

# Panasonic<sup>®</sup> Tro-Reel HS Operation Manual

## 〈Non-Tension Type〉

For keeping

The product-life is different in use conditions and the service space, however, It is possible to use it for about 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.

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# Panasonic<sup>®</sup> Tro-Reel HS Installation Manual

## 〈Non-Tension Type〉

- 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

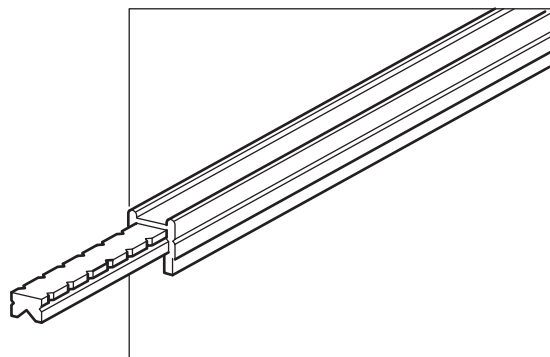
Installation of the High-Tro-Reel must be performed only by a licensed electrician. To prevent injury or accidents, always pay attention to the following points.

#### 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.



## ■ Maintenance schedule of Tro-Reel HS (Non -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 for a concrete check item.

### Maintenance done by the electrical work trader.

	At introduction	The 5th year	The 10th year
<b>Tro-Reel HS unit</b>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• Check the Tro-Reel unit is not away from the hanger. (Once every 3 to 6 months) →Install the Tro-Reel unit on thehanger.</li> <li>• 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.</li> </ul>		
<b>Joiner Center feed-in joiner</b>	<ul style="list-style-type: none"> <li>• Check whether there is loosening of the fixation screw or the terminal screw. (Once every 3 to 6 months) →Retighten.</li> <li>• Check whether the resin has not been damaged. (Once every 3 to 6 months) →Exchange products.</li> </ul>		
<b>Hanger Guide cap Insulating piece</b>	<ul style="list-style-type: none"> <li>• Check whether there is loosening of the nut. (Once every 3 to 6 months) →Retighten.</li> <li>• Check whether the resin has not been damaged. (Once every 3 to 6 months) →Exchange products.</li> </ul>		
<b>Collector arm</b>	<ul style="list-style-type: none"> <li>• Check whether there is loosening of the bolt. (Once every 1 to 3 months) →Retighten.</li> <li>• Check whether wear has reached the replacement line. (Once every 1 to 3 months) →Exchange the collector, when worn out to the replacement line.</li> <li>• 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.</li> </ul>		

Product exchange  
recommendation.

# Maintenance (Trial run ・ Periodic inspection)

## 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
	× : Abnormality		● : Finished with exchange
			△ : Adjustment required
			▲ : Finished with adjustment

A title		Check day	Y	D	M	The check person in charge	
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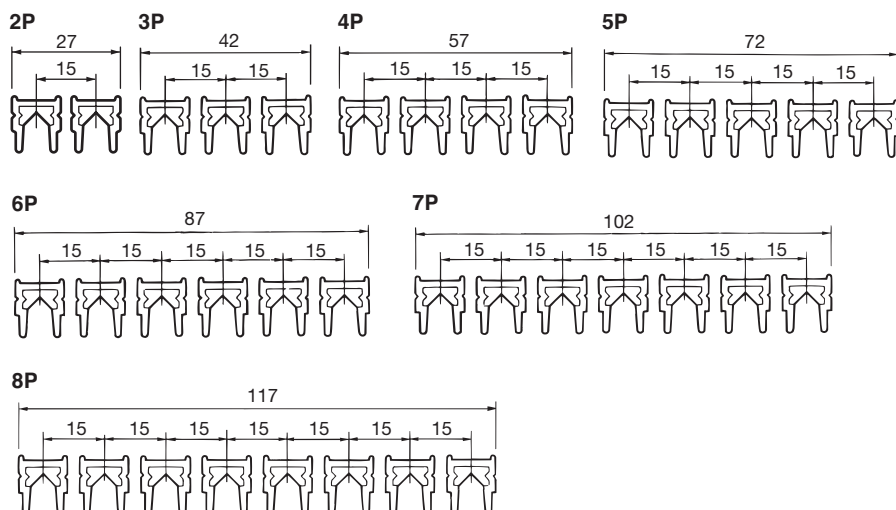
Name	Contents of inspection	Remedy	※	Result	Measures	Inspection cycle (standard)
Tro-Reel unit	Check to see if there is any foreign particles adhering on its sliding surface or if it is seriously contaminated.	Clean with a specific purpose cleaner or waste cloth.				the number of passes through the collector's arm: 1,000,000
	Is there any ark generated protrusion (convex shaped) on its sliding surface?	Remove any protrusion (convex) on the arc scratch using a file. ※ If you can not fix, please replace the duct. scratch using a file.				
	Is there damage and crack at the insulating sheath ?	If the tip of the sheath thickness is 1.2mm or less, please replace insulation	○			
	What is the meander of the duct or swell in the regulations?<Refer to installation manual11> The serpentine tolerance: standard ± 5 mm Tolerance of modulation : standard ± 3mm	Adjust it within specified size. ・Adjust the length of the duct, or Aalign the joiner. ・Adjust the mounting position of the hangers.	○			
	Is there a significant twisting or bending of the duct?	Correct the twisting or bending of the duct. ※ If you can not fix, replace the duct.	○			
	Isn't the unit dislocated from the hanger? <Refer to installation manual4>	Review for any dislocated position on the unit. Correct if any.	○			
	Are there occurred whiskers(Bali) of conductors ?	If whiskers (Bali) occurs , remove by using the conductor cleaner.				
	Amount of wear of the conductor is correct? Amount of wear of the conductor :0.7 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.				
	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.				
Joiner( Center feed-in joiner)	Are not there the cracks and damaged on a plastic part?	When damage and crack occurred in the fixed end insulator, please change it.				
	Is there any fixed screw loosen?	Retighten.	○			
	Are correct clearance size of between the conductors ? <Refer to installation manual11> ・Or less · 10 ℃: 5 ~13 mm·11 ℃ ~ 40 ℃: 3 ~10 mm	Adjust the proper clearance size. ・Adjust the length of the duct, or Aalign the joiner. ・Adjust the mounting position of the hangers.	○			
	Are correct joiner mounting size? <Refer to installation manual11> ・Or less · 10 ℃: 3003 mm · 11 ℃ ~ 40 ℃: 3000 mm	Adjust it within specified size.	○			
	Are correct cutting size of the duct or the duct end ? <Refer to installation manual7> ・ The duct cutting Size: size of between Joiner (L) -3mm ※ The same is the case of the Center Feed-in Joiner . ・Cutting Size of the duct end :Remove the insulating sheath 27.5mm from the edge of the duct,	Adjust it within specified size.	○			
	Are insert the conductor and sheath of a duct certainly? <Refer to installation manual8>	Insert the duct to ensure.	○			
Hanger	Did you set up the correct size and mounting hangers? <Refer to installation manual11> ・Straight sections: Max 600 mm ・Curved section : Max 500 mm	Adjust to the proper pitch	○			
	Is there any fixed screw loosen?	Retighten.	○			
Guide cap	Are not there the cracks and damaged on a plastic part?	When damage and crack occurred in the fixedend insulator, please change it.	○			
	Amount of wear of the plastic is correct? Amount of wear of the plastic :0.5 mm or less Exchange of a guide is when the conductor sliding surfaces will become taller than the guide-cap sliding surfaces, the number of times of passage of the collector is 5 million times.	Please exchange, when the amount of wear of a guide cap resin part is 0.5 mm or more.				

Name	Contents of inspection	Remedy		Result	Measures	Inspection cycle (standard)
Guide cap	Are correct clearance size of between the guide cap ? <Refer to installation manual⑦> Is the gap between the guide cap size correct? ·Guide cap mutual clearance: 10 ~ 20mm Horizontal: Max 2mm Vertical: Max 2mm Please have the above range, even when loaded to rated load on the trolley at any time.	Adjust it within specified dimension.	○			the number of passes through the collector's arm:1,000,000
	Is there any fixed screw loosen?	Retighten.	○			
Insulating piece	Is there any cracked or broken on plastic section?	Replace if cracked or broken sheath is found.	○			
	Are correct cutting size of the duct or the duct end ? <Refer to installation manual⑧> The duct cutting Size: The length of the duct (standard length L) -17.5 mm . ·Cutting Size of the duct end :Remove the insulating sheath 17.5mm from the edge of the duct,	Adjust its mounting dimension.	○			
	Are hanger located within 100 mm from side to side insulating piece? <Refer to installation manual⑧>	Adjust the position of Hunger.	○			Distance of the collector arm :3000km
	Do not cover broken or damaged signal wires?		○			
Collector arm	Is the arm installing dimension correct? <Refer to installation manual⑩> Single-type (for mounting rod ), tandem-type (for mounting rod ) The length of to the center of themounting rod from the sliding surface (movable range): 65±10mm tandem-type (for mounting plate ) The length of to themounting plate from the sliding surface (movable range): 65±10mm Single-type (for mounting plate ) The length of to the center of themounting plate from the sliding surface (movable range): 60±10mm	Adjust the collector arm in the reference value.	○			
	Is the center of a duct and the collector arm on a straight line? <Refer to installation manual⑩> Installation Tolerance: ± 3mm center"	Adjust its mounting dimension.	○			
	Is the collector arm attached in parallel with a duct, so that it cannot twist?	Mount the collector arm in parallel with the duct.	○			
	Is there any serious wear to replacement indication line Is there any serious wear to replacement indication line? or,Does exceed a travel distance of 20,000 km?	Collector shoes should be replaced when they partially wear down to the replacement indication line. Please exchange the collector shoes ahead of time when it will be worn out to the replacement indication line by the time of the next check. by the time of the next check.				
	Are there significant contamination,foreign matter adhering , occurred burr in collector?	Remove it with sandpaper or wes.				
	Is there any ark generated protrusion ?	Remove the protrusion (convex) on thearc scratch using a file.				
	Is there wear of plastic part of the collector plastic part?	Adjust the collector arms mounting dimensions.				
	Does the collector move smoothly?	If the motion is not smooth, replace the current collector and the collector arm.	○			
	Is there any curve or variation on the arm?	Replace the arm if there is curve or variation.	○			
	Is there any chip or broken?	Replace if chip or broken spring pin is found.	○			
	Is the collector shoes pulled by the lead wire?	If the collector shoes pulled, correct to have extra length on lead wire.	○			
	Is there any damage on the sheath of lead wire?	If there is damage, replace the collector shoes.	○			
	Are there any terminal screws or thefixed screws loosen?	Retighten.	○			
	Is not there any mistake in the contact terminal position (R, S, T, E, and signal connection line) of a lead?	Make a tightening of the connection terminals	○			
unit	After checking the above construction, to determine the insulation resistance. Working voltage 300V or less 150V or less voltage to ground: Longer than 0.1MΩ 150V or higher voltage to ground: Longer than 0.2MΩ Working voltage 300V or higher, than 0.4MΩ					the number of passes through the collector's arm:1,000,000



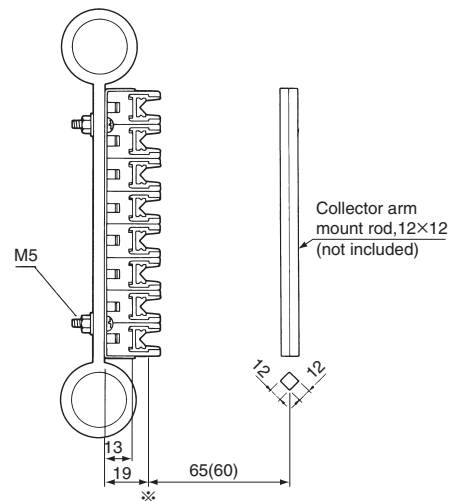
# Tro-Reel HS Installation Manual <Non-Tension Type>

## ■ Cross-section dimensions



## ■ Standard installation procedure

- In case of using a tandem type of collector arm



The values in parentheses for collector arm (without saddle) size. Attach the collector arm to the collector arm mount plate.  
The asterisk (\*) indicates the upper conductor surface of the Tro-Reel HS unit.

### ● Collector arm

Collects power during travel.  
Be sure to use in a tandem type.  
Traveling speed must be 300m/min. or less (60m/min. or less for guide-capped sections).  
1P 600V, 30A (single type)  
1P 600V, 60A (tandem type)

### ● Hanger

Fix the Tro-Reel HS unit to the side of the rail.

### ● Insulating piece

Separates circuits by providing an insulated section on the line.

### ● Center feed-in joiner

Connects the Tro-Reel HS units together and feeds external power to the conductors.

\* No power can be terminal-fed.

### ● Guide cap (right-angled)

Works as an end cap to close off terminals.

### ● Tro-Reel HS unit

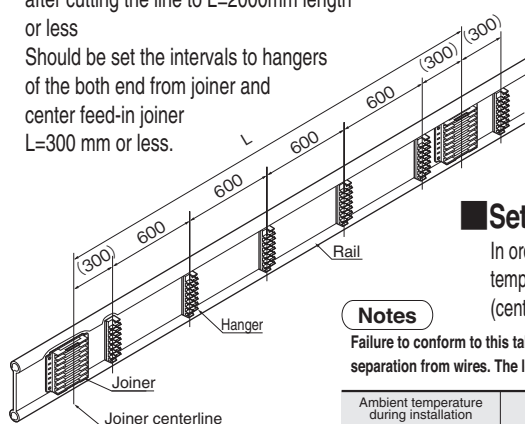
600V, 90A with standard length of 3m

# 1 Setting intervals for joiners and hangers

## Setting intervals for hangers

Hangers should be positioned at intervals of 600mm or less for straight sections and 500mm or less for curved sections. In case of working after cutting the line to L=2000mm length or less

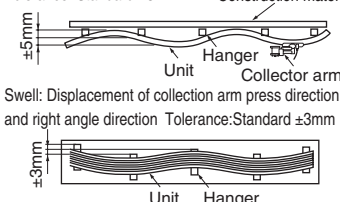
Should be set the intervals to hangers of the both end from joiner and center feed-in joiner L=300 mm or less.



### Notes

•Should be installed the hangers and joiners as the snaking/swell of Tro-Reel HS get within tolerance.

Snaking: Displacement of collector arm press direction  
Tolerance: Standard  $\pm 5\text{mm}$  Construction material



## Setting joiner intervals

In order to absorb expansion and contraction due to temperature fluctuations in the Tro-Reel HS unit, joiners (center feed-in joiners) must be positioned as below.

### Notes

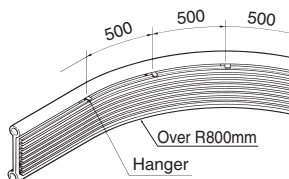
Failure to conform to this table may cause poor collector arm contact or separation from wires. The length of the Tro-Reel HS unit is  $5993 \pm 2\text{mm}$ .

Ambient temperature during installation	Mounting size	Distance between conductors at joint
$-10 \sim 40^\circ\text{C}$	6000mm	1~12mm

## Setting intervals for hangers on curved sections

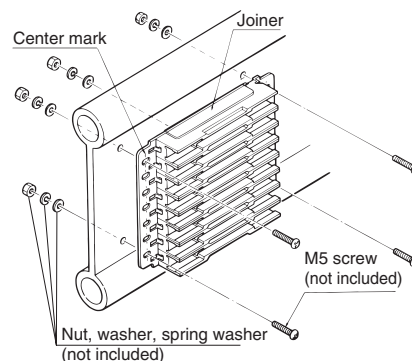
Inward curves (Outward curves also available.)

Hangers should be placed at intervals of 500mm or less on curves.



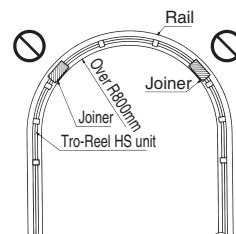
# 2-1 Joiner installation

1. Drill holes in the rail matching the position of the joiner as shown below. (See 2-2.)
2. Screw the joiner to the rail in line with the center mark.



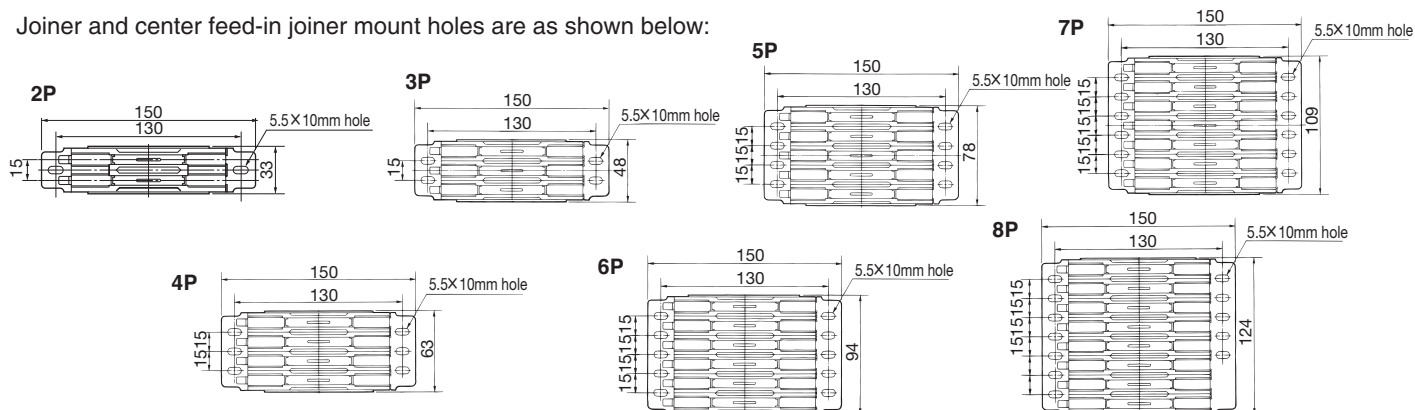
### Notes

Avoid positioning joints on curved sections. If installation on curved sections is inevitable, please mount the joint at the straightest part of the curved section, as shown in the drawing.

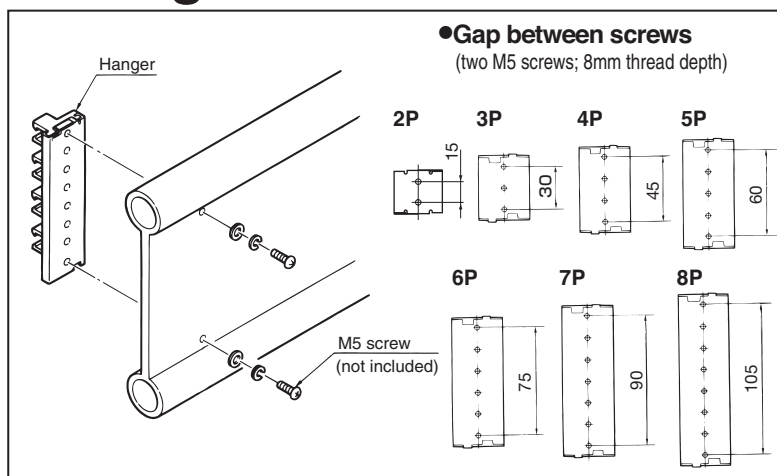


# 2-2 Joiner mount hole dimensions (center feed-in joiner)

Joiner and center feed-in joiner mount holes are as shown below:

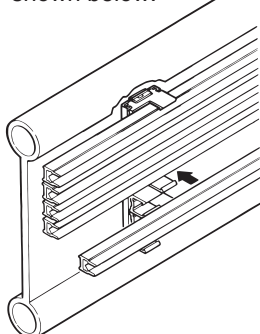


# 3 Hanger installation



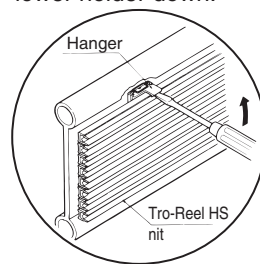
# 4 Mounting the Tro-Reel HS unit onto the hangers.

Snap the Tro-Reel HS unit onto the hanger as shown below.



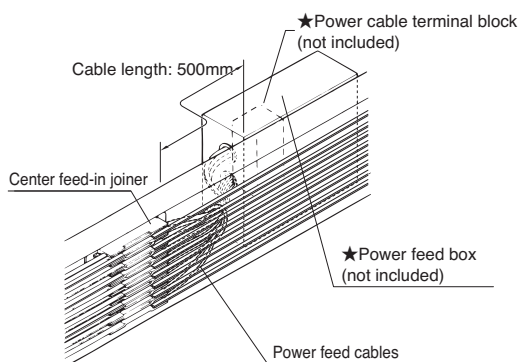
## Removing the Tro-Reel HS unit

Insert a flat tip screwdriver into the hanger slit. Then, lift the upper holder upward while pulling the lower holder down.



## 5 Center feed-in joiner installation

1. Drill holes in the rail. (See 2-2. Joiner mount holed imensions.)
2. Screw the center feed-in joiner to the rail in line with the center mark.



### ■ Number of power cables

	AWG4 (22mm <sup>2</sup> )	AWG8 (8mm <sup>2</sup> )
2P	2	—
3P	3	—
4P	3	1
5P	3	2
6P	3	3
7P	3	4
8P	3	5

※Power cable length is 500mm.

★ When using a center feed-in joiner as a UL Approved item, make sure to meet the following requirements.

1. Power feed box: The specifications must comply with the UL50 Enclosure For Electrical Equipment.
2. Power cable terminal block: Must be one of the items shown in the table.

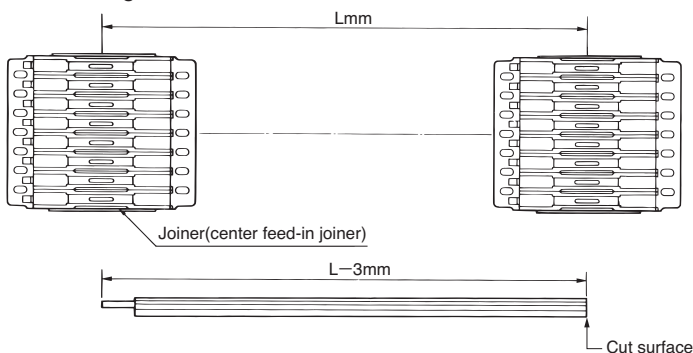
Maker	Item No.	Screw tightening torque N/m (kgf/cm)
KASUGA ELECTRIC WORK., LTD.	TX-100	8~10 {80~100}
KYORITU KEIKI CO., LTD.	KT-100, KTR-100	8.5~11 {85~110}
YOSHIDA ELECTRIC INDUSTRY CO., LTD.	UKU-125	6~9 {60~90}

## Caution

Be sure to screw the power cable terminal block in tightly. Failure to do so may cause fire.

## 6 Cutting the Tro-Reel HS unit and terminals

1. Line up the Tro-Reel HS unit between the center points of the two joiners (central dimension "L") and cut 3mm off of one end being careful not to cut the conductor.



2. Mark the length to be cut off on the Tro-Reel HS unit as shown below and remove the insulating sheath using a hacksaw or the special sheath cutter.

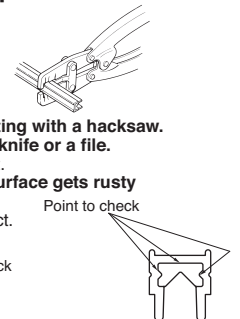
### ● Using a hacksaw



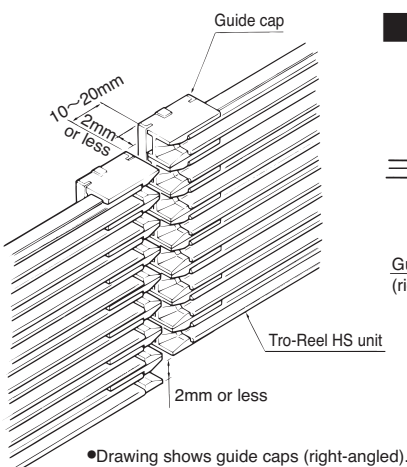
### Notes

- Be careful not to damage the conductor when cutting with a hacksaw.
- Remove the burrs from both cut surfaces using a knife or a file. Failure to do so may cause poor collector arm contact.
- In cutting the line, check to see if the conductor surface gets rusty and discolored. Sandpaper such spot as required. Failure to do so may cause poor collector arm contact.

### ● Using the special sheath cutter

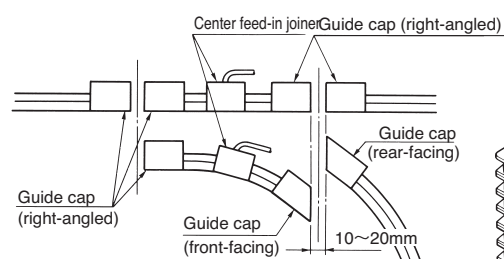


## 7 Guide cap installation



●Drawing shows guide caps (right-angled).

### ■ Usage of guide cap

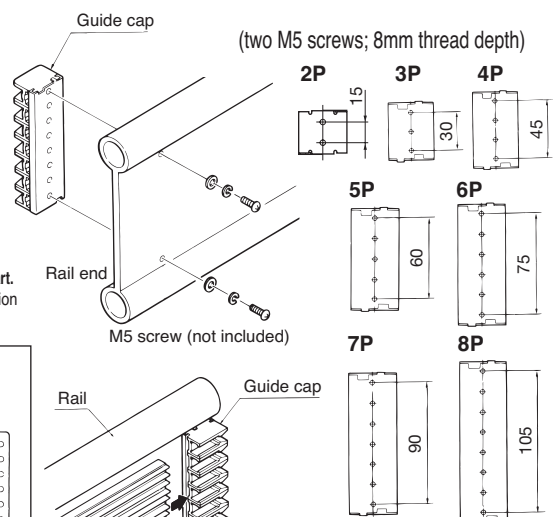


### Notes

- Use a tandem-type collector arm and set traveling speed at 60m/min. or less for switching sections.
- Be sure to use only the specified dimensions for each mounting part. Failure to do so may cause poor collector arm contact or separation from wires.

### ■ Mounting a guide cap

1. Drill holes in the rail as shown below.
2. Screw a guide cap to the rail and insert the Tro-Reel HS unit into the guide cap.



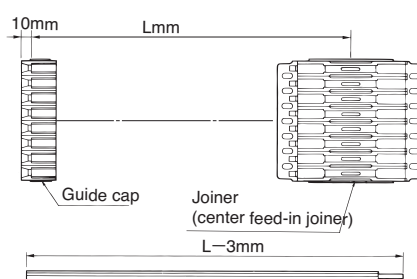
■ Mounting the Tro-Reel HS unit to the guide cap  
Insert the Tro-Reel HS unit into the guide cap in the direction of arrow.

### Cutting the Tro-Reel HS unit and terminals

Line up the Tro-Reel HS unit between the center points of the joiner and the guide cap (central dimension "L") and cut 3mm off of one end being careful not to cut the conductor.

### Notes

- Remove the burrs from both cut surfaces using a knife or a file. Failure to do so may cause poor collector arm contact.



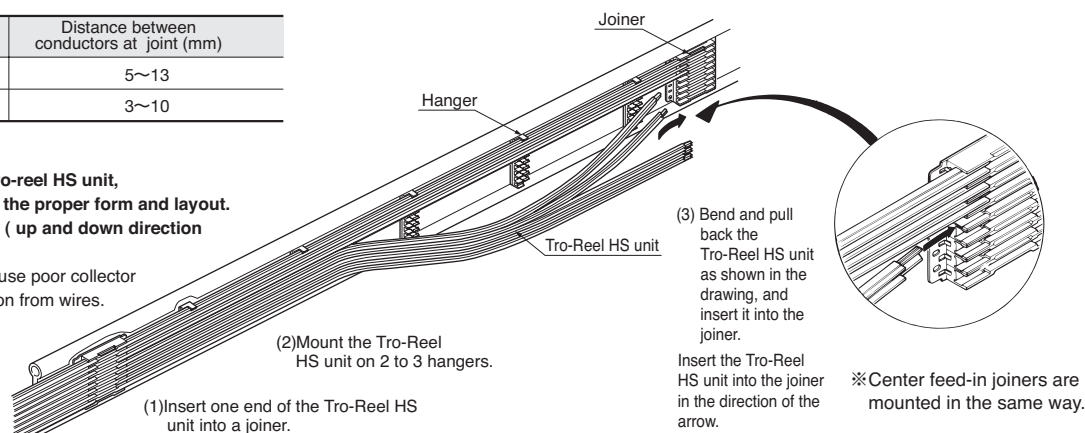


## 8 Tro-Reel HS unit connection

Ambient temperature during installation	Distance between conductors at joint (mm)
10°C or lower	5~13
11~40°C	3~10

### Notes

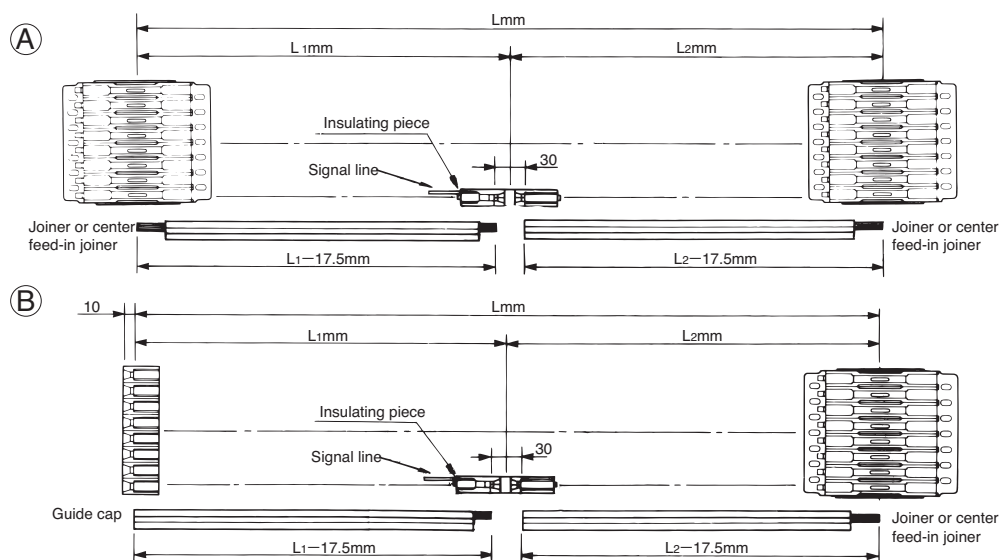
When mounting the Tro-reel HS unit,  
Be careful to maintain the proper form and layout.  
Do not be meandering ( up and down direction  
±3mm or less)  
Failure to do so may cause poor collector  
arm contact or separation from wires.



## 9 Insulating piece installation

### Cutting the Tro-Reel HS unit

Line up each Tro-Reel HS unit (in (A) and (B) below) with the "L" dimension, and cut the units to the appropriate length.

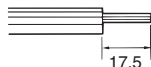


### Notes

If signal lines are not needed, insulate the end of the line with vinyl tape so that it won't affect collector arm travel.

### ● Cutting the power feed side

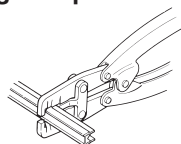
Mark the length to be cut off on the Tro-Reel HS unit as shown below and cut the insulating sheath using a hacksaw or the special sheath cutter.



### ● Using a hacksaw

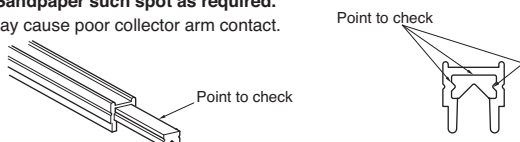


### ● Using the special sheath cutter



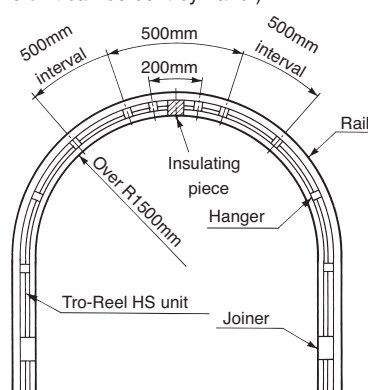
### Notes

- Be careful not to damage the conductor when cutting with a hacksaw.
- Remove the burrs from both cut surfaces using a knife or a file.  
Failure to do so may cause poor collector arm contact.
- In cutting the line, check to see if the conductor surface gets rusty and discolored. Sandpaper such spot as required.  
Failure to do so may cause poor collector arm contact.



### ● Installation to curved sections (inward and outward curves)

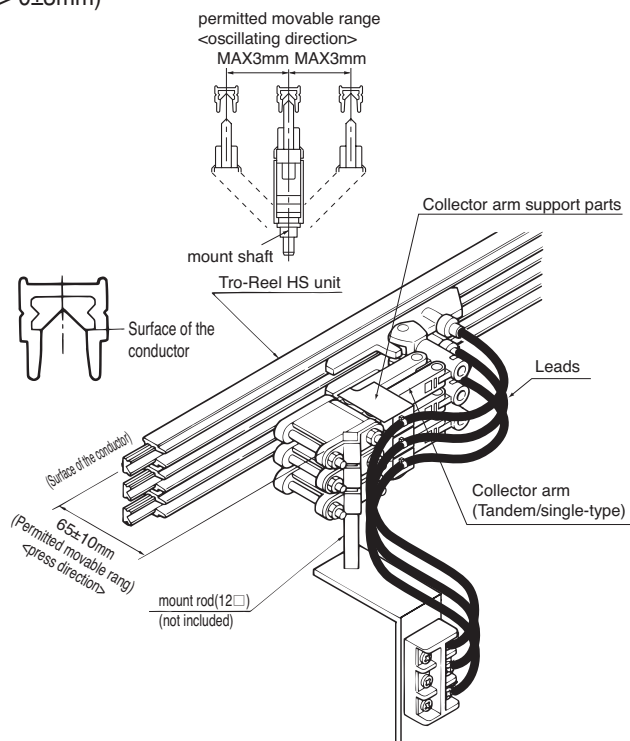
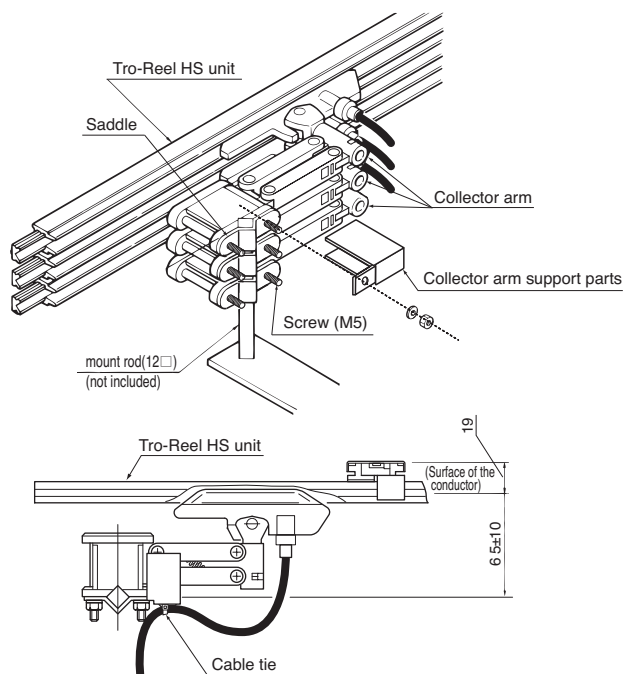
- (1) Over 1500mm in radius:
  1. Position hangers at 500mm intervals.
  2. Position hangers 200mm from each end of the insulating piece.
- (2) Less than 1500mm in radius:
  1. position hangers the same as shown above (1).
  2. Bend the Tro-Reel HS unit to the required degree before mounting it. (The unit can be bent by hand.)



# 10 Collector arm installation

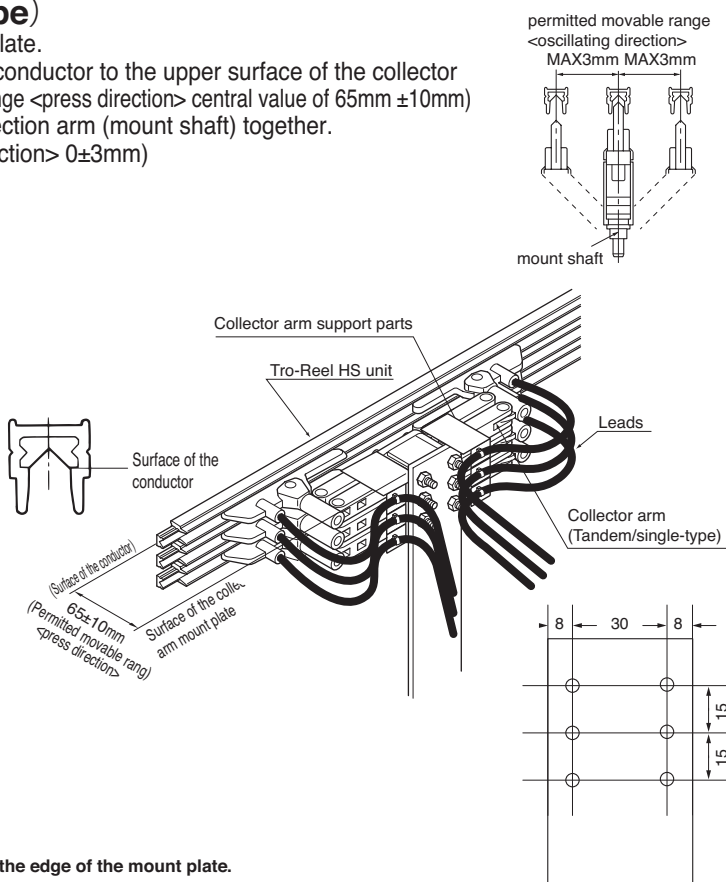
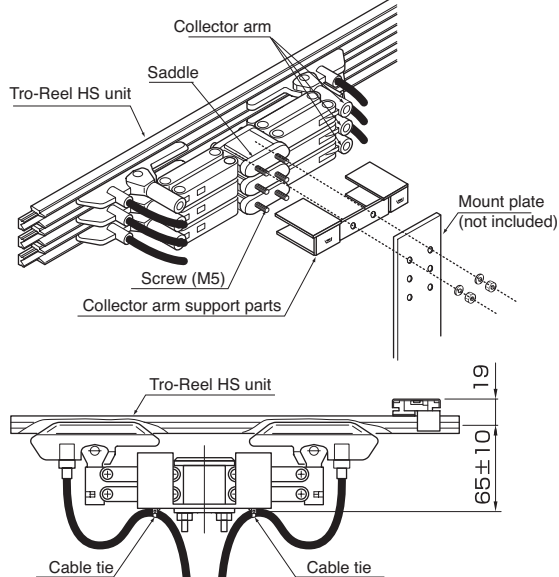
## ■ Tandem/single-type collector arm (mount rod type)

1. Mount the supporting parts of collector arm on saddle
2. Set the distance from the upper surface of the Tro-Reel HS conductor to the center of collector arm mount rod to 65mm  
(The collector arm permitted movable range <press direction> central value of  $65\text{mm} \pm 10\text{mm}$ )
3. Should be put the center of Tro-Reel HS conductor and collection arm (mount shaft) together.  
(The collector arm permitted movable range <oscillating direction>  $0 \pm 3\text{mm}$ )



## ■ Tandem/collector arm (mount plate type)

1. Mount the supporting parts between saddle and the mount plate.
2. Set the distance from the upper surface of the Tro-Reel HS conductor to the upper surface of the collector arm mount plate to 65mm. (The collector arm permitted movable range <press direction> central value of  $65\text{mm} \pm 10\text{mm}$ )
3. Should be put the center of Tro-Reel HS conductor and collection arm (mount shaft) together.  
(The collector arm permitted movable range <oscillating direction>  $0 \pm 3\text{mm}$ )

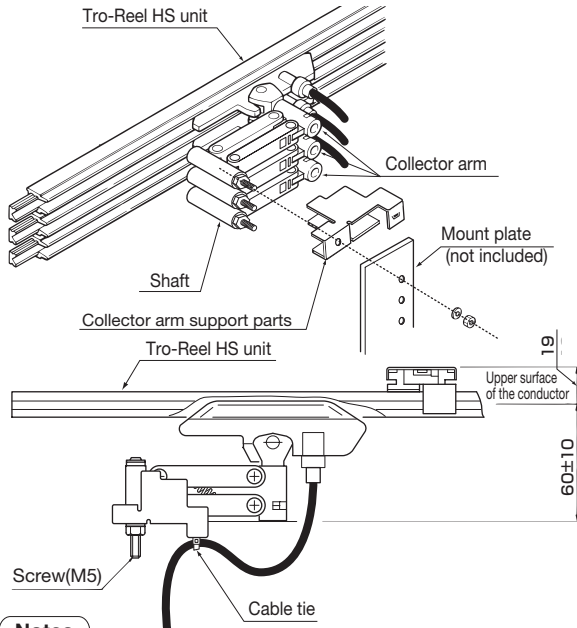


### Notes

- Collector arm mounting screw should be positioned 15 mm apart
- Mount plate mounting hole should be positioned 30 mm and 8 mm away from the edge of the mount plate.

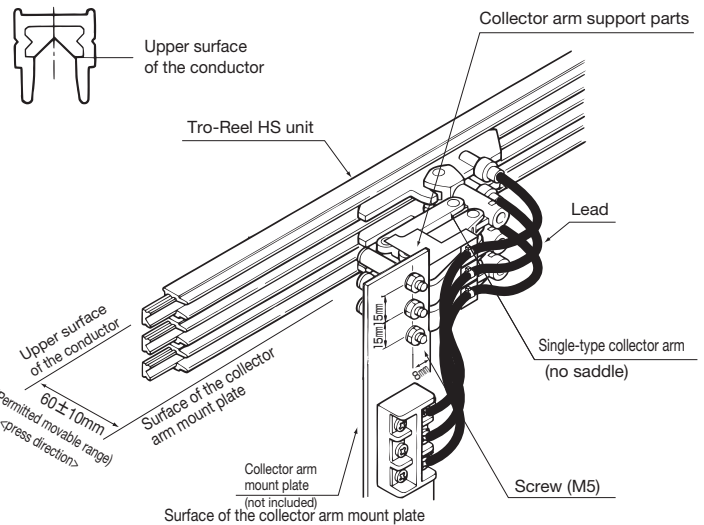
## ■ single-type collector arm (no saddle)

1. Mount the supporting parts between the top of saddle and the mount plate.
2. Set the distance from the upper surface of the Tro-Reel HS conductor to the center of collector arm mount plate to 60mm (The collector arm permitted movable range <press direction> central value of  $60\text{mm} \pm 10\text{mm}$ )
3. Should be put the center of Tro-Reel HS conductor and collection arm (mount shaft) together.  
(The collector arm permitted movable range <oscillating direction>  $0 \pm 3\text{mm}$ )



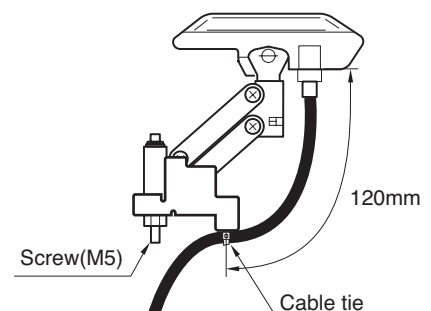
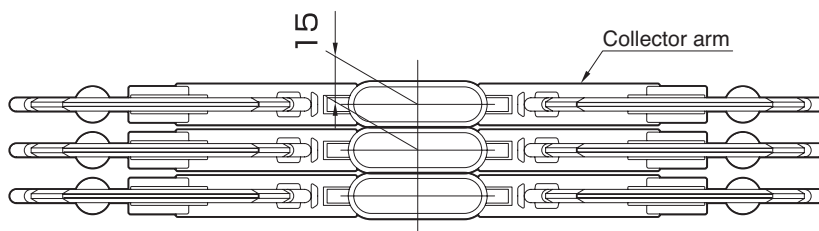
### Notes

Collector arm mounting screw should be positioned 15 mm apart and 8 mm away from the edge of the mount plate.



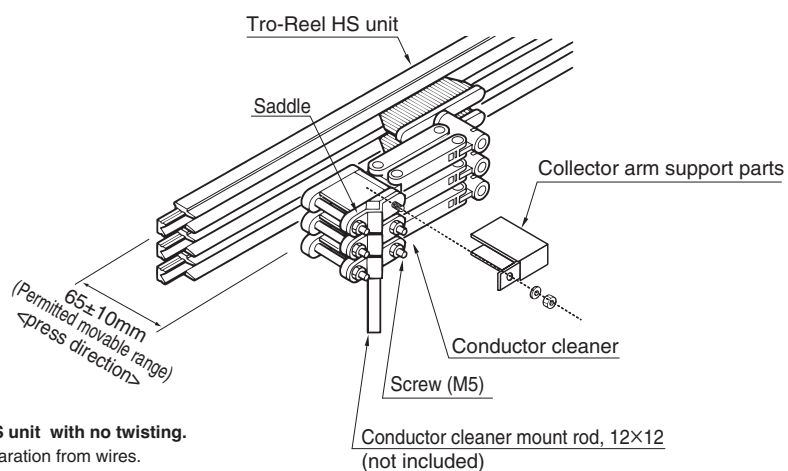
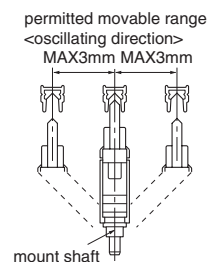
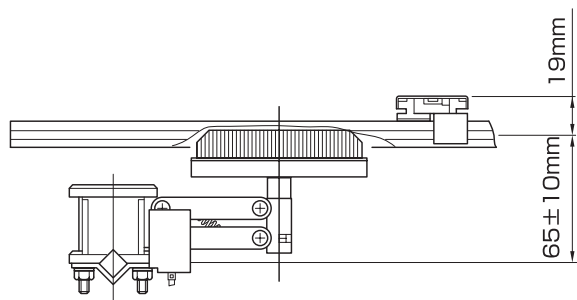
### Notes

1. Be sure to use only the specified dimensions for each mounting part.  
For operating the equipment, set the collector arm within permitted movable range of  $65 \pm 10\text{mm}$  ( $60 \pm 10\text{mm}$  for single).
2. Collector arm mounting screw should be positioned 15 mm apart and Collector arms (single-type with no saddle excluded) must be positioned close to each other as shown in the drawing at right.
3. Be sure that collector arms are mounted parallel to the Tro-Reel HS unit with no twisting  
Failure to conform to this table may cause poor collector arm contact or separation from wires.
4. Mount the center of collector arm to less than 3 from center of the Tro-Reel HS conductor.  
Failure to conform to this table may cause poor collector arm contact or separation from wires.
5. Hold the leads in using the cable ties (included) When exchange the replacement part of collector, hold the leads in using the cable ties (length less than 100 mm and width less than 3 mm) which is sold generally.  
Then, keep slack in the leads (The length of lead to fix is about 120 mm from replacement part of collector). Do not influences movement of the collector arm.  
Failure to occur biased wear of collector arm and fragment of sheath.
6. Be sure to confirm the Tro-Reel HS unit phase (R.S.T) before connecting the leads to the load.
7. When mount the Insulated terminals to the terminal, Do not twist more than required.  
Failure to occur biased wear of collector arm and fragment of sheath.
8. When mount the collector arm support parts, If it is changed or damaged by fall, Exchange the new parts.  
Failure to occur biased wear of collector arm and fragment of sheath.



# 1 Mounting a conductor cleaner

1. Mount the supporting parts of collector arm on saddle
2. Set the distance from the upper surface of the Tro-Reel HS conductor to the center of collector cleaner mount rod to 65mm (The collector arm permitted movable range <press direction> central value of  $65\text{mm} \pm 10\text{mm}$ )
3. Should be put the center of Tro-Reel HS conductor and collection arm (mount shaft) together.  
(The collector arm permitted movable range <oscillating direction>  $0 \pm 3\text{mm}$ )



## Notes

Be sure that the conductor cleaner is mounted parallel to the Tro-Reel HS unit with no twisting.  
Failure to do so may cause fire due to sparks, poor collector arm contactor separation from wires.