

Half Pitch Interface Connectors

FI Series



General Information

FI Series has been developed as a half pitch interface connector for CNC systems manufactured by Fanuc Ltd. 2 types of cable assembly style are available; IDC for 20 pos. and soldering for 15 and 20 pos.

Features

1. 1.27 mm contact pitch contributes to downsizing of electrical devices.
2. Bellows contact endures wrenching force and also provides soft mating/unmating feeling.
3. Angled cable exit case, robust die-cast case and short case are available, provided only by Hirose.
4. Case consists of two separated parts and is fitted with 4 hooks, for easy assembly.
5. One-touch lock and screw lock are available to accept cable variations.
6. 2 types of cable assembly style: IDC for easy assembly and soldering

Plug Variety

| Cable Size | Case | | Connector Unit | | |
|----------------------------------|----------------------|-----------------|----------------|--------------|-----------------|
| | Features | Part Number | Termination | Pin Counts | Part Number |
| φ 6.2 (φ 5.5 to 6.6) | Plastic | FI-20-CV2(50) | IDC | 20 | FI30-20S(50) |
| | | | Soldering | 20 | FI40B-20S(50) |
| | Plastic, Right Angle | FI-20-CVS2(50) | IDC | 20 | FI30-20S(50) |
| | | | Soldering | 20 | FI40B-20S(50) |
| Plastic, Low Profile, Screw Lock | FI-20-CV7 | IDC | 20 | FI30-20S(50) | |
| φ 8.5 (φ 8.0 to 9.0) | Plastic | FI-20-CV(60) | Soldering | 15 | FI40B-2015S(50) |
| | Plastic, Right Angle | FI-2015-CVS(50) | Soldering | 15 | FI40B-2015S(50) |
| φ 9.2 (φ 8.9 to 9.5) | Plastic | FI-20-CV5(50) | Soldering | 20 | FI40B-20S(50) |
| | Plastic, Right Angle | FI-20-CVS5(50) | Soldering | 20 | FI40B-20S(50) |
| φ 10.25 (φ 9.5 to 11.0) | Die-Casting | FI-20-CV6 | Soldering | 20 | FI40B-20S(50) |

■ Specifications

| | |
|-----------------------|--------------------------|
| Rated Current | 1A |
| Rated Voltage | 250V AC |
| Operation Temperature | - 55 °C to 85 °C |
| Contact resistance | 70 mΩ max. (10 mA DC) |
| Insulation resistance | 1,000 MΩ min. (250 V DC) |
| Withstanding voltage | 500 V AC for 1 minute |

■ Materials

| Part | | Material | Finish & Remarks |
|------------|---------|------------------------------|---|
| Plug Unit | Contact | IDC Type | Phosphor Bronze Contact Area: Gold Plated Lead: Gold Plated Under Plating: Nickel Plated |
| | | Soldering Type | Phosphor Bronze Contact Area: Gold Plated Lead: Tin Plated Under Plating: Nickel Plated |
| | Housing | IDC Type | PBT Resin UL94V-0, Black |
| | | Soldering Type | PPS Resin UL94V-0, Black or Brown |
| | Holder | IDC Type | PBT Resin UL94V-0, Black |
| | | Soldering Type | PPS Resin UL94V-0, Black or Brown |
| Shell | Steel | Nickel Plated or Tin Plated* | |
| Cover Case | Case | Plastic Cover | Polycarbonate Resin UL94V-0, Gray |
| | | Die-Casting Cover | Zinc Alloy Nickel Plated |

*Connector unit with Tin plated metal shell is also available with the specification No.(20), for customers who need to solder drain wire to metal shell for grounding connection. Please contact your Hirose representative for the details.

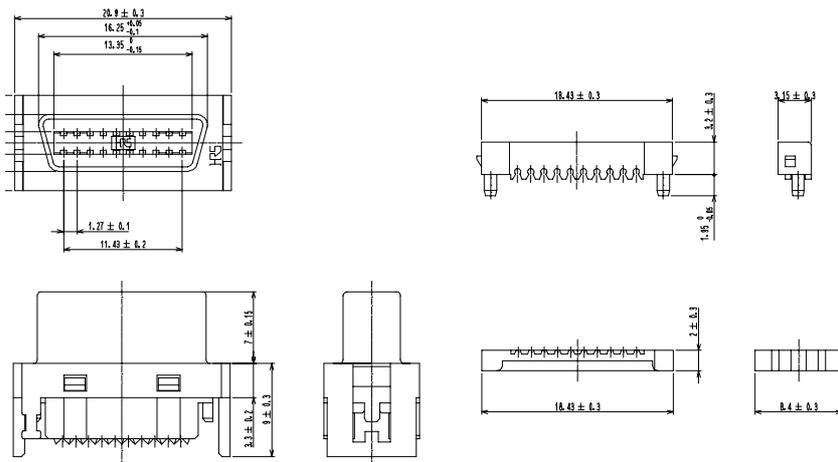
FI Series ● Half Pitch Interface Connectors

ITS-Z0344

■ Plug Unit

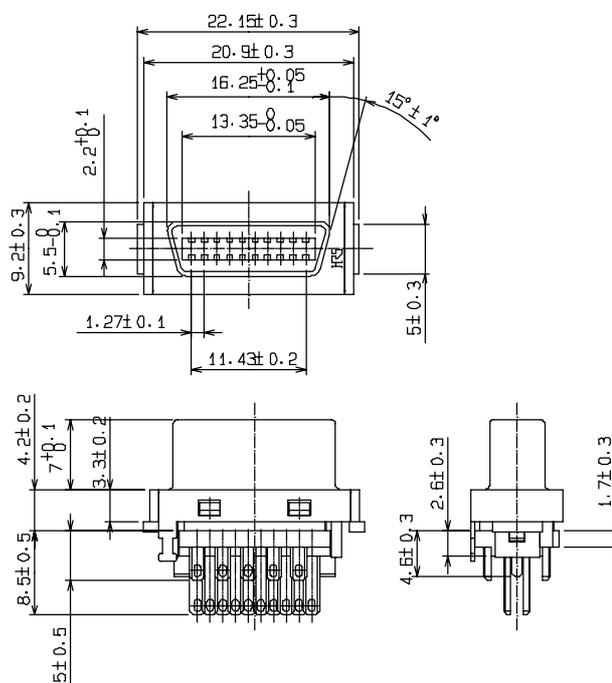
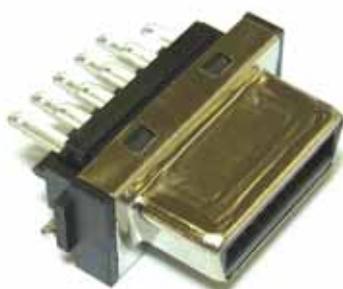
All dimensions: mm

● IDC Type 20 pos



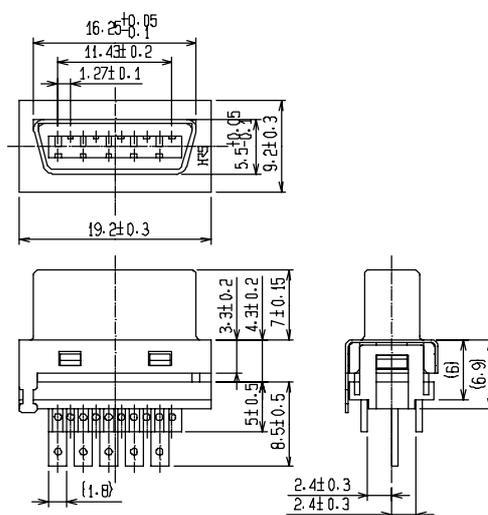
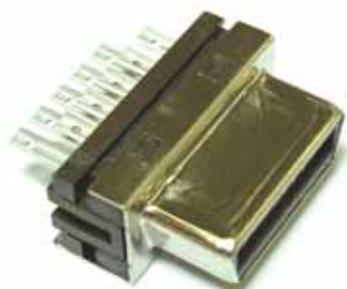
| Part Number | CL No. | RoHS |
|--------------|-----------------|------|
| FI30-20S(50) | CL230-0505-5-50 | YES |

● Soldering Type 20 pos.



| Part Number | CL No. | RoHS |
|---------------|-----------------|------|
| FI40B-20S(50) | CL230-0518-7 50 | YES |

15 pos.

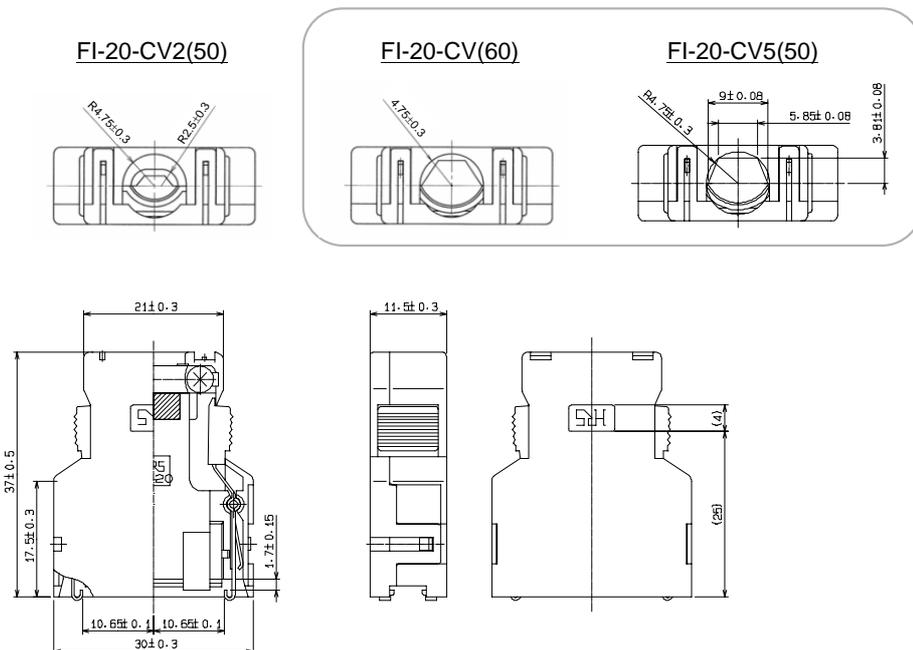


| Part Number | CL No. | RoHS |
|-----------------|-----------------|------|
| FI40B-2015S(50) | CL230-0524-0 50 | YES |

■ Cover Case

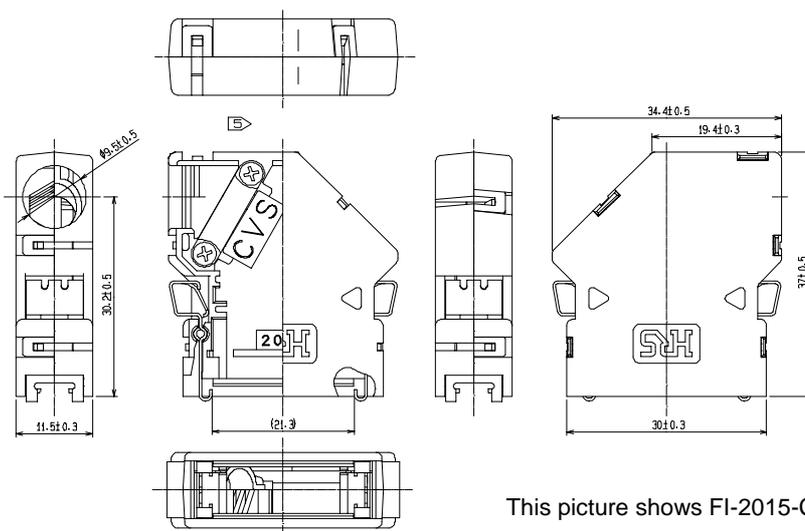
All dimensions: mm

● Straight Type Plastic Cover (One Touch Lock)



| Applicable Cable Dia. | Part Number | CL No. | RoHS |
|-----------------------|---------------|-----------------|------|
| $\phi 6.2$ | FI-20-CV2(50) | CL230-0504-2 50 | YES |
| $\phi 8.5$ | FI-20-CV(60) | CL230-0501-4 60 | YES |
| $\phi 9.2$ | FI-20-CV5(50) | CL230-0515-9 50 | YES |

● Right Angle Type Plastic Cover (One Touch Lock)

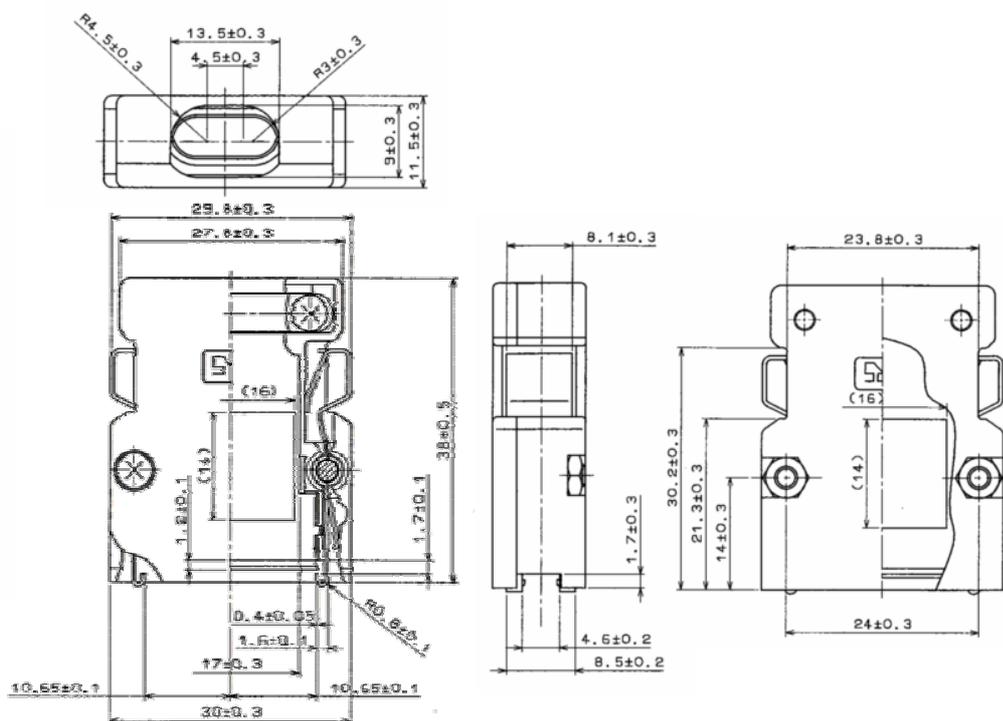


This picture shows FI-2015-CVS(50)

| Applicable Cable Dia. | Part Number | CL No. | RoHS |
|-----------------------|-----------------|-----------------|------|
| $\phi 6.2$ | FI-20-CVS2(50) | CL230-0531-5 50 | YES |
| $\phi 8.5$ | FI-2015-CVS(50) | CL230-0530-2 50 | YES |
| $\phi 9.2$ | FI-20-CVS5(50) | CL230-0532-8 50 | YES |

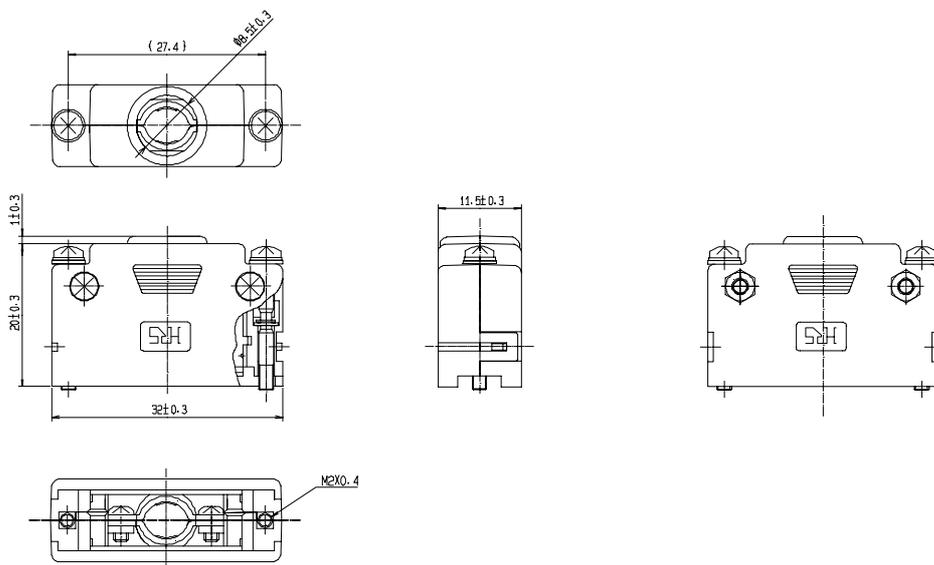
All dimensions: mm

● **Straight Type Die-Casting Cover (One Touch Lock)**



| Applicable Cable Dia. | Part Number | CL No. | RoHS |
|-----------------------|-------------|-----------------|------|
| φ 10.25 | FI-20-CV6 | CL230-0519-0 00 | YES |

● **Straight Type Short Plastic Cover (Screw Lock)**



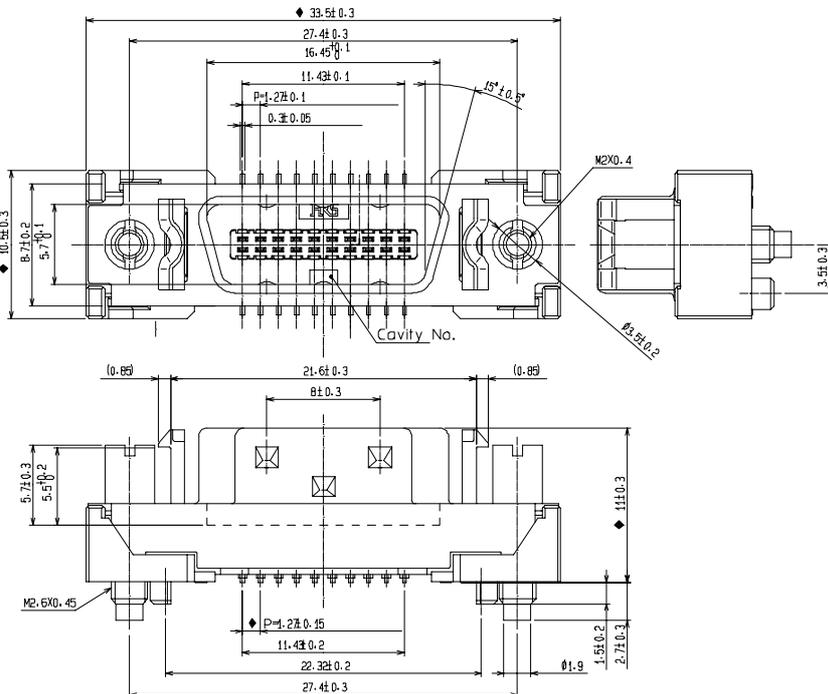
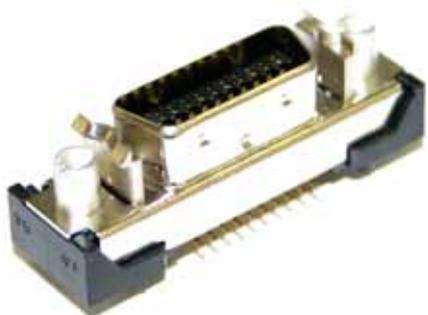
| Applicable Cable Dia. | Part Number | CL No. | RoHS |
|-----------------------|-------------|-----------------|------|
| φ 6.2 | FI-20-CV7 | CL230-0525-2 00 | YES |

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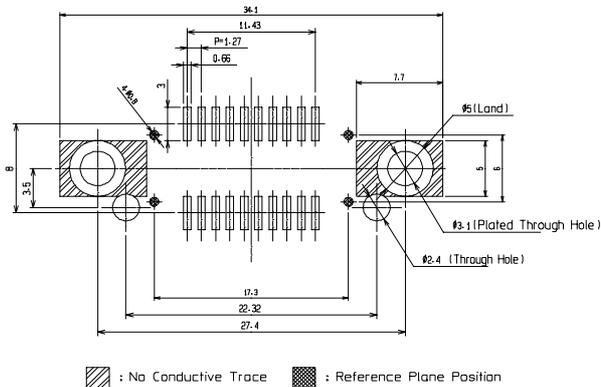
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■ Receptacle

● For Electrical Continuity Check
 20 pos.



Recommended PCB Layout



| Part Number | CL No. | Mounting | RoHS |
|-------------|-----------------|----------|------|
| FI80-20P | CL230-0537-1 00 | SMT | YES |

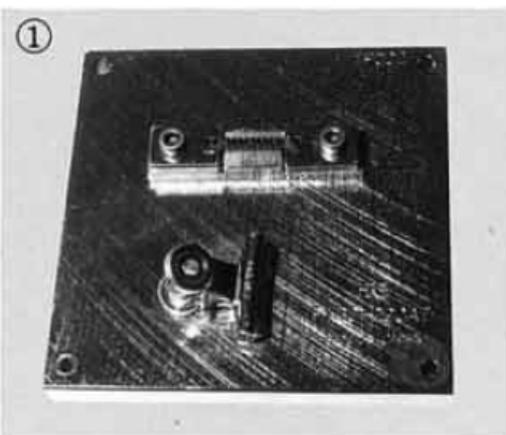
■ Materials

| Part | Material | Finish & Remarks |
|------------|------------------|--|
| Contact | Copper Alloy | Contact Area: Gold Plated Lead: Gold Plated |
| Housing | Polyamide or LCP | UL94V-0, Black |
| Shell | Steel | Nickel Plated |
| Lock Metal | Steel | Nickel Plated |
| Lock Screw | Steel | Tin Plated |
| Hex Nut | JIS B 11B1 | Nickel Plated |

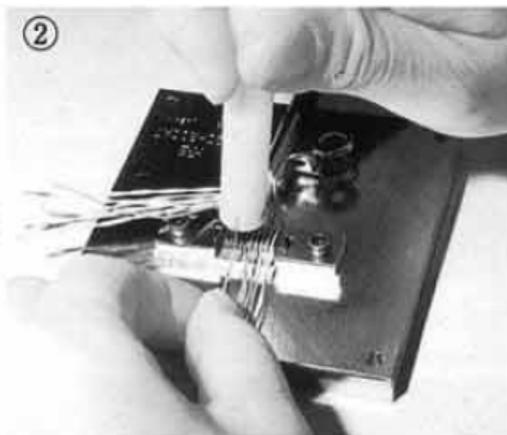
■ Applicable tools for IDC Assembly

| | | |
|----------------------------|-----------------------------|----------------------------|
| Cable | | I/O Cable (Discrete Cable) |
| Connector Name | | FI30-20S(50) |
| Cable Alignment | Manual Cable Alignment Tool | FI30-20CAT (CL250-0143-0) |
| Cutting Extra Cable Length | Hi-Flex Termination Press | HHP-502 (CL550-0082-2) |
| | Guide Plate | FI30-20CU (CL250-0147-1) |
| IDC | Hi-Flex Termination Press | HHP-502 (CL550-0082-2) |
| | Guide Plate | FI30-20GP (CL250-0144-3) |

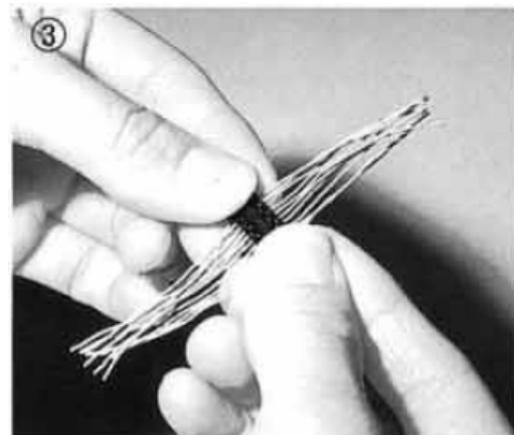
■ Cable Assembly Procedure



1. Place a protector on FI30-20CAT.



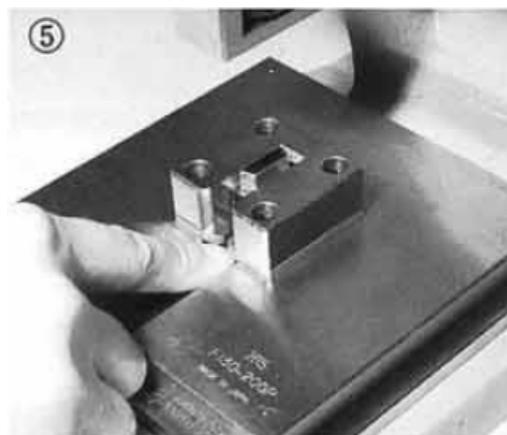
2. Clamp the cables and align signal cables to the protector one by one.



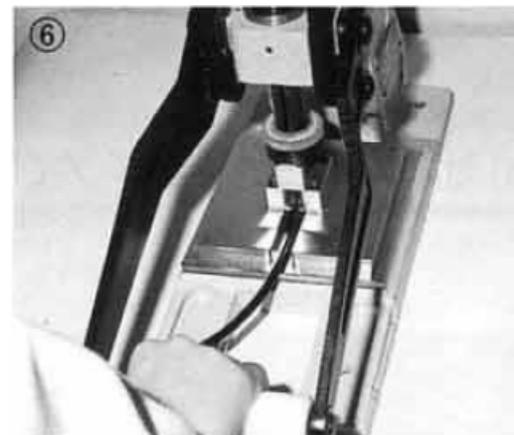
3. Assemble two protectors and temporarily attach to the holder.



4. Cut the extra cable length extended from the holder with nipper or cutter.



5. Cover the holder with a connector body, and then set them to FI30-20GP.



6. Pull the handle toward. (Termination completed.)