

The product-life is different in use conditions and the service space, however, It is possible to use it for about t 10 years by regularly maintaining and the regular service in correct construction.

- Before using, be sure to read through this Operation / Installation Manual and use the product correctly.
- After reading, keep this Operation / Installation Manual with you for your reference.
- Ask qualified electrician for troubleshooting and maintenance.
Please be sure to show this Operation / Installation Manual to that engineer.
- We have quality, strive to improve reliability, however, It finally becomes difficult the continuing use due to the deterioration of the material. Deterioration is different in use conditions like the availability and the ambient environment, etc. but degrading the year.

In the worst case degradation is the cause of the fire burning. so we recommend early inspection and replacement.

- For a long time - you use this product on your own, "Maintenance Table" Please always check regularly once a year based on the least.
- If you have trouble checking in, please contact the electrician.
- This product is an important asset - customers. Please check and the following things must be observed.
- This product is an important asset of customers. Please check and understand the following text carefully.

In addition, safety precautions, to the extent expected by the Company are listed.

Precautions on installation

Installation of the High-Tro-Reel must be performed only by a licensed electrician. To prevent injury or accidents, always pay attention to the following points.

Warning

- **Do not modify the Tro-Reel HS in any way.** Otherwise, electric shock, fire or damage due to falling of equipment may occur.
- **Do not use where exposure occurs.** Otherwise, electric shock, fire or damage due to falling of equipment may occur
- **Use at ambient temperature -10 °C ~ 40 °C. If you use outside this temperature range, please contact Panasonic Corporation.**
- **If any abnormalities occur, turn off the power immediately and contact a qualified electrician for inspection and repair.**
Otherwise, electric shock, fire or damage due to falling of equipment may occur.
- **The replacement product is required for electrical worker qualifications.**
- **Do not use the collector shoes past replacement indication lines.**
Otherwise, a unit may produce sparks, causing fire, poor contact or separation of collector arms from wires.
- **To prevent electric shock, be sure to turn off the power before starting any inspection.** Otherwise, electric shock may occur.
- **Be sure to do a pre-use test run of equipment and do periodic inspections.**
Otherwise, electric shock, fire or damage due to falling of equipment may occur.
- **When damage and crack occurred in the insulating sheath of the duct, please change the duct.**
Otherwise sparking may occur, causing fire, poor contact, or derailing of the trolley, etc.

Caution

- **This product is for general indoor use only. Do not use this product for a damp place, a place where corrosive gas is generated or a place where cutting oil is directly splashed.** Electric shock, fire or damage due to equipment falling may occur.
- **Collector shoes use a dry lubrication system. Do not apply any other lubricants to the collector shoes or a unit's conductor surface. poor contact may occur.**
- **If products are not used for a long period of time, the unit's conductor surfaces may become oxidized, resulting in poor contact.**
Clean the conductors before resuming operation and be sure to do periodic inspections to prevent fire or electric shock.
- **During the inspection, wear protective gear such as helmets and gloves. Observe may cause injury .**
- **When mounting the duct to the hanger, stuff a duct into a hanger not to pinch a hand. Observe may cause injury to your fingers.**
- **When remove the duct from the joiners, pull it out while holding the tip of the duct. so that the duct may not jump out from Joyner.**
Observe, damage to the ducts, may cause injury.
- **When filing the ends of the duct, use protective gear such as glasses.** Otherwise, your finger may be injured.
- **Be sure to remove burrs using file after cutting, drilling.** Observe may cause injury to your fingers.
- **When replacing the current collector arm, Be sure that collector arms are mounted parallel to the duct unit with no twisting.**
Failure to conform to this table may cause poor collector arm contact or separation from wires.
- **When replacing the collector, be sure to confirm the duct unit phase (R.S.T) before connecting the leads to the load.**
Failure to do so may cause fire due to sparks.
- **Traveling speed must be 300m/min. or less. (60m/min. or less in guide caps mounting section). However, further restrictions may be necessary depending on the load and voltage types. for details, please contact Panasonic Corporation,**
Otherwise, a unit may produce sparks, causing fire, poor contact or separation of collector arms from wires.
- **Be sure to use the unit for earth and to connection.**

■ Maintenance schedule of High-Tro-Reel(Tension Type)

The product-life is different in use conditions and the service space, however, It is possible to use it for about t 10 years by regularly maintaining and the regular service in correct construction.

Please check by the maintenance table based on this maintenance schedule.
Refer to the maintenance table of P.37 for a concrete check item.

Maintenance done by the electrical work trader.

At introduction

The 5th year

The 10th year

| | At introduction | The 5th year | The 10th year |
|---------------------------------|---|--------------|----------------------------------|
| High-Tro-Reel unit | <ul style="list-style-type: none"> • Check the presence of remarkable dirt of the surface of the conductor. (Once every 3 to 6 months) → Clean it with the cotton waste etc. • Check the Tro-Reel unit doesn't become it in a zigzag line. (Once every 3 to 6 months) →Review the size between conductors in the joint. • Check the Tro-Reel unit is not away from the hanger. (Once every 3 to 6 months) →Install the Tro-Reel unit on thehanger. • Check whether there is not crack and a lack of the insulation sheath (Once every 3 to 6 months) →Product exchange recommendation that exchanges the Tro-Reel unit. | | |
| End tension insulator | <ul style="list-style-type: none"> • Check the coil spring length. (Once every 3 to 6 months) →Adjust to proper length. • Check whether there is loosening of the nut of the coil spring. (Once every 3 to 6 months) →Retighten. • Check whether the resin has not been damaged. (Once every 3 to 6 months) →Exchange products. | | |
| Joiner Center feed-in joiner | <ul style="list-style-type: none"> • Check whether there is loosening of the fixation screw or the terminal screw. (Once every 3 to 6 months) →Retighten. • Check whether the resin has not been damaged. (Once every 3 to 6 months) →Exchange products. | | |
| Hanger | <ul style="list-style-type: none"> • Check whether there is loosening of the nut. (Once every 3 to 6 months) →Retighten. • Check whether the resin has not been damaged. (Once every 3 to 6 months) →Exchange products. | | |
| Collector arm | <ul style="list-style-type: none"> • Check whether there is loosening of the bolt. (Once every 1 to 3 months) →Retighten. • Check whether wear has reached the replacement line. (Once every 1 to 3 months) →Exchange the collector, when worn out to the replacement line. • Check damage of spring pin and rotation axis, wear-out of metal fittings of spring receiving. (Once every 1 to 3 months)→Exchange products when damage or abnormality is found. Please keep normal. | | |
| | | | Product exchange recommendation. |

Trial run · Periodic inspection · Maintenance table

Notes

<To Maintenance manager>

- Inspections item at the time of the pre-use test run(Checking at periodic inspection).
- For using safely, please inspect the system one month after starting regular operation.
- The inspection cycle is mentioned below. However, determine your own inspection cycle based on the actual operating rate and environmental condition.
- Items in bold: Inspection items requiring particular attention.

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

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

| Name | Inspecting point | Contents of inspection | Remedy | ※ | Result | Measures | Inspection cycle (standard) | | | | | | | | | | | | | | |
|--|---|---|--|---|---------------------------|------------|-----------------------------|---------------|-----|------|---------------------|-----------------------|---------|-----|------|---------------------|-----------------------|--|---|--|--|
| High-Tro-Reel unit | Conductor | Check to see if there is any foreign particles adhering on its sliding surface or if it is seriously contaminated. | Clean with a specific purpose cleaner or waste cloth. | | | | Once every 3 to 6 months | | | | | | | | | | | | | | |
| | | Is there any ark generated protrusion (convex shaped) on its sliding surface? | Remove any protrusion (convex) on the arc scratch using a file. | | | | | | | | | | | | | | | | | | |
| | | Amount of wear of the conductor is correct? Amount of wear of the conductor :0.5 mm or less | If it exceeds a threshold amount of wear, please replace the main conductor In case of wearing down to the replacement indication line at next inspection, please replace earlier than usual. | | | | | | | | | | | | | | | | | | |
| | Unit | Is the unit moving in zigzag way? | Review distance between conductors at connecting section. | | ○ | | | | | | | | | | | | | | | | |
| | | Isn't the unit dislocated from the hanger? | Review for any dislocated position on the unit. Correct if any. | | ○ | | | | | | | | | | | | | | | | |
| | | Is the unit mounted parallel to the traveling rail? | Adjust the unit to be parallel. | | ○ | | | | | | | | | | | | | | | | |
| | Insulating sheath | Is there any cracked or broken? | Replace if cracked or broken sheath is found. | | ○ | | | | | | | | | | | | | | | | |
| Don't the insulated sheath and the resin part of collector spinning shaft touch? | | Check the amount of wear of the collector and conductor of the duct, replace it if necessary. | | | | | | | | | | | | | | | | | | | |
| End tension insulator | Coil spring | Is the coil spring length adequate? | Adjust the coil spring length to be adequate. When applying tension to the High-Tro-Reel unit, be sure to tighten the nuts on the tension bolts evenly. <table border="1" style="margin: 5px 0;"> <thead> <tr> <th>Ambient temperature during installation</th> <th>Coil spring length, (Q)mm</th> <th>Tension(N)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">10°C or lower</td> <td>115</td> <td>4508</td> </tr> <tr> <td>70 (For transverse)</td> <td>3332 (For transverse)</td> </tr> <tr> <td rowspan="2">11~40°C</td> <td>125</td> <td>3136</td> </tr> <tr> <td>75 (For transverse)</td> <td>2254 (For transverse)</td> </tr> </tbody> </table> | Ambient temperature during installation | Coil spring length, (Q)mm | Tension(N) | | 10°C or lower | 115 | 4508 | 70 (For transverse) | 3332 (For transverse) | 11~40°C | 125 | 3136 | 75 (For transverse) | 2254 (For transverse) | | ○ | | |
| | | Ambient temperature during installation | Coil spring length, (Q)mm | Tension(N) | | | | | | | | | | | | | | | | | |
| | 10°C or lower | 115 | 4508 | | | | | | | | | | | | | | | | | | |
| | | 70 (For transverse) | 3332 (For transverse) | | | | | | | | | | | | | | | | | | |
| | 11~40°C | 125 | 3136 | | | | | | | | | | | | | | | | | | |
| | | 75 (For transverse) | 2254 (For transverse) | | | | | | | | | | | | | | | | | | |
| | Is there any nut (double nut) of coil spring loosen? | Retighten. | | ○ | | | | | | | | | | | | | | | | | |
| Insulator | Is there any feed-in terminal screw loosen? | Retighten. | | ○ | | | | | | | | | | | | | | | | | |
| Resin section | Is there any cracked or broken on resin section? | Replace if cracked or broken sheath is found. | | | | | | | | | | | | | | | | | | | |
| Cover | Is there any off or drop-out on the cover? | Attach the cover for off or drop-out of the cover. | | ○ | | | | | | | | | | | | | | | | | |
| Joiner | Connection | Is there any aperture or difference in level between conductors? | Correct the connection for aperture or difference in level. | | ○ | | | | | | | | | | | | | | | | |
| | | Is there any serious flaw or crack on the conductor surface? | Do over again the cutting and correct for serious flaw or crack. | | | | | | | | | | | | | | | | | | |
| | | Is there any fixed screw loosen? | Retighten. | | ○ | | | | | | | | | | | | | | | | |
| Cover | Is there any cracked or broken on resin section? | Replace the cover if cracked or broken on resin is found. | | | | | | | | | | | | | | | | | | | |
| | Is there any off or drop-out on the joiner cover? | Attach the cover for any off or drop-out of the cover. | | ○ | | | | | | | | | | | | | | | | | |
| Joiner (without feed-in terminal) | Joints | Is there a large gap between the tow conductors? | Fix the conductor connection section. | | ○ | | | | | | | | | | | | | | | | |
| | | Is there a significant damage and cracks on conductor surface? | Re-processing terminal again, and fix | | | | | | | | | | | | | | | | | | |
| | | Is there a loose the screws? | Tighten screws more. | | ○ | | | | | | | | | | | | | | | | |
| Center feed-in joiner | Terminal | Is there a loose the terminal screws ? | Tighten screws more. | | ○ | | | | | | | | | | | | | | | | |
| | Cover | Is there a damage or cracks in the resin? | Replace the cover. | | | | | | | | | | | | | | | | | | |
| Is there a out of Joiner cover or drop out? | | Attached to the cover | | ○ | | | | | | | | | | | | | | | | | |
| Hanger | Nut | Is there any mounting nut loosen? | Retighten. | | ○ | | | | | | | | | | | | | | | | |
| | Resin section | Is there any cracked or broken on resin section? | Replace if cracked or broken sheath is found. | | | | | | | | | | | | | | | | | | |
| Collector arm | Collector shoes | Is there any serious wear to replacement indication line. | Replace the collector shoes if there is wear to replacement indication line. | | | | Once every 1 to 3 months | | | | | | | | | | | | | | |
| | | Is there any ark generated protrusion (convex shaped)? | Remove the protrusion (convex) on the arc scratch using a file. | | | | | | | | | | | | | | | | | | |
| | | Is there any bur generated? | Remove the bur using a sand paper. | | | | | | | | | | | | | | | | | | |
| | Arm | Is there any mounting bolt loosen? | Retighten. | | ○ | | | | | | | | | | | | | | | | |
| | | Is the arm installing dimension correct? Dislocation in left and right direction: ±10mm or less Position of mount rod and sliding surface (movable range): 90±20mm | Adjust its mounting dimension. | | ○ | | | | | | | | | | | | | | | | |
| | | Is there any serious twisting on the mount rod? | Correct twisting. | | ○ | | | | | | | | | | | | | | | | |
| | | Is there any curve or variation on the arm? | Replace the arm if there is curve or variation. | | | | | | | | | | | | | | | | | | |
| | Spring pin | Is there any chip or broken? | Replace if chip or broken spring pin is found. | | | | | | | | | | | | | | | | | | |
| | Spinning shaft | Is there any cracked or broken on the spinning shaft? | Replace if cracked or broken spinning shaft is found. | | | | | | | | | | | | | | | | | | |
| | Spring bearing metal | Is there any wear or hole loosen on spring bearing metal? | Replace the collector shoes if there is wear to replacement indication line. | | | | | | | | | | | | | | | | | | |
| Lead wire | Is there any damage on the sheath of lead wire? | If there is damage, replace the collector shoes. | | | | | | | | | | | | | | | | | | | |
| | Is the collector shoes pulled by the lead wire? | If the collector shoes pulled, correct to have extra length on lead wire. | | ○ | | | | | | | | | | | | | | | | | |
| Mount metal | Are the centers of the collector arm mounted metal and the Hi-Tro-Reel unit matching? | Correct to be match the centers. | | ○ | | | | | | | | | | | | | | | | | |
| Collector arm support parts for transverse | Unit | Are there modification of a spring (6.2mm or more clearance between the spring) or rust on the spring? | Deformation of the spring, if there is rust, replace | | | | | | | | | | | | | | | | | | |
| | | Are there abnormal wear? | If there is abnormal wear of the arm, replace the collector arm. | | | | | | | | | | | | | | | | | | |
| | | Is there a loose the screws? | Tighten screws more. | | ○ | | | | | | | | | | | | | | | | |
| High-Tro-Reel | | Confirm insulation resistance and contact resistance level according to the Government Rules in your country. | | | | | | | | | | | | | | | | | | | |

- Before assembling, be sure to read through this Operation / Installation Manual for correct assembly.
- The work must be performed by a qualified engineer.
- After setup, Please pass this Operation Manual / Installation Manual to the customer.

Precautions on installation

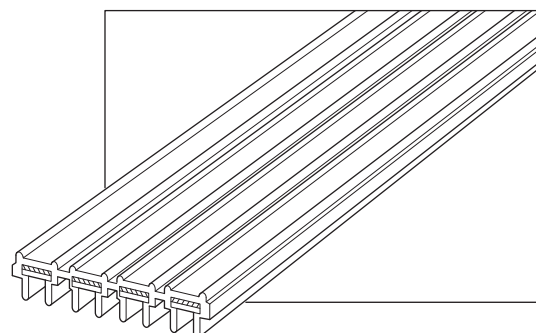
Installation of the High-Tro-Reel must be performed only by a licensed electrician. To prevent injury or accidents, always pay attention to the following points.

Warning

- **Do not modify the Tro-Reel HS in any way.**
Otherwise, electric shock, fire or damage due to falling of equipment may occur.
- **Do not use where exposure occurs.**
Otherwise, electric shock, fire or damage due to falling of equipment may occur.
- **Use at ambient temperature -10 °C ~ 40 °C. If you use outside this temperature range, please contact Panasonic Corporation.**
- **Install this product according to the construction rules in Electrical Equipment Technical Standards .**
Especially for the primary side of power supply of the duct, use an adequate over-current breaker.
- **Installation must be carried out correctly according to this Installation/Operation Manual included with the products.**
Improper installation may result in electric shock, fire or damage due to equipment falling.

Caution

- **This product is for general indoor use only. Do not use this product for a damp place, a place where corrosive gas is generated or a place where cutting oil is directly splashed.**
Electric shock, fire or damage due to equipment falling may occur.
- **Position the opening of a unit facing downward or sideways. If installed with the opening facing upward, a unit may produce sparks, causing fire, poor contact or separation of collector arms from wires.**
- **When damage and crack occurred in the insulating sheath of the duct, please change the duct.**
Otherwise sparking may occur, causing fire, poor contact, or derailing of the trolley, etc.
- **When mounting the duct to the hanger, stuff a duct into a hanger not to pinch a hand.**
Observe may cause injury to your fingers.
- **When remove the duct from the joiners, pull it out while holding the tip of the duct. so that the duct may not jump out from Joyner.**
Observe, damage to the ducts, may cause injury.
- **When filing the ends of the duct, use protective gear such as glasses.**
Otherwise, your finger may be injured.
- **Be sure to remove burrs using file after cutting, drilling.**
Observe may cause injury to your fingers.
- **Use products only within the specified rating and load capacity.**
Violation of specified ranges may cause burning or fire.
- **Firmly fix this product to the material of construction and construct it.**
Otherwise, fire or damage due to falling of equipment may occur.
- **Construct the material of construction that installs the product firmly.**
Otherwise, damage due to falling of equipment may occur.
- **Be sure to use the unit for earth and to connection.**



Installation Procedures for High-Tro-Reel <Tension Type> (CE Type)

■ Cross-section

(Unit : mm)

| 60A | 90A | 150A · 200A |
|------------------------|------------------------|---|
| | | |
| Earth marking (Yellow) | Earth marking (Yellow) | Earth marking (Yellow) 150A : PVC75 200A : PVC95 (Heat-resistant) |

● Center feed-in joiner

Connect the High-Tro-Reel unit together in long installations.
Can also feed power to 150A and 200A High-Tro-Reel unit.
The lead-in-side set up a hanger at 450~550 mm, the other side set up a hanger at 550~750 mm

● Hanger

Fixes the High-Tro-Reel unit to a building structure at an interval of 4m or less for downward installation, and 2m or less for horizontal installation.

● High-Tro-Reel unit (tension type)

Rating: 600V 60A/90A/150A/200A
Earth pole (yellow)

● End tension insulator (without feed-in terminal)

Applies tension to the High-Tro-Reel unit, supplies power, and absorbs sag, expansion and contraction.

● Joiner

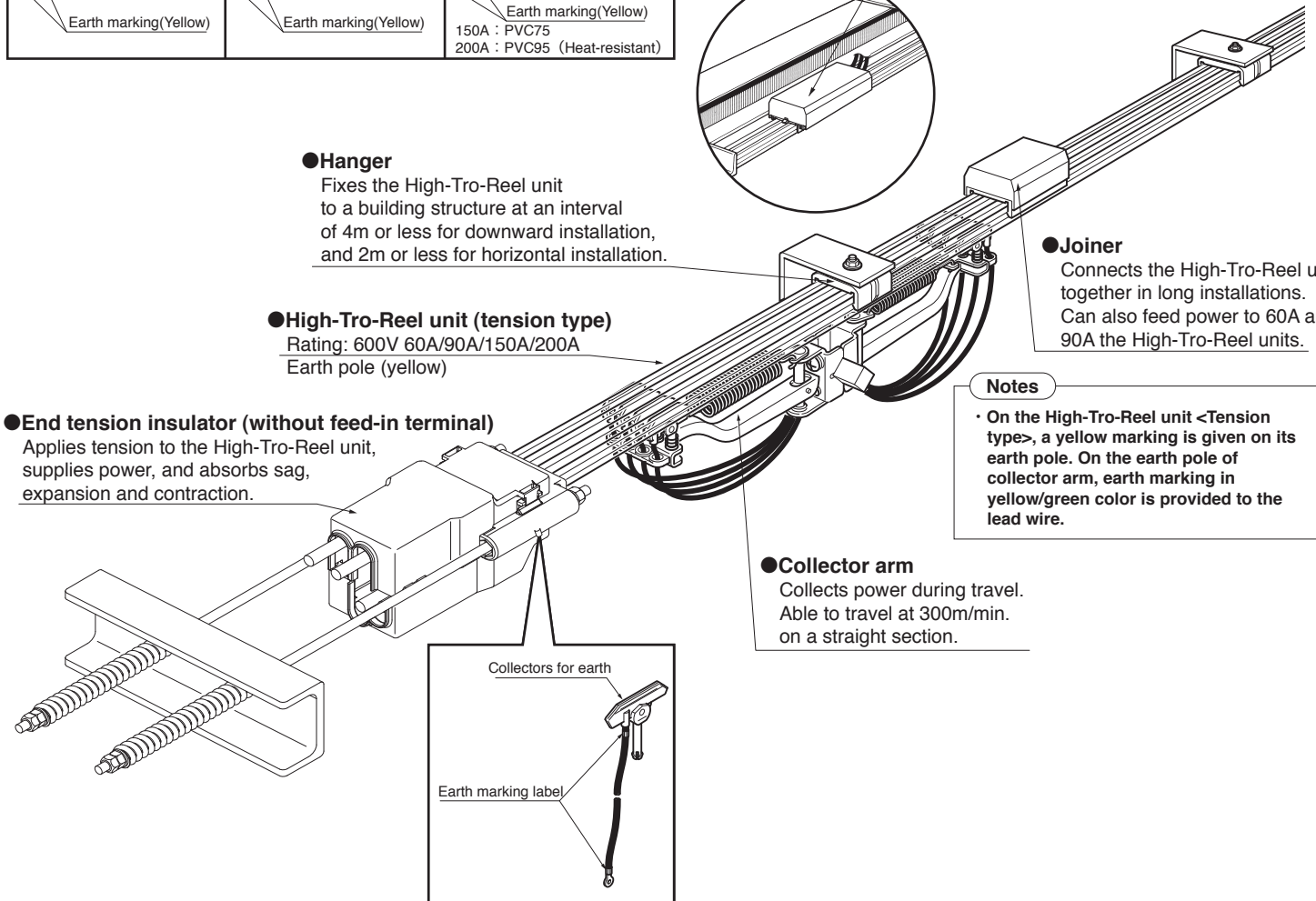
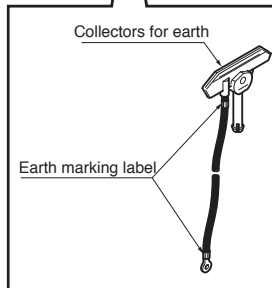
Connects the High-Tro-Reel unit together in long installations.
Can also feed power to 60A and 90A the High-Tro-Reel units.

Notes

- On the High-Tro-Reel unit <Tension type>, a yellow marking is given on its earth pole. On the earth pole of collector arm, earth marking in yellow/green color is provided to the lead wire.

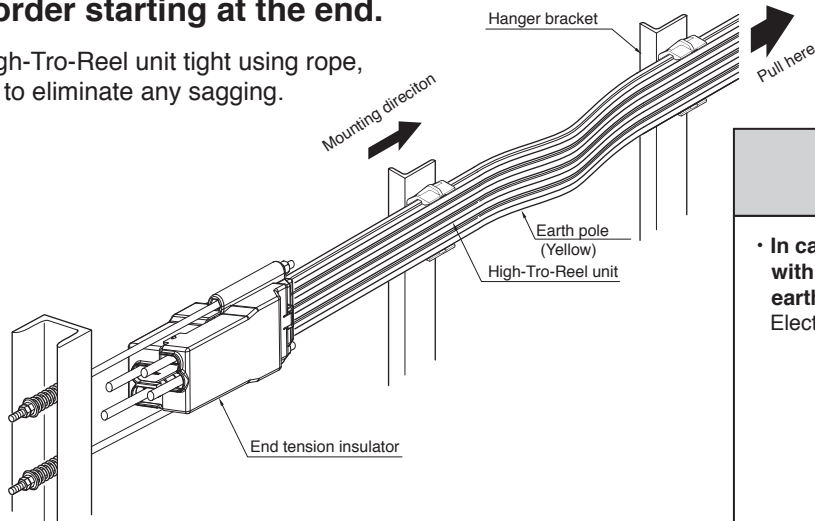
● Collector arm

Collects power during travel.
Able to travel at 300m/min. on a straight section.



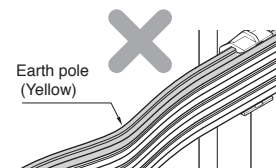
■ Temporarily fix the High-Tro-Reel unit to the hanger in the proper order starting at the end.

Pull the High-Tro-Reel unit tight using rope, being sure to eliminate any sagging.



⚠ Caution

- In case of installing the unit horizontally with its opening faced sideward, set earth pole (yellow) to floor side. Electric shock may occur.

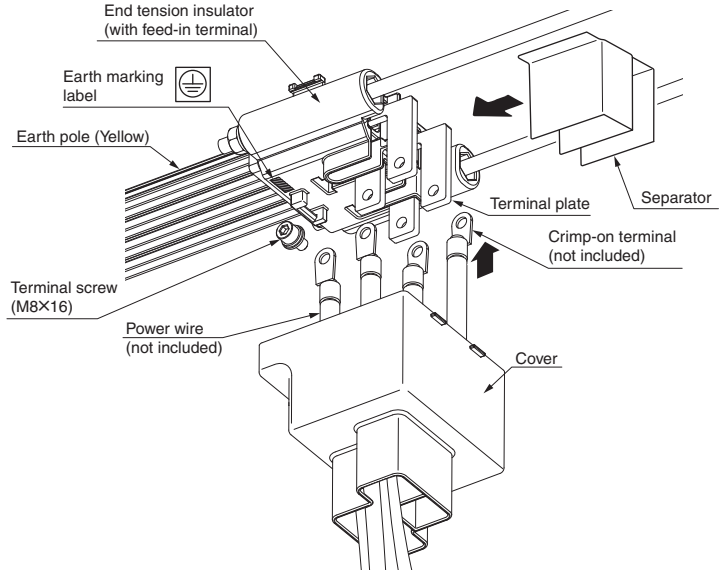


1 Feeding power to the High-Tro-Reel

(Power is fed from the line end via an end tension insulator with a feed-in terminal.)

Please see 7 refer to feeding in the High-Tro-Reel . (30p.)

Earth wire must connect to the earth terminal plate of the High-Tro-Reel earth pole (yellow) .
After wiring, please affix a label attached to the sign near the earth.(see in the drawing).



2 Feeding to middle of the High-Tro-Reel

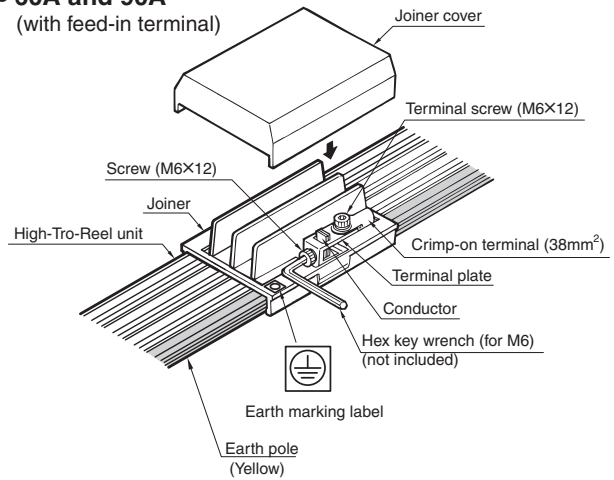
(Power is fed from an intermediate on a line with joiner (with feed-in terminal 60A,90A),or the center feed-in joiner (150A,200A))

Please see 9 Connection the High-Tro-Reel unit . (28p.)

Joiner (with feed-in terminal)

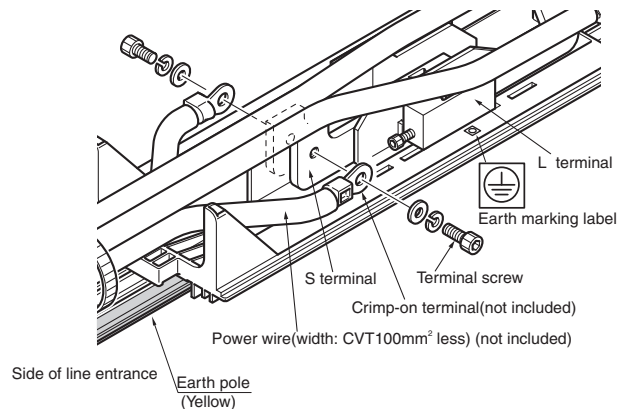
Earth wire must connect to the earth terminal plate of the High-Tro-Reel earth pole (yellow) .
After wiring, please affix a label attached to the sign near the earth. (see in the drawing).

● 60A and 90A
(with feed-in terminal)



Center feed-in joiner

Earth wire must connect to the earth terminal plate of the High-Tro-Reel earth pole (yellow) .
After wiring, please affix a label attached to the sign near the earth. (see in the drawing).

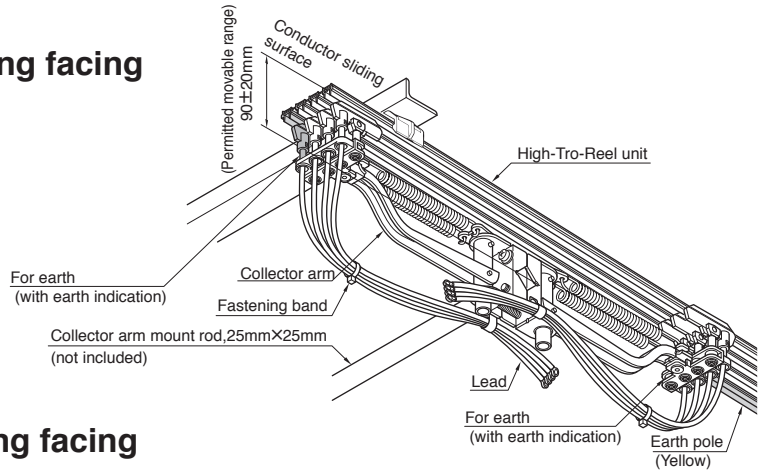


3 Collector arm installation

Please see **10** Installing the collector arm. (26p.)

Downward installation with its opening facing

Assemble the collector arm into tandem-type and set to the mount rod.

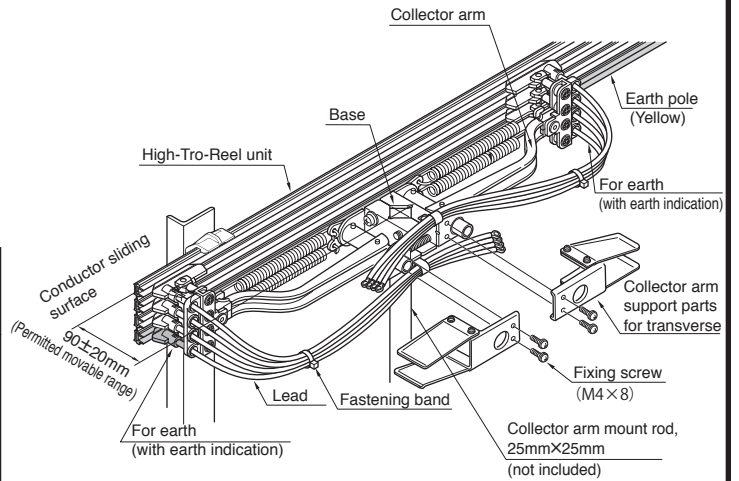


Horizontal installation with its opening facing

As shown in a figure, mounted collector arm support parts for transverse on base of the collector arm.

Tightening torque of fixing screws : $0.98 \text{ N} \cdot \text{m} \sim 1.32 \text{ N} \cdot \text{m}$

Assemble the collector arm into tandem-type and set to the mount rod.



Caution

- Set the collector arm that High-Tro-Reel unit earth pole (yellow) and collector arm earth pole fit surely. Otherwise, electric shock or fire may occur.
- Be sure to confirm the High-Tro-Reel HS unit phase (R.S.T) and the position of the earth pole (yellow) before connecting the leads to the load.

4 Collector shoe replacement

Please see **13** Exchanging the collectors. (25p.)

Replace the collector shoes of earth pole to the collector shoes for earth (attached yellow and green coating).

After replacing the collector shoes, fasten the leads with fastening band (supplied with the collector shoes).

