

# FOR BOARD-TO-CABLE CONNECTION

## 230 SERIES (GENERAL-PURPOSE TYPE)

### DISCONTINUED

#### ■ FEATURES

- 1.27 mm (0.050 in.) pitch contact arrangement in two rows enables high-density mounting.
- Connectors with 20 to 80 contacts are available for various purposes.
- Various types of board-to-cable connection can be performed.
- Discrete-wire (AWG #28, #30) I/O cables can be assembled by IDC or soldering. Metal covers completely protect sockets from EMI.
- Tails are spaced in a four-row staggered arrangement (2.54 mm × 1.905 mm) (0.100 in. × 0.075 in.) for easy PC board design.
- Insulation is UL-approved (94V-0) and is washable.

#### ■ SPECIFICATIONS

Item	Specifications					
Operating temperature range	-55°C to +105°C					
Current rating	DC 1 A					
Voltage rating	AC 240 V					
Contact resistance	30 mΩ max. (DC 6 V, 0.1 A)					
Insulation resistance	1000 MΩ min. (DC 500 V)					
Dielectric withstand voltage	AC 750 V for 1 minute					
Insertion force [kg max.]	Number of contacts	20	28	36	50	68
	Force	5.5	6.0	6.5	8.0	9.0
Withdrawal force [kg min.]	Number of contacts	20	28	36	50	68
	Force	0.8	1.12	1.44	2.0	2.3
Applicable PC board (standard)	1.6 mm (0.063 in.) thick					
Applicable wire (standard)	IDC: AWG #28 and #30 with $\phi$ 0.5 to 0.88 mm (0.019 to 0.035 in.) insulation diameter. The applicable wires depend on the number of contacts. See the descriptions of IDC sockets and metal covers. Soldering: AWG #26 max. (reference)					



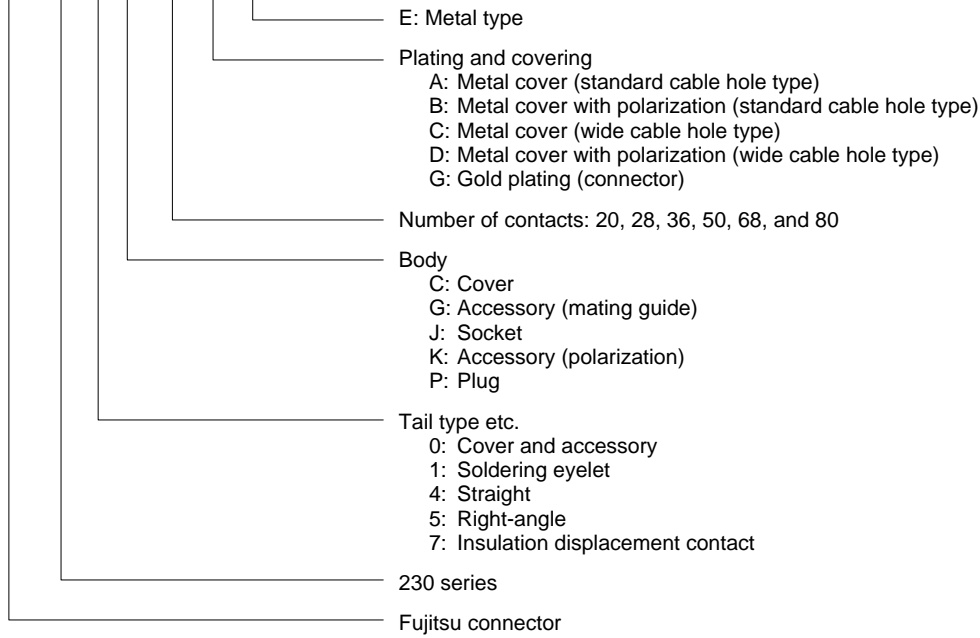
#### ■ MATERIALS

Item	Materials	
Insulator	Polyester (Soldering PPS), UL94V-0	
Conductor	Copper alloy	
Plating	Contact	Gold plating
	Terminal	Palladium plating

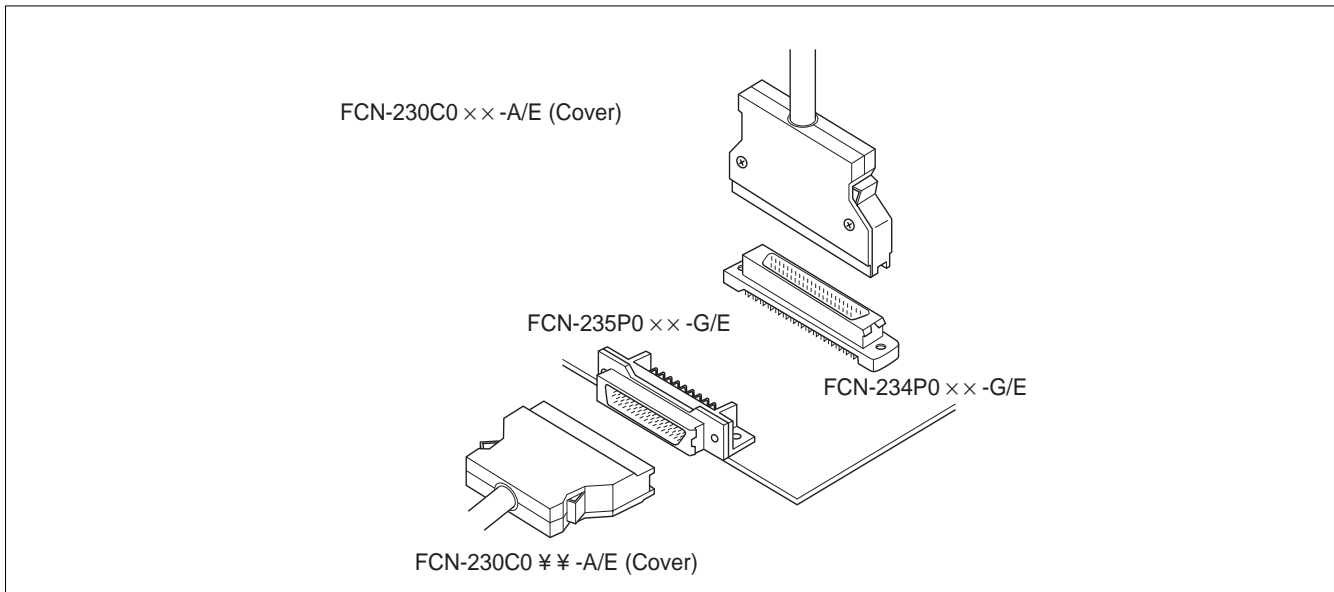
# 230 Series (General-Purpose Type)

## ■ ORDERING CODE

FCN-23 4 P 050-G / E



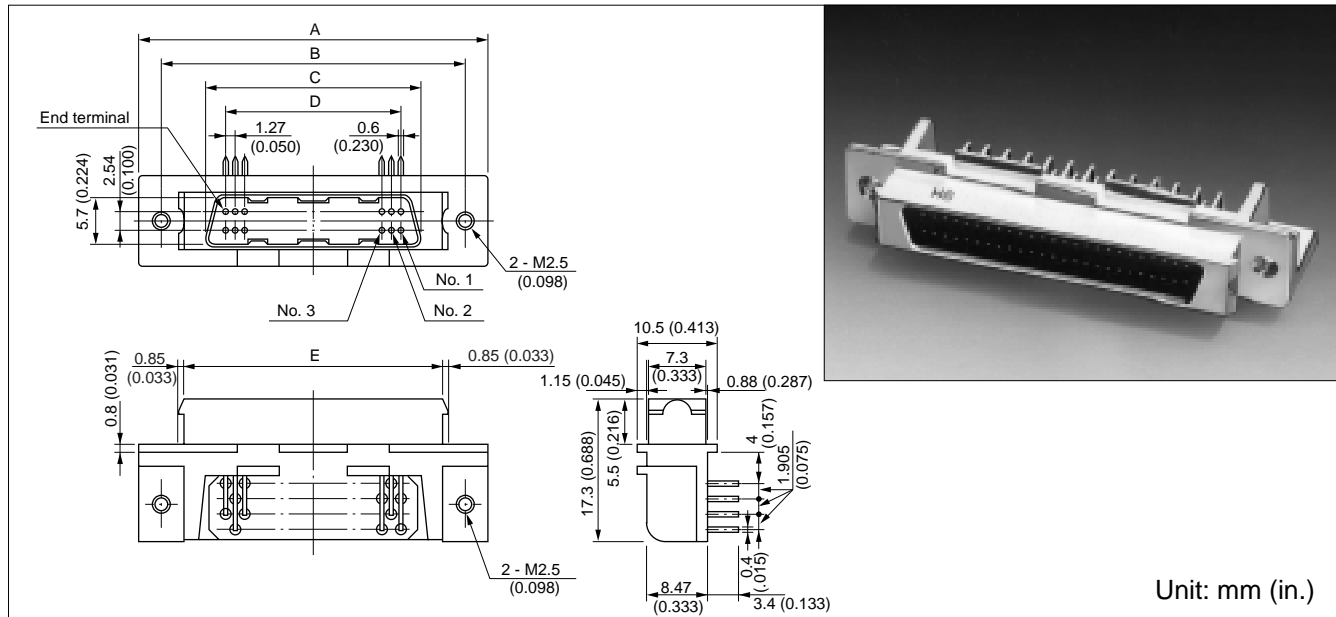
## ■ APPLICATIONS



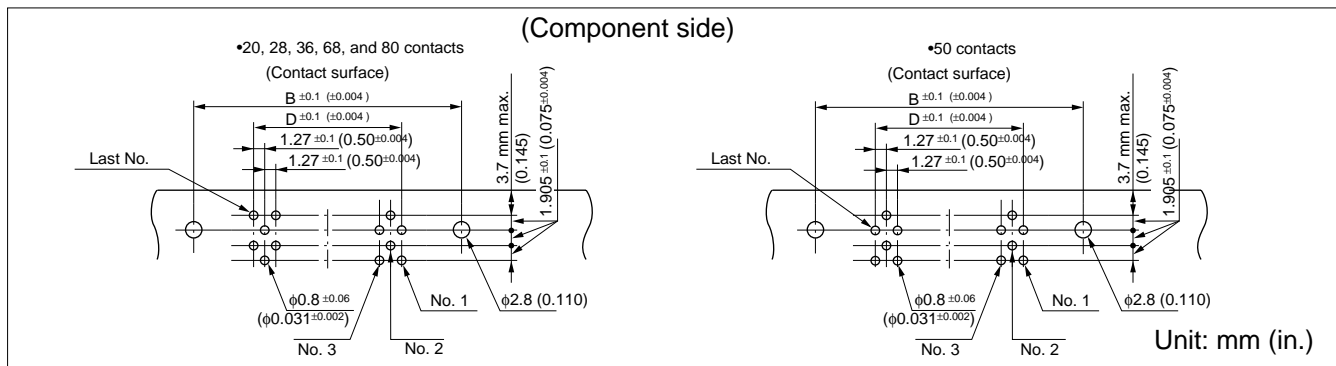
# 230 Series (General-Purpose Type)

## RIGHT-ANGLE PLUG

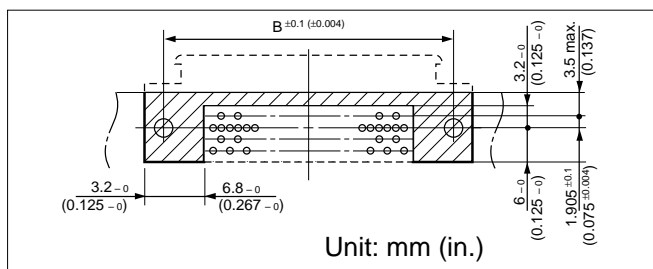
### ■ DIMENSIONS



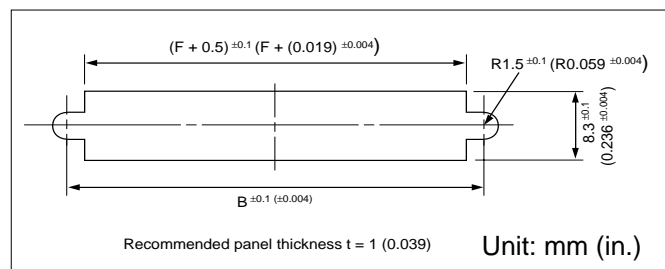
### ■ MOUNTING HOLE LAYOUT



### ■ PATTERN INHIBITED AREAS



### ■ RECOMMENDED PANEL DIMENSIONS



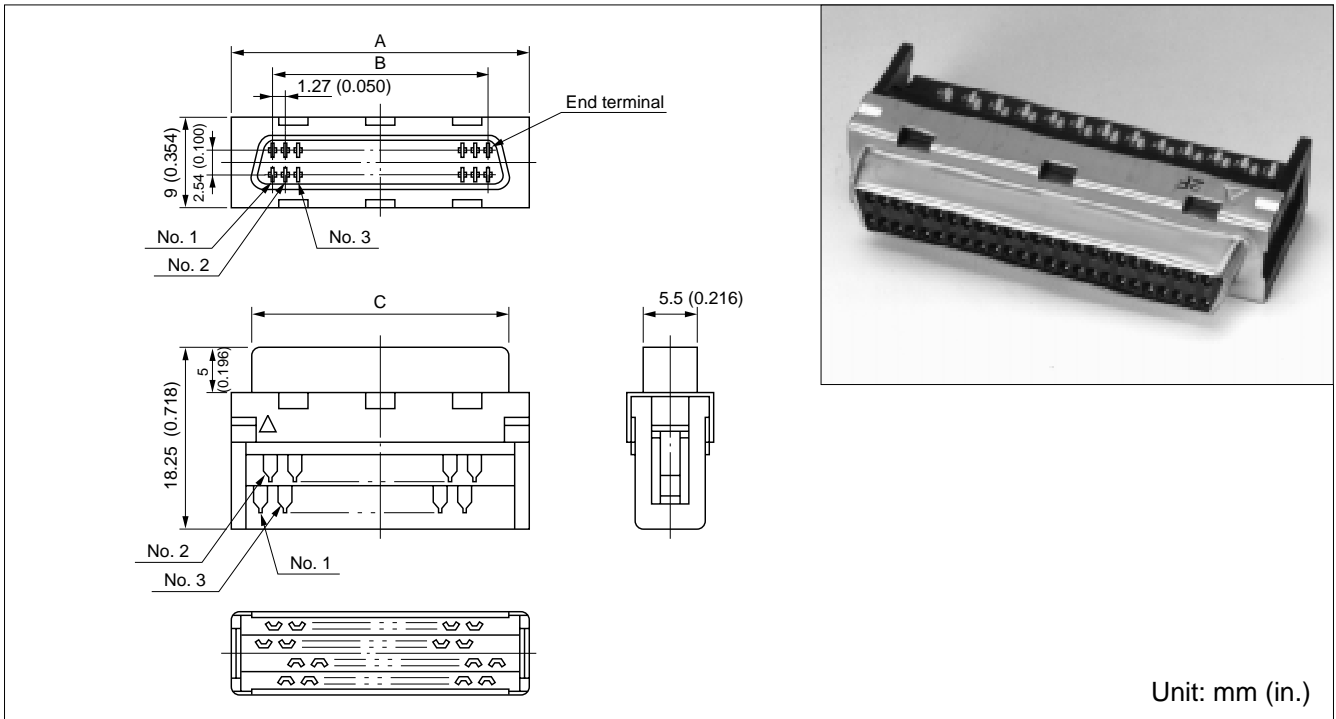
### ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)					
		A	B	C	D	E	F
28	FCN-235P028-G/E	38.48 (1.514)	32.48 (1.278)	20.88 (0.822)	16.51 (0.650)	26.68 (1.050)	28.38 (1.117)
36	FCN-235P036-G/E	43.56 (1.714)	37.56 (1.478)	25.96 (1.022)	21.59 (0.850)	31.76 (1.250)	33.46 (1.317)
50	FCN-235P050-G/E	52.45 (2.064)	46.45 (1.828)	34.85 (1.372)	30.48 (1.200)	40.65 (1.600)	42.35 (1.607)
68	FCN-235P068-G/E	63.88 (2.514)	57.88 (2.278)	46.28 (1.822)	41.91 (1.650)	52.08 (2.050)	53.78 (2.117)
80	FCN-235P080-G/E	71.50 (2.814)	65.50 (2.587)	53.90 (2.122)	49.53 (1.950)	59.70 (2.350)	61.40 (2.417)

# 230 Series (General-Purpose Type)

## SOLDERING EYELET SOCKET

### ■ DIMENSIONS



### ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)		
		A	B	C
20	FCN-231J020-G/E	19.25 (0.757)	11.43 (0.450)	15.60 (0.614)
28	FCN-231J028-G/E	24.33 (0.957)	16.51 (0.650)	20.68 (0.814)
36	FCN-231J036-G/E	29.41 (1.157)	21.59 (0.850)	25.76 (1.014)
50	FCN-231J050-G/E	38.30 (1.507)	30.48 (1.200)	34.65 (1.364)
68	FCN-231J068-G/E	49.73 (1.957)	41.91 (1.650)	46.08 (1.814)

### ■ CONNECTOR COVER

FCN-230C□□□-A/E

FCN-230C□□□-B/E

FCN-230C□□□-C/E

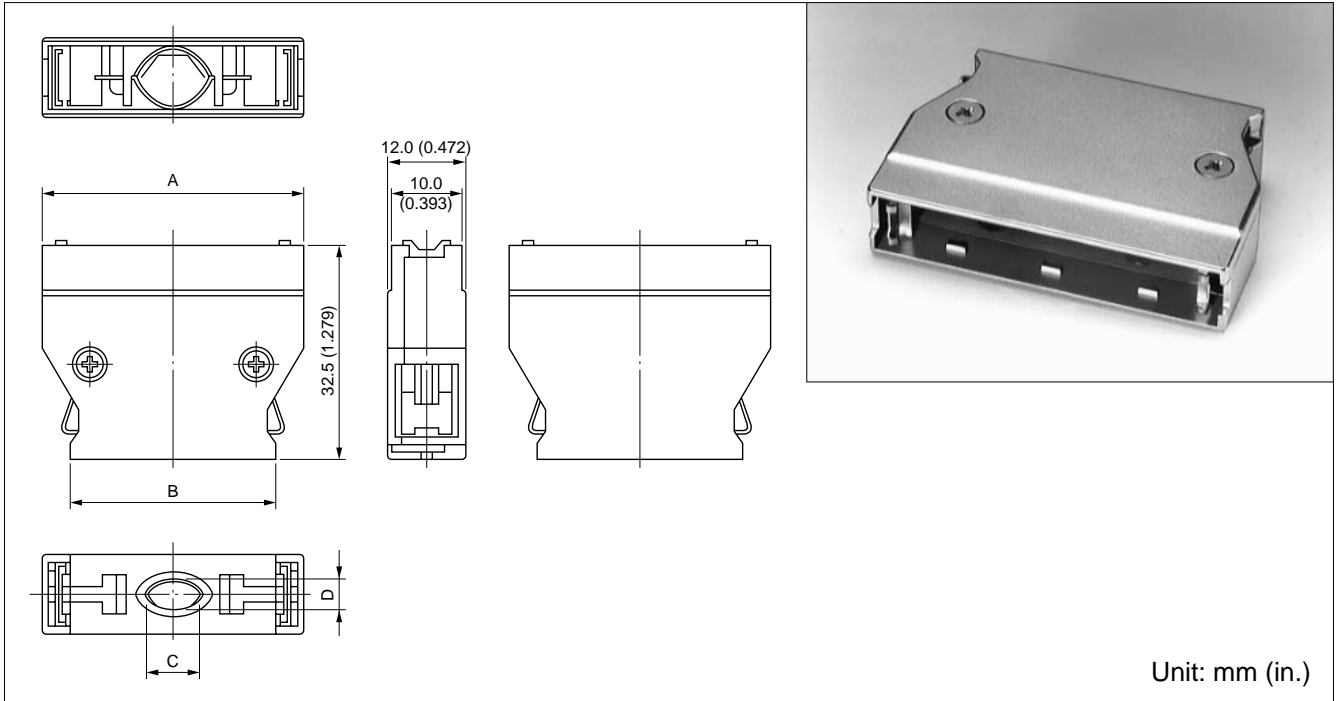
FCN-230C□□□-D/E

□□□: Number of contacts

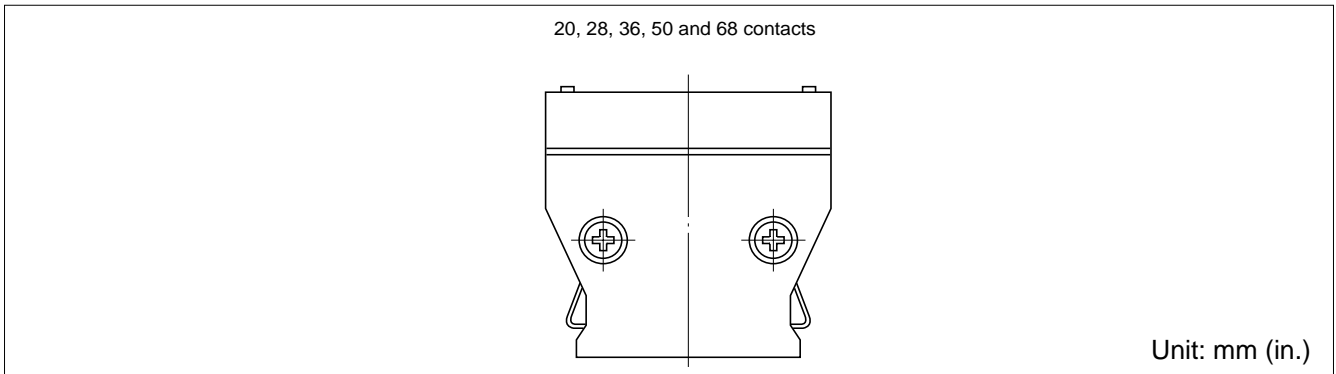
# 230 Series (General-Purpose Type)

**METAL COVER [230 SERIES (GENERAL-PURPOSE), 230R SERIES (CONFORMING TO SCSI) AND 240 SERIES (GENERAL-PURPOSE)]**

## ■ DIMENSIONS



## ■ SHAPE DEPENDING ON THE NUMBER OF CONTACTS



## ■ PART NUMBERS AND DIMENSIONS

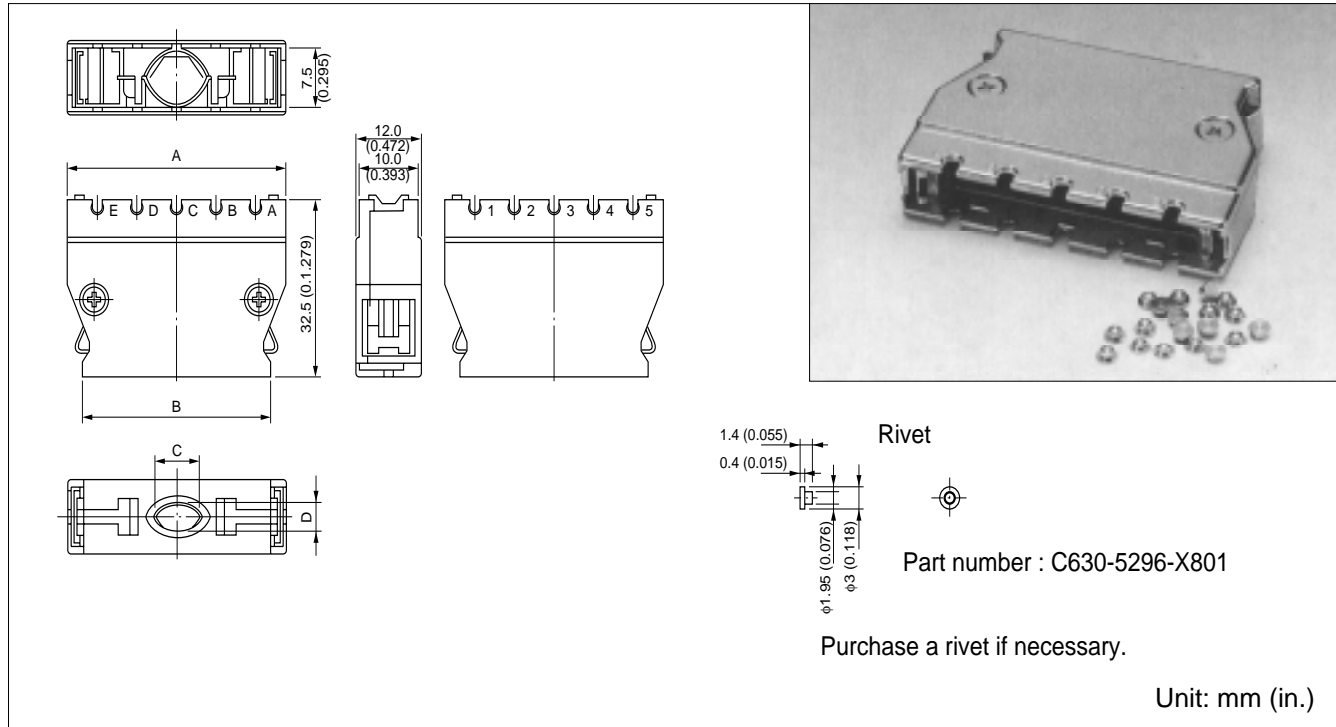
Number of contacts	Part number	Dimensions: mm (in.)		
		A	B	C × D
20	FCN-230C020-A/E	28.95 (1.139)	21.15 (0.852)	6.5 × 4.5 (0.255 × 0.177)
	FCN-230C020-C/E			8.5 × 8.2 (0.334 × 0.322)
28	FCN-230C028-A/E	34.30 (1.350)	26.23 (1.032)	6.5 × 6.0 (0.255 × 0.236)
	FCN-230C028-C/E			7.2 × 8.5 (0.283 × 0.334)
36	FCN-230C036-A/E	39.11 (1.539)	31.31 (1.232)	9.5 × 8.0 (0.374 × 0.314)
	FCN-230C036-C/E			9.0 × 10.0 (0.354 × 0.393)
50	FCN-230C050-A/E	48.00 (1.899)	40.20 (1.582)	8.5 × 7.0 (0.334 × 0.275)
	FCN-230C050-C/E			10.0 × 9.7 (0.393 × 0.381)
68	FCN-230C068-A/E	59.43 (2.339)	51.63 (2.032)	9.0 × 8.0 (0.354 × 0.314)
	FCN-230C068-C/E			10.0 × 9.0 (0.393 × 0.354)

# 230 Series (General-Purpose Type)

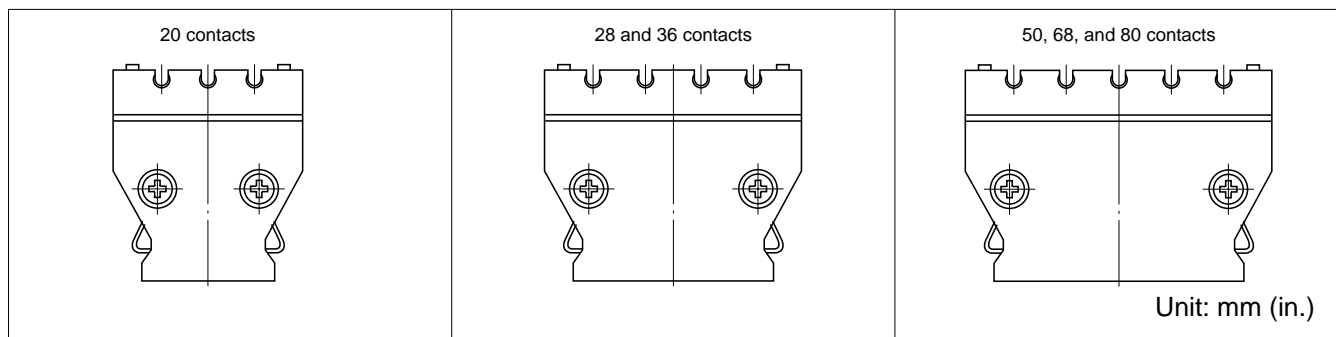
## METAL COVER WITH POLARIZATION [230 SERIES (GENERAL-PURPOSE) AND 240 SERIES (GENERAL-PURPOSE)]

This metal cover prevents a connector from being incorrectly inserted when two or more connectors with the same number of contacts are mounted on a PC board. Use the metal cover together with the polarization guide.

### ■ DIMENSIONS



### ■ SHAPES OF MAIN BODY DEPENDING ON THE NUMBER OF CONTACTS

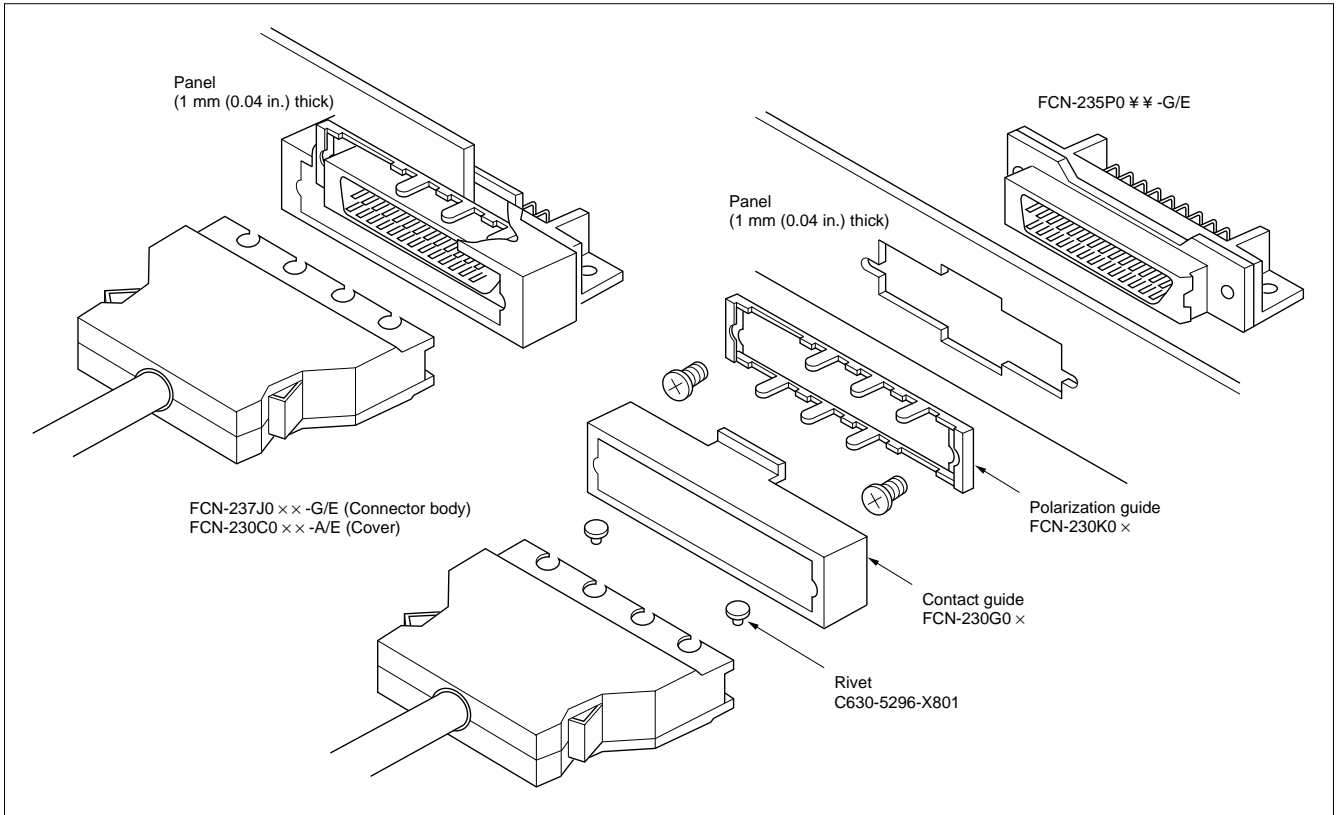


### ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)		
		A	B	C × D
20	FCN-230C020-B/E	28.95 (1.139)	21.15 (0.852)	6.5 × 4.5 (0.255 × 0.177)
28	FCN-230C028-B/E	34.03 (1.339)	26.23 (1.032)	6.5 × 6.0 (0.255 × 0.236)
36	FCN-230C036-B/E	39.11 (1.539)	31.31 (1.232)	9.5 × 8.0 (0.374 × 0.314)
	FCN-230C036-D/E			10.0 × 9.0 (0.393 × 0.354)
50	FCN-230C050-B/E	48.00 (1.899)	40.20 (1.582)	8.5 × 7.0 (0.334 × 0.275)
	FCN-230C050-D/E			14.7 × 10.4 (0.578 × 0.409)
68	FCN-230C068-B/E	59.43 (2.339)	51.63 (2.032)	9.0 × 8.0 (0.354 × 0.314)
	FCN-230C068-D/E			14.7 × 10.4 (0.578 × 0.409)
80	FCN-230C080-D/E	67.05 (2.639)	59.25 (2.322)	9.0 × 10.0 (0.354 × 0.393)

# 230 Series (General-Purpose Type)

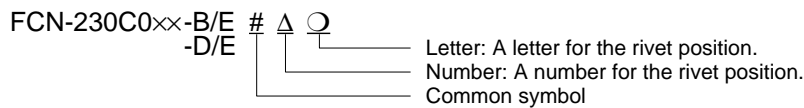
## APPLICATIONS



## PART NUMBERING FOR POLARIZATION COVER VARIATIONS (WITH RIVETS)

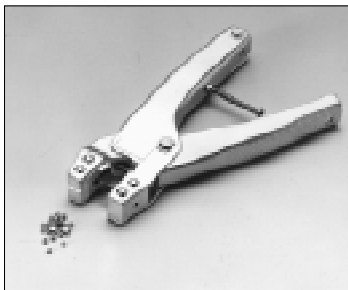
When specifying the positions of rivets for polarization, specify the part number as follows:

Part number for polarization: Specify # Δ ○ at the end of the part number.

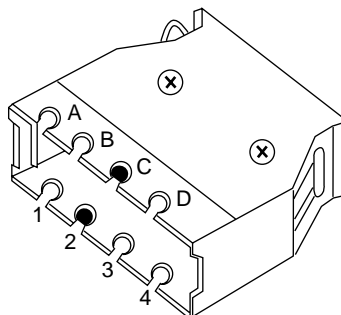


Example: FCN-230C036 -B/E #2C  
-D/E

#2C indicates that rivets (C630-5296-X801) are placed at positions 2 and C on the cover with a riveting tool (FCN-230T-T001/H).



Riveting tool  
(FCN-230T-T001/H)



FCN-230C0xx-B/E #2C  
-D/E

### Standard specifications of rivet positions for polarization

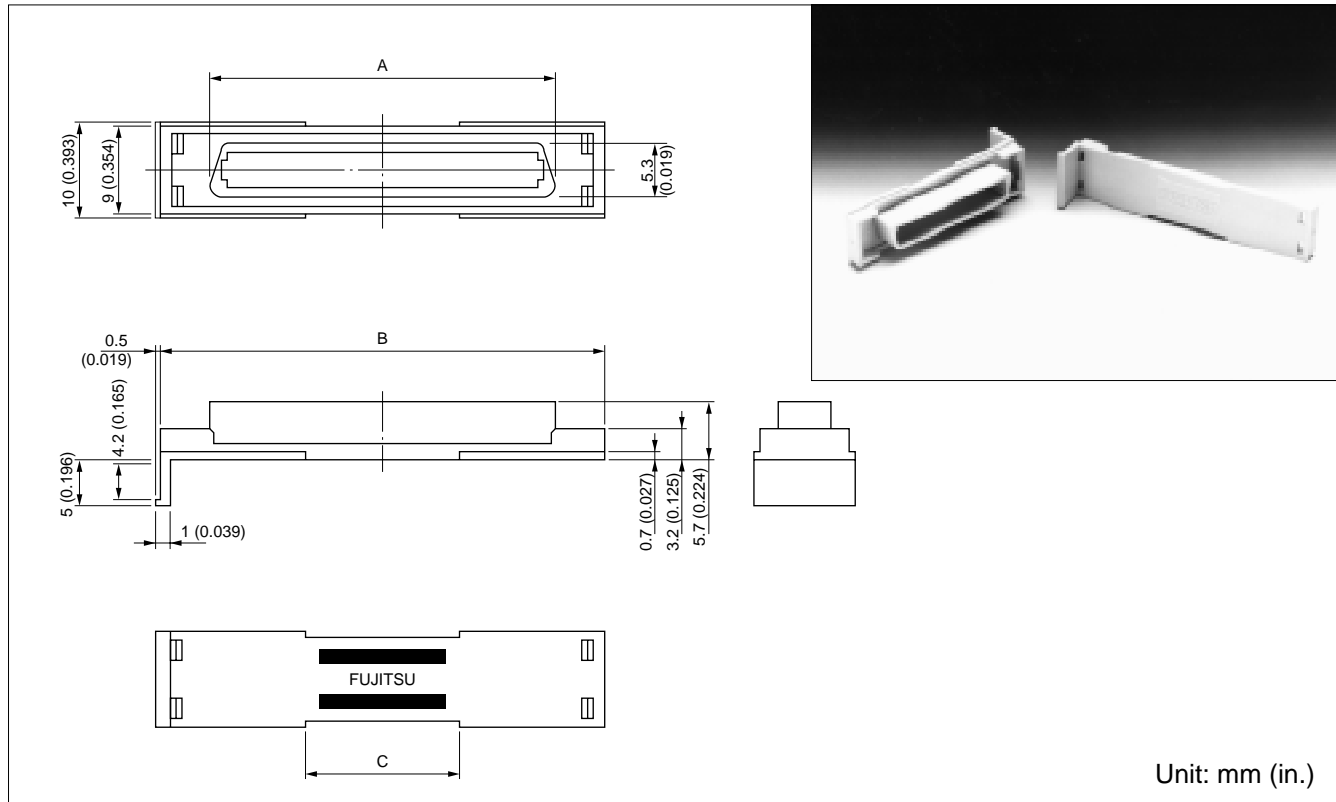
20 contacts	1B	1C	2A	3A
28 contacts	1D	2C	3B	4A
36 contacts	1D	2C	3B	4A
50 contacts	1E	2D	4B	5A
68 contacts	1E	2D	4B	5A

# 230 Series (General-Purpose Type)

## ACCESSORY (DUST CAP FOR PLUG) [230 SERIES (GENERAL-PURPOSE) AND 240 SERIES (GENERAL-PURPOSE)]

Used to prevent dust from entering the contact section of a plug connector.

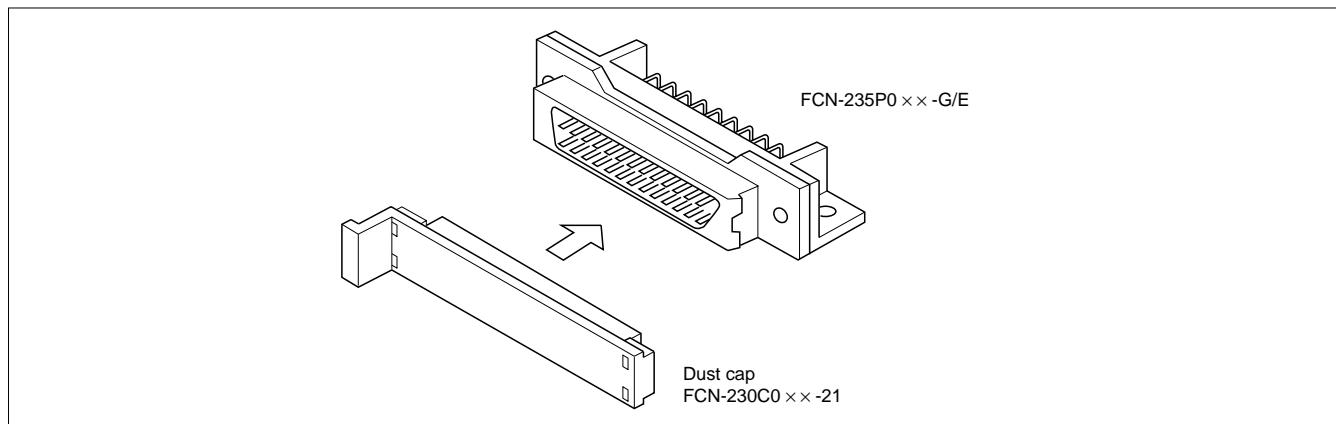
### ■ DIMENSIONS



### ■ PART NUMBERS AND DIMENSIONS

Number of contacts	Part number	Dimensions: mm (in.)		
		A	B	C
20	FCN-230C020-21	15.60 (0.614)	25.50 (1.003)	10.00 (0.393)
28	FCN-230C028-21	20.68 (0.814)	30.58 (1.203)	10.00 (0.393)
36	FCN-230C036-21	25.76 (1.014)	35.66 (1.403)	10.00 (0.393)
50	FCN-230C050-21	34.65 (1.364)	44.55 (1.753)	15.00 (0.590)
68	FCN-230C068-21	46.08 (1.814)	55.98 (2.203)	20.00 (0.787)

### ■ APPLICATIONS





# 230 Series (General-Purpose Type)

## CABLE ASSEMBLY TOOLS

The following tools are needed to assemble connectors.

- Cable aligner (semiautomatic cable aligner or hand tool)
- IDC tool

The tools shown below can also be used for the 230R/240/240R series.

### 1. Cable Aligner

Part number	Semiautomatic cable aligner			Hand tool
	Body/Controller	Bed	Adaptor	
FCN-237J	FCN-M562-A/C	FCN-P560-2/A	FCN-K560-A-xxx	FCN-237T-T062/H
FCN-237R			FCN-K560-R-xxx	
FCN-247J			FCN-K560-K-xxx	
FCN-247R		FCN-P560-2/J	FCN-K560-J-xxx	FCN-247T-T061/H

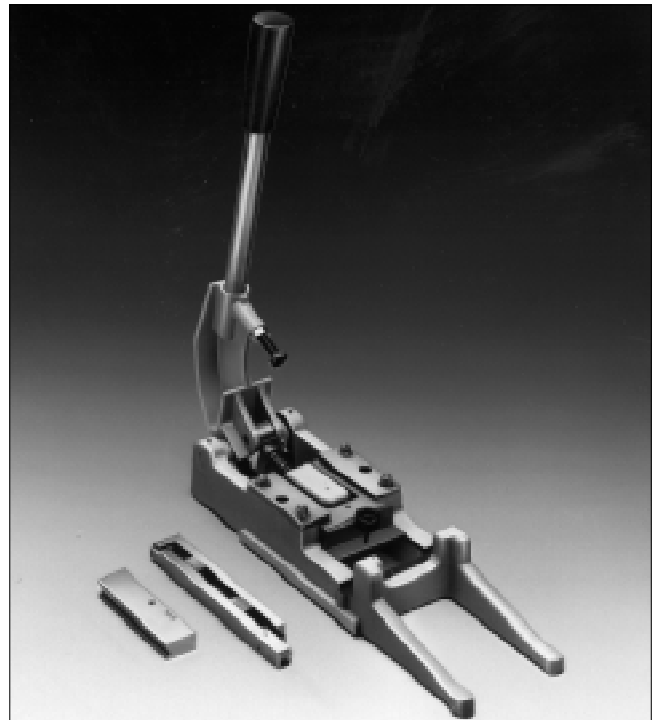
xxx indicates the number of contacts.

### 2. Insulation Displacement Connection (IDC) tool

Part number	Hand press	Head/Table
FCN-237J	FCN-237T-T109/H	FCN-237T-T064/H
FCN-237R		FCN-237T-T067/H
FCN-237D		FCN-237T-T075/H
FCN-247J		FCN-247T-T066/H
FCN-247R		FCN-247T-T068/H
FCN-247D		FCN-247T-T077/H



• Cable aligner

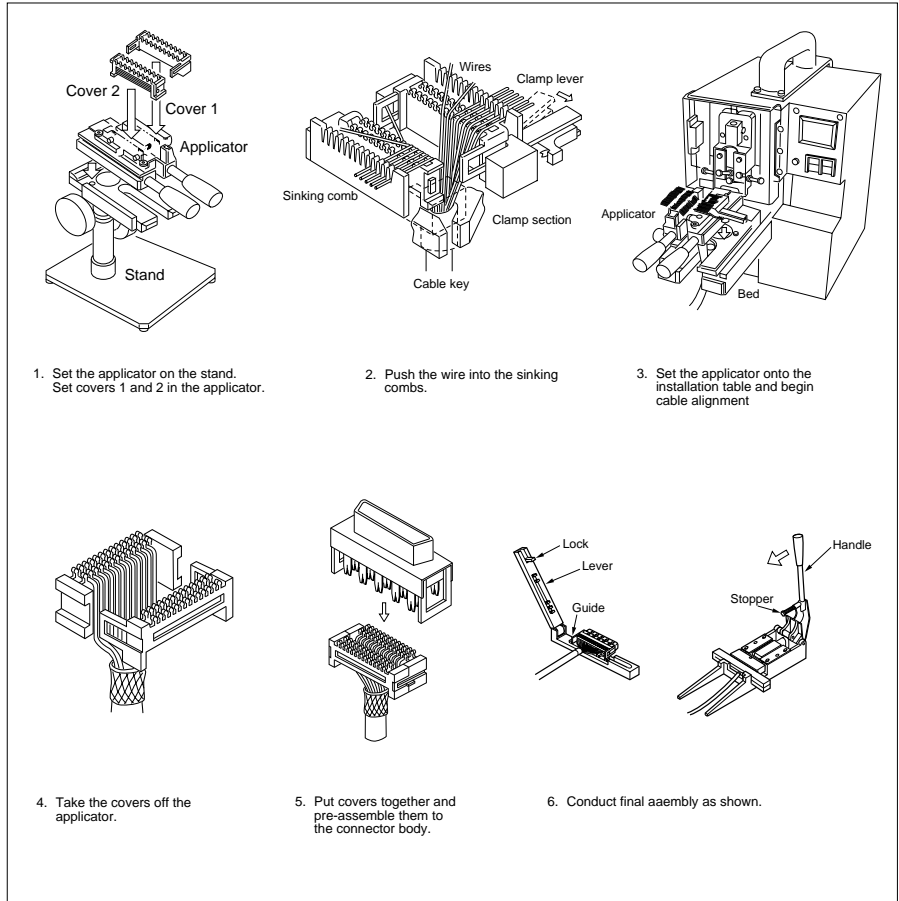
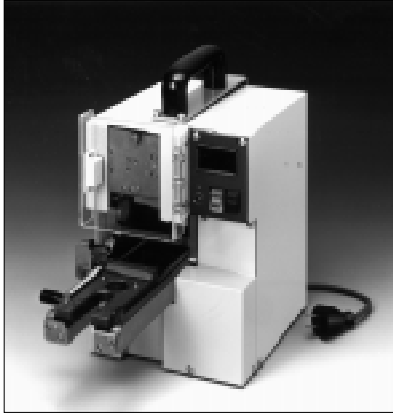


• Insulation displacement contact (IDC) tool

# 230 Series (General-Purpose Type)

## Semi-Automatic Tools Cable Aligning Machine

Main Body (FCN-M551-120, FCN-M551-220)



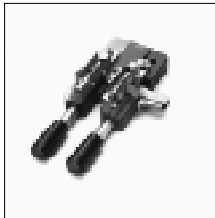
Head (FCN-H550-1/A)



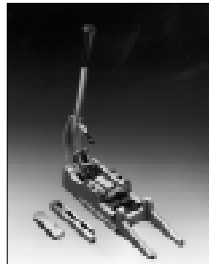
Stand (FCN-D550)



Applicator (FCN-A550-1/A-xxx)



IDC Tool (FCN-237T-T109/H,  
FCN-237T-T067/H locator)



## SOCKET: FCN-237J\*\*\*-G/E (\*\*\*: 020, 028, 036, 050, 068, 080)

Pos No.	Applied Wire (wire Dia.: mm [ in.])	Connector Part number	Cable Aligner		IDC Tool
			Hand Tool	Semi-Auto	
20   68	#28 to #30 (0.5 to 0.65)	FCN-237R020-G/E   FCN-237J080-G/E	FCN-237T-T062/H   FCN-237T-T043/H	(See below*)	HAND PRESS: FCN-237T-T109/H HEAD & Locator: FCN-237T-T067/H

Semi-automatic-Medium Level  
 Body: :FCN-M551-120  
 Head Assembly: :FCN-H550  
 Applicator: :FCN-A550-1/A-\*\*\*(\*\*\*: 020, 028, 036, 050, 068, 080)  
 Stand: :FCN-D550

# 230 Series (General-Purpose Type)

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