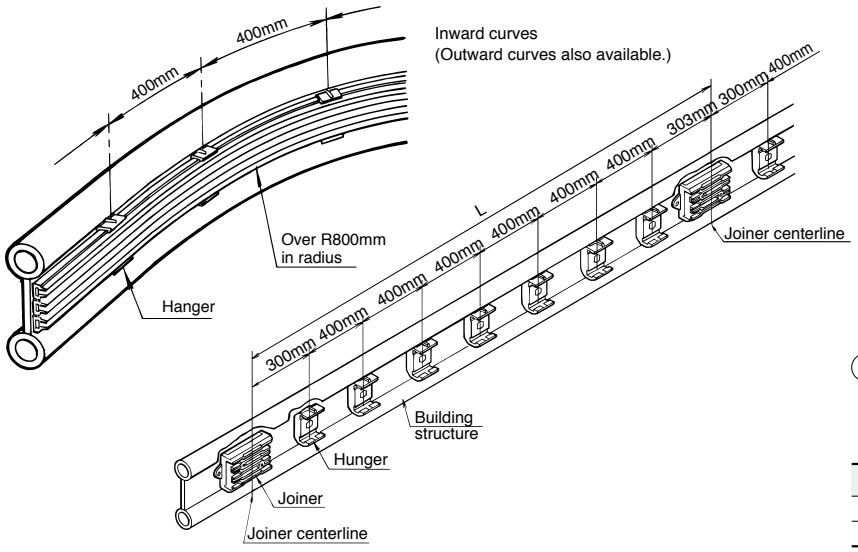
1 Setting joiner and hanger intervals

■Setting intervals for hangers

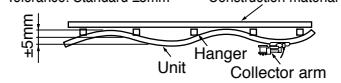
Hangers should be positioned at intervals of 400mm or less for straight sections and curved sections.
Should be set the intervals to hangers of the both end from joiner and center feed-in joiner L=300 mm or less.



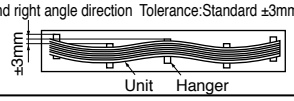
Notes

- **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 ±5mm



Swell: Displacement of collection arm press direction and right angle direction Tolerance:Standard ±3mm



■Setting joiner intervals

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

Notes

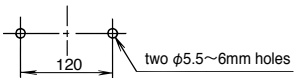
- **Failure to conform to this table may cause poor collector arm contact or separation from wires.**
- **The length of the joiner is 2997±2mm.**

Ambient temperature during installation	Mounting size: L (mm)	Distance between conductors at joint (mm)
10℃ or lower	3003	5～13
11～40℃	3000	3～10

2 Joiner installation

1. Drill holes in the building structure as shown below.

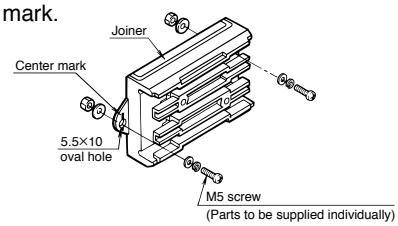
- **Preparatory drilling on building structure (for 3P, 4P, 5P and 6P)**



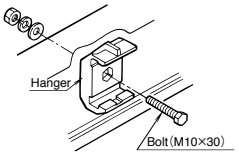
Notes

When drilling holes, use the joiner center mark as a reference.

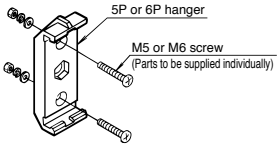
2. Screw the joiner to the building structure in line with the center mark.



3 Hanger installation



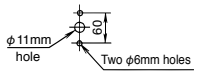
- **Fixing 5P or 6P hangers using two screws**



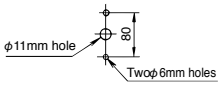
(Applicable when two screws are used to fix 5P or 6P hangers.)

- **Preparatory drilling on building structure**

For 5P type

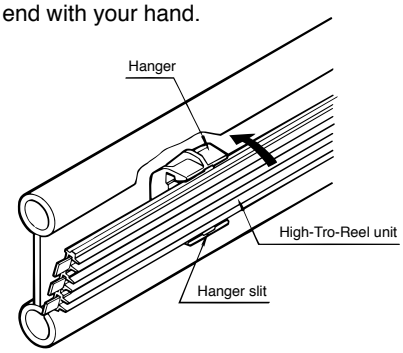


For 6P type



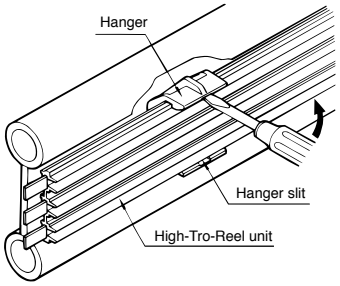
4 Mounting the High-Tro-Reel unit on a hanger

Insert one end of the High-Tro-Reel unit into the hanger and push the other end with your hand.



■Removing the High-Tro-Reel unit

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



Unit:mm

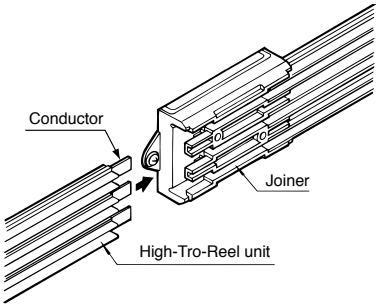
5 High-Tro-Reel unit connection

Insert the High-Tro-Reel unit into the joiner in the direction of the arrow.

Notes

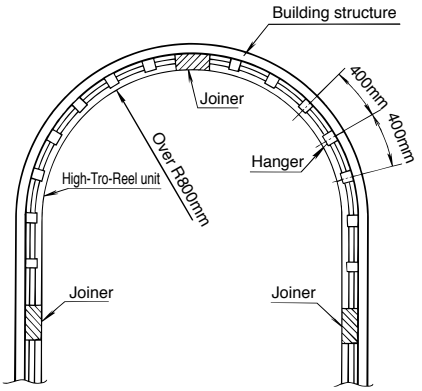
When mounting the High-Tro-Reel unit,
Be careful to maintain the proper form and layout.
Do not be meandering (up and down direction ±3mm or less)
Failure to do so may cause poor collector arm contact or separation from wires.

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



Notes

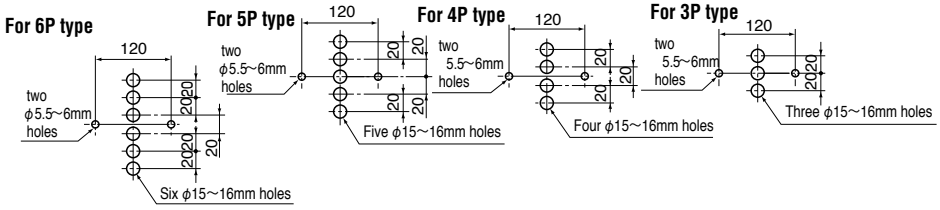
For inward curves, position a joiner (or joint) at the center of the curve. (For outward curves, a joiner can be positioned on any part of the unit.)

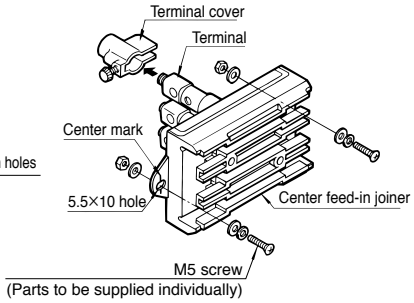


6 Center feed-in joiner installation

1. Drill holes in the building structure as shown below.
2. Remove the terminal cover, insert the joiner into the building structure, line it up with the center mark, and screw it in.

●Preparatory drilling on building structure.

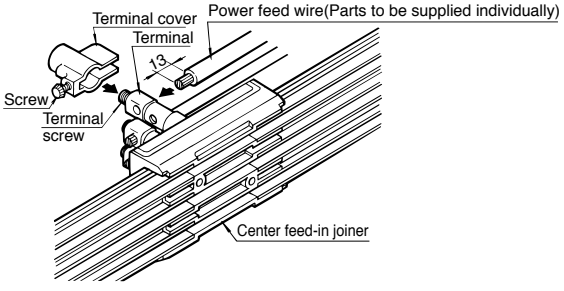




Notes **When drilling holes, use the center mark of the center feed-in joiner as a reference.**
Use a hole saw to drill ϕ15～16mm holes.

7 Supplying power to the High-Tro-Reel

1. Remove 13mm of the sheath covering the power feed wire, insert the wire into the terminal, and screw it in securely with the terminal screw. Terminal screws must besecurely tightened. Failure to do so may cause fire.
2. Screw the terminal cover to the terminal.

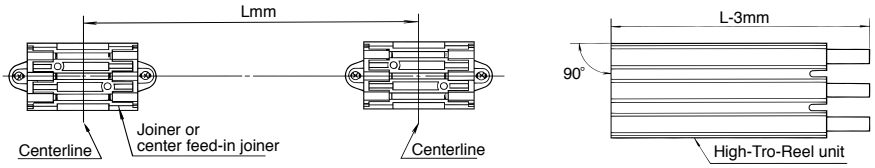


⚠Caution

1. Use 5.5 to 22mm² power feed wires.
2. Be sure to crimp the inclvded crimp sleeve before connecting the signal feed wire (0.75 to 2mm²) to the terminal. Failure to do so may cause fire.

8 Cutting the High-Tro-Reel unit

Line up the High-Tro-Reel unit between the center points of the two joiners (central dimension L) and cut 3mm off of one end.

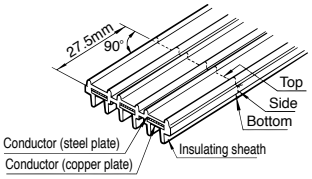


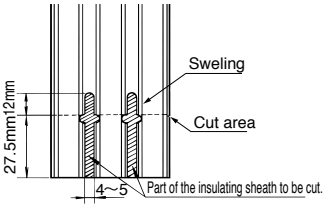
9 Cutting the High-Tro-Reel unit

1. Mark the length to be cut off on the High-Tro-Reel unit as shown below, and cut the top, sides and bottom of the insulating sheath using a hacksaw. On the top surface, make a thin cut down to the conductor steel plate.

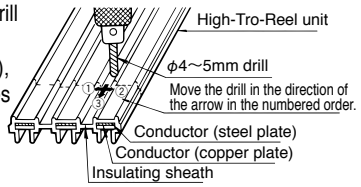
⚠Caution

Be careful not to damege the conductor (copper plate) when cutting with a hacksaw. Damage may cause fire or damege due to falling of equipment.





2. Cut the insulating sheath using ϕ4~5mm drill bit, as shown in the right drawing. Slightly exaggerating the cut to the sides (swelling), as shown in the right upper drawing, makes the insulating sheath easier to remove.



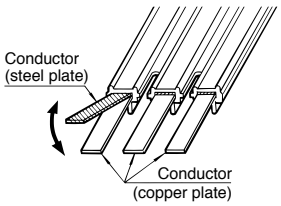
Notes

1. Be careful not to damage the lower conductor (copper plate.)
2. Hold the drill upright against the High-Tro-Reelunit when cutting the insulating sheath.

3. Break off the upper conductor (steel plate) at the cut line.

Notes

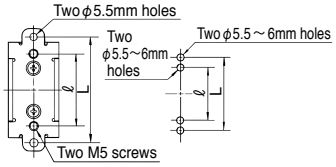
Remove the burrs from both cut surfaces using a knife or a file.
Failure to do so may cause poor collector arm contact or separation from wires.



10 Guide cap installation

1. Drill holes in the building structure as shown below.

●Preparatory drilling on building structure



2. Screw a guide cap to the building structure and insert the High-Tro-Reel unit into the guide cap.

Notes

Use a tandem-type collector arm and set traveling speed at switching sections to 60m/min. or lower.

●Installation procedure

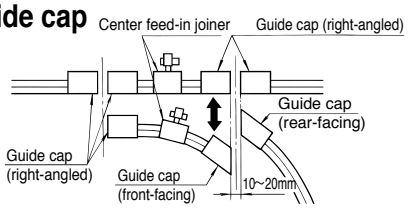
L size: front-mounting ℓsize: front-mounting

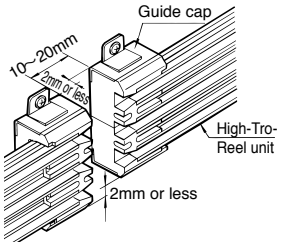
Notes

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.

Number of poles (item)	L (mm)	ℓ(mm)
3P (right-angled, front, rear-facing)	73	50
4P (right-angled, front, rear-facing)	93	70
5P (right-angled, front, rear-facing)	113	90
6P (right-angled, front, rear-facing)	133	110

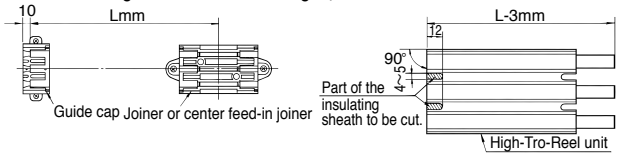
■Usage of guide cap





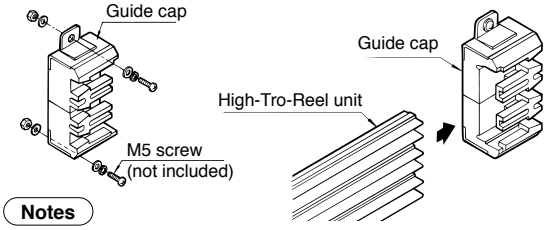
Cutting the High-Tro-Reel unit and insulating sheath

1. Line up the High-Tro-Reel unit between the center points of the joiner and the guide cap (central dimension"L") and cut 3mm off of one end.
2. Cut the insulating sheath terminal using aϕ4~5mm electric drill.



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

■High-Tro-Reelunit installation



Notes

Screws must be securely tightened.
Failure to do so may cause damage due to falling of equipment.

Unit:mm

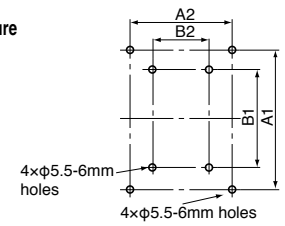
11 Line separator installation

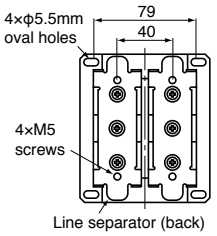
1. Drill holes in the building structure as shown below. Hole positions are different according to whether it will be installed from or back.
2. Screw a line separator to the building structure using screws (M5; not included) and insert the High-Tro-Reel unit into the line separator.

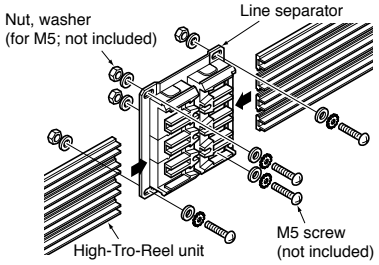
Notes **Use a tandem-type collector arm and set the maximum traveling speed to 200m/min, or lower.**

● **Preparatory drilling on building structure**

Mounting method		For 4P	For 5P
Installed from front	A1	97	117
	A2	79	79
Installed from back	B1	70	90
	B2	40	40

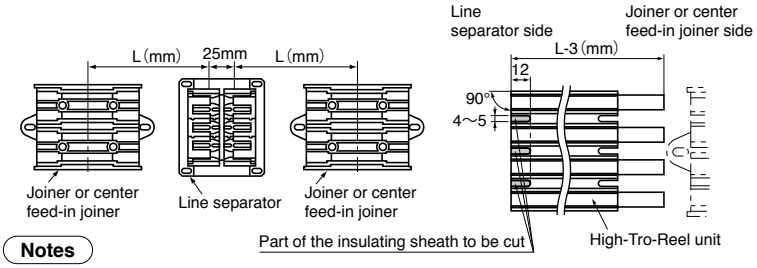






Cutting the High-Tro-Reel unit and insulating sheath

1. Line up the High-Tro-Reel unit between the center points of joiner and the line separator, and cut 3mm off of one end.
2. Cut the insulating sheath as shown in the drawing at right using an electric drill with a φ 4 to 5 bit.

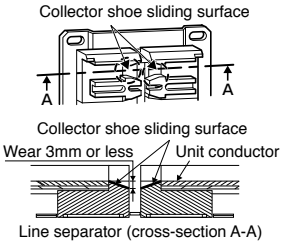


Notes

1. **After cutting, remove the burrs from cut surfaces using an electrical knife or file. Remove sharp edges from the conductor using a file or similar tool.**
   Failure to do so may cause poor contact or derailment of the collector arm.
2. **Set the intervals between hangers at 400mm or less. Intervals longer than this may result in derailment of the collector arm.**

Replacing line separators

Line separators should be replaced when the collector shoe sliding surface of the line separator has worn down 3mm from the conductor surface. Line separators should also be replaced early when it is possible that the wear amount will reach 3mm before the next inspection. at right using an electric drill with a φ4 to 5 bit.

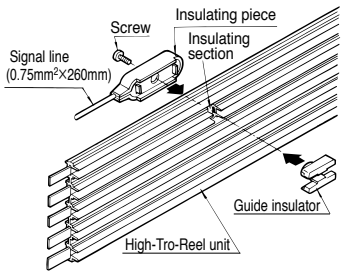


⚠Caution

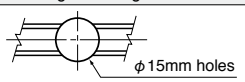
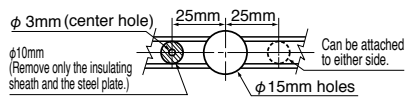
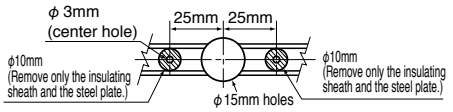
Use line separators within the wear range.
Failure to do so may result in derailment of the collector arm, fires due to sparking, or poor contact.

12 Insulating piece installation

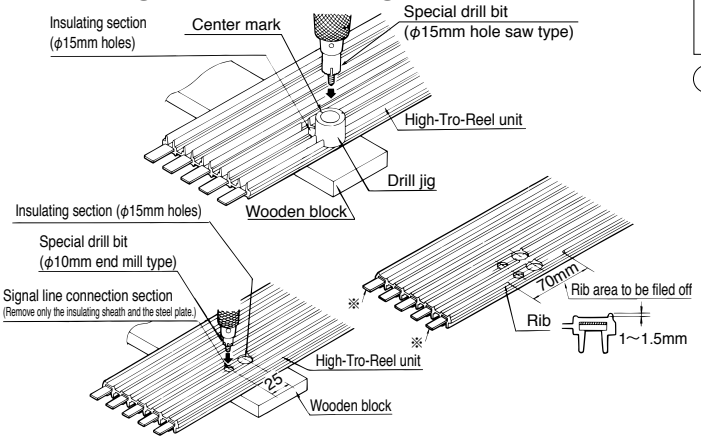
1. Drill holes in the High-Tro-Reel unit using the special jig (insulating piece drill jig).
2. Insert a guide insulator and a insulating piece into the insulating section and screw them in.



■Usage of insulating piece

Usage	Hole drilling in the High-Tro-Reel unit
Signal line insulation	
Signal line insulation + One-side power feed	
Dual-side power feed for repair	

■Drilling holes in the High-Tro-Reel unit



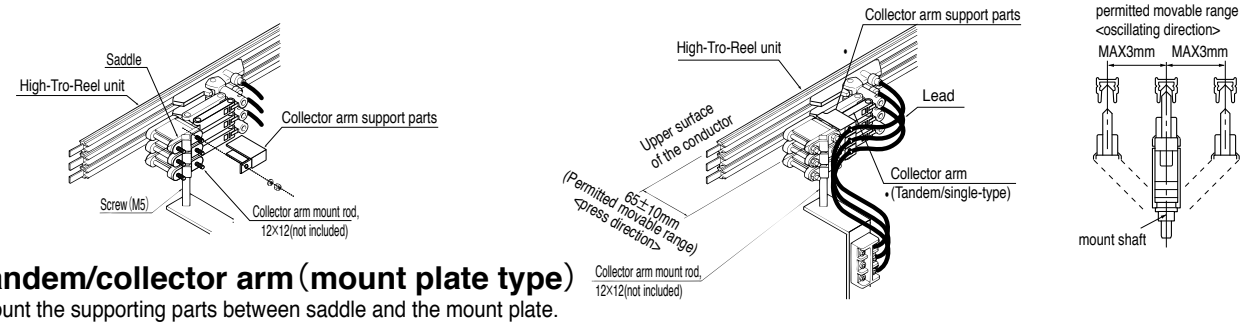
Notes

1. **Position the High-Tro-Reel unit on a wooden block and drill holes using the drill jig (positioning the center mark inside the jig.)**
2. **Hold the end mill or hole saw drill upright against the High-Tro-Reel unit when drilling.**
3. **For insulating sections, drill holes slowly to prevent damage to the insulating sheath.**
4. **Remove cutting chips from the hole saw drill with a flat tip screwdriver.**
5. **When making both ends (*section) of the High-Tro-Reel conductor insulating sections, remove the rib with a knife.**
6. **Remove the burrs from both cut surfaces using a knife or a file. Failure to do so may cause poor collector arm contact.**
7. **After drilling holes in the signal line joint, be sure to remove the burrs from the φ3mm center hole on conductor sliding surface. Failure to do so may cause poor collector arm contact.**
8. **If signal lines are not needed, insulate the end of the line with vinyl tape so that it wonit affect collector arm travel.**

13 Collector arm installation

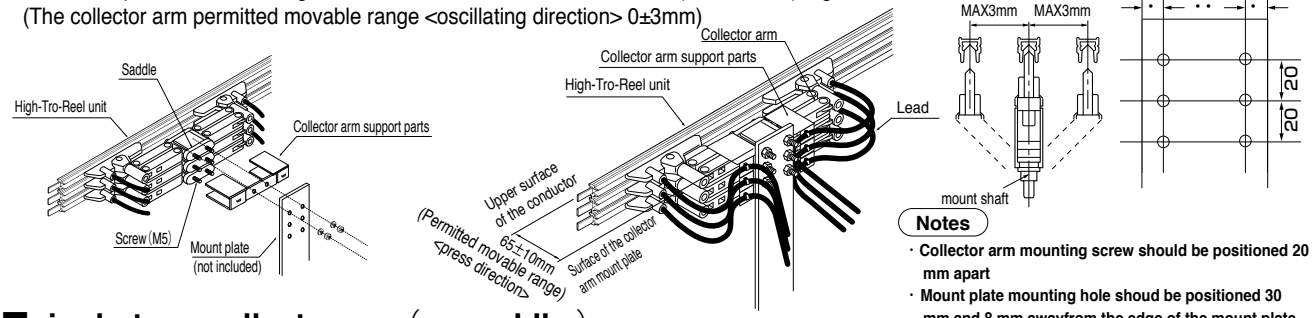
■Tandem/single-type collector arm（mount rod type）

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



■Tandem/collector arm（mount plate type）

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

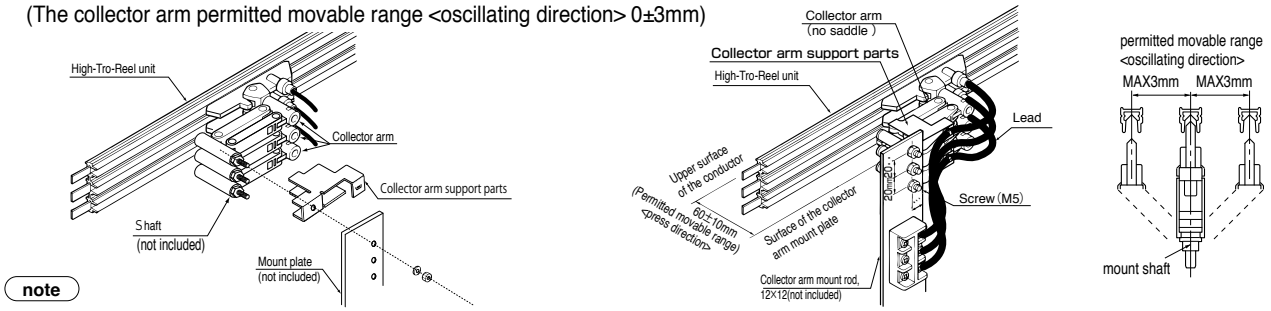


Notes

- **Collector arm mounting screw should be positioned 20 mm apart**
- **Mount plate mounting hole shoud be positioned 30 mm and 8 mm awayfrom the edge of the mount plate.**

■single-type collector arm（no saddle ）

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

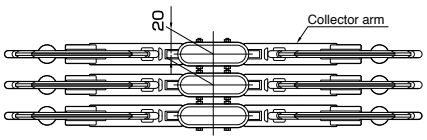


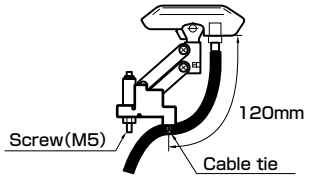
note

・Collector arm mounting screw should be positioned 20 mm apart and 8 mm awayfrom the edge of the mount plate.

note

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±10mm (60±10mm for single).**
2. **Collector arm mounting screw should be positioned 20 mm apart and Collector arms (single-type with no saddle excluded) must be positioned close toeach other as shown in the drawing at right.**
3. **Be sure that collector arms are mounted parallel to the High-Tro-Ree 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 3mm from center of the High-Tro-Reel 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 High-Tro-Ree 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. **Exchange of the collector aim once in exchange three times of replacement part of collector.**
9. **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.

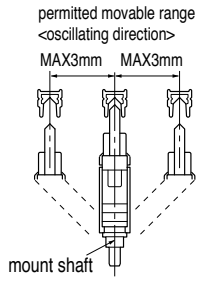


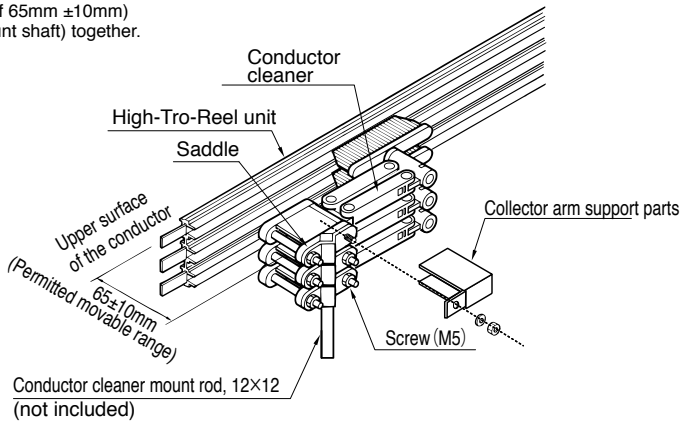


Unit:mm

14 Mounting a conductor cleaner

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





note

・Be sure that the conductor cleaner is mounted parallel to the High-Tro-Reel unit with no twisting.