

Instruction Manual Factory Line 20

- 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 Instruction and Installation Manuals to the contractor.
- Mounting additional outlet plug requires no qualification as an electrical worker.
Note: Before mounting/dismounting or relocating plugs, be sure to turn OFF power supply
- Be sure to keep this Instruction Manual for future reference, and be sure to hand this manual to user.

There is longevity in Factory Line 20, and a standard use period is ten years. It becomes impossible to use finally due to the deterioration of internal if it uses it exceeding the service life. Deterioration advances every year though it differs in the environmental condition and the service space. In order to use the factory-line for a long time, please contact the specialist in the construction shop etc. when it checks, and trouble is found, and receive the check by the specialist in the construction shop etc. once every three years. Please be sure to observe the following, and the check.

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

- | | |
|--|---|
| <ul style="list-style-type: none"> ● Do not modify to products in any way.
may cause fire, electric shock or damage due to falling of equipment. ● Do not install parts of incompatible.
may cause fire, electric shock or damage due to falling of equipment. ● Do not mount any bracket other than dedicated bracket to the Factory Line 20, 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. | <ul style="list-style-type: none"> ● Do not install the illuminator that becomes a high temperature like the white heat ball etc.
Not doing so will result in an electric shock, a fire. ● If any abnormality occurs, immediately turn OFF the power supply, and then contact your electrical worker to take necessary actions. (In such case, be sure to pass Instruction and Installation Manuals)
Not doing so will result in an electric shock, a fire, or a drop. ● Use the rated voltage within the load capacity that is always displayed.
Not doing so will result in a fire. ● Use Fluorescent lighting plug below a permissible load.
Not doing so will result in a fire, or a drop. |
|--|---|

Caution

- | | |
|--|--|
| <ul style="list-style-type: none"> ● this product is dedicated to ordinary indoor use, Do not use it at the place which is subject to the influence of heat, such as the upper part of a heater, or a place with moist place and vibration, which receives blowing in of rain, and a moist, where corrosive gas, where the smoke rises <ul style="list-style-type: none"> • A place with moist place and vibration • A place which receives blowing in of rain, and a moist place • A place where corrosive gas, where the smoke rises • The place which is subject to the influence of heat, such as the upper part of a heater Not doing so will result in an electric shock, a fire, or a drop. ● Do not slide putting the plug in the duct
Poor contact will cause a fire. ● Do not slide putting the plug in the duct
Not 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. ● Before check for the product, be sure to turn OFF the power supply.
Not doing so may result in an electric shock. | <ul style="list-style-type: none"> ● 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. ● Use the range of $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$ ambient temperature
The use without of range, burn, or cause a fire. ● Attach the plug in the right direction.
If it attaches to reverse, it will become a cause of an electric shock, a fire, and fall. ● Do not apply directly weight to an outlet of the outlet plug and the reeler outlet plug.
Not doing so will result in an electric shock, a fire, or a drop. ● Use this product for the transmission of information, The transmission performance might be deteriorated because of the signal decay in connected part. ● There is longevity in Factory Line 20, and a standard use period is ten years.
Even if abnormality is not found in externals, the check exchange is done internally because it is deteriorated. |
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Installation Manual Factory Line 20

- 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

Safety precautions

Be sure to observe the precautions fully

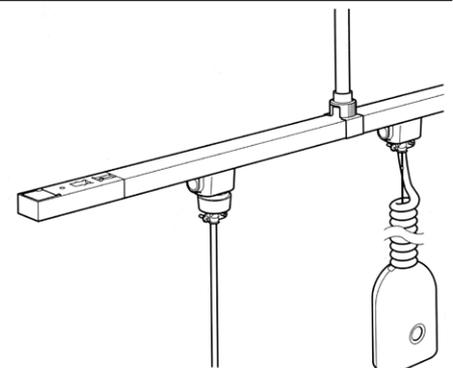
The precautions describe what must be observed not to harm humans nor cause property damage.

Warning

- **Do not make any modification to this product.**
Doing so will result in an electric shock, a fire, or a drop
- **Do not use it at the place which dew condensation generates by a quick temperature change like the wind of an air-conditioner.**
Doing so will result in an electric shock, a fire, or a drop
- **Do not use it in places with combustion gas.**
cause of the explosion.
- **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.
- **Before check for the product, be sure to turn OFF the power supply.**
Doing so may result in an electric shock .
- **Make below the weight that can allow the weight hung to the duct.**
Not doing so will result in a drop.

Caution

- this product is dedicated to ordinary indoor use, Do not use it at the place which is subject to the influence of heat, such as the upper part of a heater, or a place with moist place and vibration, which receives blowing in of rain, and a moist,,where corrosive gas, where the smoke rises
 - A place with moist place and vibration
 - A place which receives blowing in of rain, and a moist place
 - A place where corrosive gas, where the smoke rises
 - The place which is subject to the influence of heat, such as the upper part of a heaterNot doing so will 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 slide putting the plug in the duct**
Poor contact will cause a fire.
- **During construction, Do not give a shock, such as dropping on a product, or hitting.**
It may be damaged.
- **Use the range of $-10\text{ }^{\circ}\text{C} \sim 40\text{ }^{\circ}\text{C}$ ambient temperature**
The use with out of range, burn, or cause a fire.
- **For cutting work, wear protective equipment such as safety glasses.**
Not doing so may cause you to injure your finger.
- **After cutting, deburr edges using a file.**
Not doing so may cause you to injure, so may result in a fire.
- **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.
- **When cutting the ducts, cut at right angles.**
Not doing so will result in an electric shock, a poor contact.
- **Do not mount the Factory Line 20 upward, when installing the horizontal towards, Where there is no one easy touch it (eg where more than 1.8 m) and duct cover (sold separately) that must be used.**
Failure to install a duct cover, causing a fire due to ingress of dust.
- **Insert the connecting component in a duct certainly and tighten the set screw**
Not doing so will result in an electric shock, a fire, or a drop.
- **When connect the wires to the feed-in cap, insert the electrical wires until they are visible in the peep hole.**
Not doing so will result in an electric shock, a fire.



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.

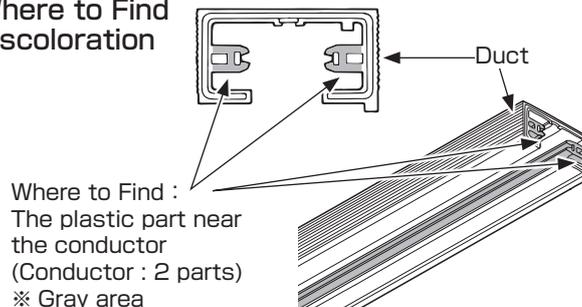
Result	○ : Normal	Measures	○ : Exchange required
	× : Abnormality		● : Finished with exchange
			△ : Adjustment required
			▲ : Finished with adjustment

■ 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?	

		Contents of inspection	Result
conditions of use	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 ?	Inserts 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.		
	Are there loose the terminal screw?	Retighten		
Plug	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.		
	Is the electric wire of the plug pulled?	takes a little longer		
Hanger	Are there loose hanger nat?	Retighten		
	Are there loose hanger cap?	Turns to the right until it locks.		
All	Insulation resistance: 0.1 M.Ω or more voltage to ground 150 V or less	Do pertain to your particular place and cause abnormal		

Installation Procedure

1 Installation of the ducts

Mounting the ducts directly to the ceiling

- Use the tapping screws included with the ducts to mount the ducts directly to the ceiling(or wall).

Caution

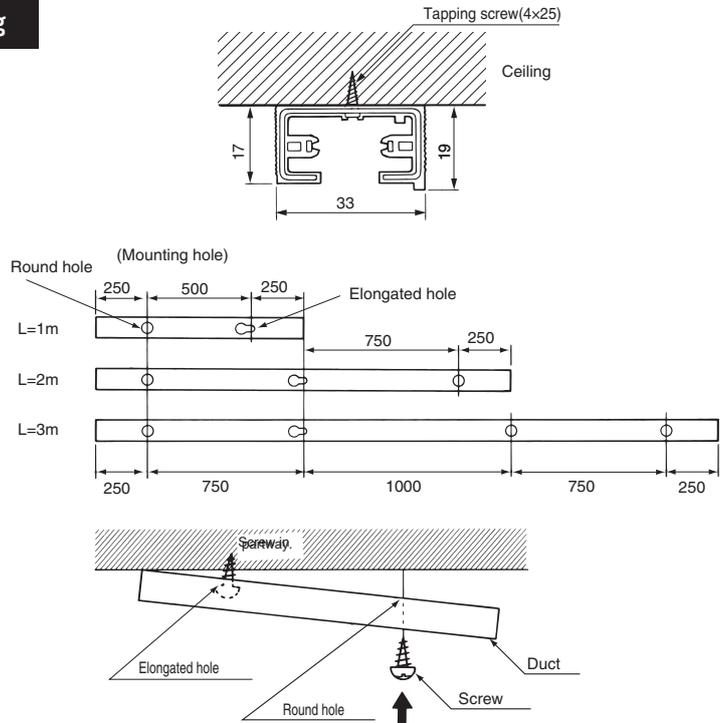
- **Fix the duct to building structure firmly.**
It will become a cause of fall if it does not so.

- Use all of the mounting holes.

Notes

- Do not attach the plug unit with the place where the tapping screws were mounted.

- Screw one screw partway in, fit the elongated hole of the duct onto that screw, and then screw the other screw in through the round hole in the duct. This allows the installation to be completed by one person.



2 Mounting the pipe-suspended hangers 1

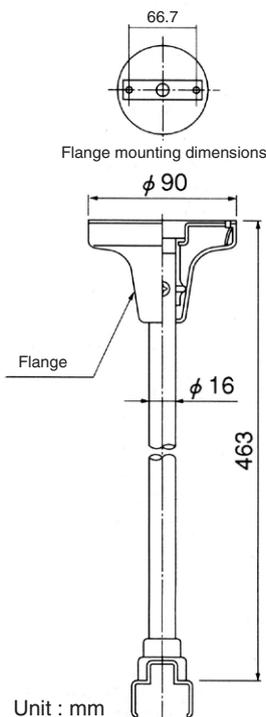
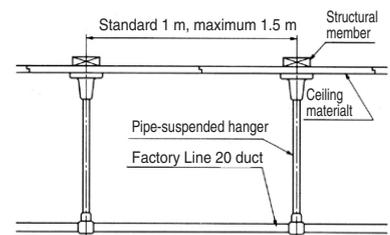
- Use this procedure if the Factory Line 20 ducts are to be suspended from pipes. If necessary, the pipes can be shortened to the required length by cutting them at the flange end.

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 10kg per support).**
Not doing so may cause the hanger to drop.
- **Use two or more pieces of hanger for one duct.**
It will become a cause of fall if it does not so.
- **To prevent the ducts from meandering, align the hanger centers.**
Not doing so may cause the hangers to drop.

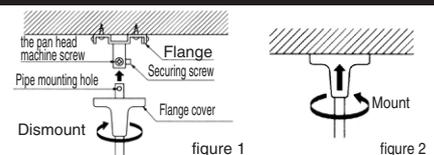


Installation the flanges

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.

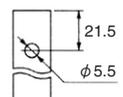
Caution

- **Securely fasten the wood screw or tapping screw, pan head machine screw, and setscrew.**



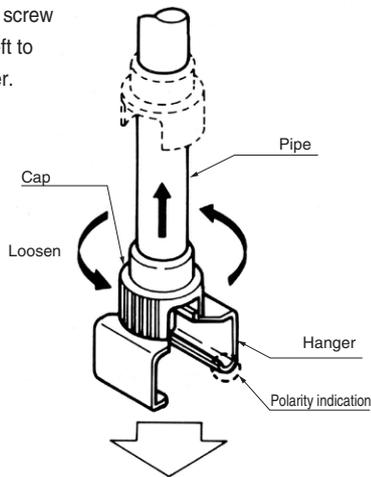
- **Adjust the length the pipe-suspended hangers after mounted**
• In order to adjust the length after the pipe-suspended hangers have been mounted to a structural member, loosen the securing screw, remove the pipe, and cut the pipe at the flange end.

- **After cutting, drill a hole ($\phi 5.5$ mm), mount the flange, and then mount a pipe to the flange.**

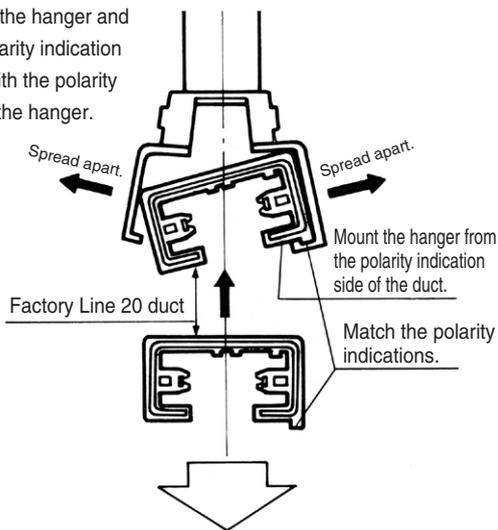


3 Mounting the pipe-suspended hangers 2

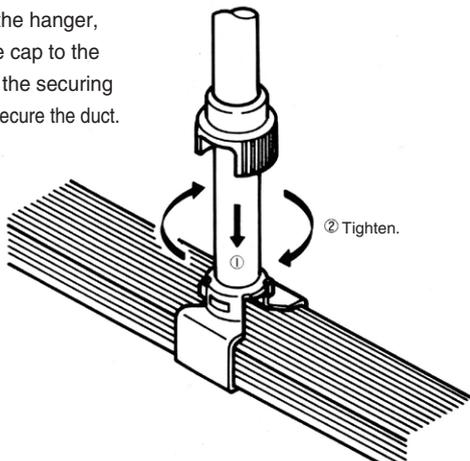
1. Loosen the cap securing screw and turn the cap to the left to remove it from the hanger.



2. Spread apart the hanger and match the polarity indication on the duct with the polarity indication on the hanger.



3. Fit the duct into the hanger, and then turn the cap to the right and tighten the securing screw in order to secure the duct.

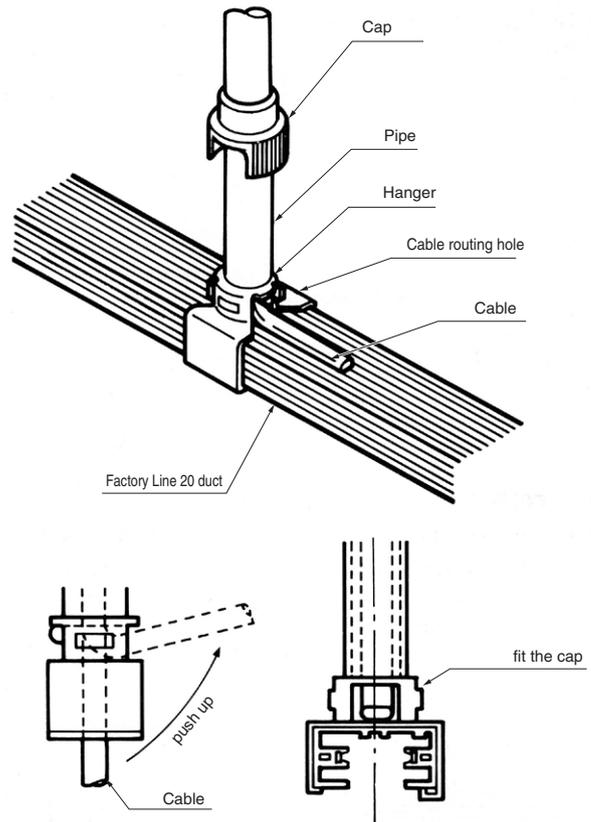


⚠ Caution

- Turn the cap until it is fully locked. Not doing so may cause the duct to drop.

4 Mounting the pipe-suspended hangers 3

1. Supplying power via the pipe-suspended hangers (method for bringing in the power supply)
Route the cable from the ceiling into the pipe. When doing this, it is easier if the cable is passed through the pipe before securing the Factory Line 20 duct in the hanger.
2. Following the same procedure for Step 3, fit the duct in the hanger, and then fix it with the cap.



• Use single-conductor cables of 1.6 or 2.0 mm² in size.

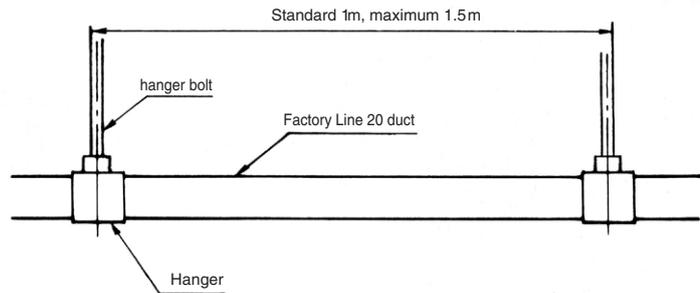
⚠ Caution

- Make wire connections with careful attention so that cables will not be bitten or damaged. Not doing so may result in electric shocks or fire.

5 hangers (with bolt) (without bolt) instalation

hanger instalation

- The standard interval for mounting of the hangers is 1 m, and the maximum interval is 1.5 m.
- Be sure to mount the hanger bolts securely to a structural member.
- DH2652 hangers (without bolt) come without hanger bolts.
- To mount the DH2652 hangers, Use M8 bolts.

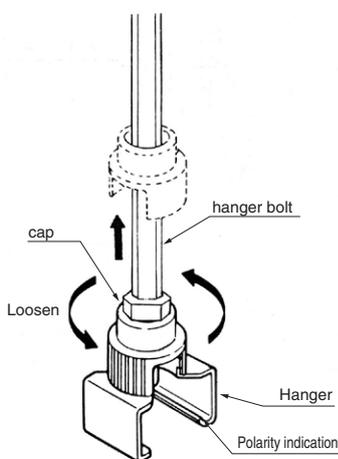


⚠ Caution

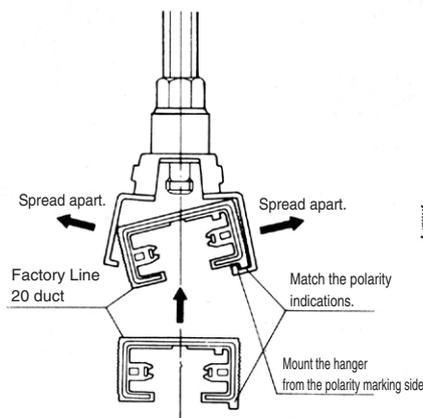
- Ensure the strength of building structures enough to support the hanging weight (a maximum of 10 kg per support).
Not doing so may cause the hanger to drop.
- To use long hanger bolts, mount these bolts using sway braces.
- Use two or more pieces of hanger for one duct.
It will become a cause of fall if it does not so
- To prevent the ducts from meandering, align the hanger centers.
Not doing so may cause the hangers to drop.

Installation of the duct

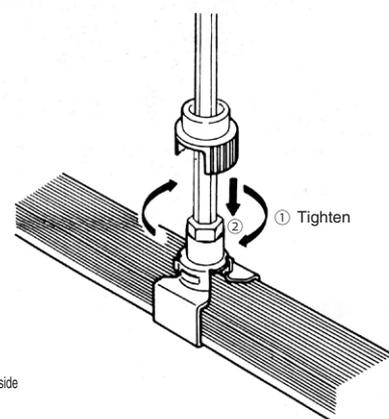
1. Loosen the cap securing screw and turn the cap to the left to remove it from the hanger.



2. Spread apart the hanger and match the polarity indication on the duct with the polarity indication on the hanger.



3. Fit the duct into the hanger, and then turn the cap to the right and tighten the securing screw in order to secure the duct.

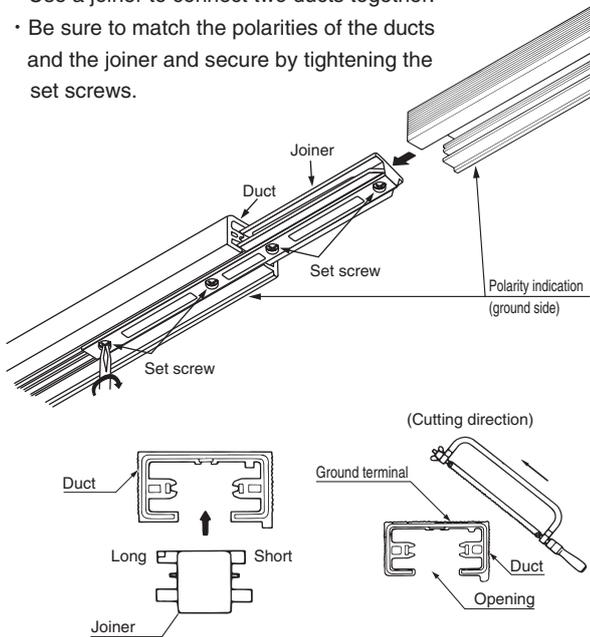


⚠ Caution

- Turn the cap until it is fully locked.
Not doing so may cause the duct to drop.

6 Connecting the ducts

- Use a joiner to connect two ducts together.
- Be sure to match the polarities of the ducts and the joiner and secure by tightening the set screws.



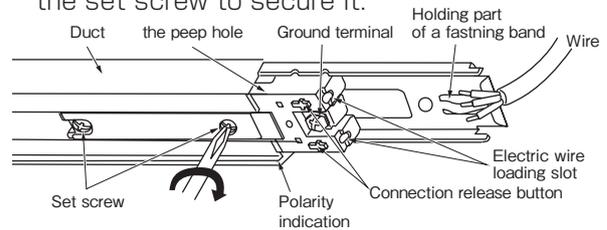
⚠ Caution

- During construction, Do not give a shock, such as dropping on a product, or hitting. It may be damaged.
- Combine the tip of a duct and connect certainly.
- Connect a straightly both of the duct
- Securely fasten the set screws. (Proper torque: 0.98 N·m~1.32 N·m)
Doing so may result in an electric shock or a fire.
- 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.

7 Installing the feed-in cap

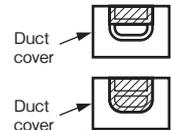
■ Connecting the ducts

- Fit the feed-in cap into the duct and tighten the set screw to secure it.



■ Procedure for providing knock-out part

- ① For cables not larger than VVF of 2 mm in size with three cores or less, remove the shaded area.
- ② For cables not larger than VCT of 3.5 mm in size with three cores or less, remove the shaded area.



- Deburr the cut surface using a Cable Knife.

■ Connection of power supply, remove about electric wire

- Strip the ends of the electrical wires in accordance with the stripping gauge shown on the inside of the cover, and then insert the electrical wires until they are visible in the peep hole.
- To disconnect the electrical wires, pull them out while using a screwdriver or your finger to press the connection release button.

⚠ Caution

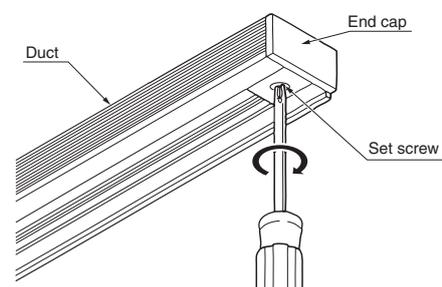
- During construction, Do not give a shock, such as dropping on a product, or hitting. It may be damaged.
- Connect the feed-in cap and the duct linearly.
- Securely fasten the set screws. (Proper torque: 0.98 N·m~1.32 N·m)
- Using the single-wire cable is 1.6 mm or 2 mm,
- Be sure to use an insulated pin terminal (Insertion length: It is longer than 15mm and is less than 21mm.) when use a stranded-conductor cable.
- Use a triplex cable and tighten the coil to the ground terminal to connect one cable.
(Proper torque: 1.2 N·m~1.5 N·m)
Doing so will result in an electric shock, a fire.
- After wire connection, Bind the cable with wire ties, etc. not to apply tension to the terminal.
Doing so will result in a fire.

8 Attaching the end cap

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

⚠ Caution

- An end cap must be attached onto the end of the duct.
Doing so may result in an electric shock.
- Securely fasten the setscrew. (Torque the setscrew to not less than 0.98 N·m~1.32 N·m)



9 Mounting center feed-in joiners

Connection to duct

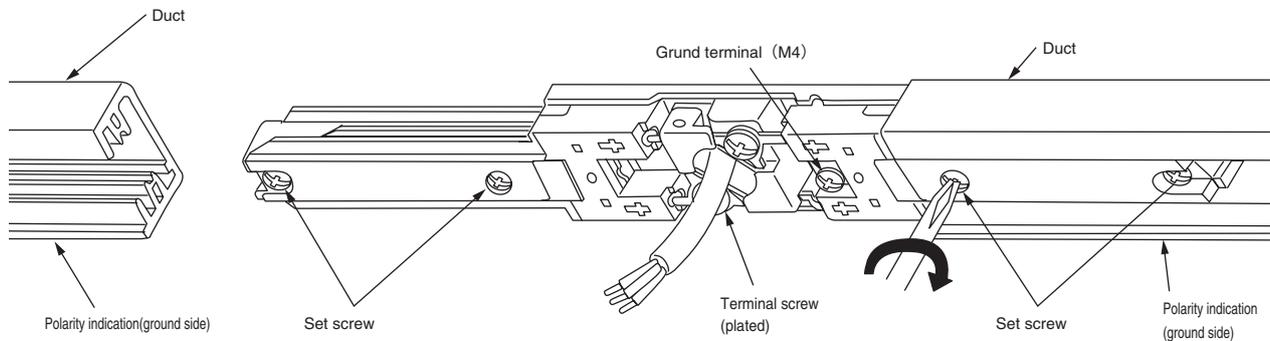
- To connect the duct with the center feed-in joiner, be sure to align the Polarity indication(ground side) with each other.
- Only to make connection, the cover needs not to be dismantled.

Power supply connection

- To make power supply connection, wind the power supply cable around the terminal screw.
- To make power supply connection, connect the power supply cable of the grounded side to the polarity side (the terminal screw of which is plated).

Caution

- During construction, Do not give a shock, such as dropping on a product, or hitting.
It may be damaged.
- Connect the plug of joiner and the duct linearly.
- Using the single-wire cable is 1.6 mm or 2 mm.
- Securely fasten the set screws. (Proper torque: 0.98 N·m~1.32 N·m)
Doing so may result in an electric shock or a fire.
- Use a triplex cable and tighten the coil to the ground terminal to connect one cable(Proper torque: 1.2 N·m~1.5 N·m).
Doing so will result in an electric shock, a fire.



10 Mounting Joiner L

Connection to duct

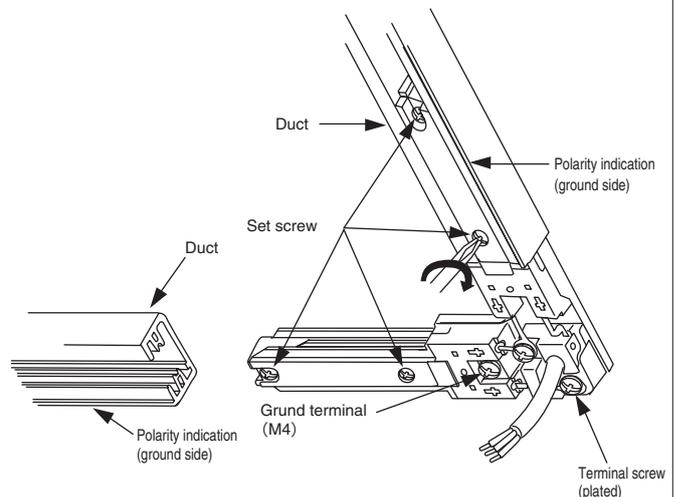
- To connect the duct with the joiner L, be sure to align the Polarity indication(ground side) with each other.
- Only to make connection, the cover needs not to be dismantled.

Power supply connection

- To make power supply connection, wind the power supply cable around the terminal screw.
- To make power supply connection, connect the power supply cable of the grounded side to the Polarity indication(ground side) (the terminal screw of which is plated).

Caution

- During construction, Do not give a shock, such as dropping on a product, or hitting.
It may be damaged
- Connect the plug of joiner and the duct linearly.
- Using the single-wire cable is 1.6 mm or 2 mm.
- Securely fasten the set screws and the terminal screws. (Proper torque: Set screw 0.98 N·m~1.32 N·m Terminal screw : 1.2 N·m~1.5 N·m)
Doing so will result in an electric shock, a fire.
- The division method look at the back of a cover according to a block of a circuit.
- Use a triplex cable and tighten the coil to the ground terminal to connect one cable(Proper torque: 1.2 N·m~1.5 N·m).
Doing so will result in an electric shock, a fire.



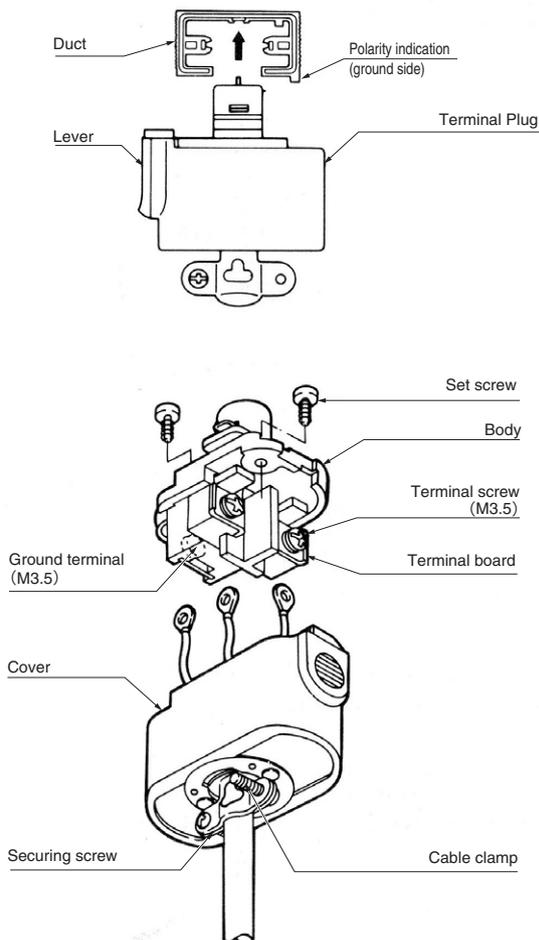
11 Mounting a terminal plug

Connection of the electrical wires

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 wires to the terminal board by either using crimp terminals or by winding the wires 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

- Securely fasten the terminal screws. (Proper torque: $0.8 \text{ N}\cdot\text{m} \sim 1 \text{ N}\cdot\text{m}$)
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.



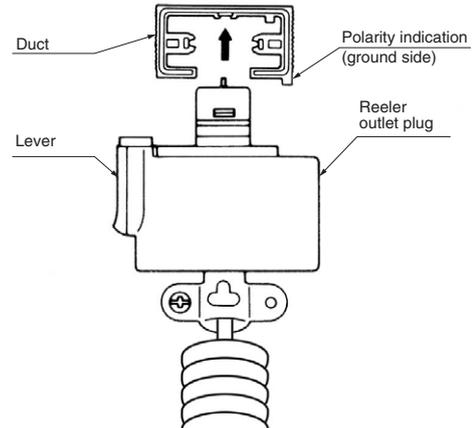
Notes

- Do not attach the plug unit where the tapping screw is used the duct directly

12 Procedure for mounting and using reeler outlet plug

Mounting reeler outlet

- To mount the reeler outlet, pull down the plug lever, and then rotate it clockwise 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.

Notes

- Do not attach the plug unit where the tapping screw is used the duct directly

Dismounting plug

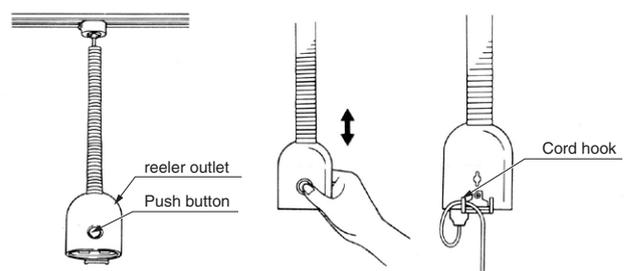
- Pull up the plug lever, and then rotate it counterclockwise by 90 degrees.

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 which pull down.
- 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.



13 Mounting an electrical outlet plug

Mounting plug

- Matching the polarity indications on the duct and the plug, insert the plug into the duct and rotate it clockwise 90.

Notes

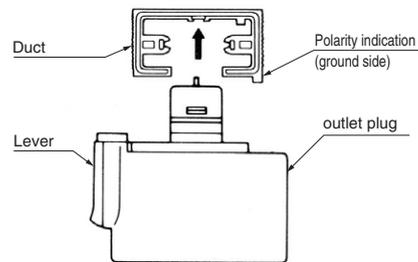
- Do not attach the plug unit where the tapping screw is used the duct directly

Caution

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

Dismounting plug

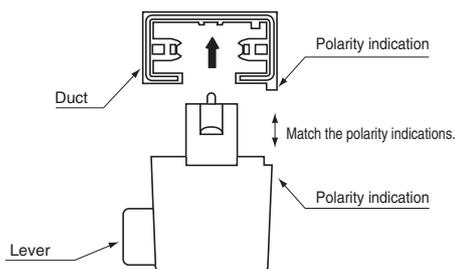
- Pull down the lever on the plug, then rotate it counterclockwise 90.



14 Mounting Lock-type duplex outlet plugs with ground

Mounting plug

- Matching the polarity indications on the duct and the plug, insert the plug into the duct
- Press the plug on the duct well, turn the lever right, Securely lock the lever.



Notes

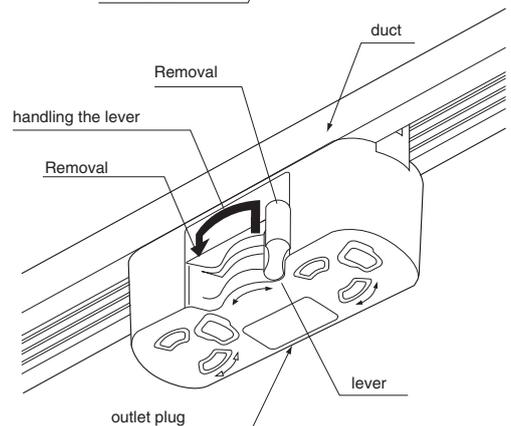
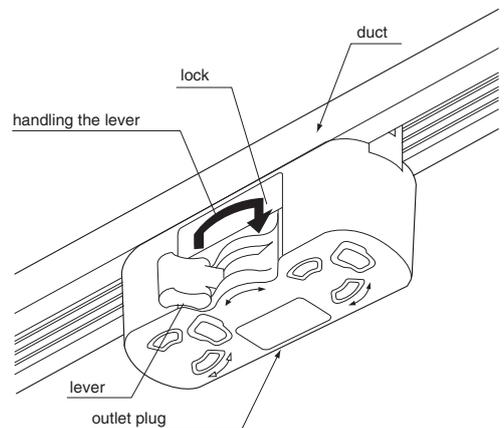
- Do not attach the plug unit where the tapping screw is used the duct directly

Caution

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

Polarity indication

- Removal plug
- Push the lever, and release the lock



15 Mounting fluorescent lighting fixture

Fixing clamp and fluorescent lighting plug

Make the hole for the fluorescent light plug and clamp in fluorescent light like the right figure.

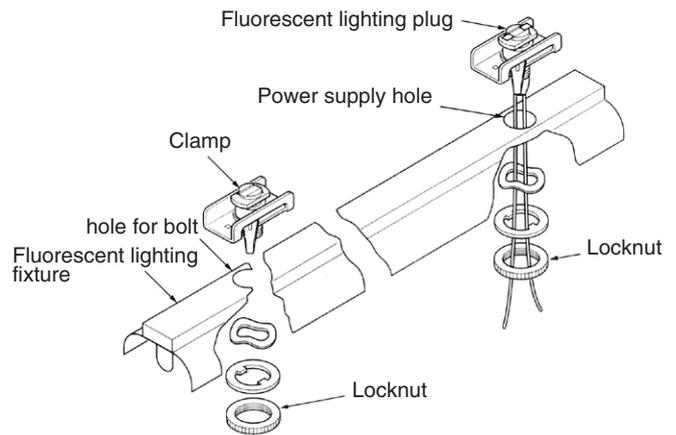
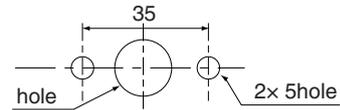
〈Clamp〉

- 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.

The clamp and the fluorescent lighting plug come with a set of fluorescent lighting fixture.



⚠ Caution

- **To connect the cable to unthreaded terminal, use bar type crimp-style terminal.**

Not doing so may result in faulty cable connection, thus leading to a fire.

- **Securely fasten the locknut.**

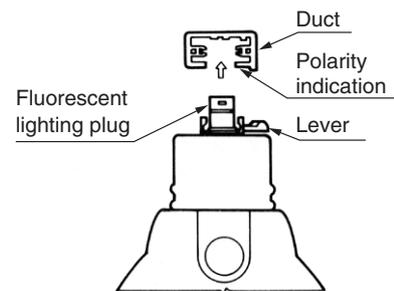
Not doing so may result in a drop. Not doing so may cause the duct to drop.

- **Ensure proper lever handling.**

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.



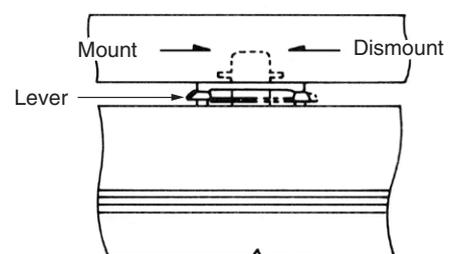
fluorescent lighting plug and clamp lever handling method

〈To mount〉

Rotate clockwise until the lever no longer rotates.

〈To dismount〉

Rotate counterclockwise until the lever no longer rotates.

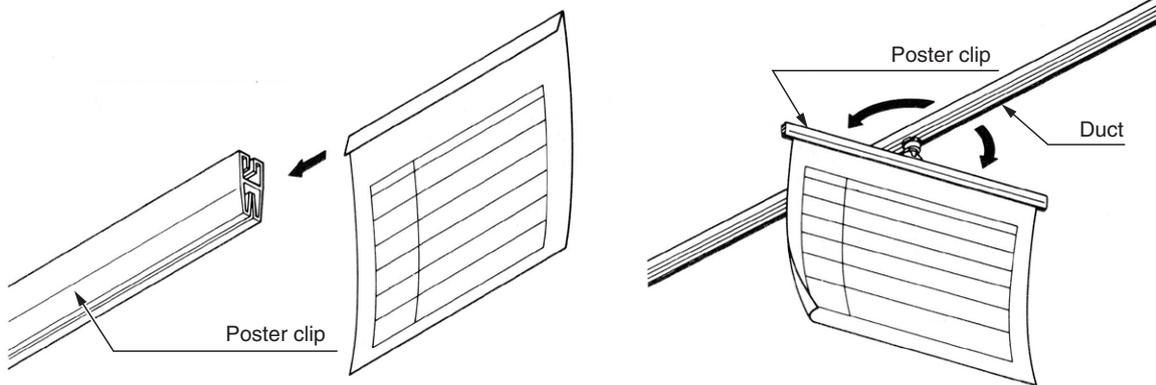


16 Use of a poster clip

- Use the poster clip to suspend a work instruction sheet or process chart from the Factory Line 20.
- Fold down about 10 mm of the top of the work instruction sheet or process chart and slide it sideways into the poster clip.
- The work instruction sheet can be positioned in the desired direction.
- Mount the poster clip onto the Factory Line 20 duct in the same way as a plug.

Caution

- **The maximum load weight is 1 kg.**
Not doing so may cause the hangers to drop.
- **Notes the installation place.**
When is to be near the illuminator, The poster might discolor and begins to burn because of the heat of the illuminator.



17 Mounting a duct cover

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

