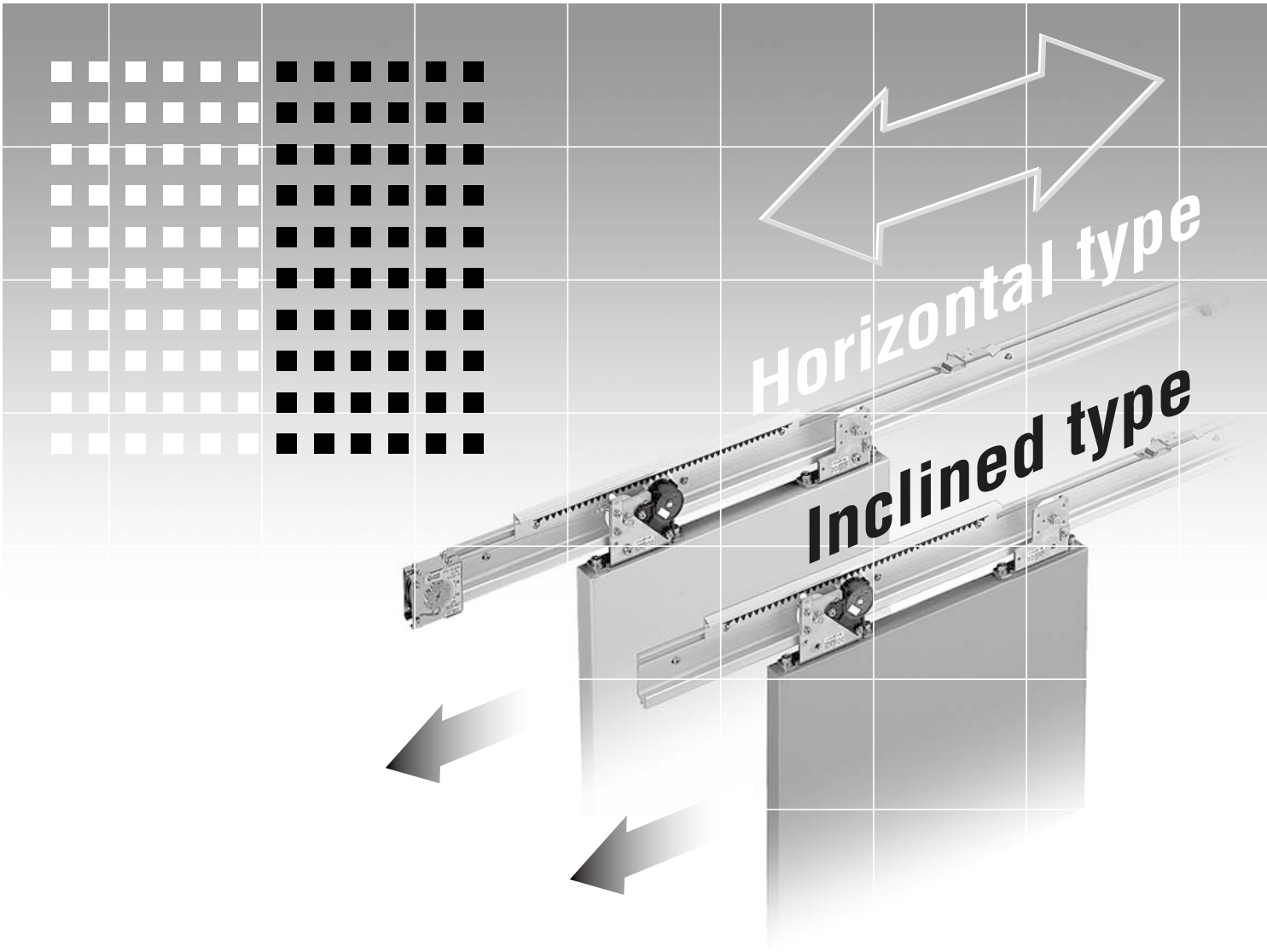
Sliding Closer
Installation manual



Horizontal type			Inclined type			Bath type	150kg type		250kg type
NSC-C48	NSC-CW23	NSC-CW48	DSC-C03 DSC-C08	DSC-CW03	DSC-CW08	NSC-CB48	DSC-C015	NSC-C1215	NSC-C2525

ISO 14001
JQA-EM4057
NITTO KOHKI CO.,LTD.
JAB CM021
QC99J1026
EC13J0016
051
ISO9001 / ISO14001
SHIRAKAWA NITTO KOHKI CO., LTD.

Parts List

		Model									
		Horizontal type			Inclined type			Bath type	150kg type		250kg type
		NSC-C48	NSC-CW23	NSC-CW48	DSC-C03 DSC-C08	DSC-CW03	DSC-CW08	NSC-CB48	DSC-C015	NSC-C1215	NSC-C2525
Control device		1	1	1	1	1	1	1	1	1	1
Hanger (Front and Rear)		1set	1set	1set	1set	1set	1set	1set	1set	1set	1set
Pull spring (with furniture)		1set	* 1set	1set	——	——	——	1set	——	1set	1set
Control rack (Noise suppression rubber, Rackretainer)		1set	1set	1set	1set	1set	1set	1set	1set	1set	——
Height adjusting plate	t = 1.0	1set	1set	1set	1set	1set	1set	1set	1set	1set	1set
	t = 0.5	——	——	——	1set	1set	1set	——	1set	——	——
Rail for 30~150kg type (2.2m or 3.1m)		1set	1set	1set	1set	1set	1set	1set	1set	1set	——
Rail for 250kg type (3.1m or 4.9m)		——	——	——	——	——	——	——	——	——	1set
Door stopper		1set	1set	1set	1set	1set	1set	1set	1set	1set	1set
Stop device		1set	1set	1set	1set	1set	1set	1set	1set	1set	1set
Door retaining fitting (For hanger A and hanger B)		1set	1set	1set	1set	1set	1set	1set	1set	1set	1set
Wooden door plate (Tapping screw 5×30)		——	——	1set	——	——	1set	——	——	——	——
Guide rail (Tappingscrew4×16)		——	1set	1set	——	1set	1set	——	——	——	——
Guide roller (Ø16,25,30,35)		——	1 (Ø16)	1 (Ø16)	——	1 (Ø16)	1 (Ø16)	——	——	——	——
Page		P9~P10	P5~P6	P5~P6	P7~P8	P3~P4	P3~P4	P15~P16	P11~P12	P13~P14	P17~P18

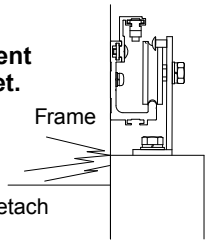
*Pull spring : PS-02

Sliding Closer

Q&A on Troubleshooting

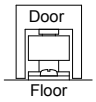
Q: The door will not close fully.

A: The door, hanger, or other component contact the top cover or door pocket.



Action: Check the contact, then either reposition the hanger and/or guide roller in a different position or detach it and reinstall it in another position.

A: The guide roller contacts the top surface of the roller groove at the bottom of the door.

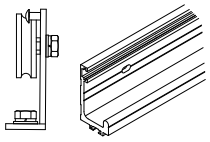


Action: Reinstall the door at the top. Slide the rail and/or other component.

A: The door is not installed vertically.

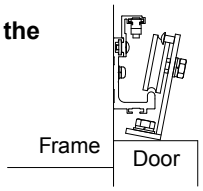
Action: Reinstall the hanger or guide roller in another position.

A: The door rollers of the hanger and the rail runway are scratched and dirty.



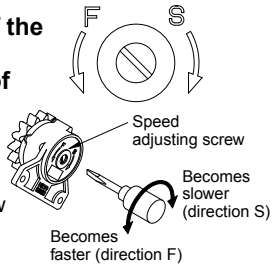
Action: Clean or replace the door rollers of the hanger and the rail.

A: The door rollers (front and back) of the hanger are not installed in parallel with the rail.



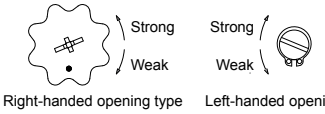
Action: Reinstall them in different positions to make them parallel.

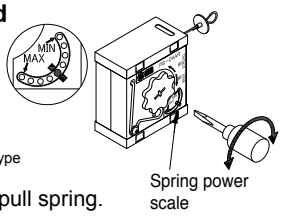
A: The speed adjusting screw of the control device is overturned in the direction of slow (direction S indicated). (An excessive controlling force is applied.)



Action: Turn the speed adjusting screw counterclockwise (direction F indicated) to adjust the speed.

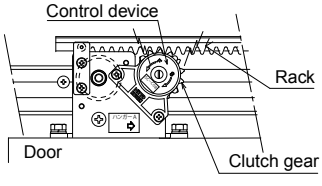
A: The pull spring is unadjusted (a horizontal type).





Action: Adjust the lead-in force of the pull spring.

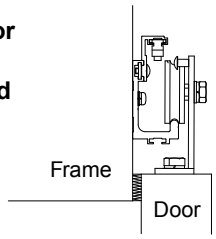
A: The clutch gear of the control device is too strongly engaged with the control rack of the rail.



Action: Reinstall the hanger or guide roller at different positions.

Q: The door will not close fully or will not close stably.

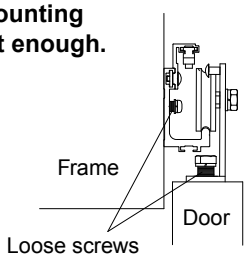
A: The airtight rubber, mohair, or other material between the door and frame gets into contact, resulting in resistance imposed to the closing of the door.



Action: Alleviate the contact.
Example: Cut the rubber or take another appropriate action.

Q: The door rattles.

A: Check that the screws for mounting the components remain tight enough.



Action: Further tighten or retighten the mounting screws.

Precautions for preventing accidents

1. Do not use the product for unspecified door dimensions or door weight.
2. If the control device of the product becomes ineffective, the door will close vigorously, possibly catching one of your fingers or getting into contact or turning over. Should an oil leak occur, component damage or incidents will result in ineffective control, despite speed adjustment, replace the product promptly.
3. Do not disassemble or remodel the product. Should you do so, we will not guarantee the subsequent performance of the product.
4. Securely tighten the screws that mount the product. Failure to observe this precaution may cause product damage or accident.
5. Be sure to install the door-retaining screws. Failure to observe this instruction may derail or turn the door over.
6. Be sure to install the door stopper on the door back end.
7. Do not drop or strike any of the components. Failure to follow this precaution may cause a breakdown.
8. The closer incorporated in the product causes the door to close on its own. Therefore do not close the door fast with force. Any such practice may cause the door to close vigorously, resulting in an unexpected accident.
9. Take care not to let a child play by hanging on the door.

Precautions to be taken to ensure a long service life

1. Wipe off dust and dirt from the rail and door rollers.
2. Conduct periodic checks for loose screws and other anomalies.

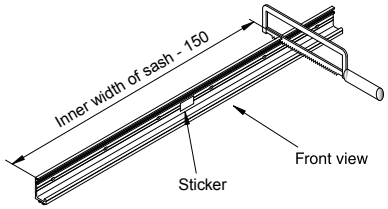
Installation Procedure for DSC-CW

(The diagrams shown represent a right-handed opening type. The left-handed opening type is symmetrical with the type represented in these diagrams.)

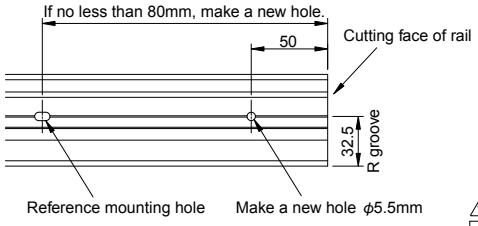
1 Installing a rail

1) Cutting the rail, making a new mounting hole

- Cut the rail to the inner width of the sash less 150mm.
- Cut off the correct end according to the instructions given on the sticker as follows:
  - For the right-handed opening type, cut off the right end as viewed from the front.
  - For the left-handed opening type, cut of the left end as viewed from the front.



- If the distance between the cutting face of the rail and the reference mounting hole is no less than 80mm, make a new hole ϕ5.5mm for installing the rail at the position 50mm from the end.

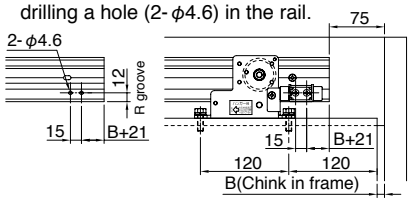


⚠Caution

- When making any change in the rail, take care not to scratch the runway.

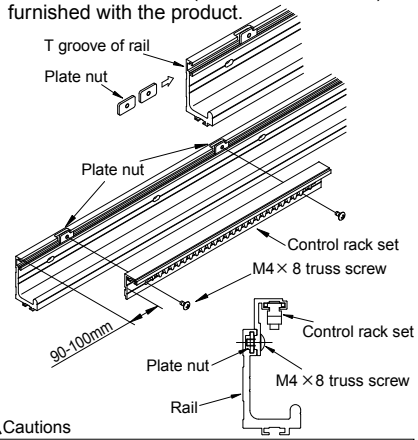
2) Drilling a hole for door stopper

- As shown in the diagram, drilling a hole (2-ϕ4.6) in the rail.



3) Installing a control rack set

- Insert 2 plate nuts in the T groove in the rail.
- Match the plate nuts to the mounting holes in the control rack set, then install the control rack set with screws (M4 ×8 truss screws) furnished with the product.



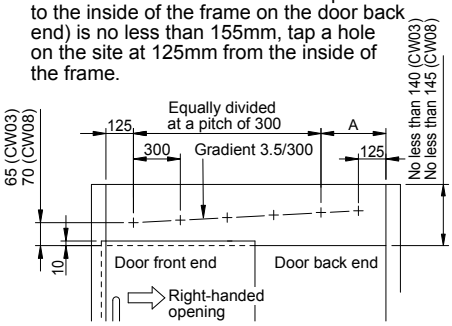
⚠Cautions

- Be sure to use specified screws furnished with the product. Using any unspecified screw may cause it to interfere with the clutch gear of the control device.
- Tighten the screws securely. Otherwise an abnormal noise or imperfect control may result.

4) Setting rail mounting holes

- Tap a hole (M5, pitch 0.8) at the position specified below, as the reference hole.
  - Dimension from the inside of the sash on the door front end = 125mm
  - Dimension from the bottom of the top frame = 65mm (CW03)
    = 70mm (CW08)

  (When the cover between the top frame and the door is 10mm)
- Tap subsequent holes (M5, pitch 0.8) with a level difference of 3.5mm at pitch intervals of 300.
- If the dimension A in the diagram below (the dimension from the final hole at a pitch of 300 to the inside of the frame on the door back end) is no less than 155mm, tap a hole on the site at 125mm from the inside of the frame.



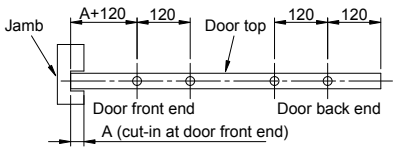
# of holes from reference hole (except for reference hole)	Horizontal distance (mm) from reference hole	Level difference (mm) from reference hole
1	300	3.5
2	600	7.0
3	900	10.5
4	1200	14.0
5	1500	17.5
6	1800	21.0
7	2100	24.5
8	2400	28.0
9	2700	31.5
10	3000	35.0

2 Installing the hanger

1) Making holes in the top of the door

- Make holes in the top of the door at the positions shown in the diagram below, as specified below.

Model	Hole	Depth	Remark
CW03	ϕ5.5-6	35mm and over	Coach screw
CW08	ϕ9	20mm and over	Wooden door plate



⚠Caution

- For the bottom diameter of the coach screws, be sure to follow the specified dimension. If the bottom hole diameter is too large, the door may come off.

2) Installing the wooden door plate, the height adjusting plate, and the hanger

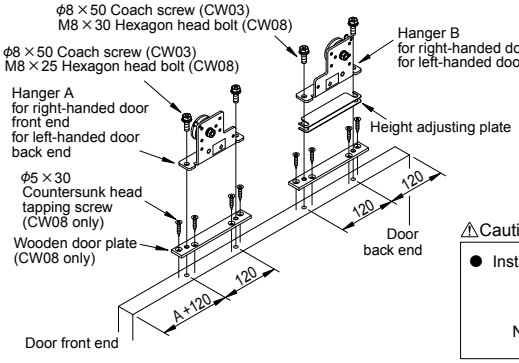
- As shown in the diagram, install the wooden door plate with screws (ϕ5mm × 30 pan head tapping screws) furnished with the product, with the M8 screw as the reference point. (The wooden door plate is installed on the CW08 only.)
- As shown in the diagram, install the hanger A, hanger B, and height adjusting plate.
- Install the hanger while orienting it as shown in the table below, according to the instructions given on the sticker attached to the hanger.

	Door front end	Door back end
Right-handed opening type	Hanger A side	Hanger B side
Left-handed opening type	Hanger B side	Hanger A side

- The number of height adjusting plates varies with the door width. See the table below and install the appropriate number of them.

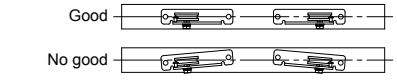
Number of height adjusting plates to be used (reference)

Door width (mm)	No. of plates used
700-800 or less	6 pcs
800-900 or less	7 pcs
900-1000 or less	8 pcs
1000-1100 or less	9 pcs
1100-1200 or less	10 pcs
1200-1300 or less	12 pcs
1300-1400 or less	13 pcs
1400-1500 or less	14 pcs
1500-1600 or less	15 pcs



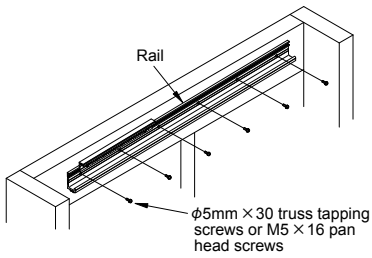
⚠Caution

- Install the hanger on the centerline of the door.



5) Installing the rail

- Install the rail with screws (ϕ5mm × 30 truss tapping screws or M5 × 16 pan head screws) furnished with the product.

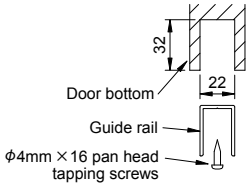


⚠Caution

- After installing the rail, protect the rail runway from scratches and paint.

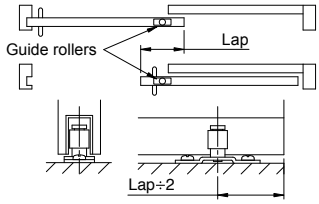
3 Installing the guide rail

- Cut off the guide rail according to the door width.
- Carve the door bottom to the dimension shown in the dimension specified below, then install the guide rail with screws (ϕ4mm × 16 pan head tapping screws) furnished with the product.



4 Installing the guide rollers

- Install them in the middle of the door lap. (The product does not come with such mounting screws.)
- Install them so that the door become vertical with the floor area.



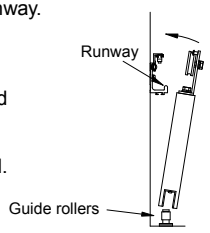
⚠Caution

- Be sure to use the guide rollers.

5 Mounting the door

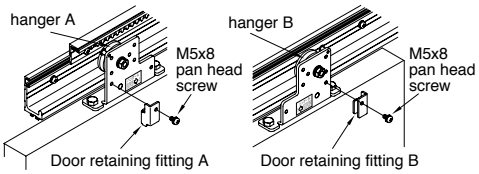
1) Mounting the door

- Before mounting the door, wipe off the dirt from the rail runway.
- Match the door bottom to the guide rollers, then suspend the door rollers and mount them onto the rail runway.
- Check that the door operates smoothly.
- Adjust the clearance between the door and jamb by varying the number of height adjusting plates used.



2) Installing the door retaining fitting

- Install the door retaining fitting in the hanger A and B with screw (M5 x 8 panhead screw).

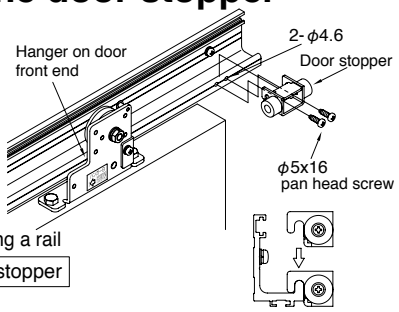


⚠Caution

- Tighten the screws securely to prevent the door from coming off.

6 Installing the door stopper

- Insert the door stopper in the rail runway.
- Slide the door stopper, adjust the door-opening position, then tighten the 2 fixing screws (ϕ5x16 pan head screw) follow the hole for door stopper.
- See the page 3, **1** installing a rail



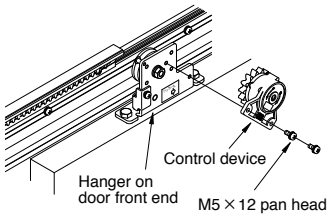
2) Drilling a hole for door stopper

⚠Caution

- Tighten the fixing screws securely, or door stopper May become out of place.
- In case of slam the door strongly, install the back check device.

7 Installing the control device

- In assembling and reengaging the clutch gears, follow the "Procedure for assembling and reengaging clutch gears."
- Install the control device on the hanger on the door front end with screws (M5 × 12 pan head screws) furnished with the product. Install it with the door open by at least 60cm (where it does not engage with the control rack set).

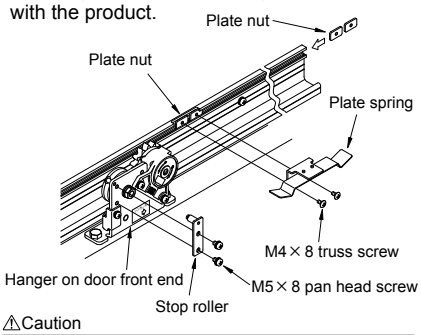


- **Check the orientation of the control device (right- or left-handed). Be sure to orient it correctly, or the control will not work.**
- **Be sure to install the control device after mounting the door. When suspending and mounting it, the door may strike and damage the rail or other component.**

8 Installing the stop device

1) Installing the stop roller and plate spring

- Install the stop roller on the hanger on the door front end with screws (M5× 8 pan head screws) furnished with the product.
- Insert the plate nuts in the T groove in the rail, then install the plate spring with screws (M4 ×8 truss screws) furnished with the product.

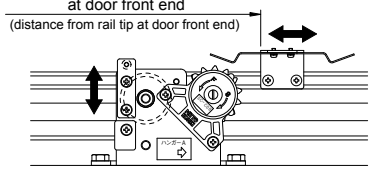


⚠Caution

- Be sure to use the specified screws furnished with the product. Using any unspecified screw may cause it to interfere with another component.
- Securely tighten the screws furnished with the product, to keep the stop roller and plate spring in place at all times.

2) Adjusting the stopping position and force

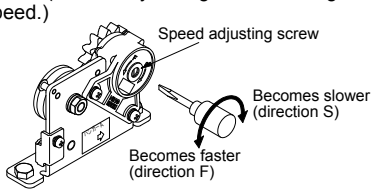
- Adjust the position of the plate spring to stop it at the position where the door is fully open.
- Move the stop roller up and down to adjust the stopping force.
  - Increase the stopping force. Raise the stop roller.
  - Reduce the stopping force. Lower the stop roller.



When the clutch gear is inserted or removed, be sure to turn it as following instruction.

9 Adjusting the closing speed

- Turn the speed adjusting screw of the control device with a screwdriver to adjust the closing speed. (It is factory-configured to the highest speed.)



- Slide the control rack set to adjust the controlling interval, thus adjusting the closing speed.
  - Shorten the controlling interval œto increase the closing speed.
  - Elongate the controlling interval œto decrease the closing speed.

⚠Caution

- Turn the speed adjusting screw lightly. Otherwise an imperfect control may result. After turning it all the way home, do not turn it with overstrain.
- A change in the ambient temperature varies the closing speed somewhat. As the temperature rises, the speed increases. As the temperature declines, the speed decreases.

Procedure for assembling and reengaging the clutch gear

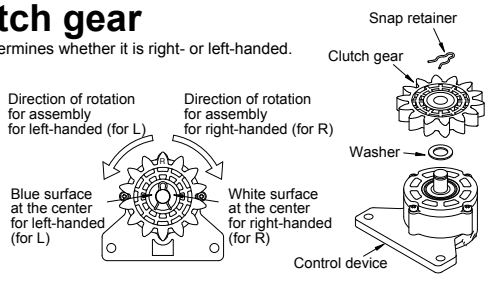
The control device used for this product is for both orientations (right- and left-handed). The orientation of the clutch gear determines whether it is right- or left-handed. When assembling and reengaging the clutch gear, follow the procedure described below.

1. Procedure for assembling the clutch gear

- Insert the washer into the shaft of the control device.
- Insert the clutch gear into the shaft.
  If right-handed
  Make the white surface (the R-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the right-handed opening type illustrated in the right-hand diagram.
  If left-handed
  Make the blue surface (the L-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the left-handed opening type illustrated in the right-hand diagram.
- Install the snap retainer in the groove at the tip of the shaft.

2. Procedure for reengaging the clutch gear

- Remove the clutch gear in reverse order of assembly. (Remove the clutch gear while turning it in the same direction as in assembly.)
- Assemble the clutch gear according to the assembly procedure.
- The product comes with one spare snap retainer.



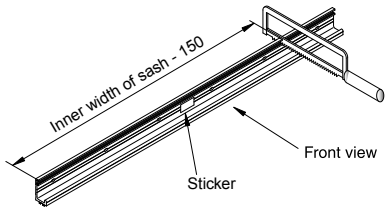
Installation Procedure for NSC-CW

(The diagrams shown represent a right-handed opening type. The left-handed opening type is symmetrical with the type represented in these diagrams.)

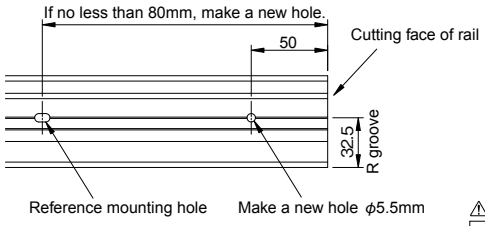
1 Installing a rail

1) Cutting the rail, making a new mounting hole

- Cut the rail to the inner width of the sash less 150mm.
- Cut off the correct end according to the instructions given on the sticker as follows:
  - For the right-handed opening type, cut off the right end as viewed from the front.
  - For the left-handed opening type, cut of the left end as viewed from the front.



- If the distance between the cutting face of the rail and the reference mounting hole is no less than 80mm, make a new hole ϕ5.5mm for installing the rail at the position 50mm from the end.



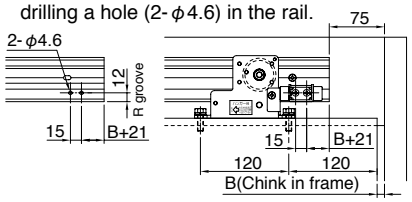
⚠Caution

- When making any change in the rail, take care not to scratch the runway.

Runway

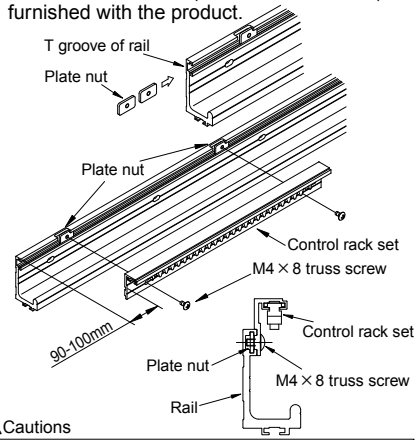
2) Drilling a hole for door stopper

- As shown in the diagram, drilling a hole (2-ϕ4.6) in the rail.



3) Installing a control rack set

- Insert 2 plate nuts in the T groove in the rail.
- Match the plate nuts to the mounting holes in the control rack set, then install the control rack set with screws (M4× 8 truss screws) furnished with the product.



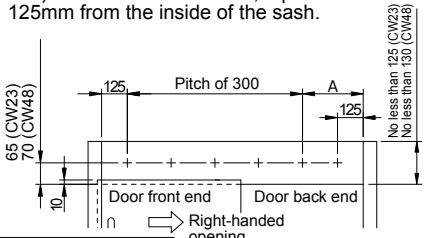
⚠Cautions

- Be sure to use specified screws furnished with the product. Using any unspecified screw may cause it to interfere with the clutch gear of the control device.
- Tighten the screws securely. Otherwise an abnormal noise or imperfect control may result.

4) Setting rail mounting holes

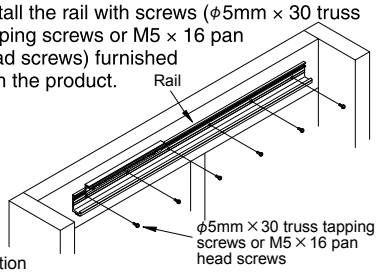
- Tap holes (M5, pitch 0.8) horizontally at intervals of 300 with the hole specified below as the reference point.
  - Dimension from the inside of the sash on the door front end = 125mm
  - Dimension from the bottom of the top frame of the sash = 65mm (CW23)
    = 70mm (CW48)

  (When the cover between the top frame and door is 10mm)
- If the dimension A in the diagram below (the dimension from the final hole at a pitch of 300 to the inside of the sash on the door back end) is no less than 155mm, tap a hole at 125mm from the inside of the sash.



5) Installing the rail

- Install the rail with screws (ϕ5mm × 30 truss tapping screws or M5 × 16 pan head screws) furnished with the product.



⚠Caution

- Install the rail horizontally.
- When installing the rail, take care not to scratch the runway.

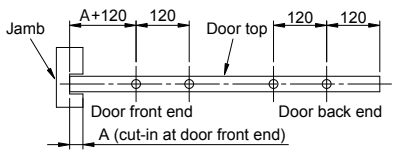
Runway

2 Installing the hanger

1) Making holes in the top of the door

- Make holes in the top of the door at the positions shown in the diagram below, as specified below.

Model	Hole	Depth	Remark
CW23	ϕ5.5-6	35mm and over	Coach screw
CW48	ϕ9	20mm and over	Wooden door plate



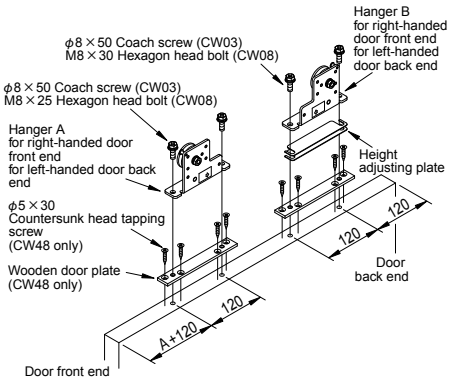
⚠Caution

- For the bottom diameter of the coach screws, be sure to follow the specified dimension. If the bottom hole diameter is too large, the door may come off.

2) Installing the wooden door plate, and the hanger

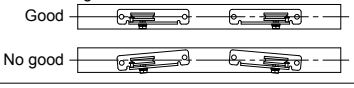
- As shown in the diagram, install the wooden door plate with screws (ϕ5mm × 30 pan head tapping screws) furnished with the product, with the M8 screw as the reference point. (The wooden door plate is installed on the CW48 only.)
- As shown in the diagram, install the hanger A, hanger B, and height adjusting plate.
- Install the hanger while orienting it as shown in the table below, according to the instructions given on the sticker attached to the hanger.

	Door front end	Door back end
Right-handed opening type	Hanger A side	Hanger B side
Left-handed opening type	Hanger B side	Hanger A side



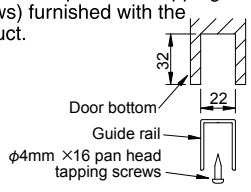
⚠Caution

- Install the hanger on the centerline of the door.



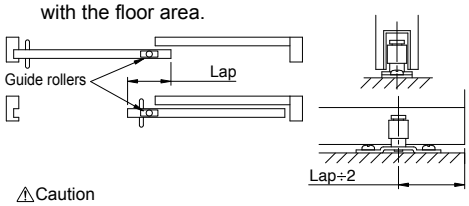
3 Installing the guide rail

- Cut off the guide rail according to the door width.
- Carve the door bottom to the dimension shown in the dimension specified below, then install the guide rail with screws (ϕ4mm × 16 pan head tapping screws) furnished with the product.



4 Installing the guide rollers

- Install them in the middle of the door lap. (The product does not come with such mounting screws.)
- Install them so that the door become vertical with the floor area.



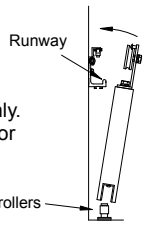
⚠Caution

- Be sure to use the guide rollers.

5 Mounting the door

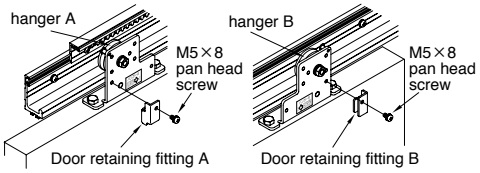
1) Mounting the door

- Before mounting the door, wipe off the dirt from the rail runway.
- Match the door bottom to the guide rollers, then suspend the door rollers and mount them onto the rail runway.
- Check that the door operates smoothly.
- Adjust the clearance between the door and jamb by changing the number of height adjusting plates (optional).



2) Installing the door retaining fitting

- Install the door retaining fitting in the hanger A and B with screw (M5 × 8 panhead screw).

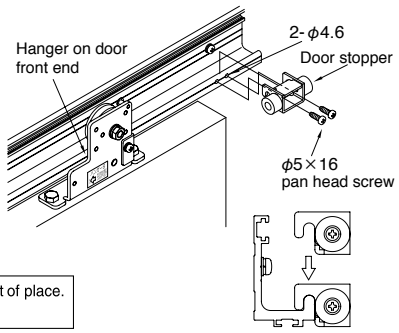


⚠Caution

- Tighten the screws securely to prevent the door from coming off.

6 Installing the door stopper

- Insert the door stopper in the rail runway.
- Slide the door stopper, adjust the door-opening position, then tighten the 2 fixing screws (ϕ5 x 16 pan head screw) follow the hole for door stopper.
- See the page 5, 1 installing a rail 2) Drilling a hole for door stopper

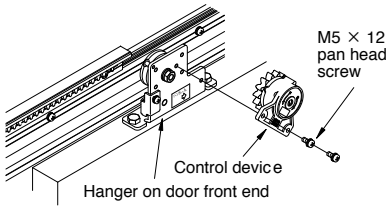


⚠Caution

- Tighten the fixing screws securely, or door stopper May become out of place.
- In case of slam the door strongly, install the back check device.

7 Installing the control device

- In assembling and reengaging the clutch gears, follow the "Procedure for assembling and reengaging clutch gears."
- Install the control device on the hanger on the door front end withscrews (M5 × 12 pan head screws) furnished with the product.Install it with the door open by at least 60cm (where it does not engage with the control rack set).

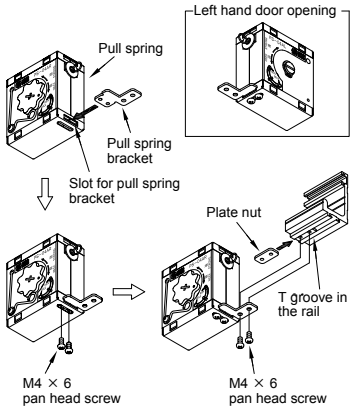


- **Check the orientation of the control device (right- or left-handed). Be sure to orient it correctly, or the control will not work.**
- **Be sure to install the control device after mounting the door. When suspending and mounting it, the door may strike and damage the rail or other component.**

8 Installing a pull spring

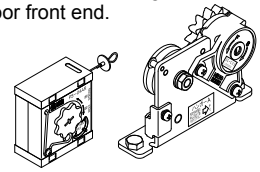
1) Installing a pull spring

- Insert the pull spring bracket in to the fixing slot of the pull spring, then install. It with screws (M4 × 6 Pan head screw).
- Insert the plate nut in the T groove in the rail then install the pull spring with screws (M4 × 6 Pan head screw).



2) Setting the wire

- Draw the wire of the pull spring, then hook it on the hanger on the door front end.



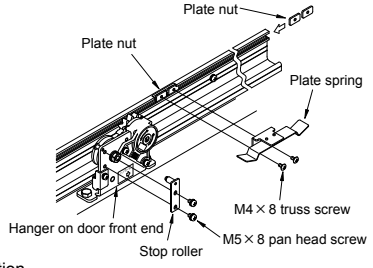
⚠Caution

- Do not draw the wire with the pull spring alone (before the installation). Any such practice might scratch the wire.

9 Installing the stop device

1) Installing the stop roller and plate spring

- Install the stop roller on the hanger on the door front end with screws (M5 × 8 pan head screws) furnished with the product.
- Insert the plate nuts in the T groove in the rail, then install the plate spring with screws (M4 × 8 truss screws) furnished with the product.

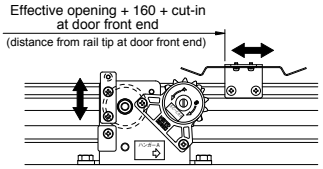


⚠Caution

- Be sure to use the specified screws furnished with the product. Using any unspecified screw may cause it to interfere with another component.
- Securely tighten the screws furnished with the product, to keep the stop roller and plate spring in place at all times.

2) Adjusting the stopping position and force

- Adjust the position of the plate spring to stop it at the position where the door is fully open.
- Move the stop roller up and down to adjust the stopping force.
  - Increase the stopping force. Raise the stop roller.
  - Reduce the stopping force. Lower the stop roller.

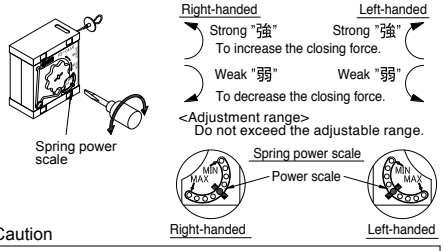


When the clutch gear is inserted or removed, be sure to turn it as following instruction.

10 Adjusting the closing force and closing speed

1) Adjusting the closing force

- If the closing force needs to be adjusted, turn the gear shaft with a screwdriver.
- The spring power scale attached in the main part. Whenever gear shaft every one turn, a power scale pin moves. The adjustment should follow the following procedure.
  <Adjustment direction>
  Be aware that direction of rotation is different for left-handed opening or right-handed opening.

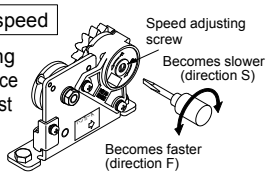


⚠ Caution

- Over exceed adjustable range will failure. Be sure to adjust the position of a power scale pin in the range of min to max of a label display.

2) Adjusting the closing speed

- Turn the speed adjusting ascrew of the control device with a screwdriver to adjust the closing speed. (It is factory-configured to the highest speed.)



- Slide the control rack set to adjust the controlling interval, thus adjusting the closing speed.
  - Shorten the controlling interval → to increase the closing speed.
  - Elongate the controlling interval → to decrease the closing speed.

⚠Caution

- Turn the speed adjusting screw lightly. Otherwise an imperfect control may result. After turning it all the way home, do not turn it with overstrain.
- A change in the ambient temperature varies the closing speed somewhat. As the temperature rises, the speed increases. As the temperature declines, the speed decreases.

Procedure for assembling and reengaging the clutch gear

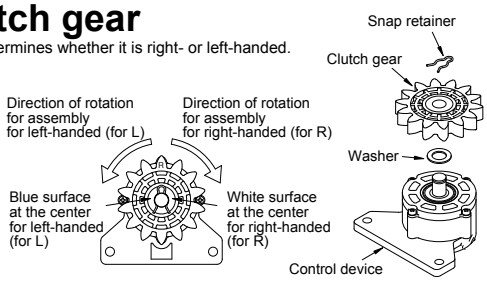
The control device used for this product is for both orientations (right- and left-handed). The orientation of the clutch gear determines whether it is right- or left-handed. When assembling and reengaging the clutch gear, follow the procedure described below.

1. Procedure for assembling the clutch gear

- Insert the washer into the shaft of the control device.
- Insert the clutch gear into the shaft.
  If right-handed
  Make the white surface (the R-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the right-handed opening type illustrated in the right-hand diagram.
  If left-handed
  Make the blue surface (the L-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the left-handed opening type illustrated in the right-hand diagram.
- Install the snap retainer in the groove at the tip of the shaft.

2. Procedure for reengaging the clutch gear

- Remove the clutch gear in reverse order of assembly. (Remove the clutch gear while turning it in the same direction as in assembly.)
- Assemble the clutch gear according to the assembly procedure.
- The product comes with one spare snap retainer.



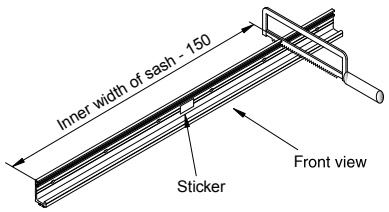
Installation Procedure for DSC-C

(The diagrams shown represent a right-handed opening type. The left-handed opening type is symmetrical with the type represented in these diagrams.)

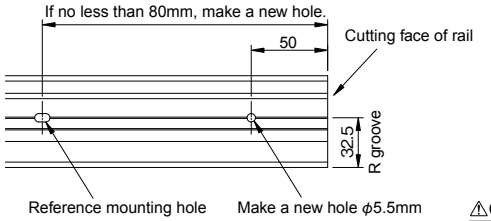
1 Installing a rail

1) Cutting the rail, making a new mounting hole

- Cut the rail to the inner width of the sash less 150mm.
- Cut off the correct end according to the instructions given on the sticker as follows:
  - For the right-handed opening type, cut off the right end as viewed from the front.
  - For the left-handed opening type, cut of the left end as viewed from the front.

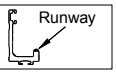


- If the distance between the cutting face of the rail and the reference mounting hole is no less than 80mm, make a new hole ϕ5.5mm for installing the rail at the position 50mm from the end.



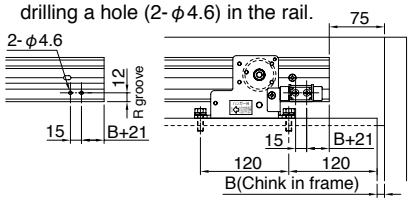
⚠Caution

- When making any change in the rail, take care not to scratch the runway.



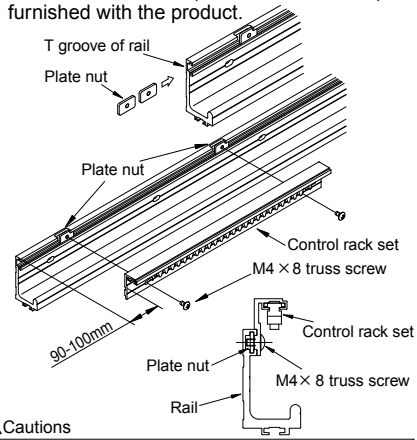
2) Drilling a hole for door stopper

- As shown in the diagram, drilling a hole (2-ϕ4.6) in the rail.



3) Installing a control rack set

- Insert 2 plate nuts in the T groove in the rail.
- Match the plate nuts to the mounting holes in the control rack set, then install the control rack set with screws (M4 × 8 truss screws) furnished with the product.



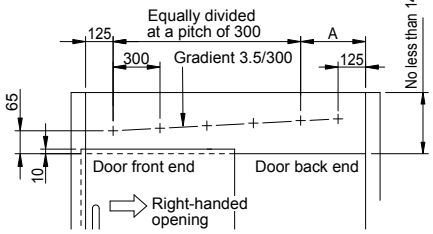
⚠Cautions

- Be sure to use specified screws furnished with the product. Using any unspecified screw may cause it to interfere with the clutch gear of the control device.
- Tighten the screws securely. Otherwise an abnormal noise or imperfect control may result.

4) Setting rail mounting holes

- Tap a hole (M5, pitch 0.8) at the position specified below, as the reference hole.
  - Dimension from the inside of the sash on the door front end = 125mm
  - Dimension from the bottom of the top frame of the sash = 65mm

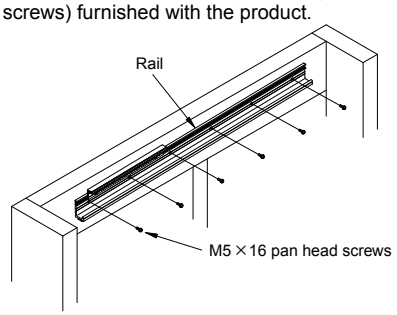
  (When the cover between the top frame of the sash and the door is 10mm)
- Tap subsequent holes (M5, pitch 0.8) with a level difference of 3.5mm at pitch intervals of 300.
- If the dimension A in the diagram below (the dimension from the final hole at a pitch of 300 to the inside of the frame on the door back end) is no less than 155mm, tap a hole on the site at 125mm from the inside of the frame.



# of holes from reference hole (except for reference hole)	Horizontal distance (mm) from reference hole	Level difference (mm) from reference hole
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
8	2400	28.0
9	2700	31.5
10	3000	35.0

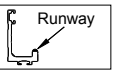
5) Installing the rail

- Install the rail with screws (M5 ×16 pan head screws) furnished with the product.



⚠Caution

- After installing the rail, protect the rail runway from scratches and paint.



2 Installing the hanger

1) Making holes in the top of the door

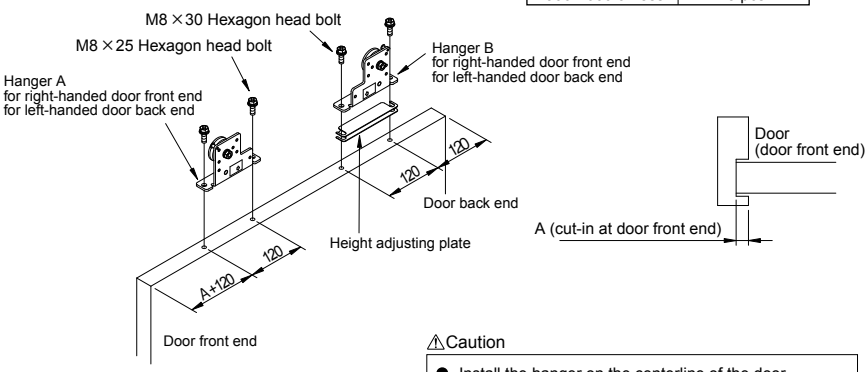
- As shown in the diagram, install the hanger A, hanger B, and height adjusting plate.
- Install the hanger while orienting it as shown in the table below, according to the instructions given on the sticker attached to the hanger.

	Door front end	Door back end
Right-handed opening type	Hanger A side	Hanger B side
Left-handed opening type	Hanger B side	Hanger A side

- The number of height adjusting plates varies with the door width. See the table below and install the appropriate number of them.

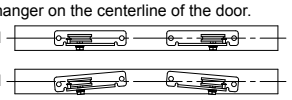
Number of height adjusting plates to be used (reference)

Door width (mm)	No. of plates used
700-800 or less	6 pcs
800-900 or less	7 pcs
900-1000 or less	8 pcs
1000-1100 or less	9 pcs
1100-1200 or less	10 pcs
1200-1300 or less	12 pcs
1300-1400 or less	13 pcs
1400-1500 or less	14 pcs
1500-1600 or less	15 pcs



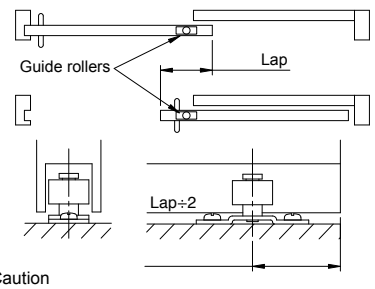
⚠Caution

- Install the hanger on the centerline of the door.



3 Installing the guide rolller (optional)

- Install them in the middle of the door lap. (The product does not come with such mounting screws.)
- Install them so that the door become vertical with the floor area.



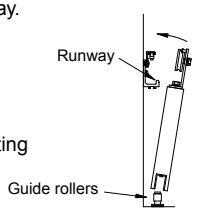
⚠Caution

- Be sure to use the guide rollers.

4 Mounting the door

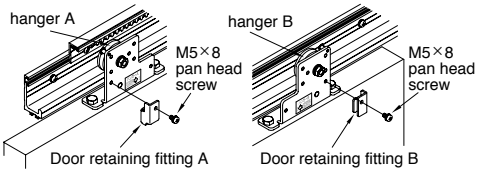
1) Mounting the door

- Before mounting the door, wipe off the dirt from the rail runway.
- Match the door bottom to the guide rollers, then suspend the door rollers and mount them onto the rail runway.
- Check that the door operates smoothly.
- Adjust the clearance between the door and jamb by varying the number of height adjusting plates used.



2) Installing the door retaining fitting

- Install the door retaining fitting in the hanger A and B with screw (M5 x 8 panhead screw).

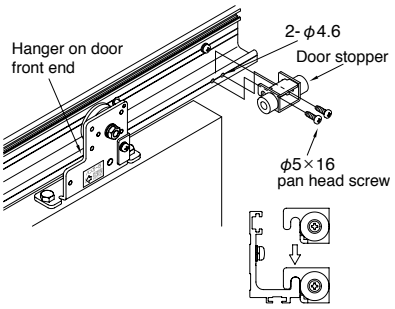


⚠Caution

- Tighten the screws securely to prevent the door from coming off.

5 Installing the door stopper

- Insert the door stopper in the rail runway.
- Slide the door stopper, adjust the door-opening position, then tighten the 2 fixing screws (ϕ5×16 pan head screw) follow the hole for door stopper.
- See the page 7, **1** installing a rail 2) Drilling a hole for door stopper

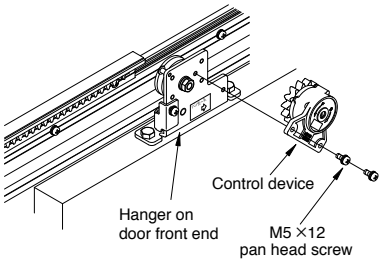


⚠Caution

- Tighten the fixing screws securely, or door stopper May become out of place.
- In case of slam the door strongly, install the back check device.

6 Installing the control device

- In assembling and reengaging the clutch gears, follow the "Procedure for assembling and reengaging clutch gears."
- Install the control device on the hanger on the door front end with screws (M5 ×12 pan head screws) furnished with the product. Install it with the door open by at least 60cm (where it does not engage with the control rack set).

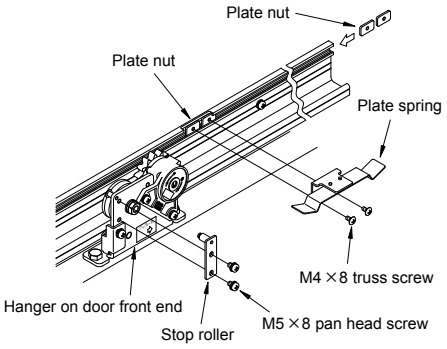


- Check the orientation of the control device (right- or left-handed). Be sure to orient it correctly, or the control will not work.
- Be sure to install the control device after mounting the door. When suspending and mounting it, the door may strike and damage the rail or other component.

7 Installing the stop device

1) Installing the stop roller and plate spring

- Install the stop roller on the hanger on the door front end with screws (M5 ×8 pan head screws) furnished with the product.
- Insert the plate nuts in the T groove in the rail, then install the plate spring with screws (M4 ×8 truss screws) furnished with the product.

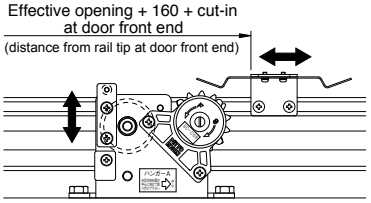


⚠Caution

- Be sure to use the specified screws furnished with the product. Using any unspecified screw may cause it to interfere with another component.
- Securely tighten the screws furnished with the product, to keep the stop roller and plate spring in place at all times.

2) Adjusting the stopping position and force

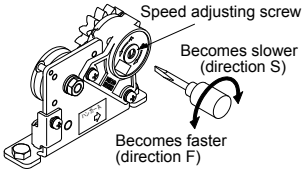
- Adjust the position of the plate spring to stop it at the position where the door is fully open.
- Move the stop roller up and down to adjust the stopping force.
  - Increase the stopping force. Raise the stop roller.
  - Reduce the stopping force. Lower the stop roller.



When the clutch gear is inserted or removed, be sure to turn it as following instruction.

8 Adjusting the closing speed

- Turn the speed adjusting screw of the control device with a screwdriver to adjust the closing speed. (It is factory-configured to the highest speed.)



- Slide the control rack set to adjust the controlling interval, thus adjusting the closing speed.
  - Shorten the controlling interval → to increase the closing speed.
  - Elongate the controlling interval → to decrease the closing speed.

⚠Caution

- Turn the speed adjusting screw lightly. Otherwise an imperfect control may result. After turning it all the way home, do not turn it with overstrain.
- A change in the ambient temperature varies the closing speed somewhat. As the temperature rises, the speed increases. As the temperature declines, the speed decreases.

Procedure for assembling and reengaging the clutch gear

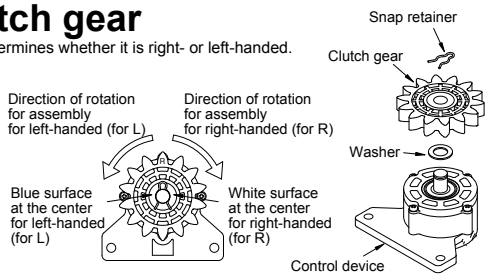
The control device used for this product is for both orientations (right- and left-handed). The orientation of the clutch gear determines whether it is right- or left-handed. When assembling and reengaging the clutch gear, follow the procedure described below.

1. Procedure for assembling the clutch gear

- Insert the washer into the shaft of the control device.
- Insert the clutch gear into the shaft.
  If right-handed
  Make the white surface (the R-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the right-handed opening type illustrated in the right-hand diagram.
  If left-handed
  Make the blue surface (the L-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the left-handed opening type illustrated in the right-hand diagram.
- Install the snap retainer in the groove at the tip of the shaft.

2. Procedure for reengaging the clutch gear

- Remove the clutch gear in reverse order of assembly. (Remove the clutch gear while turning it in the same direction as in assembly.)
- Assemble the clutch gear according to the assembly procedure.
- The product comes with one spare snap retainer.



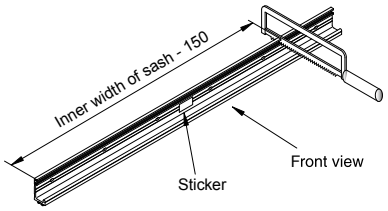
Installation Procedure for NSC-C

(The diagrams shown represent a right-handed opening type The left-handed opening type is symmetrical with the type represented in these diagrams.)

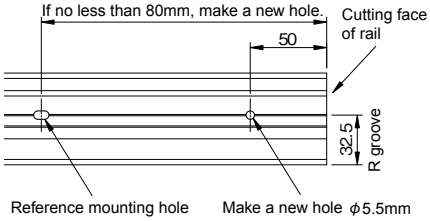
1 Installing a rail

1) Cutting the rail, making a new mounting hole

- Cut the rail to the inner width of the sash less 150mm.
- Cut off the correct end according to the instructions given on the sticker as follows:
  - For the right-handed opening type, cut off the right end as viewed from the front.
  - For the left-handed opening type, cut of the left end as viewed from the front.

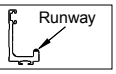


- If the distance between the cutting face of the rail and the reference mounting hole is no less than 80mm, make a new hole ϕ5.5mm for installing the rail at the position 50mm from the end.



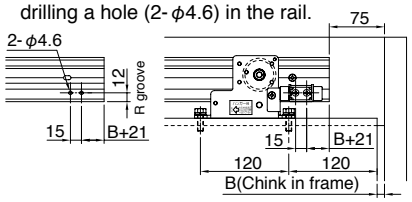
⚠Caution

- When making any change in the rail, take care not to scratch the runway.



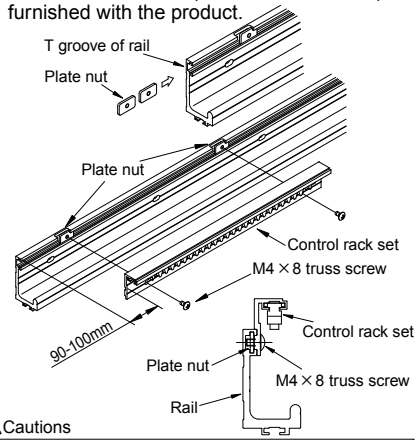
2) Drilling a hole for door stopper

- As shown in the diagram, drilling a hole (2-ϕ4.6) in the rail.



3) Installing a control rack set

- Insert 2 plate nuts in the T groove in the rail.
- Match the plate nuts to the mounting holes in the control rack set, then install the control rack set with screws (M4 × 8 truss screws) furnished with the product.



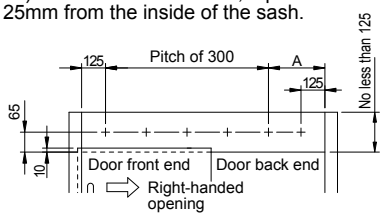
⚠Cautions

- Be sure to use specified screws furnished with the product. Using any unspecified screw may cause it to interfere with the clutch gear of the control device.
- Tighten the screws securely. Otherwise an abnormal noise or imperfect control may result.

4) Setting rail mounting holes

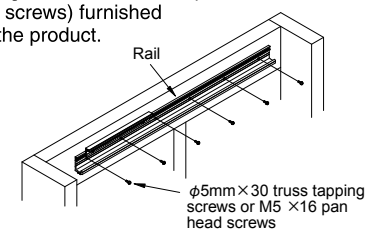
- Tap holes (M5, pitch 0.8) horizontally at intervals of 300 with the hole specified below as the reference point.
  - Dimension from the inside of the sash on the door front end = 125mm
  - Dimension from the bottom of the top frame of the sash = 65mm

  (When the cover between the top frame and door is 10mm)
- If the dimension A in the diagram below (the dimension from the final hole at a pitch of 300 to the inside of the sash on the door back end) is no less than 155mm, tap a hole at 125mm from the inside of the sash.



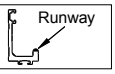
5) Installing the rail

- Install the rail with screws (ϕ5mm × 30 truss tapping screws or M5 × 16 pan head screws) furnished with the product.



⚠Caution

- Install the rail horizontally.
- When installing the rail, take care not to scratch the runway.

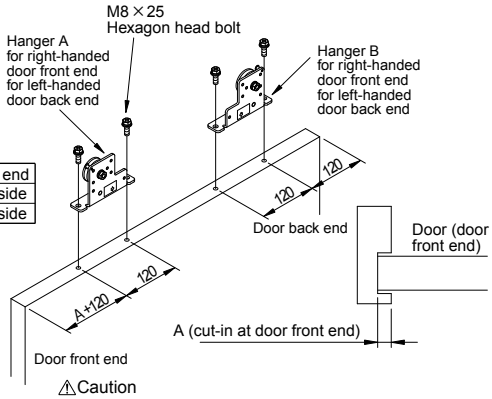


2 Installing the hanger

1) Making holes in the top of the door

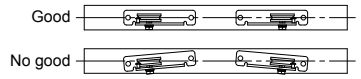
- As shown in the diagram, install the hanger A and hanger B.

	Door front end	Door back end
Right-handed opening type	Hanger A side	Hanger B side
Left-handed opening type	Hanger B side	Hanger A side



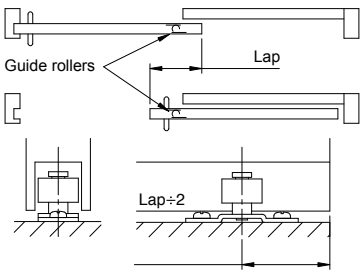
⚠Caution

- Install the hanger on the centerline of the door.



3 Installing the guide rolller (optional)

- Install them in the middle of the door lap. (The product does not come with such mounting screws.)
- Install them so that the door become vertical with the floor area.



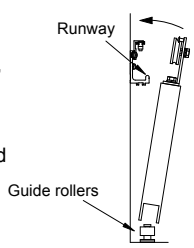
⚠Caution

- Be sure to use the guide rollers.

4 Mounting the door

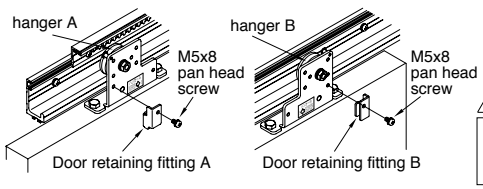
1) Mounting the door

- Before mounting the door, wipe off the dirt from the rail runway.
- Match the door bottom to the guide rollers, then suspend the door rollers and mount them onto the rail runway.
- Check that the door operates smoothly.
- Adjust the clearance between the door and jamb by varying the number of height adjusting plates used.



2) Installing the door retaining fitting

- Install the door retaining fitting in the hanger A and B with screw (M5 x 8 panhead screw).

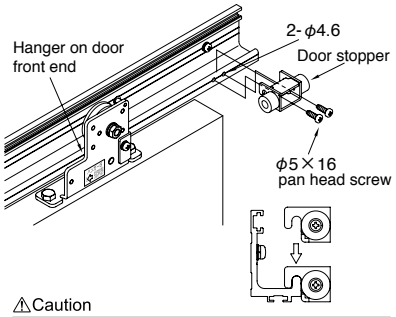


⚠Caution

- Tighten the screws securely to prevent the door from coming off.

5 Installing the door stopper

- Insert the door stopper in the rail runway.
- Slide the door stopper, adjust the door-opening position, then tighten the 2 fixing screws (ϕ5×16 pan head screw) follow the hole for door stopper.
- See the page 9, 1 installing a rail | 2) Drilling a hole for door stopper

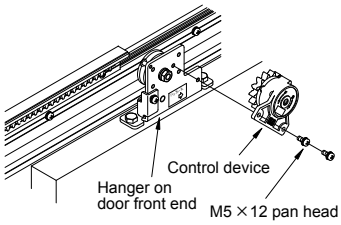


⚠Caution

- Tighten the fixing screws securely, or door stopper May become out of place.
- In case of slam the door strongly, install the back check device.

6 Installing the control device

- In assembling and reengaging the clutch gears, follow the "Procedure for assembling and reengaging clutch gears."
- Install the control device on the hanger on the door front end with screws (M5 × 12 pan head screws) furnished with the product. Install it with the door open by at least 60cm (where it does not engage with the control rack set).

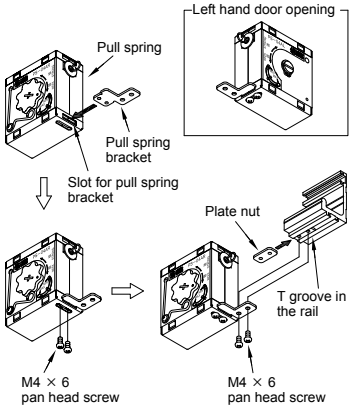


- Check the orientation of the control device (right- or left-handed). Be sure to orient it correctly, or the control will not work.
- Be sure to install the control device after mounting the door. When suspending and mounting it, the door may strike and damage the rail or other component.

7 Installing a pull spring

1) Installing a pull spring

- Insert the pull spring bracket in to the fixing slot of the pull spring, then install. It with screws (M4 x 6 Pan head screw).
- Insert the plate nut in the T groove in the rail then install the pull spring with screws (M4 x 6 Pan head screw).

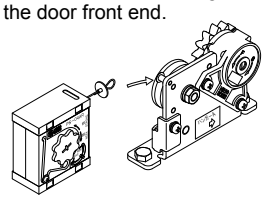


⚠Caution

- Do not draw the wire with the pull spring alone (before the installation). Any such practice might scratch the wire.

2) Setting the wire

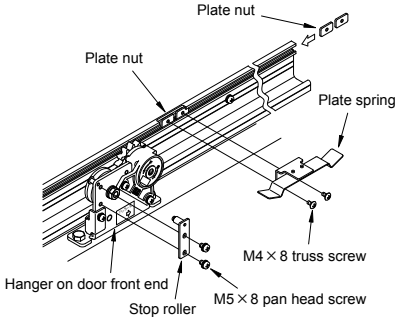
- Draw the wire of the pull spring, then hook it on the hanger on the door front end.



8 Installing the stop device

1) Installing the stop roller and plate spring

- Install the stop roller on the hanger on the door front end with screws (M5×8 pan head screws) furnished with the product.
- Insert the plate nuts in the T groove in the rail, then install the plate spring with screws (M4×8 truss screws) furnished with the product.

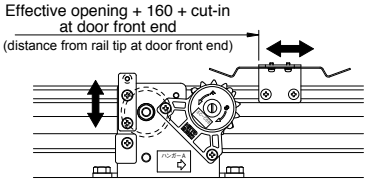


⚠Caution

- Be sure to use the specified screws furnished with the product. Using any unspecified screw may cause it to interfere with another component.
- Securely tighten the screws furnished with the product, to keep the stop roller and plate spring in place at all times.

2) Adjusting the stopping position and force

- Adjust the position of the plate spring to stop it at the position where the door is fully open.
- Move the stop roller up and down to adjust the stopping force.
  - Increase the stopping force. Raise the stop roller.
  - Reduce the stopping force. Lower the stop roller.

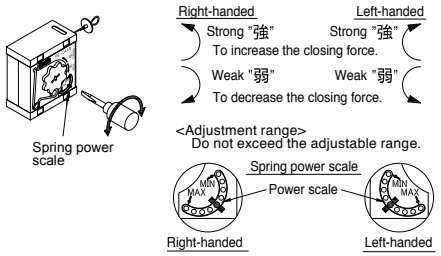


When the clutch gear is inserted or removed, be sure to turn it as following instruction.

9 Adjusting the closing force and closing speed

1) Adjusting the closing force

- If the closing force needs to be adjusted, turn the gear shaft with a screwdriver.
- The spring power scale attached in the main part. Whenever gear shaft every one turn, a power scale pin moves. The adjustment should follow the following procedure.
  <Adjustment direction>
  Be aware that direction of rotation is different for left-handed opening or right-handed opening.

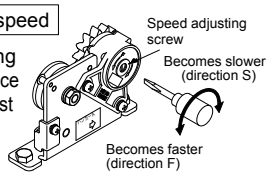


⚠ Caution

- Over exceed adjustable range will failure. Be sure to adjust the position of a power scale pin in the range of min to max of a label display.

2) Adjusting the closing speed

- Turn the speed adjusting ascrew of the control device with a screwdriver to adjust the closing speed. (It is factory-configured to the highest speed.)



- Slide the control rack set to adjust the controlling interval, thus adjusting the closing speed.
  - Shorten the controlling interval → to increase the closing speed.
  - Elongate the controlling interval → to decrease the closing speed.

⚠Caution

- Turn the speed adjusting screw lightly. Otherwise an imperfect control may result. After turning it all the way home, do not turn it with overstrain.
- A change in the ambient temperature varies the closing speed somewhat. As the temperature rises, the speed increases. As the temperature declines, the speed decreases.

Procedure for assembling and reengaging the clutch gear

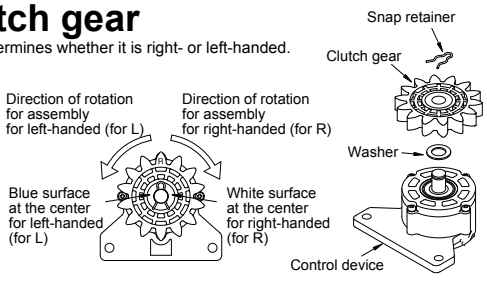
The control device used for this product is for both orientations (right- and left-handed). The orientation of the clutch gear determines whether it is right- or left-handed. When assembling and reengaging the clutch gear, follow the procedure described below.

1. Procedure for assembling the clutch gear

- Insert the washer into the shaft of the control device.
- Insert the clutch gear into the shaft.
  If right-handed
  Make the white surface (the R-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the right-handed opening type illustrated in the right-hand diagram.
  If left-handed
  Make the blue surface (the L-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the left-handed opening type illustrated in the right-hand diagram.
- Install the snap retainer in the groove at the tip of the shaft.

2. Procedure for reengaging the clutch gear

- Remove the clutch gear in reverse order of assembly. (Remove the clutch gear while turning it in the same direction as in assembly.)
- Assemble the clutch gear according to the assembly procedure.
- The product comes with one spare snap retainer.



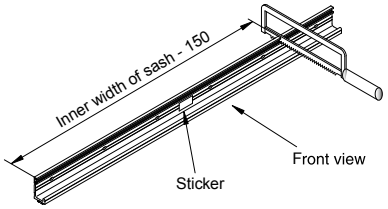
Installation Procedure for DSC-C015

(The diagrams shown represent a right-handed opening type. The left-handed opening type is symmetrical with the type represented in these diagrams.)

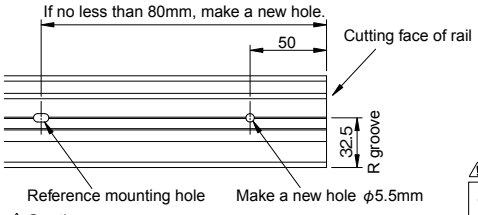
1 Installing a rail

1) Cutting the rail, making a new mounting hole

- Cut the rail to the inner width of the sash less 150mm.
- Cut off the correct end according to the instructions given on the sticker as follows:
  - For the right-handed opening type, cut off the right end as viewed from the front.
  - For the left-handed opening type, cut of the left end as viewed from the front.



- If the distance between the cutting face of the rail and the reference mounting hole is no less than 80mm, make a new hole ϕ5.5mm for installing the rail at the position 50mm from the end.

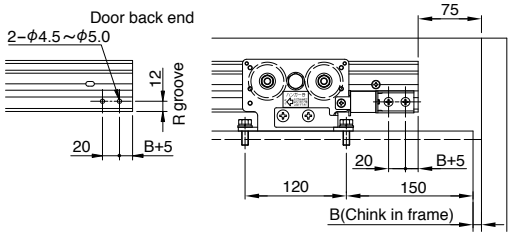


⚠Caution

- When making any change in the rail, take care not to scratch the runway.

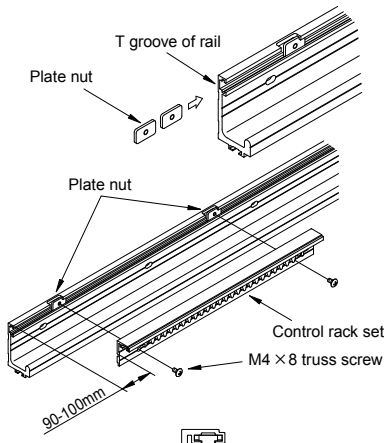
2) Drilling a hole for door stopper

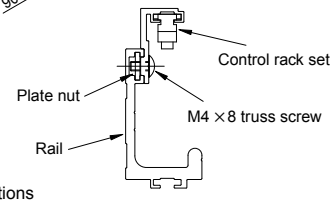
- As shown in the diagram, drilling a hole (2– ϕ4.5~ϕ5.0mm) in end of rail.



3) Installing a control rack set

- Insert 2 plate nuts in the T groove in the rail.
- Match the plate nuts to the mounting holes in the control rack set, then install the control rack set with screws (M4× 8 truss screws) furnished with the product.





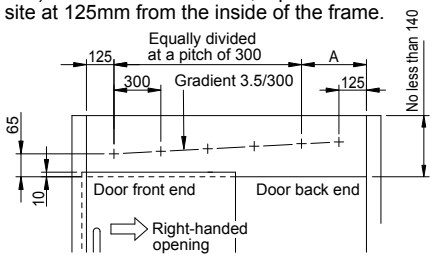
⚠Cautions

- Be sure to use specified screws furnished with the product. Using any unspecified screw may cause it to interfere with the clutch gear of the control device.
- Tighten the screws securely. Otherwise an abnormal noise or imperfect control may result.

4) Setting rail mounting holes

- Tap a hole (M5, pitch 0.8) at the position specified below, as the reference hole.
  - Dimension from the inside of the sash on the door front end = 125mm
  - Dimension from the bottom of the top frame of the sash = 65mm

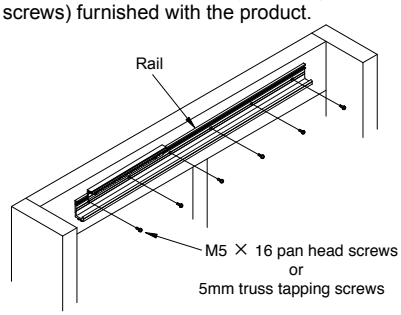
  (When the cover between the top frame of the sash and the door is 10mm)
- Tap subsequent holes (M5, pitch 0.8) with a level difference of 3.5mm at pitch intervals of 300.
- If the dimension A in the diagram below (the dimension from the final hole at a pitch of 300 to the inside of the frame on the door back end) is no less than 155mm, tap a hole on the site at 125mm from the inside of the frame.



# of holes from reference hole (except for reference hole)	Horizontal distance (mm) from reference hole	Level difference (mm) from reference hole
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
8	2400	28.0
9	2700	31.5
10	3000	35.0

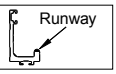
5) Installing the rail

- Install the rail with screws (M5 ×16 pan head screws) furnished with the product.



⚠Caution

- After installing the rail, protect the rail runway from scratches and paint.



2 Installing the hanger

1) Making holes in the top of the door

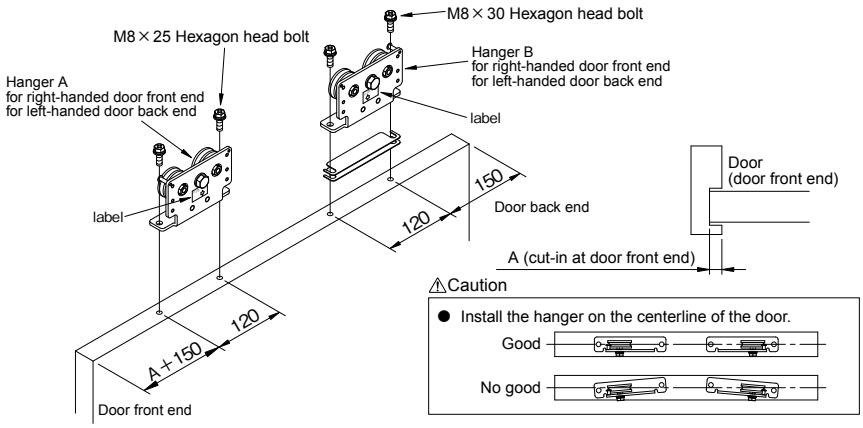
- As shown in the diagram, install the hanger A, hanger B, and height adjusting plate.
- Install the hanger while orienting it as shown in the table below, according to the instructions given on the sticker attached to the hanger.

	Door front end	Door back end
Right-handed opening type	Hanger A side	Hanger B side
Left-handed opening type	Hanger B side	Hanger A side

- The number of height adjusting plates varies with the door width. See the table below and install the appropriate number of them.

Number of height adjusting plates to be used (reference)

Door width (mm)	No. of plates used
700-800 or less	4 pcs
800-900 or less	5 pcs
900-1000 or less	6 pcs
1000-1100 or less	7 pcs
1100-1200 or less	8 pcs
1200-1300 or less	10 pcs
1300-1400 or less	11 pcs
1400-1500 or less	12 pcs
1500-1600 or less	13 pcs

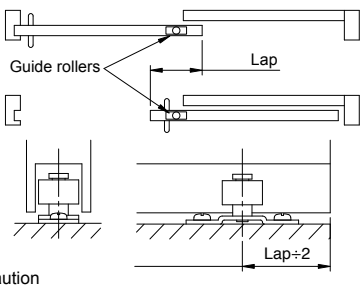


⚠Caution

- Install the hanger on the centerline of the door.

3 Installing the guide rolller (optional)

- Install them in the middle of the door lap. (The product does not come with such mounting screws.)
- Install them so that the door become vertical with the floor area.



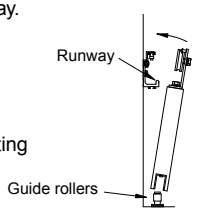
⚠Caution

- Be sure to use the guide rollers.

4 Mounting the door

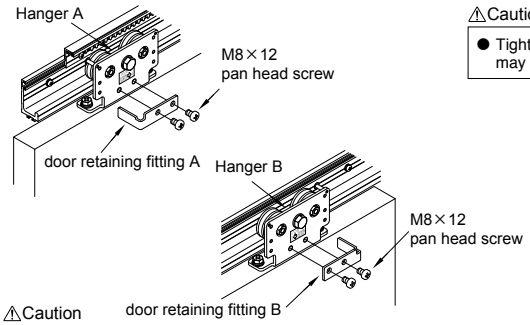
1) Mounting the door

- Before mounting the door, wipe off the dirt from the rail runway.
- Match the door bottom to the guide rollers, then suspend the door rollers and mount them onto the rail runway.
- Check that the door operates smoothly.
- Adjust the clearance between the door and jamb by varying the number of height adjusting plates used.



2) Installing the door-retaining screws

- Install the door retaining fitting in the hanger A and B with screw(M8×12 pan head screw).

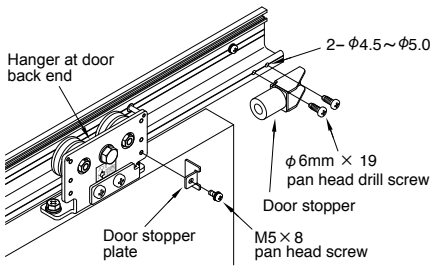


⚠Caution

- Be sure to install the door retaining fitting, the door may come off.

5 Installing the door stopper

- Install the door stopper plate on the hanger on the door back end with screws (M5 ×8 pan head screws).
- Insert the door stopper in the rail runway.
- See the page 11, **1** installing a rail 2) Drilling

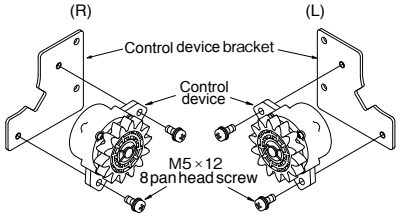


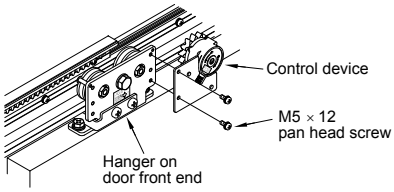
⚠Caution

- Tighten the fixing screws securely, or the door stopper may become out of place.

6 Installing the control device

- In assembling and reengaging the clutch gears, follow the "Procedure for assembling and reengaging clutch gears."
- Install the control device on the hanger on the door front end with screws (M5 ×12 pan head screws) furnished with the product. Install it with the door open by at least 60cm (where it does not engage with the control rack set).



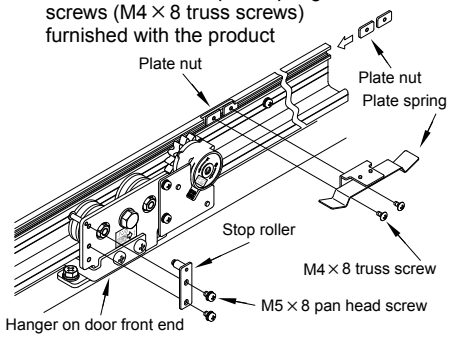


- **Check the orientation of the control device (right- or left-handed). Be sure to orient it correctly, or the control will not work.**
- **Be sure to install the control device after mounting the door. When suspending and mounting it, the door may strike and damage the rail or other component.**

7 Installing the stop device

1) Installing the stop roller and plate spring

- Install the stop roller on the hanger on the door front end with screws (M5×8 pan head screws) furnished with the product.
- Insert the plate nuts in the T groove in the rail, then install the plate spring with screws (M4×8 truss screws) furnished with the product

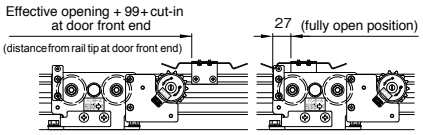


⚠Caution

- Be sure to use the specified screws furnished with the product. Using any unspecified screw may cause it to interfere with another component.
- Securely tighten the screws furnished with the product, to keep the stop roller and plate spring in place at all times.

2) Adjusting the stopping position and force

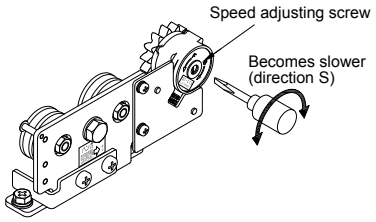
- Adjust the position of the plate spring to stop it at the position where the door is fully open.
- Move the stop roller up and down to adjust the stopping force.
  - Increase the stopping force. Raise the stop roller.
  - Reduce the stopping force. Lower the stop roller.



When the clutch gear is inserted or removed, be sure to turn it as following instruction.

8 Adjusting the closing speed

- Turn the speed adjusting screw of the control device with a screwdriver to adjust the closing speed. (It is factory-configured to the



- Slide the control rack set to adjust the controlling interval, thus adjusting the closing speed.
  - Shorten the controlling interval → to increase the closing speed.
  - Elongate the controlling interval → to decrease the closing speed.

⚠Caution

- Turn the speed adjusting screw lightly. Otherwise an imperfect control may result. After turning it all the way home, do not turn it with overstrain.
- A change in the ambient temperature varies the closing speed somewhat. As the temperature rises, the speed increases. As the temperature declines, the speed decreases.

Procedure for assembling and reengaging the clutch gear

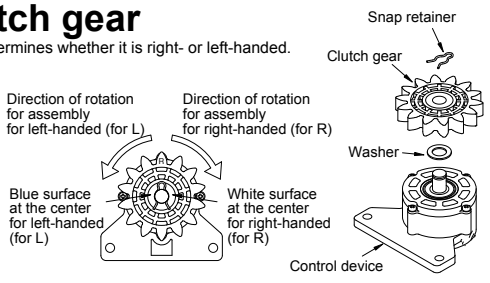
The control device used for this product is for both orientations (right- and left-handed). The orientation of the clutch gear determines whether it is right- or left-handed. When assembling and reengaging the clutch gear, follow the procedure described below.

1. Procedure for assembling the clutch gear

- Insert the washer into the shaft of the control device.
- Insert the clutch gear into the shaft.
  If right-handed
  Make the white surface (the R-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the right-handed opening type illustrated in the right-hand diagram.
  If left-handed
  Make the blue surface (the L-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the left-handed opening type illustrated in the right-hand diagram.
- Install the snap retainer in the groove at the tip of the shaft.

2. Procedure for reengaging the clutch gear

- Remove the clutch gear in reverse order of assembly. (Remove the clutch gear while turning it in the same direction as in assembly.)
- Assemble the clutch gear according to the assembly procedure.
- The product comes with one spare snap retainer.



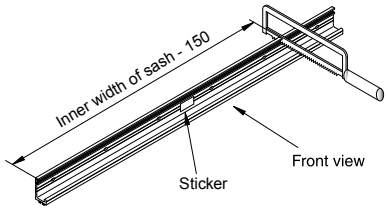
Installation Procedure for NSC-C1215

(The diagrams shown represent a right-handed opening type. The left-handed opening type is symmetrical with the type represented in these diagrams.)

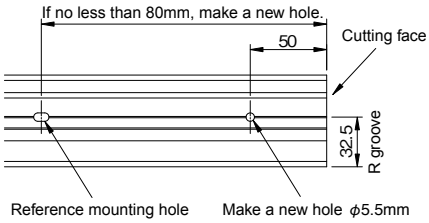
1 Installing a rail

1) Cutting the rail, making a new mounting hole

- Cut the rail to the inner width of the sash less 150mm.
- Cut off the correct end according to the instructions given on the sticker as follows:
  - For the right-handed opening type, cut off the right end as viewed from the front.
  - For the left-handed opening type, cut of the left end as viewed from the front.

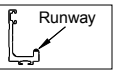


- If the distance between the cutting face of the rail and the reference mounting hole is no less than 80mm, make a new hole ϕ5.5mm for installing the rail at the position 50mm from the end.



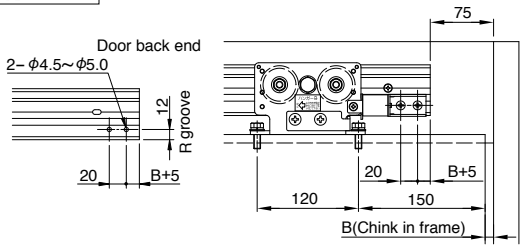
⚠Caution

- When making any change in the rail, take care not to scratch the runway.



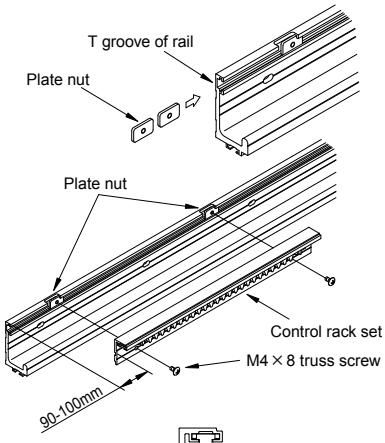
2) Drilling a hole for door stopper

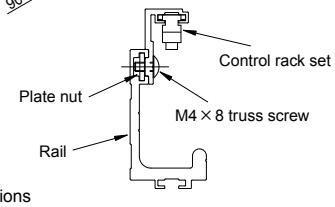
- As shown in the diagram, drilling a hole (2−ϕ4.5~ϕ5.0mm) in end of rail.



3) Installing a control rack set

- Insert 2 plate nuts in the T groove in the rail.
- Match the plate nuts to the mounting holes in the control rack set, then install the control rack set with screws (M4 × 8 truss screws) furnished with the product.





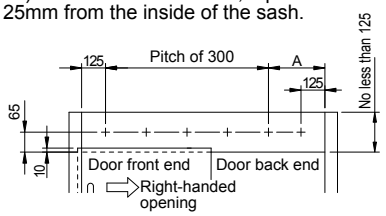
⚠Cautions

- Be sure to use specified screws furnished with the product. Using any unspecified screw may cause it to interfere with the clutch gear of the control device.
- Tighten the screws securely. Otherwise an abnormal noise or imperfect control may result.

4) Setting rail mounting holes

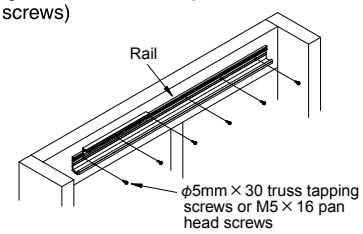
- Tap holes (M5, pitch 0.8) horizontally at intervals of 300 with the hole specified below as the reference point.
  - Dimension from the inside of the sash on the door front end = 125mm
  - Dimension from the bottom of the top frame of the sash = 65mm

  (When the cover between the top frame and door is 10mm)
- If the dimension A in the diagram below (the dimension from the final hole at a pitch of 300 to the inside of the sash on the door back end) is no less than 155mm, tap a hole at 125mm from the inside of the sash.



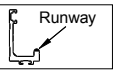
5) Installing the rail

- Install the rail with screws (ϕ5mm × 30 truss tapping screws or M5 × 16 pan head screws)



⚠Caution

- Install the rail horizontally.
- When installing the rail, take care not to scratch the runway.



2 Installing the hanger

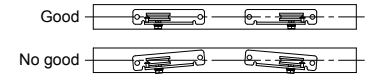
1) Making holes in the top of the door

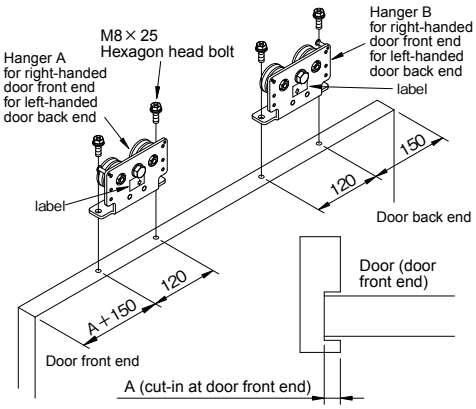
- As shown in the diagram, install the hanger A and hanger B.

	Door front end	Door back end
Right-handed opening type	Hanger A side	Hanger B side
Left-handed opening type	Hanger B side	Hanger A side

⚠Caution

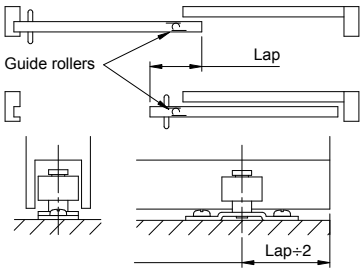
- Install the hanger on the centerline of the door.





3 Installing the guide rolller (optional)

- Install them in the middle of the door lap. (The product does not come with such mounting screws.)
- Install them so that the door become vertical with the floor area.



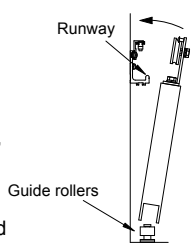
⚠Caution

- Be sure to use the guide rollers.

4 Mounting the door

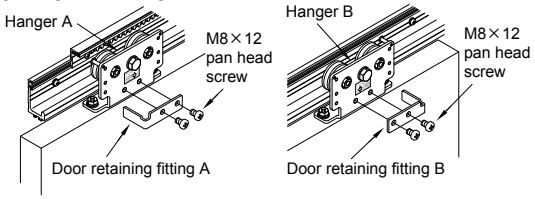
1) Mounting the door

- Before mounting the door, wipe off the dirt from the rail runway.
- Match the door bottom to the guide rollers, then suspend the door rollers and mount them onto the rail runway.
- Check that the door operates smoothly.
- Adjust the clearance between the door and jamb by varying the number of height adjusting plates used.



2) Installing the door-retaining screws

- Install the door retaining fitting in the hanger A and B with screw (M8 × 12 pan head screw).

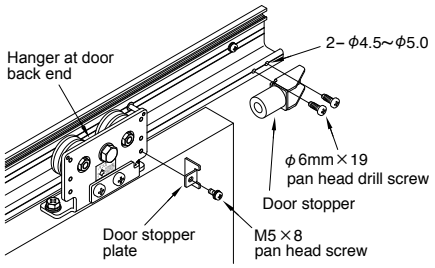


⚠Caution

- Be sure to install the door retaining fitting, the door may come off.

5 Installing the door stopper

- Install the door stopper plate on the hanger on the door back end with screws (M5 × 8 pan head screws)
- Install the door stopper in the rail runway.
- See the page 13, 1 installing a rail 2) Drilling a hole for door stopper

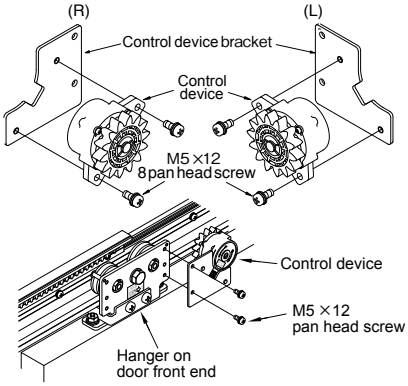


⚠Caution

- Tighten the fixing screws securely, or the door stopper may become out of place.

6 Installing the control device

- In assembling and reengaging the clutch gears, follow the "Procedure for assembling and reengaging clutch gears."
- Install the control device on the hanger on the door front end with screws (M5 × 12 pan head screws) furnished with the product. Install it with the door open by at least 60cm (where it does not engage with the control rack set).



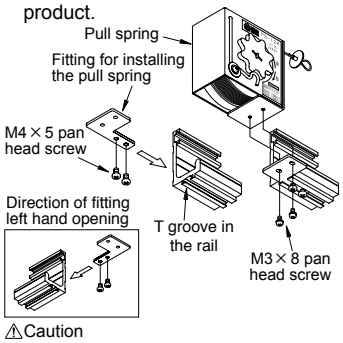
● Check the orientation of the control device (right- or left-handed). Be sure to orient it correctly, or the control will not work.

● Be sure to install the control device after mounting the door. When suspending and mounting it, the door may strike and damage the rail or other component.

7 Installing a pull spring

1) Installing a pull spring

- Temporarily tighten the screws (M4 ×5 pan head screws) furnished with the product, on the fittings for installing the pull spring. Then insert them into the T groove in the bottom of the rail.
- Tighten the screws to fix the fittings. Install the pull spring on the fittings for installing the pull spring, with screws (M3 × 8 pan head screws) furnished with the product.

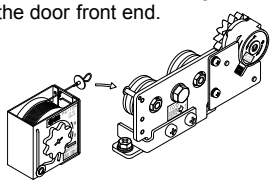


⚠Caution

- Do not draw the wire with the pull spring alone (before the installation). Any such practice might scratch the wire.

2) Setting the wire

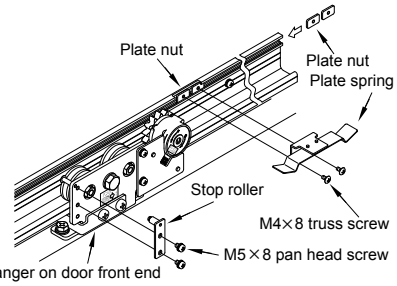
- Draw the wire of the pull spring, then hook it on the hanger on the door front end.



8 Installing the stop device

1) Installing the stop roller and plate spring

- Install the stop roller on the hanger on the door front end with screws (M5 × 8 pan head screws) furnished with the product.
- Insert the plate nuts in the T groove in the rail, then install the plate spring with screws (M4 × 8 truss screws) furnished with the product.

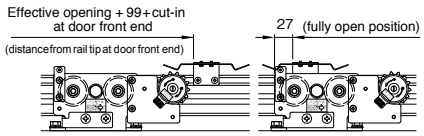


⚠Caution

- Be sure to use the specified screws furnished with the product. Using any unspecified screw may cause it to interfere with another component.
- Securely tighten the screws furnished with the product, to keep the stop roller and plate spring in place at all times.

2) Adjusting the stopping position and force

- Adjust the position of the plate spring to stop it at the position where the door is fully open.
- Move the stop roller up and down to adjust the stopping force.
  - Increase the stopping force. Raise the stop roller.
  - Reduce the stopping force. Lower the stop roller.

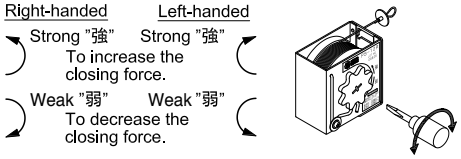


When the clutch gear is inserted or removed, be sure to turn it as following instruction.

9 Adjusting the closing force and closing speed

1) Adjusting the closing force

- If the closing force needs adjusted, turn the gear shaft with a screwdriver.
- Be aware that direction of rotation is different for left-handed opening or right-handed opening.

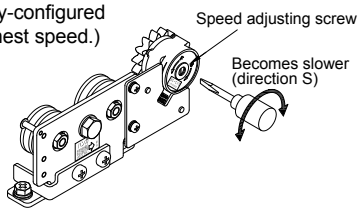


⚠Caution

- Over winding it in the direction of "Strong" will cause a breakdown. Be sure to set it to a value not exceeding the number of windings indicated on the sticker on the component.

2) Adjusting the closing speed

- Turn the speed adjusting screw of the control device with a screwdriver to adjust the closing speed. (It is factory-configured to the highest speed.)



- Slide the control rack set to adjust the controlling interval, thus adjusting the closing speed.
  - Shorten the controlling interval → to increase the closing speed.
  - Elongate the controlling interval → to decrease the closing speed.

⚠Caution

- Turn the speed adjusting screw lightly. Otherwise an imperfect control may result. After turning it all the way home, do not turn it with overstrain.
- A change in the ambient temperature varies the closing speed somewhat. As the temperature rises, the speed increases. As the temperature declines, the speed decreases.

Procedure for assembling and reengaging the clutch gear

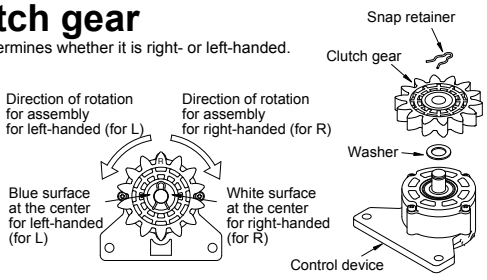
The control device used for this product is for both orientations (right- and left-handed). The orientation of the clutch gear determines whether it is right- or left-handed. When assembling and reengaging the clutch gear, follow the procedure described below.

1. Procedure for assembling the clutch gear

- Insert the washer into the shaft of the control device.
- Insert the clutch gear into the shaft.
  If right-handed
  Make the white surface (the R-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the right-handed opening type illustrated in the right-hand diagram.
  If left-handed
  Make the blue surface (the L-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the left-handed opening type illustrated in the right-hand diagram.
- Install the snap retainer in the groove at the tip of the shaft.

2. Procedure for reengaging the clutch gear

- Remove the clutch gear in reverse order of assembly. (Remove the clutch gear while turning it in the same direction as in assembly.)
- Assemble the clutch gear according to the assembly procedure.
- The product comes with one spare snap retainer.



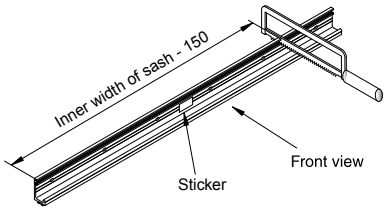
Installation Procedure for NSC-CB

(The diagrams shown represent a right-handed opening type. The left-handed opening type is symmetrical with the type represented in these diagrams.)

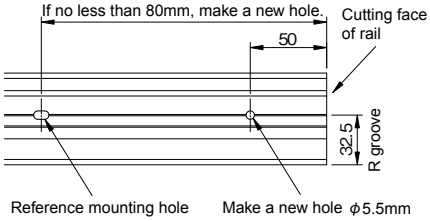
1 Installing a rail

1) Cutting the rail, making a new mounting hole

- Cut the rail to the inner width of the sash less 150mm.
- Cut off the correct end according to the instructions given on the sticker as follows:
  - For the right-handed opening type, cut off the right end as viewed from the front.
  - For the left-handed opening type, cut of the left end as viewed from the front.



- If the distance between the cutting face of the rail and the reference mounting hole is no less than 80mm, make a new hole ϕ5.5mm for installing the rail at the position 50mm from the end.

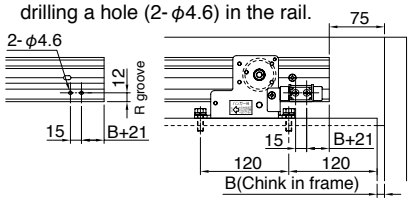


⚠Caution

- When making any change in the rail, take care not to scratch the runway.

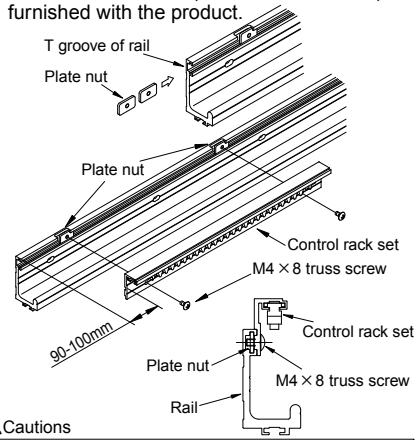
2) Drilling a hole for door stopper

- As shown in the diagram, drilling a hole (2-ϕ4.6) in the rail.



3) Installing a control rack set

- Insert 2 plate nuts in the T groove in the rail.
- Match the plate nuts to the mounting holes in the control rack set, then install the control rack set with screws (M4 × 8 truss screws) furnished with the product.



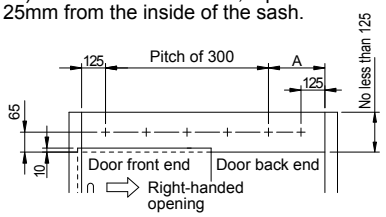
⚠Cautions

- Be sure to use specified screws furnished with the product. Using any unspecified screw may cause it to interfere with the clutch gear of the control device.
- Tighten the screws securely. Otherwise an abnormal noise or imperfect control may result.

4) Setting rail mounting holes

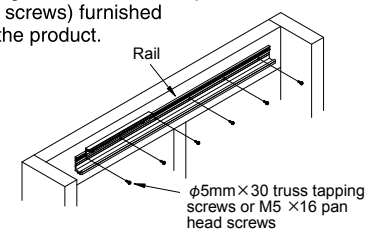
- Tap holes (M5, pitch 0.8) horizontally at intervals of 300 with the hole specified below as the reference point.
  - Dimension from the inside of the sash on the door front end = 125mm
  - Dimension from the bottom of the top frame of the sash = 65mm

  (When the cover between the top frame and door is 10mm)
- If the dimension A in the diagram below (the dimension from the final hole at a pitch of 300 to the inside of the sash on the door back end) is no less than 155mm, tap a hole at 125mm from the inside of the sash.



5) Installing the rail

- Install the rail with screws (ϕ5mm × 30 truss tapping screws or M5 × 16 pan head screws) furnished with the product.



⚠Caution

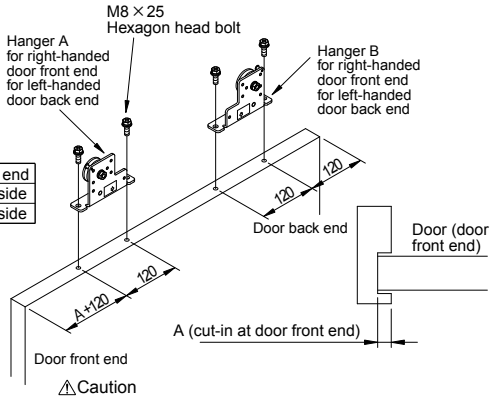
- Install the rail horizontally.
- When installing the rail, take care not to scratch the runway.

2 Installing the hanger

1) Making holes in the top of the door

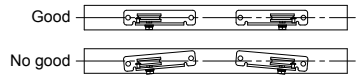
- As shown in the diagram, install the hanger A and hanger B.

	Door front end	Door back end
Right-handed opening type	Hanger A side	Hanger B side
Left-handed opening type	Hanger B side	Hanger A side



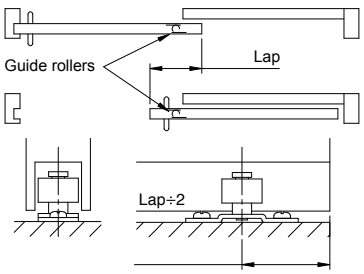
⚠Caution

- Install the hanger on the centerline of the door.



3 Installing the guide rolller (optional)

- Install them in the middle of the door lap. (The product does not come with such mounting screws.)
- Install them so that the door become vertical with the floor area.



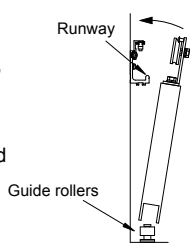
⚠Caution

- Be sure to use the guide rollers.

4 Mounting the door

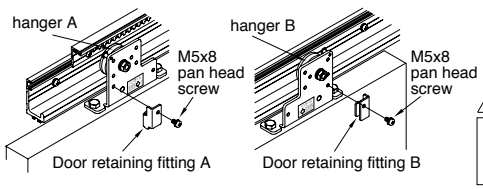
1) Mounting the door

- Before mounting the door, wipe off the dirt from the rail runway.
- Match the door bottom to the guide rollers, then suspend the door rollers and mount them onto the rail runway.
- Check that the door operates smoothly.
- Adjust the clearance between the door and jamb by varying the number of height adjusting plates used.



2) Installing the door retaining fitting

- Install the door retaining fitting in the hanger A and B with screw (M5 x 8 panhead screw).

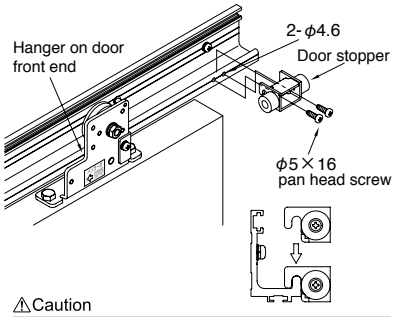


⚠Caution

- Tighten the screws securely to prevent the door from coming off.

5 Installing the door stopper

- Insert the door stopper in the rail runway.
- Slide the door stopper, adjust the door-opening position, then tighten the 2 fixing screws (ϕ5×16 pan head screw) follow the hole for door stopper.
- See the page 9, 1 installing a rail 2) Drilling a hole for door stopper

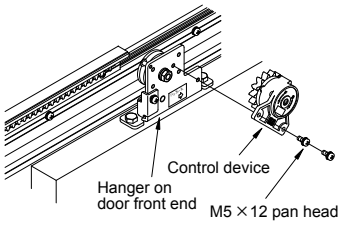


⚠Caution

- Tighten the fixing screws securely, or door stopper May become out of place.
- In case of slam the door strongly, install the back check device.

6 Installing the control device

- In assembling and reengaging the clutch gears, follow the "Procedure for assembling and reengaging clutch gears."
- Install the control device on the hanger on the door front end with screws (M5 × 12 pan head screws) furnished with the product. Install it with the door open by at least 60cm (where it does not engage with the control rack set).

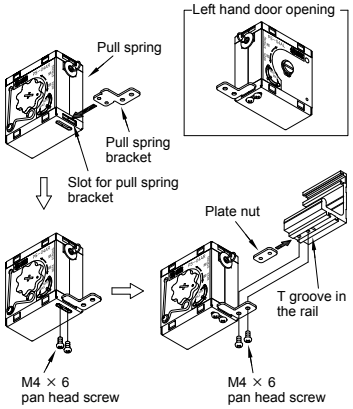


- **Check the orientation of the control device (right- or left-handed). Be sure to orient it correctly, or the control will not work.**
- **Be sure to install the control device after mounting the door. When suspending and mounting it, the door may strike and damage the rail or other component.**

7 Installing a pull spring

1) Installing a pull spring

- Insert the pull spring bracket in to the fixing slot of the pull spring, then install. It with screws (M4 x 6 Pan head screw).
- Insert the plate nut in the T groove in the rail then install the pull spring with screws (M4 x 6 Pan head screw).

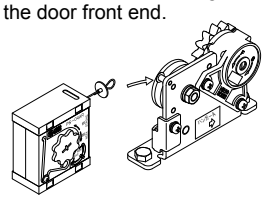


⚠Caution

- Do not draw the wire with the pull spring alone (before the installation). Any such practice might scratch the wire.

2) Setting the wire

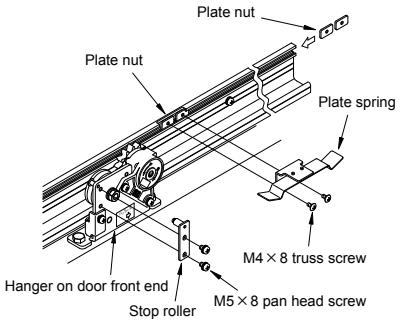
- Draw the wire of the pull spring, then hook it on the hanger on the door front end.



8 Installing the stop device

1) Installing the stop roller and plate spring

- Install the stop roller on the hanger on the door front end with screws (M5×8 pan head screws) furnished with the product.
- Insert the plate nuts in the T groove in the rail, then install the plate spring with screws (M4×8 truss screws) furnished with the product.

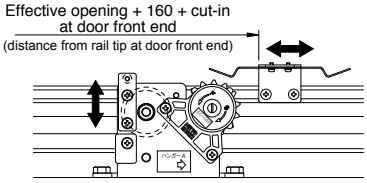


⚠Caution

- Be sure to use the specified screws furnished with the product. Using any unspecified screw may cause it to interfere with another component.
- Securely tighten the screws furnished with the product, to keep the stop roller and plate spring in place at all times.

2) Adjusting the stopping position and force

- Adjust the position of the plate spring to stop it at the position where the door is fully open.
- Move the stop roller up and down to adjust the stopping force.
  - Increase the stopping force. Raise the stop roller.
  - Reduce the stopping force. Lower the stop roller.

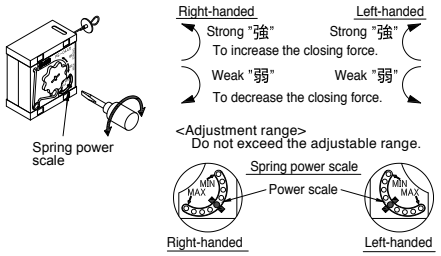


When the clutch gear is inserted or removed, be sure to turn it as following instruction.

9 Adjusting the closing force and closing speed

1) Adjusting the closing force

- If the closing force needs to be adjusted, turn the gear shaft with a screwdriver.
- The spring power scale attached in the main part. Whenever gear shaft every one turn, a power scale pin moves. The adjustment should follow the following procedure.
  <Adjustment direction>
  Be aware that direction of rotation is different for left-handed opening or right-handed opening.

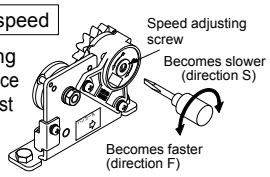


⚠ Caution

- Over exceed adjustable range will failure. Be sure to adjust the position of a power scale pin in the range of min to max of a label display.

2) Adjusting the closing speed

- Turn the speed adjusting ascrew of the control device with a screwdriver to adjust the closing speed. (It is factory-configured to the highest speed.)



- Slide the control rack set to adjust the controlling interval, thus adjusting the closing speed.
  - Shorten the controlling interval → to increase the closing speed.
  - Elongate the controlling interval → to decrease the closing speed.

⚠Caution

- Turn the speed adjusting screw lightly. Otherwise an imperfect control may result. After turning it all the way home, do not turn it with overstrain.
- A change in the ambient temperature varies the closing speed somewhat. As the temperature rises, the speed increases. As the temperature declines, the speed decreases.

Procedure for assembling and reengaging the clutch gear

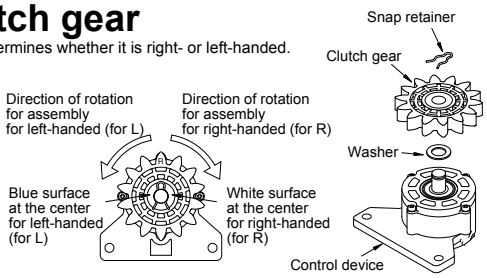
The control device used for this product is for both orientations (right- and left-handed). The orientation of the clutch gear determines whether it is right- or left-handed. When assembling and reengaging the clutch gear, follow the procedure described below.

1. Procedure for assembling the clutch gear

- Insert the washer into the shaft of the control device.
- Insert the clutch gear into the shaft.
  If right-handed
  Make the white surface (the R-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the right-handed opening type illustrated in the right-hand diagram.
  If left-handed
  Make the blue surface (the L-stamped surface) at the center of the clutch gear face upwards, then insert it while turning it in the direction of the arrow for the left-handed opening type illustrated in the right-hand diagram.
- Install the snap retainer in the groove at the tip of the shaft.

2. Procedure for reengaging the clutch gear

- Remove the clutch gear in reverse order of assembly. (Remove the clutch gear while turning it in the same direction as in assembly.)
- Assemble the clutch gear according to the assembly procedure.
- The product comes with one spare snap retainer.



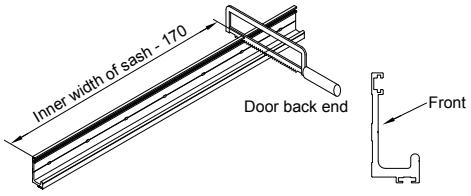
Installation Procedure for NSC-C2525

(These drawing shown represent a right-handed opening type. The left-hand opening type is a symmetrical with the type represented in these drawing.)

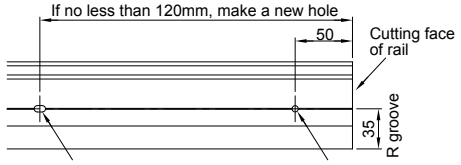
1 Installing a rail

1) Cutting the rail, making a new mounting hole

- Cut the rail to the inner width of the sash less 170mm.
- Cut off the door end according to the instructions
  - For the right hand opening type, cut off the right end as viewed from the front.
  - For the left hand opening type, cut off the left end as viewed from the front.



- If the distance between the cutting face of the rail and the reference mounting hole is no less than 120mm,make a new hole ϕ5.5mm at the position 50mm from the rail end.

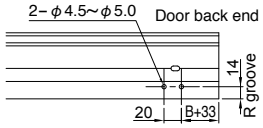


⚠Caution

- When making any change in the rail, take care not to scratch the runway.

2) Drilling a hole for door stopper

- As shown in diagram, drilling a two holes (4.5mm~5.5mm) in the rail.

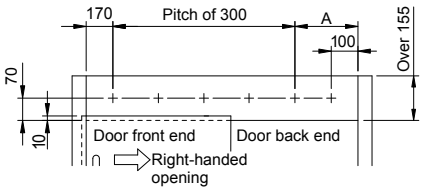


⚠Caution

- When making any change in the rail, take care not to scratch the runway.

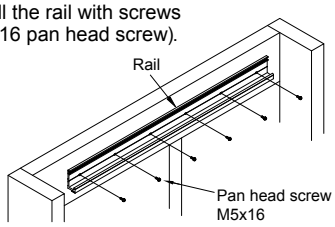
3) Setting rail mounting holes

- Tap holes (M5, pitch 0.8) horizontally at intervals of 300 with the hole specified below as the reference point.
  - •Dimension from the inside of the sash on the door front end = 170mm
  - •Dimension from the bottom of the top frame of the sash = 70mm
  (When the cover between the top frame and door is 10mm)
- •If the dimension A in the diagram below in no less than 170mm ,tap a hole at 100mm from the inside of the sash.
  (A: Dimension from the final hole at a pitch of 300 to the inside of the sash on the door back end)



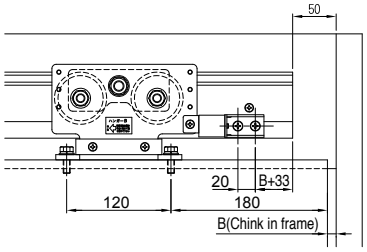
4) Installing the rail

- Install the rail with screws (M5x16 pan head screw).



⚠Caution

- When installing the rail, take care not to scratch the runway.



2 Installing the hanger

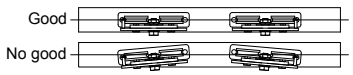
1) Making holes in the top of the door

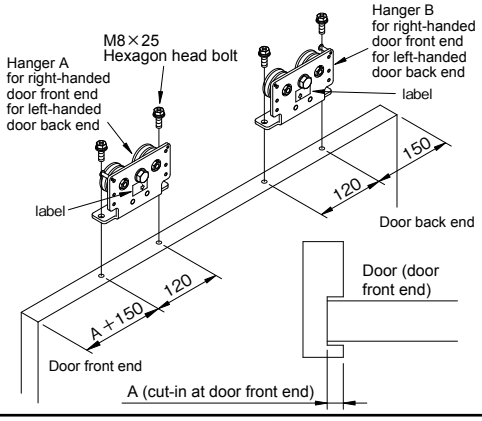
- As shown in the diagram, install the hanger A and hanger B.

	Door front end	Door back end
Right-handed opening type	Hanger A side	Hanger B side
Left-handed opening type	Hanger B side	Hanger A side

⚠Caution

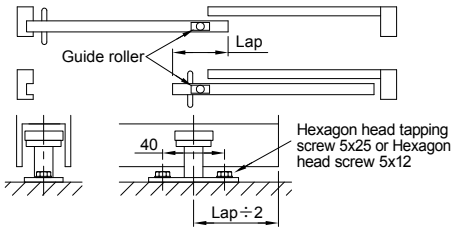
- Install the hanger on the centerline of the door.





3 Installing the guide rolller (optional)

- Install the guide roller in the middle of the door lap.
- Install the guide roller so that the door becomes vertical with the floor.
- In case of floor is concrete, Use the fisher plug. (Twist drill is 6mm)



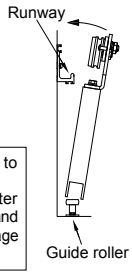
⚠Caution

- Be sure to use the guide rollers.

4 Mounting the door

1) Mounting the door

- Before mounting the door, wipe off the dirt from the rail runway.
- Match the door bottom to the guide roller, then suspend the door rollers and mount them onto the rail runway.
- Check that the door operates smoothly.
- Adjust the clearance between the door and jamb by varying the number of height adjusting plates used.

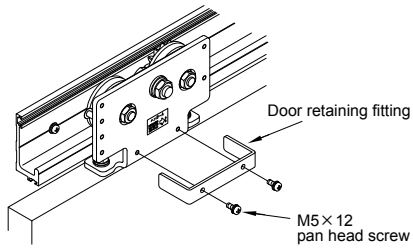


⚠Caution

- When mounting the door, take care not to scratch the rail runway.
- Be sure to install the control device after mounting the door. When suspending and mounting it, the door may strike and damage the rail and other component.

2) Installing the door retaining screw

- Tighten the door retaining fitting with Pan head screw M5X12 in the Hanger A and B.



⚠Caution

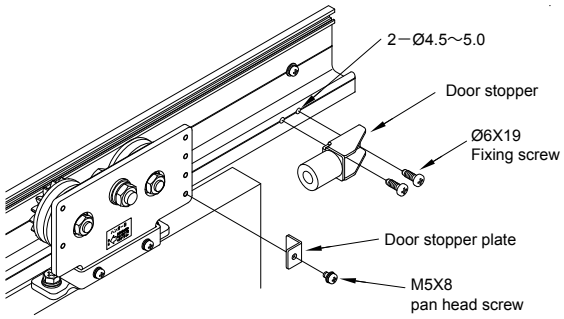
- Tighten the screws securely to prevent the door from coming off.

5 Installing the door stopper

- Install the door stopper plate on the hanger on the door back end with screws(M5 X 8 pan head screws)
- Install the door stopper in the rail runway.
  See the 1 Installing a rail 2) Drilling a hole for door stopper

⚠Caution

- Tighten the fixing screws securely, or the door stopper may becomeout of place.



6 Installing the control device

● The control device is interchangeable with right hand operation and left hand opretion .The orientation of the clutch gear determines whether it is right or left hand.

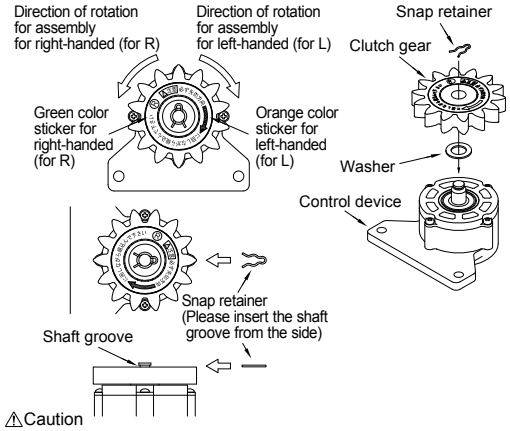
1) Procedure for clutch gear

Insert the washer into the shaft of the control devices.
Insert the clutch gear follow the below instructions.

《**If right-handed opening**》
Make the red calor sticker (R printed) face upwards, and then insert it while turning (follow the printed direction on the sticker) it.

《**If left-handed opening**》
Make the blue calor sticker (L printed) face upwards, and then insert it while turning (follow the printed direction on the sticker) it.

Be sure to confirm the direction of clutch gear correctly, or control device will not work. Refer to control direction is below the drawing.
Install the snap retainer in the groove at the tip of the shaft.

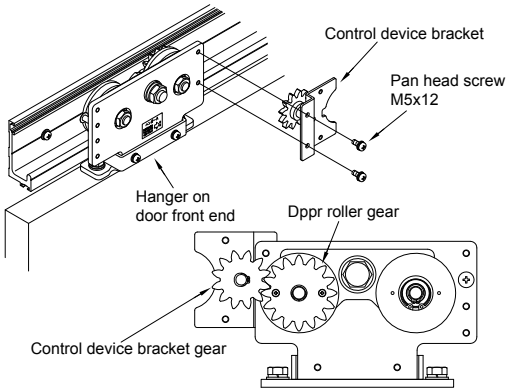


⚠Caution

● When assembling and reengaging the clutch gear, be sure to turn it printed direction.
If push roughly, the clutch gear may breakdown.

2) Installing the Control device bracket

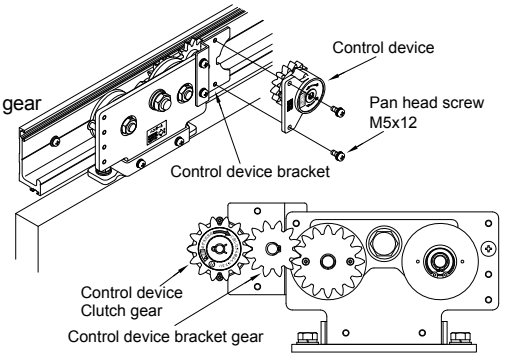
● Install the control device bracket with M5X12 Pan head screw on the door front end hanger.
● Be sure to correct engagement Hanger gear and Control device bracket gear.



3) Installing the control device

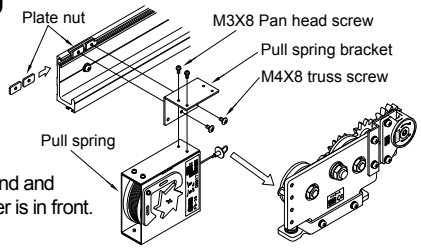
● Install the Control device on the Control device bracket with screw (M5X12 Pan head screw)
● Be sure to correct engagement Control device gear and Control device bracket gear.

● Check the orientation of the control device (right- or left-handed). Be sure to orient it correctly, or the control will not work. Be sure to install the control device after mounting the door.
● When suspending and mounting it, the door may strike and damage the rail or other component.



7 Installing The Pull spring

● Install the Pull spring bracket on the Pull spring with screw (M3X8 Pan head screw) Insert the pleat nut in the T groove in the rail, Then install Pull spring bracket with the screw (M4X8 truss screw)
Hook the wire to the Door front hanger.
The pull spring can be converted to the right hand and left hand operation.Be sure to confirm the sticker is in front.



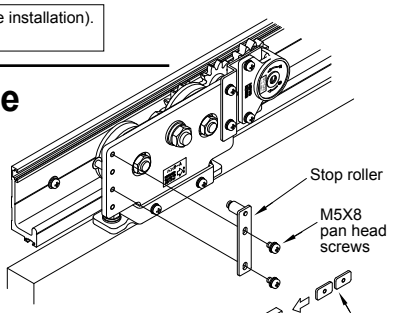
⚠Caution

● Do not draw the wire with the pull spring alone (before the installation). Any such practice might scratch the wire.

8 Installing the Stop device

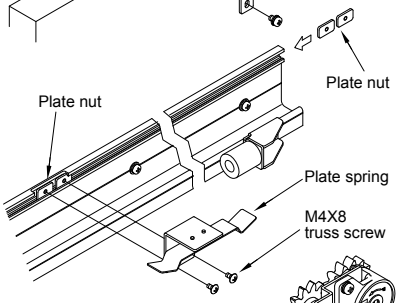
1) installing the stop roller

● Install the stop roller on the hanger on the door front end with screws (M5X8 pan head screws) furnished with the product.



2) Installing the plate spring

● Insert the plate nuts in the T groove in the rail, then install the plate spring with screws (M4X8 truss screws) furnished with the product.
Adjust the position of the plate spring to stop to at the position where the door is fully open.

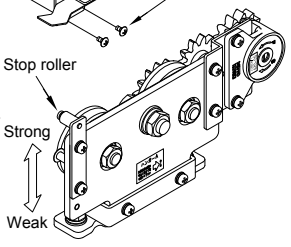


⚠Caution

● Be sure to use the specified screws furnished with the product.Using any unspecified screw may cause it to interfere with another component.

3) Adjusting the stopping force.

● Move the stop roller up and down to adjust the stopping force.
・Increase the stopping force : Upward the stop roller
・Reduce the stopping force : Downward the stop roller



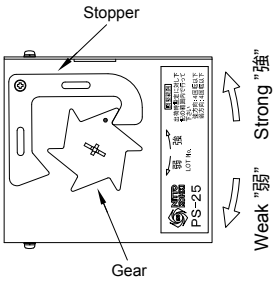
9 Adjusting the closing force and speed

1) Adjusting the closing force

● If the closing force needs adjustment, turn the gear shaft with a screwdriver for adjustment.
Label on the Turn it in the component
Turn it in the direction of
"Strong"=>to increase the closing force.
Turn it in the direction of
"Weak" =>to decrease the closing force.
＜Adjustment range＞
Be sure to adjustment within the limits of following instructions.

Model	PS-25
Strong	4 turn from factory setting
Weak	4 turn from factory setting

● Be sure to confirm the pull spring stopper is hooked with gear.

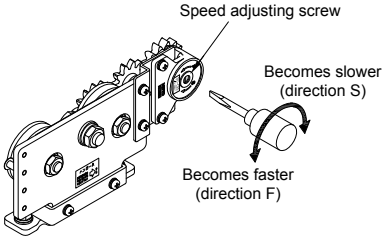


⚠Caution

● Over winding it in the direction of "strong" will cause a breakdown. Be sure to set it to a value not exceeding the number of windings indicated on the sticker on the component.

2) Adjusting the closing speed

● Turn the speed adjusting screw of the control device with a screwdriver to adjust the closing speed. (It is factory-configured to the highest speed.)



⚠Caution

● Turn the speed adjusting screw lightly. Otherwise an imperfect control may result. After turning it all the way home, do not turn it with overstrain.
A change in the ambient temperature varies the closing speed somewhat. As the temperature rises, the speed increases. As the temperature declines, the speed decreases.

Installation is completely.

Sliding Closer
Installation manual

DISTRIBUTED BY

NITTO KOHKI CO., LTD.

Head Office:
9-4, Nakaikegami 2-chome, Ohta-ku, Tokyo 146-8555, Japan
Tel : +81-3-3755-1111 Fax : +81-3-3753-8791
E-mail : overseas@nitto-kohki.co.jp

Overseas Auto Hinge Sales Division:
8F, Orix Ueno bldg., 7-4-7 Ueno, Taito-ku, Tokyo 110-0005, Japan
Tel : +81-3-5806-1030 Fax : +81-3-3843-5188
E-mail : Kentokyo@nitto-kohki.co.jp

Web www.nitto-kohki.co.jp/e