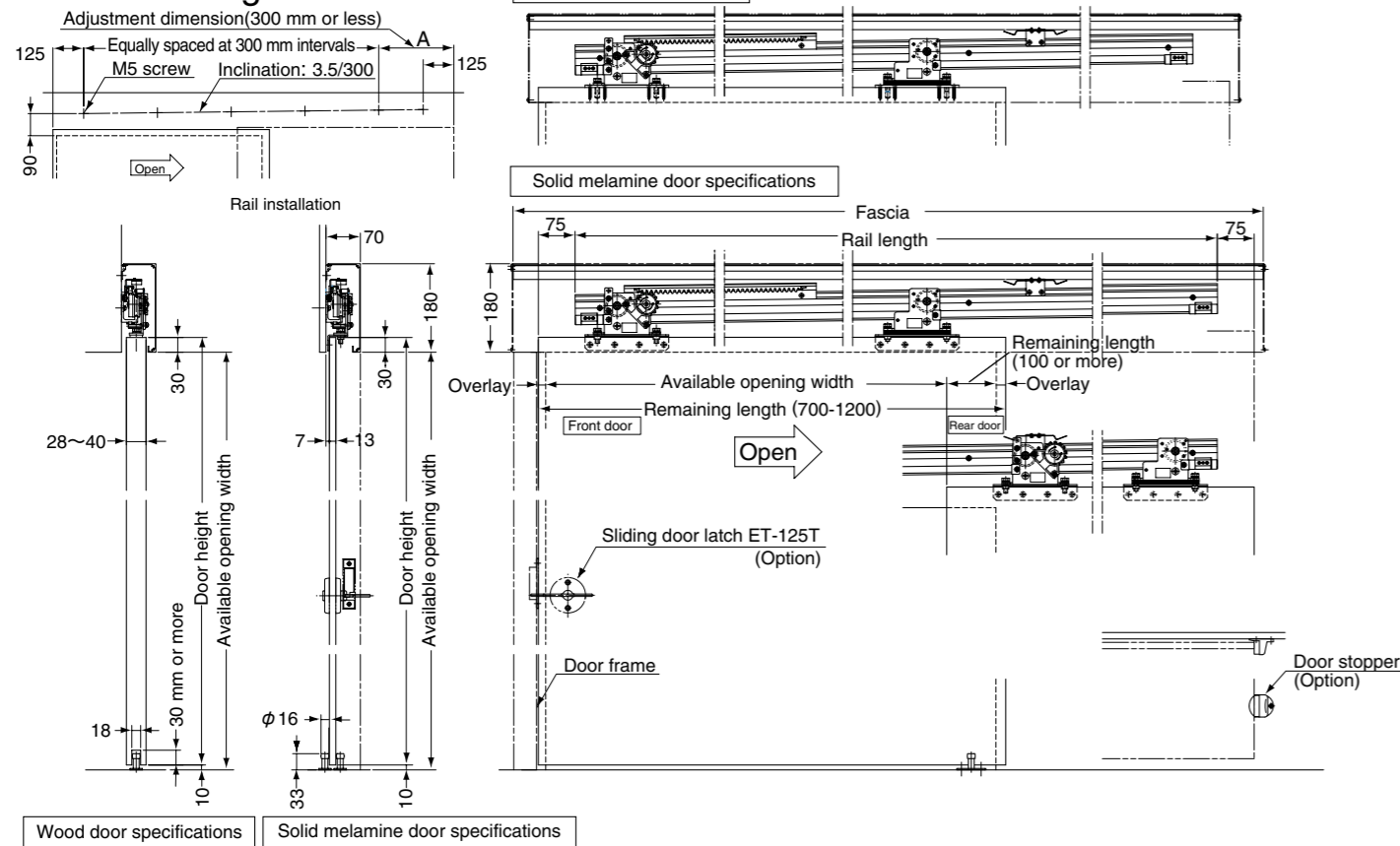
The parts can be used for both right handed and left handed opening. This drawing illustrates the right handed opening type.



No.	Part name	Q'ty	Description
①	Damper	1	
②	M5x12 cross recessed pan head screw	2	
③	Hanger A	1	
④	Hanger B	1	
⑤	M8x25 hex head bolt	2	For the front door
⑤	M8x30 hex head bolt	2	For the rear door
⑥	M8x30 cross recessed pan head screw	2	Fall-prevention screw
⑦	Spring lock washer, 8 mm nominal	2	For fall-prevention screws
⑧	Plain washer, 8 mm nominal	2	For fall-prevention screws
⑨	Gear rack set	1	
⑩	M4x8 cross recessed truss head screw	2	
⑪	Plate nut	2	
⑫	Leaf spring	1	
⑬	M4x8 cross recessed truss head screw	2	
⑭	Plate nut	2	
⑮	Stop roller	1	
⑯	M5x8 cross recessed pan head screw	2	
⑰	Door stopper fitting	2	
⑱	Nominal 5x16 cross recessed pan head tapping screw	4	For door stopper fixing and reinforcement
⑲	Door stopper supporting plate	2	
⑳	M5x8 cross recessed pan head screw	2	

No.	Part name	Q'ty	Description
⑳	Height adjusting plate (t=1.0)	15	
㉑	Height adjusting plate (t=0.5)	1	
㉒	Rail L = 2200	1	
㉓	M5x16 cross recessed pan head screw	8	
㉓	Nominal 5x30 cross recessed truss head tapping screw	8	
㉔	Hanger angle	2	For solid melamine door (13 mm)
㉕	M5x12 hex socket flat head screw	8	For solid melamine door (13 mm)
㉖	Wood door plate	2	For wood door
㉗	Nominal 5x30 cross recessed flat head tapping screw	8	For wood door
㉘	Guide roller ( φ 16)	2	
㉙	Nominal 5x25 hex tapping screw	4	For wood and anchor plugs
㉙	M5x12 hex head bolt	4	For steel
㉚	6x30 Anchor plug	4	For concrete and mortar
㉛	Fascia	1	
㉜	Side cover	2	
㉝	Mounting plate (for fascia)	1	
㉞	Nominal 4.12 cross recessed pan head tapping screw	6	

Installation Diagram

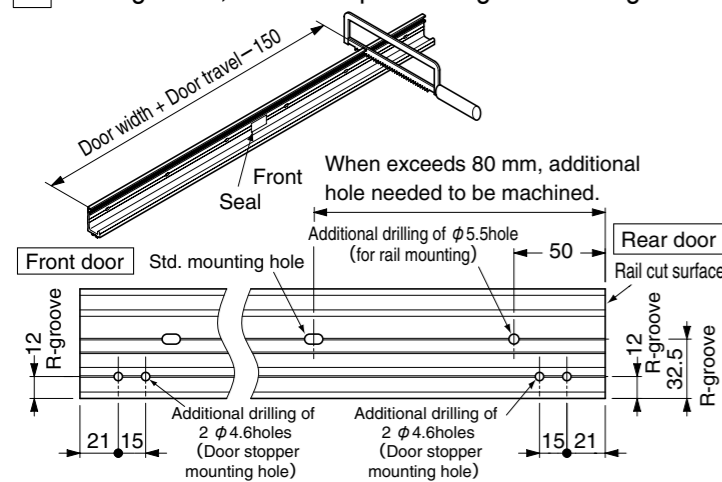


Installation Procedure

The following describes the right handed opening type.  
The left-handed opening type is left right symmetrical to the description.

1 Installation of Rail and Mounting Plate for Fascia

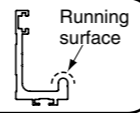
1 Cutting of rail, additional processing of mounting holes



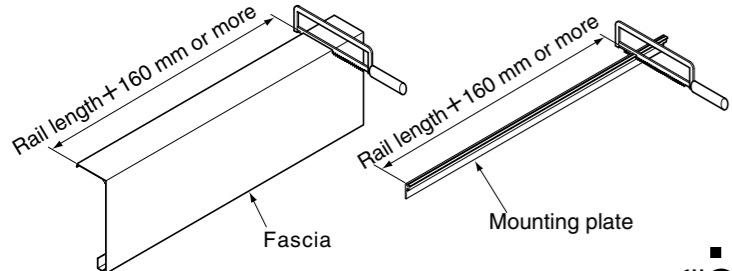
- Cut the rail according to the measurement shown in the illustration.
- Cut in the direction indicated on the seal.
  - With the right handed opening door, cut the right side when viewed from the front.
  - With the left handed opening door, cut the left side when viewed from the front.
- When the measure from the rail cut surface to the standard mounting hole is 80 mm or more, cut out another rail mounting hole ( $\phi 5.5$ ) at 50 mm from the edge.
- Additionally drill the holes ( $\phi 4.6$ ) for stopper mounting, both on the front door side and the rear door side as shown in the illustration.

Caution

Be careful not to damage the running surface of the rail, when processing the rail.

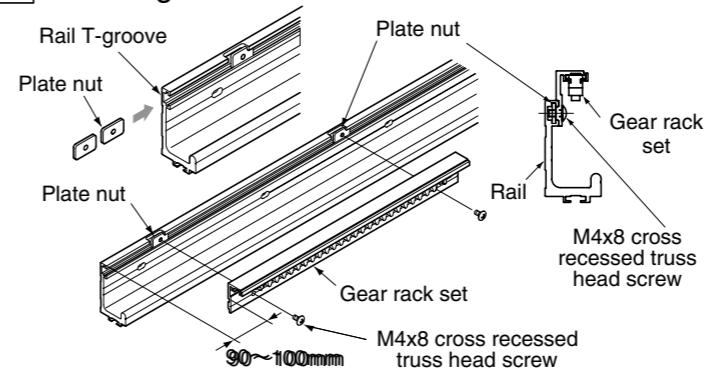


2 Cutting of Rail cover



- Cut the rail cover and the mounting plate as required.
- The cutting length of the rail cover shall be: rail length plus 160 mm or more.

3 Mounting of the Gear Rack Set

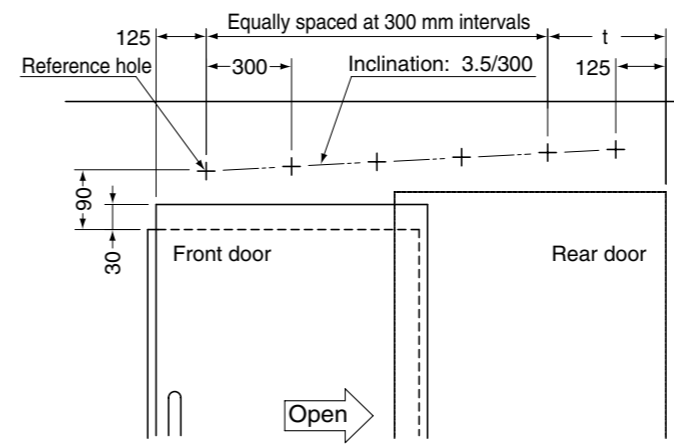


- Insert 2 plate nuts in the T groove of the rail.
- Mount the gear rack set, with adjusting the position of plate nuts to the mounting holes on the gear rack set using the provided M4x8 cross recessed truss head screws.

Caution

- Be sure to use the provided screws to prevent screws to hit the clutch gear of the damper.
- Firmly tighten the screws to prevent abnormal noise or malfunction of control.

4 Preparation of Mounting Holes on the Rail



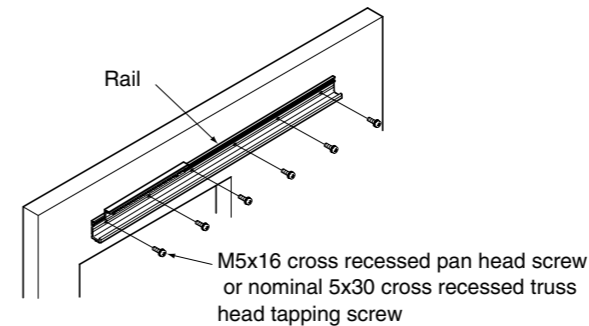
Caution

Make sure that the mounting surface has enough strength to bear the weight and impact of the unit at the time of door opening and closing.

- Using the following position as a reference hole, drill a pilot hole that is appropriate with the material of surface of rail mounting.
  - Measurement from the front door edge when the door is fully closed: 125 mm
  - Measurement from the upper frame of the sash: 90 mm (in the case the overlay of sash upper frame and the door: 30 mm)
- \* Preparation of holes on the solid melamine panel shall be  $\phi 4.7$ , depth 10 mm. Tapping is not necessary.
- Subsequent holes shall be prepared, equally spacing at 300 mm, with a difference of height of 3.5 mm.
- If measurement A in the illustration is 155 mm or more, drill a pilot hole at 125 mm from the rear door edge when the door is fully opened. (Measurement A: distance from the last hole spaced 300 mm interval and the rear door edge at full opening of the door)

Required number of holes (except ref. hole)	Horizontal distance from ref. hole (mm)	Height difference with ref. hole (mm)
1	300	3.5
2	600	7.0
3	900	10.5
4	1200	14.0
5	1500	17.5
6	1800	21.0
7	2100	24.5

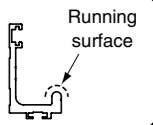
5 Installation of Rail



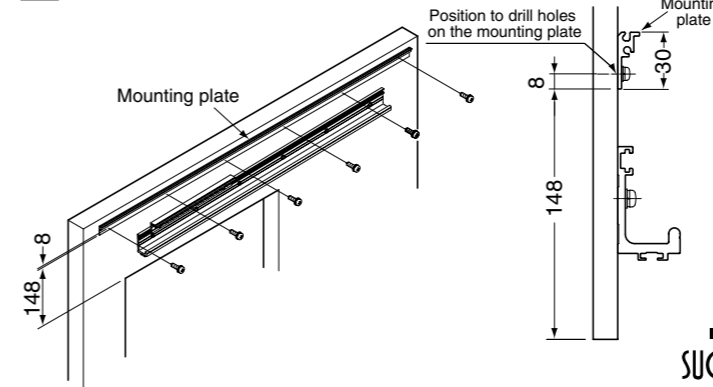
- Mount the rail with provided M5x16 cross recessed pan head screws, or nominal 5x30 cross recessed truss head tapping screws.
- \* When mounting on the solid melamine panel, directly fix it with M5x16 cross recessed pan head screws into the pilot holes ( $\phi 4.7$ , 10 mm depth). Tapping is not necessary.

Caution

Be sure to prevent scratches or paints from attaching on the running surface of the rail after installation.



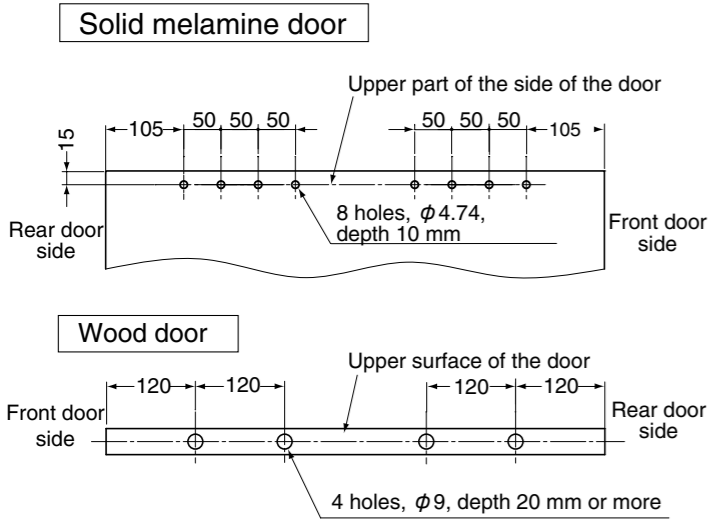
6 Installation of Mounting Plate for Rail cover



Drill mounting holes on the mounting plate for rail cover, and install the plate at the position shown in the illustration. (Screws for fixing the mounting plate shall be provided by customer.)

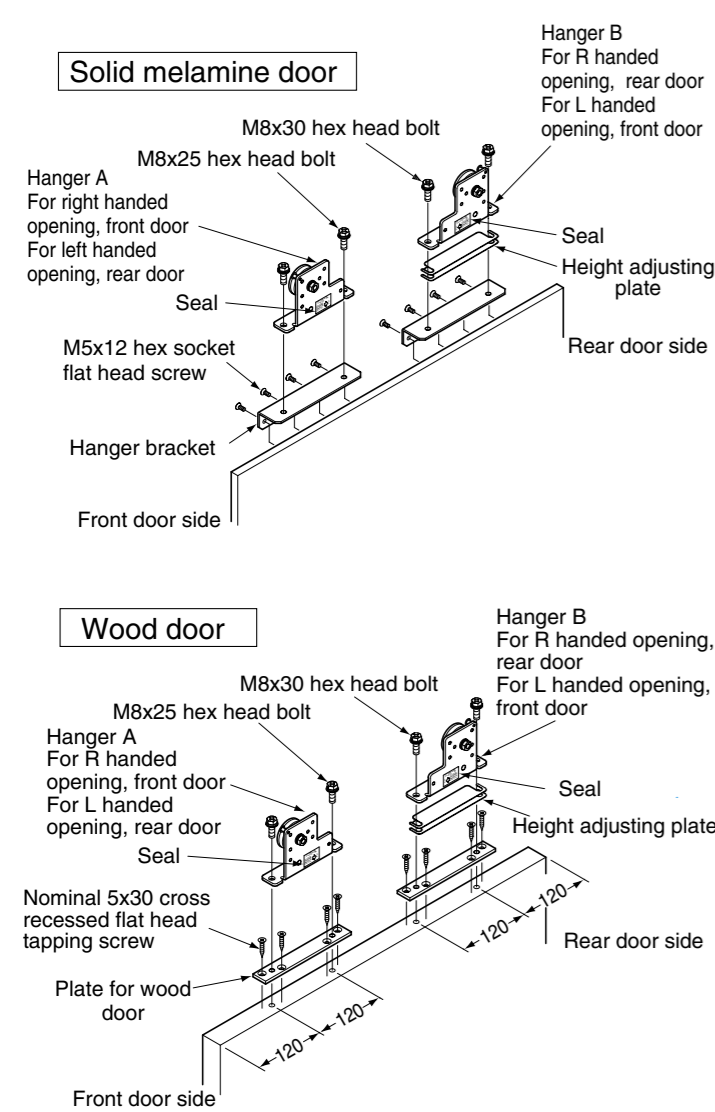
## 2 Installation of Hangers

### 1 Preparation of Holes on the Door



- Prepare pilot holes ( $\phi 4.7$ , depth 10 mm) on the upper parts of side of the door at the positions shown in the illustration (tapping is not necessary).
- Prepare  $\phi 9$  holes on the upper surface of the door.

### 2 Installation of Hangers



- Install the hanger bracket as shown in the illustration.
  - \* When mounting on the solid melamine panel, directly fix it with M5x16 cross recessed pan head screws into the pilot holes ( $\phi 4.7$ , 10 mm depth). Tapping is not necessary.
- According to how the seal on the hanger indicates, mount the hangers A/B in the direction as the illustration shows with both right handed and left handed opening doors.
- The number of height adjusting plates varies according to the door width. See the following table.

Required number of height adjusting plates (reference)

Door Width (mm)	Plates
700-800 or less	6
800-900 or less	7
900-1000 or less	8
1000-1100 or less	9
1100-1200 or less	10

- Mount the wood door plate based on the location of M8 screws with using provided screws (nominal 5x30 cross recessed flat head tapping screws) as shown in the illustration.
- According to how the seal on the hanger indicates, mount the hangers A/B in the direction as the illustration shows with both right handed and left handed opening doors.
- The number of height adjusting plates varies according to the door width. See above table.

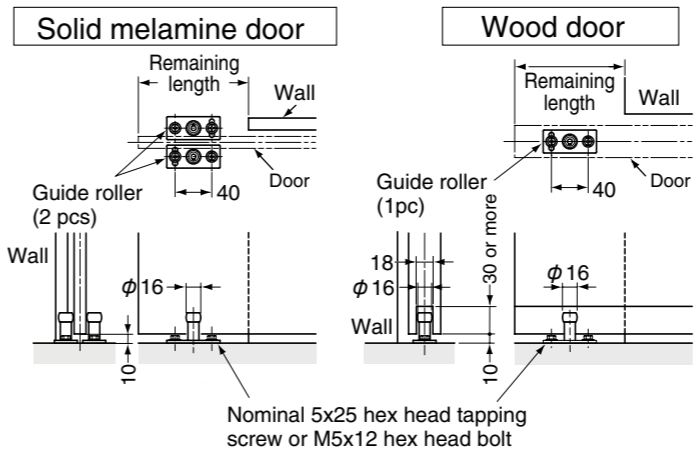
**Caution**

Install the hangers on the center line of the door upper surface.

○ Good example

✗ Bad example

## 3 Installation of Guide Roller

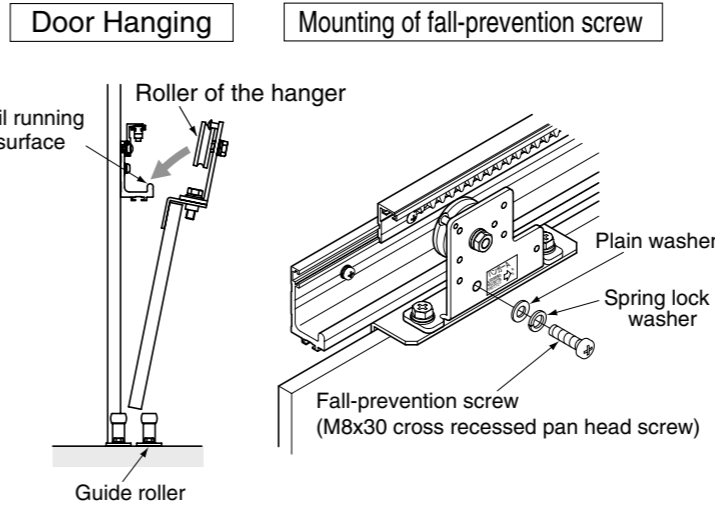


- Install on the part of remaining length of the door.
- Install the door in the manner it stands upright on the floor.
- For the concrete or mortar floor, use provided anchor plugs. (Diameter  $\phi 6$ )

**Caution**

Be sure to use guide rollers.

## 4 Door Hanging



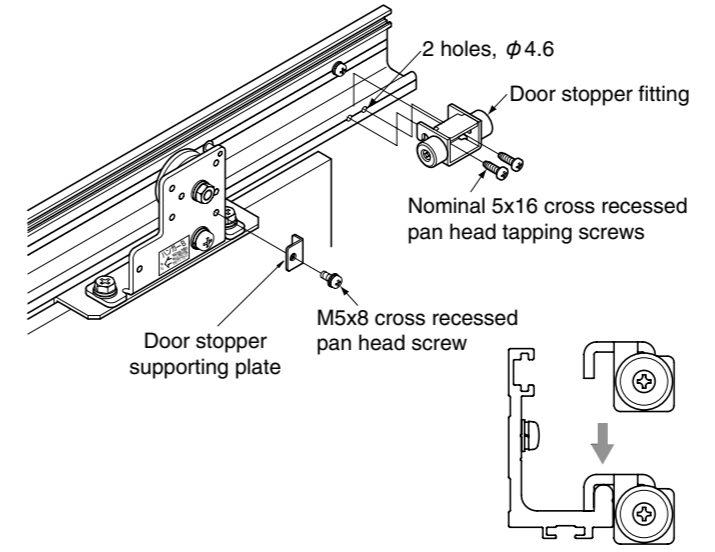
- Before hanging the door, wipe off the dirt attached to the running surface of the rail.
- Adjusting the lower part of the door with guide rollers, hang the rollers on the running surface of the rail.
- Make sure that the door can smoothly open and close.
- Adjust the space between the door and the door frame by increasing or reducing height adjusting plates.

**Caution**

- When hanging the door, be careful not to damage the gear rack or running surface of the rail.
- Ensure that the damper is mounted after the completion of hanging of the door. Otherwise, the damper may be damaged hitting against the rail, etc. at the time of hanging.

- Tighten the fall-prevention screws (M8x30 cross recessed pan head screws) into the hangers A and B.
- Caution**
- Securely tighten the screws to prevent the door from falling off.

## 5 Installation of Door Stopper



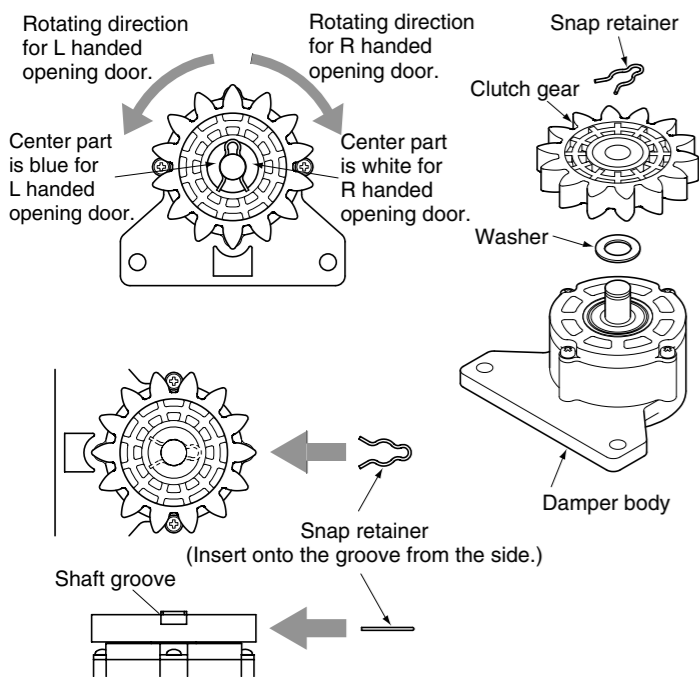
- Mount the door stopper supporting plates with provided M5x8 pan head screws on the hangers, both front door side and rear door side.
- Insert the door stopper fitting on the running surface of the rail. Adjust the hole of the stopper to the  $\phi 4.6$  hole, which was prepared in advance, and fix it with using provided screws (nominal 5x16 cross recessed pan head tapping screws).
- As for the mounting position on the rail of the stopper, refer to 1-1 Cutting of rail, additional processing of mounting holes.

**Caution**

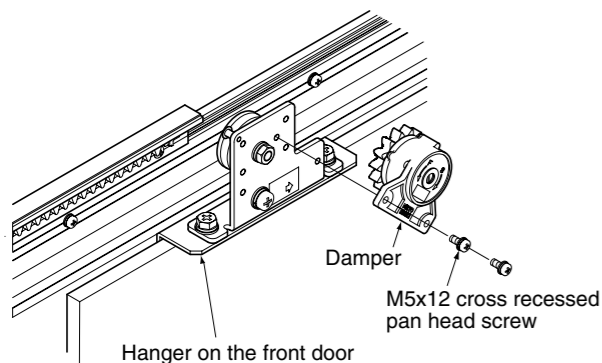
Be sure to firmly tighten the fitting screws to prevent the door stopper from falling.

## 6 Installation of the Damper

### 1 Installation and Changing of Clutch Gear

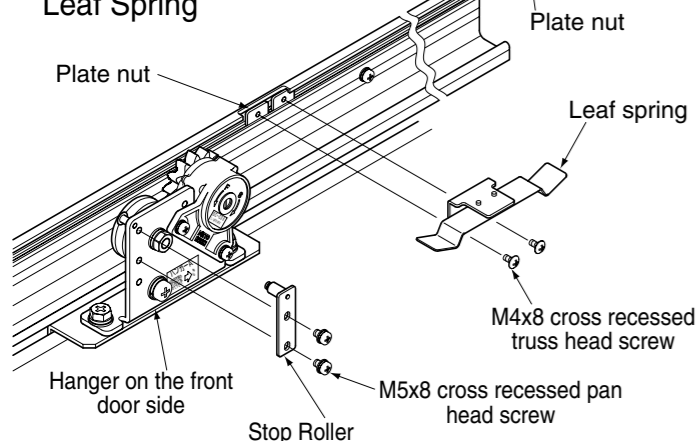


### 2 Installation of the Damper



## 7 Installation of Full Open Stop Device

### 1 Installation of Stop Roller and Leaf Spring



This damper can be used for both right handed and left handed opening type depending on the direction of installation. Install and change the clutch gear according to the following procedure.

#### (1) Installation of clutch gear

Set the washer to the shaft of damper body. Then insert the clutch gear on the shaft.

##### ● With the right handed opening

The door opens to the right, when seen from the location on which the gear is mounted.

Insert the clutch gear, face up the white center (R stamped side), rotating into the shaft in the arrow direction of R handed opening.

##### ● With the left handed opening

The door opens to the left, when seen from the location on which the gear is mounted.

Insert the clutch gear, face up the blue center (L stamped side), rotating into the shaft in the arrow direction of L handed opening.

##### ● On the groove on top of the shaft, set the snap retainer from the side.

#### (2) Change of Clutch Gear

- Detach the clutch gear according to the reverse procedure of installation. (Detach it by rotating in the same direction as the time of installation.)
- Insert the clutch gear according to the procedure.

#### ⚠ Caution

Be sure to insert and detach the clutch gear with rotating it in the specified direction. Rotating by too much force or in reverse direction may damage the clutch gear.

- Mount the damper to the hanger on the front door side with the provided M5x12 cross recessed pan head screws.
- Mount the damper with opening the door 600 mm or more (avoiding the position where the damper touches the gear rack set).

#### ⚠ Caution

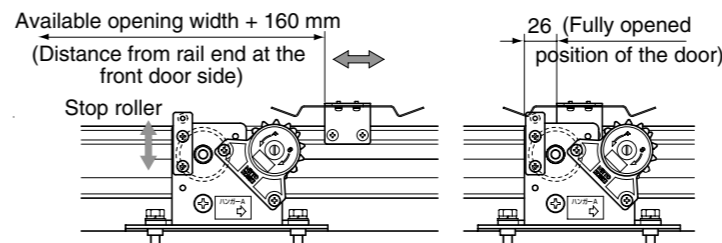
- Make sure the damper is for right handed use or left handed use. Be careful not to mount it in the reverse direction. If you do, the control device doesn't work.
- Ensure that the damper is mounted after the completion of hanging of the door. Be careful not to damage it hitting against the rail.

#### ⚠ Caution

Be sure to use the provided screws to prevent the contact with other parts.

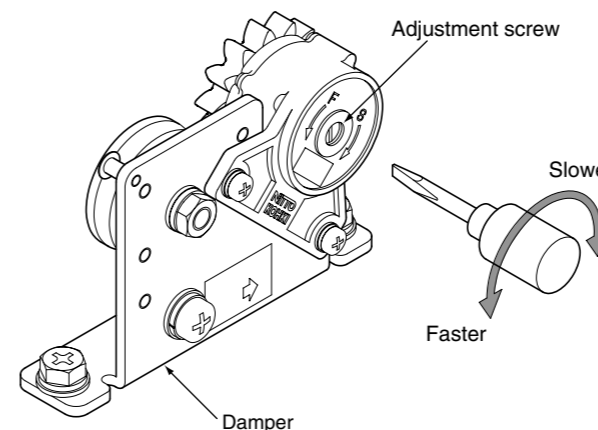
## 7 Installation of Full Open Stop Device

### 2 Adjustment of Stopping Position and Stopping Force



- Adjust the position of the leaf spring so that the door stops at the fully opened position. Determine the position by marking on the rail according to the measurement in the illustration.
- Adjust the stopping force by moving the position of the stop roller up and down.
  - To increase the stopping force → raise the stop roller.
  - To reduce the stopping force → lower the stop roller.

## 8 Adjustment of Closing Speed

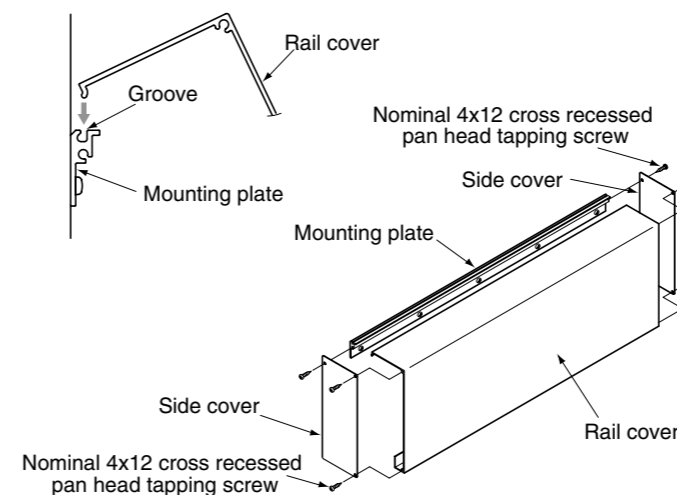


- Adjust the closing speed by turning the adjustment screw on the damper using a screwdriver. (Factory setting speed: the fastest condition)
- Adjust the control zone by sliding the position of the gear rack set to determine the closing speed.
  - To make the closing speed faster → shorten the control zone (sliding to the front door side).
  - To make the closing speed slower → lengthen the control zone (sliding to the rear door side).

#### ⚠ Caution

- Lightly turn the adjustment screw. When it is turned until the end do not turn any more.
- The closing speed more or less varies depending on the change of temperature in the vicinity.
- When the temperature is high, the door closes fast; when it is low, the door closes slowly.

## 9 Installation of Rail cover



- Hook the edge of rail cover onto the groove of mounting plate.
- Mount the side covers to fix the fascia with using the provided nominal 4x12 cross recessed pan head screws.

#### ⚠ Caution

- Side covers must be properly installed using the screws provided.
- Failure to install the covers as instructed, may result in the door running out of rail and falling, causing serious damage and injury.

The installation has been completed.