

Factory Line 30

Instruction Manual

Factory Wiring Duct

- Be sure to read this Instruction Manual before use, and then properly use the product.
- Ask an electrical contractor for troubleshooting and maintenance such as expansion of this product. In such case, be sure to pass these Installation and Instruction Manuals to the contractor.
- Since installing any additional terminal plug includes wire connection work, the qualification as an electrical worker is required. To amount an additional outlet plug, the qualification as an electrical worker is not required.
- Be sure to keep this Instruction Manual for future reference, and be sure to hand this manual to user.

Note: Before mounting/dismounting or relocating plugs, be sure to turn OFF power supply


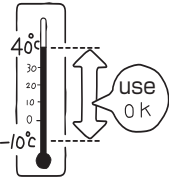
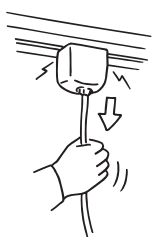
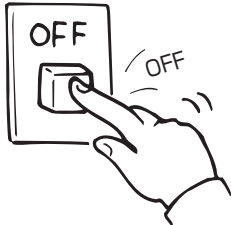
Safety precautions Be sure to observe the precautions fully.

The precautions describe what must be observed not to harm humans nor cause property damage.

Warning

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| <ul style="list-style-type: none"> ● Do not make any modification to this product. Doing so will result in an electric shock, a fire, or a drop. ● Do not mount any bracket other than dedicated bracket to the Factory Line 30, or do not apply weight exceeding that of the dedicated bracket (allowable suspension load of hanger: 10 kg) to the Factory Line. Doing so will result in a drop. ● Do not slide the plug with having come in the duct. Doing so may result in faulty connection, thus leading to a fire. | <ul style="list-style-type: none"> ● If any abnormality occurs, immediately turn OFF the power supply, and then contact your electrical contractor to ask the contractor to take necessary actions. In such case, be sure to pass these Instruction and Installation Manuals to the contractor. Not doing so will result in an electric shock, a fire, or a drop. ● To replace the product, the qualification as an electrical worker is required. ● To replace any product other than the outlet plug, the qualification as an electrical worker is required. In addition, since plugs must be mounted in a designated direction, check them for the "direction". ● Use the plugs at load not more than the allowable load. Doing so will result in a drop. ● Use products only within the specified rating and load capacity. |
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Caution

- | | |
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| <ul style="list-style-type: none"> ● Since this product is dedicated to ordinary indoor use, do not use it in places with high humidity, vibration, rain sprayed on the product, moisture, or corrosive gas. Doing so may result in an electric shock, a fire, or a drop. ● Do not use this product in places with ambient temperature range not within -10°C to 40°C or dew condensation caused by a sudden change in temperature. Doing so may result in an electric shock, a fire, or a drop. ● Do not use plugs for Factory Line 30 for Factory Line 400, 200, 100, 60, and 20 due to differences in the grounding methods and dimensions. Doing so may result in an electric shock or a fire. ● Do not pull the plug cable. Doing so may result in faulty connection, thus leading to a fire. ● Do not connect the plug in an opposite direction. Doing so may result in faulty connection, thus leading to a fire. | <ul style="list-style-type: none"> ● Before check for the product, be sure to turn OFF the power supply. Not doing so may result in an electric shock. ● If an earthquake occurs, turn OFF the power supply, and then ensure that thorough mounting strength is provided. If NOT, consult with your electrical contractor. In such case, be sure to pass these Installation and Instruction Manuals to the contractor. Not doing so will result in a drop. ● Prevent a direct load from applying to the outlet of outlet plug or reeler outlet plug. Not doing so may result in an electric shock, a fire, or a drop. |
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Safety Check Sheet & Maintenance Sheet

- At least once a year, please do self-inspection due to safety check sheet. If any abnormality occurs, immediately contact electrical worker.
- Receive the check by the specialist in the construction shop etc. once every three years.
- when will use beyond 10 years after installation, At least once a year, please do inspection due et. At least once a year at least, please accept inspection by a electrical worker to be sure. and When it passes for 15 years after installation, Please stop use promptly and exchange it.

A title	Check day	Y	D	M	The check person in charge
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Caution

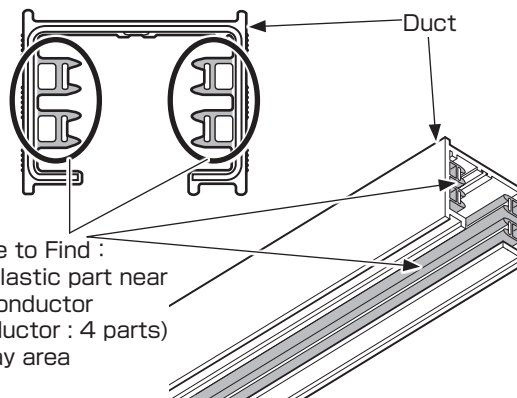
- Action against abnormal, turn off the power before, checks by the electrical worker. Not doing so will result in an electric shock, a fire, or a drop.

Result	○ : Normal	Measures	○ : Exchange required
	× : Abnormality		● : Finished with exchange
			△ : Adjustment required
			▲ : Finished with adjustment

■ Safety Check Sheet (Self-check) : At least once a year

		Contents of inspection	Result
Duration of use	1	Less than 10 years of use?	
		More than 15 years of use?	
conditions of use	1	Are there condense on the ducts?	
	2	Are there stains or discoloration on the inside of the duct?	
	3	Are there deposits of dust adhering to the inside of the duct?	
	4	Are there an abnormal looseness or gap?	
	5	Are the connection parts of duct straight ?	
	6	Are there such a strange odor or smell burnt?	
	7	Did blocked the earth leakage breakers?	
	8	Had the power supply of the apparatus linked to a duct turned on and off ?	

2. Where to Find discoloration



■ Maintenance Sheet(The contents of check by electrical worker)

: Least once every three years during and after completion

A title	Contents of inspection	Remedy	Result	Measures
Duct	Is there condensation?	Eliminate the cause of condensation		
	Mount the duct to the ceiling side directly, Are there loose the screw?	Retighten		
	Are there discoloration or deformation in the plastic of the duct and	Change it.		
	Are there adhesion and deposition of dust in the inside of a duct?	Remove the dirt		
	Is a straight line connecting duct?	Attachment is improved so that it may become a straight line.		
	Is the thing which is not an exclusive plug attached to the duct?	Exchange plugs.		
The parts to connect • feed-in cap • Center-feed-in joiner • Joiner • Joiner L • End cap	Are there any slack of a set screw ?	Retighten		
	Is the duct insufficient to merge ?	Iserts enough to the back.		
	Is cover detached?	Replace the cover		
	Are there discoloration or deformation in the plastic ?	Change it.		
	Are there breakage and a crack?	Change it.		
Plug	Are there loose the terminal screw?	Retighten		
	Correct direction of the attachment to the duct?	Attach after checking direction.		
	Are there loose the terminal screw?	Retighten		
	Is the plastic of the plug discoloring and changing?	Change it.		
	Are there breakage and a crack?	Change it.		
Hanger	Is the electric wire of the plug pulled?	takes a little longer		
	Are there loose hanger nat?	Retighten		
	Are there loose hanger cap?	Turns to the right until it locks.		
All	Insulation resistance: :Is the insulation resistance greater than or equal to 0.1 M Ω at 150 V or less voltage to ground? :Is the insulation resistance greater than or equal to 0.2 M Ω at 150 V or more voltage to ground?	Do pertain to your particular place and cause abnormal		

- Be sure to read this Instruction Manual before installation, and then properly install the product.
- Installing this product requires the qualification as an electrical worker. Be sure to ask a contractor for the installation of the product.

Safety precautions Be sure to observe the precautions fully.

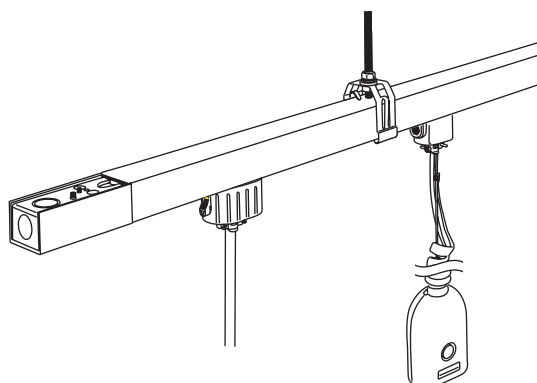
The precautions describe what must be observed not to harm humans nor cause property damage.

Warning

- NEVER make any modification to this product.
Doing so will result in an electric shock, a fire, or a drop.
- Do not use the product in places with ambient temperature range not within -10°C to 40°C or dew condensation caused by a sudden change in temperature.
Doing so may result in an electric shock, or a fire.
- Install this product in accordance with the Electrical Equipment Technical Standards (Law) and the Internal Wiring Regulations. Use proper overcurrent circuit breakers on the primary side of power supply. Choose a size of cable used to supply power to Factory Line suitable for overcurrent circuit breakers to protect the branch circuit and for the rated current.
Not doing so will result in an electric shock, a fire, or a drop. For detail, refer to information in the Internal Wiring Regulations.
- Installation must be carried out according to the installation manual. Improper installation may cause fire, electric shock or damage due to falling of equipment.

Caution

- Since this product is dedicated to ordinary indoor use, do not use it in places with high humidity, vibration, rain sprayed on the product, moisture, or corrosive gas.
Doing so may result in an electric shock, a fire, or a drop.
- Do not install the Factory Line duct passing through building structure.
Doing so may result in a fire.
- Do not install the Factory Line duct directly on building structure.
Doing so may result in a fire, or a drop.
- Do not connect the plug in an opposite direction.
Doing so may result in faulty connection, thus leading to a fire.
- Use this product within the indicated range of rating and load capacity.
Using the product outside the range may result in a burn or a fire.
- Install this product with the opening of the Factory Line duct facing upward.
Not doing so may result in faulty connection, thus leading to a fire.
- For cutting work, wear protective equipment such as safety glasses.
Not doing so may result in an injury.
- After cutting, deburr edges using a file.
Not doing so may cause you to injure your finger.
- To prevent improper use of 100V or 200V power, be sure to affix a voltage indication label, which comes with the Factory Line, to the Factory Line duct and the plug respectively after the completion of installation work.
Using the product at a voltage exceeding that indicated on the label may result in a burn or a fire.
- Since it is required by law to install a load protective device to use the duct as a 30A branch circuit, install the protective device or use terminal plugs with protective device (e.g. CP (circuit protector)).
Failure to install the protective device may result in fire.
- If the Factory Line 30 is installed with opening facing Sideways, do not install the units in areas that unauthorized persons may access easily.
Also be sure to install a duct cover.
Failure to do so may cause fire or electric shock.



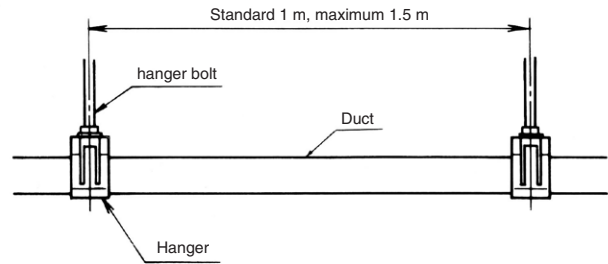
Installation Procedure

1 Hanger installation

1. Mount hangers at spacing of 1.5 m as a standard.
2. Fix hanger bolts securely to building structure.

Caution

- Use long hanger bolts, mount these bolts using anti-swing fixture
To prevent the ducts from meandering, align the hanger centers.
Not doing so may cause the hangers to drop.
- Do not mount the duct to building structure directly.

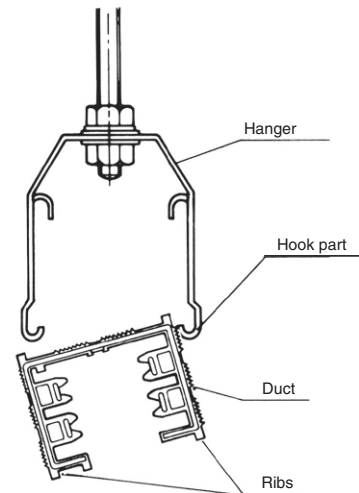


Installation the duct

1. Push to open the hook part using the upper corner of the duct.
2. Directly push up the duct, and then hitch the rib part on the hook part.

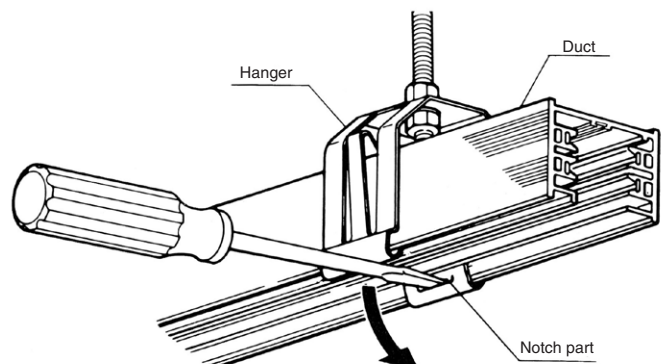
Caution

- Connect the ducts so that they butt securely up against each other.
There is a possibility of falling.



Dismount of the duct

1. Insert a flat-blade screwdriver in a notch part of a hanger, and then pull it up in the direction of an arrow.
2. Subsequently, disengage the hook part of the hanger from the rib part of the duct.



2 Pipe suspension Hanger installation

Support spacing for the duct

- The standard interval for mounting of the hangers is 1 m, and the maximum interval is 1.5 m.
Be sure to mount securely to a structural member.

Caution

- Ensure the strength of building structures enough to support the hanging weight (a maximum of 10 kg per support).
Not doing so may cause the hanger to drop.
- To prevent the ducts from meandering, align the hanger centers.
Not doing so may cause the hangers to drop.

Flange mounting dimensions

1. Turn the flange cover to the left to remove it.
2. Use the wood screw or tapping screw, then mount the flange to a structural member.
3. Align the pipe mounting hole of the pipe suspension hanger with the position of the pan head machine screw to put the pipe in the flange, and then fasten the pan head machine screw and the setscrew. (Fasten the pan head machine screw through the pipe mounting hole.)
4. Turn the flange cover to the right to mount it back in its original position.

Caution

- Securely fasten the wood screw or tapping screw, pan head machine screw, and setscrew.
Not doing so may cause the hangers to drop.

Adjust the length the pipe-suspended hangers after mounted

- In order to adjust the length after the pipe-suspended hangers have been mounted to a structural member, loosen the securing screw, remove the pipe, and cut the pipe at the flange end.
- After cutting, drill a hole ($\phi 5.5$ mm), mount the flange, and then mount a pipe to the flange.

Installation of the duct

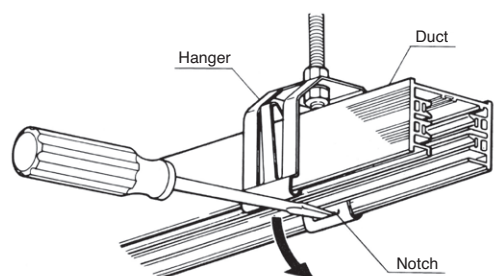
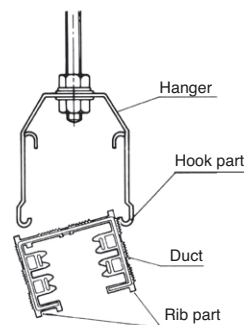
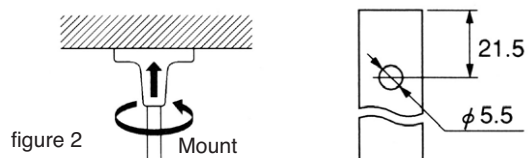
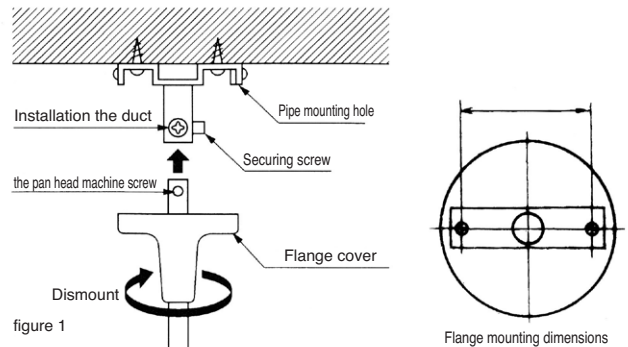
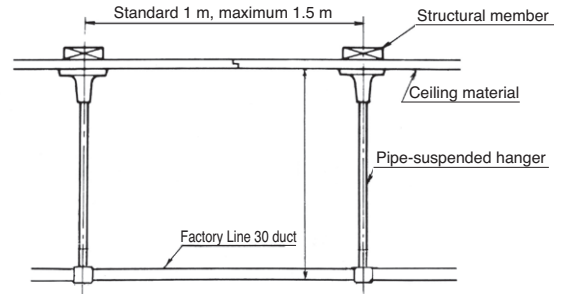
1. Push to open the hook part using the upper corner of the duct.
2. Directly push up the duct, and then hitch the rib part on the hook part.

Caution

- Hangers must be securely fixed.
Not doing so may cause them to drop.

Removal of the duct

1. Insert a flat-blade screwdriver in a notch of a hanger, and then pull it up in the direction of an arrow. Subsequently, disengage the hook part of the hanger from the rib part of the duct.
2. Dismount the duct downwards.

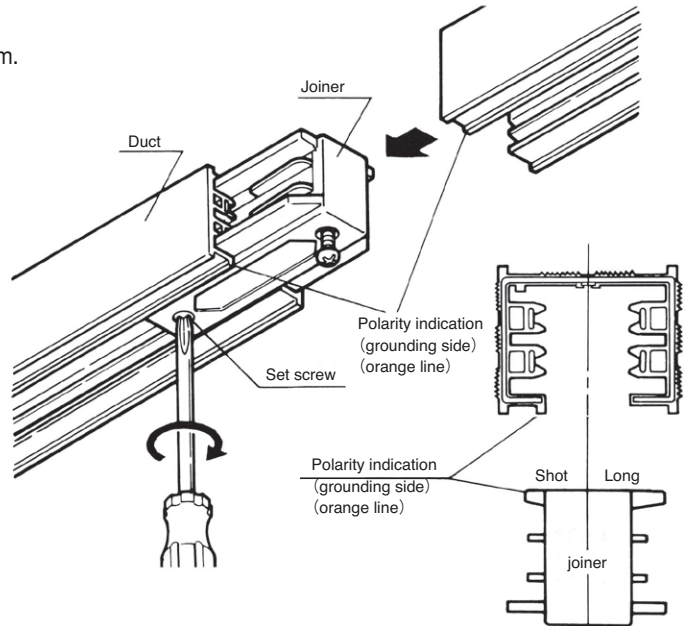


3 Connecting the ducts

- Be sure to mount the duct and joiner by aligning the polarity marking with each other, and then fasten the setscrew to fix them.

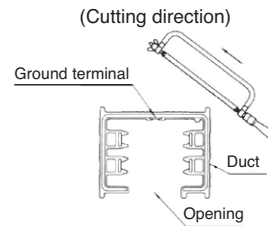
Notes

- To connect Factory Line ducts, use a joiner.



Caution

- Connect the ducts so that they butt securely up against each other.
- Tighten the set screws securely. (tightening torque : more than 0.98N·m)
- When cutting the ducts, use a metal hacksaw (hand type) and cut with the opening in the duct facing downward as shown in the figure. If a power saw is used, the insulation cladding or ground terminals could be scraped or burned.
- After cutting, if the ground terminal protrudes slightly, correct it.
- Remove any cutting chips or burrs from the cut surface. Doing so may result in an electric shock or a fire.



4 Indicating operating voltage category

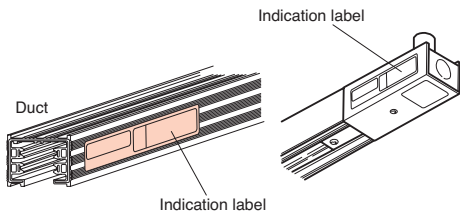
- To prevent improper use of operating voltage (100V or 200V), be sure to affix a voltage indication label, which comes with the duct and connection units (the feed-in cap, the feed-in joiner, joiner L · T · +), to a prominent place on the side of the duct and the connection units, after the completion of cable connections to the duct.

Duct use



Connection unit use

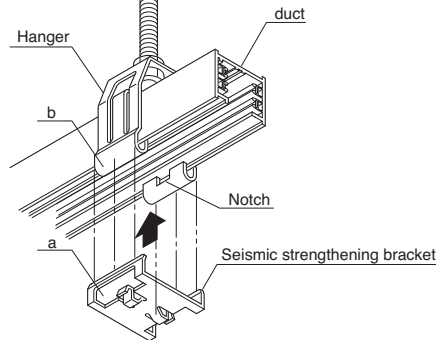
feed-in cap Center feed-in joiner
joiner L · T · +



	wiring method	using Label
Single phase and two circuits		100V
		200V
		上段 200V 下段 100V
Three phases and a single circuit		3φ 200V

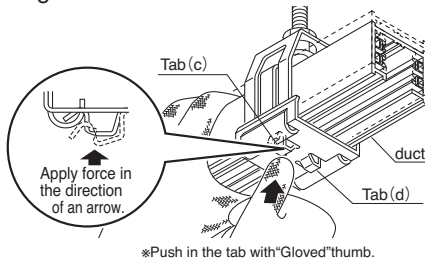
5 Mounting seismic strengthening brackets

- Align the center of seismic strengthening bracket with that of a hanger, and then fit the part “b” of the hanger in the part “a” of the seismic strengthening bracket.



Mounting seismic strengthening bracket

1. Apply force in the direction of “↑” to push one tab (c) in the notch of the hanger with your thumb until you feel a click.
2. Subsequently, push the other tab (d) in the notch of the hanger in the same manner.

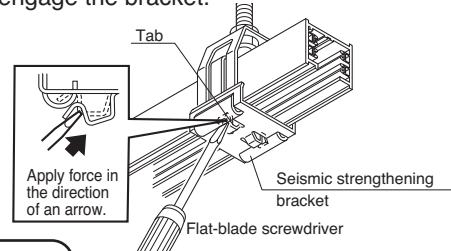


Note

- If the seismic strengthening bracket is not fit to the hanger, the duct or the hanger may have caused deformation or damage. In this case, check for it, and then replace it if necessary.
- Note that seismic strengthening brackets used for Factory Line 30 are different in mounting dimensions.

Dismounting seismic strengthening brackets

1. As shown in the figure below, put a flat-blade screwdriver in a clearance between the tab of a seismic strengthening bracket and the bottom of a hanger.
2. Move the screwdriver in the direction of an arrow to disengage the bracket.



Note

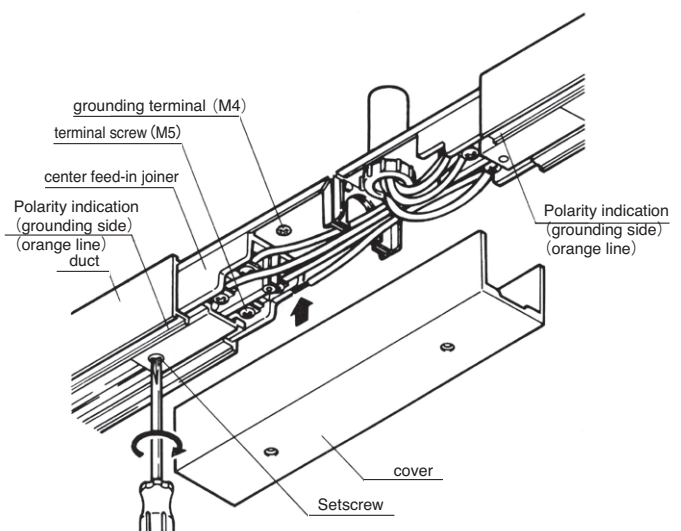
- There are two tabs to be disengaged.
- Disengage these tabs one by one.
- Do not refuse any seismic strengthening brackets dismounted.

6 Installing a center feed-in joiner

1. To connect the duct with the center feed-in joiner, be sure to align the polarity side (convex side) with each other, and then fasten setscrews to fix the joiner.
2. Strip the sheath of the cable by 10 to 12 mm in length, unfasten the terminal screw to put the cable under the washer, and then fasten the terminal screw to securely connect the cable.
3. To connect the cable, be sure to put the polarity indication side of the cable on grounding side.
4. Mount the cover to the feed-in cap

⚠ Caution

- The cable must be a single-conductor cable of 2.0 to 2.6 mm in size or a stranded-conductor cable of 3.5 to 5.5 mm² in size.
- To connect the cable using crimp-style terminal, be sure to use an insulating cap or an insulated pin terminal.
- Connect a grounding cable to the grounding terminal by winding the cable around the terminal.
- Securely fasten the setscrews and terminal screws. (Set screw clamping torque : more than 0.98N·m) (Terminal screw clamping torque : 1.5~2.0N·m)
Not doing so may result in an electric shock.

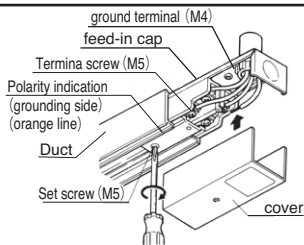


7 Installing the feed-in cap

1. Fit the feed-in cap into the duct and tighten the set screw to secure it
2. Strip the sheath of the cable by 10 to 12 mm in length, unfasten the terminal screw to put the cable under the washer, and then fasten the terminal screw to securely connect the cable.
3. Mount the cover onto the feed-in cap.

Caution

- To connect the cable, be sure to put the polarity indication side of the cable on grounding side.
- The cable must be a single-conductor cable of 2.0 to 2.6 mm in size or a stranded-conductor cable of 3.5 to 5.5 mm in size.
- Connect a grounding cable to the grounding terminal by winding the cable around the terminal.
- To connect the cable using crimp-style terminal, be sure to use an insulating cap or an insulated pin terminal.
- Securely fasten the setscrews and terminal screws. (Set screw clamping torque : more than 0.98N·m) (Terminal screw clamping torque : 1.5~2.0N·m)
Not doing so may result in an electric shock.

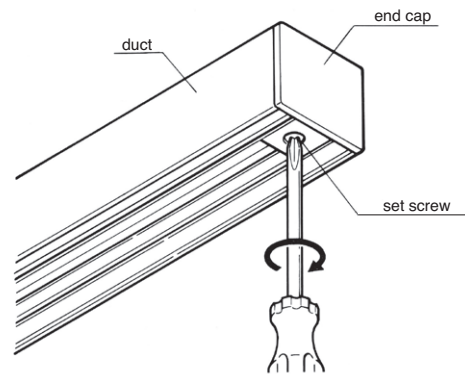


8 Attaching the end cap

- Fit the end cap into the end of the duct and secure it by tightening the set screw.

Caution

- An end cap must be mounted onto end of the duct. Not doing so may result in an electric shock.
- Securely fasten the setscrews. (tightening torque : more than 0.98N·m)
Doing so may result in an electric shock or fire.



9 Mounting the terminal plug

Connecting the electrical cables

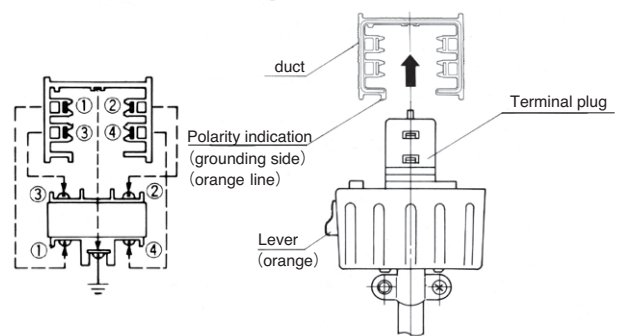
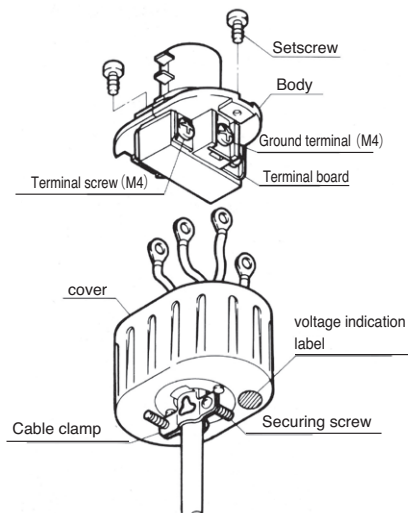
- Remove the set screws to remove the cover.
- Loosen the cable clamp securing screws and insert the electrical cable into the cover.
- Connect the electrical cables to the terminal board by either using crimp terminals or by winding the cables around the terminals.
- Fit the cover into the body and secure it by tightening the set screws.
- Tighten the cable clamp securing screws to secure the electrical cable.

Caution

- Securely fasten the terminal screws. Not doing so may result in a fire.
Do not connect the Factory-line 100-60.
- Do not slide the plug with having come in the duct.
Doing so may result in faulty connection, thus leading to a fire.

Notes

- If a ground needs to be established, connect a single-core cable to the grounding terminal board.
- **Indicating operating voltage category**
To prevent improper use of operating voltage (100V or 200V), be sure to affix a voltage indication label, which comes with the duct, to a prominent place on the side of the duct after the completion of wire connections to the duct.



Mounting plug

- Matching the polarity indications on the duct (orange line) and the plug lever (orange), insert the plug into the duct, and then rotate it clockwise by 90 degrees.

Dismounting plug

- Put down the plug lever, and then rotate the plug counterclockwise.

10 Mounting an electrical outlet plug

Mounting plug

- Matching the polarity indications on the duct (orange line) and the plug lever (orange), insert the plug into the duct. and then rotate it clockwise by 90 degrees.

Dismounting plug

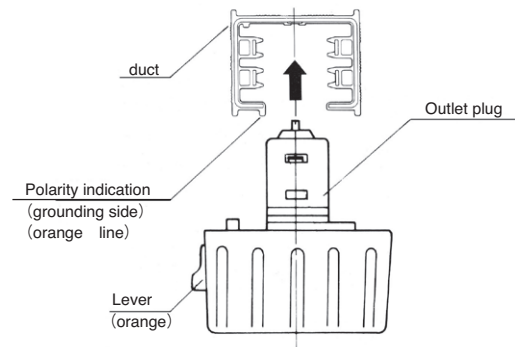
- Put down the plug lever, and then rotate the plug counterclockwise.

Caution

- Do not slide the plug with having come in the duct. Doing so may result in faulty connection, thus leading to a fire.

Notes

- Do not connect the Factory-line 100·60.
- Use the Factory-line unit as a branch circuit of 20A or 15A.



11 Procedure for mounting and using reeler outlet plug

Mounting reeler outlet

- To mount the reeler outlet, pull up the plug lever, and then rotate it clockwise by 90 degrees.

Dismounting plug

- Pull down the plug lever, and then rotate it counterclockwise by 90 degrees.

Up-and-down handling the outlet

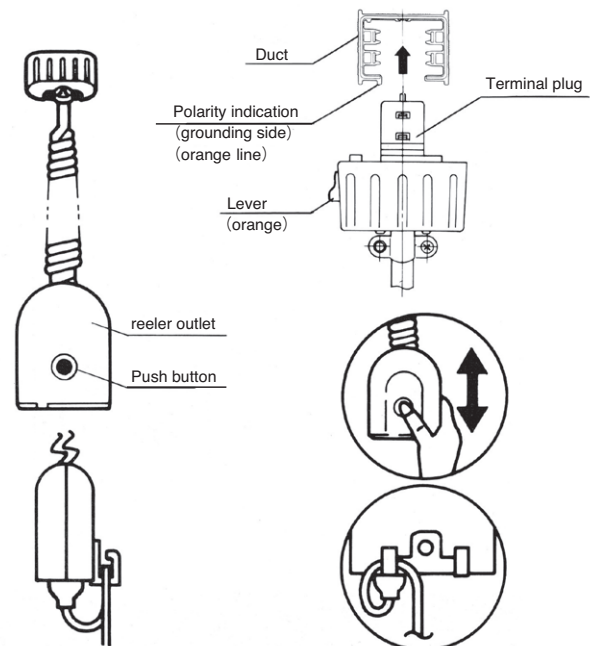
- The outlet can expand and contract in the range of approximately 80 to 180 cm from the mounting surface.
- Pull down the main body of the outlet. It stops in a position in which handling stop.
- To return the main body to the original position, press and hold the pushbutton press and hold the pushbutton to push up the main body to a position to which you want to return it. (Releasing the pushbutton will stop it on the spot.)

Retaining the cap of fixture used

- Hitch the cord on the cord hook of the outlet to use the fixture.

Caution

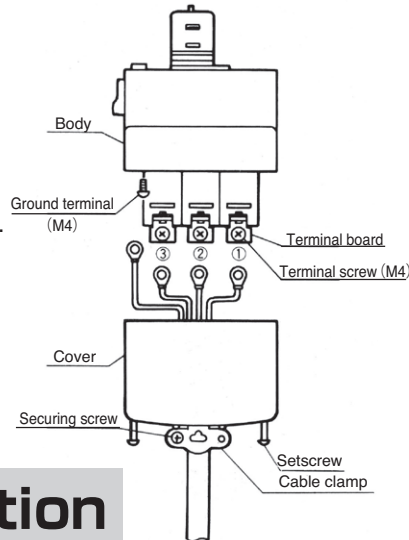
- Do not slide the plug with having come in the duct. Doing so may result in faulty connection, thus leading to a fire.



12 Mounting terminal plug with protective device (CP)

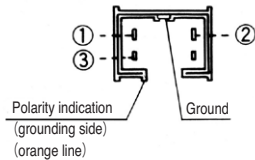
Connecting the electrical cables

1. Remove the set screws to remove the cover.
2. Loosen the cable clamp securing screws and insert the electrical cable into the cover.
3. Connect the electrical cables to the terminal board by either using crimp terminals or by winding the cables around the terminals.
4. Fit the cover into the body and secure it by tightening the set screws.
5. Tighten the cable clamp securing screws to secure the electrical cable.



Caution

- Connect one lead to the grounding terminal.
- Securely fasten the terminal screws. Not doing so may result in a fire.
- Do not slide the plug with having come in the duct. Doing so may result in faulty connection, thus leading to a fire.

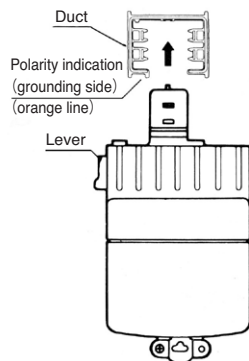


Mounting the terminal plug with protective device (CP)

- pull up the plug lever, and then rotate it clockwise by 90 degrees.

Notes

- Do not use CP plugs for ducts with the opening facing sideways.



Dismounting plug

- Pull down the plug lever, and then rotate it counterclockwise by 90 degrees.

13 Mounting fluorescent lighting fixture

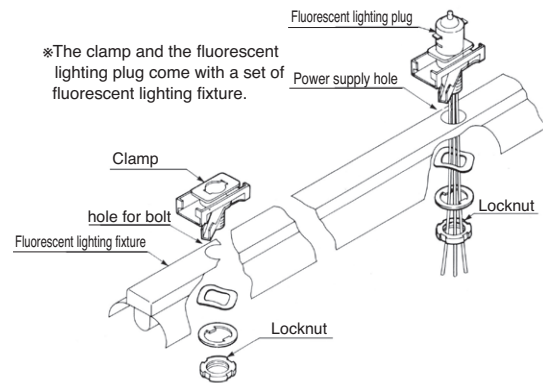
Fixing clamp and fluorescent lighting plug

<Clamp>

- As shown in the figure, put the clamp in the hole for bolt in the fluorescent lighting fixture, and then fasten the locknut to fix the clamp.

<Fluorescent lighting plug>

- As shown in the figure, put the lighting plug in the hole for power supply cable, and then fasten the locknut to fix the plug.

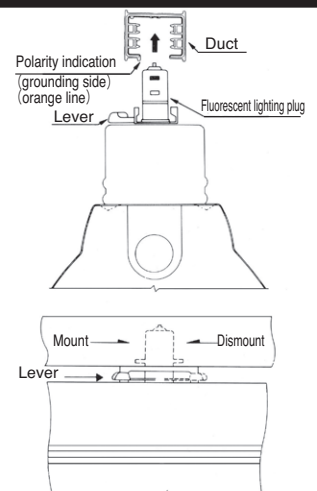


Caution

- To connect the cable to unthreaded terminal, use an insulated pin terminal. Not doing so may result in faulty cable connection, thus leading to a fire.
- Securely fasten the locknut. Not doing so may result in a drop.

Mounting fluorescent lighting fixture to the duct

- Put the clamp and fluorescent lighting plug lever in line with the polarity indication (green line) of the duct.



fluorescent lighting plug and clamp lever handling method

<To mount>

Rotate clockwise until the lever no longer rotates.

<To dismount>

Rotate counterclockwise until the lever no longer rotates.

Caution

- Ensure proper lever handling. Not doing so may result in a drop.
- Do not slide the plug with having come in the duct. Doing so may result in faulty connection, thus leading to a fire.

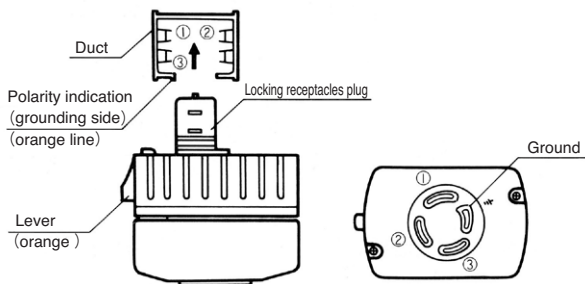
14 Locking receptacles plug

Mounting plug

- pull up the plug lever, and then rotate it clockwise by 90 degrees.

Dismounting plug

- Pull down the plug lever, and then rotate it counterclockwise by 90 degrees.



Caution

- Do not slide the plug with having come in the duct. Doing so may result in faulty connection, thus leading to a fire.

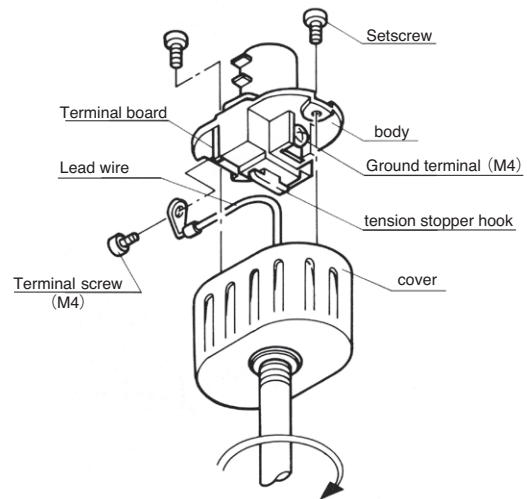
15 Mounting lighting plug

Connecting the electrical cables

1. Screw the lighting fixture setscrews in the plug cover, and then lock the setscrews with locknut or application of superglue.
2. Hitch the lead wires on the tension stopper hook and then connect them to the terminal board by either. (using crimp terminals or by winding around the terminals)
3. Fit the cover into the body and secure it by tightening the set screws.

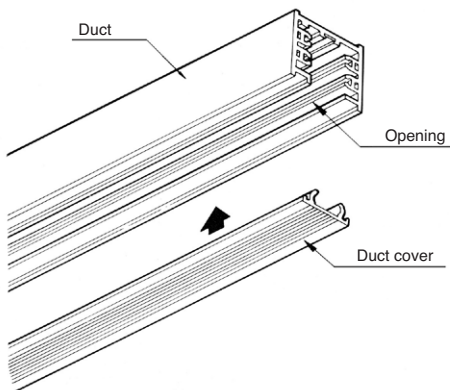
Caution

- Securely fasten the terminal screws. Not doing so may result in a fire.
- Do not slide the plug with having come in the duct. Doing so may result in faulty connection, thus leading to a fire.



16 Mounting a duct cover

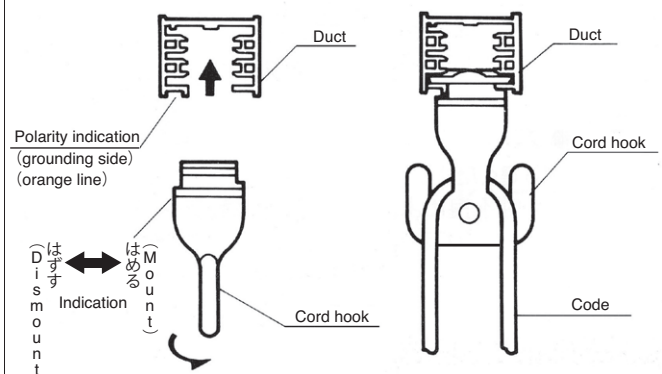
- Mount the cover by fitting it into the opening in the duct.



17 Procedure for mounting and using cord hook

Mounting cord hook

- Put the cord hook in the duct aligning the marking “ははずす (Dismount) ↔ はめる (Mount)” on the hook with the Polarity indication (orange line) of the duct, and then rotate the hook clockwise by 90 degrees.
- To dismount the hook, rotate it counterclockwise by 90 degrees.
- Hitch the cord as shown in the figure below.
- Hanging load shall be not more than 5 kg.



18 Mounting joiner L

Connection to duct

- Be sure to connect the duct with joiner L with the polarity marking (orange lines) aligned in the direction shown in the figure below, and then fasten the setscrew to fix them.
- Only to make connection, the cover needs not to be dismantled.

Power supply connection

- For power supply connection, break the knock-out part, and then make cable connection.
- Strip the sheath of the cable by 10 to 12 mm in length, unfasten the terminal screw to put the cable under the washer, and then fasten the terminal screw to securely connect the cable.
- To connect the power supply cable, be sure to put the polarity marking side of the duct on the grounding side.

Caution

- The cable must be a single-conductor cable of 2.0 to 2.6 mm in size or a stranded-conductor cable of 3.5 to 5.5 mm² in size.
- To connect the cable using crimp-style terminal, be sure to use an insulating cap or an insulated pin terminal.
- Connect a grounding cable to the grounding terminal by winding the cable around the terminal.
- Securely fasten the setscrews and terminal screws.
(Set screw clamping torque : more than 0.98N·m)
(Terminal screw clamping torque : 1.5~2.0N·m)
Not doing so may result in an electric shock.

