



Positronic  
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# MILITARY QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

Size 20 Signal and  
Thermocouple Contacts, Fixed  
PosiBand® Closed Entry  
IEC Publication 60807-2  
Performance Level One  
MIL-DTL-24308

UL Recognized File #E49351  
CSA Recognized File #LR54219

Telecommunication  
UL File #E140980



Harmo-D series connectors are military quality connectors designed for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. Applicable fixed contact connectors are qualified to MIL-DTL-24308 (see page 82 for more information) and meet the performance requirements of IEC 60807-2, Performance Level One.

Harmo-D series connectors utilize precision machined contacts which are fixed within the connector body. The female contact features Positronic's unique PosiBand closed entry design, see page 1 for details.

Five standard connector variants are offered in arrangements of 9, 15, 25, 37 and 50 contacts. Each connector variant is available with contact terminations for solder cup, straight and right angle (90°) printed board mount terminations with Inch and Metric footprints. Harmo-D series connectors are mateable and compatible with all D-subminiature connectors conforming to IEC 60807-2, IEC 60807-3 and MIL-DTL-24308.

A wide assortment of printed board mounting hardware, cable support hoods and locking systems is available from stock.

## HARMO-D SERIES TECHNICAL CHARACTERISTICS

### MATERIALS AND FINISHES:

<b>Insulator:</b>	Glass filled DAP per ASTM-D-5948, SDG-F, UL 94V-0, green color.
<b>Contacts:</b>	Precision machined copper alloy.
<b>Contact Plating:</b>	Military performance - 0.000050 inch [1.27 µ] gold over copper plate. IEC 60807-2, Performance Level One - gold flash over nickel plate. Other finishes available upon request.
<b>Interfacial Seal:</b>	Fluorosilicone rubber per MIL-R-25988.
<b>Shells:</b>	Steel with tin plate; zinc plate; or cadmium plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
<b>Mounting Spacers and Brackets:</b>	Nylon; copper alloy or steel with zinc plate or tin plate; phosphor bronze with tin plate; stainless steel, passivated; polyester.
<b>Push-On Fasteners:</b>	Phosphor bronze or beryllium copper with tin plate.
<b>Jackscrew Systems:</b>	Brass or steel with zinc plate or clear zinc plate or tin plate; stainless steel, passivated.
<b>Vibration Lock Systems:</b>	Slide lock and lock tabs, steel with nickel plate.
<b>Hoods:</b>	Composite and plastic, UL 94V-0; brass or steel with zinc plate. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Low magnetic versions are available, contact Technical Sales.

### MECHANICAL CHARACTERISTICS:

<b>Fixed Contacts:</b>	Size 20 contact, male - 0.040 inch [1.02mm] mating diameter. Female contact - PosiBand closed entry design, see page 1 for details.
<b>Contact Retention In Insulator:</b>	9 lbs. [40 N].
<b>Resistance To Solder Iron Heat:</b>	650°F [350°C] for 10 seconds duration per IEC 60512-6.
<b>Contact Terminations:</b>	Solder cup contacts - 0.042 inch [1.06mm] minimum hole diameter in solder style contact for 20 AWG [0.5mm <sup>2</sup> ] wire maximum. Straight Printed Board Mount - 0.028 inch [0.71mm] termination diameter and 0.024 inch [0.61mm] termination diameter.

<b>Shells:</b>	Male shells may be dimpled for EMI/ESD ground paths.
<b>Polarization:</b>	Trapezoidally shaped shells and polarized jackscrews.
<b>Mounting To Angle Brackets:</b>	Jackscrews and riveted fasteners with 0.120 inch [3.05mm] clearance hole, and threaded riveted fasteners with 4-40 threads and polyester lock inserts.
<b>Mounting To Printed Board:</b>	Rapid installation push-on fasteners an mounting posts.
<b>Locking Systems:</b>	Jackscrews and vibration locking systems.
<b>Mechanical Operations:</b>	1000 operations minimum per IEC 60512-5.

Right Angle (90°) Printed Board Mount - 0.028 [0.71mm] termination diameter for Inch System footprint, and 0.024 [0.61mm] termination diameter for European Metric footprint.

### ELECTRICAL CHARACTERISTICS:

#### Contact Current Rating, Tested per UL 1977:

18 amperes, 2 contacts energized.
14 amperes, 6 contacts energized.
11 amperes, 15 contacts energized.
10 amperes, 25 contacts energized.
9 amperes, 50 contacts energized.

See temperature rise curves on page 2 for details.

<b>Initial Contact Resistance:</b>	0.004 ohms maximum.
<b>Proof Voltage:</b>	1000 V r.m.s.
<b>Insulation Resistance:</b>	5 G ohms.
<b>Clearance and Creepage Distance [minimum]:</b>	0.039 inch [1.0mm].
<b>Working Voltage:</b>	300 V r.m.s.

### CLIMATIC CHARACTERISTICS:

<b>Temperature Range:</b>	-55°C to +125°C.
<b>Damp Heat, Steady State:</b>	56 days.

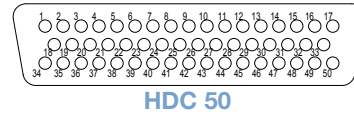
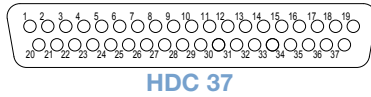
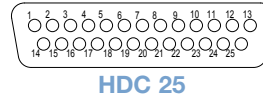
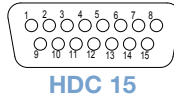
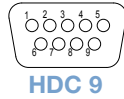
### THERMOCOUPLE CONTACTS:

Straight and right angle (90°) printed circuit board mount contacts are available, please contact Technical Sales for details.

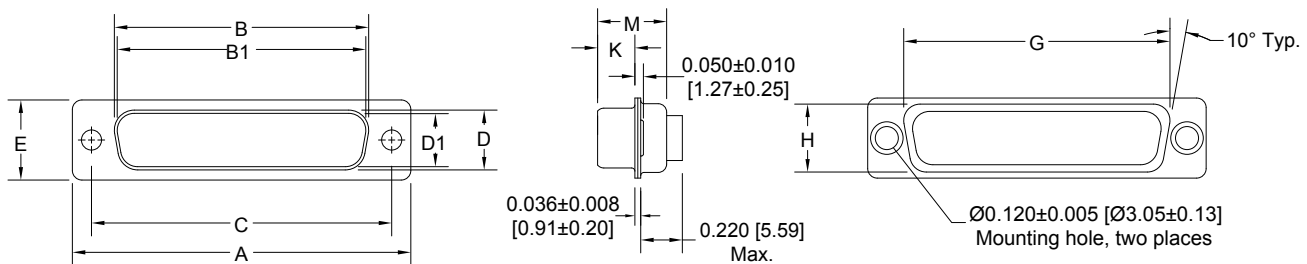
Size 20 crimp contacts are available in RD series, see page 30 for details.

CONTACT VARIANTS

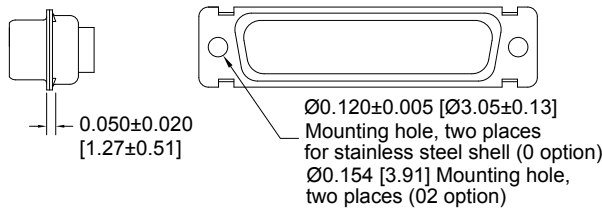
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



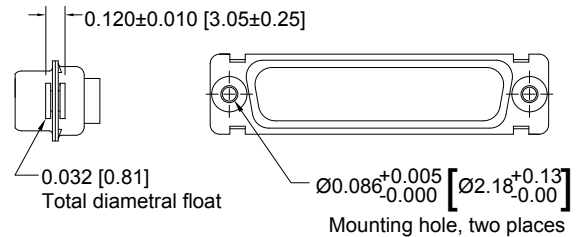
STANDARD SHELL ASSEMBLY



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



CONNECTOR VARIANT SIZES	A $\pm 0.015$ [0.38]	B $\pm 0.005$ [0.13]	B1 $\pm 0.005$ [0.13]	C $\pm 0.005$ [0.13]	D $\pm 0.005$ [0.13]	D1 $\pm 0.005$ [0.13]	E $\pm 0.015$ [0.38]	G $\pm 0.010$ [0.25]	H $\pm 0.010$ [0.25]	K $\pm 0.005$ [0.13]	M $\pm 0.010$ [0.25]
HDC 9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
HDC 9 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
HDC 15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
HDC 15 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
HDC 25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
HDC 25 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
HDC 37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
HDC 37 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
HDC 50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
HDC 50 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]

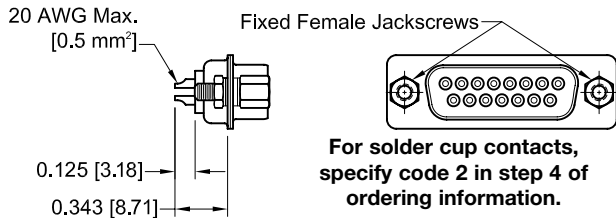


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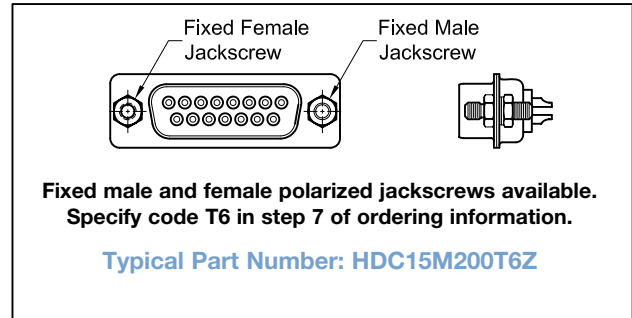
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**SOLDER CUP TERMINATION**  
CODE 2



For solder cup contacts,  
specify code 2 in step 4 of  
ordering information.

Typical Part Number: **HDC15M200T2Z**



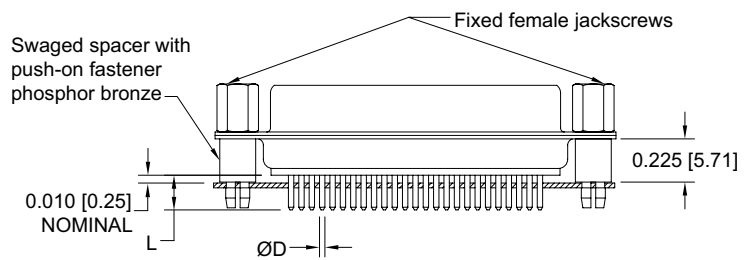
Fixed male and female polarized jackscrews available.  
Specify code T6 in step 7 of ordering information.

Typical Part Number: **HDC15M200T6Z**

**STRAIGHT PRINTED BOARD MOUNT TERMINATION**  
CODE 3, 32 AND 36

CODE NUMBER	L	ØD
3	0.170 [4.32]	0.028 [0.71]
32	0.375 [9.53]	0.028 [0.71]
36	0.236 [6.00]	0.024 [0.61]

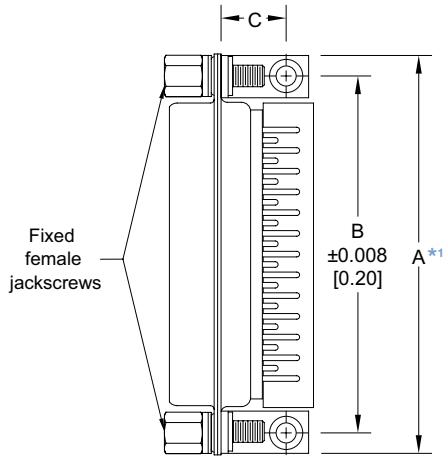
For straight printed board  
mount contacts, specify code no. in step  
4 of ordering information.



Typical Part Number: **HDC25S3S60T0**



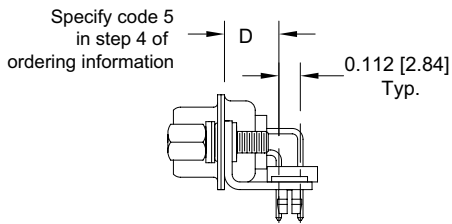
**RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION**  
**CODE 5, 0.283 [7.19] CONTACT EXTENSION**



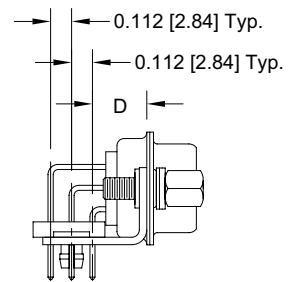
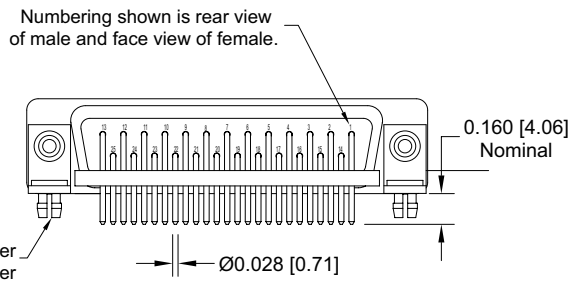
HDC**5**** 0.283 [7.19] CONTACT EXTENSION					
PART NUMBER	A*1	B	C	D	E
HDC9*5****	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]	0.283 [7.19]	0.112 [2.84]
HDC15*5****	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]	0.283 [7.19]	0.112 [2.84]
HDC25*5****	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]	0.112 [2.84]
HDC37*5****	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]	0.283 [7.19]	0.112 [2.84]
HDC50*5****	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.283 [7.19]	0.112 [2.84]

**NOTE:**

\*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.



**Typical Part Number:**  
**HDC25M5R7NT2X**



**Typical Part Number:**  
**HDC50S5R7NTX**



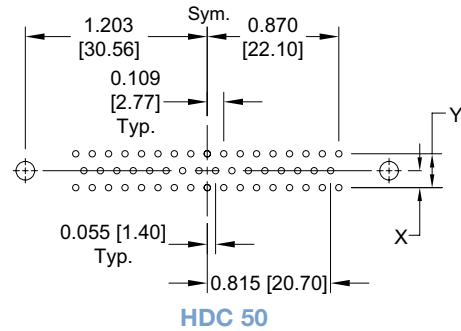
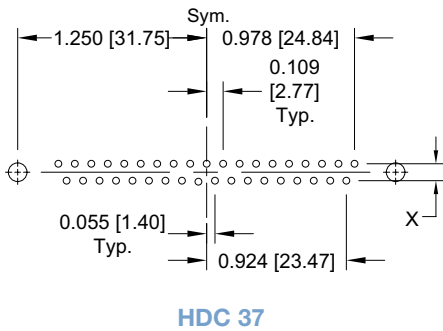
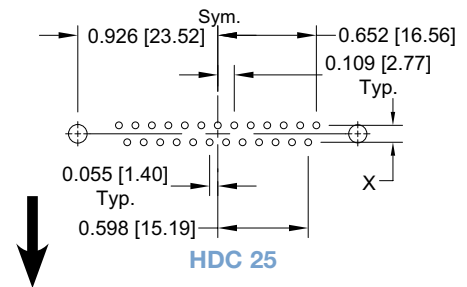
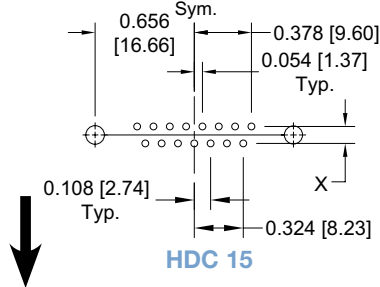
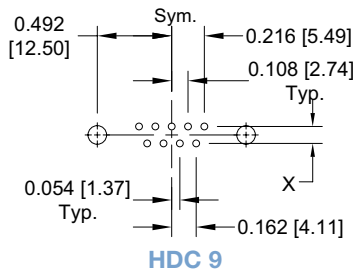
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# MILITARY QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

## RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.  
Contact Technical Sales for hole dimensions using lead-free solder.



### SUGGESTED PRINTED BOARD HOLE SIZES:

- Suggest 0.039 [0.99] Ø hole for 0.024 [0.61] Ø contact termination positions.
- Suggest 0.045 [1.14] Ø hole for 0.028 [0.71] Ø contact termination positions.
- Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.



CODE NUMBER	X	Y
3, 5, 32, 36	0.112 [2.84]	0.224 [5.69]



## ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	HDC	37	S	5	B3	0	T	0	/AA	-50
<b>STEP 1 - BASIC SERIES</b> HDC series.										<b>STEP 10 - SPECIAL OPTIONS</b> -14 - 0.000030 [0.76μ] gold over nickel. -15 - 0.000050 [1.27μ] gold over nickel. -50 - 0.000050 [1.27μ] gold over copper. <i>Contact Technical Sales For Ordering Details Of The Following:</i> Other Special Requirements, Straight and Right Angle (90°), Thermocouple printed circuit board mount contacts
<b>STEP 2 - CONNECTOR VARIANTS</b> 9, 15, 25, 37, 50										<b>STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS</b> /AA - RoHS Compliant  <b>NOTE:</b> If compliance to environmental legislation is not required, this step will not be used. Example: HDC37S5B30T0
<b>STEP 3 - CONNECTOR GENDER</b> M - Male P - Male with interfacial seal S - Female - PosiBand closed entry contacts										<b>STEP 8 - SHELL OPTIONS</b> 0 - Zinc plated. C - Cadmium plated with chromate seal L - Electroless nickel. R - Electroless nickel and dimpled (male connectors only) S - Stainless steel, passivated. X - Tin plated. Z - Tin plated and dimpled (male connectors only).
<b>STEP 4 - CONTACT TERMINATION TYPE</b> 2 - Solder cup. 3 - Solder, straight printed board mount with 0.170 [4.32] tail length. 32 - Solder, straight printed board mount with 0.375 [9.52] tail length. 36 - Solder, straight printed board mount with 0.236 [5.99] tail length. 5 - Solder, right angle (90°) printed board mount with 0.283 [7.19] contact extension.										<b>*1 STEP 7 - LOCKING AND POLARIZING SYSTEMS</b> 0 - None. V3 - Lock tab, connector front panel mounted. V5 - Lock tab, connector rear panel mounted. VL - Lock lever, used with hoods Only. T - Fixed female jackscrews. T2 - Fixed female jackscrews. T6 - Fixed male and female polarized jackscrews. E - Rotating male Jackscrews. E2 - Rotating male screw locks. E3 - Rotating male with internal hex for 3/32 hex drives E6 - Rotating male and female polarized jackscrews.
<b>*1 STEP 5 - MOUNTING STYLE</b> 0 - Mounting hole, 0.120 [3.05] ø. 02 - Mounting hole, 0.154 [3.91] Ø. B3 - Bracket, mounting, right angle (90°) metal with cross bar. B8 - Bracket, mounting, right angle (90°) plastic with cross bar. F - Float mounts, universal. P - Threaded post, brass, 0.225 [5.71] length. P2 - Threaded post, nylon, 0.225 [5.71] length. R2 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 thread fixed female jackscrews with cross bar. R6 - Bracket, mounting, right angle (90°) metal, swaged to connector with 0.120 [3.05] ø mounting hole with cross bar. R7 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 threads with cross bar. R8 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 locknut with cross bar. S - Swaged spacer, 4-40 threads, 0.225 [5.71] length. S2 - Swaged spacer, 4-40 threads, 0.125 [3.18] length. S5 - Swaged locknut, 4-40 threads. S6 - Swaged spacer with push-on fastener, 4-40 threads, 0.225 [5.71] length. S7 - Swaged spacer with push-on fastener for use with ferrite inductor, 4-40 threads, 0.375 [9.53] length.										<b>*1 STEP 6 - HOODS AND PUSH-ON FASTENERS</b> 0 - None. J - Hood, top opening, plastic. L - Hood, side opening, plastic. Y - Hood, top opening, plastic with rotating male Jackscrews. Available in size 50 only. Y6 - Hood, top opening, plastic with rotating male and female polarized jackscrews. Available in size 50 only. Z - Hood, top or side opening, robust and extended height, composite and plastic with rotating male jackscrews. H - Hood, top opening, metal. Available in size 15, 25, 37 and 50 only. G - Hood, EMI/RFI, die cast zinc. AN - Lightweight aluminum hood, nickel finish. AL - Lightweight aluminum hood, nickel finish, low-profile. W - Hood, top or side opening, plastic. Available is size 9, 15, and 25 only. N - Push-on fastener, for right angle (90°) mounting brackets. *2 F - Ferrite Inductor.
<b>*1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.</b> <b>*2 Ferrite inductor is available on contact types 32 and 36 only. For more information on ferrite inductors, see page 7.</b>										