

tyco

Electronics

AMPLIMITE Subminiature D Connectors
Catalog 82068 Revised 03-04

AMP



Introduction

AMPLIMITE family of Subminiature D connectors is the industry's most extensive and versatile. These subminiature D connectors have become the most popular type of input/output (I/O) connectors in use today. Established and proven, they are rugged, easily used and have been widely adopted in standards for serial communications, telecommunications and local area networks (LANS).

This family of connectors consists of:

- Standard Subminiature D Connectors, Cable Mount and Board Mount

Standard AMPLIMITE connectors come in two series, HD-20 and HD-22, each having five sizes related to the size of the shell. The shell sizes, numbering from one to five, are identical for each series, while the number of positions differ. Depending on the size of the contacts, it is possible to have different numbers of contact cavities in a given shell size.

HD-20 connectors use size 20 contacts, which are based on .040 [1.02] pin diameters with contact centerlines of .109 x .112 [2.77 x 2.85]. This size is the more common variety.

HD-22 connectors use size 22 contacts, based on .030 [0.76] pin diameters on centerlines of .090 x .078 [2.29 x 1.98] for shell sizes 1, 2 and 3; .095 x .078 [2.41 x 1.98] for shell size 4; and .095 x .082 [2.41 x 2.08] for shell size 5. The smaller pin diameter of the HD-22 series allow roughly 65% more contacts to be held in a given shell size. For example, shell size three holds 25 contacts in an HD-20 connector and 44 contacts in an HD-22 connector.

Choosing a subminiature D connector requires evaluating application requirements and deciding which of the many options available best suits your needs. It is due to this wealth of choices to satisfy and performance and costs requirements that makes the subminiature D connector family the world's most popular choice.

- **Produced under a Quality Management System certified to ISO 9001**

A copy of the certificate is available upon request



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Call Technical Support at the numbers listed below.

Technical Support is staffed with specialists well versed in all Tyco Electronics products. They can provide you with:

- Technical support
- Catalogs
- Technical Documents
- Product Samples
- Tyco Electronics Authorized Distributor Locations

For information on application tooling call the Tooling Assistance Hotline: **1-800-722-1111**

Specifications subject to change. Consult Tyco Electronics for latest design applications.

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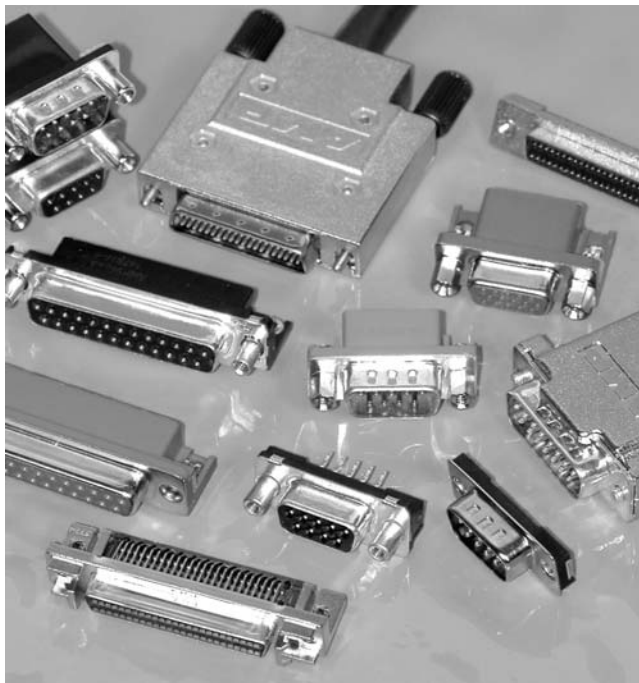





Table of Contents

AMPLIMITE .050 Series Connector (.050 x .100 [1.27 x 2.54] Centerline) Series III		.545 [13.84] Board Mount Footprint	
Introduction	.4, 5	HD-20 Full Metal-Shell Right-Angle Posted Connectors	.63, 64
Cable Assemblies	.6	.590 [14.99] Board Mount Footprint	
Right-Angle Receptacle Headers	.7	HD-20 Front Metal-Shell Right-Angle Posted Connectors	.65, 66
Vertical Mount Receptacle Headers	.8, 9	HD-20 All-Plastic Right-Angle Posted Connectors	.70-72
Vertical Mount Receptacle Headers with ACTION PIN Contacts	.10, 11	Right-Angle Mounting Connectors	
Cable Plug Connectors	.12-14		.73, 74
Cable Receptacle Connectors	.15	Straight Mounting Connectors	
Backshell Kits	.16-19		.75
Enclosure Kits	.20	Standard Density Press Fit Termination, Right-Angle Mounting	
Panel Mount Receptacle Assemblies	.21-24		.76
Panel Mount Plug Assemblies for .025 [0.64] Ribbon Cable	.25	Standard Density Press Fit Termination, Straight Mounting	
Hardware	.26		.77
Technical Documents	.27	Right-Angle Mounting Connectors — Footprints	
Application Tooling	.28, 29		.78
Slimline Connectors	.30-36	Subminiature D Connectors for Cable Mounting	
Panel Mount Receptacle Assemblies for .025 [0.64] Ribbon Cable	.37		.79, 80
Plug Assemblies Unshielded for .025 [0.64] Ribbon Cable	.38	Straight Posted Connectors	
Right-Angle Posted Connectors	.39-43	Introduction	.81, 82
HD-20 Subminiature D Stacked PCB Connectors		HD-20 Full Metal-Shell Straight Posted Connectors	.83, 84
Introduction	.44	HD-20 Front Metal-Shell Straight Posted Connectors	.85, 86
Hybrid and Mixed Styles	.45-49	HD-20 All-Plastic Straight Posted Connectors	.87-90
AMPLIMITE 2000 Subminiature Connectors	.50, 51	HD-22 Straight Subminiature D Connectors	.91
HD-20 and HD-22 Slimline Connectors	.52	HD-20 Front Metal-Shell Straight Posted Connectors with ACTION PIN Contacts	.92, 93
HD-22 Right-Angle Posted Subminiature D Connectors	.53, 54	HD-20 All-Plastic Straight Posted Connectors with ACTION PIN Contacts	.94
.318 [8.08] Board Mount Footprint		Cable Connectors	
HD-20 Front Metal-Shell Right-Angle Posted Connectors	.55-58	HDP-20 Crimp Snap-In Contact Connectors	.95-107
HD-20 All-Plastic Right-Angle Posted Connectors	.67-69	HDP-22 Crimp Snap-In Contact Connectors	.108-114
.454 [11.53] Board Mount Footprint		HDE-20 IDC (Insulation Displacement Crimp) Connectors for Discrete Wire and Jacketed Cable	.115-128
HD-20 Full Metal-Shell Right-Angle Posted Connectors	.59, 60	Subminiature D Connectors HDF-20 for Flat Ribbon Cable	.129-132
.478 [12.14] Board Mount Footprint		HD-20 Solder Cup Connectors	.133-135
HD-20 Front Metal-Shell Right-Angle Posted Connectors	.61, 62	Accessories (Cable Clamps, Shields, Fasteners and Miscellaneous Hardware)	.136-160
		Numerical Index	.161-164

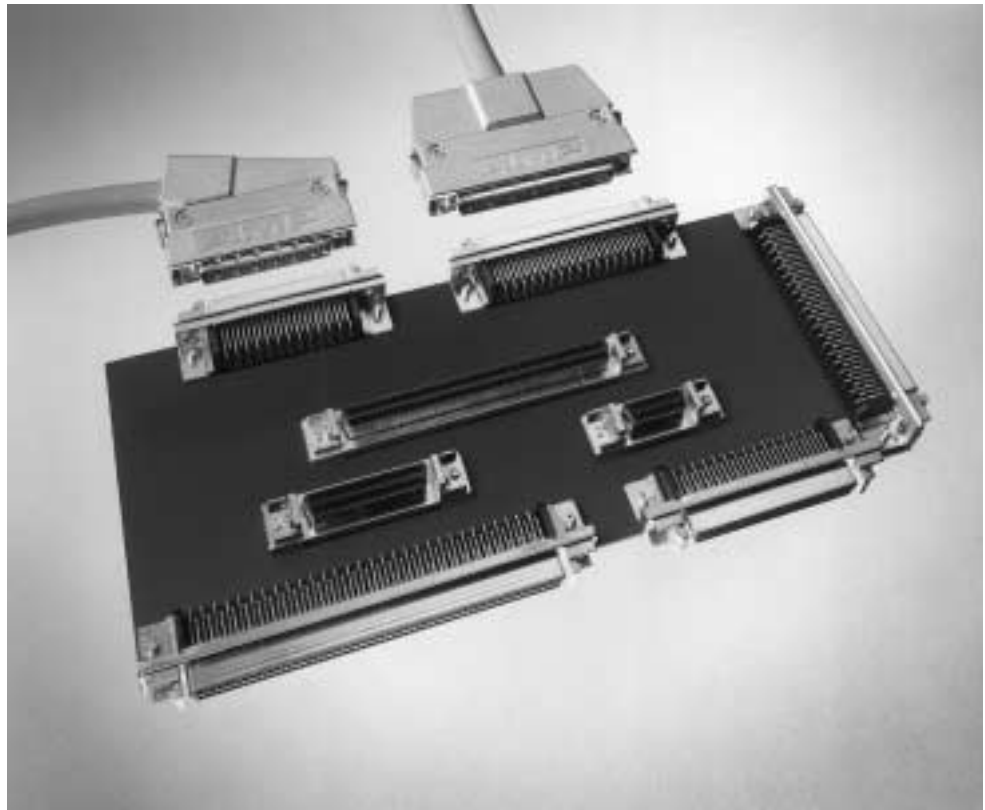
**AMPLIMITE .050 Series Connector
(.050 x .100 [1.27 x 2.54] Centerline) Series III**

Product Facts

- Compatible with SCSI-2, SCSI-3, EIA RS-232, ISO-11569*, HIPPI, IPI-2 and IEE 802.3 MII standards
- High-density D type interface
- 20 through 100 contact positions
- Tab plug contacts and tuning-fork receptacle contacts, with reliable two-point (redundant) contact; contact normal force is not dependent on plastic housing support
- Excellent EMI/RFI protection
- Shields mate before contacts, with ground mating first and breaking last
- Squeeze-to-release latches or jackscrew hardware
- Board connectors compatible with standard thru-hole flow solder and surface-mount reflow solder processes (Series III)
- Recognized under the Component Program of Underwriters Laboratories Inc.,  File No. E28476
- Listed and complies with UL 1863, Communication Circuit Accessories  File No. E81956
- Certified by Canadian Standards Association,  File No. 1088108 (LR 7189A-207)

- Produced under a Quality Management System certified to ISO 9001 

A copy of the certificate is available upon request



Introduction

Shielded AMPLIMITE .050 Series connectors offer a high-density D type interface. Featuring .050 x .100 [1.27 x 2.54] contact centerline spacing, these compact and reliable connectors are available in 20 through 120 positions. Their construction offers exceptional EMI/RFI shielding effectiveness.

Shielded AMPLIMITE .050 Series Connectors, Series III, are approved to SCSI-2, SCSI-3, EIA RS-232, ISO-11569*, IPI-2, HIPPI, and IEE 802.3 MII standards.

Connectors are available in cable-mount and panel mount versions and vertical and right angle mount pcb headers plus vertical mount with ACTION PIN contacts. The headers feature high temperature housings for reflow soldering processes.

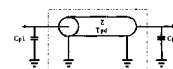
Cable and panel connectors use insulation displacement contacts for fast termination of discrete, round-to-flat laminated, and ribbon cable.

Series I, II and III intermateability:

Only the 50 and 68 position sizes are intermateable between Series I, II, and III.

Backshells are available with either a straight or angled cable exit. Hardware includes a choice of integral squeeze-to-release latches or jackscrews.

Unshielded, All-Plastic Cable Plugs are available in 50 through 100 positions and offer an economical answer to your connector needs on applications where EMI/RFI protection is not a factor.



AMP Single Line and Multi Line Models are available for AMPLIMITE Subminiature D Type connectors at www.amp.com/simulation.

*26-position cable assembly with spring latches

**AMPLIMITE .050 Series Connector
(.050 x .100 [1.27 x 2.54] Centerline) Series III** (Continued)

Product Facts

- **Compact design, profile for the right-angle header 1.230 x .588 [31.24 x 14.94], vertical header 1.230 x .433 [31.24 x 11.00], right-angle stacked headers 1.230 x .803 [31.24 x 20.40]**
- **Housings and covers made of UL 94V-0 rated thermo-plastic**
- **Header footprint for right-angle and stacked configurations is .100 x .050 [2.54 x 1.27] staggered centerlines**
- **Header footprint for vertical configuration is .100 x .075 [2.54 x 1.90] staggered centerlines**
- **Right-angle and stacked headers feature integral boardlocks for positive board retention and grounding**
- **Vertical headers feature 8 below the board, retentive contact legs for mechanical retention before and after soldering**
- **Vertical headers feature polarized grounding posts to assure correct header-to-board orientation**
- **Stacked headers reduce overall total header volume by 48% and PC board area by 38%**
- **Stacked headers offer optional contact shield for additional EMI/RFI protection**
- **Plugs preloaded with insulation displacement contacts (IDC) provide fast, reliable and economical terminations**
- **Choice of three keying positions, plus non-keyed inserts for assurance against mismatch mating**

Shielded AMPLIMITE .050 Series, Slimline Connectors answer today's industry requirement for higher density in a smaller overall package. The present line consists of 26 position, shielded right-angle and vertical PCB receptacle headers, 26 position right-angle stacked PCB receptacle header, and mating 26 position plug connectors. All header, plug and backshell housings are made of UL 94V-0 rated thermoplastic. PCB headers are compatible with surface mount reflow solder processes. Right-angle and stacked PCB headers feature contact footprints on .100 x .050 [2.54 x 1.27] staggered centerlines and vertical header footprints are on .100 x .075 [2.54 x 1.90] staggered centerlines.

The compact design of the **right-angle header** package measures only 1.230 W x .588 D x .300 H [31.24 W x 14.94 D x 7.62 H] for maximum board real estate conservation. Right-angle PCB headers feature integral boardlocks for positive board retention and grounding.

Vertical headers feature 8 below the board, retentive contact legs for mechanical retention before and after soldering. Polarized grounding posts provide correct header-to-board orientation. The complete package occupies an area only 1.230 W x .325 D x .433 H [31.24 W x 8.26 D x 11.00 H].

Right-angle stacked headers provide 52 contacts in a package only .635 [16.13] high, allowing parallel (board-over-board) board spacing of .800 [20.32].

Centerlines between the top connector and the bottom connector measure .335 [8.51] when compared to .400 [10.06] on the standard .050 Series stacked headers. This results in an overall reduction of total header volume, in comparison to the standard AMPLIMITE .050 Series header, of 48%, and a comparative reduction in PC board area of 38%.

Stacked header board retention and stabilization is provided by two boardlocks and four grounding posts. In addition, an optional rear contact shield is available for additional EMI/RFI protection.

The mating plug connector consists of a thermoplastic housing, preloaded with insulation displacement contacts (IDC) for fast, reliable terminations that offer greater applied cost savings. Tyco Electronics offers a choice of termination equipment to meet your production requirements.

The backshell hardware kit includes a two-piece, aesthetically designed, thermoplastic cover over an inner and outer shield and two, high strength #2-56 male jackscrews with insulated heads (easy finger grip caps) to secure mated connectors.

The AMPLIMITE .050 Series, Slimline family of connectors offers **keyed coupling**. This feature reduces the problem of mismatch mating of plug and receptacle, particularly in stacked applications. There are three possible keying arrangements, plus unkeyed inserts to assure maximum options for multiple connector applications.

To meet Standard Applications the following 106 ohm, black jacketed cable assemblies are available. For AMPLIMITE .050 Series cable assemblies that meet other impedance requirements or other lengths consult Tyco Electronics.



SCSI-2



SCSI-1 to SCSI-2



RS-232 (Alternate)



RS-232 (Alternate) to RS-232



IPI-2 and HIPPI

Application	Assembly	Part Numbers		
		2 Feet	2 Meters	3 Meters
SCSI-2	50 pos. .050 Series Plug to 50 pos. .050 Series Plug	750254-1	750254-2	750254-3
SCSI-2*	68 pos. .050 Series Plug to 68 pos. .050 Series Plug	750732-3	750732-2	750732-4
SCSI-1 to SCSI-2	50 pos. CHAMP Conn. to 50 pos. .050 Series Plug	750342-3	750342-5	—
RS-232 (Alternate)	26 pos. .050 Series Plug to 26 pos. .050 Series Plug	750255-1	750255-2	750255-3
RS-232 to RS-232 Alt.	Std. 25 pos. AMPLIMITE Plug to 26 pos. .050 Series Plug	750257-1	750257-2	—

Application	Assembly	Part Numbers		
		5 Meters	15 Meters	25 Meters
IPI-2 and HIPPI	100 pos. .050 Series Plug to 100 pos. .050 Series Plug	749755-2	749755-3	749755-4

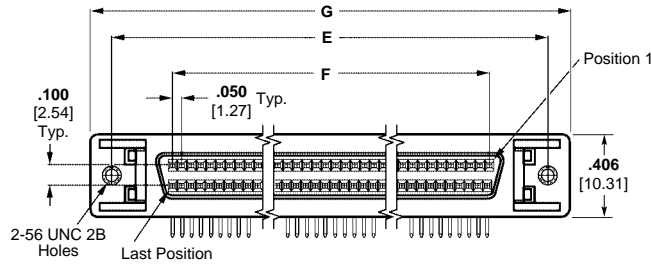
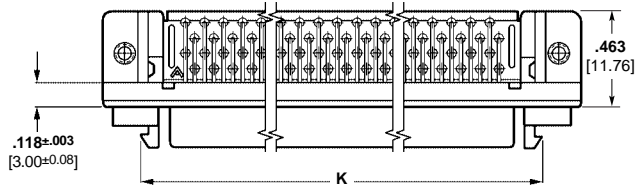
*This version has spring latches. Consult Tyco Electronics for availability of jackscrew version.

Note: .050 centerline ribbon cable assemblies are available in single or double ended versions. These assemblies are made using AMPLIMITE .050 Series panel mount connectors, AMPLIMITE .050 Series all-plastic connectors and AMP-LATCH Novo receptacles. Consult Tyco Electronics.

SCSI—Small Computer Systems Interface
 HIPPI—High Performance Parallel Interface
 IPI—Intelligent Peripheral Interface

AMPLIMITE .050 Series Right-Angle Receptacle Headers, Series III

AMPLIMITE .050 Series
Connectors, Series III



Materials:

- Housing** — Thermoplastic, 94V-0 rated, black. SMT compatible
- Shell** — Steel, plated bright nickel over copper
- Bracket** — Zinc, plated nickel over copper
- Contacts** — Phosphor bronze, duplex plated [.000030] 0.00076 min. gold on mating end; tin-lead on solder end; all underplated nickel

Note: Refer to Tyco Electronics Customer drawings and Application Spec for PCB & panel layouts.

Technical Documents:

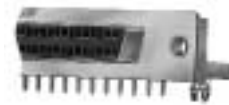
- Product Specifications** — 108-1228
- Application Specifications** — 114-40029



Shown With Boardlocks



Shown With Boardlocks



Shown With Boardlocks

No. of Pos.	Dimensions				Part Numbers						
	E	F	G	K	w/ Rails and Latchblocks		w/o Rails, w/ Latchblocks		w/o Rails, w/o Latchblocks		
					With .100 [2.54] Solder Tails		With .100 [2.54] Solder Tails		With .100 [2.54] Solder Tails		With .120 [3.05] Solder Tails
					Without Boardlocks	With Boardlocks	Without Boardlocks	With Boardlocks	Without Boardlocks	With Boardlocks	With Boardlocks
40	1.580 40.13	.950 24.13	1.815 46.10	1.415 35.94	—	787171-4	—	787082-3	—	787170-4*	—
50	1.830 46.48	1.200 30.48	2.065 52.45	1.665 42.29	787190-5	787171-5	787394-5	787082-5	787169-5*	787170-5*	787362-5*
50	1.830 46.48	1.200 30.48	2.065 52.45	1.665 42.29	—	787266-5*	—	787395-5*	—	—	—
68	2.280 57.91	1.650 41.91	2.515 63.88	2.115 53.72	787190-7	787171-7	787394-7	787082-7	787169-7*	787170-7*	787362-7*
100	3.080 78.23	2.450 62.23	3.315 84.20	2.915 74.04	—	787171-9	787394-9	787082-9	787169-9*	787170-9*	787362-9*

*Has 4-40 threaded mating holes (2 places), for use with female screwlock Part No. 750644-1.



Materials:

Housing—Thermoplastic, 94V-0 rated, black. SMT compatible

Shell—Steel, plated bright nickel over copper

Bracket—Zinc, plated nickel over copper

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; tin-lead on solder end; all underplated nickel

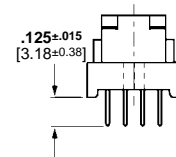
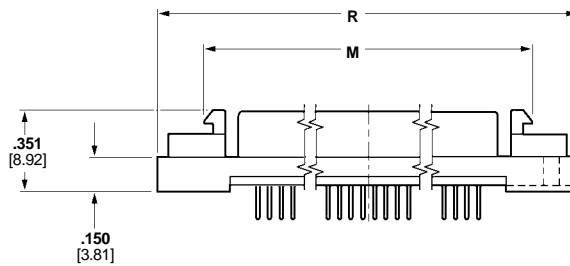
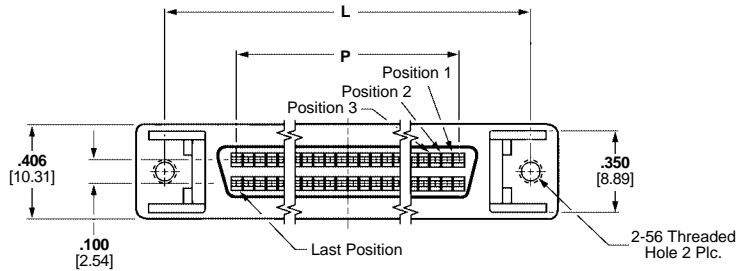
Technical Documents:

Product Specifications—108-1228

Application Specifications—114-40029

Note: Extra pin contact protection is provided by rails, which facilitate a straight-out, unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.

AMPLIMITE .050 Series Vertical Receptacle Headers With Through-Hole Tails, Series III



Note: Refer to Tyco Electronics Customer drawings and Application Spec for PCB & panel layouts.



Part Number 749069-5



Part Number 749721-5

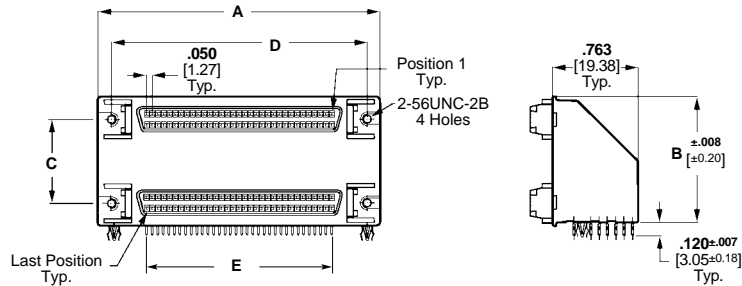
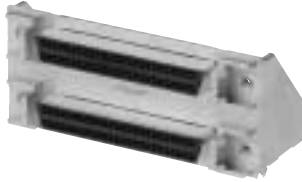


Part Number 749070-7

No. of Pos.	Dimensions				Part Numbers		
	L	M	P	R	w/ Rails & Latchblocks	w/ Latchblocks	Plain
20	1.080 27.43	.915 23.24	.450 11.43	1.315 33.40	749069-1	749721-1	—
26	1.230 31.34	1.065 27.05	.600 15.24	1.465 37.21	749069-2	—	—
28	1.280 32.51	1.115 28.32	.650 16.51	1.515 38.48	—	749721-3	—
40	1.580 40.13	1.415 35.94	.950 24.13	1.815 46.10	749069-4	—	—
50	1.830 46.48	1.665 42.29	1.200 30.48	2.065 52.45	749069-5	749721-5	749070-5
68	2.280 57.91	2.115 53.72	1.650 41.91	2.515 63.88	749069-7	749721-7	749070-7
80	2.580 65.53	2.415 61.34	1.950 49.53	2.815 71.50	749069-8	—	—
100	3.080 78.23	2.915 74.04	2.450 62.23	3.315 84.20	749069-9	—	749070-9

AMPLIMITE .050 Series Vertical Receptacle Headers With Through-Hole Tails, Series III (Continued)

.120 [3.05] Solder Tail Length



Rails and Latch Blocks

Materials:

Housing—Thermoplastic, 94V-0 rated, black. SMT compatible

Shell—Steel, plated bright nickel over copper

Bracket—Zinc, plated nickel over copper

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; tin-lead on solder end; all underplated nickel

Related Product Data:

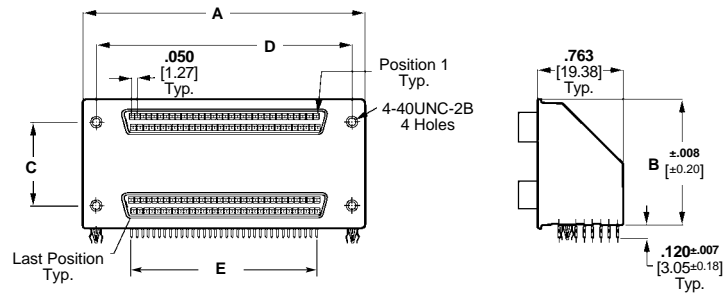
Required Hardware—page 26

Technical Documents:

Product Specifications—108-1228-1

Application Specifications—114-40029

Note: Extra pin contact protection is provided by rails, which facilitate a straight-out unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.



Flat Top Configuration

Note: Refer to Tyco Electronics Customer drawings and Application Spec for PCB & panel layouts.

No. of Pos.	Dimensions					Part No.
	A	B	C	D	E	
50/50	2.085 52.96	.874 22.20	.500 12.70	1.830 46.48	1.200 30.48	787656-1
68/68	2.535 64.39	1.124 28.55	.750 19.05	2.280 57.91	1.650 41.91	787678-1
68/68	2.535 64.39	1.124 28.55	.750 19.05	2.280 57.91	1.650 41.91	787679-1*

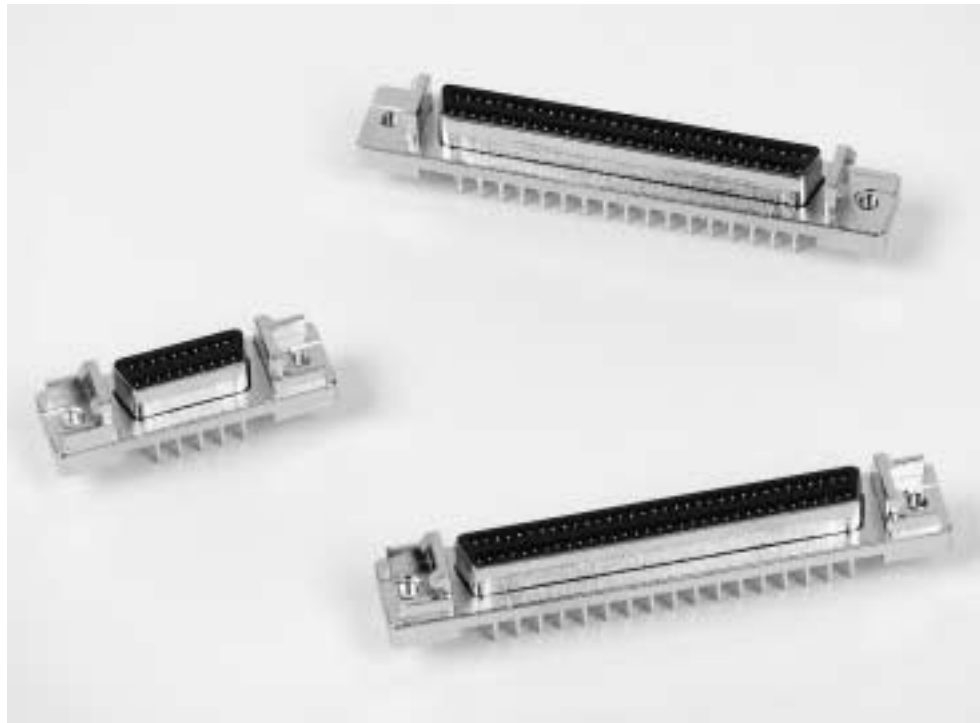
*Flat-top configuration.

AMPLIMITE .050 Series Vertical Receptacle Headers, Series III, with ACTION PIN Contacts (.050 x .100 [1.27 x 2.54] Centerlines)

Product Facts

- **Recognized under the Component Program of the Underwriters Laboratories, Inc.,**  File No. E28476
- **Certified by Canadian Standards Association,**  File No. 1088108 (LR 7189A-207)
- **Produced under a Quality Management System certified to ISO 9001**

A copy of the certificate is available upon request



Shielded AMPLIMITE .050 Series headers with ACTION PIN contacts offer a high-density D type interface, and a solderless board-mount interconnection. These vertical mount headers are available in 20, 26, 50, 68 and 100 contact sizes. Choice of configurations includes; headers with rails and latch blocks, with latch blocks only, and without rails and latch blocks.

ACTION PIN contact tails are available in two lengths; .173 [4.39] for pc boards with a nominal thickness of .062 [1.56] to .093 [2.36], and .280 [7.11] for pc boards with a nominal thickness of .125 [3.18] to .200 [5.08].

AMPLIMITE .050 Series headers with ACTION PIN contacts are compatible with SCSI-2, SCSI-3, EIA RS-232, IPI-2 and HIPPI standards.

Principle of the AMPLIMITE .050 Series Compliant ACTION PIN Contact

When an AMPLIMITE .050 Series, compliant ACTION PIN contact is inserted into a plated-through-hole, two spring members are compressed, exerting force against the hole for a gas-tight connection. The diameter of the hole is smaller than the diagonal size of the pin (see cross-section illustration, page 13).

The beam characteristics of the pin are designed so that a plastic, as well as an elastic, deformation takes place during insertion. The two spring members compress to different degrees to accommodate hole tolerances. The compliant pin also reduces strain on the board. With a rigid pin, the elastic strain energy is stored entirely in the board, leading to damage of the plated-through holes. With

the AMPLIMITE .050 Series, compliant ACTION PIN contact, the residual force of the elastic deformation maintains stored energy to produce a gas-tight contact zone between the pin and the plated-through-hole. This ensures long term electrical and mechanical reliability of the interconnection.

Technical Documents:

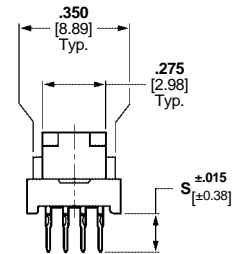
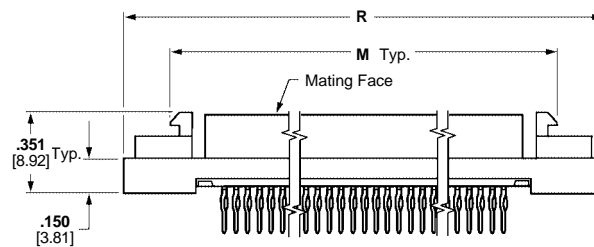
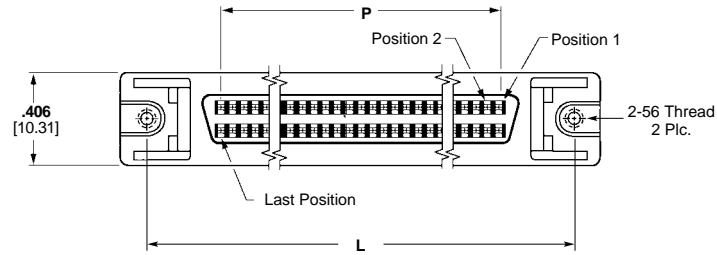
Product Specification—
108-1228-2

Application Specification—
114-40029

Instruction Sheets—
408 6923—AMP Manual Arbor Frame Assembly
408 9027—AMP Adapter Kit for Greenerd Frame Assemblies 3A and 3B
408 9757—Seating Instructions and Tooling
408 6927—Recommendations for pc board support

AMPLIMITE .050 Series Vertical Receptacle Headers, with ACTION PIN Tails, Series III

AMPLIMITE .050 Series Connectors, Series III



Materials:

Housings—Thermoplastic, 94V-0 rated, black, SMT compatible

Shell—Carbon steel, plated bright tin over copper

Bracket—Zinc, plated nickel over copper

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; tin-lead on solder end; all underplated nickel

Technical Documents:

Product Specifications—
108-1228-2

Application Specifications—
114-40029

Note: Refer to Tyco Electronics Customer drawings and Application Spec for PCB & panel layouts.

Note: Extra pin contact protection is provided by rails, which facilitate a straight-out unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.



Part Number 786554-1

Part Number 786554-7

Part Number 786155-7

No. of Pos.	Dimensions					Part Numbers		
	L	M	P	R	S	w/ Rails & Latchblocks	w/ Latchblocks	Plain
20	1.080	.915	.450	1.315	.173	786554-1	—	—
	27.43	23.24	11.43	33.40	4.39			
26	1.230	1.065	.600	1.465	.173	786554-2	—	—
	31.34	27.05	15.24	37.21	4.39			
50	1.830	1.665	1.200	2.065	.173	786554-5	786155-5	786555-5
					4.39			
	46.48	42.29	30.48	52.45	.280	786556-5	—	—
					7.11			
68	2.280	2.115	1.650	2.515	.173	786554-7	786155-7	786555-7
					4.39			
	57.91	53.72	41.91	63.88	.280	786556-7	786162-7	786557-7
					7.11			
100	3.080	2.915	2.450	3.315	.173	786554-9	786155-9	786555-9
	78.23	74.04	62.23	84.20	4.39			
120	3.580	3.415	2.950	3.815	.173	1-786554-0	—	—
	90.93	86.74	74.93	96.90	4.39			

AMPLIMITE .050 Series Cable Plug Connectors, Series III

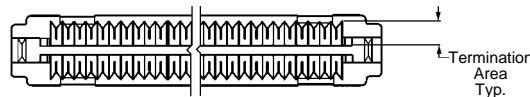
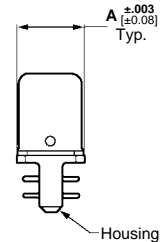
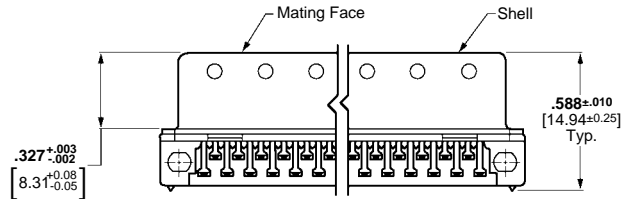
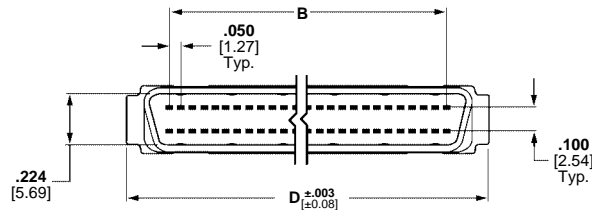
Shielded Plugs



Shielded Plug



Wire Lacing Termination Covers



Shielded Plug with Unassembled Wire Lacing Termination Covers

Materials:

Housing and Covers—Thermoplastic, 94V-0 rated, black or gray

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, tin-lead on termination end, all underplated .nickel

Shell—Steel, plated tin-nickel alloy over nickel over min. copper

Recommended wire size—28 AWG [0.08-0.09mm²] or 30 AWG [0.05mm²], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter.

Technical Documents:
Product Specifications—108-1228
Application Specifications—114-40029
Instruction Sheet—408-9427

Connector With Unassembled Wire Lacing Termination Covers

No. of Pos.	Dimensions			Part Numbers	
	A	B	D	.032-.036 [0.81-0.91] Outer Wire Dia. Black	.029-.031 [0.74-0.79] Outer Wire Dia. Gray
26	.293 7.44	.600 15.24	.979 24.87	750913-2	1-750913-2
40	.293 7.44	.950 24.13	1.329 33.76	750913-4	—
50	.293 7.44	1.200 30.48	1.579 40.11	750913-5	1-750913-5
68	.293 7.44	1.650 41.91	2.029 51.54	750913-7	1-750913-7
100	.373 9.47	2.450 62.23	2.829 71.86	—	1-750913-9

- Notes:** 1. Plug connector requires backshell kit for complete assembly. Refer to pages 25, 26 for backshell kit part numbers.
 2. For termination, cover closing and wire lacing tooling, see page 14.

AMPLIMITE .050 Series Connectors, Series III

AMPLIMITE .050 Series Cable Plug Connectors, Series III (Continued)

AMPLIMITE .050 Series
Connectors, Series III

Shielded Plugs

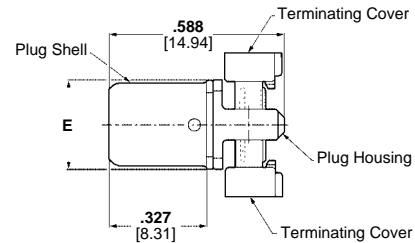
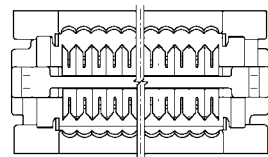
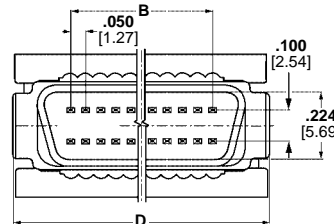
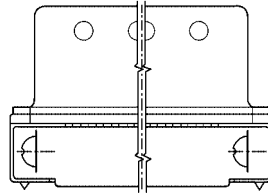
(Continued)



Shielded Plug with Unassembled Standard Termination Covers



Shielded Plug with Assembled Standard Termination Covers



Shielded Plug with Assembled or Unassembled Standard Termination Covers

Materials:

Housing and Covers—

Thermoplastic, 94V-0 rated, black

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, in-lead on termination end, all underplated nickel

Shell—Steel, plated tin-nickel alloy over nickel over copper

Recommended wire size³—

28 AWG [0.08-0.09mm²] or 30 AWG [0.05mm²], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter.

Technical Documents:

Product Specifications—108-1228

Application Specifications—114-40029

Instruction Sheet—408-9427

Note: Refer to Tyco Electronics Customer drawings and Application Spec for PCB & panel layouts.

Connectors With Standard Termination Covers

No. of Pos.	Dimensions			Part Numbers	
	B	D	E	w/Rails & Latchblocks	w/Latchblocks
20	.450 11.43	.829 21.06	.293 7.44	749111-1	749621-1
26	.600 15.24	.979 24.87	.293 7.44	1-749111-0	749621-2
28	.650 16.50	1.029 26.14	.293 7.44	—	749621-3
40	.950 24.13	1.329 33.76	.293 7.44	749111-3	749621-4
50	1.200 30.48	1.579 40.11	.293 7.44	749111-4	749621-5
68	1.650 41.91	2.029 51.54	.293 7.44	749111-6	749621-7
80	1.950 49.53	2.329 59.16	.373 9.47	749111-7	749621-8
100	2.450 62.23	2.829 71.86	.373 9.47	749111-8	749621-9
120	2.950 74.93	3.329 84.56	.373 9.47	749111-9	1-749621-0

- Notes:**
1. Plug connector requires backshell kit for complete assembly and must use round jacketed cable (discrete or laminated). Refer to pages 16-19 for backshell kit part numbers.
 2. For termination tooling, see page 29.
 3. The CHAMPOMATOR 2.5 Automatic Termination Machine will accept diameters as low as .023 [0.58].

AMPLIMITE .050 Series Cable Plug Connectors, Series III (Continued)

AMPLIMITE .050 Series Connector Application Tooling for Use with Wire Lacing Termination Covers

Manual Arbor Frame Assembly—Part No. 58024-1

Equipped with Cover Lacing Assembly—**Part No. 91293-1** (Includes Seating Bars for 50 and 100 Positions). See Table 3 for Seating Bar Part Numbers.

Extra Lacing Stations available for use with Lacing Assembly—**Part No. 91293-1**
Order Lower Tooling Assembly—**Part No. 543481-1**



Arbor Frame, Part No. 58024-1
Equipped with
Cover Lacing Assembly,
Part No. 91293-1



Lower Tooling Assembly
Part No. 543481-1



Miniature Applicator Frame Assembly
Part No. 91295-1
Equipped with Cover Closing Kit
Part No. 543508-1

Note: AMP Manual Miniature Applicator Frame Assembly, Cover Closing Kit, and Staple Insertion Kit each must be ordered separately by part number.



Seatings Bars

Table Number 3

No. of Pos.	Seating Bar Part No.
26	543494-2
40	543494-3
50	543494-1
68	543502-2
100	543502-1

Note: All Tooling must be ordered separately by part number.

AMPLIMITE .050 Series Connectors, Series III

AMPLIMITE .050 Series Cable Receptacle Connectors, Series III

AMPLIMITE .050 Series
Connectors, Series III

Shielded Receptacles



Shielded Receptacle with Assembled Termination Covers

Materials:

Housing and Covers—

Thermoplastic, 94V-0 rated, black

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, tin-lead on termination end, all underplated nickel

Shell—Steel, plated bright tin-lead over copper

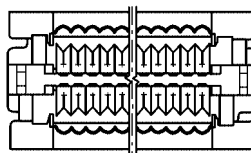
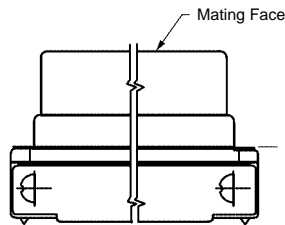
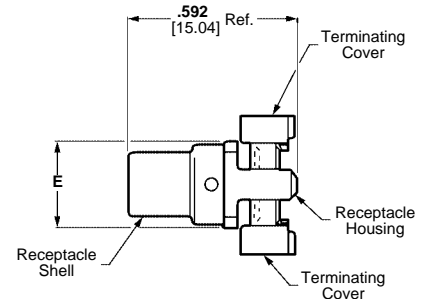
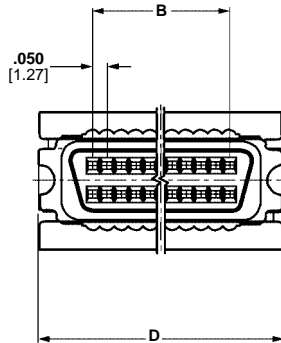
Recommended wire size—

28 AWG [0.08-0.09mm²] or 30 AWG [0.05mm²], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter.

Technical Documents:

Product Specifications—108-1228

Application Specifications—114-40029



No. of Pos.	Dimensions			Part Numbers	
	B	D	E	Connectors With Standard Termination Covers	Assembled Covers
40	.950 24.13	1.329 33.76	.293 7.44	—	—
50	1.200 30.48	1.579 40.11	.293 7.44	749210-5	749699-5
68	1.650 41.91	2.029 51.54	.293 7.44	749210-7	749699-7
100	2.450 62.23	2.829 71.86	.373 9.47	—	749699-8

- Notes:**
1. Receptacle connector requires backshell kit for complete assembly. Refer to pages 16-19 for backshell kit part numbers.
 2. For termination, cover closing and wire lacing tooling, see page 14.
 3. For Termination Tooling other than Wire Lacing see pages 28 & 29.

AMPLIMITE .050 Series Shielded Backshell Kits, With Jackscrews, Series III



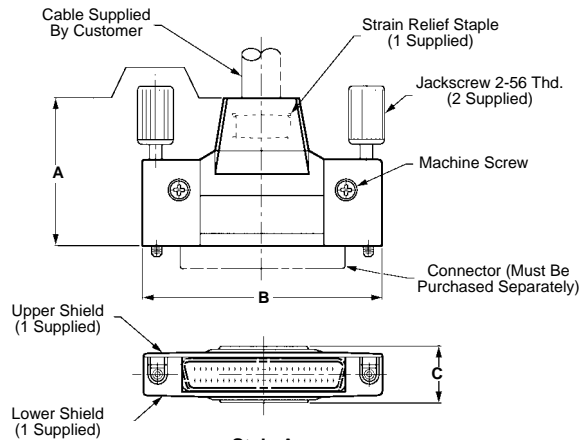
Straight Exit Male Jackscrews Style A



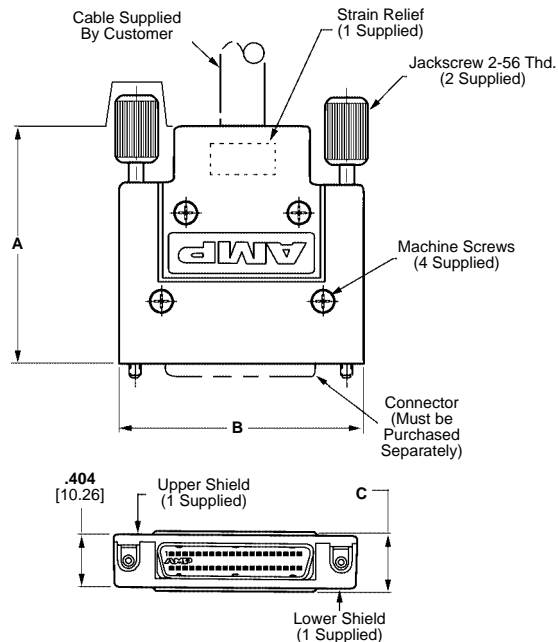
Straight Exit Male Jackscrews Style B



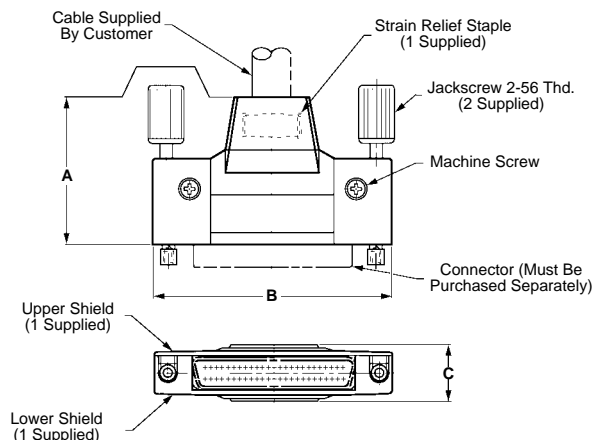
Straight Exit Female Jackscrews Style A



**Style A
Straight Exit Male Jackscrews**



**Style B
Straight Exit Male Jackscrews**



**Style A
Straight Exit Female Jackscrews**

Materials:

Jackscrews—Stainless steel or steel, black electroless nickel plated

Jackscrew Caps—Polyolefin or PVC, black

2-56 Screws—Stainless steel

Backshell—Zinc, plated nickel over copper

Strain Relief Staple—Steel, plated tin-lead over nickel

Technical Documents:

Product Specifications—108-1228

Application Specifications—114-40029

Instruction Sheet—408-9427

AMPLIMITE .050 Series Shielded Backshell Kits, With Jackscrews, Series III (Continued)

No. of Pos.	Style	Dimensions			Pkg.	Max. O.D.	Male with #2-56 Threads	Female with #2-56 Threads
		A	B	C				
40	B	1.822 46.25	1.830 46.48	.456 11.58	Bulk	.450 11.43	787543-1	787543-7
					Bulk	.400 10.16	787543-2	787543-8
					Bulk	.350 8.89	787543-3	787543-9
50	A	1.270 32.26	2.085 52.96	.480 12.19	Individual	.400 10.16	749080-1	—
					Bulk	.400 10.16	749080-2	—
68	B	1.887 47.93	2.645 67.18	.660 16.76	Bulk	.550 13.97	750752-3	—
		1.822 46.28	2.525 64.14	.564 14.33	Individual	.550 13.97	786152-3	—
100	A	2.082 52.88	3.325 84.46	.615 15.62	Individual	.500 12.70	749854-1	—
		1.695 43.05	3.325 84.46	.595 15.11	Individual	.500 12.70	749081-1	—

Notes: 1. Each backshell kit includes upper and lower backshells, two male or female jackscrews, one strain relief staple and two or four #2-56 screws. All are packaged unassembled.
 2. For Staple Insertion Tooling see page 29.

AMPLIMITE .050 Series Connectors, Series III

AMPLIMITE .050 Series Shielded Backshell Kits, With Spring Latches, Series III



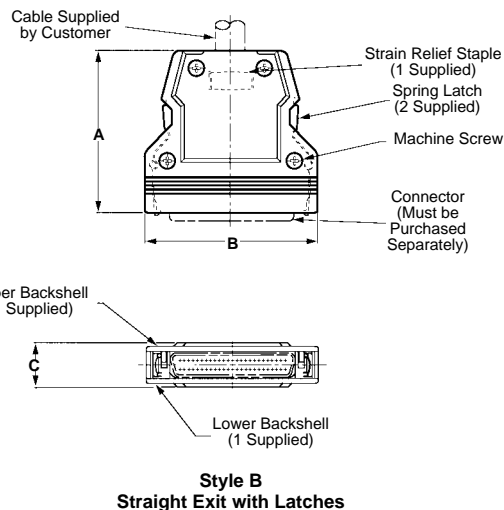
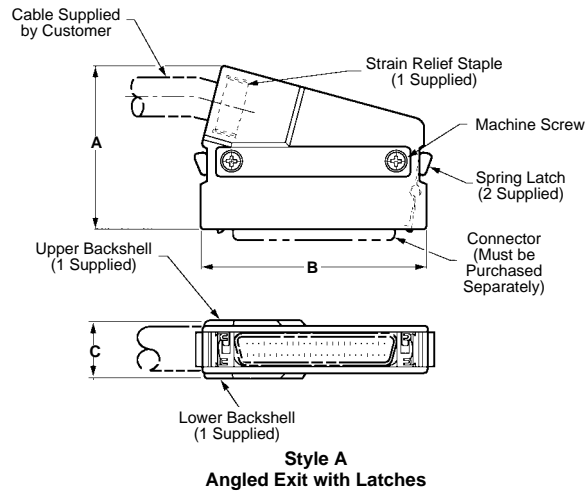
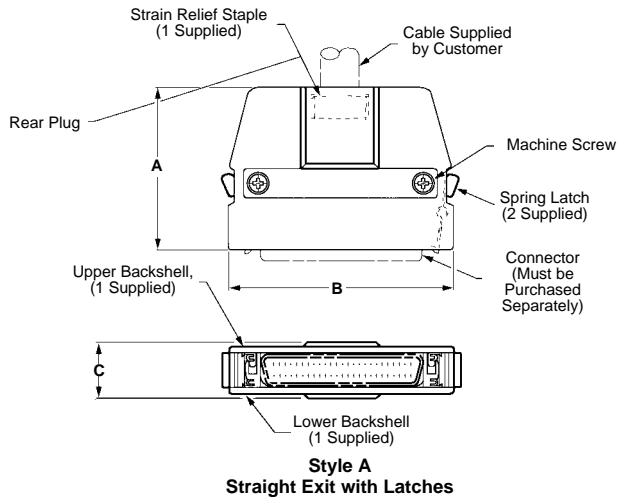
**Style A
Straight Exit
with Latches**



**Style A
Angled Exit
with Latches**



**Style B
Straight Exit
with Latches**



Materials:

Backshell—Zinc, plated nickel over copper

Spring Latch—Stainless steel

2-56 Screws—Stainless steel

Strain Relief Staple—Steel, plated tin-lead over nickel

Technical Documents:

Product Specifications—108-1228

Application Specifications—114-40029

Instruction Sheet—408-9427

Note: Extra pin contact protection is provided by rails on the receptacle, which facilitate a straight-out unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.

AMPLIMITE .050 Series Shielded Backshell Kits, With Spring Latches, Series III (Continued)

No. of Pos.	Style	Dimensions			Pkg.	Max. O.D.	Straight Exit with Latches	Angled Exit with Latches
		A	B	C				
20	A	1.290 32.77	1.215 30.86	.400 10.16	Individual	.270 6.86	749190-1	749199-1
26	A	1.290 32.77	1.365 34.67	.400 10.16	Individual	.270 6.86	—	749609-1
					Bulk	.270 6.86	—	749609-2
40	A	1.290 32.77	1.335 33.91	.400 10.16	Individual	.270 6.86	749608-1	—
						.320 8.13	—	749201-1
50	A	1.395 35.43	1.715 43.56	.400 10.16	Individual	.320 8.13	749192-1	—
					.270 6.85	749192-2	—	
					.400 10.16	—	749202-2	
	B	1.800 45.72	1.965 49.91	.492 12.50	Bulk	.400 10.16	749202-3	—
					Individual	.355 9.02	749193-1	—
					.400 10.16	749193-2	—	
68	A	1.405 35.69	2.415 61.34	.520 13.21	Individual	.480 12.19	749889-3	—
						.480 12.18	749889-4	—
80	A	1.600 40.64	2.715 68.96	.565 14.35	Individual	.400 10.16	—	749204-1
						.440 11.18	749195-2	749204-2
100	A	1.725 43.82	3.215 81.66	.615 15.62	Individual	.420 10.67	—	749205-1
						.500 12.70	749196-2	—
120	A	1.725 43.82	3.715 94.36	.665 16.89	Individual	.500 12.70	749197-1	749206-1
						.550 13.97	749198-1	749207-1

AMPLIMITE .050 Series Connectors, Series III

AMPLIMITE .050 Series Shielded Enclosure Kits, With Male Jackscrews, Series III

68-Position

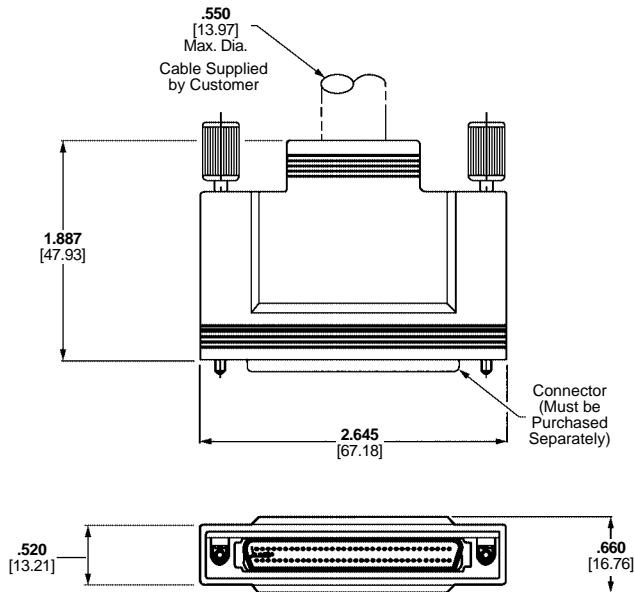
Material and Finish:

- Backshells**—Zinc
- Boot**—PVC, black
- Jackscrews**—Stainless steel and PVC, black
- Staple**—Carbon steel, plated tin-lead over nickel
- Screws**—Stainless steel, #2-56 threads



Technical Documents:

- Product Specifications**—108-1228
- Application Specifications**—114-40029



No. of Pos.	Part Number Male 2-56 Jackscrews	Part Number Male 4-40 Jackscrews
68	750752-1	750752-2

- Notes:**
1. Each enclosure kit contains two backshells, one boot, two jackscrews, one staple and two screws. All are packaged unassembled.
 2. For staple insertion tooling see page 29.
 3. Meets SCSI-3 standards.

AMPLIMITE .050 Series Panel Mount Receptacle Assemblies Without Rails, With Latch Blocks, Series III



Materials:

Housing and Termination

Covers—Thermoplastic, 94V-0 rated, black

Shell—Steel, plated bright tin over copper

Bracket—Zinc, plated nickel over copper

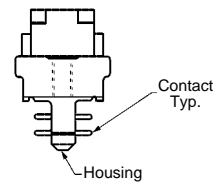
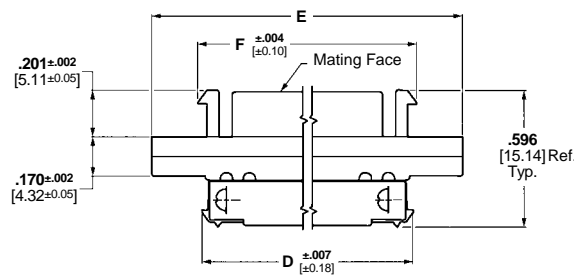
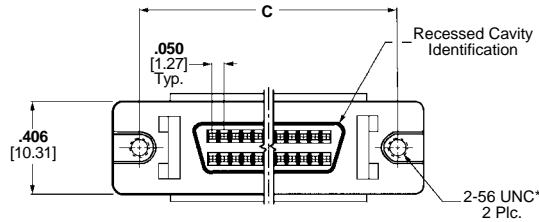
Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin-lead in termination area, all nickel underplated

Recommended wire size—
28 AWG [0.08-0.09mm²] or 30 AWG [0.05mm²], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter or .050 [1.27] centerline, 28 AWG [0.08-0.09mm²] stranded, PVC, flat ribbon cable.

Technical Documents:

Product Specifications—108-1228

Application Specifications—
114-40029



Note: Refer to Tyco Electronics Customer drawings and Application Spec for PCB & panel layouts.

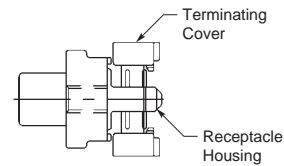
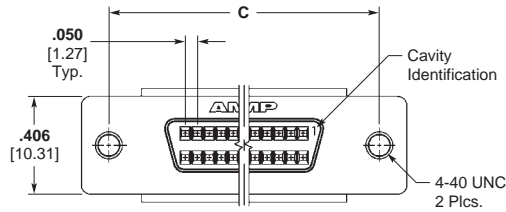
No. of Pos.	Dimensions				Part Numbers		
	C	D	E	F	Connectors With Assembled Standard Termination Covers	Connectors With Unassembled Wire Lacing Termination Covers	
						.032-.036 [0.81-0.91] Outer Wire Dia.	.029-.031 [0.74-0.79] Outer Wire Dia.
50	1.830 46.48	1.629 41.38	2.065 52.45	1.665 42.29	749656-5	786862-5	1-786862-5
50	1.830 46.48	1.629 41.38	2.065 52.45	1.665 42.29	750640-1*	786865-5*	—
68	2.280 57.91	2.079 52.81	2.515 63.88	2.115 53.72	749656-7	—	—
120	3.580 90.93	3.379 85.83	3.815 96.90	3.415 86.74	1-749656-0	—	—

*Part Numbers 750640-1 and 786865-5 have 4-40 threaded holes. All others have 2-56 threaded holes.

Note: For termination, cover closing and wire lacing tooling, see page 14.
For termination tooling other than wire lacing see page 29.



AMPLIMITE .050 Series Panel Mount Flat Top Receptacle Assemblies Without Rails and Latch Blocks, Series III



Materials:

Housing and Termination Covers

—Thermoplastic, 94V-0 rated, black

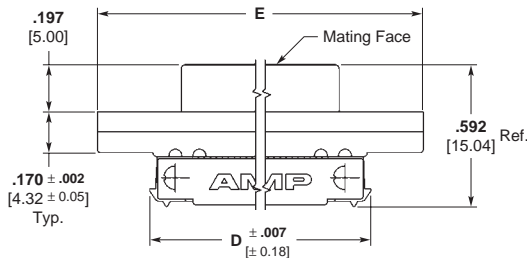
Shell—Steel, plated bright tin over copper

Bracket—Zinc, plated nickel over copper

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; tin-lead on solder end; all nickel underplated

Recommended wire size

—28 AWG [0.08-0.09mm²] or 30 AWG [0.05mm²], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter or .050 [1.27] centerline, 28 AWG [0.08-0.09mm²] stranded, PVC, flat ribbon cable



Note: Refer to Tyco Electronics Customer drawings and Application Spec for PCB & panel layouts.

Technical Documents:

Product Specifications—108-1228

Application Specifications—114-40029

Pos. No. of	Dimensions			Part Numbers
	C	D	E	Connectors With Assembled Standard Termination Covers
50	1.830 46.48	1.629 41.38	2.065 52.45	749877-5
68	2.280 57.91	2.079 52.81	2.515 63.88	749877-7
100	3.080 78.23	2.879 73.13	3.315 84.20	749877-9

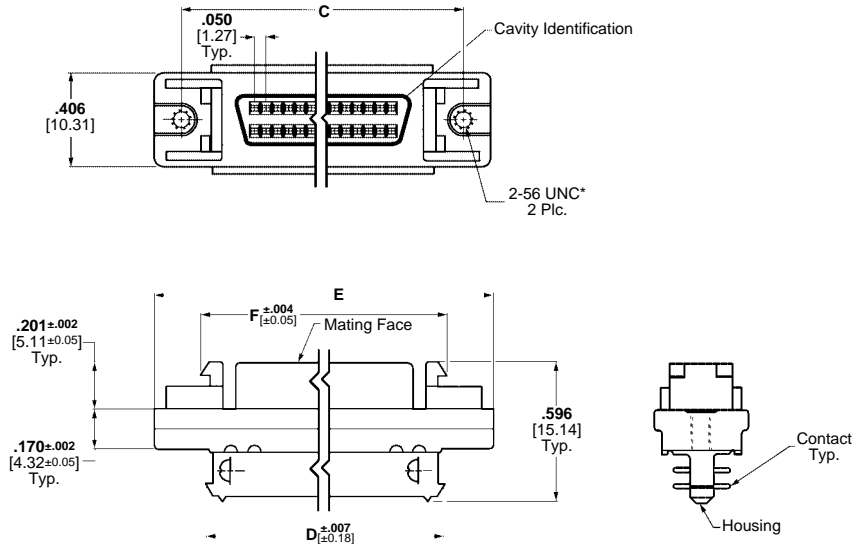
Note: For termination, cover closing and wire lacing tooling, see page 14. For termination tooling other than wire lacing see page 29.

AMPLIMITE .050 Series Panel Mount Receptacle Assemblies With Rails, Latch Blocks, Series III

AMPLIMITE .050 Series Connectors, Series III



Receptacle



Materials:

Housing and Termination Covers—Thermoplastic, 94V-0 rated, black

Shell—Steel, plated bright tin over copper

Bracket—Zinc, plated nickel over copper

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin-lead in termination area, all nickel underplated

Recommended wire size—

28 AWG [0.08-0.09mm²] or 30 AWG [0.05mm²], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter or .050 [1.27] centerline, 28 AWG [0.08-0.09mm²] stranded, PVC, flat ribbon cable.

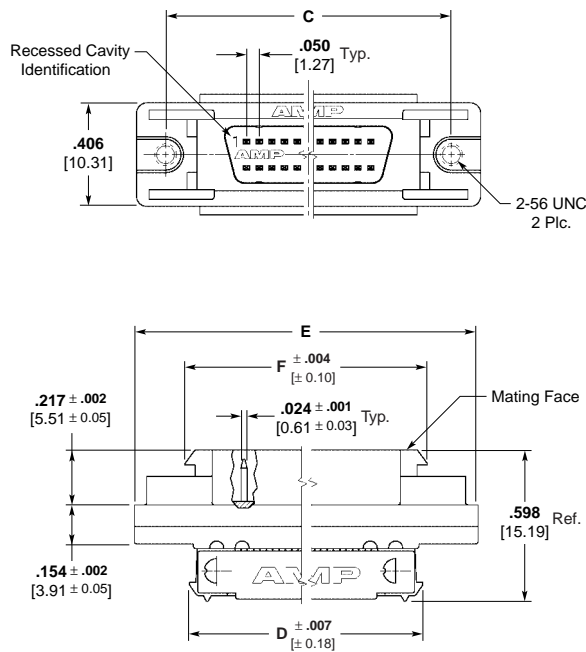
Technical Documents:

Product Specifications—108-1228

Application Specifications—114-40029

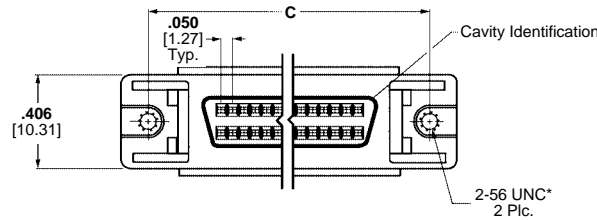
Note: Extra pin contact protection is provided by rails, which facilitate a straight-out, unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.

Plug



No. of Positions	Dimensions				Part Numbers
	C	D	E	F	
50	1.830 46.48	1.629 41.38	2.065 52.45	1.665 42.29	749878-5
68	2.280 57.91	2.079 52.81	2.515 63.88	2.115 53.72	749878-7
100	3.080 78.23	2.879 73.13	3.315 84.20	2.915 74.04	749878-9

**AMPLIMITE .050 Series Panel Mount Receptacle Assemblies
With Rails, Latch Blocks, Series III (Continued)**



Materials:

Housing and Termination

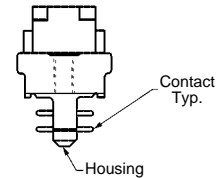
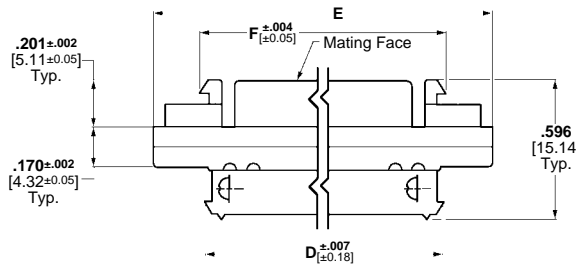
Covers—Thermoplastic, 94V-0 rated, black

Shell—Steel, plated bright tin over copper

Bracket—Zinc, plated nickel over copper

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin-lead in termination area, all nickel underplated

Recommended wire size—28 AWG [0.08-0.09mm²] or 30 AWG [0.05mm²], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter or .050 [1.27] centerline, 28 AWG [0.08-0.09mm²] stranded, PVC, flat ribbon cable.



Technical Documents:

Product Specifications—108-1228

Application Specifications—114-40029

Note: Refer to Tyco Electronics Customer drawings and Application Spec for PCB & panel layouts.

Note: Extra pin contact protection is provided by rails, which facilitate a straight-out, unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.

No. of Pos.	Dimensions				Part Numbers
	C	D	E	F	Connectors With Assembled Standard Termination Covers
20	1.080 27.43	.879 22.33	1.315 33.40	.915 23.24	749611-2
26	1.230 31.24	1.029 26.14	1.465 37.21	1.065 27.05	749611-1
50	1.830 46.48	1.629 41.38	2.065 52.45	1.665 42.29	749611-5
50	1.830 46.48	1.629 41.38	2.065 52.45	1.665 42.29	750450-1*
100	3.080 78.23	2.879 73.13	3.315 84.20	2.915 74.04	749611-9

*Part Number 750450-1 has 4-40 threaded holes. All others have 2-56 threaded holes.

Note: For termination, cover closing and wire lacing tooling, see page 14. For termination tooling other than wire lacing see page 29.

AMPLIMITE .050 Series Plug Assemblies Unshielded for .025 [0.64] Centerline Ribbon Cable, Series III

Plug Assembly



Materials:

Housing and Termination Covers—Thermoplastic, 94V-0 rated, black

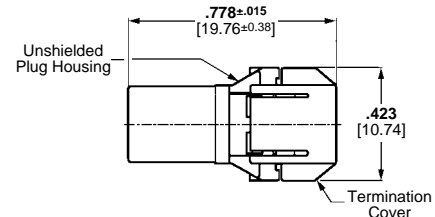
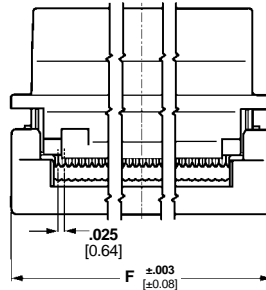
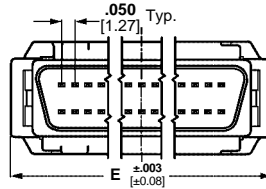
Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin-lead on termination end, all over nickel underplating

Recommended wire size— .025 [0.64] centerline, 30 AWG [0.05mm²] solid or 7 strand, PVC, flat ribbon cable.

Technical Documents:

Product Specifications—108-1359

Application Specifications— 114-40049

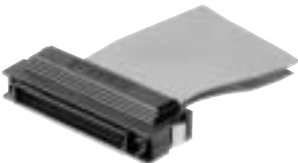


No. of Pos.	Dimensions		Part No.
	E	F	
68	2.029 51.54	2.023 51.30	786090-7

Note: Termination Tooling: Manual Arbor Press Part No. 91085-2 or Pneumatic Press Part No. 91112-3, Universal Base Tool Part No. 768338-4, and Connector Specific Kit Part No. 679235-2. Refer to page 29.

Note: Refer to Tyco Electronics Customer drawings and Application Spec for PCB & panel layouts.

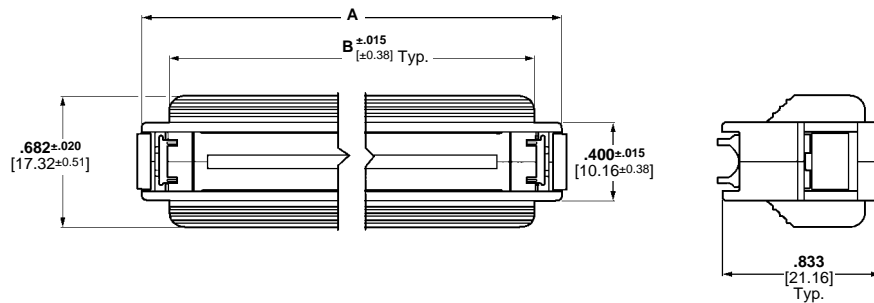
Backshell Kit for .025 [0.64] Unshielded Plug



Materials:

Backshell—Thermoplastic, 94V-0 rated, black

Spring Latches—Stainless steel



No. of Pos.	Kit Part No.	Dimension	
		A	B
68	787032-7	2.415 [61.34]	2.125 [53.48]

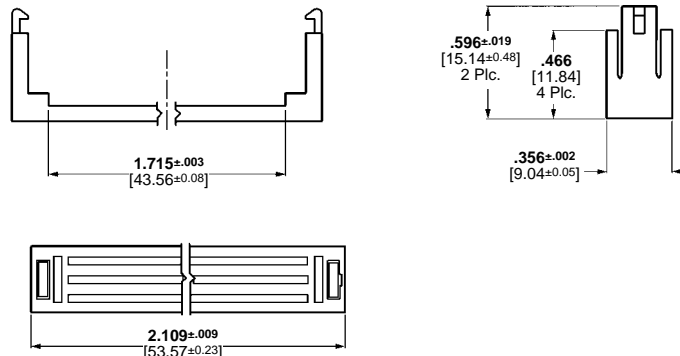
Strain Relief for .025 [0.64] Unshielded Plug

68-Position
Part No. 787043-7

Materials:

Thermoplastic, 94V-0 rated, black

Note: Pull tab Part No. 88450-8 can be used with this strain relief. Must be ordered separately.



AMPLIMITE .050 Series Hardware and Dust Covers, Series III

Screwlock Kits

Materials:

Stainless steel (female)
Steel, zinc plated black (male)

Related Product Data:

Used with the following connectors:

Right-Angle Receptacle Header—page 7

Vertical Receptacle Header—pages 8-11

Panel Mount Plug and Receptacle Headers—pages 21, 22

Technical Documents:

Product Specifications—108-1228

Application Specifications—114-40029



Male
Part No. 749086-1
(Includes two screwlocks)



Female
(Includes two screwlocks)

Dim. A	Dim. B	Individual Kits Part No.	Bulk Part No.
.562 14.27	.157 3.99	749087-1	749087-7
.380 9.65	.157 3.99	749087-2 ¹	749087-3
.562 14.27	.165 4.19	749087-4	749087-8

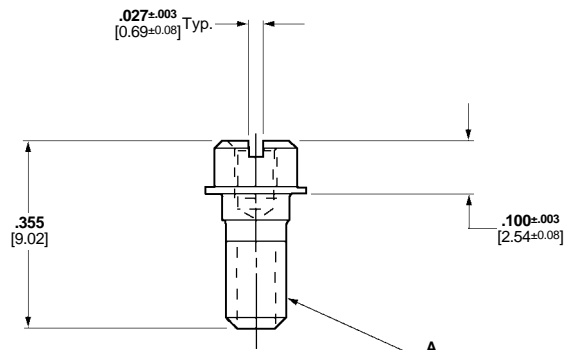
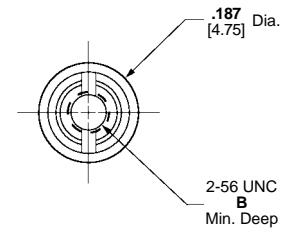
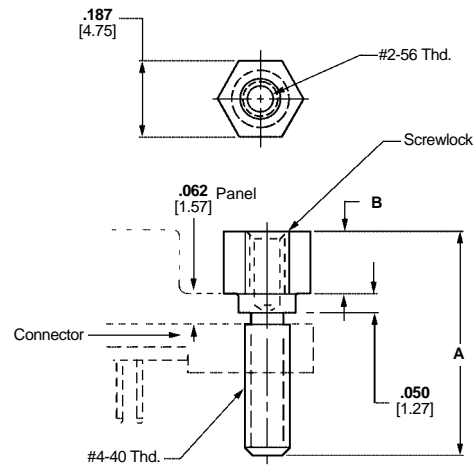
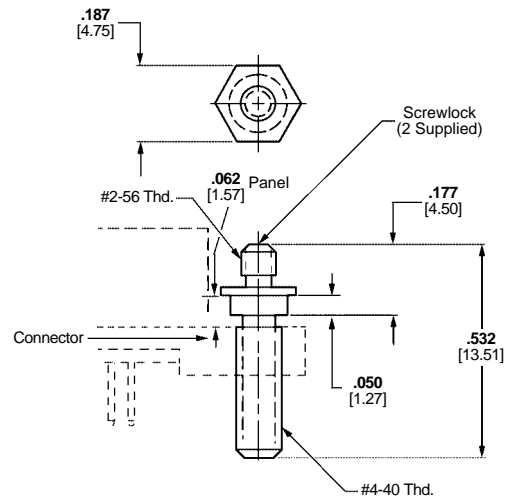
¹ Recommended for right-angle board mount connectors.



Female
(Includes two screwlocks)

Thread Size		Kits Part No.	Bulk Part No.
A	B		
4-40	.110 2.79	750644-1	750644-2
2-56	.090 2.29	786585-2	786585-3

Recommended for pc board mount of panel mount connectors with latches or latches and rails. Permits cable connectors to be spring latch-type or jackscrew-type



AMPLIMITE .050 Series Performance Specifications and Technical Documents

Performance Specifications for Right-Angle, Vertical and .050 Centerline Cable Products

- Mating Cycles (Durability):** 500 max.
- Current Rating (30°C T-Rise):** 1A max., 50% energized
- Termination Resistance (Mated):** 25 milliohms max.
- Insulation Resistance:** 1000 megohms min.
- Dielectric Withstanding Voltage:** 500 VAC
- Header Processing Temperature:** +220°C max. for 3 minutes
- Temperature Range:** -55°C to 105°C

Performance Specifications for .025 [1.27] Centerline Ribbon Cable Product. Same as above except:

- Current Rating (30°C T-Rise):** 1A max. center four contacts energized (two from top row, two from bottom row)
- Termination Resistance (Mated):** 50 milliohms max.

Product Specifications:

- 108-1228 AMPLIMITE .050 Series Printed Circuit Board Mounted and Cable Applied
- 108-1359 AMPLIMITE .050 Series .025 [0.64] Centerline Connectors
- 108-1228 AMPLIMITE .050 Series Stacked Connectors
- 108-1228-2 AMPLIMITE .050 Series ACTION PIN Connectors
- 108-1228-3 AMPLIMITE .050 Series SBus Connectors

Application Specifications:

- 114-40029 AMPLIMITE .050 Series Printed Circuit Board Mounted and Cable Applied Connectors
- 114-40049 AMPLIMITE .050 Series .025 [0.64] Centerline Connectors

Instruction Sheets:

- 408-6923 AMP Manual Arbor Frame Assembly
- 408-6927 AMP Design Recommendations for Printed Circuit Board Support Fixture
- 408-9200 AMP Single Wire Insertion Tool
- 408-9822 Wire Termination Tooling Kit for CHAMPOMATOR 2.5 Machine
- 408-9820 AMP Cover Closing and Staple Inserter Kits
- 408-9663 AMP Mass Insertion Tool
- 408-9750 AMP Cover Lacing Fixture
- 408-9757 AMP Tooling Assembly for ACTION PIN Receptacles
- 408-9817 AMP Manual Miniature Applicator Frame Assembly
- 408-9427 Round-to-Flat Cable Termination
- 408-9875 AMP Universal Base Tool for .025 [0.64] \mathcal{Q} Connectors
- 408-9892 AMP Tool Kit for .025 [0.64] \mathcal{Q} Connectors

Customer Manuals:

- 409-5839 CHAMPOMATOR 2.5 Machine
- 409-5791 Control Unit for CHAMPOMATOR 2.5 Machine

AMPLIMITE .050 Series Application Tooling, Series III

Discrete Wire Application Tooling

To meet medium to high volume production of discrete wire terminations, AMP offers the following tooling:

The CHAMPOMATOR Model 2.5 Bench Terminating Machine—**Part No. 354786-1**, used in conjunction with Control Module—**Part No. 852423-□**, and Tie Bar—**Part No. 762637-□** (Table No. 1).



Control Module
Part No. 852423-1 120 VAC
852423-2 100 VAC
852423-3 230 VAC

CHAMPOMATOR 2.5 Machine Tool Kit
Part No. 354786-1

Note: The CHAMPOMATOR 2.5 Machine includes plug and receptacle nests, as well as wire setup gauge.

Table Number 1

Connector Size	Tie Bar Part No.
20 Pos.	762637-1
26 Pos.	1-762637-1
28 Pos.	1-762637-2
40 Pos.	762637-3
50 Pos.	762637-4
60 Pos.	762637-5
68 Pos.	762637-6
80 Pos.	762637-7
100 Pos.	762637-9
120 Pos.	1-762637-0

Discrete Wire Application Tooling

For low to medium volume production use the AMP Arbor Frame Assembly—**Part No. 58024-1** equipped with Applicator—**Part No. 91291-1** for .032-.035 [0.81-0.89] Conductor Insulation O.D. and Applicator—**Part No. 91291-2** for .029-.032 [0.74-0.81] Conductor Insulation O.D.

Note: AMP Arbor Frame Assembly and Applicator Kit must be ordered separately.



Arbor Frame
Part No. 58024-1
Equipped with
Applicator Part No. 91291-□

AMPLIMITE .050 Series Application Tooling, Series III (Continued)

**Cover Closing/
Termination Tooling**

**Manual Miniature Applicator
Frame Assembly—
Part No. 91295-1**

This Frame requires Cover Closing Kit—**Part No. 543508-1**

Cable Staple Tooling

To provide cable strain relief use Manual Miniature Applicator Frame Assembly—**Part No. 91295-1**. This Frame requires Staple Insertion Kit—**Part No. 543515-1** to install staples into lower backshells of connector kits and assemblies.



**Staple Insertion Kit
Part No. 543515-1
(For use with Miniature Applicator
Frame Assembly
Part No. 91295-1)**

**Miniature Applicator Frame Assembly
Part No. 91295-1
Equipped with Cover Closing Kit
Part No. 543508-1**

**AMPLIMITE .050 Series
Connector Application
Tooling for Use with Wire
Lacing Terminating Covers**

**Manual Arbor Frame
Assembly—Part No. 58024-1**

Equipped with Cover Lacing Assembly—**Part No. 91293-1 (Includes Seating Bars for 50 and 100 Positions)**. See Table 3 for Seating Bar Part Numbers.

Extra Lacing Stations available for use with Lacing Assembly—**Part No. 91293-1** Order Lower Tooling Assembly—**Part No. 543481-1**



Seating Bars

Table Number 3

No. of Pos.	Seating Bar Part No.
26	543494-2
50	543494-1
68	543502-2
100	543502-1

Notes: All Tooling must be ordered separately by part number. Two seating bars required per tool assembly.



**Arbor Frame, Part No. 58024-1
Equipped with
Cover Lacing Assembly, Part No. 91293-1**

Note: AMP Manual Miniature Applicator Frame Assembly, Cover Closing Kit, and Staple Insertion Kit each must be ordered separately by part number.



**Lower Tooling Assembly
Part No. 543481-1**

**Termination Tooling for
.025 [0.64] Centerline
Ribbon Cable**

Used with Manual Arbor Tool **Part No. 91085-2**, or Pneumatic Arbor Tool **Part No. 91112-3** and Universal Base Tool **Part No. 768338-4**.

No. of Pos.	Plug/Receptacle Upper Tooling Kit
50	679235-2
68	

Shielded AMPLIMITE .050 Series Slim Line Connectors

Product Facts

- Compact design, profile for the right-angle header 1.230 x .588 [31.24 x 14.94], vertical header 1.230 x .433 [31.24 x 11.00], right-angle stacked headers 1.230 x .803 [31.24 x 20.40]
- Housings and covers made of UL 94V-0 rated thermoplastic
- Headers are compatible with surface mount reflow solder processes
- Header footprint for right-angle and stacked configurations is .100 x .050 [2.54 x 1.27] staggered centerlines
- Right-angle and stacked headers feature integral boardlocks for positive board retention and grounding
- Stacked headers reduce overall total header volume by 48% and PC board area by 38%
- Stacked headers offer optional contact shield for additional EMI/RFI protection
- Plugs preloaded with insulation displacement contacts (IDC) provide fast, reliable and economical terminations
- Aesthetically designed backshell kits feature easy-to-use finger grip jackscrews to secure mated connectors
- Listed and complies with UL 1863, Communication Circuit Accessories, File No. E81956
- Certified by Canadian Standards Association File No. 1088108 (LR 7189A-207)
- Produced under a Quality Management System certified to ISO 9001



A copy of the certificate is available upon request



Shielded AMPLIMITE .050 Series, Slim Line Connectors answer today's industry requirement for higher density in a smaller overall package. The present line consists of 26 position, shielded right-angle, 26 position right-angle stacked PCB receptacle header, and mating 26 position plug connectors. All header, plug and backshell housings are made of UL 94V-0 rated thermoplastic. PCB headers are compatible with surface mount reflow solder processes. Right-angle and stacked PCB headers feature contact footprints on .100 x .050 [2.54 x 1.27] staggered centerlines.

The compact design of the **right-angle header** package measures only 1.230 W x .588 D x .300 H [31.24 W x 14.94 D x 7.62 H] for maximum board real estate conservation. Right-angle PCB headers feature integral

boardlocks for positive board retention and grounding.

Right-angle stacked headers provide 52 contacts in a package only .635 [16.13] high, allowing parallel (board-over-board) board spacing of .800 [20.32]. Centerlines between the top connector and the bottom connector measure .335 [8.51] when compared to .400 [10.16] on the standard .050 Series stacked headers. This results in an overall reduction of total header volume, in comparison to the standard AMPLIMITE .050 Series header, of 48%, and a comparative reduction in PC board area of 38%.

Stacked header board retention and stabilization is provided by two boardlocks and four grounding posts. In addition, an optional rear contact shield is available for additional EMI/RFI protection.

The mating plug connector consists of a thermoplastic housing, preloaded with insulation displacement contacts (IDC) for fast, reliable terminations that offer greater applied cost savings. AMP offers a choice of termination equipment to meet your production requirements.

The backshell hardware kit includes a two-piece, aesthetically designed, thermoplastic cover over an inner and outer shield and two, high strength #2-56 male jackscrews with insulated heads (easy finger grip caps) to secure mated connectors.

The AMPLIMITE .050 Series, Slim Line family of connectors offers **keyed coupling**. This feature eliminates the problem of mismatch mating of plug and receptacle, particularly in stacked applications.

Shielded AMPLIMITE .050 Series Slim Line Connectors (Continued)

**Right-Angle Header,
Receptacle**



Part No. 750823-1

Material and Finish

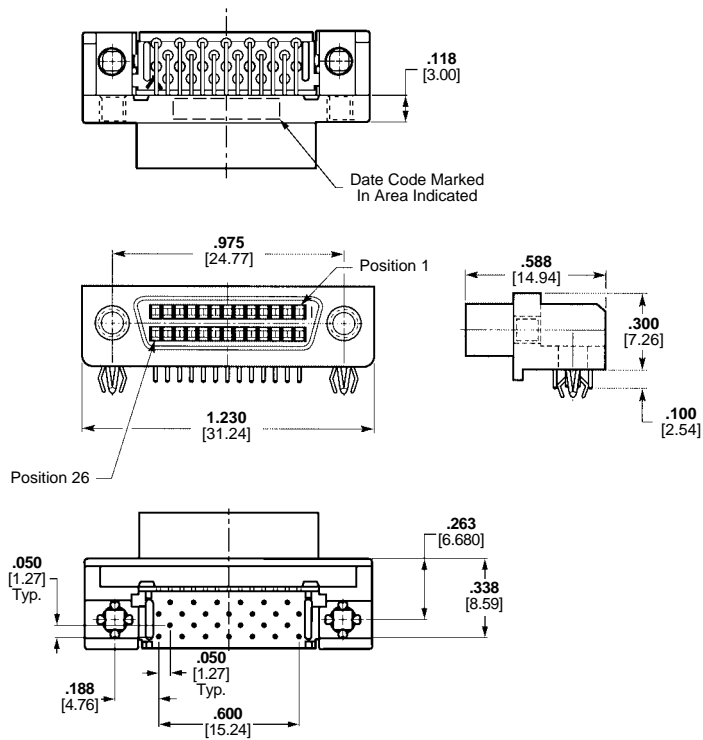
Housing—UL 94V-0 rated thermo-plastic, black

Bracket—Zinc, plated tin or tin-lead over copper

Metal-Shell—Carbon steel, plated tin over copper

Boardlocks—Copper alloy, tin-lead plated

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, tin-lead plated on solder end, all over nickel



Notes:

1. Rear panel mounting only.
2. Female screwlocks to be used with connectors mounted to panels having a thickness of .047 [1.19].
3. **See Application Specification 114-40036 for the most up-to-date detailed panel cutout and recommended PC Board hole pattern.**
4. Female screwlocks are not included with receptacles and must be ordered separately. See page 33 for screwlock kit information.

Shielded AMPLIMITE .050 Series Slim Line Connectors (Continued)

AMPLIMITE .050 Series Connectors, Series III

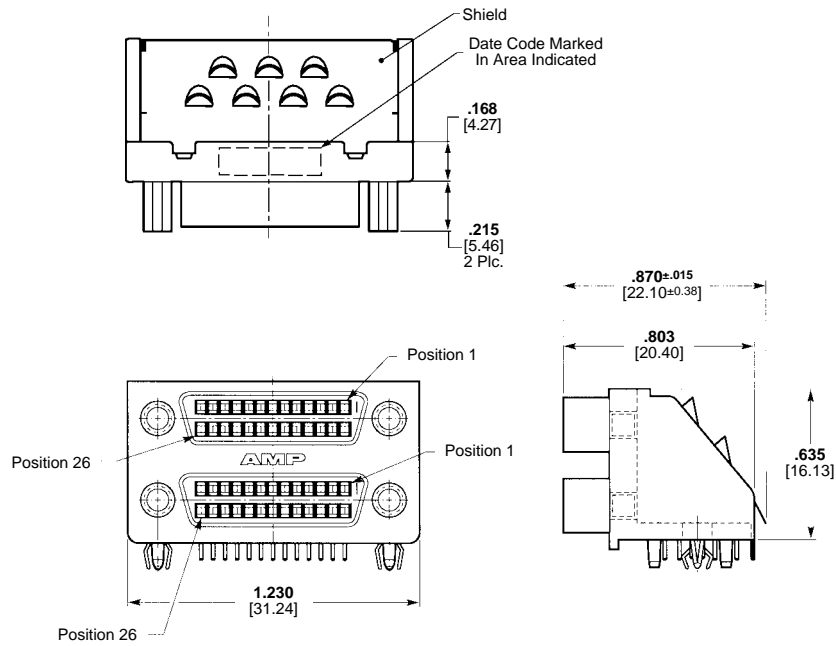
Shielded Right-Angle Stacked Header, Receptacle



With Shielding



Without Shielding



Shielded Header with Rear Contact Shield

Material and Finish:

Housing—UL 94V-0 rated thermo-plastic, black

Bracket—Zinc, plated tin-lead over copper

Metal-Shell—Carbon steel, plated tin over copper

Boardlocks—Copper alloy, tin-lead plated

Contact Shield—Phosphor bronze, plated tin

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. on mating end, tin-lead plated on solder end, all over nickel

No. of Positions	Part Numbers			
	Std. Rcpt. without Rear Contact Shield		Rcpt. with Rear Contact Shield ⁸	
	Keyed ⁶	Unkeyed ⁷	Keyed ⁶	Unkeyed ⁷
26/26	—	786200-1	750821-1	750820-1

⁶Lower header unkeyed with 4-40 threaded holes, upper header keyed in keying position 1. See page 33 for keying code.

⁷Both headers unkeyed with 4-40 threaded holes.

⁸Receptacle includes a metal contact shield for added RFI protection to the rear of the receptacle assembly.

Note: See Application Specification 114-40036 for the most up-to-date detailed panel cutout and recommended PC Board hole pattern.

Shielded AMPLIMITE .050 Series Slim Line Connectors (Continued)

AMPLIMITE .050 Series
Connectors, Series III

Cable Connector, Plug



Part No. 750833-1

Material and Finish:

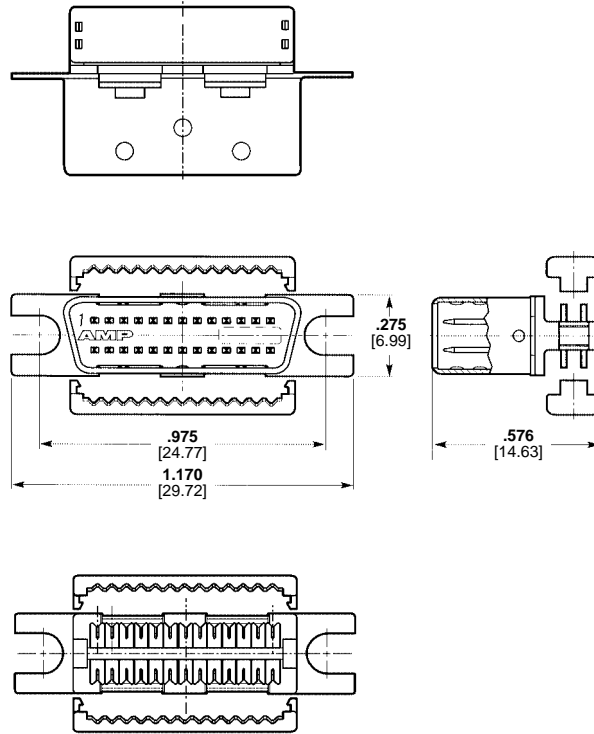
Housing and Termination Covers—UL 94V-0 rated thermoplastic, black

Shell—Steel, plated bright tin-lead over copper

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin-lead on termination end, all underplated nickel

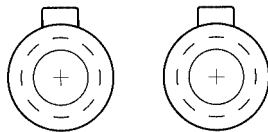
Bracket—Zinc, plated nickel over copper

Recommended Wire Size—28 AWG [0.08 mm²] with max. O.D. .032 [0.813]. PVC or polyolefin insulation.

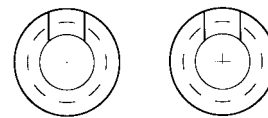


Note: Cable Connectors must be used with Backshell Kits. See page 34.

Keying Code, Receptacle



Keying Code, Plug



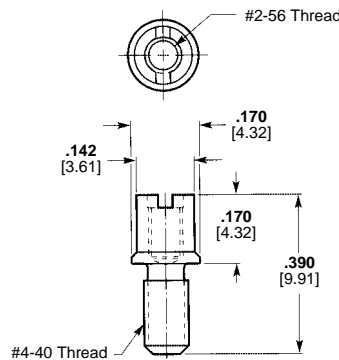
Position 1 (Up)

Accessories

Female Screwlock Kit

Material—Stainless Steel

Note: Female screwlocks to be used with connectors mounted to panels having a thickness of .047 [1.19]



Part No.	Packaging
750831-1	Individually Packed Kit (2 Screwlocks per kit)

*Minimum order is 510 kits.

Shielded AMPLIMITE .050 Series Slim Line Connectors (Continued)

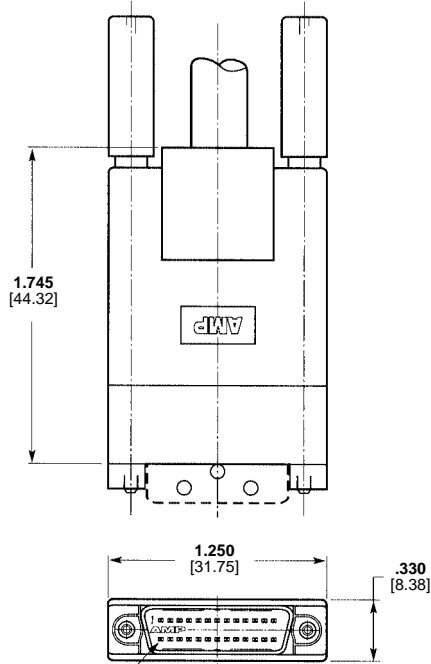
Backshell Kits



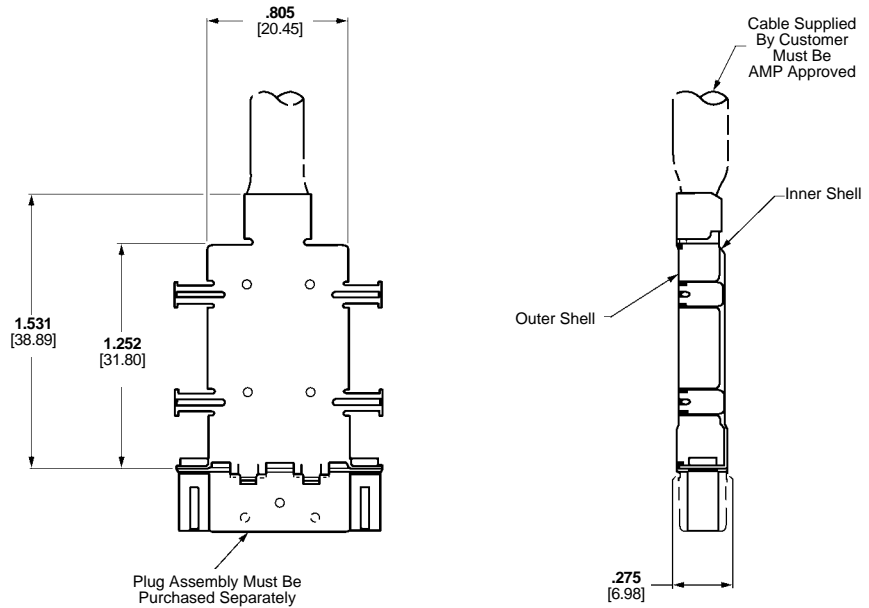
AMPLIMITE .050 Series Connectors, Series III

Material and Finish:

- Backshells**—Copper-nickel alloy
- Jackscrews**—Steel, plated tin over copper, handles covered with ABS, gray
- Keyed and Unkeyed Inserts**—Zinc, plated tin over copper
- Outside Covers**—ABS, gray



Connector shown for illustration purposes only, must be purchased separately.



Backshell Kits

Unkeyed Kit Part No.	Cable Dia.	Packaging*
750850-1	.250-.280	Individually Packed Kit
750850-2	6.35-7.11	Bulk Packed Kit
750850-3	.280-.310	Individually Packed Kit
	7.11-7.87	

*Bulk packaging—100 kits per box.

Shielded AMPLIMITE .050 Series Slim Line Connectors, Application Tooling

AMPLIMITE .050 Series
Connectors, Series III

Discrete Wire Application Tooling

To meet medium to high volume production of discrete wire terminations, AMP offers the following tooling:

The CHAMPOMATOR Model 2.5 Bench Terminating Machine—**Part No. 354786-1**, used in conjunction with Control Module—**Part No. 852423-□**, and Tie Bar—**Part No. 1-762637-3**.

Note: CHAMPOMATOR 2.5 Machine and Control Module must be ordered separately by part number.



Control Module
Part No. 852423-1 120 VAC
852423-2 100 VAC
852423-3 230 VAC

CHAMPOMATOR 2.5 Machine
Part No. 354786-1

26 Position Tie Bar
1-762637-3

Wire Setup Gauge

Wire Insulation Dia.		Part No.
in.	mm	
.026-.028	0.66-0.71	763382-3
.029-.031	0.74-0.79	763382-4
.032-.035	0.81-0.89	763382-5

Discrete Wire Application Tooling

For low to medium volume production use the AMP Arbor Tool—**Part No. 58024-1** equipped with Applicator—**Part No. 91291-1** and Special Locator—**Part No. 543506-1**.



Arbor Tool
Part No. 58024-1
Equipped with Applicator Part No. 91291-1



Miniature Applicator Frame Assembly
Part No. 91295-1
Equipped with Cover Closing Kit Part No. 543508-1



Staple Insertion Kit
Part No. 543515-1
(For use with Miniature Applicator Frame Assembly Part No. 91295-1)

Cable-to-Shell Staple Tooling (For discrete wire jacketed cable only)

To meet medium to high volume production use AMP Pneumatic Crimper—**Part No. 312522-3** equipped with Die Holder Assembly—**Part No. 58449-1** and Die—**Part No. 90437-1** to crimp outer backshells onto inner backshells of connector kits and assemblies.



Pneumatic Bench Tool
No. 312522-3
(Requires Die Set Holder No. 58449-1)

Backshell Tooling and Cover Tooling

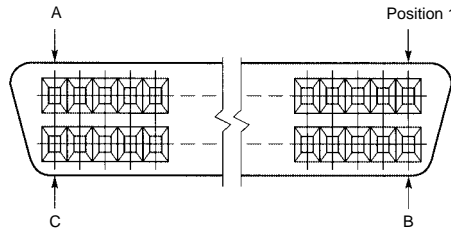
To assemble backshell into plastic housing use Manual Miniature Applicator Frame Assembly—**Part No. 91295-1** equipped with **Part No. 543521-1**. To assemble upper cover on lower cover use **Part No. 91295-1** equipped with **Part No. 543522-1**.

For low volume use Manual Arbor Tool—**Part No. 91085-2**, equipped with Backshell Crimper Assembly Tool—**Part No. 856684-1**.

For tooling information call Tooling Assistance Center 1-800-722-1111.

Shielded AMPLIMITE .050 Series Contact Arrangements, Performance Specifications, Technical Documents—Slim Line Connectors

Contact Arrangements



Note: Mating face of receptacle is shown, plug is mirror image.

No. of Pos.	Position No.		
	A	B	C
26	13	14	26

Performance Specifications

- Mating Cycles (Durability):** 500 max.
- Current Rating (30°C T-Rise):** 1A max., 50% loading
- Termination Resistance (Mated):** 25 milliohms max.
- Insulation Resistance:** 1000 megohms min.
- Dielectric Withstanding Voltage:** 500 VAC
- Header Processing Temperature:** +220°C max. for 3 minutes
- Temperature Range:** -55°C to +105°C

Technical Documents

Product Specifications describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

108-1366 Shielded AMPLIMITE .050 Series, Slim Line Connectors

Application Specifications describe requirements for using the product in its intended application and/or termination information. They are intended for the Packaging and Design Engineer and the Setup person.

114-40036 Shielded AMPLIMITE .050 Series, Slim Line Connectors

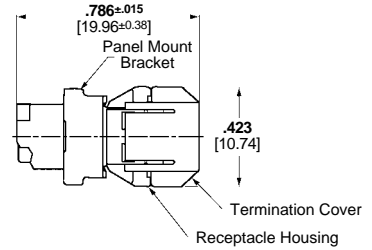
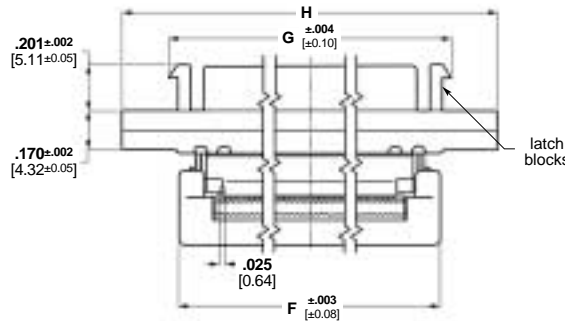
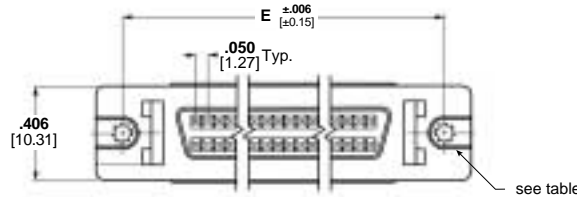
Instruction Sheets provide instructions for assembling or applying product. They are intended for Manufacturing Assembler or Operator.

- 408-9663 Mass Insertion Tooling—**Part No. 91291-□**
- 408-6923 AMP Manual Arbor Frame—**Part No. 58024-1**
- 408-9701 Wire Termination Tooling Kit for CHAMPOMATOR 2.5 Machine—**Part No. 1-762661-4**
- 408-7777 AMP Manual Arbor Frame w/Slide—**Part No. 91085-2**
- 408-9746 Crimper Assembly—**Part No. 856684-1**
- 408-9200 Single Wire Insertion Tool—**Part No. 58430-1**
- 408-9721 Die Holder Assembly for Pneumatic Crimper—**Part No. 58449-□**
- 408-9788 Die Assembly—**Part No. 90437-1**
- 408-9898 Backshell and Cover Tooling Assemblies—**Part No. 543521-1 and 543522-1**

Customer Manuals provide information on AMP termination equipment. They are intended for Manufacturing Assemblers or Operators.

- 409-5786 CHAMPOMATOR 2.5 Machine
- 409-5791 CHAMPOMATOR 2.5 Control Module—**Part No. 852423-□**
- 409-5822 Pneumatic Crimper—**Part No. 312522-3**
- 409-5843 Pneumatic Power Unit

AMPLIMITE .050 Series Panel Mount Receptacle Assemblies for .025 [0.64] Centerline Ribbon Cable, Series III



Materials:

Housing and Termination

Covers—Thermoplastic, 94V-0 rated, black

Shell—Steel, plated bright tin over copper

Bracket—Zinc, plated nickel over copper

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; tin-lead on solder end; all nickel underplated

Recommended wire size— .025 [0.64] centerline, 30 AWG [0.05mm²] and 32 AWG [0.03mm²] solid or 7 strand, PVC, flat ribbon cable. Selection of compatible ribbon cable is the responsibility of the user.

Technical Documents:

See customer drawings for Product Performance criteria.

■ **Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476**



■ **Certified by Canadian Standards Association, File No. LR 7189**



No. of Pos.	Dimensions				Gold Plating	Mating Hardware	Part No.
	E	F	G	H			
50	1.831 46.50	1.602 40.70	N/A	2.066 52.47	15μ	w/ 4-40 threaded holes	1-390378-5
	1.831 46.50	1.602 40.70	N/A	2.066 52.47	30μ	w/ 4-40 threaded holes	390378-5
	1.831 46.50	1.602 40.70	1.664 42.27	2.066 52.47	flash	w/ latch blocks and 4-40 threaded holes	2-390399-5
	1.831 46.50	1.602 40.70	1.664 42.27	2.066 52.47	15μ	w/ latch blocks and 4-40 threaded holes	1-390399-5
	1.831 46.50	1.602 40.70	1.664 42.27	2.066 52.47	30μ	w/ latch blocks and 4-40 threaded holes	390399-5
	1.831 46.50	1.602 40.70	1.664 42.27	2.066 52.47	30μ	w/ latch blocks and 2-56 threaded holes	390379-5
68	2.281 57.93	2.018 51.50	N/A	2.516 63.90	15μ	w/ 4-40 threaded holes	1-390378-7
	2.281 57.93	2.018 51.50	N/A	2.516 63.90	30μ	w/ 4-40 threaded holes	390378-7
	2.281 57.93	2.018 51.50	2.114 53.70	2.516 63.90	flash	w/ latch blocks and 4-40 threaded holes	2-390399-7
	2.281 57.93	2.018 51.50	2.114 53.70	2.516 63.90	15μ	w/ latch blocks and 4-40 threaded holes	1-390399-7
	2.281 57.93	2.018 51.50	2.114 53.70	2.516 63.90	30μ	w/ latch blocks and 4-40 threaded holes	390399-7
	2.281 57.93	2.018 51.50	2.114 53.70	2.516 63.90	30μ	w/ latch blocks and 2-56 threaded holes	390379-7

Note: Termination Tooling: Manual Arbor Press Part No. 91085-2 or Pneumatic Press Part No. 91112-3, Universal Base Tool Part No. 768338-4, and Connector Specific Kit Part No. 1490479-1.

**AMPLIMITE .050 Series Plug Assemblies
Unshielded for .025 [0.64] Centerline Ribbon Cable, Series III**

Plug Assembly



Materials:

Housing and Termination Covers—Thermoplastic, 94V-0 rated, black

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin-lead on termination end, all over nickel underplating

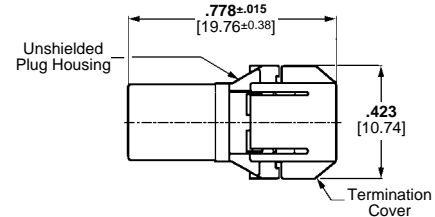
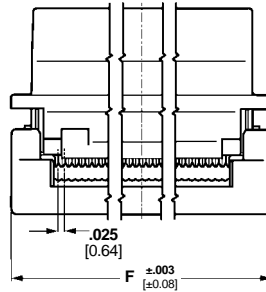
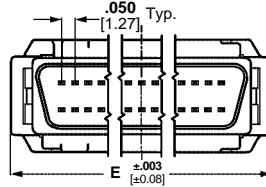
Recommended wire size—
.025 [0.64] centerline, 30 AWG [0.05mm²] solid or 7 strand, PVC, flat ribbon cable.

Note: Cable must be approved by AMP Engineering

Technical Documents for 786090-7 only:

Product Specifications—108-1359

Application Specifications—
114-40049

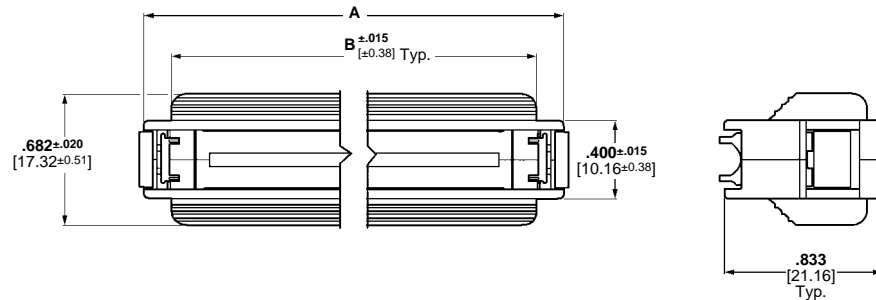
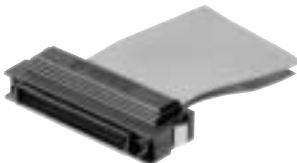


No. of Pos.	Dimensions		Part No.
	E	F	
50	1.578 40.07	1.578 40.07	390377-51
68	2.029 51.54	2.023 51.30	786090-7

Note: Termination Tooling: Manual Arbor Press Part No. 91085-2 or Pneumatic Press Part No. 91112-3, Universal Base Tool Part No. 768338-4, and Connector Specific Kit Part No. 679235-2.

¹ Accepts 32 AWG Flat Ribbon Cable. Selection of compatible ribbon cable is the responsibility of the user.

**Backshell Kit for 786090-7
.025 [0.64] & Unshielded Plug**



Materials:

Backshell—Thermoplastic, 94V-0 rated, black

Spring Latches—Stainless steel

No. of Pos.	Kit Part No.	Dimension	
		A	B
68	787032-7	2.415 [61.34]	2.125 [53.48]

**Strain Relief for 786090-7
.025 [0.64] & Unshielded Plug**

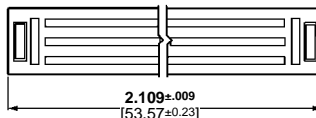
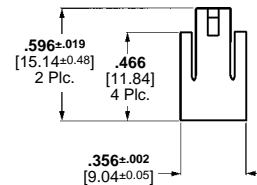
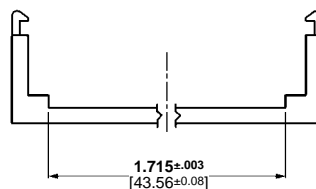
68-Position

Part No. 787043-7

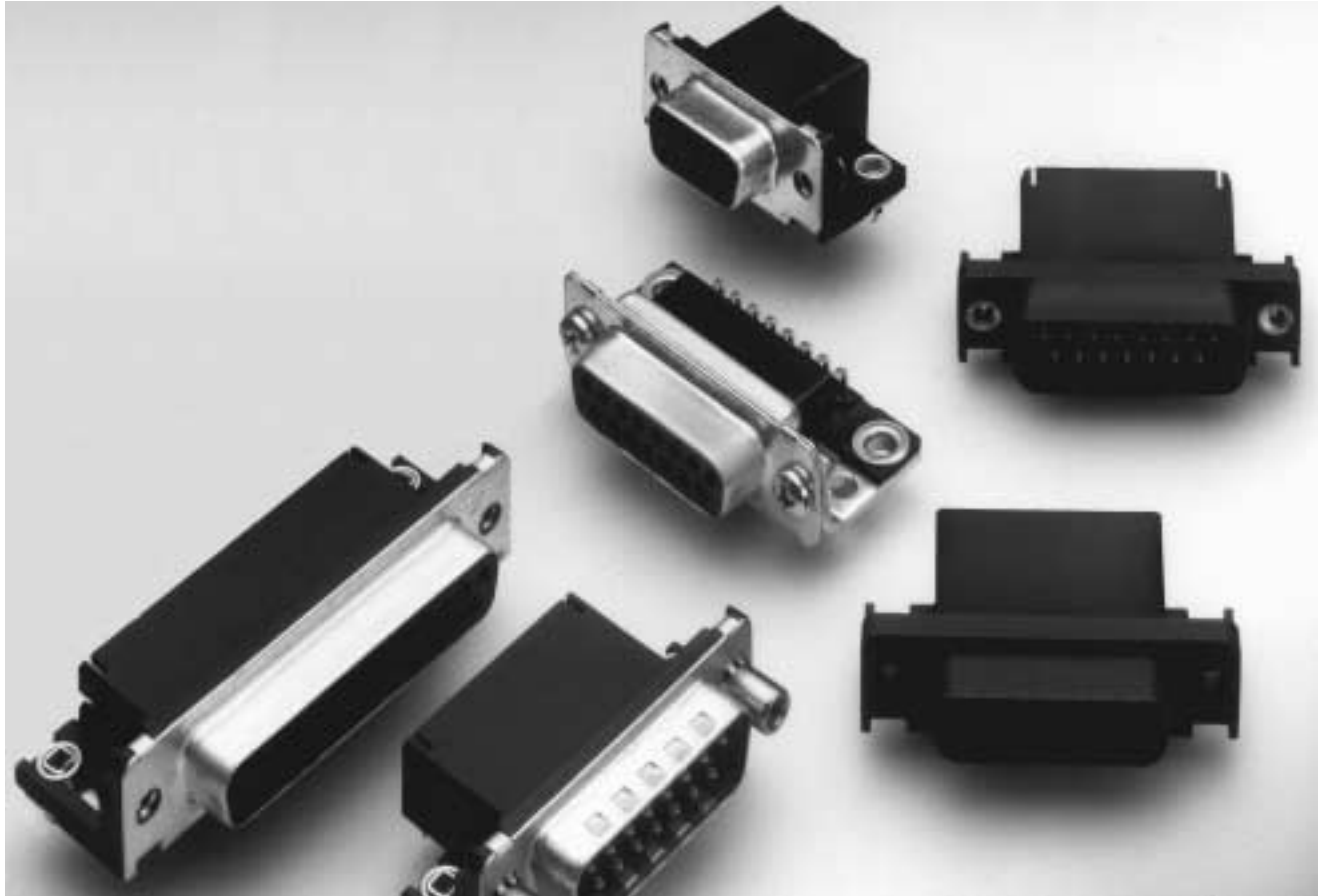
Materials:

Thermoplastic, 94V-0 rated, black

Note: Pull tab Part No. 88450-8 can be used with this strain relief. Must be ordered separately.



Right-Angle Posted Connectors



Right-Angle Posted Connectors

Connector Density	Type	Style and Shell Finish	No. of Contact Positions	Footprint	Mating Hardware	Board Mounting	Contact Plating (Mating Area/Solder Tails)	Post Length				
HD-22	Plug and Receptacle	Front Metal-Shell, Tin Plated (Pgs. 37, 53)	15	.350 [8.89]	Threaded Inserts	.125 [3.18] Dia. Holes	Duplex (0.000030 [0.00076] Gold/Tin-Lead)	.085 [2.16]				
			26		Female Screwlocks	Boardlocks	Duplex (Gold Flash/Tin-Lead)	.125 [3.18]				
44	Standard Screws	Full Metal-Shell With and Without Grounding Indents, Tin Plated (Pgs. 72, 144, 160)	.454 [11.53]		Female Screwlocks	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin-Lead)	.125 [3.18]				
62									Duplex (Gold Flash/Tin-Lead)	.220 [5.59]		
HD-20	Plugs and Receptacles	Front Metal-Shell With Grounding Indents, Tin Plated (Pgs. 56-59, 61-64, 66-68, 136, 139, 143, 148, 155)	9	.318 [8.08]	Standard Screws	.125 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin-Lead)	.085 [2.16]				
			15		Threaded Inserts				Boardlocks	Duplex (Gold Flash/Tin-Lead)	.125 [3.18]	
			25		Female Screwlocks							Duplex (Gold Flash/Tin-Lead)
			37		Female Screwlocks				Boardlocks	Duplex (Gold Flash/Tin-Lead)	.125 [3.18]	
		50	All-Plastic (Pgs. 69-71, 137, 138, 140, 141)	9	.318 [8.08]	Threaded Inserts	.125 [3.18] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin-Lead)				.125 [3.18]
		15							Female Screwlocks	Duplex (Gold Flash/Tin-Lead)	.125 [3.18]	
		25										
		37							Female Screwlocks	Boardlocks	Duplex (Gold Flash/Tin-Lead)	

Right-Angle Posted Connectors (Continued)

Product Facts:

- Flame retardant thermo-plastic housing material, UL 94V-0 rated
- HD-20 right-angle connectors are available in 9, 15, 25 and 37 positions (Shell Sizes 1 thru 4) in both plug and receptacle versions; some versions available in 50 position, (Shell Size 5)
- HD-20 stacked connectors are available in 9/9, 15/15, 25/25, and 37/37 positions (Shell Sizes 1 thru 4) in receptacle over receptacle, plug over plug and combination versions
- HD-22 right angle receptacle connectors are available in 15, 26, 44, 62 and 78 positions (Shell Sizes 1 thru 5)
- Low cost front metal-shell design compatible with full metal-shell connectors
- Integral boardlock versions secure posted connectors to pc boards prior to soldering

- HD-20 and HD-22 connector contacts are available in plating types to satisfy different applications
- HD-22 right-angle posted connectors are designed for high temperature applications
- Integral fixed 4-40 threaded inserts and screwlocks are available in both HD-20 and HD-22 connectors
- Connectors are intermateable with any size 20 or 22 subminiature D connectors dimensionally complying with MIL-C-24308

Section Contents

HD-22 and HD-20 Contact Arrangements..... 41
 HD-22 and HD-20 Performance Specifications..... 42
 Plug/Receptacle Mating and Panel Mounting Specifications..... 43
 AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors
 Hybrid and Mixed Styles 44-49
 AMPLIMITE 2000 Subminiature D Connectors..... 50, 51
 HD-20 and HD-22 Slim Line Connectors 52
 HD-22 Right-Angle Posted Subminiature D Connectors 53, 54
 HD-20 Front Metal-Shell Right-Angle Posted Connectors
 318 Mount 55-58
 HD-20 Full Metal-Shell Right-Angle Posted Connectors
 454 Mount 59, 60
 HD-20 Front Metal-Shell Right-Angle Posted Connectors
 478 Mount 61, 62
 HD-20 Full Metal-Shell Right-Angle Posted Connectors
 545 Mount 63, 64
 HD-20 Front Metal-Shell Right-Angle Posted Connectors
 590 Mount 65, 66
 HD-20 All-Plastic Right-Angle Posted Connectors
 318 Mount 67-69
 HD-20 All-Plastic Right-Angle Posted Connectors
 590 Mount 70-72
 Right-Angle Mounting Connectors—European Standard Footprint..... 73
 Right-Angle Mounting Connectors—Eurostyle Footprint 74
 Straight Mounting Connectors 75
 Standard Density Press Fit Termination, Right-Angle Mounting 76
 Standard Density Press Fit Termination, Straight Mounting 77
 Right-Angle Mounting Connectors—Footprints..... 78
 Subminiature D Connectors for Cable Mounting..... 79, 80

Right-Angle Stacked Connectors (Centerline-to-centerline height .750 [19.05])

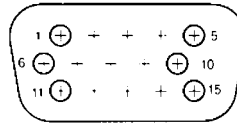
Connector Density	Type	Style and Shell Finish	No. of Contact Positions	Footprint	Mating Hardware	Board Mounting	Contact Plating (Mating Area/Solder Tails)	Post Length
HD-20	Receptacle over Receptacle							
	Plug over Plug	Front Metal-Shell, Tin Plated (Pgs. 149-154, 156)	9/9 15/15 25/25 37/37 (Std.)	See Customer Drawings	Threaded Inserts	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin-Lead) (.000010 [0.00025] Gold/Tin-Lead)	.125 [3.18]
	Receptacle over Plug				Female Screwlocks	Boardlocks	Duplex (Gold Flash/Tin-Lead)	
	Plug over Receptacle							

Contact Arrangements

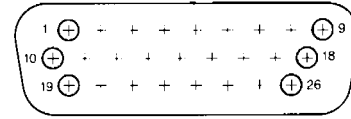
HD-22 and HD-20 Commercial Connectors (AMPLIMITE)

Right-Angle Posted Connectors

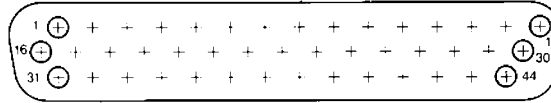
HD-22 Inserts



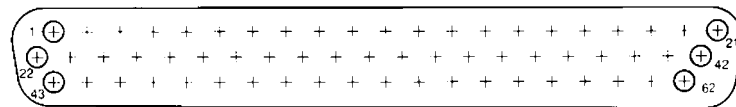
Shell Size 1
(15 Position)



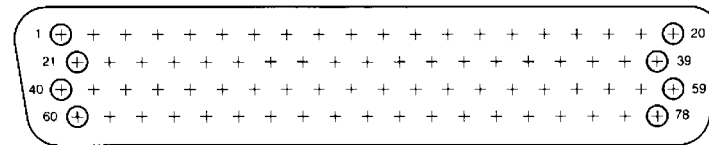
Shell Size 2
(26 Position)



Shell Size 3
(44 Position)

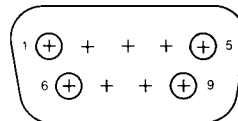


Shell Size 4
(62 Position)

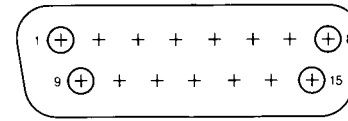


Shell Size 5
(78 Position)

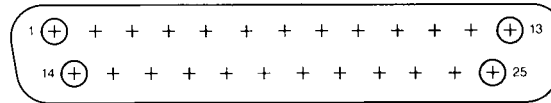
HD-20 Inserts



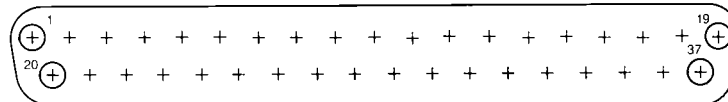
Shell Size 1
(9 Position)



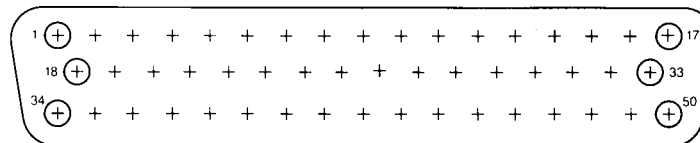
Shell Size 2
(15 Position)



Shell Size 3
(25 Position)



Shell Size 4
(37 Position)



Shell Size 5
(50 Position)

Note: Mating face of plug is shown, receptacle is mirror-image.

HD-22 and HD-20 Connectors Performance Characteristics

Right-Angle Posted Connectors

Cable Connectors

	Connector Type		
	HDP-22	HDE-20	HDP-20
Electrical Characteristics			
Contact Current Rating (One pair of contacts)	22 AWG [0.4mm ²] Wire 5.0 amperes	20 AWG [0.6mm ²] 3 amperes	20 AWG [0.6mm ²] 7.5 amperes
Termination Resistance	15 milliohms (max.)	30 milliohms (max.)	15 milliohms (max.)
Dielectric Withstanding Voltage	1000 VAC min.	1000 VAC min.	1000 VAC min.
Insulation Resistance	5000 megohms min.	5000 megohms min.	5000 megohms min.
Mechanical Characteristics			
Contact Insertion Force	3 lb. max. [13.34 N max.]	N/A	3 lb. max. [13.34 N max.]
Contact Retention	5 lb. min. [22.24 N min.]	7 lb. min. [31.14 N min.]	10 lb. min. [44.48 N min.]
Contact Mating Force (Per contact circuit pair)	8 oz. max. [2.22 N max.]	8 oz. max. [2.22 N max.]	8 oz. max. [2.22 N max.]
Contact Unmating Force (Per contact circuit pair)	.75 oz. min. [0.209 N min.]	.75 oz. min. [0.209 N min.]	.75 oz. min. [0.209 N min.]
Tensile Strength	22 AWG—12 lb. [0.4mm ² —53.4 N] 24 AWG—8 lb. [0.2mm ² —35.6 N] 26 AWG—4.5 lb. [0.15mm ² —20.02 N] 28 AWG—2.7 lb. [0.08mm ² —12.01 N]	20 AWG—9.5 lb. [0.6mm ² —42.3 N] 22 AWG—6 lb. [0.4mm ² —26.7 N] 24 AWG—4 lb. [0.2mm ² —17.79 N] 26 AWG—2.5 lb. [0.15mm ² —11.12 N] 28 AWG—2.5 lb. [0.08mm ² —11.12 N] 30 AWG—1 lb. [0.05mm ² —4.45 N]	20 AWG—20 lb. [0.6mm ² —89 N] 22 AWG—12 lb. [0.4mm ² —53.4 N] 24 AWG—8 lb. [0.2mm ² —35.6 N] 26 AWG—4.5 lb. [0.15mm ² —20.02 N] 28 AWG—2.7 lb. [0.08mm ² —12.01 N]
Durability	.000030 [0.00076] gold—500 cycles Gold Flash— 100 cycles	.000030 [0.00076] gold—500 cycles Gold Flash— 100 cycles	.000030 [0.00076] gold—500 cycles Gold Flash— 100 cycles
Environmental Characteristics			
Vibration	Random 20 G's rms max.	Random 20 G's rms max.	Random 20 G's rms max.
Physical Shock	50 G's Duration 11 ms	50 G's Duration 11 ms	50 G's Duration 11 ms

Board Mount Connectors

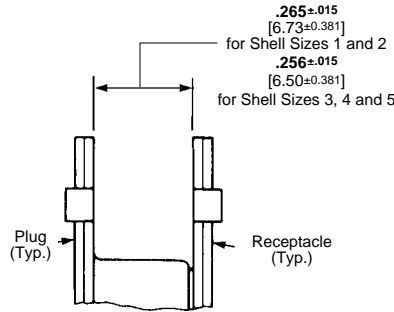
	Connector Type
	HD-20
Electrical Characteristics	
Single Contact Current Rating (30°C Rise) Duration 11 ms	18 AWG 6.0 amperes 24 AWG 4.3 amperes 28 AWG 2.9 amperes
Termination Resistance	15 milliohms* (max.)
Dielectric Withstanding Voltage	1000 VAC min.**
Insulation Resistance	5000 megohms min.

*Stacked Connectors—30 milliohms (max.)
**Stacked Connectors—500 VAC min.

	Connector Type		
	HD-20		
Mechanical Characteristics			
Durability	.000030 [0.00076] gold—500 cycles Gold Flash—100 cycles		
Connector Mating and Unmating Force (lbs. max. over [N max.])	Size	HD-20 Without Grounding Indents	HD-20 With Grounding Indents
	1	4.5 [20.02]	30.0 [133.5]
	2	7.5 [33.4]	33.0 [146.8]
	3	12.5 [55.6]	37.0 [164.6]
	4	18.5 [82.3]	40.0 [177.9]
	5	25.0 [111.2]	44.0 [195.7]

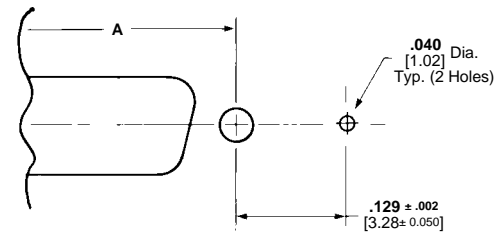
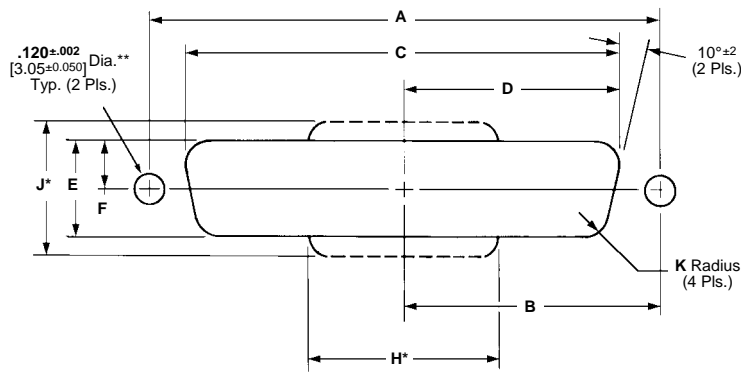
Plug/Receptacle Mating and Panel Mounting Specifications

Plug/Receptacle Mating



The .265 [6.73] dimension is required to assure full mating of connector halves. This dimension must be taken into consideration when determining the method of mounting, panel thickness, etc.

Panel Mounting



Cutout for Rear Mount and Short Latching Block

Note: Cutouts are for either plug or receptacle, front or rear panel mount.

Shell Size (Pos.)	Mounting Method Front/Rear Panel	Dimensions								
		A	B	C	D	E	F	H*	J*	K
1 (9)	Front	.984 24.99	.492 12.50	.874 22.20	.437 11.10	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	.984 24.99	.492 12.50	.806 20.47	.403 10.24	.449 11.41	.225 5.72	.550 13.97	.750 19.05	.132 3.35
2 (15)	Front	1.312 33.33	.656 16.66	1.202 30.53	.601 15.27	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	1.312 33.33	.656 16.66	1.134 28.80	.567 14.40	.449 11.41	.225 5.72	.730 18.54	.750 19.05	.132 3.35
3 (25)	Front	1.852 47.04	.926 23.52	1.743 44.27	.872 22.15	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	1.852 47.04	.926 23.52	1.674 42.52	.837 21.26	.449 11.41	.225 5.72	1.275 32.39	.750 19.05	.132 3.35
4 (37)	Front	2.500 63.50	1.250 31.75	2.391 60.73	1.196 30.38	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	2.500 63.50	1.250 31.75	2.326 59.08	1.163 29.54	.449 11.41	.225 5.72	1.920 46.05	.750 16.13	.132 3.35
5 (50)	Front	2.406 61.11	1.203 30.56	2.297 58.34	1.149 29.19	.623 15.82	.312 7.93	—	—	.083 2.11
	Rear	2.406 61.11	1.203 30.56	2.218 56.34	1.109 28.17	.555 14.10	.278 7.06	1.753 44.52	.750 19.05	.132 3.35

*Panel cutout configuration with H and J dimensions provides clearance for mounting connectors with cable clamps.
 **This dimension is .190 ± .002 [4.83 ± 0.05] when posted connectors with fixed female screwlocks are rear-panel mounted.

Most plugs and receptacles can be mounted to a panel from either the front or rear, using a variety of accessory hardware. Posted receptacles are rear panel mounted only. Typical examples are shown below.



Typical Front-Panel Mounted Subminiature D Plug




Typical Rear-Panel Mounted Subminiature D Receptacle

**AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors
Hybrid and Mixed Styles**



HD-20 Subminiature D Stacked PCB Connectors

Product Facts

- Stacked pcb connectors save board real estate
- Wide choice of configurations available
- Front Metal-Shells for EMI/RFI shielding
- Housings made of UL 94V-0 rated thermoplastic
- Plug connectors have built-in grounding indents
- Choice of 4-40 threaded insert or female screwlock mating hardware
- Hybrid styles provide maximum selectivity and permit mixing of signal speeds
- Packaged in plastic trays for ease of handling
- Recognized under the Component Program of the Underwriters Laboratories, Inc.  File No. 28476
- Certified by Canadian Standards Association, File No. LR 7189 

See customer drawings for pcb layouts.

AMPLIMITE HD-20 Subminiature D, Stacked PCB Connectors are members of the complete line of AMPLIMITE Subminiature D Connector family which has been accepted by the electronic industry for their rugged design and ease of application.

Stacked connectors add the advantage of reducing overall board real estate normally consumed by individual pcb connectors. The versatility of the AMPLIMITE HD-20 line enables you to select the stacked connector best suited for your specific application.

AMPLIMITE HD-20 Stacked Connectors, Series II offer a high degree of performance and a reduced cost. The line consists of:

- Receptacle over Receptacle in 9/9, 15/15, 25/25 and 37/37 contact positions

- Plug over Plug in 9/9, 15/15, 25/25 and 37/37 contact positions
- Receptacle over Plug in 9/9, 15/15, 25/25 and 37/37 contact positions
- Plug over Receptacle in a total of 9/9, 15/15, 25/25 and 37/37 contact positions

Configurations are available with a choice of mounting hardware—4-40 threaded inserts and female screwlocks.

Hybrid and Mixed Styles

AMPLIMITE Hybrid and Mixed Stacked Connectors combine a variety of sub-miniature D connector configurations into a single connector. This permits mixing signal speeds with a substantial reduction in pc board real estate.

All AMPLIMITE Stacked and Mixed PCB Connectors fea-

ture front metal-shells for EMI/RFI shielding, with housings made of UL 94V-0 approved material. The series offers gold plating in 30µ", 10µ" and gold flash on the mating end and tin plating on the termination end, with the entire contact nickel underplated.

Due to the versatility of the AMPLIMITE Hybrid and Mixed lines of connectors any combination with AMPLIMITE HD-20 as the top connector, HD-22 High Density, and AMPLIMITE .050 Series as the bottom connector can be provided based on your application requirements. Contact Tyco Electronics for additional information.

AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors
Hybrid and Mixed Styles (Continued)

Material and Finish:

Housing—94V-0 rated thermoplastic, black

Shell—Steel, tin-lead plated

Contacts:

Pins—Brass

Sockets—Phosphor bronze

Contact Plating:

A—Gold flash on mating end, tin-lead on solder tails with overall nickel plating underneath

B—.000010 [0.00025] gold on mating end, tin-lead on solder tails with overall nickel underplate

C—.000030 [0.00076] gold on mating end, tin-lead on solder tails with overall nickel underplate

Boardlocks—Brass, tin plated

Female Screwlocks—Brass, nickel plated

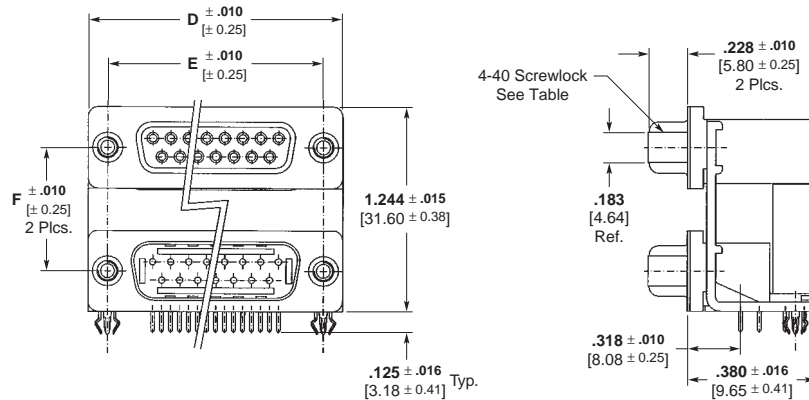
Threaded Inserts—Brass, tin plated

Brackets—Zinc

Technical Documents:

Product performance characteristics specified on customer drawings.

See customer drawings for printed circuit board layouts.



Upper D-Sub	Lower D-Sub	Dimensions			Contact Finish	Mounting Hardware	Part Number
		D	E	F			
9p Plug / 9p Plug	A	1.22	.984	.750	A	4-40 inserts	440391-1
		30.95	24.99	19.05			
		1.22	.984	.750	B	4-40 inserts	440391-2
		30.95	24.99	19.05			
		1.22	.984	.750	C	4-40 inserts	440391-3
		30.95	24.99	19.05			
	B	1.22	.984	.750	A	4-40 fem s/l	440392-1
		30.95	24.99	19.05			
		1.22	.984	.750	B	4-40 fem s/l	440392-2
		30.95	24.99	19.05			
		1.22	.984	.750	C	4-40 fem s/l	440392-3
		30.95	24.99	19.05			
9p Plug / 9p Rcpt.	A	1.22	.984	.750	A	4-40 inserts	440394-1
		30.95	24.99	19.05			
		1.22	.984	.750	B	4-40 inserts	440394-2
		30.95	24.99	19.05			
		1.22	.984	.750	C	4-40 inserts	440394-3
		30.95	24.99	19.05			
	B	1.22	.984	.750	A	4-40 fem s/l	440395-1
		30.95	24.99	19.05			
		1.22	.984	.750	B	4-40 fem s/l	440395-2
		30.95	24.99	19.05			
		1.22	.984	.750	C	4-40 fem s/l	440395-3
		30.95	24.99	19.05			
9p Rcpt. / 9p Plug	A	1.22	.984	.750	A	4-40 inserts	440397-1
		30.95	24.99	19.05			
		1.22	.984	.750	B	4-40 inserts	440397-2
		30.95	24.99	19.05			
		1.22	.984	.750	C	4-40 inserts	440397-3
		30.95	24.99	19.05			
	B	1.22	.984	.750	A	4-40 fem s/l	440398-1
		30.95	24.99	19.05			
		1.22	.984	.750	B	4-40 fem s/l	440398-2
		30.95	24.99	19.05			
		1.22	.984	.750	C	4-40 fem s/l	440398-3
		30.95	24.99	19.05			
C	1.22	.984	.750	A	4-40 inserts	440183-1	
	30.95	24.99	19.05				
	1.22	.984	.750	B	4-40 inserts	440183-2	
	30.95	24.99	19.05				
	1.22	.984	.750	C	4-40 inserts	440183-3	
	30.95	24.99	19.05				
A	1.22	.984	.750	A	4-40 fem s/l	440184-1	
	30.95	24.99	19.05				
	1.22	.984	.750	B	4-40 fem s/l	440184-2	
	30.95	24.99	19.05				
	1.22	.984	.750	C	4-40 fem s/l	440184-3	
	30.95	24.99	19.05				

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AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors
Hybrid and Mixed Styles (Continued)

Upper D-Sub	Lower D-Sub	Dimensions			Contact Finish	Mounting Hardware	Part Number
		D	E	F			
15p Plug / 15p Plug		1.55	1.31	.750	A	4-40 inserts	1-440391-1
		39.30	33.30	19.05			
		1.55	1.31	.750	B	4-40 inserts	1-440391-2
		39.30	33.30	19.05			
		1.55	1.31	.750	C	4-40 inserts	1-440391-3
		39.30	33.30	19.05			
15p Plug / 15p Rcpt.		1.55	1.31	.750	A	4-40 fem s/l	1-440392-1
		39.30	33.30	19.05			
		1.55	1.31	.750	B	4-40 fem s/l	1-440392-2
		39.30	33.30	19.05			
		1.55	1.31	.750	C	4-40 fem s/l	1-440392-3
		39.30	33.30	19.05			
15p Rcpt. / 15p Rcpt.		1.55	1.31	.750	A	4-40 inserts	1-440394-1
		39.30	33.30	19.05			
		1.55	1.31	.750	B	4-40 inserts	1-440394-2
		39.30	33.30	19.05			
		1.55	1.31	.750	C	4-40 inserts	1-440394-3
		39.30	33.30	19.05			
15p Rcpt. / 15p Plug		1.55	1.31	.750	A	4-40 fem s/l	1-440395-1
		39.30	33.30	19.05			
		1.55	1.31	.750	B	4-40 fem s/l	1-440395-2
		39.30	33.30	19.05			
		1.55	1.31	.750	C	4-40 fem s/l	1-440395-3
		39.30	33.30	19.05			
15p Rcpt. / 15p Rcpt.		1.55	1.31	.750	A	4-40 inserts	1-440397-1
		39.30	33.30	19.05			
		1.55	1.31	.750	B	4-40 inserts	1-440397-2
		39.30	33.30	19.05			
		1.55	1.31	.750	C	4-40 inserts	1-440397-3
		39.30	33.30	19.05			
15p Rcpt. / 15p Plug		1.55	1.31	.750	A	4-40 fem s/l	1-440398-1
		39.30	33.30	19.05			
		1.55	1.31	.750	B	4-40 fem s/l	1-440398-2
		39.30	33.30	19.05			
		1.55	1.31	.750	C	4-40 fem s/l	1-440398-3
		39.30	33.30	19.05			
15p Rcpt. / 15p Plug		1.55	1.31	.750	A	4-40 inserts	1-440183-1
		39.30	33.30	19.05			
		1.55	1.31	.750	B	4-40 inserts	1-440183-2
		39.30	33.30	19.05			
		1.55	1.31	.750	C	4-40 inserts	1-440183-3
		39.30	33.30	19.05			
25p Plug / 25p Plug		2.09	1.85	.750	A	4-40 inserts	2-440391-1
		53.10	47.04	19.05			
		2.09	1.85	.750	B	4-40 inserts	2-440391-2
		53.10	47.04	19.05			
		2.09	1.85	.750	C	4-40 inserts	2-440391-3
		53.10	47.04	19.05			
25p Plug / 25p Plug		2.09	1.85	.750	A	4-40 fem s/l	2-440392-1
		53.10	47.04	19.05			
		2.09	1.85	.750	B	4-40 fem s/l	2-440392-2
		53.10	47.04	19.05			
		2.09	1.85	.750	C	4-40 fem s/l	2-440392-3
		53.10	47.04	19.05			
25p Plug / 25p Rcpt.		2.09	1.85	.750	A	4-40 inserts	2-440394-1
		53.10	47.04	19.05			
		2.09	1.85	.750	B	4-40 inserts	2-440394-2
		53.10	47.04	19.05			
		2.09	1.85	.750	C	4-40 inserts	2-440394-3
		53.10	47.04	19.05			
25p Plug / 25p Rcpt.		2.09	1.85	.750	A	4-40 fem s/l	2-440395-1
		53.10	47.04	19.05			
		2.09	1.85	.750	B	4-40 fem s/l	2-440395-2
		53.10	47.04	19.05			
		2.09	1.85	.750	C	4-40 fem s/l	2-440395-3
		53.10	47.04	19.05			

Continued on next page

AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors
Hybrid and Mixed Styles (Continued)

Upper D-Sub	Lower D-Sub	Dimensions			Contact Finish	Mounting Hardware	Part Number
		D	E	F			
25p Rcpt. / 25p Rcpt.		2.09	1.85	.750	A	4-40 inserts	2-440397-1
		53.10	47.04	19.05			
		2.09	1.85	.750	B	4-40 inserts	2-440397-2
		53.10	47.04	19.05			
		2.09	1.85	.750	C	4-40 inserts	2-440397-3
		53.10	47.04	19.05			
2.09	1.85	.750	A	4-40 fem s/l	2-440398-1		
53.10	47.04	19.05					
2.09	1.85	.750	B	4-40 fem s/l	2-440398-2		
53.10	47.04	19.05					
2.09	1.85	.750	C	4-40 fem s/l	2-440398-3		
53.10	47.04	19.05					
25p Rcpt. / 25p Plug		2.09	1.85	.750	A	4-40 inserts	2-440183-1
		53.10	47.04	19.05			
		2.09	1.85	.750	B	4-40 inserts	2-440183-2
		53.10	47.04	19.05			
		2.09	1.85	.750	C	4-40 inserts	2-440183-3
		53.10	47.04	19.05			
2.09	1.85	.750	A	4-40 fem s/l	2-440184-1		
53.10	47.04	19.05					
2.09	1.85	.750	B	4-40 fem s/l	2-440184-2		
53.10	47.04	19.05					
2.09	1.85	.750	C	4-40 fem s/l	2-440184-3		
53.10	47.04	19.05					
37p Plug / 37p Plug		43.94	2.500	.750	A	4-40 inserts	3-440391-1
		69.34	63.50	19.05			
		43.94	2.500	.750	B	4-40 inserts	3-440391-2
		69.34	63.50	19.05			
		43.94	2.500	.750	C	4-40 inserts	3-440391-3
		69.34	63.50	19.05			
43.94	2.500	.750	A	4-40 fem s/l	3-440392-1		
69.34	63.50	19.05					
43.94	2.500	.750	B	4-40 fem s/l	3-440392-2		
69.34	63.50	19.05					
43.94	2.500	.750	C	4-40 fem s/l	3-440392-3		
69.34	63.50	19.05					
37p Plug / 37p Rcpt.		43.94	2.500	.750	A	4-40 inserts	3-440394-1
		69.34	63.50	19.05			
		43.94	2.500	.750	B	4-40 inserts	3-440394-2
		69.34	63.50	19.05			
		43.94	2.500	.750	C	4-40 inserts	3-440394-3
		69.34	63.50	19.05			
43.94	2.500	.750	A	4-40 fem s/l	3-440395-1		
69.34	63.50	19.05					
43.94	2.500	.750	B	4-40 fem s/l	3-440395-2		
69.34	63.50	19.05					
43.94	2.500	.750	C	4-40 fem s/l	3-440395-3		
69.34	63.50	19.05					
37p Rcpt. / 37p Rcpt.		43.94	2.500	.750	A	4-40 inserts	3-440397-1
		69.34	63.50	19.05			
		43.94	2.500	.750	B	4-40 inserts	3-440397-2
		69.34	63.50	19.05			
		43.94	2.500	.750	C	4-40 inserts	3-440397-3
		69.34	63.50	19.05			
43.94	2.500	.750	A	4-40 fem s/l	3-440398-1		
69.34	63.50	19.05					
43.94	2.500	.750	B	4-40 fem s/l	3-440398-2		
69.34	63.50	19.05					
43.94	2.500	.750	C	4-40 fem s/l	3-440398-3		
69.34	63.50	19.05					
37p Rcpt. / 37p Plug		43.94	2.500	.750	A	4-40 inserts	3-440183-1
		69.34	63.50	19.05			
		43.94	2.500	.750	B	4-40 inserts	3-440183-2
		69.34	63.50	19.05			
		43.94	2.500	.750	C	4-40 inserts	3-440183-3
		69.34	63.50	19.05			
43.94	2.500	.750	A	4-40 fem s/l	3-440184-1		
69.34	63.50	19.05					
43.94	2.500	.750	B	4-40 fem s/l	3-440184-2		
69.34	63.50	19.05					
43.94	2.500	.750	C	4-40 fem s/l	3-440184-3		
69.34	63.50	19.05					

HD-20 Subminiature D Stacked PCB Connectors

AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors
 Hybrid and Mixed Styles (Continued)

HD-20 Subminiature D Stacked PCB Connectors

HD-20 Front Metal Shell, Right-Angle (AMPLIMITE) Connectors

Material and Finish:

Housings and Pin Spacer—94V-0 rated thermoplastic, black

Contacts:

Pins—Brass

Receptacles—Phosphor bronze

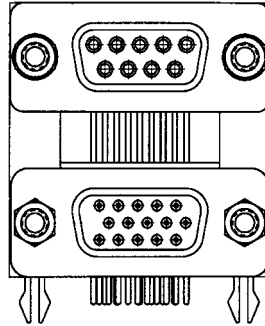
Contact Plating—

.000015 [0.00038] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

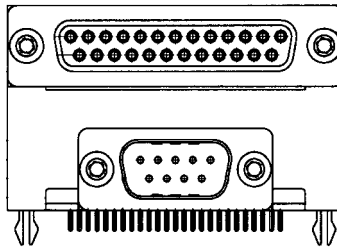
Shell—Steel, tin plated

Boardlocks—Copper alloy, plated tin-lead

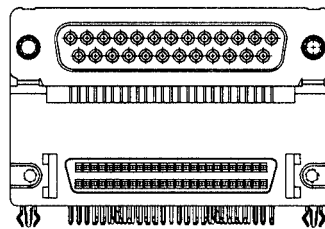
Bracket—Zinc



9 Position HD-20 Receptacle over 15 Position HD-22 Receptacle
 Part No. 788508-1



25 Position HD-20 Receptacle over 9 Position HD-20 Plug
 Part No. 788433-1



25 Position HD-20 Receptacle over 50 Position .050 Series Receptacle

Description	Part Number
25 Position Receptacle over 50 Position .050 Series Receptacle	786387-1

AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors
Hybrid and Mixed Styles (Continued)

HD-20 Front Metal Shell, Right-Angle Connectors

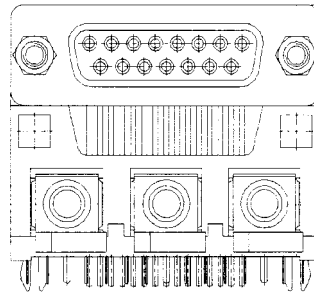
Material and Finish:

Housing—94V-0 rated PBT, black

Contacts—Phosphor bronze

Contact Plating—

Gold flash on contact area, tin on solder tail area, all over nickel underplated



15 Position HD-20 Receptacle over 3 Position Audio Plug

Description	Part Number	PC 99
With screws	440407-1	
With screws & color audio ¹	440407-2	
—	1-440407-1	
With color coded audio ¹	1-440407-2	
Without screws		1-440407-3
With screws & back cover		2-440407-3
With screws		3-440407-3

¹ Color coded audio:
 Audio line in — light blue
 Audio line out — lime
 Microphone — pink

Subminiature D Stacked, 9 position with 3 Audio Jacks

PC99 2-440409-2

High-Rise Connectors

Material and Finish:

Housing—94V-0 rated thermoplastic, black

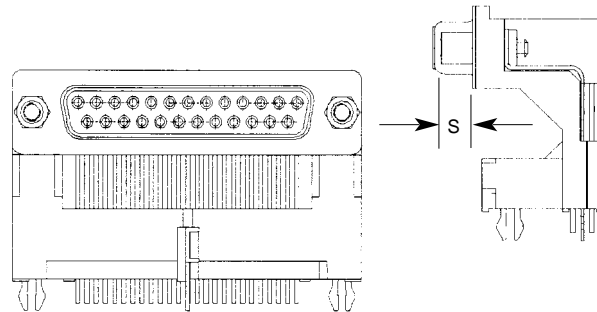
Contacts—Phosphor bronze

Contact Plating:

A— .00015 [.000381] min. gold on contact area, tin on solder tail area, all over nickel underplated

B— Gold flash on mating area, tin-lead on solder tails, all over nickel

C— .00010 [.000254] gold on mating area, tin-lead on solder tails, all over nickel




High-Rise 25 Position HD-20 Receptacle/Over 0

Dimension S	Plating Code	Part Number	PC 99
.228 5.80	A	440408-1	—
		440408-3	—
	B	—	1-440408-2*
		—	2-440408-2*
	C	—	2-440408-3**

* Screws packed separately.
 ** 10µm gold.

AMPLIMITE 2000 Subminiature Connectors**Product Facts**

- Flame retardant housings, rated up to 105°C
- Front metal-shell design
- Duplex plated gold flash or .000015 [0.00038] min. gold on mating end, tin-lead on solder end, all over nickel underplate
- With boardlocks and 4-40 threads or female screwlocks
- Designed to Office Class II
- 9, 15 & 25 right-angle plugs and receptacles
- Recognized under the Component Program of the Underwriters Laboratories, Inc.  File No. E28476

See customer drawings for circuit board layout.

**AMPLIMITE 2000**

Subminiature D connectors represent the latest breakthrough in economical Sub-D connector design.

Presently available in the more popular sizes — 9-, 15- and 25-receptacles and plugs with a .318 [8.08] printed circuit board footprint, the AMPLIMITE 2000 connector line features front metal-shell RFI/EMI protection, flame retardant housings with integral 4-40 threads, boardlocks, and duplex plated gold-over-nickel contacts.

AMPLIMITE 2000 Subminiature Connectors (Continued)

HD-20 Front Metal Shell Right Angle Connectors

Material and Finish:

Housing—94V-0 rated thermoplastic, black

Shell—Steel, nickel plated

Contacts:

Pins—Brass

Sockets—Phosphor bronze

Contact Plating:

A—Gold flash on mating end, tin lead on solder tails with overall nickel underplate

B—.000015 [0.00038] gold on mating end, tin-lead on solder tails with overall nickel underplate

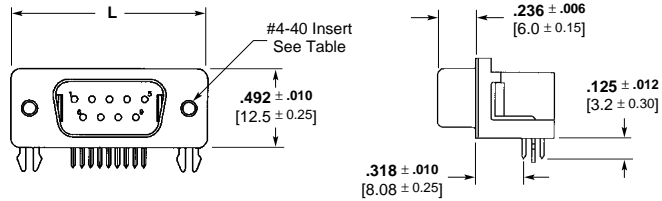
Boardlocks—Brass, tin or tin-lead plated

Female Screwlocks—Brass, nickel plated

Threaded Inserts—Brass, nickel plated

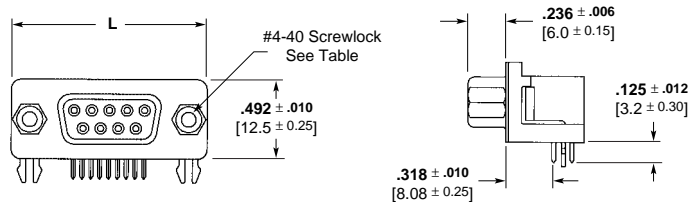
Technical Documents:

Product performance characteristics specified on customer drawings.



Typical Plug

Shell Size	Contact Finish	Dimension L Ref.	With Female Screwlocks	With 4-40 Threaded Inserts
9	A	1.210	788753-1	788754-1
	B	30.80	788753-2	788754-2
15	A	1.540	—	1364027-1
	B	39.20	—	1364027-2
25	A	2.090	788782-1	788755-1
	B	53.10	788782-2	788755-2



Typical Receptacle

Shell Size	Contact Finish	Dimension L Ref.	With Female Screwlocks	With 4-40 Threaded Inserts
9	A	1.210	788756-1	788750-1
	B	30.80	788756-2	788750-2
15	A	1.540	788781-1	788757-1
	B	39.20	788781-2	788757-2
25	A	2.090	788751-1	788752-1
	B	53.10	788751-2	788752-2

AMPLIMITE 2000 Subminiature Connectors

HD-20 and HD-22 Slim Line Connectors

2 Rows of Solderails

Material and Finish:

Housing—94V-0 rated thermoplastic, black

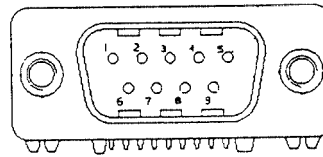
Shell—Low carbon steel, nickel plated

Contacts—Phosphor bronze or brass

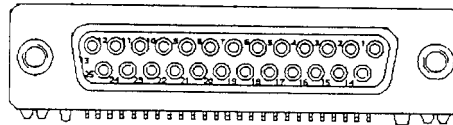
Contact Plating—Gold flash on mating area; .000100 [0.00254] min. tin-lead on solder tail area; overall .000050 [0.00127] min. nickel underplate

Boardlocks—Brass, tin-lead plated over nickel underplate

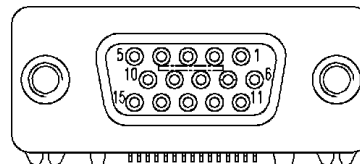
Threaded Inserts—Brass, nickel plated



9 Position Plug
Part Number 788573-1



25 Position Receptacle
Part Number 788575-1



15 Position VESA Receptacle HD-22
Part Number 788754-1

1 Row of Solderails

Material and Finish:

Housing—94V-0 rated thermoplastic, black

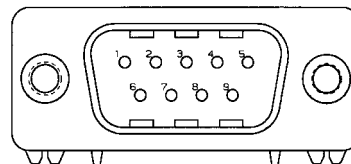
Shell—Low carbon steel, nickel plated

Contacts—Brass

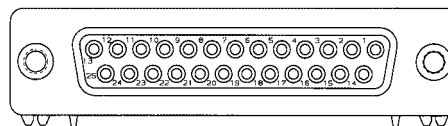
Contact Plating—.000015 [0.00038] min. gold on mating area; .000100 [0.00254] min. tin-lead on solder tail area; overall .000050 [0.00127] min. nickel underplate

Boardlocks—Brass, tin-lead plated over nickel underplate

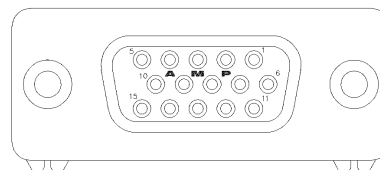
Threaded Inserts—Brass, nickel plated



9 Position Plug
Part Number 788490-1



25 Position Receptacle
Part Number 788489-1



15 Position VESA Receptacle HD-22
Part Number 788491-1

HD-20 and HD-22 Slim Line Connectors

HD-22 Right-Angle Posted Subminiature D Connectors**Product Facts**

- Flame retardant thermoplastic housing material, UL94V-0 rated
- Low cost front metal shell design compatible with full metal-shell connectors
- Integral boardlock versions secure connectors to pc boards prior to soldering
- Contacts available in platings to satisfy different applications
- Integral threaded inserts and screwlocks available
- Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476

**HD-22 Front Metal Shell .350 [8.89] PCB Footprint**

Plug



Receptacle

HD-22 Right-Angle Posted Subminiature D Connectors (Continued)

Material and Finish:

Housing—94V-0 rated thermoplastic, black

▲ VESA Std. 15-position Receptacle Housing Material—Thermoplastic 94V-0 blue per VESA Std.

Shell—Steel, nickel plated

Contacts

Pins—Brass

Sockets—Phosphor bronze

Contact Plating—

Gold flash, .000010 [0.00025] or .000030 [0.00076] on mating end, tin lead on solder tails with overall nickel underplate

Boardlocks—Brass, tin plated

Female Screwlocks—Brass, nickel plated

Threaded Inserts—Brass, tin plated

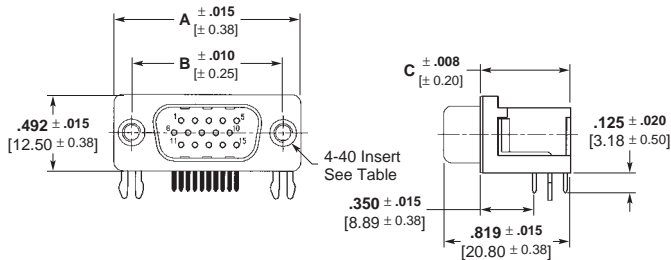
Technical Documents:

Product Specification—108-1092

Application Specification—114-40021

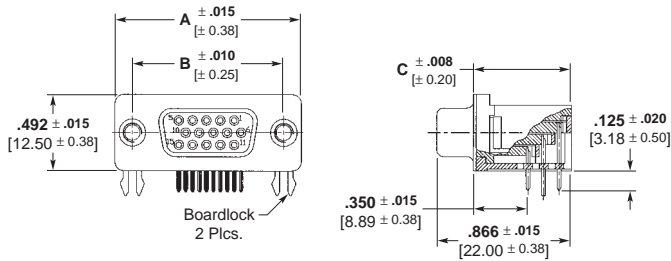
See customer drawings for printed circuit board layouts.

■ Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476



Right-Angle Plug

No. of Contact Positions	Dimensions			Mounting Hardware	PCB Mounting Style	Part Numbers		
	A	B	C			Gold Flash	15µ" Gold	30µ" Gold
15	1.212	.984	.582	4-40 inserts	board locks	749767-3	749767-2	749767-1
	30.81	24.99	14.80	4-40 screw locks	board locks	749768-3	749768-2	749768-1
26	1.543	1.312	.583	4-40 inserts	board locks	749769-3	749769-2	749769-1
	39.20	33.32	14.81	4-40 screw locks	board locks	749771-3	749771-2	749771-1
44	2.089	1.852	.593	4-40 inserts	board locks	749771-3	749771-2	749771-1
62	2.732	2.500	.593	4-40 inserts	board locks	749639-3	749639-2	749639-1
	69.40	63.50	15.06	4-40 screw locks	board locks	749234-3	749234-2	749234-1
78	2.638	2.400	.693	4-40 screw locks	board locks	749234-3	749234-2	749234-1
	67.00	61.00	17.60					



Right-Angle Receptacle

No. of Contact Positions	Dimensions			Mounting Hardware	PCB Mounting Style	Part Numbers		
	A	B	C			Gold Flash	15µ" Gold	30µ" Gold
15	1.212	.984	.630	4-40 inserts	board locks	1-1470250-1	1-1470250-2	1-1470250-3
	30.81	25.00	16.00	4-40 screw locks	board locks	1470250-1	1470250-2	1470250-3
▲ 15 VESA	1.212	.984	.630	4-40 inserts	board locks	788624-1	—	2-788624-3
	30.81	25.00	16.00	4-40 screw locks	board locks	1-788740-1	1-788740-2	3-788740-1
26	1.543	1.311	.593	4-40 inserts	board locks	2-748481-3	2-748481-2	748481-5
	39.20	44.32	15.06	4-40 screw locks	board locks	2-748481-5	2-748481-4	748481-6
44	2.089	1.852	.583	4-40 inserts	board locks	2-748482-4	2-748482-3	748482-5
	53.05	47.04	14.81	4-40 screw locks	board locks	—	2-748482-5	—
62	2.732	2.500	.583	4-40 inserts	board locks	2-748394-4	2-748394-3	748394-5
	69.40	63.50	14.81	4-40 screw locks	board locks	2-748394-6	2-748394-5	748394-6
78	2.638	2.400	.693	4-40 inserts	board locks	2-748483-1	2-748483-0	748483-5
	67.00	61.00	17.60	4-40 screw locks	board locks	2-748483-3	2-748483-2	748483-6
	67.00	61.00	17.60					

Right-Angle Subminiature D Connectors

HD-20 Front Metal-Shell Right-Angle Posted Connectors 318 Mount

Post Size—.026 [0.66] Dia.

Plug



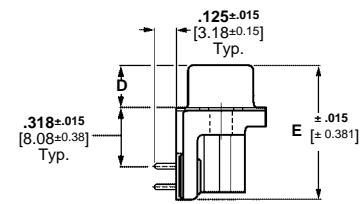
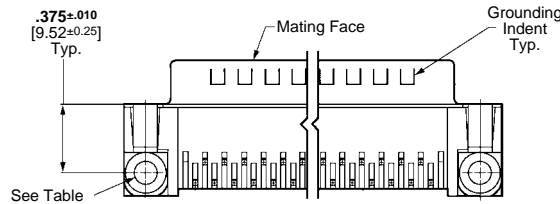
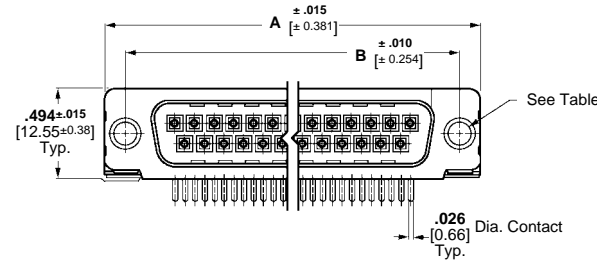
With Grounding Indents and Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin-lead plated
- Pin Contacts (Posted)**—Brass, duplex plated as follows:
 - A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
 - B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40010
- See customer drawings for printed circuit board layouts.

- **Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR 7189**



.318 [8.08] Board Mount Footprint

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Plug Part Numbers					
							Without Boardlocks			With Boardlocks		
							With Standard Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	With Standard Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	.235 5.97	.733 18.62	A	747250-2	747250-4	747250-6	747840-2	747840-4	747840-6
						B	—	747250-3	—	—	747840-3	747840-5
2	15	1.541 39.14	1.312 33.33	.235 5.97	.733 18.62	A	747236-2	747236-4	747236-6	747841-2	747841-4	747841-6
						B	—	747236-3	—	—	747841-3	—
3	25	2.088 53.04	1.852 47.04	.230 5.84	.738 18.75	A	747238-2	747238-4	747238-6	747842-2	747842-4	747842-6
						B	747238-1	747238-3	—	—	747842-3	747842-5
4	37	2.729 69.32	2.500 63.50	.230 5.84	.740 18.80	A	747252-2	747252-4	—	747843-2	747843-4	747843-6
						B	—	—	—	—	747843-3	—

- Notes:**
- All plug connectors are preloaded with size 20 DF posted pin contacts.
 - Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
 - Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

HD-20 Front Metal-Shell Right-Angle Posted Connectors 318 Mount (Continued)

Post Size—.026 [0.66] Dia.

Receptacle



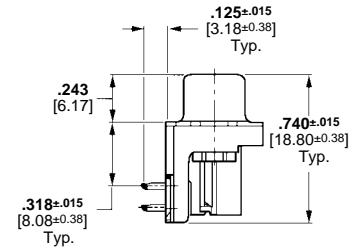
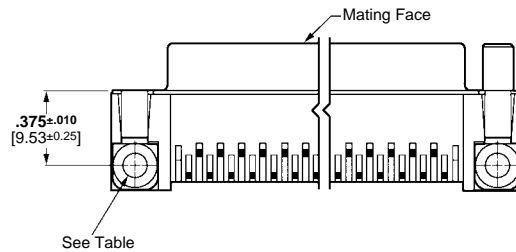
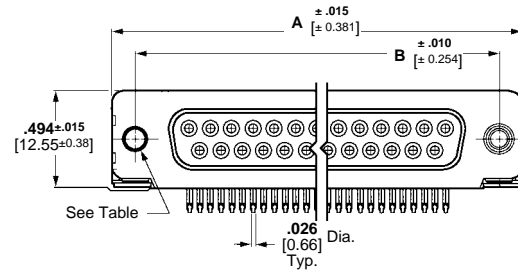
With Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin-lead plated
- Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:
 - A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
 - B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40010

.318 [8.08] Board Mount Footprint

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Receptacle Part Numbers					
					Without Boardlocks			With Boardlocks		
					A	B	With Standard Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	With Standard Mounting Holes
1	9	1.213 30.81	.984 24.99	A	745781-2	745781-4	745781-6	747844-2	747844-4	747844-6
				B	—	745781-3	—	—	747844-3	747844-5
2	15	1.541 39.14	1.312 33.33	A	745782-2	745782-4	745782-6	747845-2	747845-4	747845-6
				B	—	—	—	—	747845-3	747845-5
3	25	2.088 53.04	1.852 47.04	A	745783-2	745783-4	745783-6	747846-2	747846-4	747846-6
				B	—	745783-3	745783-5	—	747846-3	747846-5
4	37	2.729 69.32	2.500 63.50	A	745784-2	745784-4	745784-6	—	747847-4	747847-6

- Notes:**
- All receptacle connectors are preloaded with size 20 DF posted socket contacts.
 - Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
 - Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

HD-20 Front Metal-Shell Right-Angle Posted Connectors 318 Mount (Continued)

Post Size—.026 [0.66] Dia.

Plug



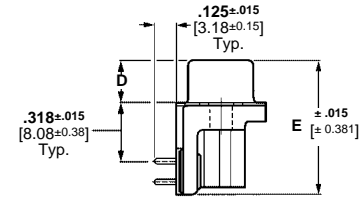
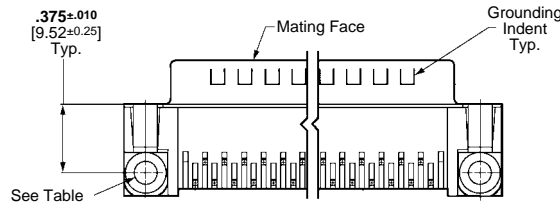
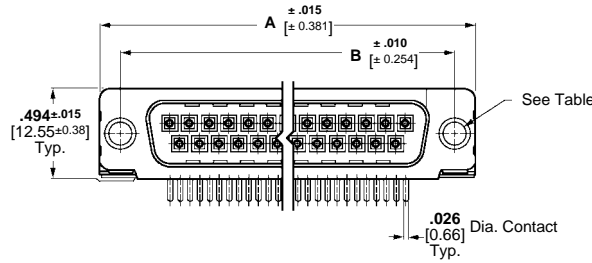
With Grounding Indents and Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, compatible with standard wave, vapor phase, and infra-red reflow (SMT) soldering, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin-lead plated
- Pin Contacts (Posted)**—Brass, duplex plated as follows:
A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

- Technical Documents:**
- Product Specification**—108-40025
- Application Specification**—114-40010

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Plug Part Numbers With Boardlocks	
		A	B	D	E		With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213	.984	.235	.733	A	788792-1	788793-1
		30.81	24.99	5.97	18.62	B	788792-2	788793-2
3	25	2.088	1.852	.230	.738	A	788794-1	788795-1
		53.04	47.04	5.84	18.75	B	788794-2	—

- Notes:**
1. All plug connectors are preloaded with size 20 DF posted pin contacts.
 2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

.318 [8.08] Board Mount Footprint

HD-20 Front Metal-Shell Right-Angle Posted Connectors 318 Mount (Continued)

Post Size—.026 [0.66] Dia.

Receptacle



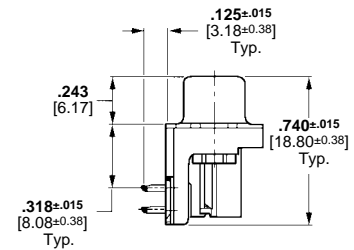
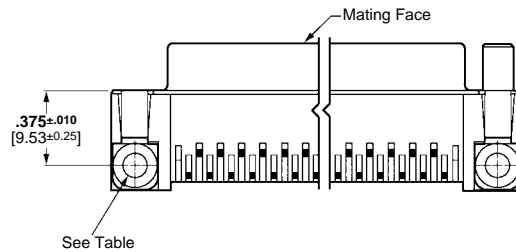
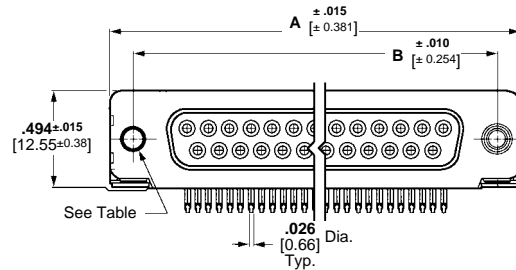
With Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



.318 [8.08] Board Mount Footprint

Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, compatible with standard wave, vapor phase, and infra-red reflow (SMT) soldering, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin-lead plated
- Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:
 - A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
 - B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40010

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Receptacle Part Numbers		
		A	B		Without Boardlocks		With Boardlocks
					With Fixed Female Screwlocks	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213	.984	A	788803-1	788796-1	788797-1
		30.81	24.99	B	—	788796-2	788797-2
2	15	1.541	1.312	A	—	788798-1	788799-1
		39.14	33.33	B	—	788798-2	—
3	25	2.088	1.852	A	—	788800-1	788801-1
		53.04	47.04	B	—	788800-2	788801-2
4	37	2.729	2.500	A	—	788802-1	—
		69.32	63.50				

- Notes:**
1. All receptacle connectors are preloaded with size 20 DF posted socket contacts.
 2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

HD-20 Full Metal-Shell Right-Angle Posted Connectors 454 Mount



Post Size—.025 [0.64] Sq.

Material and Finish:

Shell—Steel, tin plated

Insert—94V-0 rated thermoplastic, black

Contacts (Posted):

Pin—Brass

Socket—Phosphor bronze

Contact Plating:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

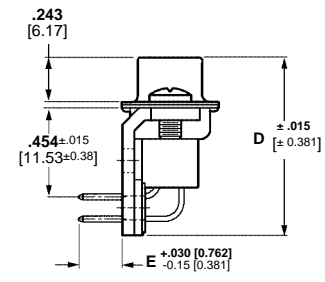
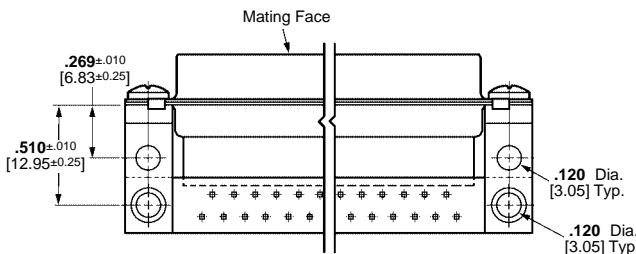
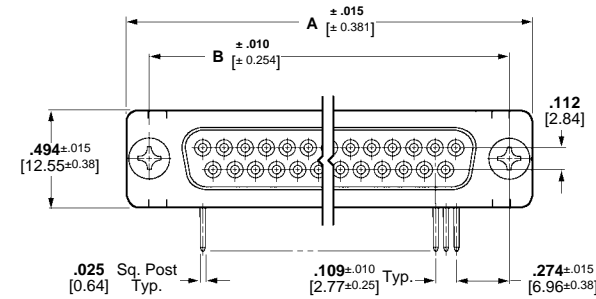
Technical Documents:

Product Specification—108-40025

Application Specification—114-40013

See customer drawings for printed circuit board layouts.

Receptacle



Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Part Number
		A	B	D	E		
1	9	1.213 30.81	.984 24.99	.915 23.24	.125 3.18	A	745438-4
					.220 5.59	B	745438-3
2	15	1.541 39.14	1.312 33.33	.915 23.24	.125 3.18	A	745439-4
					.220 5.59	A	745439-2
3	25	2.088 53.04	1.852 47.04	.919 23.34	.125 3.18	A	745440-4
					.220 5.59	B	745440-1
4	37	2.729 69.32	2.500 63.50	.919 23.34	.125 3.18	A	745441-4
					.220 5.59	B	—

- Notes:**
- All connectors are preloaded with size 20 DF posted contacts; plugs with pin contacts and receptacles with socket contacts.
 - .125 [3.18] post length is recommended for pc board thickness of .093 [2.36] max.; .220 [5.59] post length is recommended for pc board thickness of .125 [3.18] max.

.454 [11.53] Board Mount Footprint

HD-20 Full Metal-Shell Right-Angle Posted Connectors 454 Mount (Continued)

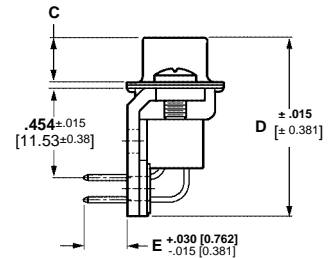
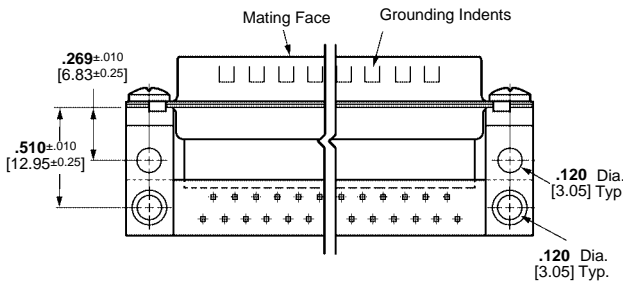
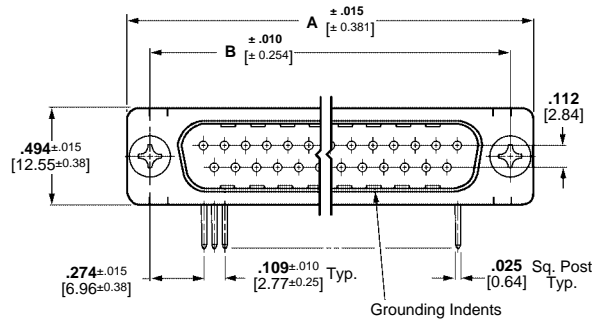
Plug



Without Grounding Indents



With Grounding Indents



Post Size—.025 [0.64] Sq.

Material and Finish:

Shell—Steel, tin plated

Insert—94V-0 rated thermoplastic, black

Contacts (Posted):

Pin—Brass

Socket—Phosphor bronze

Contact Plating:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

Product Specification—108-40025

Application Specification—114-40013

Shell Size	No. of Contact Positions	Dimensions					Contact Finish (Plating Code)	Part Numbers With Grounding Indents
		A	B	C	D	E		
1	9	1.213 30.81	.984 24.99	.235 5.97	.915 23.24	.125 3.18	A	745434-8
						.220 5.59	B	—
2	15	1.541 39.14	1.312 33.33	.235 5.97	.915 23.24	.125 3.18	A	745435-8
						.220 5.59	A	—
3	25	2.088 53.04	1.852 47.04	.230 5.84	.919 23.34	.125 3.18	A	—
						.220 5.59	B	745436-3
4	37	2.729 69.32	2.500 63.50	.230 5.84	.919 23.34	.125 3.18	A	745437-8
						.220 5.59	B	745437-3

- Notes:**
- All connectors are preloaded with size 20 DF posted contacts; plugs with pin contacts and receptacles with socket contacts.
 - .125 [3.18] post length is recommended for pc board thickness of .093 [2.36] max.; .220 [5.59] post length is recommended for pc board thickness of .125 [3.18] max.

.454 [11.53] Board Mount Footprint

HD-20 Front Metal-Shell Right-Angle Posted Connectors 478 Mount

Post Size—.026 [0.66] Dia.

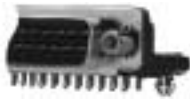
Plug



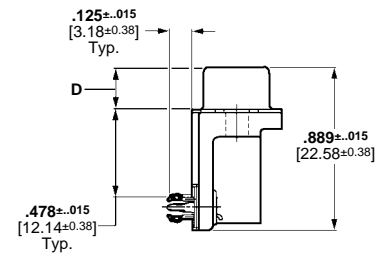
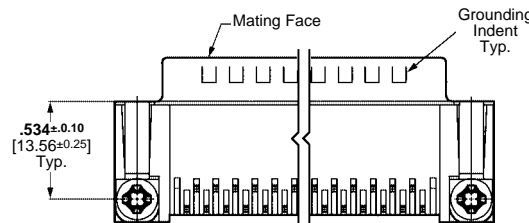
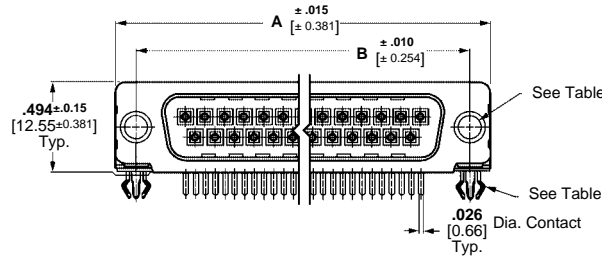
With Grounding Indents and Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin-lead plated
- Pin Contacts (Posted)**—Brass, duplex plated as follows:
 - A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
 - B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40010

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Plug Part Number With Boardlocks	
		A	B	D		With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	.235 5.97	A	747848-4	—
3	25	2.088 53.04	1.852 47.04	.230 5.84	A	—	747850-6

- Notes:**
1. All plug connectors are preloaded with size 20 DF posted pin contacts.
 2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

.478 [12.14] Board Mount Footprint

HD-20 Front Metal-Shell Right-Angle Posted Connectors 478 Mount (Continued)

Post Size—.026 [0.66] Dia.

Receptacle



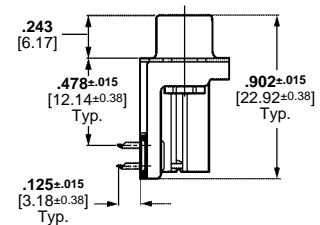
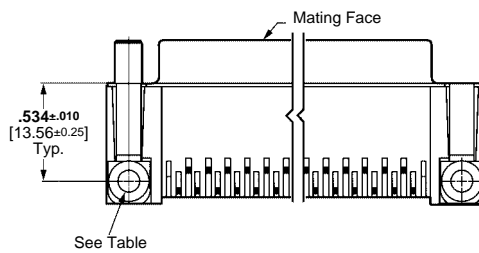
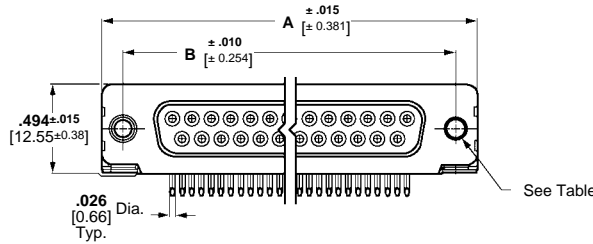
With Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin-lead plated
- Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:
 - A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
 - B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40010

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Receptacle Part Numbers	
		A	B		Without Boardlocks	With Boardlocks
1	9	1.213 30.81	.984 24.99	A	747418-4	747852-4
2	15	1.541 39.14	1.312 33.33	A	—	747853-4
3	25	2.088 53.04	1.852 47.04	A	—	747854-4

- Notes:**
1. All receptacle connectors are preloaded with size 20 DF posted socket contacts.
 2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

.478 [12.14] Board Mount Footprint

HD-20 Full Metal-Shell Right-Angle Posted Connectors 545 Mount

Post Size—.025 [0.64] Sq.

Plug



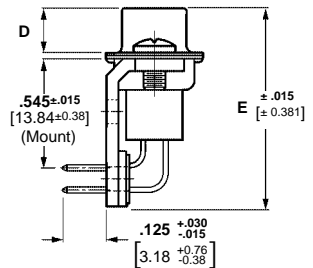
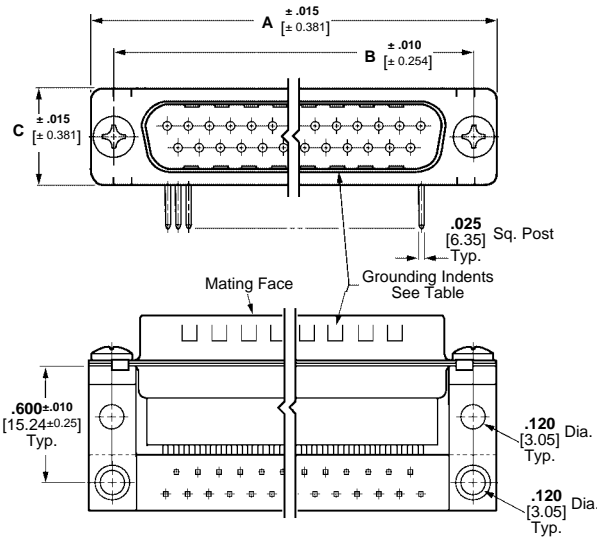
Without Grounding Indents



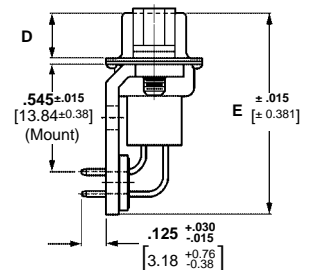
With Grounding Indents



With 4-40 Female Screwlocks



With Standard Mounting Screws



With 4-40 Female Screwlocks

Material and Finish:

- Shell**—Steel, tin plated
- Insert**—94V-0 rated thermoplastic, black
- Female Screwlock**—Steel, zinc plated
- Pin Contacts (Posted)**—Brass, duplex plated as follows:
 - A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
 - B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40013

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Pos.	Dimensions					Contact Finish (Plating Code)	Plug Part Numbers		
		A	B	C	D	E		Without Grounding Indents	With Grounding Indents	
								With Standard Mounting Screws*	With Standard Mounting Screws	With Female Screwlocks
1	9	1.213 30.81	.984 24.99	.494 12.55	.235 5.99	1.025 26.04	A	745351-2	745351-4	747197-4
2	15	1.541 39.14	1.312 33.33	.494 12.55	.235 5.99	1.025 26.04	A B	— 745352-1	745352-4	— —
3	25	2.088 53.04	1.852 47.04	.494 12.55	.230 5.84	1.029 26.14	A	—	—	747022-2
4	37	2.729 69.32	2.500 63.50	.494 12.55	.230 5.84	1.029 26.14	A	—	745354-4	—
5	50	2.635 66.93	2.406 61.11	.605 15.37	.230 5.84	1.149 29.19	A B	— —	745355-4	747497-4 747497-3

*These plugs can be made available with female screwlocks, consult Tyco Electronics.
Notes: 1. All plugs are preloaded with size 20 DF posted pin contacts.
 2. Recommended pc board thickness is .093 [2.36] max.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

.545 [13.84] Board Mount Footprint

HD-20 Full Metal-Shell Right-Angle Posted Connectors 545 Mount (Continued)

Post Size—.025 [0.64] Sq.

Receptacle



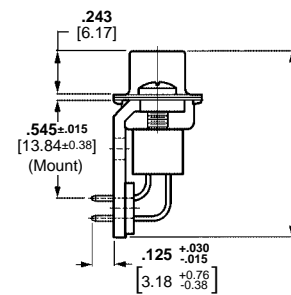
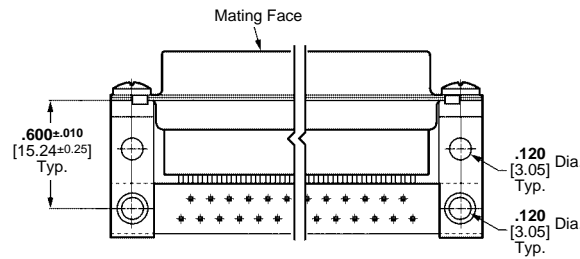
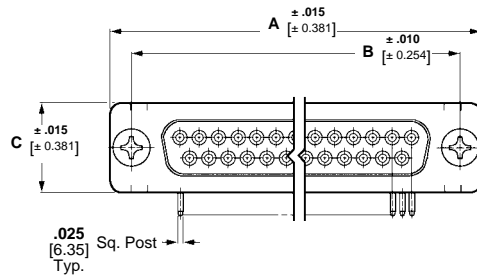
With 4-40 Female Screwlocks

Material and Finish:

- Shell**—Steel, tin plated
- Insert**—94V-0 rated thermoplastic, black
- Female Screwlock**—Steel, zinc plated
- Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:
 - A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
 - B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40013



Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Receptacle Part Numbers	
		A	B	C	E		With Standard Mounting Screws	With Female Screwlocks
1	9	1.213	.984	.494	1.033	A	745112-2	747020-2
		30.81	24.99	12.55	26.24	B	—	747020-1
2	15	1.541	1.312	.494	1.033	A	745113-2	747021-2
		39.14	33.33	12.55	26.24			
3	25	2.088	1.852	.494	1.033	A	745114-2	745536-2
		53.04	47.04	12.55	26.24			
4	37	2.729	2.500	.494	1.033	A	745115-2	—
		69.32	63.50	12.55	26.24			
5	50	2.635	2.406	.605	1.153	A	745116-2	747193-2
		66.93	61.11	15.37	29.29	B	745116-1	747193-1

- Notes:**
1. All receptacles are preloaded with size 20 DF posted socket contacts.
 2. Recommended pc board thickness is .093 [2.36] max.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

.545 [13.84] Board Mount Footprint

HD-20 Front Metal-Shell Right-Angle Posted Connectors 590 Mount

Post Size—.026 [0.66] Dia.

Plug



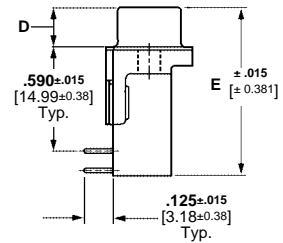
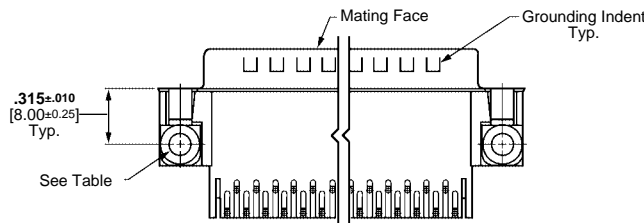
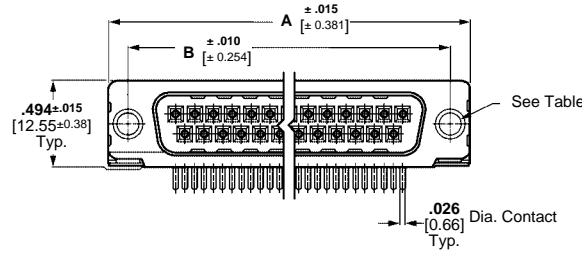
With Grounding Indents and Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin-lead plated
- Pin Contacts (Posted)**—Brass, duplex plated as follows:
 - A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
 - B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40010

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Plug Part Numbers		
		A	B	D	E		Without Boardlocks		With Boardlocks
							With Threaded Inserts	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	.235 5.97	.965 24.51	A	745990-4	747832-4	747832-6
						B	745990-3	747832-3	—
2	15	1.541 39.14	1.312 33.33	.235 5.97	.965 24.51	A	—	747833-4	747833-6
						A	745994-4	747834-4	747834-6
3	25	2.088 53.04	1.852 47.04	.230 5.84	.970 24.64	A	—	747835-4	747835-6
						A	—	747835-4	747835-6

- Notes:**
1. All plug connectors are preloaded with size 20 DF posted pin contacts.
 2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

.590 [14.99] Board Mount Footprint

HD-20 Front Metal-Shell Right-Angle Posted Connectors 590 Mount (Continued)

Post Size—.026 [0.66] Dia.

Receptacle



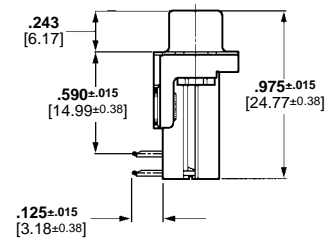
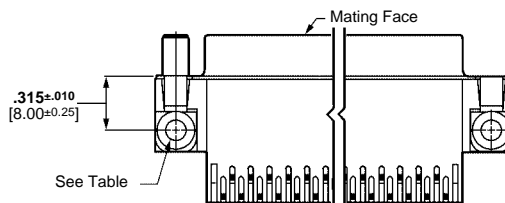
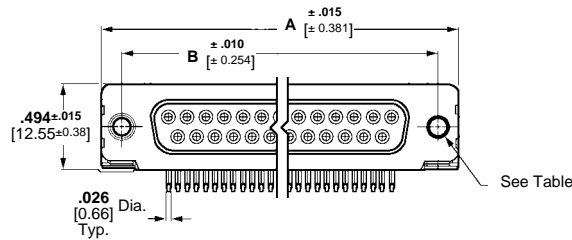
With Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin-lead plated
- Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:
 - A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
 - B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40010

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Receptacle Part Numbers			
		A	B		Without Boardlocks		With Boardlocks	
					With Threaded Inserts	With Fixed Female Screwlocks	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	A	745988-4	745988-6	747836-4	747836-6
2	15	1.541 39.14	1.312 33.33	A	745984-4	—	747837-4	—
3	25	2.088 53.04	1.852 47.04	A	—	745992-6	747838-4	747838-6
				B	745992-3	—	747838-3	—
4	37	2.729 69.32	2.500 63.50	A	745996-4	—	747839-4	—

- Notes:**
1. All receptacle connectors are preloaded with size 20 DF posted socket contacts.
 2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

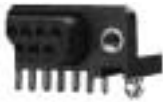
.590 [14.99] Board Mount Footprint

HD-20 All-Plastic Right-Angle Posted Connectors 318 Mount

Receptacle—With Boardlocks



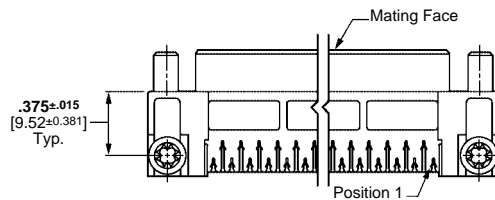
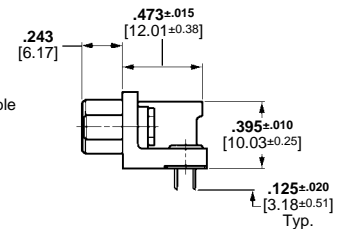
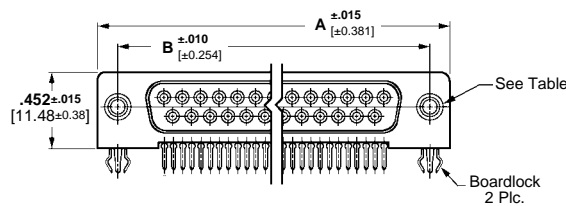
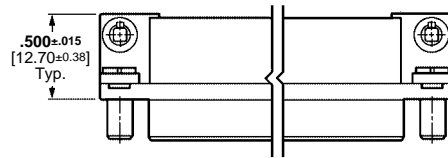
With Threaded Insert



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

Housing—94V-0 rated thermoplastic, black

Eyelets—Brass, tin plated

Threaded Inserts—Zinc

Female Screwlock—Zinc

Boardlock—Copper alloy, tin-lead plated

Socket Contacts (Posted)—

Phosphor bronze, duplex plated as follows:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

Product Specification—108-1226

Application Specification—114-40027

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers	
		A	B		With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.222 31.04	.984 24.99	A	—	748979-1
3	25	2.090 53.09	1.852 47.04	A	748901-1	748981-1

Consult Tyco Electronics for availability.

- Notes:**
1. All receptacle connectors are preloaded with size 20 DF posted socket contacts.
 2. Recommended pc board thickness is .062 [1.58].
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

.318 [8.08] Board Mount Footprint

HD-20 All-Plastic Right-Angle Posted Connectors 318 Mount (Continued)

Plug



With Threaded Insert

Material and Finish:

Housing—94V-0 rated thermoplastic, black

Eyelets—Brass, tin plated

Threaded Inserts—Zinc

Boardlock—Copper alloy, tin-lead plated

Pin Contacts (Posted)—Copper alloy, duplex plated as follows:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

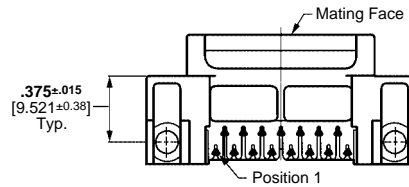
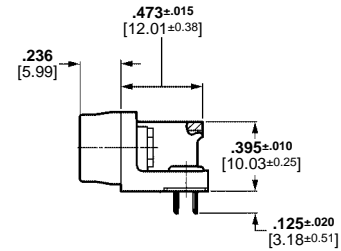
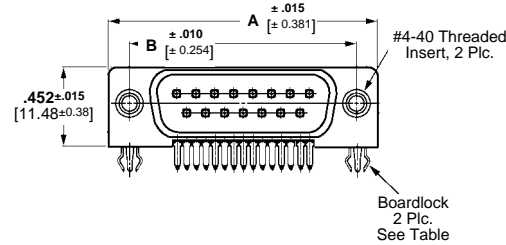
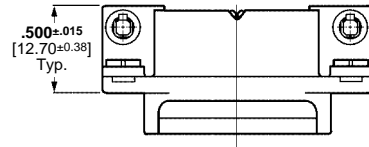
B—.000010 [0.00025] min. gold on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

Product Specification—108-1226

Application Specification—114-40027

See customer drawings for printed circuit board layouts.



Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers With Threaded Inserts	
		A	B		With Boardlocks	Without Boardlocks
2	15	1.550 39.37	1.312 33.32	A	748904-1	—
3	25	2.090 53.09	1.852 47.04	B	—	748865-3

Consult Tyco Electronics for availability.

Notes: 1. All plug connectors are preloaded with size 20 DF posted pin contacts.

2. Recommended pc board thickness is .062 [1.58].

3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

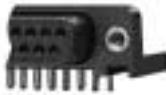
HD-20 All-Plastic Right-Angle Posted Connectors 318 Mount (Continued)

Post Size—.026 [0.66] Dia.

Receptacle—Without Boardlocks



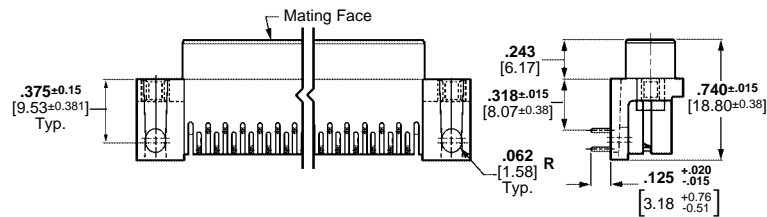
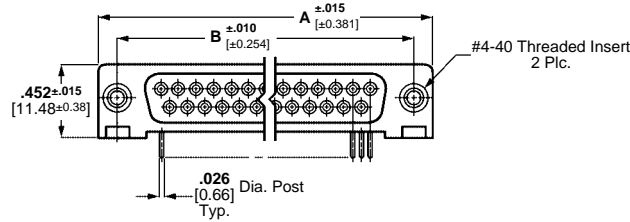
With Standard Mounting Holes



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

Housing—94V-0 rated thermoplastic, black

Threaded Inserts—Zinc, chromate coated

Female Screwlocks—Zinc, chromate coated

Socket Contacts (Posted)—Phosphor bronze, duplex plated as follows:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

Product Specification—108-40025

Application Specification—114-40015

See customer drawings for printed circuit board layouts.

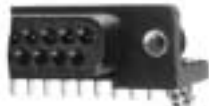
Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers		
		A	B		With Threaded Inserts	With Fixed Female Screwlocks	With .125 [3.18] Mounting Holes
1	9	1.213	.984	A	745394-2	745395-2	—
		30.81	24.99	B	—	—	745131-1
2	15	1.541	1.312	A	—	745396-2	745271-2
		39.14	33.32	B	—	—	—
3	25	2.088	1.852	A	745392-2	745397-2	745132-2
		53.04	47.04	B	—	—	—

- Notes:**
1. All receptacle connectors are preloaded with size 20 DF posted socket contacts.
 2. Recommended pc board thickness is .093 [2.36].
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

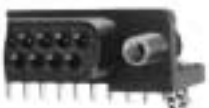
.318 [8.08] Board Mount Footprint

HD-20 All-Plastic Right-Angle Posted Connectors 590 Mount

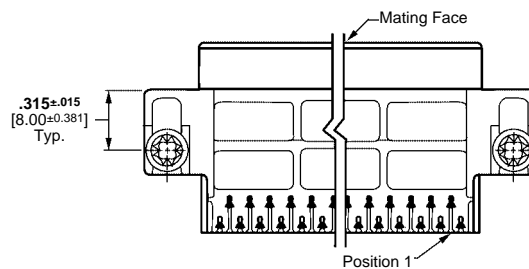
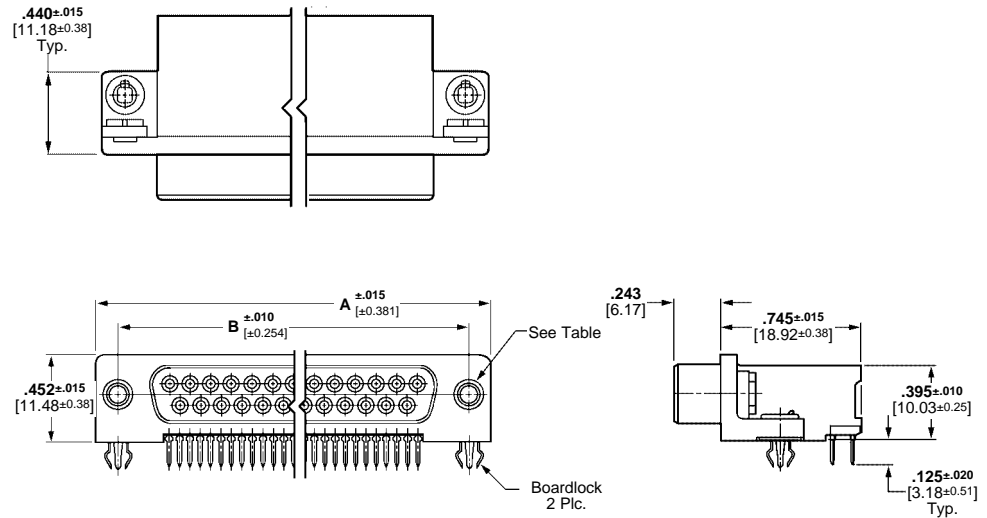
Receptacle—With Boardlocks



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

Housing—94V-0 rated thermoplastic, black

Eyelets—Brass, tin plated

Threaded Inserts—Zinc

Female Screwlock—Zinc

Boardlock—Copper alloy, tin-lead plated

Socket Contacts (Posted)—Phosphor bronze, duplex plated as follows:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

Product Specification—108-1226

Application Specification—114-40027

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers	
		A	B		With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	B	748907-2	—
3	25	2.088 53.04	1.852 47.04	A	748909-1	748989-1

- Notes:**
1. All receptacle connectors are preloaded with size 20 DF posted socket contacts.
 2. Recommended pc board thickness is .062 [1.58].
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

HD-20 All-Plastic Right-Angle Posted Connectors 590 Mount (Continued)

Post Size—.026 [0.66] Dia.

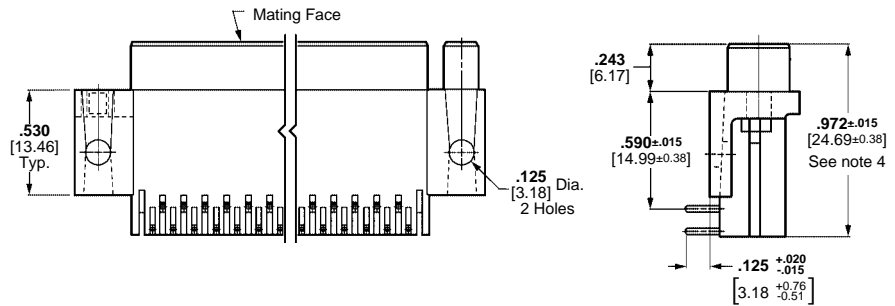
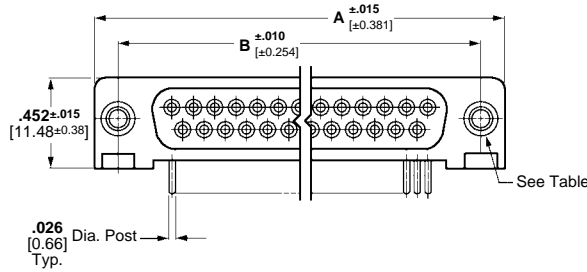
Receptacle—Without Boardlocks



With Threaded Insert



With Female Screwlock



Material and Finish:

Housing—94V-0 rated thermoplastic, black

Threaded Inserts—Zinc, chromate coated

Female Screwlocks—Zinc, chromate coated

Socket Contacts (Posted)—Phosphor bronze, duplex plated as follows:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

Product Specification—108-40025

Application Specification—114-40015

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers		
		A	B		With Threaded Inserts	With Fixed Female Screwlocks	With .125 [3.18] Mounting Holes
1	9	1.213	.984	A	747459-4	747459-6	747459-2
		30.81	24.99	B	747459-3	747459-5	747459-1
2	15	1.541	1.312	A	747460-4	748948-1	747460-2
		39.14	33.32	B	747460-3	747460-5	747460-1
3	25	2.088	1.852	A	747461-4	747461-6	747461-2
		53.04	47.04	B	747461-3	747461-5	747461-1
4	37	2.729	2.500	A	747462-4	747462-6	747462-2
		69.32	63.50	B	—	—	—
5	50	2.635	2.406	A	—	—	206973-1
		66.93	61.11	B	—	—	206973-2

- Notes:**
- All receptacle connectors are preloaded with size 20 DF posted socket contacts.
 - Recommended pc board thickness is .093 [2.36] max.
 - Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.
 - Dimension is 1.120 [28.45] for size 5 d-sub.

HD-20 All-Plastic Right-Angle Posted Connectors 590 Mount (Continued)

Post Size—.026 [0.66] Dia.

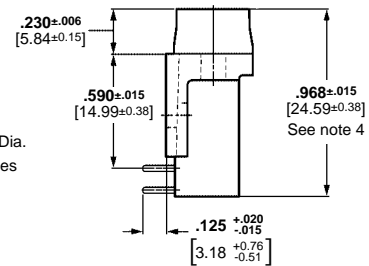
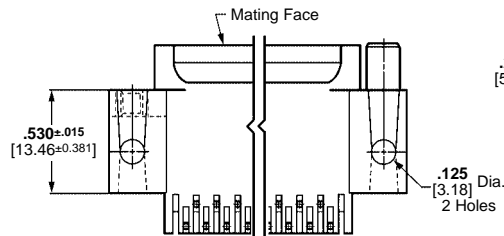
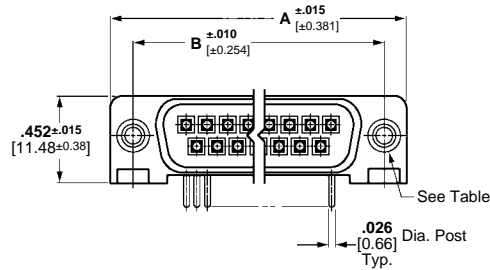
Plug—Without Boardlocks



With Threaded Insert



With Female Screwlocks



Material and Finish:

Housing—94V-0 rated thermoplastic, black

Threaded Inserts—Zinc, chromate coated

Female Screwlocks—Zinc, chromate coated

Pin Contacts (Posted)—Brass, duplex plated as follows:
A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Technical Documents:

Product Specification—108-40025

Application Specification—114-40015

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers		
		A	B		With Threaded Inserts	With Fixed Female Screwlocks	With .125 [3.18] Mounting Holes
1	9	1.213	.984	A	747467-4	—	747467-2
		30.81	24.99	B	—	—	747467-1
2	15	1.541	1.312	A	748872-1	748952-1	747468-2
		39.14	33.32	B	—	—	—
3	25	2.090	1.852	A	748873-1	748953-1	748826-1
		53.09	47.04	B	—	—	748826-2
4	37	2.729	2.500	A	—	—	747470-2
		69.32	63.50	B	—	—	—
5	50	2.635	2.406	A	—	—	206971-1
		66.93	61.11	B	—	—	206971-2

- Notes:**
1. All plug connectors are preloaded with size 20 DF posted pin contacts.
 2. Recommended pc board thickness is .093 [2.36] max.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.
 4. Dimension is 1.115 [28.32] for size 5 d-sub, GPL244.

.590 [14.99] Board Mount Footprint



Right-Angle Mounting Connectors — European Standard Footprint

Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—Black glass-filled polyester
- Flammability**—UL 94V-0
- Contact Material**—
- Pin**—Phosphor bronze
- Socket**—Phosphor bronze
- Contact Area Plating**—0.76µm Gold
- Current Rating**—6A max.
- Insulation Resistance**—5000 MΩ min.
- Dielectric Strength**—1000V AC min.
- Temperature Rating**—-55°C to +105°C

Plug with Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	338168-2	1-338168-2	3-338168-2	2-338168-2	4-338168-2
15	338169-2	1-338169-2	3-338169-2	2-338169-2	4-338169-2
25	338170-2	1-338170-2	3-338170-2	2-338170-2	4-338170-2
37	338171-2	1-338171-2	3-338171-2	2-338171-2	4-338171-2

Socket with Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	106505-2	1-106505-2	3-106505-2	2-106505-2	4-106505-2
15	106506-2	1-106506-2	3-106506-2	2-106506-2	4-106506-2
25	106507-2	1-106507-2	3-106507-2	2-106507-2	4-106507-2
37	106508-2	1-106508-2	3-106508-2	2-106508-2	4-106508-2

Plug without Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	5-338168-2	6-338168-2	8-338168-2	7-338168-2	9-338168-2
15	5-338169-2	6-338169-2	8-338169-2	7-338169-2	9-338169-2
25	5-338170-2	6-338170-2	8-338170-2	7-338170-2	9-338170-2
37	5-338171-2	6-338171-2	8-338171-2	7-338171-2	9-338171-2

Socket without Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	5-106505-2	6-106505-2	8-106505-2	7-106505-2	9-106505-2
15	5-106506-2	6-106506-2	8-106506-2	7-106506-2	9-106506-2
25	5-106507-2	6-106507-2	8-106507-2	7-106507-2	9-106507-2
37	5-106508-2	6-106508-2	8-106508-2	7-106508-2	9-106508-2



Right-Angle Mounting Connectors — Eurostyle Footprint

Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—Grey thermoplastic PBTP
- Flammability**—UL 94V-0
- Contact Material**—
- Pin**—Copper alloy
- Socket**—Copper alloy
- Contact Area Plating**—Nickel/Gold (>250 mating cycles)
- Current Rating**—2.2A
- Insulation Resistance**—5000 MΩ min.
- Dielectric Strength**—1000V AC
- Temperature Rating**—-55°C to +125°C

Plug with Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	5-1393480-9	8-1393480-5	1393481-5	7-1393480-4	9-1393480-4
15	6-1393480-0	8-1393480-6	3-1392010-3	7-1393480-5	9-1393480-5
25	On Enquiry	8-1393480-7	1393481-6	7-1393480-6	9-1393480-6
37	On Enquiry	8-1393480-8	3-1392010-4	7-1393480-7	On Enquiry

Socket with Boardlocks — Solder Termination

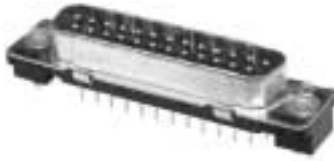
No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	5-1393480-5	8-1393480-1	9-1393480-9	6-1393480-7	9-1393480-0
15	5-1393480-6	8-1393480-2	1393481-1	6-1393480-8	9-1393480-1
25	5-1393480-7	8-1393480-3	1393481-2	6-1393480-9	9-1393480-2
37	On Enquiry	8-1393480-4	3-1392010-7	7-1393480-0	On Enquiry

Plug without Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	2-1393480-1	4-1393480-0	5-1393480-2	3-1393480-2	On Enquiry
15	2-1393480-2	4-1393480-1	5-1393480-3	3-1393480-3	On Enquiry
25	2-1393480-3	4-1393480-2	5-1393480-4	2-1392010-8	On Enquiry
37	2-1393480-4	4-1393480-3	3-1392010-5	3-1392010-6	On Enquiry

Socket without Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	1-1393480-7	3-1393480-6	4-1393480-7	2-1393480-8	On Enquiry
15	1-1393480-8	3-1393480-7	4-1393480-8	2-1393480-9	On Enquiry
25	1-1393480-9	3-1393480-8	4-1393480-9	3-1393480-0	On Enquiry
37	2-1393480-0	3-1393480-9	5-1393480-0	3-1392010-8	On Enquiry



Straight Mounting Connectors

Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—Black glass-filled polyester
- Flammability**—UL 94V-0
- Contact Material**—
- Pin**—Phosphor bronze
- Socket**—Phosphor bronze
- Contact Area Plating**—0.76µm Gold
- Current Rating**—6A max.
- Insulation Resistance**—5000 MΩ min.
- Dielectric Strength**—1000V AC
- Temperature Rating**—-55°C to +105°C

Plug with Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	1-338309-2	3-338309-2	2-338309-2	4-338309-2
15	—	1-338310-2	3-338310-2	2-338310-2	4-338310-2
25	—	1-338311-2	3-338311-2	2-338311-2	4-338311-2
37	—	1-338312-2	3-338312-2	2-338312-2	4-338312-2

Socket with Boardlocks — Solder Termination

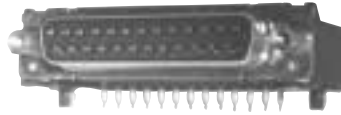
No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	1-338313-2	3-338313-2	2-338313-2	4-338313-2
15	—	1-338314-2	3-338314-2	2-338314-2	4-338314-2
25	—	1-338315-2	3-338315-2	2-338315-2	4-338315-2
37	—	1-338316-2	3-338316-2	2-338316-2	4-338316-2

Plug without Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	5-338309-2	6-338309-2	8-338309-2	7-338309-2	9-338309-2
15	5-338310-2	6-338310-2	8-338310-2	7-338310-2	9-338310-2
25	5-338311-2	6-338311-2	8-338311-2	7-338311-2	9-338311-2
37	5-338312-2	6-338312-2	8-338312-2	7-338312-2	9-338312-2

Socket without Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	5-338313-2	6-338313-2	8-338313-2	7-338313-2	9-338313-2
15	5-338314-2	6-338314-2	8-338314-2	7-338314-2	9-338314-2
25	5-338315-2	6-338315-2	8-338315-2	7-338315-2	9-338315-2
37	5-338316-2	6-338316-2	8-338316-2	7-338316-2	On Enquiry



Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—Black thermoplastic PBTP/PPS
- Flammability**—UL 94V-0
- Contact Material**—
- Pin**—Copper alloy
- Socket**—Copper alloy
- Contact Area Plating**—Nickel/Gold (>250 mating cycles)
- Current Rating**—2.2A
- Insulation Resistance**—5000 MΩ min.
- Dielectric Strength**—1000V AC
- Temperature Rating**—-55°C to +125°C

Plug with Boardlocks — Press Fit Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	3-1393481-2	3-1393481-8	2-1393481-5	On Enquiry
15	—	3-1393481-3	3-1393481-9	2-1393481-6	On Enquiry
25	—	3-1393481-4	2-1393497-7	2-1393481-7	On Enquiry
37	—	2-1392010-7	4-1393481-0	2-1393481-8	On Enquiry

Socket with Boardlocks — Press Fit Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	2-1393481-9	3-1393481-6	2-1393481-1	On Enquiry
15	—	3-1393481-0	2-1393497-4	2-1393481-2	On Enquiry
25	—	3-1393481-1	2-1393497-5	2-1393481-3	On Enquiry
37	—	2-1392010-6	2-1393497-6	2-1393481-4	On Enquiry

**Standard Density Press Fit Termination,
Right-Angle Mounting — Eurostyle Footprint**



Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—Black thermoplastic PBTP/PPS
- Flammability**—UL 94V-0
- Contact Material**—
- Pin**—Copper alloy
- Socket**—Copper alloy
- Contact Area Plating**—Nickel/Gold (>250 mating cycles)
- Current Rating**—2.2A
- Insulation Resistance**—5000 MΩ min.
- Dielectric Strength**—1000V AC
- Temperature Rating**—-55°C to +125°C

Plug with Boardlocks — Press Fit Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	On Enquiry	3-1393482-0	1-1393482-4	2-1393482-1
15	—	On Enquiry	3-1393482-2	3-1393497-0	4-1483489-2
25	—	On Enquiry	3-1393482-4	1-1393482-5	On Enquiry
37	—	On Enquiry	3-1393482-5	3-1393497-1	On Enquiry

Socket with Boardlocks — Press Fit Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	1-1393482-6	2-1393482-2	1-1393482-2	2-1393482-0
15	—	1-1393482-8	2-1393482-4	1-1393482-3	On Enquiry
25	—	3-1392010-9	2-1393482-6	9-1393487-2	On Enquiry
37	—	4-1392010-0	2-1393482-8	2-1393497-9	On Enquiry

Standard Density Press Fit Termination, Straight Mounting



Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—Black glass-filled polyester
- Flammability**—UL 94V-0
- Contact Material**—
- Pin**—Phosphor bronze
- Socket**—Phosphor bronze
- Contact Area Plating**—0.76µm Gold
- Current Rating**—2.2A
- Insulation Resistance**—
5000 MΩ min.
- Dielectric Strength**—1000V AC
- Temperature Rating**—
-55°C to +105°C

Plug with Boardlocks — Press Fit Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	1-338238-2	3-338238-2	2-338238-2	4-338238-2
15	—	1-338239-2	3-338239-2	2-338239-2	4-338239-2
25	—	1-338240-2	3-338240-2	2-338240-2	4-338240-2
37	—	1-338241-2	3-338241-2	2-338241-2	4-338241-2

Socket with Boardlocks — Press Fit Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	1-188987-2	3-188987-2	2-188987-2	4-188987-2
15	—	1-188988-2	3-188988-2	2-188988-2	4-188988-2
25	—	1-188989-2	3-188989-2	2-188989-2	4-188989-2
37	—	1-188990-2	3-188990-2	2-188990-2	4-188990-2

Press fit connectors require dedicated tooling and procedures for pcb assembly. Please refer to the application specification for full details.

Standard Density Press Fit Termination,
Straight Mounting

Right-Angle Mounting Connectors—Footprints

Right-Angle Mounting Connectors—Footprints

An Explanation of Footprints

Right-angle connectors can be confusing due to the seemingly endless range of styles offered. In fact, the situation is usually much simpler than it looks with the majority of standard density connectors in Europe falling into one of three footprint types. The footprint defines the relationship between the mounting holes, the pcb pins and the body of the connector. Connectors sharing the same footprint are considered to be

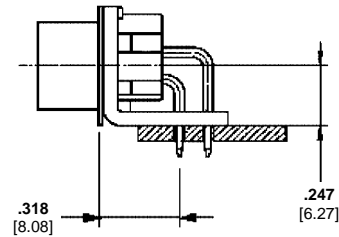
interchangeable, at least from a physical mounting perspective. The footprint is usually identified by a dimension from the front of the connector shell to either the first row of pins, in the case of the US footprint style, or to the centerline of the two rows of pins, in the case of the European styles. Either way, by identifying this dimension you can identify the footprint type and therefore the correct product to offer.

A further dimension that is commonly specified within the footprint type is the mounting height, being the distance between the upper side of the printed circuit board and the centerline of the connector. This dimension is again a standard for each footprint style.

For high density connectors the situation is simpler with one standard footprint generally used.

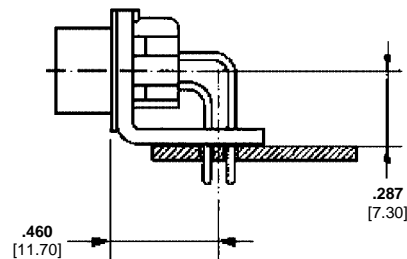
US Footprint

The most widely known of the right angle footprints, it remains the standard used within the computer industry. This footprint evolved originally from the US and is still the dominant type in the market. It is also widely used in Great Britain, but much less so on the continent where the European standard footprint is more common.



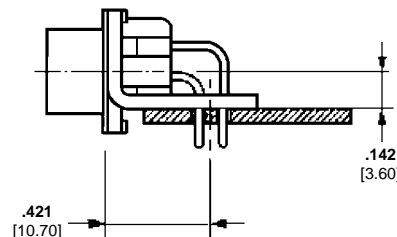
European Standard Footprint

The standard footprint type in Europe for many years, but now being increasingly replaced for new designs by the Eurostyle version. The dimensions within this footprint are defined by the standards DIN41652 and CECC 75 301-802.



Eurostyle Footprint

A relatively recent footprint style, offering the major benefit of a reduced mounting height of .142 [3.60]. This allows stacking of circuit boards employing D connectors at a much higher density than was previously possible. The term "Eurostyle" was actually introduced by Tyco Electronics when it first developed this product and has now become the industry standard terminology. Also defined dimensionally within DIN 41652 and CECC 75 301-802.



Subminiature D Connectors for Cable Mounting

This guide illustrates the preferred range of Subminiature D Connectors for cable mounting.

Please refer to our general catalogs or our website www.tycoelectronics.com for details of additional

ranges, connector styles, plating options and performance levels.

Standard Density Crimp Termination

Connector Housings

- Material and Finish:**
Front Shell—Steel, tin plated
Housing—Black glass-filled thermoplastic
Flammability—UL 94V-0
Current Rating—3.7A max.
Insulation Resistance—5000 MΩ min.
Dielectric Strength—1000V AC min.
Temperature Rating—-55°C to +105°C



Plug Connector Housing

No of Ways	Part Number
9	167292-1
15	167293-1
25	167294-1
37	167295-1
50	167296-1

Socket Connector Housing

No of Ways	Part Number
9	164531-4
15	164532-4
25	164533-4
37	164534-4
50	164535-4

Crimp Contacts

- Material and Finish:**
Contact Material—
Pin—Brass
Socket—Phosphor bronze
Contact Area Plating—0.76µm Gold



Male Contact for Plug Connector Housing

Wire Size	Reel of 12500 Contacts (1)	Reel of 500 Contacts (2)	Bag of 100 Loose Contacts (3)
20-24 AWG	166053-1	5-166053-1	166293-1
24-28 AWG	166054-1	5-166054-1	166294-1

Female Contact for Socket Connector Housing

Wire Size	Reel of 12500 Contacts (1)	Reel of 500 Contacts (2)	Bag of 100 Loose Contacts (3)
20-24 AWG	166051-1	5-166051-1	166291-1
24-28 AWG	166052-1	5-166052-1	166292-1

Application Tooling

- (1) Reel of 12500 Contacts** Use applicator Part Number 1238049 with suitable press.
- (2) Reel of 500 Contacts** Use Mini Reel-Fed Certi-Lok Part Number 169424-1
- (3) Loose Piece Contacts** **Premium:** Use Certicrimp II — Part Number 91503-1
Commercial: Use SDE die — Part Number 58448-2 with suitable ancillary equipment
- Insertion / Extraction Tool** Use Part Number 1579007-9

Subminiature D Connectors for Cable Mounting (Continued)

Standard Density Solder Cup Termination

Industrial

Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—Grey thermoplastic PBTP
- Flammability**—UL 94V-0
- Contact Material**—Copper alloy
- Contact Area Plating**—Nickel/Pd/Gold (>250 mating cycles)
- Current Rating**—3A
- Insulation Resistance**—5000 MΩ min.
- Dielectric Strength**—1000V AC min.
- Temperature Rating**—-55°C to +125°C



Plug Connector

No of Ways	Part Number
9	3-1393483-8
15	3-1393483-9
25	4-1393483-0
37	4-1393483-1

Socket Connector

No of Ways	Part Number
9	4-1393483-7
15	4-1393483-8
25	4-1393483-9
37	5-1393483-0

Commercial

Material and Finish:

- Front Shell**—Steel, tin plated
- Housing**—Black glass-filled thermoplastic
- Flammability**—UL 94V-0
- Contact Material**—Copper alloy
- Contact Area Plating**—Gold
- Current Rating**—5A
- Insulation Resistance**—500 MΩ min.
- Dielectric Strength**—1000V AC min.
- Temperature Rating**—-40°C to +105°C



Plug Connector

No of Ways	Part Number
9	344642-1
15	344644-1
25	344646-1
37	344651-1

Socket Connector

No of Ways	Part Number
9	344643-1
15	344645-1
25	344647-1
37	344652-1

Subminiature D Connectors for Cable Mounting

HD-20 Straight Posted Connectors



Product Selection Guide



Connector Density	Type	Post Style	Style and Shell Finish	No. of Contact Positions	Mating Hardware	Contact Plating (Mating Area/Solder Tail)	Post Length	Profile	
HD-20	Plugs and Receptacles	Straight	Full Metal-Shell With and Without Grounding Indents, Tin Plated (pgs. 83 and 84)	9	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin-Lead)	.125 [3.18]	High	
				15	Clinch Nuts	Duplex (Gold Flash/Tin-Lead)	.188 [4.78]		
				25					
				37					
				50					
				9	.120 [3.18] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin-Lead)	.125 [3.18]		Medium
	15	Threaded Inserts	Duplex (Gold Flash/Tin-Lead)	.170 [4.32]					
	25	Retention Inserts							
	37	Female Screwlocks	Duplex (Gold Flash/Tin-Lead)	.250 [6.35]					
	All-Plastic (pgs. 87-90)				9	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin-Lead)	.125 [3.18]	Medium
					15	Threaded Inserts	Duplex (Gold Flash/Tin-Lead)	.170 [4.32]	
					25				
37									
50									
9					.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin-Lead)	.125 [3.18]	Medium	
15	Threaded Inserts	Duplex (Gold Flash/Tin-Lead)	.170 [4.32]						
25	Female Screwlocks			Duplex (Gold Flash/Tin-Lead)	.250 [6.35]				
ACTION PIN	Plugs and Receptacles		Front Metal-Shell Tin Plated (pgs. 92 and 93)	9	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin-Lead)	.228 [5.79]	Medium	
				15	Threaded Inserts	Duplex (Gold/Tin-Lead)			
				25					
	37	Female Screwlocks	Duplex (Gold/Tin-Lead)						
	Receptacles			All-Plastic (pg. 94)	9	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold Flash/Tin-Lead)	.228 [5.79]	Low/High
					15	Threaded Inserts	Duplex (.000010 [0.000254] Gold Flash/Tin-Lead)		
25									
37	Female Screwlocks	Duplex (Gold Flash/Tin-Lead)							
HD-22	Plugs and Receptacles	Straight	Front Metal-Shell With Grounding Indents, Nickel Plated (pg. 91)	15	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin-Lead)	.125 [3.18]	Medium	
				26	Threaded Inserts	Duplex (.000015 [0.00038] Gold/Tin-Lead)			
				44					
				62					
				78					
					Female Screwlocks	Duplex (Gold Flash/Tin-Lead)			

Straight Posted Connectors

HD-20 Straight Posted Connectors (Continued)

Product Facts

- Flame retardant thermo-plastic housing material, UL 94V-0 rated
- HD-20 straight posted connectors are available in 9, 15, 25, 37 and 50 positions (Shell Sizes 1 thru 5)
- HD-20 straight posted connectors in Full Metal-Shell, Front Metal-Shell and All-Plastic versions
- HD-20 connectors with ACTION PIN contacts are available in low, medium and high profiles with integral standoffs
- ACTION PIN contact connectors for both .093 [2.36] and .062 [1.58] min. thick pc board application

- Various straight posted connectors offer a choice of through-holes, 4-40 threaded inserts or 4-40 fixed female screwlocks
- Choice of contact platings
- Integral boardlock feature secures connector to pc board prior to soldering
- Connectors are intermateable with any size 20 or 22 subminiature D connectors dimensionally complying with MIL-C-24308
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- CSA Certified, File No. LR 16455 HD-20 Products 

Section Contents

Straight Posted Connectors

- HD-20 Full Metal-Shell
 - Straight Posted Connectors83, 84
- HD-20 Front Metal-Shell
 - Straight Posted Connectors85, 86
- HD-20 All-Plastic Straight Posted Connectors87-90
- HD-22 Subminiature D Connectors91
- HD-20 Front Metal-Shell Straight Posted Connectors with ACTION PIN Contacts92, 93
- HD-20 All-Plastic Straight Posted Connectors with ACTION PIN Contacts94

Straight Posted Connectors

HD-20 Full Metal-Shell Straight Posted Connectors

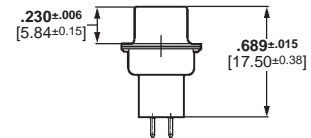
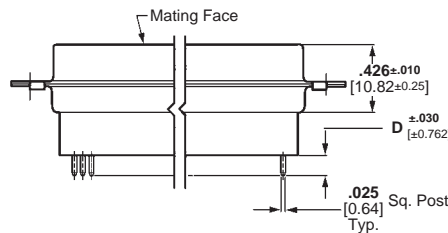
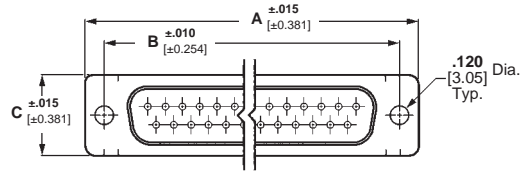
Plug



Without Grounding Indents



With Grounding Indents



See customer drawings for pcb layouts.

Material and Finish:

Shell—Steel, tin plated
Insert—94V-0 rated thermoplastic, black

Pin Contacts (Posted)—Brass, plated as follows:
A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated
B—Gold flash on mating end, tin-lead on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

Technical Documents:

Product Specification—108-40025

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Plug Part Numbers		
		A	B	C	D*		Without Grounding Indents	With Grounding Indents	With Clinch Nuts
1	9	1.213 30.81	.984 24.99	.494 12.55	.125 3.18	A	—	745410-1	749014-1
					.188 4.78	B	745182-2	—	
2	15	1.541 39.14	1.312 33.33	.494 12.55	.125 3.18	A	—	745411-1	—
					.188 4.78	B	745186-2	—	
3	25	2.088 53.04	1.852 47.04	.494 12.55	.125 3.18	A	—	745412-1	745959-1
					.188 4.78	B	745412-7	—	
4	37	2.729 69.32	2.500 63.50	.494 12.55	.125 3.18	A	—	745413-1	—
					.188 4.78	B	745414-7	—	
5	50	2.635 66.93	2.406 61.11	.605 15.37	.125 3.18	A	—	745414-1	—
					.188 4.78	B	745414-7	—	

*.125 [3.18] post length is for recommended pc board thickness of .062-.093 [1.58-2.36] max.; .188 [4.78] post length is for recommended pc board thickness of .125 [3.18].

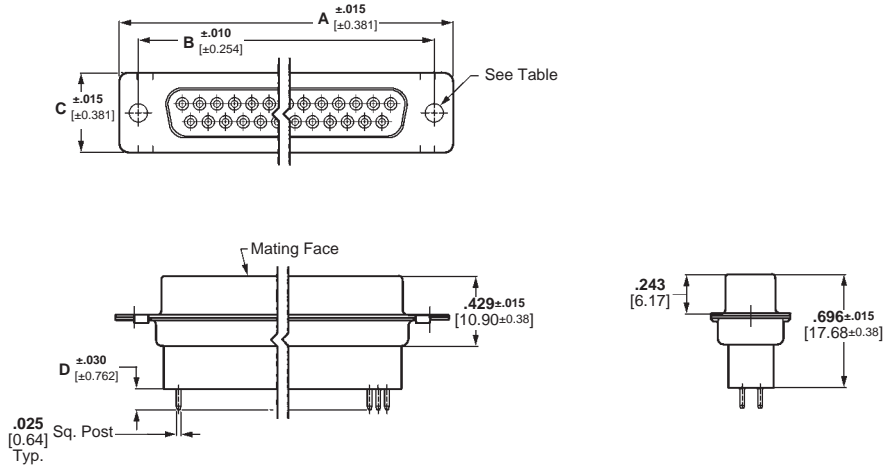
- Notes:**
1. All plugs are preloaded with size 20 DF posted pin contacts.
 2. Special loading of contacts can be arranged upon request.
 3. Longer post lengths available, consult Tyco Electronics.

HD-20 Full Metal-Shell Straight Posted Connectors (Continued)

Receptacle



With Clinch Nuts



See customer drawings for pcb layouts.

Material and Finish:

Shell—Steel, tin plated
Insert—94V-0 rated thermoplastic, black

Clinch Nuts—Steel, zinc plated
Socket Contacts (Posted)—Phosphor bronze, plated as follows:
A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated
B—Gold flash on mating end, tin-lead on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

Technical Documents:

Product Specification—108-40025

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Receptacle Part Numbers	
		A	B	C	D*		With .120 [3.05] Mounting Holes	With Clinch Nuts
1	9	1.213 30.81	.984 24.99	.494 12.55	.125 3.18	A	745183-1	747190-2
					.188 4.78	B	745183-2	747190-1
					.125 3.18	A	745183-7	747190-4
					.188 4.78	B	—	—
2	15	1.541 39.14	1.312 33.33	.494 12.55	.125 3.18	A	745185-1	745820-1
					.188 4.78	B	—	745820-2
					.125 3.18	A	745185-7	—
					.188 4.78	B	—	—
3	25	2.088 53.04	1.852 47.04	.494 12.55	.125 3.18	A	745187-1	745886-1
					.188 4.78	B	—	745886-2
					.125 3.18	A	745187-7	—
					.188 4.78	B	745187-8	—
4	37	2.729 69.32	2.500 63.50	.494 12.55	.125 3.18	A	745189-1	747315-1
					.188 4.78	A	745189-7	—
					.125 3.18	A	745191-1	747302-1
					.188 4.78	A	745191-7	—

*.125 [3.18] post length is for recommended pc board thickness of .062-.093 [1.58-2.36] max.; .188 [4.78] post length is for recommended pc board thickness of .093-.125 [2.36-3.18].

- Notes:**
- All receptacles are preloaded with size 20 DF posted socket contacts.
 - Special loading of contacts can be arranged upon request.
 - Longer post lengths available, consult Tyco Electronics.

Straight Posted Connectors

HD-20 Front Metal-Shell Straight Posted Connectors

Plug



With Grounding Indents



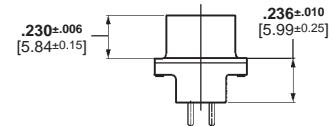
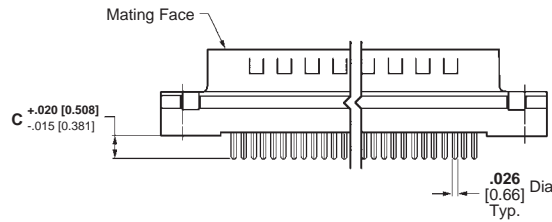
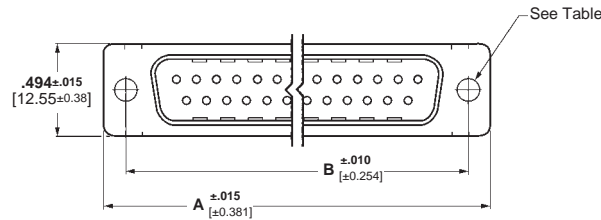
With Threaded Insert



With Fixed Female Screwlock



With Retention



See customer drawings for pcb layouts.

Material and Finish:

- Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Threaded Inserts**—Brass, unplated
- Female Screwlocks**—Zinc
- Pin Contacts (Posted)**—Brass, plated as follows:
 - A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated
 - B**—Gold flash on mating end, tin-lead on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40023

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Plug Part Numbers				
		A	B	C*		With Standard Mounting Holes	With 4-40 Threaded Inserts	With Retention 4-40 Inserts (for .062 [1.58] PCB)	With Fixed Female Screwlocks	With Retention 4-40 Screwlocks (for .062 [1.58] PCB)
1	9	1.213 30.81	.984 24.99	.125	A	747871-2	747871-8	2-748003-0	1-747871-4	—
				3.18	B	—	—	—	1-747871-3	—
				.170	A	747871-4	—	—	1-747871-6	—
				4.32	A	—	747872-8	—	—	748026-1
2	15	1.541 39.14	1.312 33.33	.125	A	—	747872-8	—	—	748026-1
				3.18	A	747872-4	—	—	1-747872-6	—
				.170	A	745968-2	745968-8	2-747704-0	1-745968-4	748027-1
				4.32	A	745968-4	—	—	1-745968-3	—
3	25	2.090 53.09	1.852 47.04	.125	A	745968-2	745968-8	2-747704-0	1-745968-4	748027-1
				3.18	B	—	745968-7	—	1-745968-3	—
				.170	A	745968-4	—	—	1-745968-6	—
				4.32	B	—	—	—	1-745968-5	—
4	37	2.732 69.39	2.500 63.50	.125	A	747375-2	747375-8	—	—	787686-1
				3.18	A	—	—	—	—	—

*.125 [3.18] post length is recommended for pc board thickness of .062-.093 [1.58-2.36] max.; .170 [4.32] post length is recommended for pc board thickness of .093-.125 [2.36-3.18]; .250 [6.35] post length is for special applications

- Notes:**
1. All plugs are preloaded with size 20 DF posted pin contacts.
 2. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.
 3. PC board hole size is .121±.002 [3.07±0.0508] for all retention inserts and screwlocks.

HD-20 Front Metal-Shell Straight Posted Connectors (Continued)

Receptacle



With Standard Mounting Holes



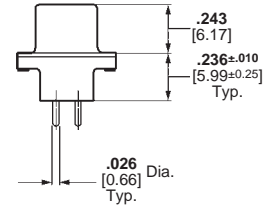
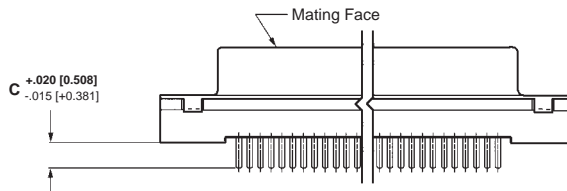
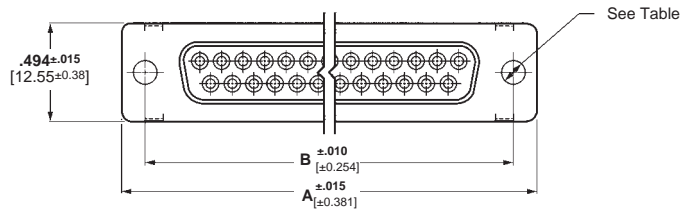
With Threaded Insert



With Fixed Female Screwlock



With Retention



See customer drawings for pcb layouts.

Material and Finish:

- Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Threaded Inserts**—Brass, unplated
- Female Screwlocks**—Zinc

- Socket Contacts (Posted)**—Phosphor bronze, plated as follows:
A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated
B—Gold flash on mating end, tin-lead on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

- Technical Documents:**
- Product Specification**—108-40025
- Application Specification**—114-40023

Straight Posted Connectors

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Receptacle Part Numbers				
		A	B	C*		With Standard Mounting Holes	With 4-40 Threaded Inserts	With Retention 4-40 Inserts (for .062 [1.58] PCB)	With Fixed Female Screwlocks	With Retention 4-40 Screwlocks (for .062 [1.58] PCB)
1	9	1.216 30.89	.984 24.99	.125 3.18	A	747150-2	747150-8	2-747706-0	1-747150-4	750678-1
				.170 4.32	B	—	747150-7	—	1-747150-3	—
				.125 3.18	A	747150-4	—	—	1-747150-6	—
				.170 4.32	B	—	747150-9	—	—	—
2	15	1.541 39.14	1.312 33.33	.125 3.18	A	747299-2	747299-8	2-747707-0	1-747299-4	787683-1
				.170 4.32	B	—	747299-7	—	1-747299-3	—
				.125 3.18	A	747299-4	—	—	1-747299-6	—
				.170 4.32	B	—	—	—	—	—
3	25	2.090 53.09	1.852 47.04	.125 3.18	A	745967-2	745967-8	2-747708-0	1-745967-4	748612-1
				.170 4.32	B	—	745967-7	1-747708-9	—	—
				.125 3.18	A	745967-4	1-745967-0	—	1-745967-6	—
				.170 4.32	B	—	—	—	1-745967-5	—
4	37	2.732 69.39	2.500 63.50	.125 3.18	A	747301-2	747301-8	2-747709-0	1-747301-4	787685-1
				.170 4.32	B	—	747301-7	—	—	—
				.125 3.18	A	—	—	—	—	—
				.170 4.32	B	—	—	—	1-747301-6	—

*.125 [3.18] post length is recommended for pc board thickness of .062-.093 [1.58-2.36] max.; .170 [4.32] post length is recommended for pc board thickness of .093-.125 [2.36-3.18]; .250 [6.35] post length is for special applications

- Notes:**
- All receptacles are preloaded with size 20 DF posted socket contacts.
 - Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.
 - Pc board hole size is .121±.002 [3.07±0.0508] for all retention inserts and screwlocks.

HD-20 All-Plastic Straight Posted Connectors

Plug



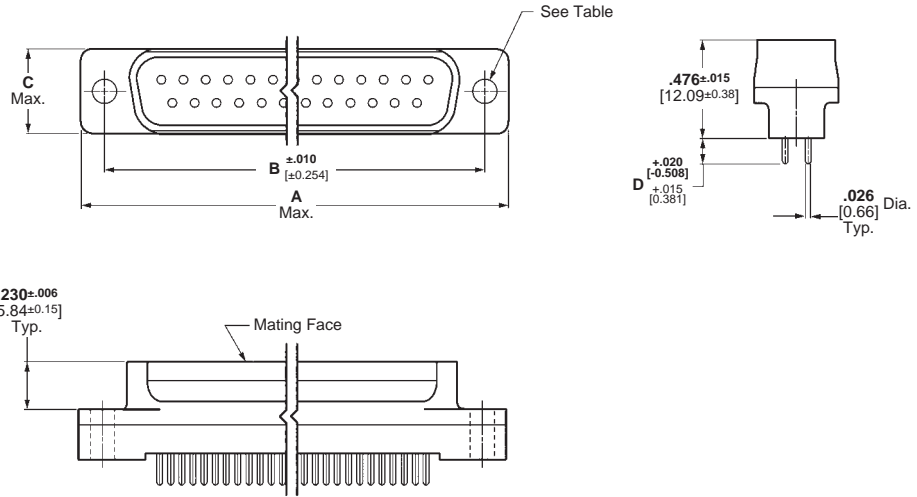
With Standard Mounting Hole



With Threaded Insert



With Fixed Female Screwlock



Material and Finish:

Housing—94V-0 rated thermoplastic, black

Threaded Inserts—Brass, unplated

Female Screwlocks—Brass, nickel plated

Pin Contacts (Posted)—Brass, plated as follows:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

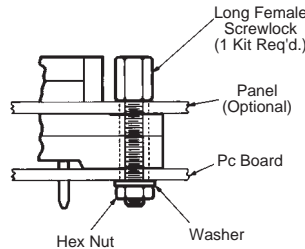
B—Gold flash on mating end, tin-lead on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

Technical Documents:

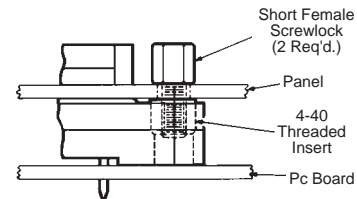
Product Specification—108-40025

See customer drawings for pcb layouts.

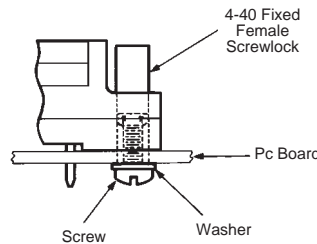
Typical Applications



Application of connector with standard mounting holes using Long Female Screwlock Kit No. 207719



Application of connector with 4-40 Threaded Inserts using Short Female Screwlocks included in Kit No. 207952



Application of connector with 4-40 Fixed Female Screwlocks. (See table on next page.)

Note: Hardware parts in illustrations above are not included with the connectors listed in the table on page 88. They are to be supplied by the Customer or, where applicable, purchased separately from Tyco Electronics using the part nos. specified.

HD-20 All-Plastic Straight Posted Connectors (Continued)

Plug
(Continued)

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Plug Part Numbers			
		A	B	C	D*		With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	
1	9	1.228 32.72	.984 24.99	.420 10.67	.125 3.18	A	208006-2	745051-2	745071-2	
					.170 4.32	B	208006-1	745051-1	745071-1	
						.170 4.32	A	—	—	745071-4
						.125 3.18	A	208007-2	745052-2	745072-2
2	15	1.546 39.27	1.312 33.33	.420 10.67	.125 3.18	B	—	745052-1	—	
					.170 4.32	A	—	—	745072-4	
						.125 3.18	A	208008-2	745053-2	745073-2
						.170 4.32	B	208008-1	—	745073-1
3	25	2.095 53.21	1.852 47.04	.420 10.67	.125 3.18	B	—	—	745073-3	
					.170 4.32	A	—	—	745074-2	
						.125 3.18	B	208009-1	—	745074-1
						.170 4.32	A	—	745054-4	745074-4
4	37	2.737 69.52	2.500 63.50	.420 10.67	.125 3.18	B	208009-3	—	—	
					.170 4.32	A	—	—	—	
						.125 3.18	A	208010-2	—	—
						.170 4.32	B	—	—	—
5	50	2.643 67.13	2.406 61.11	.527 13.39	.125 3.18	A	—	—	—	
					.170 4.32	B	—	—	—	

*.125 [3.18] post length is recommended for pc board thickness of .062-.093 [1.58-2.36] max.; .170 [4.32] post length is recommended for pc board thickness of .093-.125 [2.36-3.18]; .250 [6.35] post length is for special applications.

- Notes:**
1. All plugs are preloaded with size 20 DF posted pin contacts.
 2. It is recommended that these connectors be secured with appropriate hardware to a pc board and/or panel.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

Straight Posted Connectors

HD-20 All-Plastic Straight Posted Connectors (Continued)

Receptacle



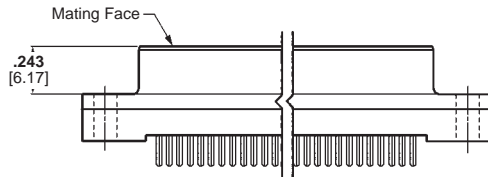
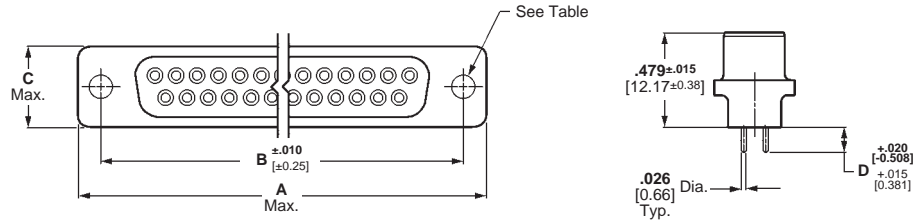
With Standard Mounting Hole



With Threaded Insert



With Fixed Female Screwlock



See customer drawings for pcb layouts.

Material and Finish:

Housing—94V-0 rated thermoplastic, black

Threaded Inserts—Brass, unplated

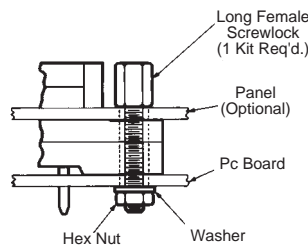
Female Screwlocks—Brass, nickel plated

Socket Contacts (Posted)—Phosphor bronze, plated as follows:
A— $.000030$ [0.00076] gold on mating end, tin-lead on termination end, with entire contact $.000050$ [0.00127] (min.) nickel underplated
B—Gold flash on mating end, tin-lead on termination end, with entire contact $.000050$ [0.00127] (min.) nickel underplated

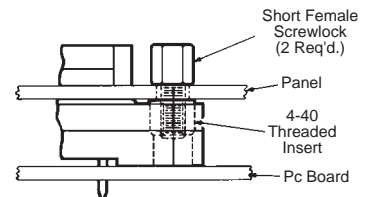
Technical Documents:

Product Specification—108-40025

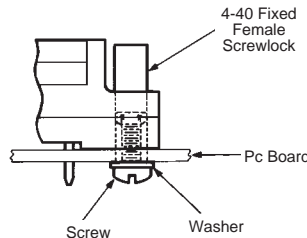
Typical Applications



Application of connector with standard mounting holes using Long Female Screwlock Kit No. 207719



Application of connector with 4-40 Threaded Inserts using Short Female Screwlocks included in Kit No. 207952



Application of connector with 4-40 Fixed Female Screwlocks. (See table on next page.)

Note: Hardware parts in illustrations above are not included with the connectors listed in the table on page 90. They are to be supplied by the Customer or, where applicable, purchased separately from Tyco Electronics using the part nos. specified.

HD-20 All-Plastic Straight Posted Connectors (Continued)

Receptacle

(Continued)

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Receptacle Part Numbers		
		A	B	C	D*		With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.228 32.72	.984 24.99	.420 10.67	.125	A	207826-4	207841-4	745076-4
					3.18	B	207826-3	207841-3	745076-3
		.170 4.32	A	—	—	745076-6			
			B	—	—	—			
2	15	1.546 39.27	1.312 33.33	.420 10.67	.125	A	207827-4	745057-4	745077-4
					3.18	B	207827-3	745057-3	745077-3
		.170 4.32	A	—	—	745077-6			
			B	—	—	—			
3	25	2.095 53.21	1.852 47.04	.420 10.67	.125	A	207828-4	745058-4	745078-4
					3.18	B	207828-3	745058-3	745078-3
		.170 4.32	A	—	—	745078-6			
			B	—	—	745078-5			
4	37	2.737 69.52	2.500 63.50	.420 10.67	.125	A	207829-4	745059-4	745079-4
					3.18	B	207829-3	—	—
		.170 4.32	A	—	—	745079-6			
			B	—	—	—			
5	50	2.643 67.13	2.406 61.11	.527 13.39	.125	A	—	—	745080-4
					3.18	A	—	—	745080-6
		.170 4.32	A	—	—	—			
			B	—	—	—			

*.125 [3.18] post length is recommended for pc board thickness of .062-.093 [1.58-2.36] max.; .170 [4.32] post length is recommended for pc board thickness of .093-.125 [2.36-3.18]; .250 [6.35] post length is for special applications.

- Notes:**
1. All receptacles are preloaded with size 20 DF posted socket contacts.
 2. It is recommended that these connectors be secured with appropriate hardware to a pc board and/or panel.
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

Straight Posted Connectors

HD-22 Straight Subminiature D Connectors

Material and Finish:

Housing—94V-0 rated thermoplastic, black

▲ VESA Std. 15-position Receptacle Housing Material—Thermoplastic 94V-0 blue per VESA Std.

Shell—Steel, nickel plated

Contacts

Pins—Brass

Sockets—Phosphor bronze

Contact Plating—

Gold flash, .000010 [0.00025] or .000030 [0.00076] on mating end, tin lead on solder tails with overall nickel underplate

Boardlocks—Brass, tin plated

Female Screwlocks—Brass, nickel plated

Threaded Inserts—Brass, tin plated

Technical Documents:

Product Specification—108-1092

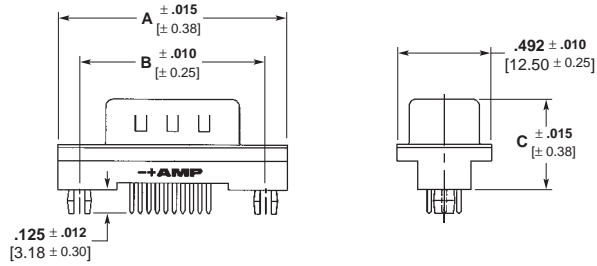
Application Specification—114-40021

See customer drawings for printed circuit board layouts.

■ **Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476**

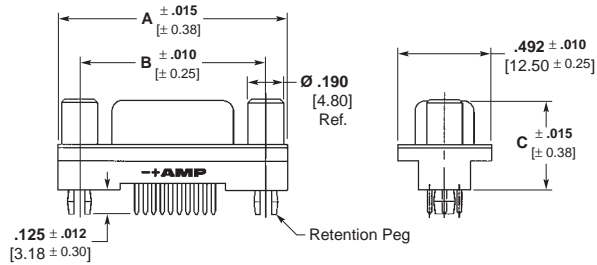


■ **Certified by Canadian Standards Association, File No. LR 7189**



Vertical Plug

No. of Contact Positions	Dimensions			Mounting Hardware	PCB Mounting Style	Part Numbers		
	A	B	C			Gold Flash	15µ" Gold	30µ" Gold
15	1.212	.984	.476	4-40 inserts	retention pegs	750489-4	750489-3	750489-1
	30.80	25.00	12.10	4-40 inserts	—	749798-4	749798-3	749798-1
78	2.640	2.500	.476	4-40 inserts	—	749019-6	749019-5	749019-1
	67.00	63.50	12.10					



Vertical Receptacle

No. of Contact Positions	Dimensions			Mounting Hardware	PCB Mounting Style	Part Numbers		
	A	B	C			Gold Flash	15µ" Gold	30µ" Gold
15	1.212	.984	.465	4-40 inserts	—	749374-8	749374-7	749374-1
	30.80	25.00	11.80	4-40 screw locks	—	786356-4	786356-3	786356-1
	1.212	.984	.465	4-40 inserts	retention pegs	1-749374-0	749374-9	749374-3
	30.80	25.00	11.80	4-40 screw locks	retention pegs	786382-4	786382-3	786382-1
26	1.543	1.310	.465	4-40 inserts	—	749030-4	749030-3	749030-1
	39.20	33.30	11.80	4-40 screw locks	retention pegs	788623-4	788623-3	788623-1
62	2.732	2.500	.465	4-40 inserts	—	3-747786-4	3-747786-3	747786-6
78	2.638	2.400	.476	4-40 inserts	—	1-748831-0	748831-9	748831-1
	67.00	61.00	12.10					

**HD-20 Front Metal-Shell Straight Posted Connectors
With ACTION PIN Contacts**

Receptacle



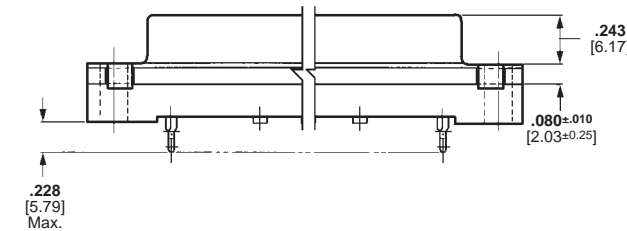
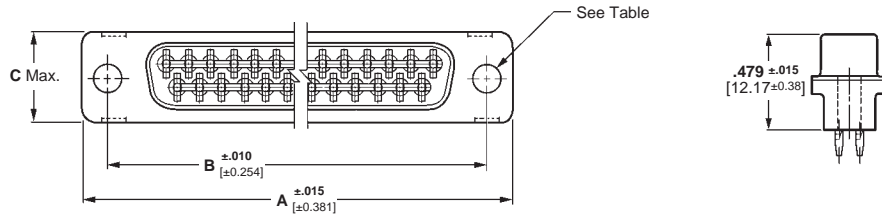
With Standard Mounting Holes



With Threaded Insert



With Fixed Female Screwlock



See customer drawings for pcb layouts.

Material and Finish:

Front Shell—Steel, tin plated

Housing—94V-0 rated thermoplastic, black

Threaded Inserts—Brass, unplated

Female Screwlocks—Zinc

ACTION PIN Contacts—Copper alloy, duplex plated as follows:

A—.000030 [0.00076] gold on mating end, tin-lead on ACTION PIN post surface, with entire contact .000050 [0.00127] (min.) nickel underplated

B—Gold flash on mating end, tin-lead on ACTION PIN post surface, with entire contact .000050 [0.00127] (min.) nickel underplated

For .062 [1.57] min. Thick Pc Boards

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Receptacle Part Numbers			Seating Tool Part No.
		A	B	C		With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	
1	9	1.213 30.81	.984 24.99	.509 12.93	A	—	—	—	91164-2
2	15	1.541 39.14	1.312 33.33	.509 12.93	A	—	—	—	91165-2
3	25	2.088 53.04	1.852 47.04	.509 12.93	B	—	—	748688-1	91168-2
5	50	2.635 66.93	2.406 61.11	.620 15.75	A	—	748485-2	—	91167-2

Technical Documents:

Product Specification—108-40014

Application Specification—114-40026

For .093 [2.36] min. Thick Pc Boards

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Receptacle Part Numbers			Seating Tool Part No.
		A	B	C		With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	
1	9	1.213 30.81	.984 24.99	.509 12.93	A	747089-2	747090-2	747091-2	91164-2
					B	—	—	747091-1	
2	15	1.541 39.14	1.312 33.32	.509 12.93	A	747140-2	747141-2	747142-2	91165-2
					B	—	—	—	
3	25	2.088 53.04	1.852 47.04	.509 12.93	A	745922-2	745925-2	745928-2	91168-2
					B	—	745925-1	—	
4	37	2.729 69.32	2.500 63.50	.509 12.93	A	747713-2	747714-2	747715-2	91166-2
					B	—	747714-1	—	
5	50	2.635 66.93	2.406 61.11	.620 15.75	A	747143-2	747144-2	747145-2	91167-2
					B	—	747144-1	—	

- Notes:** 1. All receptacles are preloaded with straight posted ACTION PIN socket contacts.
2. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

Straight Posted Connectors

HD-20 Front Metal-Shell Straight Posted Connectors
With ACTION PIN Contacts (Continued)

Plug



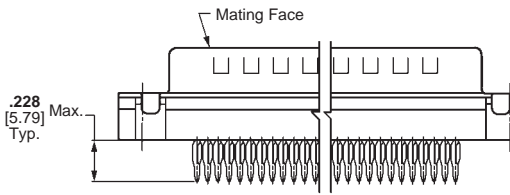
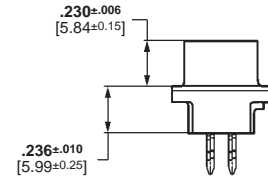
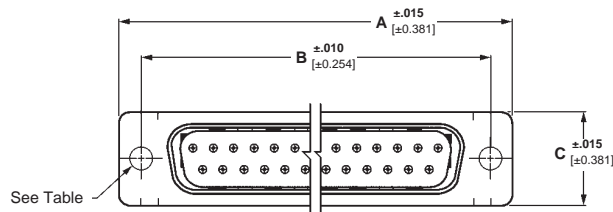
With Standard Mounting Holes



With Threaded Insert



With Fixed Female Screwlock



See customer drawings for pcb layouts.

Material and Finish:

Front Shell—Steel, tin plated

Housing—94V-0 rated thermoplastic, black

Threaded Inserts—Brass, unplated

Female Screwlocks—Zinc

ACTION PIN Contacts—Copper alloy, duplex plated as follows:

A—.000030 [0.00076] gold on mating end, tin-lead on ACTION PIN post surface, with entire contact .000050 [0.00127] (min.) nickel underplated

Technical Documents:

Product Specification—108-40014

Application Specification—114-40026

For .093 [2.36] min. Thick Pc Board

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Plug Part Numbers			Seating Tool Part No.
		A	B	C		With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	
1	9	1.213 30.81	.984 24.99	.494 12.55	A	—	786830-1	787176-1	58274-3
2	15	1.541 39.14	1.312 33.32	.494 12.55	A	—	—	787177-1	58274-6
3	25	2.088 53.04	1.852 47.04	.494 12.55	A	748146-2	748146-4	748146-6	58274-1
4	37	2.732 69.39	2.500 63.50	.494 12.55	A	788458-1	786534-1	750060-1	58274-5
5	50	2.635 66.93	2.406 61.11	.605 15.37	A	—	749892-1	—	58273-1

- Notes:** 1. All plugs are preloaded with straight posted ACTION PIN pin contacts.
 2. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**HD-20 All-Plastic Straight Posted Connectors
With ACTION PIN Contacts**

**Receptacles
(Low and High Profile)**



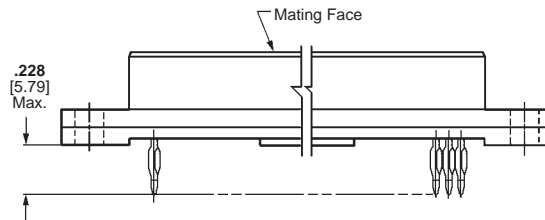
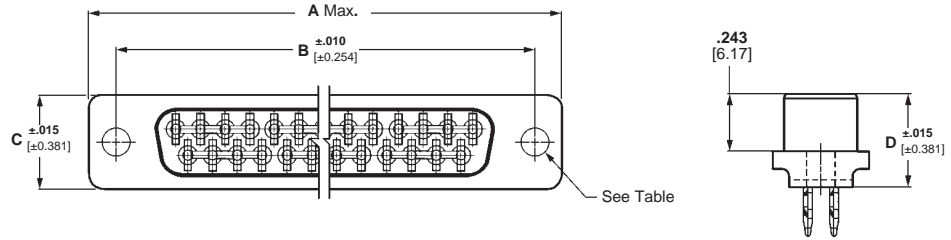
With Standard Mounting Holes



With Threaded Insert



With Fixed Female Screwlock



See customer drawings for pcb layouts.

Material and Finish:

Housing—94V-0 rated thermoplastic, black

Threaded Inserts—Brass, unplated

Female Screwlocks—Brass, nickel plated

ACTION PIN Contacts—Copper alloy, duplex plated as follows:

A—.000030 [0.00076] gold on mating end, tin-lead on ACTION PIN post surface, with entire contact .000050 [0.00127] (min.) nickel underplated

B—Gold flash on mating end, tin-lead on ACTION PIN post surface, with entire contact .000050 [0.00127] (min.) nickel underplated

Technical Documents:

Product Specification—108-40014

Straight Posted Connectors

Shell Size	No. of Contact Positions	Dimensions				Profile	Contact Finish (Plating Code)	Receptacle Part Numbers					Seating Tool Part No.	
		A	B	C	D			For .093 [2.36] (min.) Thick Pc Boards			For .062 [1.57] (min.) Thick PC Boards			
								With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	With .120 [3.05] Mounting Holes	With Threaded Inserts		With Fixed Female Screwlocks
1	9	1.221 31.01	.984 24.99	.410 10.41	.395 10.03	Low	A	—	—	745454-2	—	—	—	91164-1
					.695 17.65	High	A	—	—	745455-2	—	—	—	91164-3
2	15	1.546 39.27	1.312 33.32	.410 10.41	.395 10.03	Low	A	—	—	745456-2	—	—	—	91165-1
					.695 17.65	High	A	—	—	—	—	745612-2	—	—
3	25	2.095 53.21	1.852 47.04	.410 10.41	.395 10.03	Low	A	—	—	745458-2	—	—	—	91168-1
					.695 17.65	High	A	—	—	745458-1	—	—	—	—
4	37	2.737 69.52	2.500 63.50	.410 10.41	.395 10.03	Low	A	—	—	745459-2	745589-2	—	—	91166-1
					.695 17.65	High	A	—	—	—	—	745599-2	—	—
5	50	2.643 67.13	2.406 61.11	.517 13.13	.395 10.03	Low	A	—	—	745461-2	—	—	—	91167-1

- Notes:** 1. All receptacles are preloaded with straight posted ACTION PIN socket contacts.
2. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

HDP-20 Crimp Snap-In Contact Connectors



Product Selection Guide

Connector				Contacts		
Type	Insert Material	Shell Type Material and Finish	Mounting	Type	Termination	Plating
Plug (pg. 97)	94V-0 Rated Thermoplastic Black	Zinc Plated Steel Without Grounding Indents	.120 [3.05] Dia. Holes Clinch Nut, 4-40 Threads	Pins (pgs. 105, 106)	Crimp Posted	Duplex (.000030 [0.00076] Gold and Tin)
		Tin Plated Steel Without Grounding Indents				Duplex (Gold Flash and Tin)
		Tin Plated Steel With Grounding Indents				Select (.000030 [0.00076] Gold and Gold Flash)
Receptacle (pg. 98)	94V-0 Rated Thermoplastic Black	Zinc Plated Steel	.120 [3.05] Dia. Holes Clinch Nuts, 4-40 Threaded	Sockets (pgs. 105, 106)	Crimp Posted	Duplex (.000030 [0.00076] Gold and Tin)
		Tin Plated Steel				Duplex (Gold Flash and Tin)
						Select (.000030 [0.00076] Gold and Gold Flash)

HDP-20 Crimp Snap-In Contact Connectors (Continued)

Product Facts

- Shell sizes offer wide choice of contact positions—9, 15, 25, 37 and 50
- Lower cost, commercial version of the military approved series
- Tin or zinc plated shells, with or without grounding indents
- Crimp snap-in contacts allows loading of only the number of contacts being used
- Available with shielding hardware and shielding enclosure kits
- Numerous cable clamps and mating hardware options
- Low cost, high performance, precision-formed crimp contacts

- Machine applied terminations assure highest production rates at lowest applied cost
- Interchangeable with any size 20 Subminiature D connector dimensionally complying with MIL-C-24308
- Recognized under the Component Program of Underwriters Laboratories Inc.,  File No. E28476
- Listed under Underwriters Laboratories Inc., Standard 1863, Communication Circuit Accessories,  File No. E81956
- Certified by Canadian Standards Association,  File No. LR 1088108 (LR 7189-207)

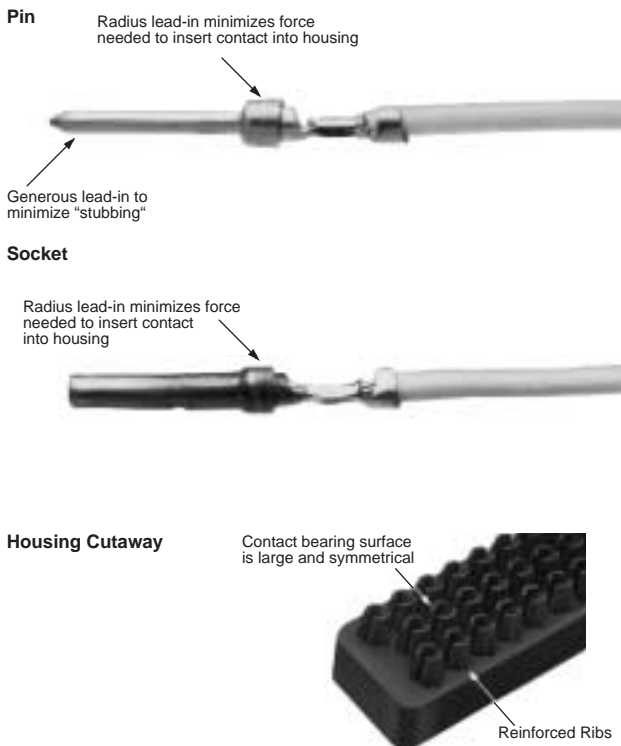
Section Contents

Plug and Receptacle Connectors	97, 98
Basic Shielding Hardware Kits	99, 100
Shielding Hardware Enclosure Kits	101, 102
Preassembled Shielded Connector Kits	103
Ferrules for Shielding Hardware Kits	104
Contacts	105, 106
Application Tooling	107

Cable Connectors

Unshielded Cable Clamps	Shielded Cable Clamps and Shielding Hardware and Enclosure Kits	Mounting and Mating Hardware
<p>One-Piece Cable Clamp 180°/120° Quik-Snap (pg. 139)</p> <p>Box and Lid Straight/90° Exit (pg. 142)</p> <p>Box and Lid with Male Screw Retainers (pg. 142)</p> <p>Clam Shell Straight/45° Exit (pg. 143)</p> <p>Clam Shell Straight/45° Exit with Male Screw Retainers (pg. 143)</p>	<p>Straight Exit RFI/EMI Shields for Jacketed Cable (pgs. 144, 147)</p> <p>90° Exit Die Cast RFI/EMI Shields for Jacketed Cable (pg. 147)</p> <p>Basic Shielding Hardware Kits (pgs. 99, 100)</p> <p>Shielding Hardware Enclosure Kits (pgs. 101, 102)</p>	<p>Keying Plug (pg. 160)</p> <p>Male Screw Retainers (pgs. 151, 152)</p> <p>Female Screwlocks (pg. 153)</p> <p>Locking Posts and Slide Latches (pgs. 154, 156)</p> <p>Spring Latch, Two-Piece (pg. 157)</p> <p>Latching Blocks (pgs. 158, 159)</p> <p>Standoff Bushings (pg. 160)</p>

Contact Retention Features



HDP-20 Crimp Snap-In Contact Connectors (Continued)

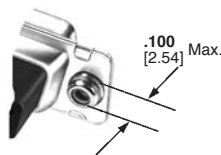


Material and Finish:
Shell—Steel, zinc or tin plated
Insert—94V-0 rated thermoplastic, black

Mounting Holes:
Standard—.120 [3.05] Dia.
Clinch Nut—4-40 threads with self-locking feature

Related Product Data:
Contact Arrangements—page 41
Performance Characteristics—page 42
Contacts—pages 105, 106
Application Tooling—page 107
Mateable Connectors:
HDE—pages 115-128
HDP—pages 95-107
HD-20 Board Mount—pages 55-72, 83-90, 92-94
Mating/Panel Mounting—page 43
Cable Clamps—pages 137, 138, 140-142, 145, 146, 149, 150
Mating Hardware—pages 151-155, 158, 160

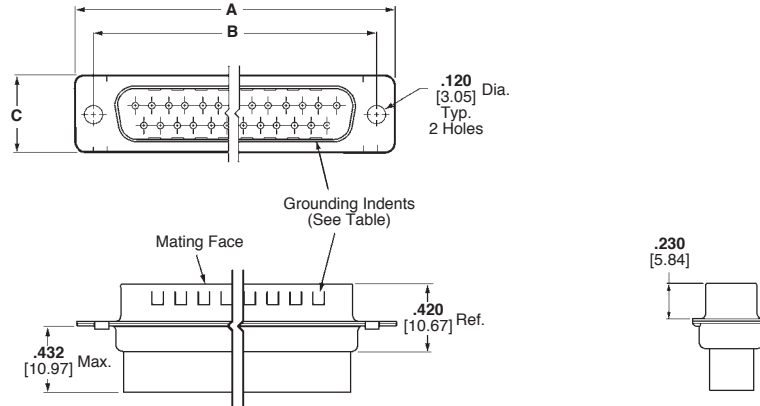
Technical Documents:
Product Specification—108-40005
Application Specifications—114-10000, 114-40030



Clinch Nut
(Plug and Receptacle)

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

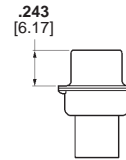
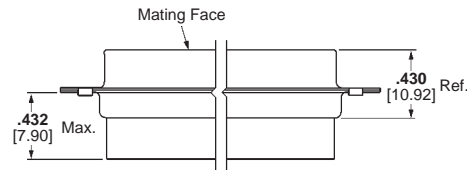
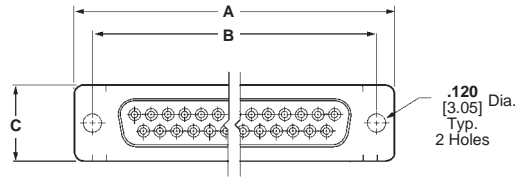
Plug



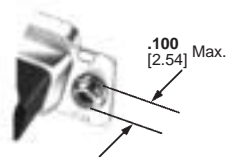
HDP-20 Crimp Snap-In Contact Connectors (Continued)



Receptacle



Cable Connectors



Clinch Nut
(Plug and Receptacle)

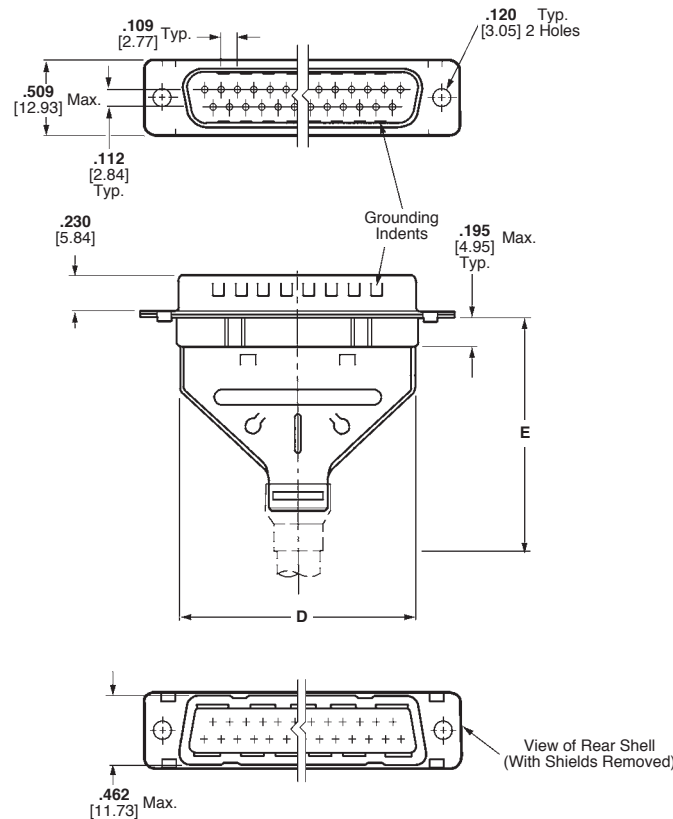
Shell Size	No. of Contact Positions	Dimensions			Insert Material	Mounting Method	Plug Part Numbers			Receptacle Part Nos.	
		A	B	C			Tin Plated Shell			Zinc Plated Shell	Tin Plated Shell
							Zinc Plated Shell	Without Grounding Indents	With Grounding Indents		
1	9	1.213 30.81	.984 24.99	.494 12.55	94V-0	Standard	205204-1	205204-3	205204-4	205203-1	205203-3
						Clinch Nut	—	745906-1	745906-2	—	745907-1
2	15	1.541 39.14	1.312 33.33	.494 12.55	94V-0	Standard	205206-1	205206-2	205206-3	205205-1	205205-2
						Clinch Nut	—	—	745908-2	—	745909-1
3	25	2.088 53.04	1.852 47.04	.494 12.55	94V-0	Standard	205208-1	207464-1	207464-2	205207-1	207463-1
						Clinch Nut	—	—	745036-2	207516-1	207516-3
4	37	2.729 69.32	2.500 63.50	.494 12.55	94V-0	Standard	205210-1	205210-2	205210-3	205209-1	205209-2
						Clinch Nut	—	—	745135-2	—	207661-3
5	50	2.635 66.93	2.406 61.11	.605 15.37	94V-0	Standard	205212-1	205212-2	205212-3	205211-1	205211-2
						Clinch Nut	—	—	745883-2	—	745884-1

Note: Plugs accept size 20 DF pin contacts and receptacles accept size 20 DF socket contacts.

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

HDP-20 Basic Shielding Hardware Kits

Plug



Each kit contains:

- Connector
- Inner shield
- Outer shield

Contacts and ferrules must be purchased separately.

Material and Finish:

Connector Shells—Steel, tin plated

Connector Insert—94V-0 rated thermoplastic, black

Shield—Steel, tin plated

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Contacts—pages 105, 106

Application Tooling—page 107

Mateable Connectors:

HDE—pages 115-128

HDP—pages 95-107

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating/Panel Mounting—page 43

Mating Hardware—pages 151-155, 158, 160

Ferrules—page 104

Technical Documents:

Product Specifications—

108-40005

108-40030

Application Specifications—

114-10000

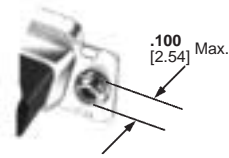
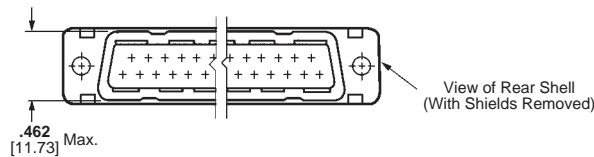
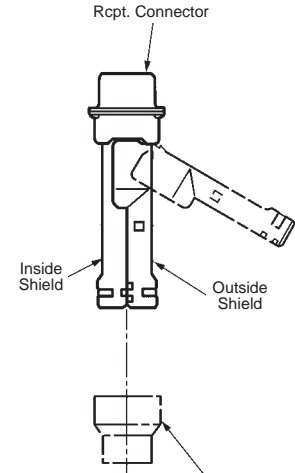
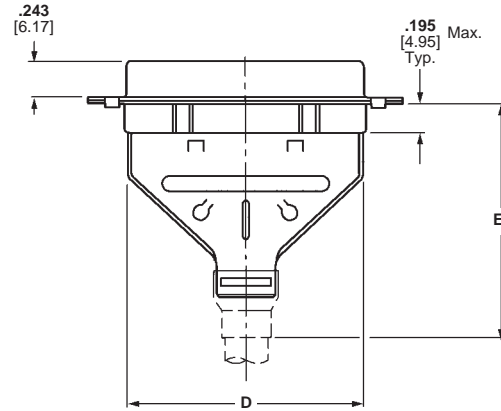
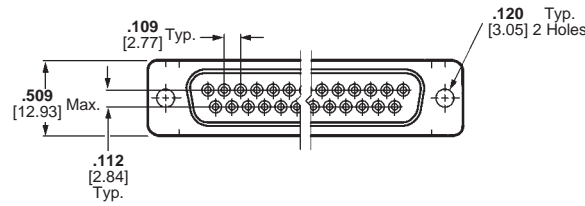
114-40030

Instruction Sheet—408-9010

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

HDP-20 Basic Shielding Hardware Kits (Continued)

Receptacle



Clinch Nut
(Plug and Receptacle)

Ferrule (Must Be Purchased Separately)

Cable Connectors

Shell Size	No. of Contact Positions	Dimensions		Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Mounting Method	Plug Kit Numbers	Receptacle Kit Numbers
		D	E					
1	9	.700	1.535	.165-.455	.350	Standard	747522-1	747523-1
		17.78	38.99			Clinch Nut	748526-1	748536-1
2	15	1.024	1.535	.165-.455	.350	Standard	747538-1	747539-1
		26.01	38.99			Clinch Nut	750636-1	787908-1
3	25	1.576	1.535	.165-.455	.350	Standard	747554-1	747555-1
		40.03	38.99			Clinch Nut	—	749763-1
4	37	2.215	1.892	.338-.562	.450	Standard	747570-1	747571-1
		56.26	48.06			Clinch Nut	786929-1	—
5	50	2.120	1.876	.338-.480	.450	Standard	747577-1	747578-1
		53.85	47.65					

Notes: 1. Plugs accept size 20 DF pin contacts and receptacles accept size 20 DF socket contacts.
 2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.
 †Maximum cable diameter after jacket and braid removed.

HDP-20 Shielding Hardware Enclosure Kits



Each Kit Contains:

- Connector
- Inner shield
- Outer shield
- Enclosure
- Two jackscrews

Contacts and ferrules must be purchased separately.

Material and Finish:

Connector Shells—Steel, tin plated.

Connector Insert—94V-0 rated thermoplastic, black

Shield—Steel, tin plated

Enclosure—PVC, black

Jackscrews—Zinc alloy

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Contacts—pages 105, 106

Application Tooling—page 107

Mateable Connectors:

HDE—pages 115-128

HDP—pages 95-107

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating/Panel Mounting—page 43

Mating Hardware—pages 151-155, 158, 160

Ferrules—page 104

Technical Documents:

Product Specifications—

108-40005

108-40030

Application Specifications—

114-10000

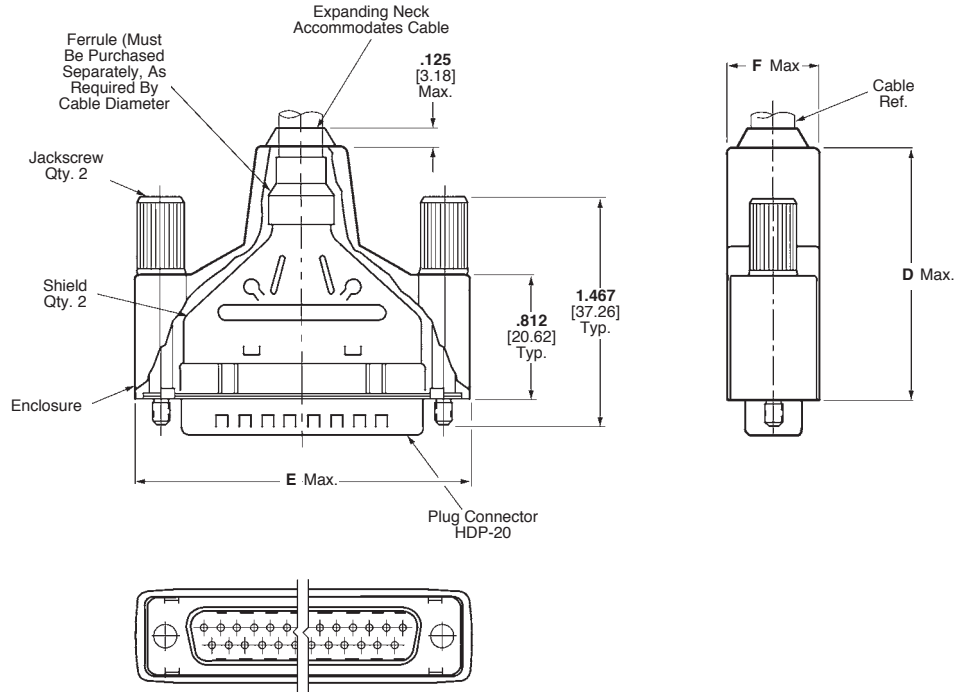
114-40030

Instruction Sheet—408-9172

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center:

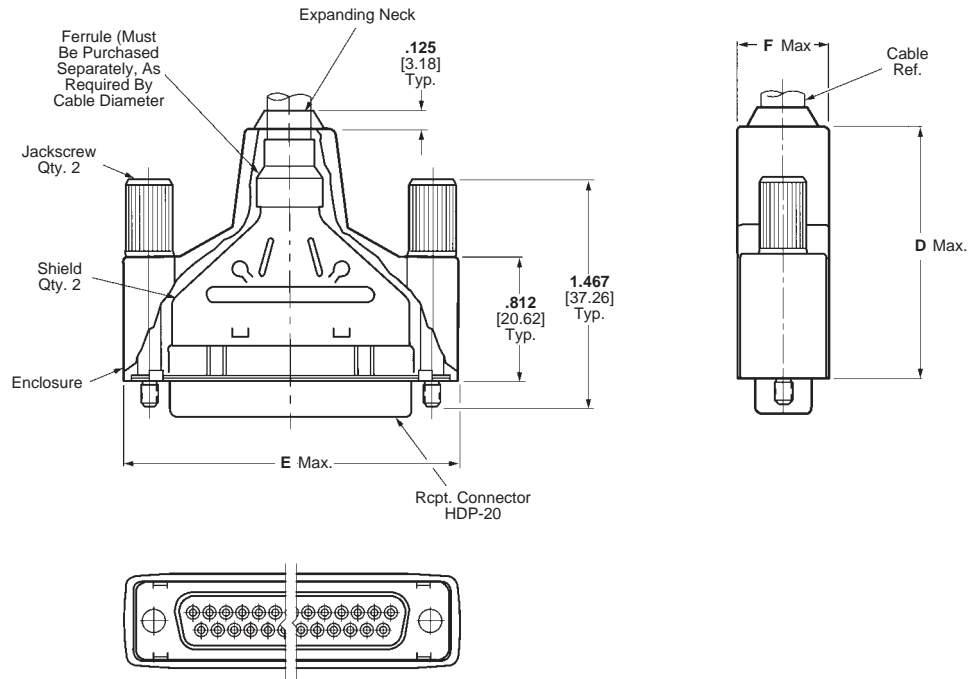
1-800-722-1111.

Plug



HDP-20 Shielding Hardware Enclosure Kits (Continued)

Receptacle



Cable Connectors

Shell Size	No. of Contact Positions	Dimensions			Recommended Cable Outer Diameter Range	Max. Inner Cable Bundle Dia.†	Insert Material	Kit Numbers		Shielding Enclosure Expansion Tool	
		D	E	F				Plug	Receptacle	Cable O.D. (Max.)	Part Number
1	9	1.660	1.355	.630	.190-.330 4.83-8.38	.330 8.38	94V-0	747952-1	747951-1	.330 8.38	58241-4
		42.16	34.42	16.00							
2	15	1.660	1.685	.630	.190-.330 4.83-8.38	.330 8.38	94V-0	747954-1	747953-1	.450 11.43	58241-1
		42.16	42.80	16.00							
3	25	1.660	2.210	.630	.217-.435 5.51-11.05	.350 8.89	94V-0	747956-1	747955-1	.572 14.52	58241-2
		42.16	56.13	16.00							
4	37	2.010	2.865	.730	.338-.562 8.59-14.28	.450 11.43	94V-0	747958-1	747957-1	.450 11.43	58241-1
		51.05	72.77	18.54							
5	50	2.010	2.775	.730	.338-.562 8.59-14.28	.450 11.43	94V-0	747960-1	747959-1	.450 11.43	58241-1
		51.05	70.49	18.54							

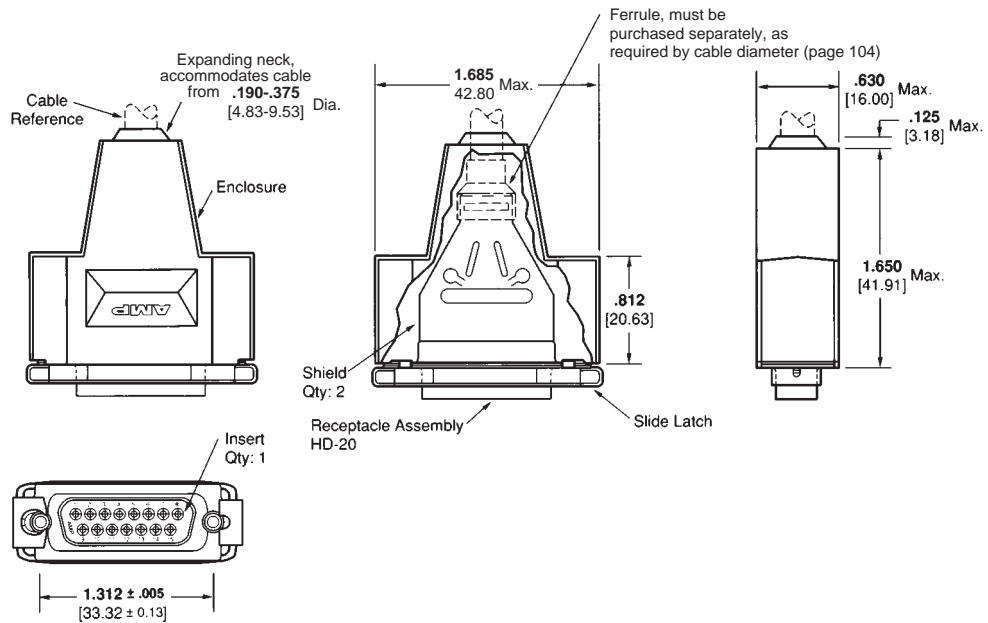
Notes: 1. Plugs accept size 20 DF pin contacts and receptacles accept size 20 DF socket contacts.
 2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.
 †Maximum cable diameter after jacket and braid removed.

Shielded Connector, Preassembled Kit

Designed to meet the requirements of Local Area Networking, this Subminiature D Shielded Connector Kit is available with slide latches attached to the receptacle. The receptacle is shielded and covered with a durable plastic enclosure. This shielding decreases emissions and provides an effective EMI/RFI barrier.

Preassembled connector kits are available in Subminiature D, shell size 2, 15-position configuration and accept crimp, snap-in HD-20 contacts. Contacts are available separately and allow for selective positioning.

Other sizes and styles can be made available, consult Tyco Electronics.



Receptacle Part No. 749246-1

Material and Finish:

Inserts—94V-0 rated nylon, black

Enclosures—Elastomer, styrene polyolefin, or PVC, black

Shields and Shells—Carbon steel per ASTM A109, plated with .000200 [0.00508] min. tin over .000050 [0.00127] min. copper

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Contacts—pages 105, 106

Application Tooling—page 107

Ferrules—page 104

Technical Documents:

Product Specifications—108-40005, 108-40030, 108-40032

Application Specifications—114-10000 & 114-40030

HDP-20 Ferrules for Shielding Hardware Kits

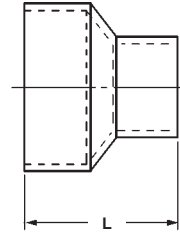
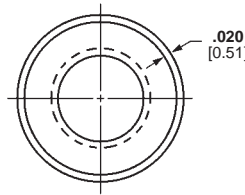
Ferrules for Shielding Hardware Kits



Stepped



Straight



Material and Finish:

Steel (annealed), tin plated

Related Product Data:

Shielding Hardware and Enclosure Kits—pages 99-103

Technical Documents:

Instruction Sheets—

- 408-9507
- 408-9508
- 408-9243
- 408-9242

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Sizes	Style	L Dim.	Cable Diameter	Part Numbers	
				Ferrule	Die Sets*
1-3	Stepped	.440 11.18	.165-.190 4.19-4.83	747579-8	543424-3
1-3	Stepped	.440 11.18	.190-.217 4.83-5.51	747579-8	543424-2
1-3	Stepped	.440 11.18	.217-.246 5.51-6.25	747579-8	543424-8
1-3	Stepped	.440 11.18	.246-.284 6.25-7.21	1-747579-0	543424-1
1-3	Stepped	.440 11.18	.284-.324 7.21-8.23	1-747579-0	543424-7
1-3	Stepped	.440 11.18	.324-.375 8.23-9.53	1-747579-1	543424-6
1-3	Straight	.440 11.18	.375-.437 9.53-11.10	1-747579-2	543424-5
1-3	Straight	.440 11.18	.400-.460 10.16-11.56	1-747579-4	543424-4
4-5	Stepped	.625 15.88	.230-.265 5.84-6.73	1-747580-0	543425-2
4-5	Stepped	.625 15.88	.338-.385 8.59-9.78	747580-8	543425-1
4-5	Stepped	.625 15.88	.375-.432 9.53-10.97	747580-4	58238-1
4-5	Stepped	.625 15.88	.422-.490 10.72-12.45	747580-5	58237-2
4-5	Straight	.625 15.88	.480-.562 12.19-14.28	747580-6	58237-1

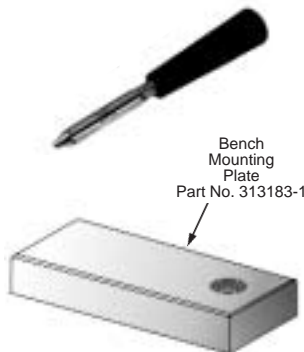
*Die sets used with Hand Crimping Tool Part No. 543344-1 or Pneumatic Bench Tool Part No. 312522-3 equipped with Die Set Holder Part No. 58449-1.

Cable Connectors

Application Tooling for Shielding Hardware Kits



Hand Crimping Tool
No. 543344-1
(Requires Die Sets, see table above.)



Bench Mounting Plate
Part No. 313183-1

Shielding Enclosure Expansion Tools
Part No. 58241-1 (.450 [11.43])†
58241-2 (.572 [14.53])†
58241-4 (.330 [8.38])†
†Maximum Cable Diameter
(Instruction Sheet—408-9172)

Pneumatic Bench Tool
No. 312522-3
(Requires Die Set Holder No. 58449-1.)



HDP-20 Connector Contacts, Precision Formed

**Contact Size 20 DF
Pin Diameter .040 [1.02]**

Material and Finish:

Pin—Brass
Socket—Phosphor bronze
Plated

A—Select—Gold flash over nickel on entire contact, with additional .000030 [0.00076] gold on mating end
B—Duplex—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated
C—Gold flash over nickel on entire contact
D—Duplex—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Related Product Data:

Performance Characteristics—page 42

Connectors used with:
HDP—pages 97-102

Application Tooling—page 107

Technical Documents:

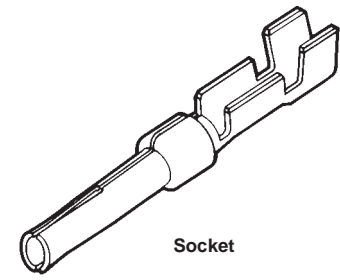
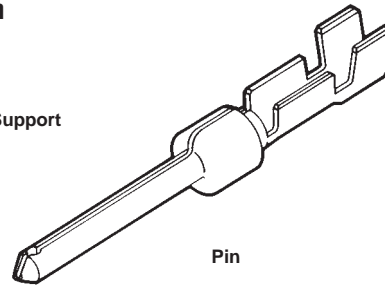
Product Specification—108-40005

Application Specifications—114-10000
114-40030

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Crimp Snap-In Contacts

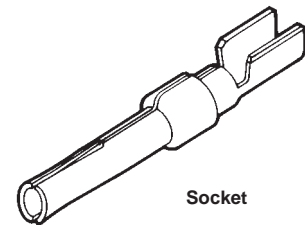
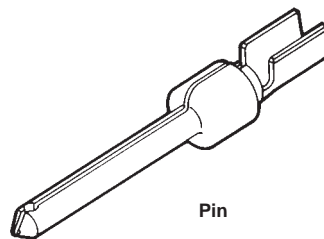
With Insulation Support



Wire Size Range AWG [mm ²]	Ins. Dia. Max.	Contact Finish (Plating Code)	Contact Part Numbers				Hand Tools for Loose Form Contacts		
			Pin		Socket		PRO-CRIMPER II Hand Tool	CERTI-CRIMP II Hand Tool (Color Code)	Applicators* for Strip Form Contacts
			Strip Form	Loose Form	Strip Form	Loose Form			
28-24 0.08-0.2	.040 1.02	A	66507-3	66507-9	66505-3	66505-9	58448-2	91503-1 (Blue Dot)	466423-4** 466901-1***
		B	3-66507-0	5-66507-7	6-66505-0	—			
		C	66507-4	1-66507-0	66505-4	1-66505-0			
		D	3-66507-1	5-66507-9	5-66505-7	5-66505-9			
26-22 0.15-0.4	.040 1.27	A	66682-2	66682-4	66683-2	66683-4	—	91549-1 (Black Dot)	466963-1***
		B	66682-9	—	1-66683-0	—			
		C	745254-3	745254-7	745253-3	745253-7			
		D	1-745254-1	1-745254-3	1-745253-1	—			
24-20 0.2-0.6	.060 1.52	A	66506-3	66506-9	66504-3	66504-9	58448-2	91503-1 (Red Dot)	466422-4** 466900-1***
		B	2-66506-4	5-66506-7	5-66504-9	6-66504-0			
		C	66506-4	1-66506-0	66504-4	1-66504-0			
		D	2-66506-5	5-66506-9	5-66504-6	5-66504-7			

*For Part Nos. of Special Applicators and Applicators for other model machines, call the AMP Tooling Assistance Center at **1-800-722-1111**.
**For use with AMP-O-LECTRIC Model "G" Terminating Machine.
***For use with AMP-O-MATIC Model II Stripper-Crimper Machine.

Without Insulation Support



Wire Size Range AWG [mm ²]	Ins. Dia. Max.	Contact Finish (Plating Code)	Contact Part Numbers		Hand Tools for Loose Form Contacts	
			Pin	Socket	CERTI-CRIMP II Hand Tool (Color Code)	Applicators* for Strip Form Contacts
			Strip Form	Strip Form		
28-24 0.08-0.2	.068 1.73	A	205310-2	205311-3	91548-1 (Blue Dot)	466903-1***
		C	—	205311-4		
24-20 0.2-0.6	.068 1.73	A	205202-2	205201-3	91548-1 (Red Dot)	466902-1***
		C	205202-6	205201-6		
22-18 0.4-0.8	.068 1.73	A	745229-2	745230-2	91513-1 (Green Dot)	466996-1***
		B	1-745229-1	1-745230-1		
		C	745229-5	745230-5		
		D	—	745230-8		

Note: Wire insulation diameter is limited by the connector housing cavity and clearance for the insertion/extraction tool.
*For Part Nos. of Special Applicators and Applicators for other model machines, call the AMP Tooling Assistance Center at **1-800-722-1111**.
***For use with AMP-O-MATIC Model II Stripper-Crimper Machine.

HDP-20 Connector Contacts, Precision Formed (Continued)

Contact Size 20 DF
Pin Diameter .040 [1.02]

Material and Finish:

Pin—Brass

Socket—Phosphor bronze

Plated:

A—Duplex plated .000030 [0.00076] gold on mating end, with entire contact .000050 [0.00127] min. nickel underplated

B—Duplex plated gold flash on mating end, with entire contact .000050 [0.00127] min. nickel underplated

Related Product Data:

Performance Characteristics—
page 42

Connectors used with:
HDP—pages 97, 98

Technical Documents:

Product Specification—108-40005

Application Specifications—
114-10000
114-40030

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Contact Size 20 DF
Pin Diameter .040 [1.02]

Material and Finish:

Pin—Brass

Socket—Phosphor bronze

Plated—Gold flash over nickel on entire contact, with additional .000030 [0.00076] gold on mating end

Related Product Data:

Performance Characteristics—
page 42

Connectors used with:
HDP—pages 97-102

Technical Documents:

Product Specification—108-40005

Application Specification—
114-40030

Insertion/Extraction Tool
No. 91285-1

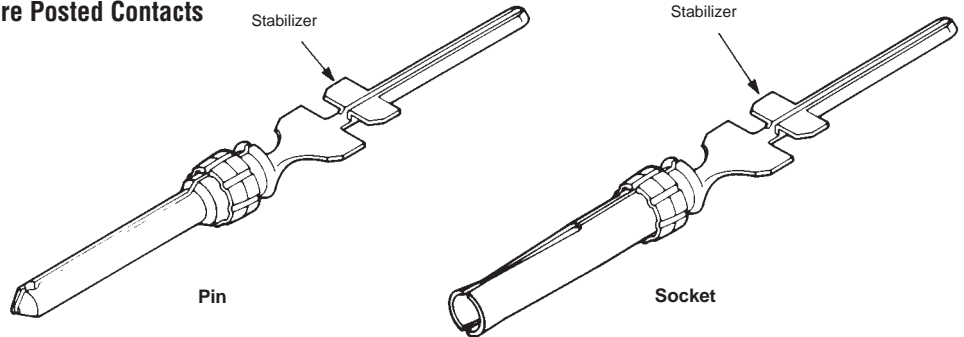
This tool includes interchangeable tips to Insert/Extract:

Size 22, 28-22 AWG [0.08-0.4 mm²]

Size 20, Posted Contacts

(Instruction Sheet—408-9404)

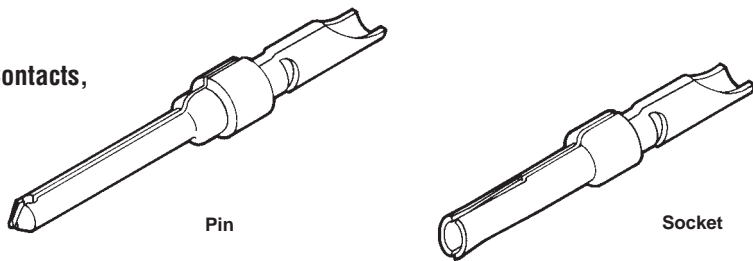
.025 [0.64]
Square Posted Contacts



Contact Finish (Plating Code)	Loose Form Contact Numbers							
	.125 [3.18] Post Length*		.188 [4.78] Post Length*		.427 [10.85] Post Length*		.651 [16.54] Post Length*	
	Pin	Socket	Pin	Socket	Pin	Socket	Pin	Socket
A	—	745288-4	2-745287-0	2-745288-0	745287-8	745288-8	1-745287-2	1-745288-2
B	—	—	—	—	—	745288-6	—	1-745288-0

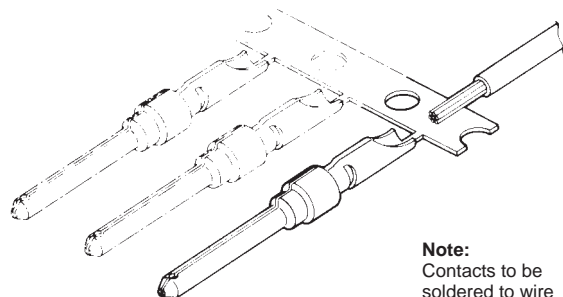
*Length of post extending from rear of HDP-20 metal-shell connector.

Solder Cup Contacts, Snap-In



18 AWG Max. Wire (.046 [1.17] Max. Conductor Diameter)

Strip Form Contact Number		Loose Form Contact Number	
Pin	Socket	Pin	Socket
66570-2	66569-2	66570-3	66569-3



Note: Contacts to be soldered to wire before being inserted into housing

HDP-20 Application Tooling

HDP-20 contacts may be applied by a variety of hand tools and machines. For low production runs, repairs and prototype work, we offer either our premium CERTI-CRIMP Hand Tool or our commercial PRO-CRIMPER II Hand Tool. For medium-volume production, you have the choice of our AMP-O-LECTRIC Model "G" Terminating Machine, our new Model "M" Terminating Machine, or our AMP-O-MATIC Model II Stripper-Crimper Machine. The Stripper-Crimper is typically used for terminating the wires of jacketed cable. All three machines can be bench mounted.

For production requirements ranging from non-stop high volumes to countless series of short runs, our popular AMPOMATOR CLS IV+ fully-automated lead-making machine is an ideal choice.

For further information about these or other AMP hand tools and machines, call the AMP Tooling Assistance Center at **1-800-722-1111**.



AMPOMATOR CLS IV+ Lead-Making Machine

This versatile machine now incorporates two AMP-O-LECTRIC Model "G" Terminating Units. Basically, it produces single-wire leads in lengths from 1.62 [41.2] to 1000 [25 400]. It measures, cuts, strips and terminates wire sizes from 26 to 10 AWG [0.12 to 6 mm²] stranded and 26 to 16 AWG [0.12 to 1.4 mm²] solid. Production rates range up to 4800 leads per hour for 3 [76.2] lengths.

The machine is microprocessor controlled, and programmed and operated with

an easy-to-follow, menu-driven touchscreen. It can retain data for up to 200 lead assemblies. Off-line programming is also possible with optional software OffLine-Plus for Windows 95, **Part No. 189263-2**.

Air requirement is 90 psi [6.21] bar minimum at 15 scfm [0.0071 m³/s]. Power requirement is single-phase 220 VAC, 50 or 60 Hz, 25 A.

For further information request Catalog 124324.

HDP-22 Crimp Snap-In Contact Connectors

Cable Connectors



Product Selection Guide

Connector			
Type	Insert Material	Shell Type Material and Finish	Mounting

Contacts		
Type	Termination	Plating

Plug
(pg. 110)

94V-0 Rated
Thermoplastic,
Black

Tin Plated Steel
with Grounding
Indents

.120
[3.05]
Dia. Holes



Pin
(pg. 114)

Crimp

Duplex
(.000030
[0.00076] Gold
and Tin)

Duplex
(Gold Flash
and Tin)



Receptacle
(pg. 110)

94V-0 Rated
Thermoplastic,
Black

Tin Plated Steel

.120
[3.05]
Dia. Holes



Socket
(pg. 114)

Crimp


Duplex
(0.000030
[0.00076] Gold
and Tin)

Duplex
(Gold Flash
and Tin)

HDP-22 Crimp Snap-In Contact Connectors (Continued)

Product Facts:

- Approximately 65% higher density than HD-20 connectors
- Lower cost, commercial version of the military approved Series 90 family
- Available with shielding overmold hardware and shielding enclosure kits
- Capable of using numerous standard HD-20 cable clamps and mating hardware

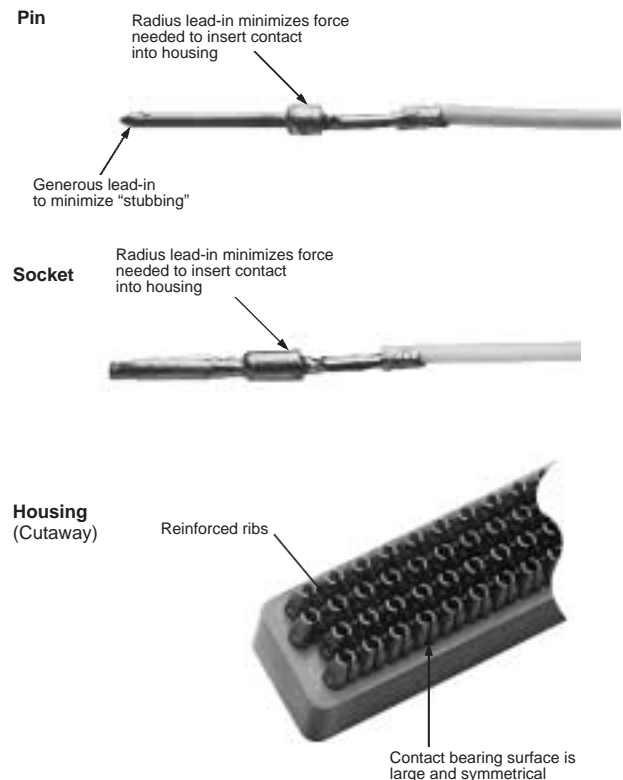
- Low cost, high performance, precision-formed crimp contacts
- Intermateable with any size 22 Subminiature D connector dimensionally complying with MIL-C-24308
- Recognized under the Component Program of Underwriters Laboratories Inc.,  File No. E28476
- Listed under Underwriters Laboratories Inc., Standard 1863, Communication Circuit Accessories,  File No. E81956
- Certified by Canadian Standards Association, File No. LR 1088108  (LR 7189-207)

Section Contents

Plug and Receptacle Connectors 110
 Basic Shielding Hardware Kits 111
 Shielding Hardware Enclosure Kits 112
 Ferrules for Shielding Hardware Kits 113
 Contacts 114
 Application Tooling 113, 114

Unshielded Cable Clamps	Shielded Cable Clamps and Shielding Hardware and Enclosure Kits	Mounting and Mating Hardware
One-Piece All Plastic Cable Clamp 180°/120° (Quik-Snap) (pg. 138)	Straight Exit RFI/EMI Shields for Jacketed Cable (pg. 146)	Male Screw Retainers (pgs. 151, 152)
Box and Lid Straight/90° Exit (pg. 142)	90° Exit RFI/EMI Die Cast Shields For Jacketed Cable (pg. 147)	Female Screwlocks (pg. 153)
Box and Lid Straight/90° Exit with Male Screw Retainers (pg. 142)	Basic Shielding Hardware Kits (pg. 111)	Locking Posts and Slide Latches (pgs. 154, 156)
Clam Shell Straight/45° Exit (pg. 143)	Shielding Hardware Enclosure Kits (pg. 112)	Two-Piece Spring Latch (pg. 157)
Clam Shell Straight/45° Exit with Screw Retainers (pg. 143)	Crimp & Split Ring Ferrules (pgs. 148-150)	Latching Blocks (pgs. 158, 159)

Contact Retention Features



HDP-22 Crimp Snap-In Contact Connectors (Continued)

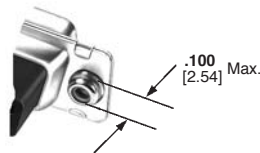
Cable Connectors



Plug
(With Grounding Indents)



Receptacle



Clinch Nut
(Plug and Receptacle)

Material and Finish:

Shell—Steel, tin plated

Insert—94V-0 rated thermoplastic, black

Contacts and ferrules must be purchased separately.

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Contacts—page 114

Ferrules—page 113

Mating/Panel Mounting—page 43

Cable Clamps—pages 137, 138, 140-142, 145, 146, 149, 150

Mating Hardware—pages 151-155, 158, 160

Technical Documents:

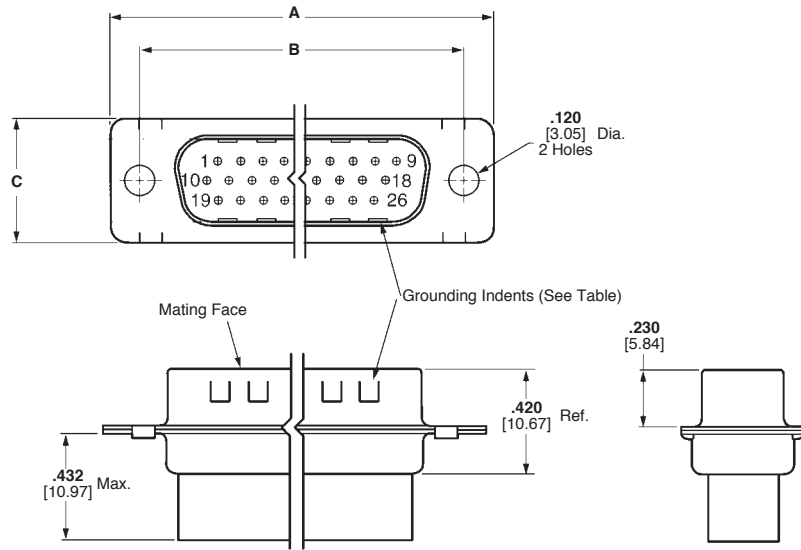
Application Specification—114-10001

Product Specification—108-1268

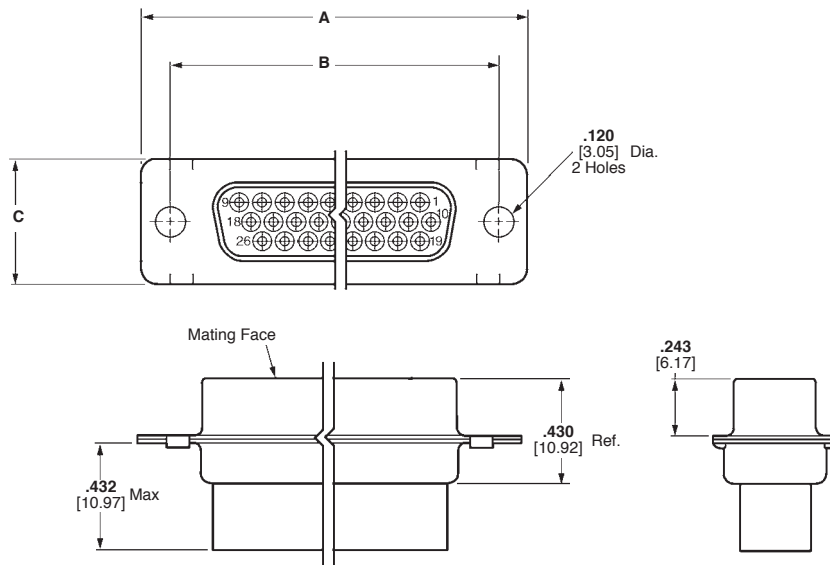
Instruction Sheets—408-9381

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Plug



Receptacle



Shell Size	No. of Contact Positions	Dimensions			Part Numbers			
		A	B	C	With Grounding Indents		With Clinch Nuts	
					Plug	Plug	Receptacle	Receptacle
1	15	1.213 30.81	.984 24.99	.494 12.55	748364-1	787695-1	748565-1	748696-1
2	26	1.541 39.14	1.312 33.33	.494 12.55	748365-1	749717-1	748566-1	788816-1
3	44	2.088 53.84	1.852 47.04	.494 12.55	748366-1	—	748567-1	786583-1
4	62	2.729 69.32	2.500 63.50	.494 12.55	748367-1	1658293-1	748568-1	—
5	78	2.635 66.93	2.406 61.11	.605 15.37	748368-1	—	748569-1	788817-1

Note: Plugs accept size 22 DF pin contacts and receptacles accept size 22 DF socket contacts.

HDP-22 Crimp Snap-In Contact Connectors (Continued)

Basic Shielding Hardware Kits



Plug



Receptacle

Each kit contains:

- Connector
- Inner shield
- Outer shield

Contacts and ferrules must be purchased separately.

Material and Finish:

Connector Shell—Steel, tin plated

Connector Insert—94V-0 rated thermoplastic, black

Shields—Steel, tin plated

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Contacts—page 114

Ferrules—page 113

Application Tooling—pages 113 & 114

Mateable Connectors—pages 110 & 112

Mating Hardware—pages 151-155, 158, 160

Mating/Panel Mounting—page 43

Technical Documents:

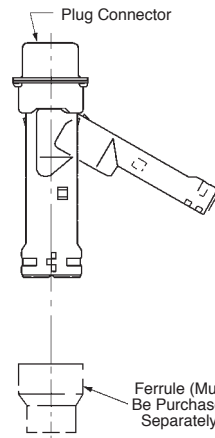
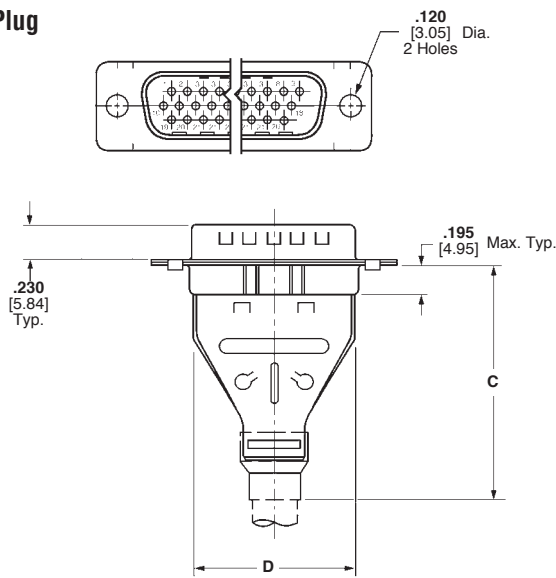
Application Specifications—114-10001

Product Specification—108-1268

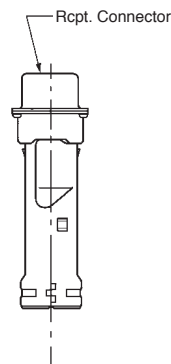
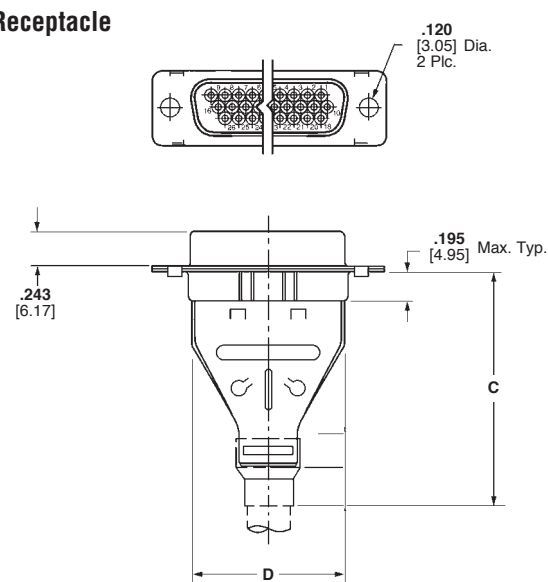
Instruction Sheet—408-9381, 408-9010

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Plug



Receptacle



Shell Size	No. of Contact Positions	Dimensions		Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia. †	Kit Numbers	
		C	D			Plug	Receptacle
1	15	1.535 38.99	.700 17.78	.165-.455 4.19-11.56	.350 8.89	748468-1	748634-1
2	26	1.535 38.99	1.024 26.01	.165-.455 4.19-11.56	.350 8.89	748469-1	748635-1
3	44	1.535 38.99	1.576 40.03	.165-.455 4.19-11.56	.350 8.89	748470-1	748636-1
4	62	1.892 48.06	2.215 56.26	.338-.562 8.59-14.28	.450 11.43	748471-1	—
5	78	1.876 47.65	2.120 53.85	.338-.490 8.59-12.45	.450 11.43	748472-1	—

Notes: 1. Plugs accept size 22 DF pin contacts and receptacles accept size 22 DF socket contacts.
2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.
†Maximum cable diameter after jacket and braid removed.

HDP-22 Crimp Snap-In Contact Connectors (Continued)

Shielding Hardware Enclosure Kits



Plug



Receptacle

Each kit contains:

- Connector
- Inner shield
- Outer shield
- Enclosure
- Two jackscrews

Contacts and ferrules must be purchased separately.

Material and Finish:

Connector Shell—Steel, tin plated

Connector Insert—94V-0 rated thermoplastic, black

Shields—Steel, tin plated

Enclosure—PVC, black

Jackscrews—Zinc alloy

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Contacts—page 114

Ferrules—page 113

Application Tooling—pages 113 & 114

Mateable Connectors—pages 110 & 111

Mating Hardware—pages 151-155, 158-160

Mating/Panel Mounting—page 43

Technical Documents:

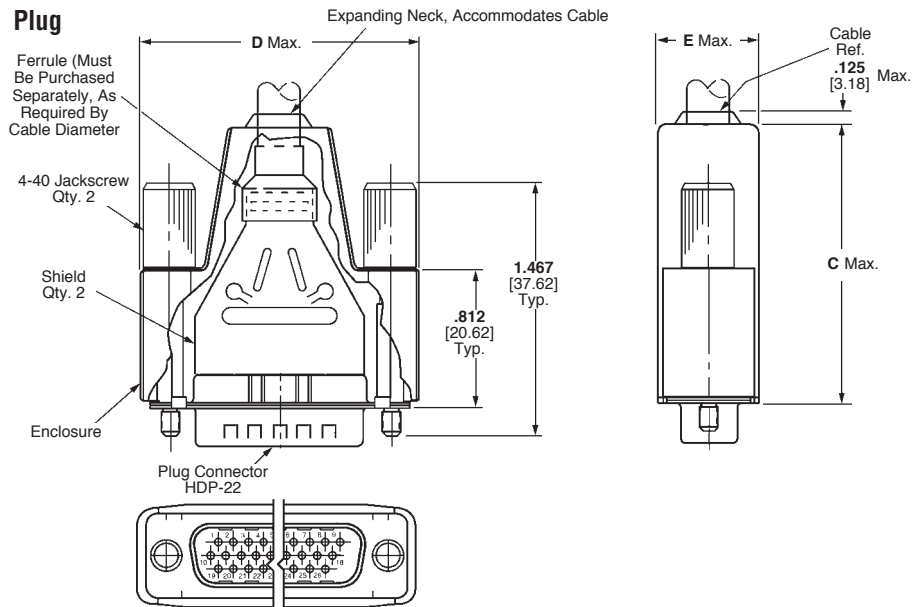
Application Specifications—114-10001

Product Specification—108-1268

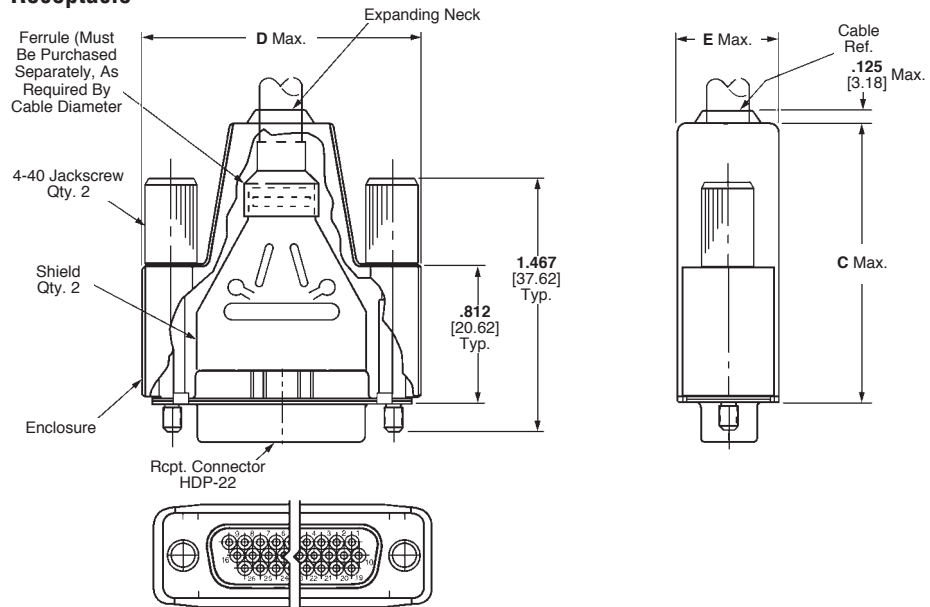
Instruction Sheet—408-9381
408-9172

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Plug



Receptacle



Shell Size	No. of Contact Positions	Dimensions			Recommended Cable Outer Diameter	Max. Inner Cable Bundle Dia.†	Kit Numbers		Shielding Enclosure Expansion Tool	
		C	D	E			Plug	Receptacle	Cable O.D. (Max.)	Part Number
1	15	1.640 41.66	1.355 34.42	.630 16.00	.190-.330 4.83-8.38	.330 8.38	748473-1	748639-1	.330 8.38	58241-4
2	26	1.640 41.66	1.685 42.80	.630 16.00	.190-.330 4.83-8.38	.330 8.38	748474-1	748640-1	.330 8.38	58241-4
3	44	1.640 41.66	2.205 56.01	.630 16.00	.217-.435 5.51-11.05	.350 8.89	748475-1	748641-1	.450 11.43	58241-1
4	62	2.010 51.05	2.860 72.64	.730 18.54	.338-.562 8.59-14.28	.450 11.43	748476-1	748642-1	.572 14.52	58241-2
5	78	2.010 51.05	2.770 70.36	.730 18.54	.338-.490 8.59-12.45	.450 11.43	748477-1	748643-1	.572 14.52	58241-2

Notes: 1. Plugs accept size 22 DF pin contacts and receptacles accept size 22 DF socket contacts.
2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.
†Maximum cable diameter after jacket and braid removed.

HDP-22 Crimp Snap-In Contact Connectors (Continued)

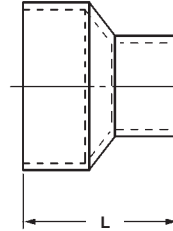
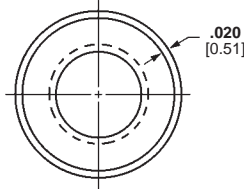
Ferrules for Shielding Hardware Kits



Stepped



Straight



Material and Finish:

Steel (annealed), tin plated

Related Product Data:

Shielding Hardware and Enclosure Kits—pages 111 & 112

Technical Documents:

Instruction Sheets—

- 408-9507
- 408-9508
- 408-9243
- 408-9242

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

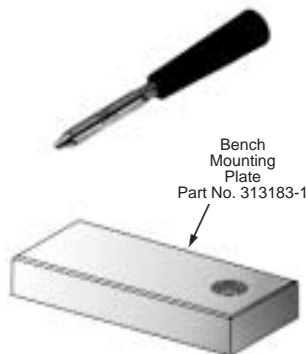
Shell Sizes	Style	L Dim.	Cable Diameter	Part Numbers	
				Ferrule	Die Sets*
1-3	Stepped	.440 11.18	.165-.190 4.19-4.83	747579-8	543424-3
1-3	Stepped	.440 11.18	.190-.217 4.83-5.51	747579-8	543424-2
1-3	Stepped	.440 11.18	.217-.246 5.51-6.25	747579-8	543424-8
1-3	Stepped	.440 11.18	.246-.284 6.25-7.21	1-747579-0	543424-1
1-3	Stepped	.440 11.18	.284-.324 7.21-8.23	1-747579-0	543424-7
1-3	Stepped	.440 11.18	.324-.375 8.23-9.53	1-747579-1	543424-6
1-3	Straight	.440 11.18	.375-.437 9.53-11.05	1-747579-2	543424-5
1-3	Straight	.440 11.18	.400-.460 10.16-11.56	1-747579-4	543424-4
4-5	Stepped	.625 15.88	.230-.265 5.84-6.73	1-747580-0	543425-2
4-5	Stepped	.625 15.88	.338-.385 8.59-9.78	747580-8	543425-1
4-5	Stepped	.625 15.88	.375-.432 9.53-10.97	747580-4	58238-1
4-5	Stepped	.625 15.88	.422-.490 10.72-12.45	747580-5	58237-2
4	Straight	.625 15.88	.480-.562 12.19-14.28	747580-6	58237-1

*Die sets used with Hand Crimping Tool Part No. 543344-1 or Pneumatic Bench Tool Part No. 312522-3 equipped with Die Set Holder Part No. 58449-1.

Application Tooling for Shielding Hardware Kits



Hand Crimping Tool
No. 543344-1
(Requires Die Sets, see table above.)



Shielding Enclosure Expansion Tools
Part No. 58241-1 (.450 [11.43])†
58241-2 (.572 [14.53])†
58241-4 (.330 [8.38])†
†Maximum Cable Diameter
(Instruction Sheet—408-9507)

Pneumatic Bench Tool
No. 312522-3
(Requires Die Set Holder No. 58449-1.)



HDP-22 Crimp Snap-In Contact Connectors (Continued)

Material

Pin—Brass

Socket—Phosphor bronze

Finish

A—Duplex plated .000030 [0.00076] gold on mating end, tin-lead on crimp barrel, with entire contact nickel underplated

B—Duplex plated gold flash on mating end, tin-lead on crimp barrel, entire contact nickel underplated

Related Product Data:

Performance Characteristics—page 42

Connectors used with—pages 110-112

Technical Documents:

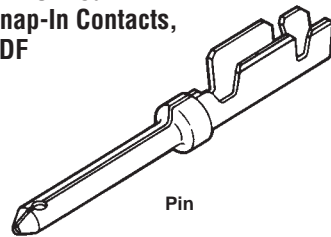
Application Specification—114-10001

Product Specification—108-1268

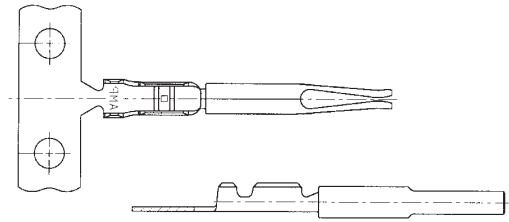
Instruction Sheet—408-9381

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Precision Formed Crimp Snap-In Contacts, Size 22 DF



Pin



Socket

Wire Size AWG mm ²	Insulation Diameter Max.	Contact Finish (Plating Code)	Contact Part Numbers				Hand Tools for Loose Form Contacts	
			Pin		Socket		PRO-CRIMPER II Hand Tool	CERTI-CRIMP II Hand Tool
			Strip Form	Loose Form	Strip Form	Loose Form		
28-22 0.4-0.08	.040 1.02	A	748333-2	748333-4	748610-2	748610-4	90800-1	91520-1
		B	748333-5	748333-7	748610-5	748610-7		

Notes: 1. Strip form contacts shipped 20,000 pieces/reel.

Insertion/Extraction Tool No. 91285-1 (Instruction Sheet—408-9404)

This tool contains interchangeable tips to Insert/Extract Size 22, 28-22 AWG [0.08-0.4 mm²] Crimp Contacts Size 20, 28-20 AWG [0.08-0.4 mm²] Crimp Contacts Size 20, Posted Contacts

Application Tooling

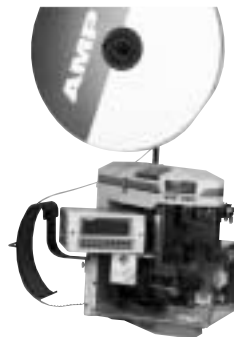


Applicators

To accommodate the broad range of wire termination products that AMP produces, most AMP terminating machines are designed for use with interchangeable applicators. The basic styles are quickly interchangeable to minimize costly down times, and feature dial-in wire and insulation crimp-height settings. Special applicators are now available for use with the AMP Crimp Quality Monitor, for measuring the crimp height of each termination as it is made, plus evaluating the quality of each crimp.

For further information, request Catalog 65404.

For applicator part numbers, call the AMP Tooling Assistance Center at **1-800-722-1111**.



AMP-O-LECTRIC MODEL "G" Terminating Machine

A totally new design of our most popular machine for bench-top operation. It features a quiet and highly-reliable direct motor drive, electronic controls for ease of setup and operation, and improved guarding and lighting for operator convenience and safety. All versions also include either manual or automatic precision adjustment for crimp height. Power requirement is 120 or 220 VAC, 50 or 60 Hz.

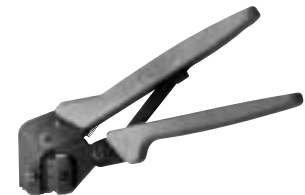
For further information, request Catalog 65828.



AMP-O-MATIC Model II Stripper-Crimper Machine

This machine automatically strips as well as terminates individual wires. Similar to the AMP-O-LECTRIC Model "G" machine, applicators are quickly interchangeable, and it includes precision adjustment for crimp height. All adjustments can be made from the front of the machine without special tools. Power requirement is 120 VAC. Air requirement is 80-100 psi [5.52-6.89 bar], 3.5 scfm [0.00165 m³/s].

For further information request Catalog 65004.



PRO-CRIMPER II Hand Tool Part No. 90800-1

Features interchangeable die sets and ratchet control that provides full die closure to help eliminate partial crimps. The new design is more durable, and requires dramatically less hand force.

For further information, request Catalog 82276.

HDE-20 IDC Connectors for Discrete Wire and Jacketed Cable



Cable Connectors




Product Selection Guide

Connector				Contacts Pre-Loaded*		
Type	Insert Material	Shell Type Material and Finish	Mounting	Type	Termination	Plating
Plug						
All-Plastic (pg. 117)	94V-0 Rated Thermoplastic, Black	Tin Plated Steel	.120 [3.05] Dia. Holes	Pins	Insulation Displacement	Duplex (.000030 [0.00076] Gold and Tin)
Metal-Shell (pg. 119)						* Interchangeable crimp snap-in contacts available, see page 126
Receptacle						
All-Plastic (pg. 118)	94V-0 Rated Thermoplastic, Black	Tin Plated Steel	.120 [3.05] Dia. Holes	Sockets	Insulation Displacement	Duplex (.000030 [0.00076] Gold and Tin)
Metal-Shell (pg. 120)						* Interchangeable crimp snap-in contacts available, see page 126

HDE-20 IDC Connectors for Discrete Wire and Jacketed Cable (Continued)

Product Facts

- Insulation displacement contacts preloaded in housings
- No wire stripping
- Post plated contacts with no bare edges
- Duplex plated contacts—gold on mating end and tin on crimp end
- Patented contact ensures reliable termination of a wide range of wire sizes and insulation diameters
- Removable contacts for replacement and repair

- Selective loading of contacts available
- Crimp snap-in contacts available for making jumpers between circuits
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Listed under Underwriters Laboratories Inc., Standard 1863, Communication Circuit Accessories, File No. E81956 
- Certified by Canadian Standards Association, File No. 1088108 (LR 7189-207) 

Section Contents

All-Plastic Plug and Receptacle Connectors.....	117, 118
Metal-Shell Plug and Receptacle Connectors.....	119, 120
Basic Shielding Hardware Kits	121, 122
Shielding Hardware Enclosure Kits	123, 124
Ferrules for Shielding Hardware Kits	125
Interchangeable Contacts, Crimp Snap-In.....	126
Application Tooling	127, 128

Typical Application Rates

Tool	Rate
Pistol Style	7.4 Sec./Line
Arbor Tool	5.0 Sec./Line
CHAMPOMATOR Machine	2.8 Sec./Line

Note: Rates are based on total time to complete a double ended 25 position Jacketed Cable Assembly

Cable Connectors

Unshielded Cable Clamps	Shielded Cable Clamps and Shielding Hardware and Enclosure Kits	Mounting and Mating Hardware
-------------------------	---	------------------------------

One-Piece, All-Plastic Cable Clamp, 180°/120° Exit (Quik-Snap) (pg. 138)

Unshielded Cable Clamps Straight/90° Exit (pg. 137)

Slide-On Back Cover (pg. 141)

Straight Exit RFI/EMI Shields for Jacketed Cable (pg. 147)

90° Exit Die Cast RFI/EMI Shields for Jacketed Cable (pg. 147)

Basic Shielding Hardware Kits (pgs. 121, 122)

Shielding Hardware Enclosure Kits (pgs. 123, 124)

Male Screw Retainers (pgs. 151, 152)

Female Screwlocks (pg. 153)

Locking Posts and Slide Latches (pgs. 154, 156)

Spring Latches, (pg. 157)

Latching Blocks, (pgs. 158, 159)

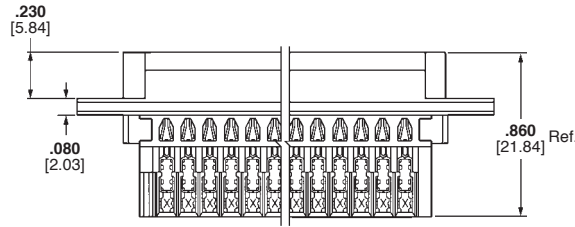
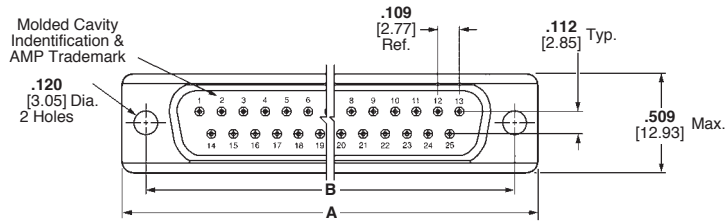
Keying Plug (pg. 160)

HDE-20 All-Plastic IDC Connectors

Plug



Plug



Material and Finish:

Housing—94V-0 rated thermoplastic, black

Contacts—Phosphor bronze

Contact Finish—Duplex plated:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Interchangeable Crimp Snap-In Contacts—page 126

Application Tooling—pages 126-128

Mateable Connectors:

HDP—pages 95-102

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating/Panel Mounting—page 43

Cable Clamps—pages 137, 138, 140-142, 145, 146, 149, 150

Mating Hardware—pages 151-155, 158, 160

Technical Documents:

Product Specification—108-40011

Application Specifications—114-40002
114-40003

Instruction Sheet—408-6621

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Connector Part Numbers	
		A	B		Contact Identification No. 1 for 30-26 AWG [0.05-0.15mm ²] Wire	Contact Identification No. 2 for 26-22 AWG [0.15-0.4mm ²] Wire
					Plug	Plug
1	9	1.213 30.81	.984 24.99	A	—	745203-2
				B	—	745203-5
2	15	1.541 39.14	1.312 33.33	A	—	745207-2
				B	—	—
3	25	2.090 53.09	1.852 47.04	A	745211-1	745211-2
				B	—	745211-5
4	37	2.732 69.39	2.500 63.50	A	—	745215-2
				B	—	—

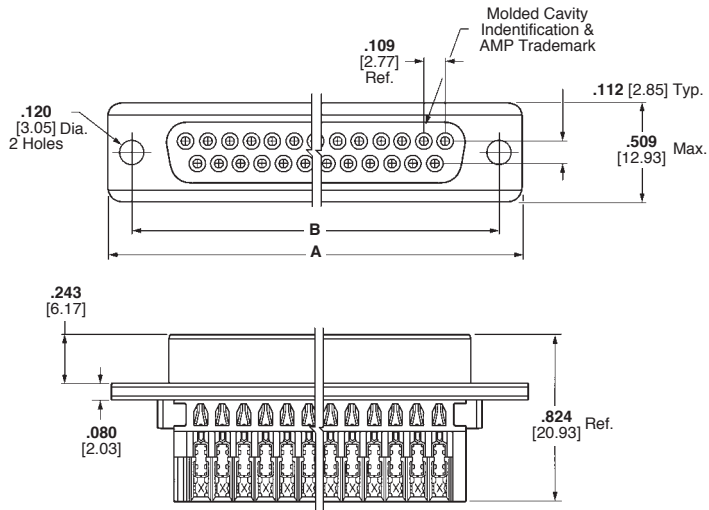
- Notes:**
1. All connectors are preloaded with insulation displacement contacts. Pins in plug connectors and sockets in receptacle connectors. Contacts accept a max. wire insulation thickness of .015 [0.38] and a max. wire insulation dia. of .060 [1.52].
 2. HDE connectors are designed for terminating solid or stranded (7-strand max.) wire.
 3. Individual conductor strands should be larger than .005 inch [0.127] diameter.
 4. Extraction Tool Part No. 91232-1 (Instruction Sheet 408-6631) is used to remove pin or socket contacts.
 5. For terminating more than one wire, or a drain wire, use crimp contacts on page 126.

HDE-20 All-Plastic IDC Connectors (Continued)

Receptacle



Receptacle



Material and Finish:

Housing—94V-0 rated thermoplastic, black

Contacts—Phosphor bronze

Contact Finish—Duplex plated:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Interchangeable Crimp Snap-In Contacts—page 126

Application Tooling—pages 126-128

Mateable Connectors:

HDP—pages 95-102

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating/Panel Mounting—page 43

Cable Clamps—pages 137, 138, 140-142, 145, 146, 149, 150

Mating Hardware—pages 151-155, 158, 160

Technical Documents:

Product Specification—108-40011

Application Specifications—114-40002
114-40003

Instruction Sheet—408-6621

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center:

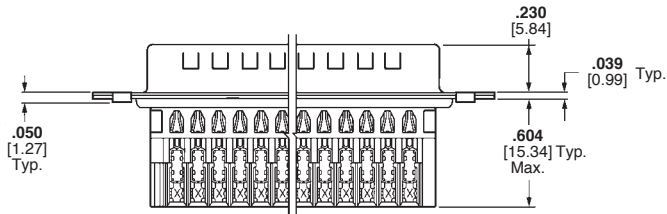
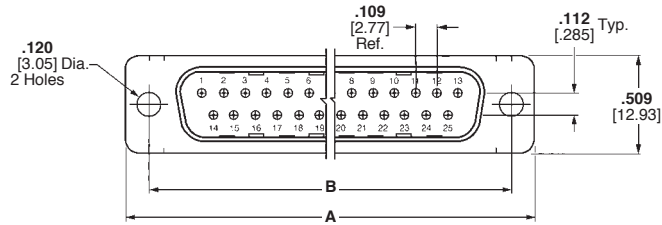
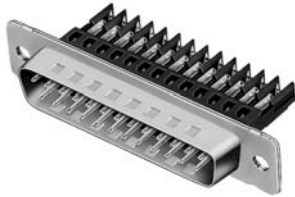
1-800-722-1111.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Connector Part Numbers
		A	B		Contact Identification No. 2 for 26-22 AWG [0.15-0.4mm ²] Wire Receptacle
1	9	1.213 30.81	.984 24.99	A	745201-2
				B	745201-5
2	15	1.541 39.14	1.312 33.33	A	745205-2
				B	745209-2
3	25	2.090 53.09	1.852 47.04	A	745209-2
				B	745209-5

- Notes:**
1. All connectors are preloaded with insulation displacement contacts. Pins in plug connectors and sockets in receptacle connectors. Contacts accept a max. wire insulation thickness of .015 [0.38] and a max. wire insulation dia. of .060 [1.52].
 2. HDE connectors are designed for terminating solid or stranded (7-strand max.) wire.
 3. Individual conductor strands should be larger than .005 inch [0.127] diameter.
 4. Extraction Tool Part No. 91232-1 (Instruction Sheet 408-6631) is used to remove pin or socket contacts.
 5. For terminating more than one wire, or a drain wire, use crimp contacts on page 126.

HDE-20 Metal-Shell IDC Connectors

Plug



Material and Finish:

Shell—Steel, tin plated

Insert—94V-0 rated thermoplastic, black

Contacts—Phosphor bronze

Contact Finish—Duplex plated:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Interchangeable Crimp Snap-In Contacts—page 126

Application Tooling—pages 126-128

Mateable Connectors:

HDP—pages 95-102

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating/Panel Mounting—page 43

Cable Clamps—pages 137, 138, 140-142, 145, 146, 149, 150

Mating Hardware—pages 151-155, 158, 160

Technical Documents:

Product Specification—108-40011

Application Specifications—114-40002
114-40003

Instruction Sheet—408-6645

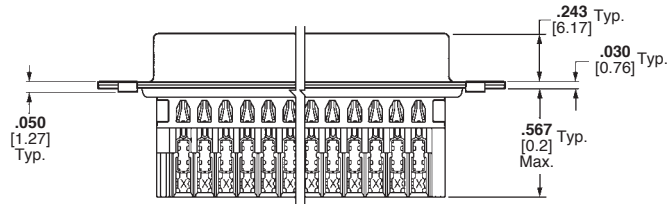
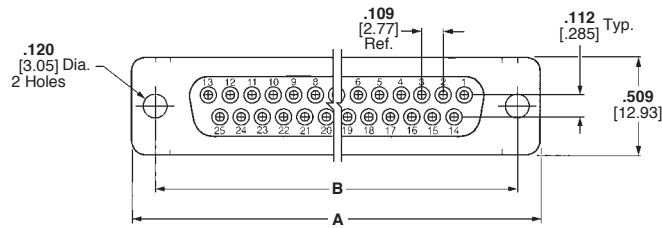
Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Connector Part Numbers		
					Contact Identification No. 1 for 30-26 AWG [0.05-0.15mm ²] Wire	Contact Identification No. 2 for 26-22 AWG [0.15-0.4mm ²] Wire	Contact Identification No. 3 for 22-20 AWG [0.4-0.6mm ²] Wire
					Plug	Plug	Plug
1	9	1.213 30.81	.984 24.99	A	745492-1	745492-2	745492-3
				B	—	745492-5	—
2	15	1.541 39.14	1.312 33.33	A	745494-1	745494-2	—
				B	—	745494-5	—
3	25	2.088 53.04	1.852 47.04	A	745496-1	745496-2	745496-3
				B	—	745496-5	745496-6
4	37	2.729 69.32	2.500 63.50	A	745498-1	745498-2	—
				B	—	745498-5	745498-6

- Notes:**
- All connectors are preloaded with insulation displacement contacts. Pins in plug connectors and sockets in receptacle connectors. Contacts accept a max. wire insulation thickness of .015 [0.38] and a max. wire insulation dia. of .060 [1.52].
 - Connectors can be made available with clinch nuts, contact Tyco Electronics.
 - HDE connectors are designed for terminating solid or stranded (7-strand max.) wire.
 - Individual conductor strands should be larger than .005 inch [0.127] diameter.
 - Extraction Tool Part No. 91232-1 (Instruction Sheet 408-6631) is used to remove pin or socket contacts.
 - For terminating more than one wire, or a drain wire, use crimp contacts on page 126.

HDE-20 Metal-Shell IDC Connectors (Continued)

Receptacle



Material and Finish:

Shell—Steel, tin plated

Insert—94V-0 rated thermoplastic, black

Contacts—Phosphor bronze

Contact Finish—Duplex plated:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Interchangeable Crimp Snap-In Contacts—page 126

Application Tooling—pages 126-128

Mateable Connectors:

HDP—pages 95-102

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating/Panel Mounting—page 43

Cable Clamps—pages 137, 138, 140-142, 145, 146, 149, 150

Mating Hardware—pages 151-155, 158, 160

Technical Documents:

Product Specification—108-40011

Application Specifications—114-40002
114-40003

Instruction Sheet—408-6645

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Connector Part Numbers		
		A	B		Contact Identification No. 1 for 30-26 AWG [0.05-0.15mm ²] Wire	Contact Identification No. 2 for 26-20 AWG [0.15-0.4mm ²] Wire	Contact Identification No. 3 for 22-20 AWG [0.4-0.6mm ²] Wire
		Receptacle	Receptacle		Receptacle		
1	9	1.213 30.81	.984 24.99	A	745491-1	745491-2	745491-3
				B	—	745491-5	—
2	15	1.541 39.14	1.312 33.33	A	745493-1	745493-2	—
				B	—	745493-5	—
3*	25	2.088 53.04	1.852 47.04	A	745495-1	745495-2	745495-3
				B	—	745495-5	—
4	37	2.729 69.32	2.500 63.50	A	745497-1	745497-2	—
				B	—	745497-5	—

* RS-232, size 3 connector, for 26-22 [0.15-0.4mm²] AWG wire select loaded circuits 1-8,15,17, 20 and 22, Plug Part No. 747740-1, Receptacle Part No. 747741-1, gold flash contacts.

- Notes:**
1. All connectors are preloaded with insulation displacement contacts. Pins in plug connectors and sockets in receptacle connectors. Contacts accept a max. wire insulation thickness of .015 [0.38] and a max. wire insulation dia. of .060 [1.52].
 2. Connectors can be made available with clinch nuts, contact Tyco Electronics.
 3. HDE connectors are designed for terminating solid or stranded (7-strand max.) wire.
 4. Individual conductor strands should be larger than .005 inch [0.127] diameter.
 5. Extraction Tool Part No. 91232-1 (Instruction Sheet 408-6631) is used to remove pin or socket contacts.
 6. For terminating more than one wire, or a drain wire, use crimp contacts on page 126.

HDE-20 Basic Shielding Hardware Kits



Each kit contains:

- Connector
- Inner shield
- Outer shield

Ferrules must be purchased separately.

Material and Finish:

Connector Shell—Steel, tin plated

Connector Insert—94V-0 rated thermoplastic, black

Shield—Steel, tin plated

Contacts—Phosphor bronze

Contact Finish—Duplex plated:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Application Tooling—pages 126-128

Mateable Connectors:

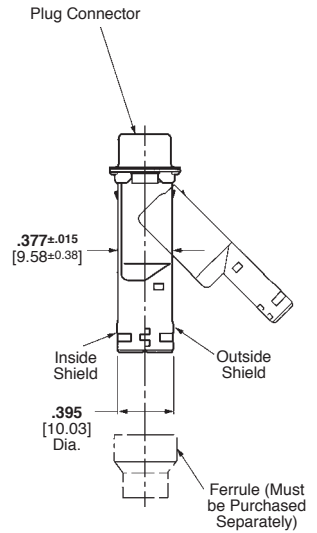
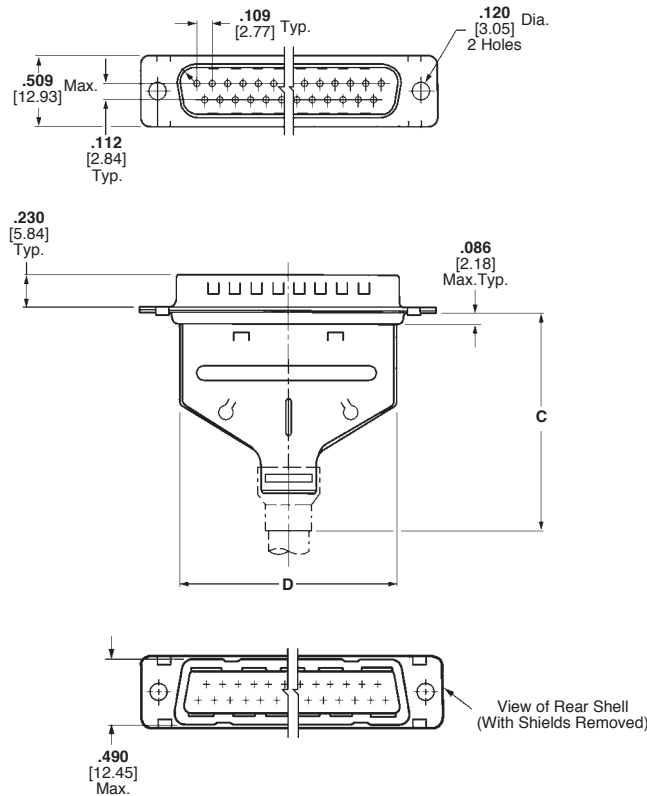
HDP—pages 95-102

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating Hardware—pages 151-155, 158, 160

Mating/Panel Mounting—page 43

Plug



Technical Documents:

Product Specifications—
108-40011
108-40030

Application Specifications—
114-40002
114-40003
114-40006

Instruction Sheet—408-9010

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Size	No. of Contact Pos.	Dimensions		Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Contact Finish (Plating Code)	Connector Part Numbers		
							Contact I.D. No. 1 for 30-26 AWG [0.05-0.15mm ²] Wire	Contact I.D. No. 2 for 26-22 AWG [0.15-0.4mm ²] Wire	Contact I.D. No. 3 for 22-20 AWG [0.4-0.6mm ²] Wire
							Plug	Plug	Plug
1	9	1.520 38.61	.678 17.22	.165-.455 4.19-11.56	.350 8.89	A	—	747515-2	747515-3
							747531-1	747531-2	—
2	15	1.520 38.61	1.002 25.45	.165-.455 4.19-11.56	.350 8.89	A B	—	747531-5	—
							747547-1	747547-2	—
3	25	1.520 38.61	1.550 39.37	.165-.455 4.19-11.56	.350 8.89	A B	—	747547-5	—
							747563-1	—	—
4	37	1.867 47.42	2.205 56.01	.338-.562 8.59-14.28	.450 11.43	A B	—	747563-5	—

Note: Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

†Maximum cable diameter after jacket and braid removed.

HDE-20 Basic Shielding Hardware Kits (Continued)



Each kit contains:

- Connector
- Inner shield
- Outer shield

Ferrules must be purchased separately.

Material and Finish:

Connector Shell—Steel, tin plated

Connector Insert—94V-0 rated thermoplastic, black

Shield—Steel, tin plated

Contacts—Phosphor bronze

Contact Finish—Duplex plated:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Application Tooling—pages 126-128

Mateable Connectors:

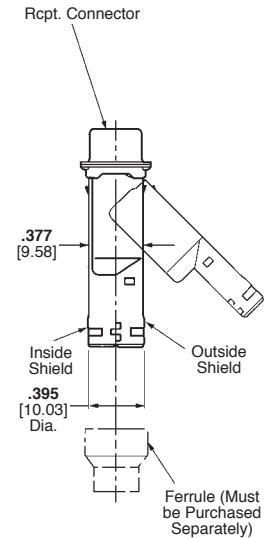
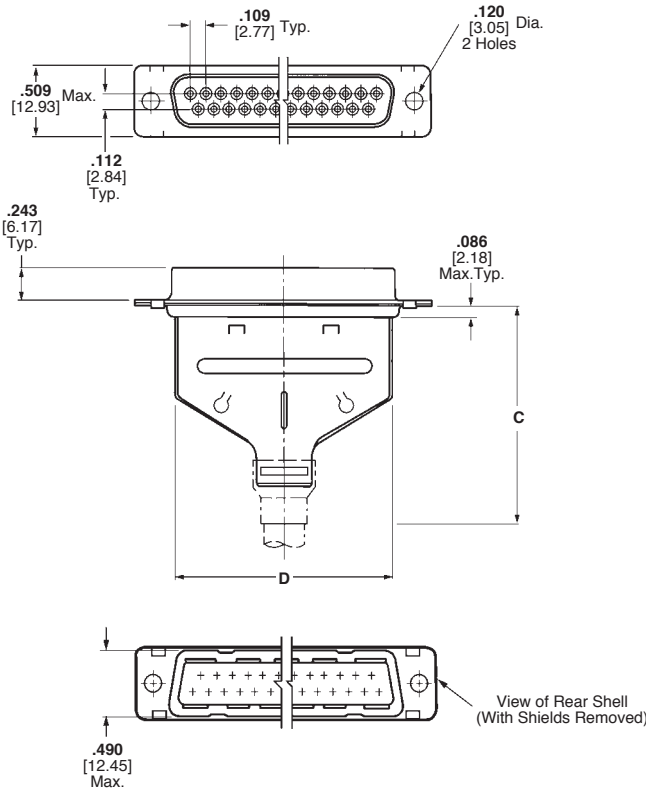
HDP—pages 95-102

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating Hardware—pages 151-155, 158, 160

Mating/Panel Mounting—page 43

Receptacle



Technical Documents:

Product Specifications—

108-40011

108-40030

Application Specifications—

114-40002

114-40003

114-40006

Instruction Sheet—408-9010

Note: Instruction Sheets for AMP Tooling are packaged with the tooling.

For additional information call the Tooling Assistance Center:

1-800-722-1111.

Shell Size	No. of Contact Pos.	Dimensions		Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Contact Finish (Plating Code)	Connector Part Numbers		
		C	D				Contact I.D. No. 1 for 30-26 AWG [0.05-0.15mm ²] Wire	Contact I.D. No. 2 for 26-22 AWG [0.15-0.4mm ²] Wire	Contact I.D. No. 3 for 22-20 AWG [0.4-0.6mm ²] Wire
							Receptacle	Receptacle	Receptacle
1	9	1.520 38.61	.678 17.22	.165-.455 4.19-11.56	.350 8.89	A	—	747516-2	747516-3
							—	747516-5	—
2	15	1.520 38.61	1.002 25.45	.165-.455 4.19-11.56	.350 8.89	A	—	747532-2	—
							—	747532-5	—
3	25	1.520 38.61	1.550 39.37	.165-.455 4.19-11.56	.350 8.89	A	747548-1	747548-2	—
							—	747548-5	—
4	37	1.867 47.42	2.205 56.01	.338-.562 8.59-14.28	.450 11.43	B	747564-4	747564-5	—

Note: Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

†Maximum cable diameter after jacket and braid removed.

HDE-20 Shielding Hardware Enclosure Kits



Each kit contains:

- Connector
- Inner shield
- Outer shield
- Enclosure
- Two jackscrews

Ferrules must be purchased separately.

Material and Finish:

Connector Shell—Steel, tin plated

Connector Insert—94V-0 rated thermoplastic, black

Shield—Steel, tin plated

Enclosure—PVC, black

Jackscrews—Zinc alloy

Contacts—Phosphor bronze

Contact Finish—Duplex plated:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Application Tooling—pages 126-128

Mateable Connectors:

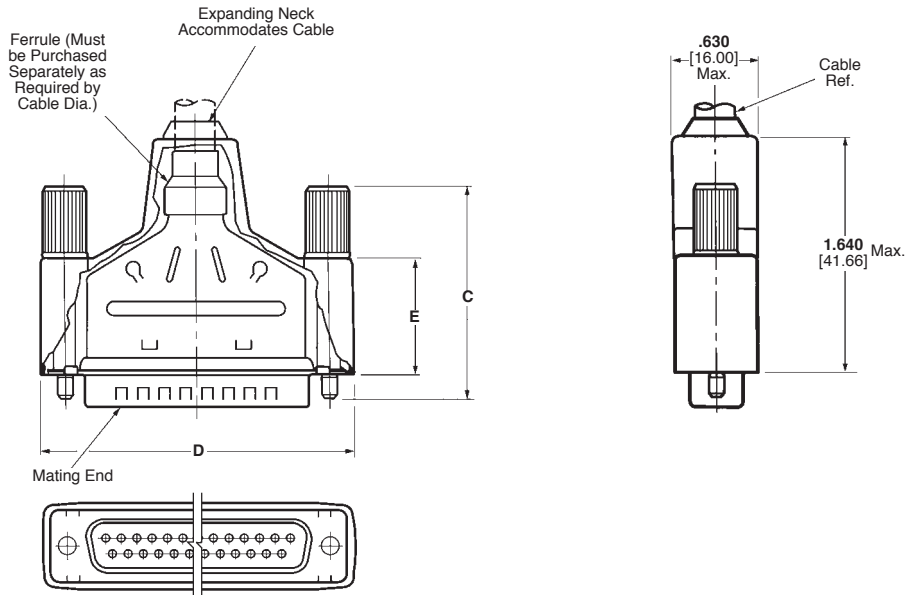
HDP—pages 95-102

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating Hardware—pages 151-155, 158, 160

Mating/Panel Mounting—page 43

Plug



Technical Documents:

Product Specifications—

108-40011

108-40030

Application Specifications—

114-40002

114-40003

114-40006

114-40008

Instruction Sheet—408-9172

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111.**

Shell Size	No. of Contact Pos.	Dimensions			Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Contact Finish (Plating Code)	Kit Part Numbers			Shielding Enclosure Expansion Tool	
		C	D	E				Contact I.D. No. 1 for 30-26 AWG [0.05-0.15mm ²]	Contact I.D. No. 2 for 26-22 AWG [0.15-0.4mm ²]	Contact I.D. No. 3 for 22-20 AWG [0.4-0.6mm ²]	Cable O.D. (Max.)	Part No.
								Plug	Plug	Plug		
1	9	1.640 41.66	1.355 34.42	.630 16.00	.190-.330 4.83-8.38	.330 8.38	A	—	747944-2	—	.330 8.38	58241-4
							B	—	747944-5	—		
2	15	1.640 41.66	1.685 42.80	.630 16.00	.190-.330 4.83-8.38	.330 8.38	A	—	747946-2	—	.450 11.43	58241-1
							B	—	747946-5	—		
3	25	1.640 41.66	2.210 56.13	.630 16.00	.217-.435 5.51-11.05	.350 8.89	A	747948-1	747948-2	—	.572 14.52	58241-2
							B	747948-4	747948-5	747948-6		
4	37	2.010 51.05	2.865 72.77	.730 18.54	.338-.562 8.59-14.28	.450 11.43	A	747950-1	747950-2	—	.572 14.52	58241-2
							B	—	747950-5	—		

†Maximum cable diameter after jacket and braid removed.

HDE-20 Shielding Hardware Enclosure Kits (Continued)



Each kit contains:

- Connector
- Inner shield
- Outer shield
- Enclosure
- Two jackscrews

Ferrules must be purchased separately.

Material and Finish:

Connector Shell—Steel, tin plated

Connector Insert—94V-0 rated thermoplastic, black

Shield—Steel, tin plated

Enclosure—PVC, black

Jackscrews—Zinc alloy

Contacts—Phosphor bronze

Contact Finish—Duplex plated:

A—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Related Product Data:

Contact Arrangements—page 41

Performance Characteristics—page 42

Application Tooling—pages 126-128

Mateable Connectors:

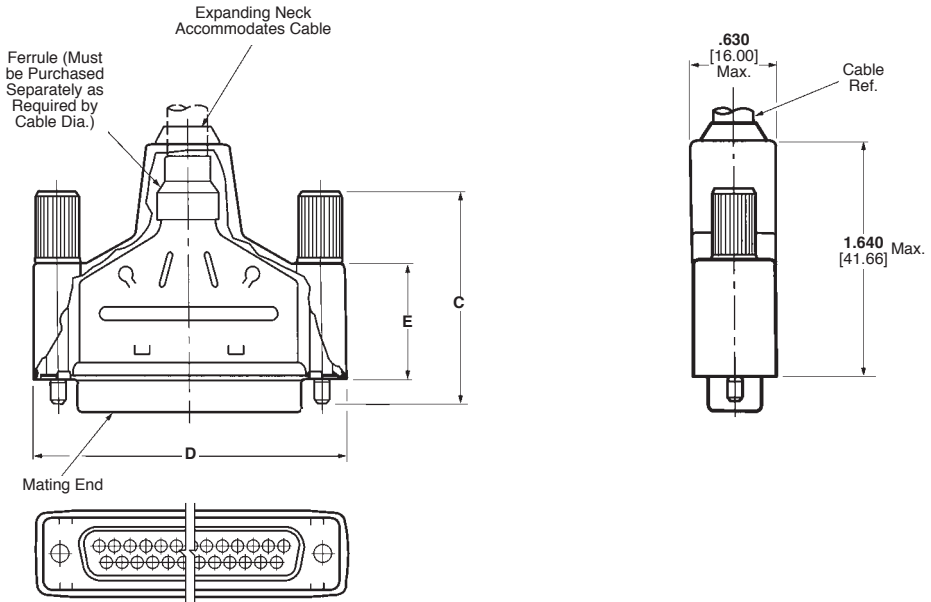
HDP—pages 95-102

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating Hardware—pages 151-155, 158, 160

Mating/Panel Mounting—page 43

Receptacle



Technical Documents:

Product Specifications—

108-40011

108-40030

Application Specifications—

114-40002

114-40003

114-40006

114-40008

Instruction Sheet—408-9172

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111.**

Shell Size	No. of Contact Pos.	Dimensions			Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Contact Finish (Plating Code)	Kit Part Numbers		Shielding Enclosure Expansion Tool	
		C	D	E				Contact I.D. No. 1 for 30-26 AWG [0.05-0.15mm ²]	Contact I.D. No. 2 for 26-22 AWG [0.15-0.4mm ²]	Cable O.D. (Max.)	Part No.
								Receptacle	Receptacle		
1	9	1.640 41.66	1.355 34.42	.630 16.00	.190-.330 4.83-8.38	.330 8.38	A	747943-1	747943-2	.330 8.38	58241-4
								—	747943-5		
2	15	1.640 41.66	1.685 42.80	.630 16.00	.190-.330 4.83-8.38	.330 8.38	A	747945-1	—	.450 11.43	58241-1
								—	747945-5		
3	25	1.640 41.66	2.210 56.13	.630 16.00	.217-.435 5.51-11.05	.350 8.89	A	747947-1	747947-2	.572 14.52	58241-2
								—	747947-5		
4	37	2.010 51.05	2.865 72.77	.730 18.54	.338-.562 8.59-14.28	.450 11.43	A	—	747949-2	.572 14.52	58241-2
								—	—		

†Maximum cable diameter after jacket and braid removed.

HDE-20 Crimp Snap-In Contact Connectors

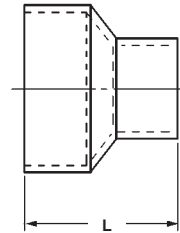
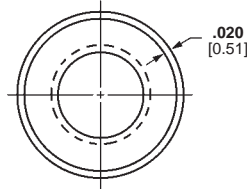
Ferrules for Shielding Hardware Kits



Stepped



Straight



Material and Finish:

Steel (annealed), tin plated

Related Product Data:

Shielding Hardware and Enclosure Kits—pages 121-124

Technical Documents:

Instruction Sheets—

- 408-9242
- 408-9243
- 408-9507
- 408-9508

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

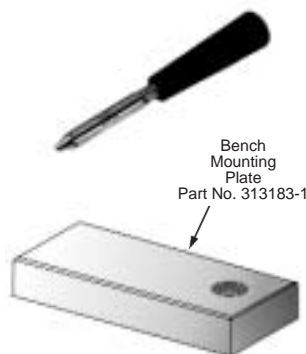
Shell Sizes	Style	L Dim.	Cable Diameter	Part Numbers	
				Ferrule	Die Sets*
1-3	Stepped	.440 11.18	.165-.190 4.19-4.83	747579-8	543424-3
1-3	Stepped	.440 11.18	.190-.217 4.83-5.51	747579-8	543424-2
1-3	Stepped	.440 11.18	.217-.246 5.51-6.25	747579-8	543424-8
1-3	Stepped	.440 11.18	.246-.284 6.25-7.21	1-747579-0	543424-1
1-3	Stepped	.440 11.18	.284-.324 7.21-8.23	1-747579-0	543424-7
1-3	Stepped	.440 11.18	.324-.375 8.23-9.53	1-747579-1	543424-6
1-3	Straight	.440 11.18	.375-.435 9.53-11.05	1-747579-2	543424-5
1-3	Straight	.440 11.18	.400-.455 10.16-11.56	1-747579-4	543424-4
4	Stepped	.625 15.88	.230-.265 5.84-6.73	1-747580-0	543425-2
4	Stepped	.625 15.88	.338-.385 8.59-9.78	747580-8	543425-1
4	Stepped	.625 15.88	.375-.432 9.53-10.97	747580-4	58238-1
4	Stepped	.625 15.88	.422-.490 10.72-12.45	747580-5	58237-2
4	Straight	.625 15.88	.480-.562 12.19-14.28	747580-6	58237-1

*Die sets used with Hand Crimping Tool Part No. 543344-1 or Pneumatic Bench Tool Part No. 312522-3 equipped with Die Set Holder Part No. 58449-1.

Application Tooling for Shielding Hardware Kits



Hand Crimping Tool
No. 543344-1
(Requires Die Sets, see table above.)



Shielding Enclosure Expansion Tools
Part No. 58241-1 (.450 [11.43])†
58241-2 (.572 [14.53])†
58241-3 (.330 [8.38])†
†Maximum Cable Diameter
(Instruction Sheet—408-9507)

Pneumatic Bench Tool
No. 312522-3
(Requires Die Set Holder No. 58449-1.)



HDE-20 Contacts, Precision Formed

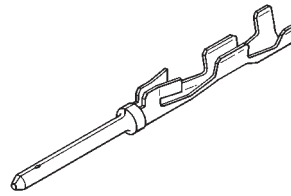
Material and Finish:

Phosphor bronze, duplex plated as follows:

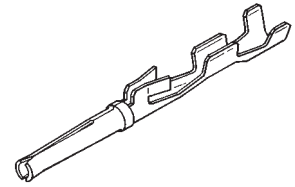
A—Duplex plated .000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

B—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated

Interchangeable Contacts, Crimp Snap-In



Pin



Socket

Related Product Data:

Performance Characteristics—
page 42

Connectors used with:
HDE—pages 117-124

Technical Documents:

Product Specifications—
108-40011
108-40030

Application Specifications—
114-40002
114-40003
114-40006
114-40008

Instruction Sheet—408-6738

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Wire Size Range AWG mm ²	Code*	Insulation Diameter		Contact Finish (Plating Code)	Contact Part Numbers	
		Single Wire	Two Wire		Pin Strip Form	Socket Strip Form
26-22 0.15-0.4	4	.054	.039	A	—	745269-2
		1.37	0.99	B	745266-6	745269-6
22-18 0.4-0.8	3	.075	.054	A	745267-2	745270-2
		1.91	1.37	B	—	745270-6

* A Code indicating accepted wire size range is stamped inside insulation crimp barrel of each contact.

Notes: 1. Extraction Tool No. 91232-1 is used to remove pin and socket contacts.
2. Strip form contacts shipped 10,000 pieces/reel.

Hand Tools with Modular Heads

Technical Documents:

Instruction Sheets—

408-6790
408-9414
408-6789

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Hotline: **1-800-722-1111**.

HDE-20 Application Tooling

A modular interchangeable head provides versatility to these tools. Along with the head used to terminate Subminiature D connectors, heads are available to terminate other AMP product lines.

The head used to terminate the Subminiature D, HDE connectors can be used with a manual pistol grip tool, an air pistol grip tool and a bench mount power assembly. These tools terminate one unstripped wire per cycle and index the connector to the next terminating position. The head rotates to permit optimum access to the wiring area.

Manual Pistol Grip Tool



Handle and Head Tool Assembly No. 608868-1
Handle No. 58074-1
Head Assembly No. 58063-2

This tool is manually actuated, using modular heads.

Air Pistol Grip Tool



Handle No. 58075-1
Head Assembly No. 58063-2

Air actuated, utilizing modular heads.

Bench Mounted Tools with Modular Heads

Bench Mount Pneumatic Power Assembly



Bench Assembly No. 58338-1
Head Assembly No. 58063-2

This tool is air actuated with either a foot or knee switch.

Bench Mount Electric Power Assembly



Head Assembly No. 58063-2

This tool electrically powered and actuated by a foot switch.

HDE-20 Application Tooling (Continued)

Cable Connectors

Product Facts

- Low applied costs
- Automatic termination of jacketed cable
- Automatic continuity check and shorts test
- Single- or double-ended assemblies
- Microprocessor controlled with touch input screen
- Stored program capability
- Selective termination of connector positions
- Rapid tooling changeover for different connector types
- Handles a variety of AMP insulation-displacement connectors
- Terminates both multicolor and single-color wires
- Remote programming capability
- Straight or right-angle wire dress
- Control Module 852423-1 120 VAC

Technical Documents:

Instruction Sheets

408-7777 Manual Arbor Tool

Note: Instruction Sheets for AMP Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: 1-800-722-1111.



CHAMPOMATOR 3A Terminating Machine

This machine is the high-productivity way to terminate multiconductor, jacketed cable with a variety of AMP connectors having insulation displacement contacts. It automatically sorts the wires, and terminates them in a programmed sequence. The sequence may use all or some of the connector contacts, such as for various RS-232 wiring patterns.

All cable assemblies are tested for continuity and shorts.

The machine is microprocessor controlled, and programmed by a touch input screen. The easy programming simplifies the process and reduces training requirements. The machine's internal storage capability can retain up to 50 cable assemblies, which can be easily retrieved by number or name. Production monitoring and diagnostics can also be accessed through the touch screen.

Contact Tyco Electronics for the tooling required for your specific applications.



Control Module
No. 852423-1

CHAMPOMATOR 2.5 Machine
No. 354786-4

CHAMPOMATOR 2.5 Terminating Machine

This is a compact, semi-automatic bench machine. It is microprocessor controlled, and programmed using a membrane switch keyboard. The potential machine rate is one pair of wires per second. Contact Tyco Electronics for the tooling required for your specific applications.

The CHAMPOMATOR Model 2.5 Bench Terminating Machine—**Part No. 354786-4** is used in conjunction with Control Module—**Part No. 852423-1**.

Contact Tyco Electronics for application specific requirements.

Manual Arbor Tool



Arbor Tool No. 91085-2
Applicators:




- Wire O.D. .041-.060 [1.04-1.52]—No. 543157-1 (tool mount), 543426-1 (termination tool)
- Wire O.D. .040 [1.02] and smaller—No. 543157-1 (tool mount), 543426-2 (termination tool)

Manual Arbor Tool

The arbor tool with applicator is used to terminate jacketed cable. Wires are neatly routed and trimmed to length with the cable jacket close to the connector. 400 to 800 terminated wires per hour are typical.

Subminiature D Connectors HDF-20 for Flat Ribbon Cable

Product Facts

- Available in all 5 standard shell sizes
- Visual inspection of termination possible
- Fluted cover provides positive alignment of cable prior to termination
- Wide range of application tooling
- Patented insulation displacement contact latches into the connector cover
- Contact design provides a "gas-tight" termination
- Contacts accept 28 AWG [0.08mm²] solid and stranded, and 26 AWG [0.15mm²] solid and stranded round conductor flat ribbon cable on .050 [1.27] centers
- Qualified to Battelle Level III environment
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 
- Listed and complies with UL 1863, Communication Circuit Accessories File No. E81956 

Plug — Low Profile Metal Shell



Receptacle — Low Profile Metal Shell



No. of Pos. & (Shell Size)	Cable Stabilizer Part No.	Plug Part Nos.		Receptacle Part Nos.	
		With Standard Mounting Holes	With 4-40 Threaded Inserts	With Standard Mounting Holes	With 4-40 Threaded Inserts
9 (1)	747275-4	747306-4	747043-4	747303-4	747052-4
15 (2)	747275-3	747306-3	747043-3	747303-3	747052-3
25 (3)	747275-2	747306-2	747043-2	747303-2	747052-2
37 (4)	747275-1	747306-1	747043-1	747303-1	747052-1
50 (5)	746785-1	—	746790-1	—	746789-1

Note: All assemblies are supplied with housing and cover pre-assembled. Optional cable stabilizer must be ordered separately.

Material

Front Shell—Steel, tin or tin-lead plated

Housing, Cover & Cable Stabilizer—Thermoplastic, 94V-0, black

Threaded Inserts—Brass, unplated

Contacts—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, .000100-.000200 [0.00254-0.00508] bright tin-lead on termination end with entire contact underplated .000050 [0.00127] min. nickel

Related Product Data

Contact Arrangement—page 41

Performance Characteristics—page 42

Mateable Receptacles:

HDF-20 Metal-Shell—page 129

HDE—pages 115-126 (Sizes 1-4 only)

HDP—pages 95-114

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Mating/Panel Mounting—page 131

Ribbon Cable—page 130

Accessories:

Commoning Strip—page 151

Mating Hardware—pages 151-155, 158 & 159

Application Tooling—page 132

Technical Documents

Product Specification—108-40012

**HDF-20 Low Profile All-Plastic Connectors
(for Round Conductor Flat Ribbon Cable)**

Material and Finish

Housing, Cover & Cable Stabilizer

—Black thermoplastic, 94V-0 rated

Threaded Inserts

—Brass, unplated
Pin Contacts—Phosphor bronze, duplex plated .000030 [0.00076] gold on mating end, .000100-.000200 [0.00254-0.00508] bright tin-lead on termination end, with entire contact underplated .000050 [0.00127] nickel

Related Product Data

Contact Arrangement—page 41

Performance Characteristics—page 42

Mateable Receptacles:

HDF-20 All-Plastic—page 129

HD-20 Board Mount—pages 55-72, 83-90, 92-94

HDE All-Plastic—pages 152, 153

Mating/Panel Mounting—page 131

Ribbon Cable—page 130

Accessories:

Mating Hardware—pages 151-155, 158, 160

Application Tooling—page 132

Technical Documents

Product Specifications—

108-40012 HDF-20 Low Profile Connectors

Plug Assemblies



Housing and Covers are Preassembled; Cable Stabilizer is Separate.

Receptacle Assemblies



Housing and Covers are Preassembled; Cable Stabilizer is Separate.

No. of Contact Pos. & (Shell Size)	Optional Cable Stabilizer Part No.	Plug Assembly Part No.		Receptacle Assembly Part No.	
		With Standard Mounting Holes	With Threaded Inserts	With Standard Mounting Holes	With Threaded Inserts
9 (1)	747275-4	747321-4	747053-4	747318-4	747051-4
15 (2)	747275-3	747321-3	747053-3	747318-3	747051-3
25 (3)	747275-2	747321-2	747053-2	747318-2	747051-2
37 (4)	747275-1	747321-1	747053-1	747318-1	747051-1

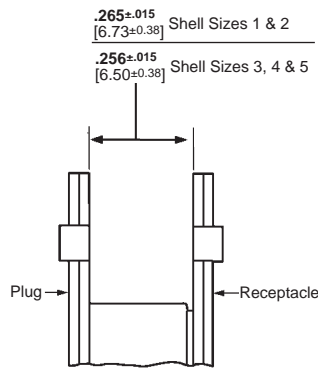
Note: All assemblies are supplied with housing and cover pre-assembled. Optional cable stabilizer must be ordered separately.

Ribbon Cable Parameters

No. of Conductors	28 AWG [0.08mm ²] Part No.		26 AWG [0.15mm ²] Part No.
	Length Per Reel		Length Per Reel
	100 Ft. [30.5m]	500 Ft. [152.4m]	500 Ft. [152.4m]
9	1-57040-2	1-971111-2	57034-2
15	1-57040-5	1-971111-5	57034-5
25	57040-2	971111-2	57034-9
37	1-57040-8	1-971111-8	1-57034-3
50	57040-6	971111-6	1-57034-5

HDF-20 Plugs/Receptacles Mating and Panel Mounting Specifications

Plug/Receptacle Mating



The .265/.256 [6.73/6.50] dimensions are required to assure full mating of connector halves. These dimensions must be taken into consideration when determining the method of mounting, panel thickness, etc.

Panel Mounting

Plugs and receptacles can be mounted to a panel from either the front or rear, using a variety of accessory hardware. Typical examples are shown below.

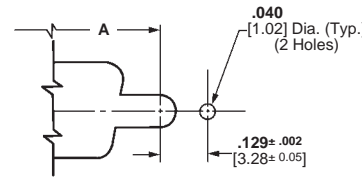
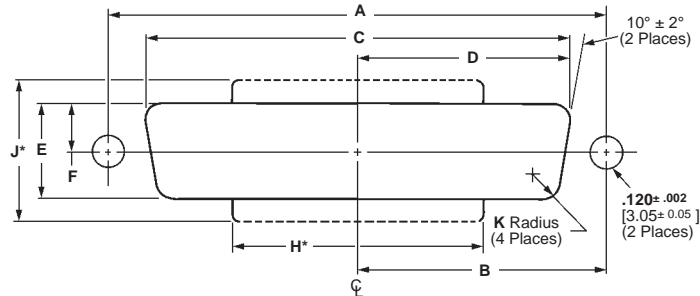


Typical Front-Panel Mounted HDF-20 Plug



Typical Rear-Panel Mounted HDF-20 Plug

Panel Cutouts



Cutout for Rear Mount and Short Latching Blocks

Shell Size (Pos.)	Mounting Method Front/Rear Panel	Dimensions								
		A	B	C	D	E	F	H*	J*	K
1 (9)	Front	.984 24.99	.492 12.50	.874 22.20	.437 11.10	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	.984 24.99	.492 12.50	.806 20.47	.403 10.24	.449 11.41	.225 5.72	.550 13.97	.750 19.05	.132 3.35
2 (15)	Front	1.312 33.33	.656 16.66	1.202 30.53	.601 15.27	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	1.312 33.33	.656 16.66	1.134 28.80	.567 14.40	.449 11.41	.225 5.72	.730 18.54	.750 19.05	.132 3.35
3 (25)	Front	1.852 47.04	.926 23.52	1.743 44.27	.872 22.15	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	1.852 47.04	.926 23.52	1.674 42.52	.842 21.39	.449 11.41	.225 5.72	1.275 32.39	.750 19.05	.132 3.35
4 (37)	Front	2.500 63.50	1.250 31.75	2.391 60.73	1.196 30.38	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	2.500 63.50	1.250 31.75	2.326 59.08	1.163 29.54	.449 11.41	.225 5.72	1.920 46.05	.750 16.13	.132 3.35
5 (50)	Front	2.406 61.11	1.203 30.56	2.297 58.34	1.149 29.19	.623 15.82	.312 7.93	—	—	.083 2.11
	Rear	2.406 61.11	1.203 30.56	2.218 56.34	1.109 28.17	.555 14.10	.278 7.06	1.753 44.52	.750 19.05	.132 3.35

*Panel cutout configuration with H and J dimensions provides clearance for mounting connectors with cable clamps.




HDF-20 Application Tooling**Application Tooling****Hand Tool Kit No. 768340-1**

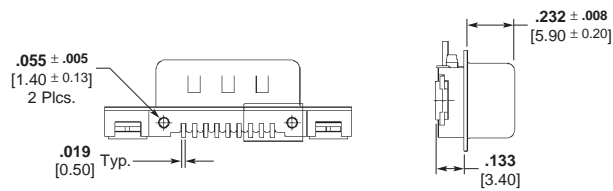
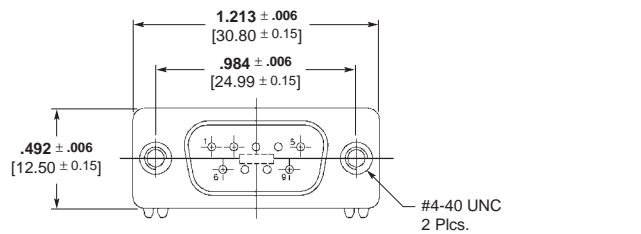
Consists of a hand tool frame, a universal base assembly, a bench mount kit, and connector-specific tooling for AMP-LATCH Standard and Novo Receptacles, Card-Edge Connectors, and AMPLIMITE HDF-20 Connectors.

Note: For 50-position HDF connectors, you must also order Connector-Specific Kit No. 768350-1.

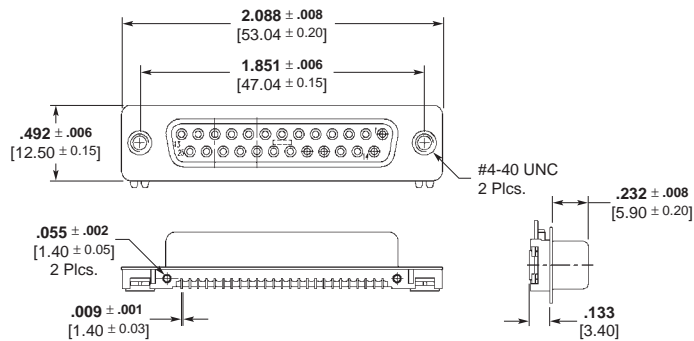
HD-20 Solder Cup Connectors

Product Facts

- Preloaded duplex-plated solder cup contacts
- Shell finish in choice of standard zinc or tin
- Two-piece 94V-0 rated plastic insert
- Anti-solderwicking contact design
- Intermateable with other subminiature D connectors
- Available in 9, 15, 25 and 37 position (shell sizes 1-4) plugs and receptacles
- Easy application without special application tools
- Shields offer full EMI shielding and ESD insulation
- Crimped shield termination for low impedance
- Shield crimp provides strain relief
- Shields may be post molded or covered with enclosures
- Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476 
- Listed under Underwriters Laboratories Inc., connectors for use in data, signal, control & Power Applications — components, File No. E127344 
- Certified by Canadian Standards Association, File No. LR 97981 



**Part Number 440144-1
9 Position Slim Line
Surface Mount HD-20 Plug**



**Part Number 440362-1
25 Position Slim Line
Surface Mount HD-20 Receptacle**

HD-20 Solder Cup Connectors (Continued)



Material and Finish:

Shell—Steel, tin or zinc plated

Insert—94V-0 rated thermoplastic, black

Contacts—Phosphor bronze; duplex plated with gold flash on mating end, tin-lead on solder cup, with entire contact nickel underplated

Related Product Data:

Mateable Connectors:

HDE—pages 115-124

HDF—pages 129-131

HDP—pages 95-106

HD-20 Solder Cup—pages 133-135

HD-20 Board Mount—pages 55-72, 83-90, 92-94

Cable Clamps—pages 137, 138, 140-142, 145, 146, 149, 150

Mating Hardware—pages 151-154, 156-159

Technical Documents:

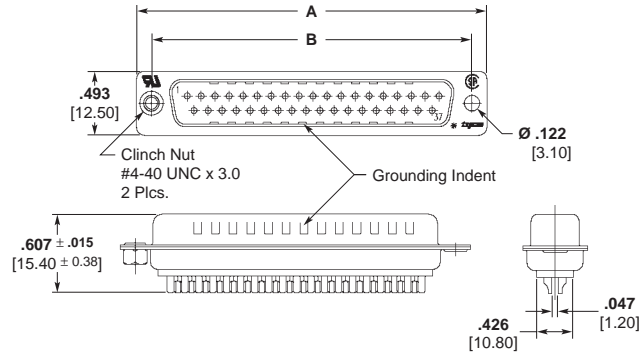
Product Specification

108-40031

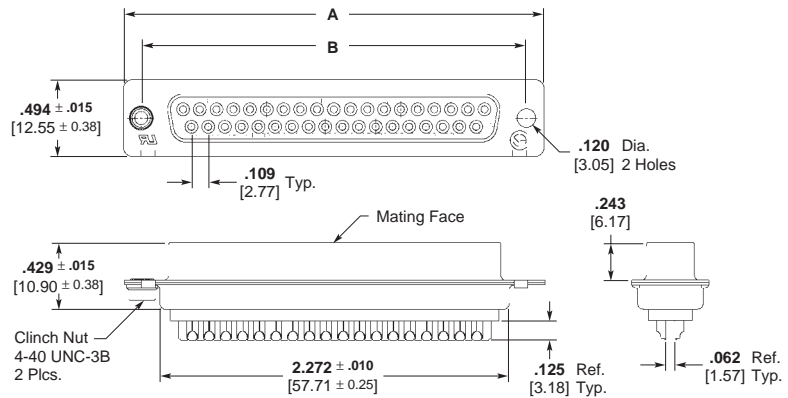
Instruction Sheet

408-9193

Plug



Receptacle



Shell Size	No. of Contact Positions	Dimensions		Plug Part Numbers		Receptacle Part Numbers	
		A	B	Tin Plated Shell	Zinc Plated Shell	Tin Plated Shell	Zinc Plated Shell
1	9	1.210 30.80	.984 24.99	747904-2	747904-4	747905-2	747905-4
2	15	1.544 39.20	1.312 33.30	747908-2	747908-4	747909-2	747909-4
3	25	2.092 53.10	1.856 47.10	747912-2	747912-4	747913-2	747913-4
4	37	2.734 69.40	2.500 63.50	747916-2	747916-4	747917-2	747917-4

HD-20 Solder Cup Shielding Hardware Enclosure Kits



Each kit contains

- Connector with preloaded, nonremovable contacts
- Shield
- Enclosure
- Two jackscrews

Material and Finish:

Connector Shell—Steel, tin plated

Connector Insert—94V-0 rated thermoplastic, black

Shields—Steel, tin plated

Enclosure—PVC, black

Jackscrews—Brass

Contacts—Phosphor bronze; duplex plated with gold flash on mating end, tin-lead on solder cup, with entire contact nickel underplated

Related Product Data:

Mateable Connectors:

HDE—pages 115-124

HDF—pages 129-131

HDP—pages 95-106

HD-20 Solder Cup—pages 133-135

HD-20 Board Mount—pages 87-90, 92-94

Technical Documents:

Product Specification

108-40031

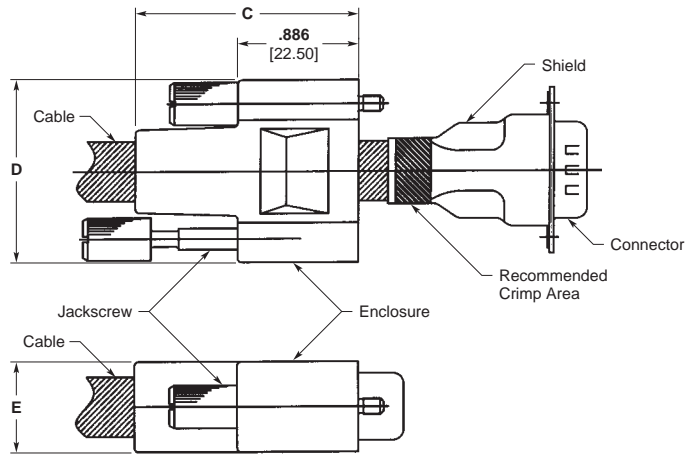
Application Specification

114-40030

Instruction Sheets

408-9193

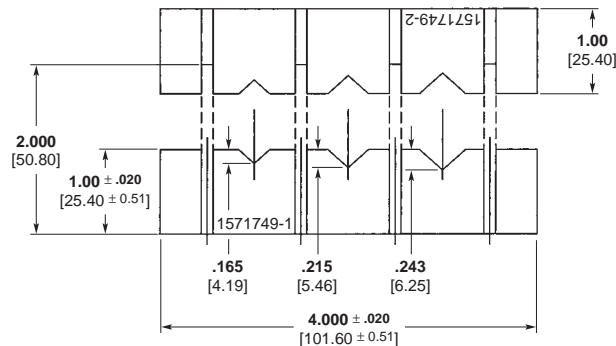
Plug and Receptacles



Shell Size	No. of Contact Positions	Dimensions			Cable Insulation Diameter	Kit Part Numbers		Shielding Enclosure Expansion Tool	
		C	D	E		Plug	Receptacle	Cable O.D. (Max.)	Part Number
1	9	1.64 41.67	1.21 30.74	.659 16.74	.217-.270 5.51-6.86	1571650-1	1571654-1	.355 9.02	58241-4
					.270-.324 6.86-8.23	1571650-2	1571654-2		
					1571650-3	1571654-3			
2	15	1.64 41.67	1.53 38.82	.659 16.74	.217-.270 5.51-6.86	1571651-1	1571655-1	.355 9.02	58241-4
					.270-.324 6.86-8.23	1571651-2	1571655-2		
					1571651-3	1571655-3			
3	25	1.64 41.67	2.08 52.84	.659 16.74	.217-.270 5.51-6.86	1571652-1	1571656-1	.465 11.56	58241-1
					.270-.324 6.86-8.23	1571652-2	1571656-2		
					1571652-3	1571656-3			
4	37	2.35 59.67	2.70 68.59	.659 16.74	.455-.480 11.58-12.19	1571653-1	1571657-1	.562 14.28	58241-2
					.324-.385 8.23-9.78	1571652-3	1571656-3		

Note: Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

HD-20 Solder Cup Shielding Hardware Crimping Tool



Assembled Tooling: Part Number 1571750-1
Individual Tools (for customer fabrication):
1571749-1 & 1571749-2

Numerous accessories are available for strain relief and cable clamping, shielding, connector-to-connector mating, connector-to-connector pc board mounting, and keying. These accessories are illustrated and tabled on the following pages.

To help discern the accessories available for a particular connector type, refer to the Product Selection Guide at the beginning of the connector section. Also, the connector the accessory is used with is listed under the Related Product Data heading next to the accessory listing.



Section Contents

Unshielded Cable Clamps

Universal Cable Clamps for Jacketed Cable 137
 One-Piece, All-Plastic Cable Clamp 138, 139
 Straight/90° Low Profile Cable Clamps 140
 Slide-On Back Covers 141
 Box and Lid, Straight/90° Exit 142
 Clam Shell, Straight/45° 143
 Straight Exit, Dataphone 144
 Straight Exit for Jacketed Cable (Two-Piece) 144
 Straight/90° Exit 145

Shielded Cable Clamps

Straight Exit RFI/EMI Shields for Jacketed Cable (HDE, HDP) 146
 Straight/90° Exit RFI/EMI Die Cast Shields for Jacketed Cable (HDE, HDP) 147
 Crimp and Split-Ring Ferrules 148-150

Hardware

Commoning Strip 151
 Male Screw Retainers for Metal-Shell Connectors (HDE, HDP) 151
 Male Screw Retainers for All-Plastic Connectors (HDE) ... 152
 Male Screw Retainers for Metal-Shell and All-Plastic Connectors (HDF) 152
 Female Screwlocks for Metal-Shell and All-Plastic Connectors (HDE, HDF, HDP) 153
 Slide Latches 154, 155
 Slide Latch Clips 156
 Locking Post Assemblies 156
 Spring Latches (Two-Piece) 157
 Latching Blocks (HDE, HDF, HDP, HD) 158, 159
 Standoff Bushings 160
 Keying Plug 160
 EMI/RFI Gasket 160

Unshielded Cable Clamps

Material and Finish:

Cable Clamp Housing—
Thermoplastic, black

Cable Clamp Wedge Set—
Thermoplastic, black

4-40 Mounting Screws—
Steel, zinc plated

Related Product Data:

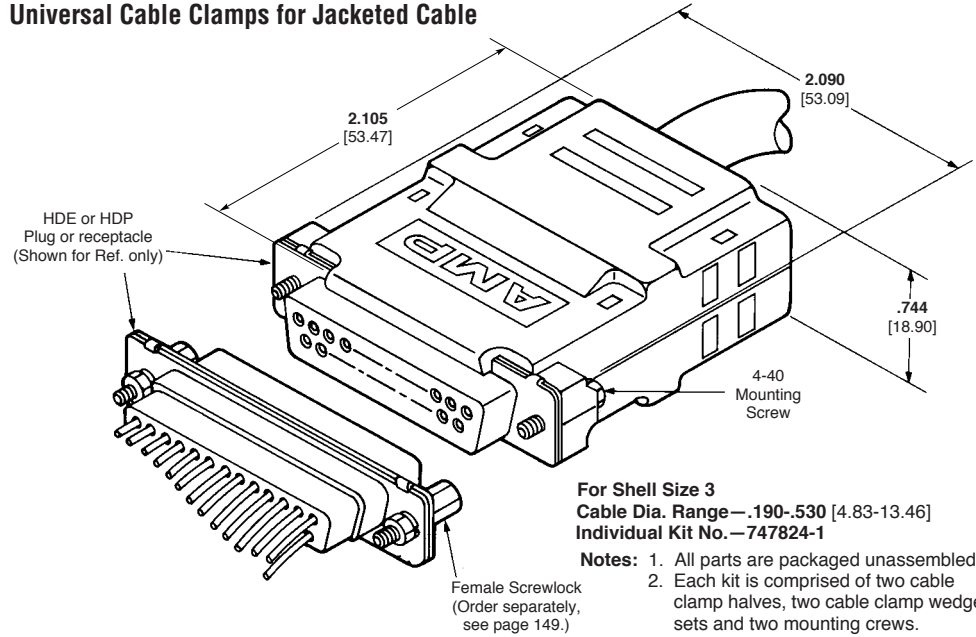
Connectors used with:
HDE Metal-Shell—pages 119 & 120
HDP Metal-Shell—pages 95-107

Other accessory capabilities:
Spring Latches (Two Piece)—
page 157

Technical Documents:

Instruction Sheet—408-7555

Universal Cable Clamps for Jacketed Cable



For Shell Size 3
Cable Dia. Range— .190-530 [4.83-13.46]
Individual Kit No.—747824-1

- Notes:**
1. All parts are packaged unassembled.
 2. Each kit is comprised of two cable clamp halves, two cable clamp wedge sets and two mounting crews.

Material and Finish:

Cable Clamp Housing—
Thermoplastic, gray

4-40 Mounting Screws—
Steel, zinc plated

4-40 Housing Screws & Hex Nuts—
Steel, zinc plated

Related Product Data:

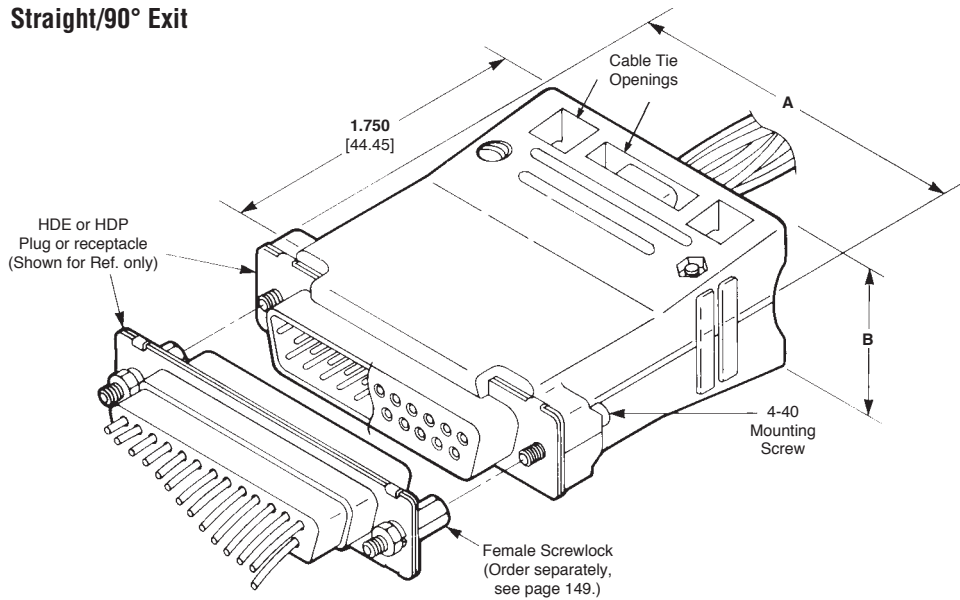
Connectors used with:
HDE All-Plastic—pages 117 & 118
HDE Metal-Shell—pages 119 & 120
HDP Metal-Shell—pages 95-107

Other accessory capabilities:
Spring Latches (Two Piece)—
page 157

Technical Documents:

Instruction Sheet—408-7555

Straight/90° Exit



Shell Size	Dimensions		Cable Dia. (Max.)	Cable Clamp Kit No.	
	A	B		Individual	Bulk Packed*
2	1.550	.826	.350	206471-1	—
	39.37	20.98	8.89		
3	2.090	.826	.335	745134-1	745134-2
			8.51		
			.460		
11.68					
4	2.738	.826	.675	745081-1	745081-2
			17.15		
5	2.644	.938	.775	745082-1	—
			19.69		

*Each part is individually bulk packed for multiple assembly orders.

- Notes:**
1. All parts are packaged unassembled.
 2. Straight or 90° cable exit is achieved by inserting AMP-TY Cable Ties through cable tie openings and clamping the cable to one housing half only.

Unshielded Cable Clamps (Continued)

The AMP Quik-Snap Backshell Kit is a one-piece, all-plastic cable clamp kit designed for use with either the AMPLIMITE HDP-20, HDP-22, or HDE, all-plastic or metal-shell connectors.

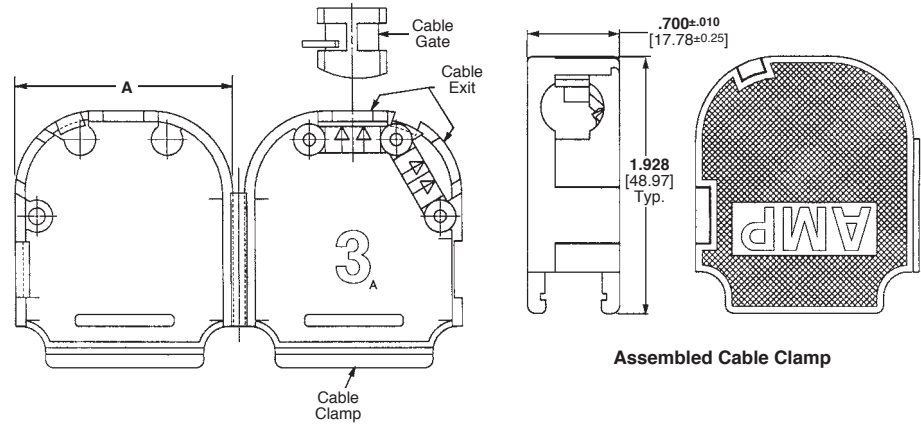
Kits are available for connector sizes 1, 2, 3, and 4 with a cable exit option of 180° or 120°.

Each kit contains:

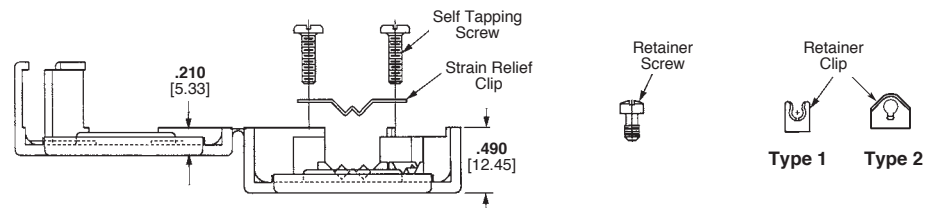
- 1-Hinged, plastic clamp
- 2-Self-tapping screws
- 1-Strain relief clip
- 1-Cable exit gate plug (Used to close unused exit)

(For metal-shell connector applications an optional kit with 2 retainer clips and screws is available.)

One-Piece, All-Plastic Cable Clamp for Jacketed Cable, 180°/120° Exit (HDP and HDE) (Quik-Snap)



Assembled Cable Clamp



Material and Finish:

- Cover**—Polypropylene, black
- Strain Relief Clip**—Stainless steel
- Retainer Clip**—Stainless steel
- Screws**—Carbon steel, zinc plated
- Cable Gate**—Polypropylene, Black

Related Product Data:

- Connectors used with:**
- HDP Metal-Shell**—pages 95-107
- HDE All-Plastic**—pages 117 & 118
- HDE Metal-Shell**—pages 119 & 120

Technical Documents:

- Instruction Sheet**—408-9544

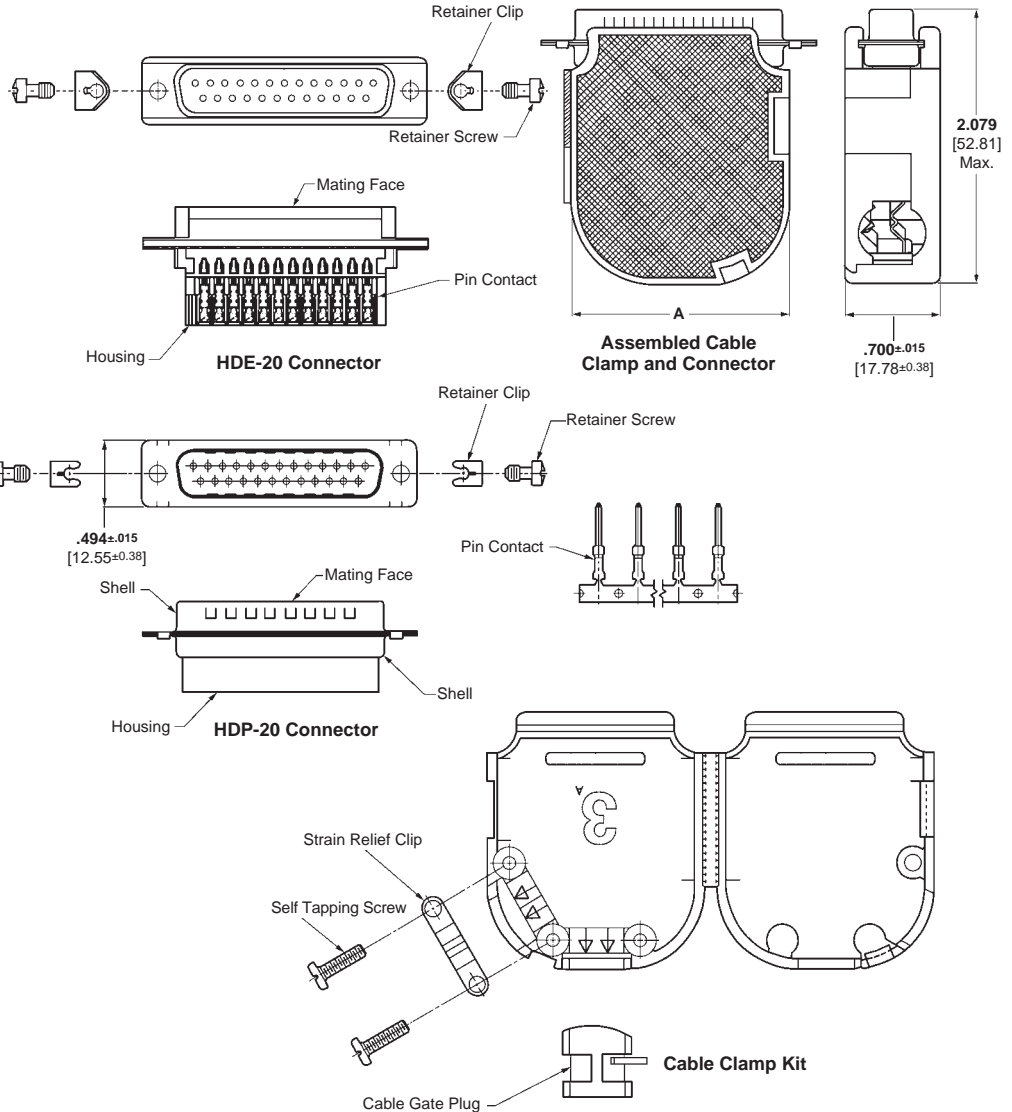
Shell Size	Cable Dia. Range (Ref.)	Dimension A	Kit Number* with Retainer Screws and Clips	Kit Number ¹ without Retainer Screws and Clips	Packaging
1	.075-.250 1.91-6.35	.785 19.94	749914-1	—	Bulk Pkg.
			749914-2	750100-1	Unit Kit
			749914-4**	—	
2	.170-.380 4.32-9.65	1.110 28.19	749915-1	—	Bulk Pkg.
			—	750101-1	Unit Kit
3	.180-.460 4.57-11.68	1.650 41.91	749626-1	—	Bulk Pkg.
			749626-2	750078-1	Unit Kit
4	.250-.550 6.35-13.97	2.285 58.04	749916-1	—	Bulk Pkg.
			749916-2	—	Unit Kit

*For metal-shell connectors only.
 **Type 2 Retainer Clip
¹ For Metal-Shell or All-Plastic Connectors

Unshielded Cable Connector and Clamp Kits

The AMPLIMITE Quik-Snap Backshell and Connector kit presents a complete package for your unshielded subminiature D connector needs. Kits are available for Shell Sizes 1, 2 and 3, and are packaged 25 and 100 kits per unit.

One-Piece, All-Plastic Cable Clamp for Jacketed Cable, 180°/120° Exit and HDP-20 and HDE-20 Connector



Each kit contains:

- 1-Hinged Plastic Clamp
- 2-Retention Screws
- 2-Retention Clips
- 1-Cable Gate Plug
- 1-Strain Relief Clip
- 2-Self Tapping Screws
- 1-Connector and Contacts

Material and Finish:

- Cover**—Polypropylene, black
- Retention Screws**—Steel, zinc plated
- Retention Clips**—Stainless steel
- Cable Gate Plug**—Polypropylene, Black
- Strain Relief Clip**—Stainless steel
- Self Tapping Screws**—Steel, zinc plated
- Contacts**—Brass (HDP Pins), Phosphor Bronze (All Others), plated gold flash on the mating end, .000100 [0.00254] min. tin or tin-lead on the terminating end, all over .000030 [0.00076] min. nickel underplating
- Housing**—Polyester or nylon, glass-filled, UL rated 94V-0, black
- Shell**—Steel, plated .000200 [0.00508] min. tin over .000050 [0.00127] min. copper

Technical Documents:

- HDE Connectors:**
- Instruction Sheets**—408-6621
- Application Specifications**—114-40002, 114-40003
- HDP Connectors:**
- Application Specifications**—114-10000, 114-40030
- Cable Clamps:**
- Instruction Sheet**—408-9544
- Retention Clips:**
- Instruction Sheet**—408-7837

Unshielded Cable Clamp Kits with HDP-20 Connectors

Shell Size	Cable Dia. Range (Ref.)	Dimension A	Plug Kit Part No.	Receptacle Kit Part No.	Packaging
1	.075-.250 1.91-6.35	.785 19.94	749808-1	749812-1	100/pack
2	.170-.380 4.32-9.65	1.110 28.19	749808-2	749812-2	100/pack
3	.180-.460 4.58-11.68	1.650 41.91	749808-3	749812-3 749812-6	100/pack 25/pack

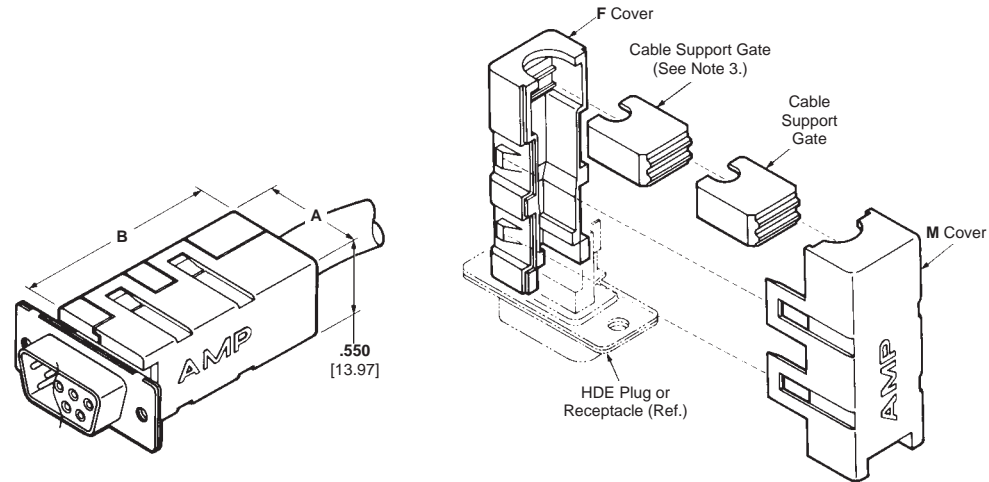
Unshielded Cable Clamp Kits with HDE-20 All-Plastic Connectors

Shell Size	Cable Dia. Range (Ref.)	Dimension A	Plug Kit Part No.	Receptacle Kit Part No.	Packaging
1	.075-.250 1.91-6.35	.785 19.94	—	749813-1	100/pack
3	.180-.460 4.58-11.68	1.650 41.91	749809-3	749813-3	100/pack

Unshielded Cable Clamps

Low Profile Cable Clamps feature a two-piece construction which allows the two cover halves to be snapped together, no hardware is required for assembly. They can be used on plugs or receptacles and will not interfere with commonly used mating hardware. Sufficient Cable Support Gates (or a Cable Support Gate Latch) are supplied with each cable clamp kit to achieve adjustable clamping over a wide range of jacketed cable diameters.

Straight Exit Low Profile for Jacketed Cable



Material

Black thermoplastic

Related Product Data:

Connectors used with:
HDE All-Plastic—pages 117 & 118
HDE Metal-Shell—pages 119 & 120

Other accessory capabilities:

Male Screw Retainers—pages 151 & 152

Female Screwlocks—page 153

Locking Posts and Slide Latches—pages 154-156

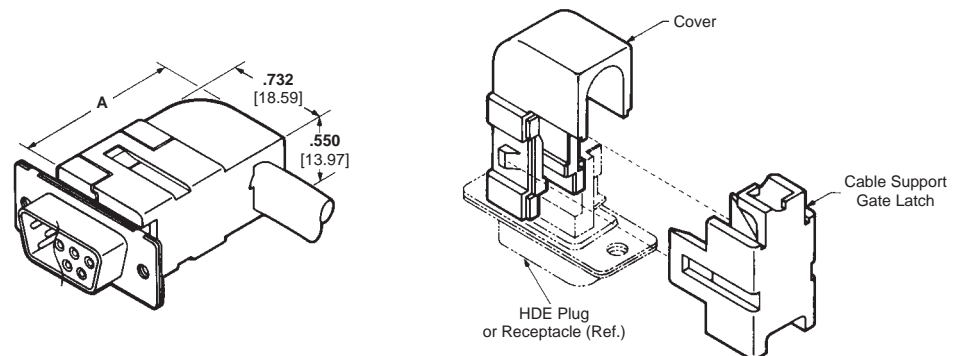
Latching Blocks—pages 158 & 159

Shell Size	Dimensions			Cable Dia. (Max.)	Cable Clamp Kit No.	
	A	When used On Plug	When used on Receptacle		Individual	Bulk Packed*
1	.732 18.59	1.582 40.18	1.533 38.94	.330 8.38	745547-1	745547-2
2	1.056 26.82	1.582 40.18	1.533 38.94	.425 10.80	745553-1	745553-2
3	1.604 40.74	1.700 43.18	1.651 41.94	.550 13.97	745560-1	745560-2

*Each part is individually bulk packed for multiple kit orders.

- Notes:**
1. All parts are packaged unassembled.
 2. Each kit is comprised of two cover halves (F and M) and an assortment of cable support gates.
 3. Cable support gate must be used as shown for small diameter cable.

90° Exit Low Profile for Jacketed Cable



Shell Size	Dimension A		Cable Dia. (Max.)	Cable Clamp Kit No.
	When used on Plug	When used on Receptacle		Individual
1	1.290 32.77	1.241 31.52	.330 8.38	745550-1

- Notes:**
1. All parts are packaged unassembled.
 2. Each kit is comprised of a cover half and an assortment of cable support gate latches.

Unshielded Cable Clamps (Continued)

Material

Black thermoplastic

Related Product Data:

Connectors used with:

HDE All-Plastic—pages 117 & 118

HDE Metal-Shell—pages 119 & 120

Other accessory capabilities:

RFI/EMI Metal Shields—
pages 146 & 147

Male Screw Retainers—
pages 151 & 152

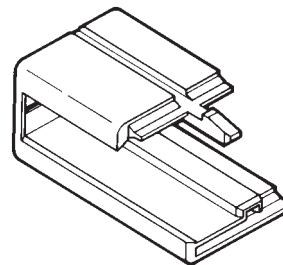
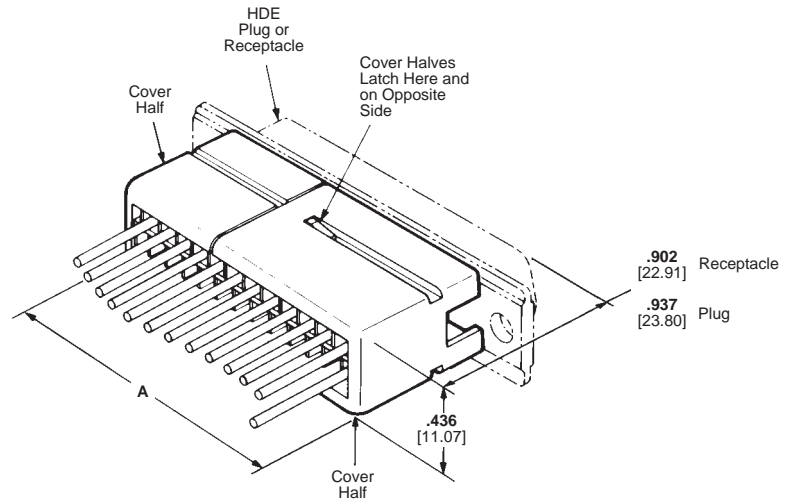
Locking Posts and Slide Latches—
pages 154-156

Latching Blocks—pages 158 & 159

Technical Documents:

Instruction Sheet—408-6658

Slide-On Back Covers



Back Cover Half
(See Note 2.)

Shell Size	Dim. A	Back Cover Kit No. Individual
1	.610 15.49	745530-1
2	.934 23.72	745530-2
3	1.482 37.64	745530-3
4	2.134 54.20	745530-4

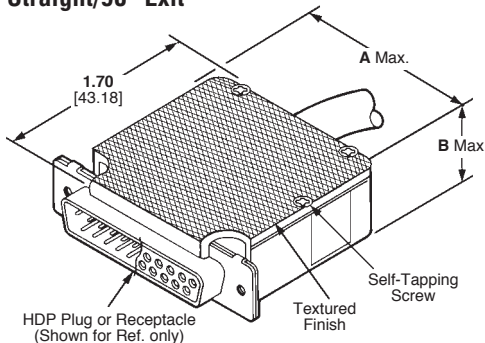
- Notes:** 1. All parts are packaged unassembled.
2. Each slide-on back cover kit includes two identical cover halves which snap together over the connector.

Unshielded Cable Clamps (Continued)

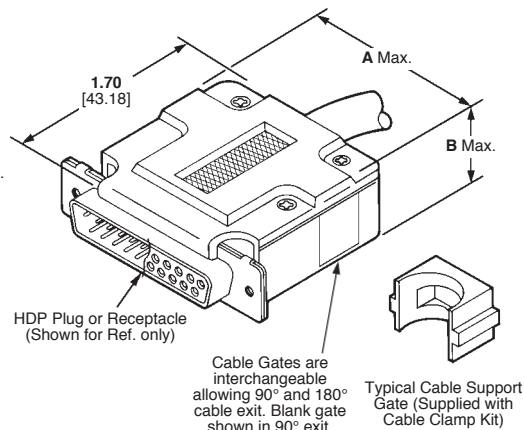
Box and Lid Cable Clamps can be used on either plugs or receptacles and will not interfere with commonly used hardware. Their hinged construction allows easy assembly to a harness. A wide range of cable diameters are accommodated through the use of cable support gates, supplied with each cable clamp.

Cable clamps are available in kits with appropriate hardware for convenient plug/receptacle mating. See below for kits with Male Screw Retainers.

Box and Lid Straight/90° Exit



Shell Size 1 & 2



Shell Size 3 & 4 & 5

Material and Finish:

Cable Clamp Housing—Thermoplastic, black with textured finish

Gates—Thermoplastic, black

Flat Head Screws—Steel, black, zinc plated

Related Product Data:

Connectors used with:
HDP Metal-Shell—pages 95-107

Other accessory capabilities:
Male Screw Retainers—pages 151 & 152

Female Screwlocks—page 153

Locking Posts and Slide Latches—pages 154-156

Spring Latches (Two Piece)—page 157

Latching Blocks—pages 158 & 159

Technical Documents:

Instruction Sheet—408-7555

Material and Finish:

Cable Clamp Housing—Thermoplastic, black with textured finish

Gates—Thermoplastic, black

Flat Head Screws—Steel, black, zinc plated

Male Screw—Steel, zinc plated yellow chromate

Retaining Clip—Stainless steel

Related Product Data:

Connectors used with:
HDP Metal-Shell—pages 95-107

Technical Documents:

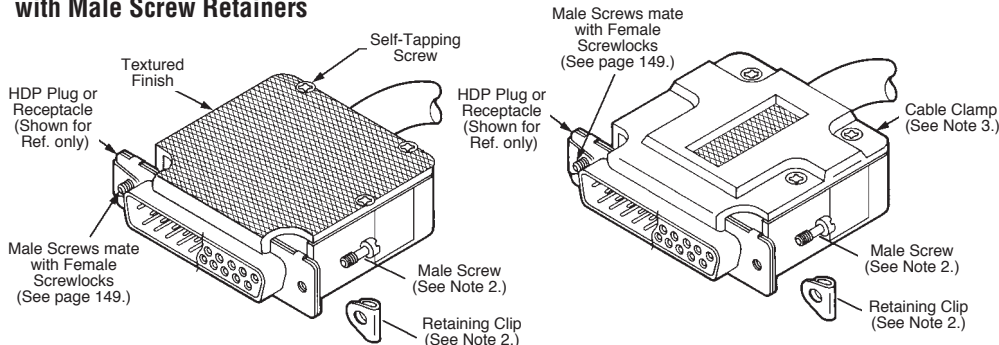
Instruction Sheets—
408-7555
408-7837

Shell Size	Dimensions		Cable Dia. Max. (Ref.)		Cable Clamp Kit No.	
	A	B	Straight Cable Exit	90° Cable Exit	Individual	Bulk Packed*
1	.755 19.18	.630 16.00	.160 4.06	.160 4.06	207467-1	207467-2
2	1.078 27.38	.630 16.00	.320 8.13	.320 8.13	207470-1	207470-2
3	1.620 41.15	.770 19.56	.390 9.91	.390 9.91	207345-1	207345-2
4	2.268 57.61	.770 19.56	.640 16.26	.405 10.29	207473-1	207473-2
5	2.178 55.32	.880 22.35	.490 12.45	.490 12.45	207476-1	—

*Each part is individually bulk packed for multiple kit orders.

- Notes:**
1. All parts are packaged unassembled.
 2. Cable diameter is adjustable by changing cable support gates. Use the flat side of cable support gates for discrete wire, and the semicircle side for jacketed cable.
 3. Cable clamp assemblies are available in kits with male screw retainers, see below.

Box and Lid Straight/90° Exit Cable Clamp Kits with Male Screw Retainers



Shell Size 1 & 2

Shell Size 3 & 4 & 5

Shell Size	Cable Clamp Kit No.	
	Individual	Bulk Packed*
1	207908-1	207908-2
2	207908-4	—
3	207908-7	207908-8
4	1-207908-0	1-207908-1
5	1-207908-3	—

*Each part is individually bulk packed for multiple kit orders.

- Notes:**
1. All parts are packaged unassembled.
 2. Each kit is comprised of a cable clamp and male screw retainer hardware (2 each). Male screw retainers are also available in kit form, see page 151.
 3. For ordering cable clamps separately, see above.

Unshielded Cable Clamps (Continued)

Straight/45° Exit Cable Clamps can be used on either a plug or receptacle and will not interfere with commonly used hardware, such as Male Screw Retainers, Female Screw-locks or Spring Latches and Latching Blocks. Their hinged construction allows easy assembly to a harness. Also, the straight or 45° angle of the cable exit is achieved by merely positioning the Cable Support Gate for the desired angle prior to installing the assembly onto the plug or receptacle. Adjustable screws are used to tighten cable strain reliefs.

Cable Clamp assemblies are available in kits with appropriate hardware for convenient plug/receptacle mating.

Material and Finish:

- Cable Clamp Housing**—Thermoplastic, black with textured finish
- Gates**—Thermoplastic, black
- Pan Head Screws, 6-32 Set Screw and 6-32 Square Nut**—Steel, zinc plated (sizes 1 and 2 include self-tapping screws only)

Related Product Data:

- Connectors used with:**
HDP Metal-Shell—pages 95-107
- Other accessory capabilities:**
Male Screw Retainers—pages 151 & 152
- Female Screwlocks**—page 153
- Locking Posts and Slide Latches**—pages 154-156
- Spring Latches (Two Piece)**—page 157
- Latching Blocks**—pages 158 & 159

Technical Documents:

Instruction Sheet—408-7555

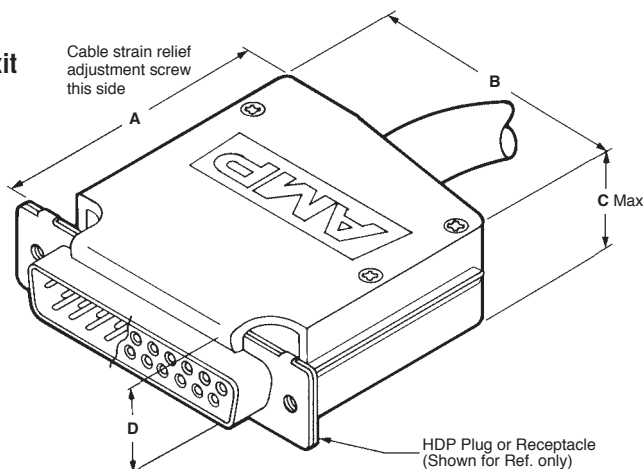
Material and Finish:

- Cable Clamp Housing**—Thermoplastic, black with textured finish
- Gates**—Thermoplastic, black
- Pan Head Screws, 6-32 Set Screw and 6-32 Square Nut**—Steel, zinc plated (sizes 1 and 2 include self-tapping screws only)
- Male Screw**—Steel, zinc plated yellow chromate
- Retaining Clip**—Stainless steel

Related Product Data:

- Connectors used with:**
HDP Metal-Shell—pages 95-107
- Technical Documents:**
Instruction Sheets—408-7555
408-7837

Clam Shell Straight/45° Exit

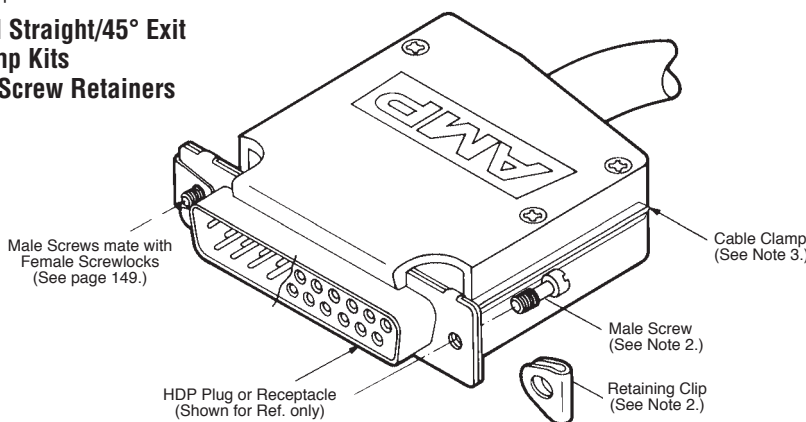


Shell Size	Dimensions				Cable Dia. (Max.)	Short Cable Clamp Part No.		Standard Cable Clamp Part No.	
	A	B	C	D		Individual	Bulk Packed*	Individual	Bulk Packed*
1	1.625	.750	.640	.640	.256	—	—	205729-1	205729-3
	41.28	19.05	16.26	16.26	6.30	—	—	—	—
2	1.250	1.073	.600	.640	.320	206393-1	—	—	—
	31.75	27.25	15.24	16.26	8.13	—	—	205730-1	205730-3
3	1.625	1.073	.640	.640	.320	—	—	205730-1	205730-3
	41.28	27.25	16.26	16.26	8.13	—	—	—	—
3	1.250	1.615	.600	.640	.420	206390-1	206390-3	—	—
	31.75	41.02	15.24	16.26	10.67	—	—	—	—
4	1.625	1.615	.640	.640	.420	—	—	205718-1	205718-4
	41.28	41.02	16.26	16.26	10.67	—	—	—	—
4	1.625	2.263	.640	.640	.490	—	—	205731-1	—
	41.28	57.48	16.26	16.26	12.45	—	—	—	—
5	1.625	2.168	.750	.750	.600	—	—	205732-1	—
	41.28	55.07	19.05	19.05	15.24	—	—	—	—

*Each part is individually bulk packed for multiple assembly orders.

- Notes:**
1. All parts are packed unassembled.
 2. Quantity of pan head screws supplied with cable clamp assembly varies with shell size.
 3. Cable clamps are available in kits with male screw retainers, see below.
 4. All pan head screws have combination cross-recessed and slotted heads.

Clam Shell Straight/45° Exit Cable Clamp Kits with Male Screw Retainers



Shell Size	Short Cable Clamp Kit No.		Standard Cable Clamp Kit No.	
	Individual	Bulk Packed*	Individual	Bulk Packed*
1	—	—	206478-1	—
2	1-206478-1	—	206478-2	—
3	1-206478-2	2-206478-6	206478-3	2-206478-2
4	—	—	206478-4	—
5	—	—	206478-5	—

*Each part is individually bulk packed for multiple assembly orders.

- Notes:**
1. All parts are packaged unassembled.
 2. Each kit is comprised of a cable clamp and male screw retainer hardware (2 each). Male screw retainers are also available in kit form, see page 151.
 3. For ordering cable clamps separately, see above.

Unshielded Cable Clamps (Continued)

Material and Finish:

Cable Clamp Housing—
Nylon, black

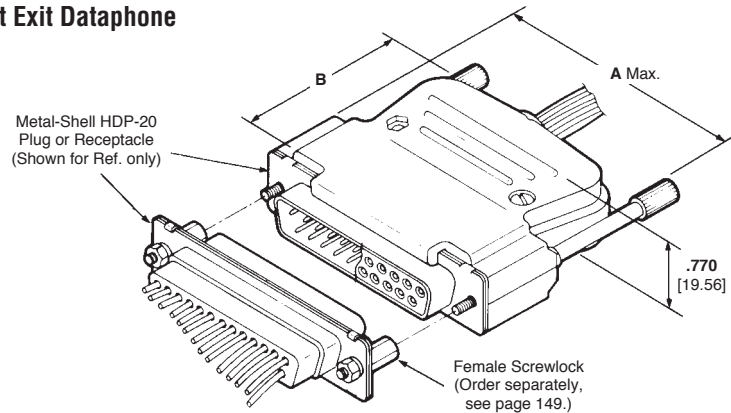
4-40 Fillister Head Screws & Hex Nuts—Steel, clear zinc plated

Jackscrews—Steel, black zinc plated

Related Product Data:

Connectors used with:
HDP Metal-Shell—pages 95-107

Straight Exit Dataphone



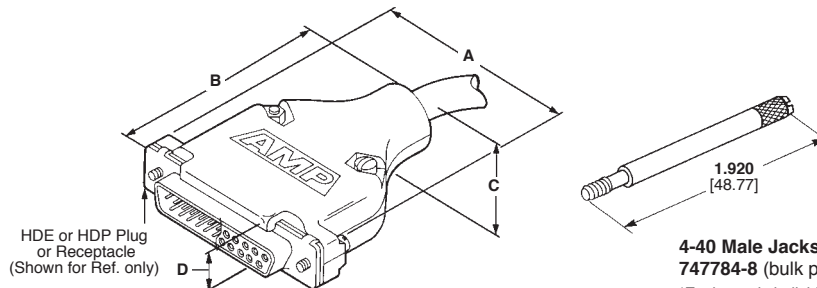
Shell Size	Dimensions		Max. Cable Dia. (without Gate)	Max. Cable Dia. (with Gate)	Cable Gate Identification*	Thread Size	Cable Clamp Kit No.
	A	B					
2	1.575 40.01	1.312 33.32	.400 10.16	.200 5.08	2A	4-40	745122-2
				.260 6.60	2B		
				.320 8.13	2C		
3	2.115 53.72	1.421 36.09	.500 12.70	.250 6.35	3A	4-40	745121-2
				.340 8.64	3B		
				.420 10.67	3C		

*Molded-in identification (as shown in chart above) is provided on cable support gates to facilitate proper selection with regard to shell size and maximum acceptable cable diameter.

- Notes:** 1. All parts are packaged unassembled.
2. Cable diameter is adjustable by changing cable support gates.

Straight Exit for Jacketed Cable (Two-Piece)

This cable clamp allows cable to be fully prepared and terminated to the connector before the clamp is installed.



Material and Finish:

Cable Clamps—ABS black

4-40 Fillister Head Screws and Hex Nuts—Steel, zinc plated

4-40 Mounting Screws—Steel, zinc plated

Jackscrews—Stainless steel, passivated

Related Product Data:

Ferrules—pages 148-150

Connectors used with:
HDE Metal-Shell—pages 119 & 120
HDP Metal-Shell—pages 95-107

Other accessory capabilities:
Spring Latch (Two-Piece)—
page 157

Technical Documents:

Instruction Sheet—408-6609

Cable Clamp Kits with Grommets

Shell Size	Dimensions				Cable O.D. Range	No. of Grommets Per Set	Kit Numbers
	A	B	C	D			
1	1.215 30.86	1.910 48.51	.570 14.48	.630 16.00	.185-.320 4.70-8.13	4	748678-1
	1.545 39.24	1.910 48.51	.620 15.75	.620 15.75			
2	2.090 53.09	1.920 48.77	.680 17.27	.640 16.26	.255-.470 6.48-11.94	6	748678-3
	2.738 69.55	1.920 48.77	.800 20.32	.620 15.75			
3	2.644 67.16	1.920 48.77	.900 22.86	.730 18.54	.255-.470 6.48-11.94	6	748678-5
	2.738 69.55	1.920 48.77	.800 20.32	.620 15.75			

- Notes:** 1. All parts are packaged unassembled.
2. Jackscrews must be purchased separately.
3. Split-ring and crimp ferrules are shown on pages 148-150.
4. Shielded cable clamps will not accept connector housings with clinch nuts.

Unshielded Cable Clamps (Continued)

Straight/90° Exit Cable Clamps can be used on a plug or receptacle and will not interfere with commonly used mating hardware. Their three-piece construction allows easy assembly to a cable harness. Also, the same cable clamp components are used for both straight and 90° cable exit applications. This is accomplished by simply positioning the Male and Female Panels on the Yoke for the desired angle.

Material

Black thermoplastic

Related Product Data:

Connectors used with:

HDE All-Plastic—pages 117 & 118

HDE Metal-Shell—pages 119 & 120

HDP Metal-Shell—pages 95-107

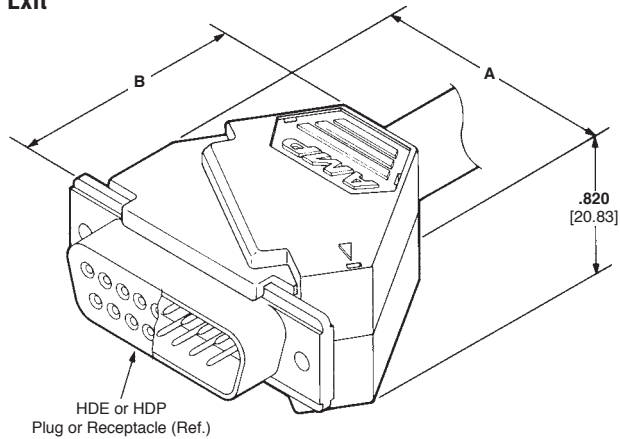
Other accessory capabilities:

Female Screwlocks—page 153

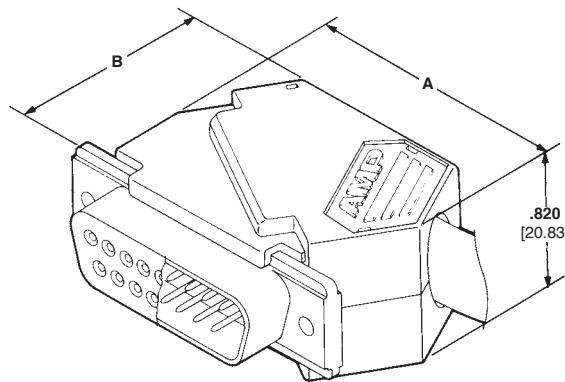
Locking Posts and Slide Latches—pages 154-156

Latching Blocks—pages 158 & 159

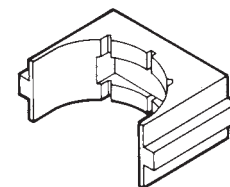
Straight/90° Exit



Straight Cable Exit Application



90° Cable Exit Application



Typical Cable Support Gate
(Supplied with Cable Clamp Kit)

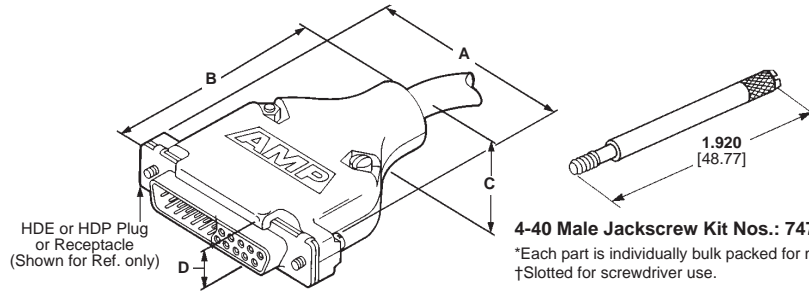
Shell Size	Cable Clamp Configuration	Dimensions		Cable Dia.	Cable Clamp Kit No. Individual
		A	B		
3	Straight Exit	1.906	1.672	.550	745306-1
	90° Exit	2.066	1.396		
4	Straight Exit	2.424	1.820	.750	745311-1
	90° Exit	2.638	1.596		

- Notes:** 1. All parts are packaged unassembled.
2. Each cable clamp assembly includes a yoke, male panel, female panel and four cable support gates. The cable diameter is adjustable by changing the cable support gates.

Shielded Cable Clamps

Straight Exit RFI/EMI Shields for Jacketed Cable (Two-Piece)

This RFI/EMI shield allows cable to be fully prepared and terminated to the connector before the shield is installed. During installation, the shield of the jacketed cable is folded back and compressed into the cable opening of the RFI/EMI shield. For greater cable support and/or shielding effectiveness, split-ring and crimp ferrules are available (pages 148-150).



4-40 Male Jackscrew Kit Nos.: 747784-8 (bulk packed)*†
 *Each part is individually bulk packed for multiple kit orders.
 †Slotted for screwdriver use.

Material and Finish:

- Die Cast Shield**—Zinc alloy, plated bright nickel over bright copper
- Metal-Plated Plastic Shield**—Thermoplastic, plated nickel over copper
- 4-40 Fillister Head Screws and Hex Nuts**—Steel, zinc plated
- 4-40 Mounting Screws**—Steel, zinc plated
- Jackscrews**—Stainless steel, passivated

Related Product Data:

- Ferrules**—pages 148-150
- Connectors used with:**
- HDE Metal-Shell**—pages 119 & 120
- HDP Metal-Shell (Tin plated only)**—pages XX
- Other accessory capabilities:**
- Spring Latch (Two-Piece)**—page 157

Technical Documents:

- Product Specification**—108-40032
- Instruction Sheet**—408-6609

Shell Size	Dimensions				Cable O.D. (Max.)	Die Cast Shield Kit Numbers	Metal-Plated Plastic Shield Kit Numbers	Grommet Sets		
	A	B	C	D				Cable O.D. Range	No. of Grommets Per Set	Part Number
1	1.215 30.86	1.910 48.51	.550** 13.97	.620** 15.75	.200 5.08	745171-2	745854-5	—	—	—
					.250 6.35	745171-1	745854-3	—	—	—
					.370 9.40	745171-5	745854-1	.185-.320 4.70-8.13	4	747746-1
					.225 5.72	745172-3	747099-7	—	—	—
					.300 7.62	745172-2	747099-5	—	—	—
2	1.545 39.24	1.910 48.51	.620 15.75	.620 15.75	.375 9.53	745172-1	747099-3	.185-.320 4.70-8.13	4	747746-1
					.430 10.92	1-745172-3	747099-1	—	—	—
					.280 7.11	745173-5	745833-9	—	—	—
					.350 8.89	745173-4	745833-7	—	—	—
					.430 10.92	745173-3	745833-5	—	—	—
3	2.090 53.09	1.920 48.77	.680 17.27	.620** 15.75	.480 12.19	745173-2	745833-3	—	—	—
					.530 13.46	745173-1	745833-1	.255-.470 6.48-11.94	6	747973-1
					.350 8.89	745174-5	747100-9	—	—	—
					.425 10.80	745174-4	747100-7	—	—	—
					.500 12.70	745174-3	747100-5	—	—	—
4	2.738 69.55	1.920 48.77	.800 20.32	.620 15.75	.530 13.46	2-745174-7	1-747100-1	.255-.470 6.48-11.94	6	747973-1
					.575 14.61	745174-2	747100-3	—	—	—
					.650 16.51	745174-1	747100-1	—	—	—
					.375 9.53	745175-6	—	—	—	—
					.450 11.43	745175-5	—	—	—	—
5	2.644 67.16	1.920 48.77	.900 22.86	.730 18.55	.525 13.34	745175-4	—	.255-.470 6.48-11.94	6	747973-1
					.600 15.24	745175-3	—	—	—	—
					.675 17.15	745175-2	—	—	—	—
					.750 19.05	745175-1	747098-1	—	—	—

Cable Clamp Kits with Grommets

Shell Size	Dimensions				Cable O.D. Range	No. of Grommets Per Set	Kit Numbers	
	A	B	C	D			Die Cast Shield With Grommets	Metal-Plated Plastic Shield With Grommets
1	1.215 30.86	1.910 48.51	.550** 13.97	.620** 15.75	.185-.320 4.70-8.13	4	748676-1	748677-1
2	1.545 39.24	1.910 48.51	.620 15.75	.620 15.75	.185-.320 4.70-8.13	4	748676-2	748677-2
3	2.090 53.09	1.920 48.77	.680 17.27	.620** 15.75	.255-.470 6.48-11.94	6	748676-3	748677-3
4	2.738 69.55	1.920 48.77	.800 20.32	.620 15.75	.255-.470 6.48-11.94	6	748676-4	748677-4
5	2.644 67.16	1.920 48.77	.900 22.86	.730 18.55	.255-.470 6.48-11.94	6	748676-5	748677-5

- Notes:**
- All parts are packaged unassembled.
 - Jackscrews must be purchased separately.
 - Split-ring and crimp ferrules are shown on pages 148-150.
 - Shielded cable clamps will not accept connector housings with clinch nuts.

** The following dimensions apply to metal-plated plastic cable clamps: Size 1: C = .570 [14.48], D = .630 [16.0] Size 3: D = .640 [16.26]

Both the straight exit and the 90° exit die cast RFI/EMI shield allows cable to be fully prepared and terminated to the connector before the shield is installed. During installation, the shield of the jacketed cable is folded back and compressed into the cable opening of the RFI/EMI shield. For greater cable support and/or shielding effectiveness, split-ring and crimp ferrules are available (pages 148-150).

Material and Finish:

Shield—Zinc alloy, plated nickel over copper

4-40 Pan Head Screws & Latch Screws (90° Exit Only)—Steel, zinc plated

One-Piece Slide Latch (90° Exit Only)—Stainless steel

Related Product Data:

Ferrules—pages 148-150

Connectors used with:
HDE Metal-Shell—pages 119 & 120
HDP Metal-Shell (Tin plated only)—pages 95-107

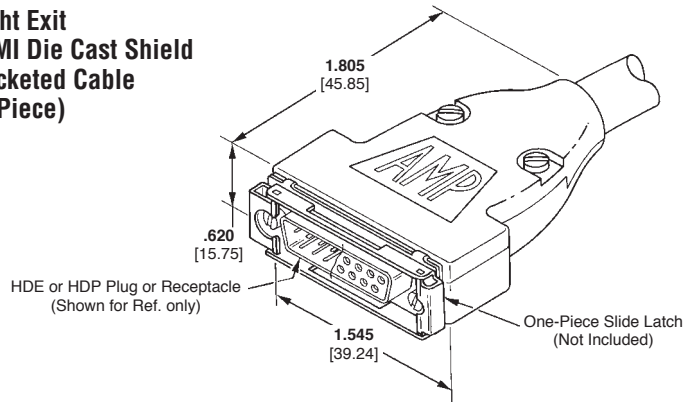
Technical Documents:

Product Specification—108-40032

Instruction Sheet—408-6769

Shielded Cable Clamps (Continued)

Straight Exit RFI/EMI Die Cast Shield for Jacketed Cable (Two-Piece)

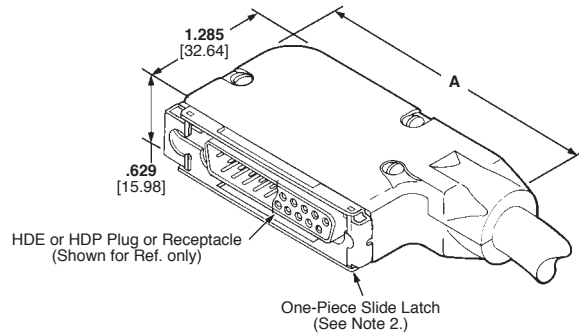


Shell Size	No. of Positions	ID Letter	Cable Dia. w/Ferrules	Part Number	Grommet Kit
2	15	E	.260-.300 6.60-7.72	745919-3	—
		H	.190-.375 4.83-9.53	745919-2	747746-1*
		K	.190-.430 4.83-10.92	745919-1	—

*Cable Dia. Range using Grommet is .185-.320 [4.70-8.13].

- Notes:**
1. All parts packaged unassembled.
 2. Each kit comprised of a two-piece shield with 2 pan head screws.
 3. Split-ring and crimp ferrules are shown on pages 148-150.

90° Exit RFI/EMI Die Cast Shields for Jacketed Cable (Two-Piece)



Shell Size	Dimension A	Cable Dia. w/Ferrules	Shield with Slide Latch Kit Numbers (See Note 2)	Shield without Slide Latch Kit Numbers (See Note 3)	Grommet Kit
2	2.310 58.67	.185-.225 4.70-6.48	745652-4	—	—
		.260-.300 6.60-7.62	745652-3	—	—
		.190-.375 4.83-9.53	745652-2*	745918-2*	747746-1
		.190-.430 4.83-10.92	745652-1	—	—
		.240-.280 6.10-7.11	745653-5	—	—
		.315-.355 8.00-9.02	745653-4	—	—
3	2.850 72.39	.190-.430 4.83-10.92	745653-3	747194-3	—
		.440-.480 11.18-12.19	745653-2	—	—
		.380-.530 9.65-13.46	745653-1*	—	747973-1

* Cable Dia. with Grommet Kit: Size 2 = .185-.320 [4.70-8.13]; Size 3 = .255-.470 [6.48-11.94].

- Notes:**
1. All parts are packaged unassembled.
 2. Each kit is comprised of a two-piece shield with three pan head screws and a slide latch with two 4-40 slide latch screws.
 3. Each kit is comprised of a two-piece shield with three pan head screws.
 4. Split-ring and crimp ferrules are shown on pages 148-150.

Shielded Cable Clamps (Continued)

Material and Finish:

Outer Ferrule—Copper, plated .000100 [0.00254] min. tin
Inner Ferrule—.023 [0.58] thick brass, plated .000050 [0.00127] tin over copper

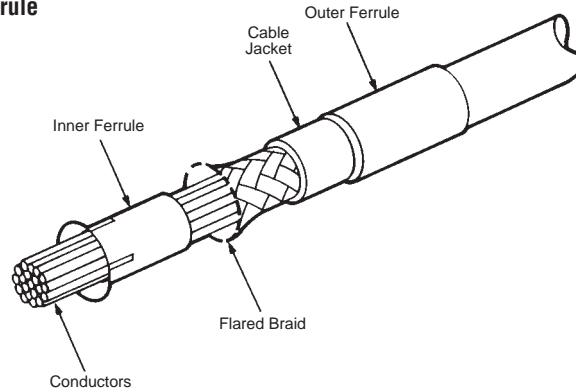
Related Product Data:

Shields used with:
Straight Exit—pages 146 & 147
90° Exit—page 147

Technical Documents:

Product Specification—108-40032
Instruction Sheets—408-9315 Hand Tool
 408-9318 Die Sets

Crimp Ferrules for Braided Cable Shield (See pages 149 & 150 for Inner and Outer Ferrule Part Numbers.)



Application Tooling

Note: Crimp ferrules are for use with braided shields only. Crimp ferrules require application tooling with die sets for attachment to cable.



Pneumatic Bench Tool No. 312522-2 (Requires Die Set Holder No. 58449-1.)



AMP Hand Tool No. 543344-1 (See pages 149 & 150 for Hand Tool Die Set Numbers)

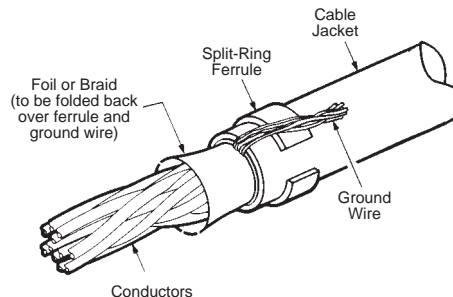
Split-Ring Ferrules for Foil or Braided Cable Shield (See pages 149 & 150 for Split-Ring Ferrule Part Numbers.)

Material:
 Aluminum

Related Product Data:
Shields used with:
Straight Exit—pages 146 & 147
90° Exit—page 147

Technical Document

Product Specification—108-40032



Note: Split-ring ferrules cannot be used with outer and inner ferrules. Split-ring ferrules are suitable for both foil and braided shields. The ferrules do not require tooling for assembly.

Crimp and Split-Ring Ferrules

Shell Size	Cable Dia. (Max.)	When using these Shield Kits				Use these Ferrules				
		Straight Exit Shield Kit No.		90° Exit Die Cast Shield Kit No.		Split-Ring* Ferrule No.	Crimp Ferrule No. and Tooling No.**			
		Die Cast	Metal-Plated Plastic	With Slide Latch	Without Slide Latch		Inner	Outer	Die Set For Hand Tool 543344-1	Applicator Die Set
1	.200 5.08	745171-2	745854-5	—	—	745508-2	—	—	—	—
	.240 6.10	745171-5	745854-1	—	—	—	1-745129-8	745130-8	543013-2	813809-1
	.250 6.35	745171-1	745854-3	—	—	745508-3	—	—	—	—
	.280 7.11	745171-5	745854-1	—	—	—	3-745129-4	1-745130-6	1-543013-7	813809-7
	.370 9.40	745171-5	745854-1	—	—	745508-6	1-745129-7	1-745130-0	543013-6	813809-5
2	.225 5.72	745172-3	747099-7	745652-4	—	745508-3	—	—	—	—
	.240 6.10	745172-1	747099-3	745652-2	745918-2	—	1-745129-8	745130-8	543013-2	813809-1
	.240 6.10	1-745172-3 745919-1	747099-1	745652-1	—	—	2-745129-1	745130-8	543013-3	813809-1
	.280 7.11	1-745172-3 745919-1	747099-1	745652-1	—	—	3-745129-2	1-745130-6	1-543013-6	813809-7
	.300 7.62	745172-2 745919-3	747099-5	745652-3	745918-3	745508-4	—	—	—	—
	.350 8.90	1-745172-3 745919-1	747099-1	745652-1	—	—	2-745129-0	745130-9	543013-4	813809-2
	.365 9.27	745172-1	747099-3	745652-2	745918-2	—	1-745129-7	1-745130-0	543013-6	813809-5
	.375 9.53	745172-1 745919-2	747099-3	745652-2	745918-2	745508-6	—	—	—	—
	.430 10.92	1-745172-3 745919-1	747099-1	745652-1	—	745508-1	1-745129-9	1-745130-1	543013-7	813809-3
	.240 6.10	745173-3	745833-5	745653-3	747194-3	—	2-745129-1	745130-8	543013-3	813809-1
3	.280 7.11	745173-5	745833-9	745653-5	—	745508-4	—	—	—	—
	.280 7.11	745173-3	745833-5	745653-3	747194-3	—	3-745129-2	1-745130-6	1-543013-6	813809-7
	.350 8.90	745173-4	745833-7	745653-4	—	745508-5	—	—	—	—
	.350 8.90	745173-3	745833-5	745653-3	747194-3	—	2-745129-0	745130-9	543013-4	813809-2
	.430 10.92	745173-3	745833-5	745653-3	747194-3	745508-1	1-745129-9	1-745130-1	543013-7	813809-3
	.430 10.92	745173-1	745833-1	745653-1	—	—	2-745129-3	1-745130-1	543013-8	813809-3
	.480 12.19	745173-2	745833-3	745653-2	—	745508-8	—	—	—	—
.530 13.46	745173-1	745833-1	745653-1	—	745508-9	2-745129-2	1-745130-2	1-543013-0	813809-4	

*For split-ring ferrules, Min. O.D. is .040 [1.02] smaller than Max. O.D.

**For inner and outer ferrules, Min. O.D. is .050 [1.27] smaller than Max. O.D. At the Max. cable O.D. the Min. insulation thickness is .060 [1.52].

Continued on Page 150

Cable Connectors

Crimp and Split-Ring Ferrules (Continued)

Shell Size	Cable Dia. (Max.)	When using these Shield Kits				Use these Ferrules				
		Straight Exit Shield Kit No.		90° Exit Die Cast Shield Kit No.		Split-Ring* Ferrule No.	Crimp Ferrule No. and Tooling No.**			
		Die Cast	Metal-Plated Plastic	With Slide Latch	Without Slide Latch		Inner	Outer	Die Set for Hand Tool 54334-1	Applicator Die Set
4	.240 6.10	745174-4	747100-7	—	—	—	2-745129-1	745130-8	543013-3	813809-1
	.280 7.11	745174-4	747100-7	—	—	—	3-745129-2	1-745130-6	1-543013-6	813809-7
	.350 8.90	745174-5	747100-9	—	—	745508-5	—	—	—	—
	.350 8.90	745174-4	747100-7	—	—	—	2-745129-0	745130-9	543013-4	813809-2
	.430 10.92	745174-4	747100-7	—	—	745508-1	1-745129-9	1-745130-1	543013-7	813809-3
	.500 12.70	745174-3	747100-5	—	—	745508-8	—	—	—	—
	.525 13.34	745174-1	747100-1	—	—	—	2-745129-6	1-745130-2	1-543013-1	813809-4
	.575 14.61	745174-2	747100-3	—	—	1-745508-0	—	—	—	—
	.650 16.51	745174-1	747100-1	—	—	1-745508-1	—	—	—	—
	5	.240 6.10	745175-6	—	—	—	—	1-745129-8	745130-8	543013-2
.365 9.27		745175-6	—	—	—	—	1-745129-7	1-745130-0	543013-6	813809-5
.375 9.53		745175-6	—	—	—	745508-6	—	—	—	—
.430 10.92		745175-4	—	—	—	—	2-745129-3	1-745130-1	543013-8	813809-3
.450 11.43		745175-5	—	—	—	745508-7	—	—	—	—
.525 13.34		745175-4	—	—	—	745508-9	—	—	—	—
.530 13.46		745175-4	—	—	—	—	2-745129-2	1-745130-2	1-543013-0	813809-4
.600 15.24		745175-3	—	—	—	1-745508-0	—	—	—	—
.650 16.51		745175-1	747098-1	—	—	—	2-745129-9	1-745130-3	1-543013-4	813809-6
.675 17.15		745175-2	—	—	—	1-745508-1	—	—	—	—
.750 19.05	745175-1	747098-1	—	—	1-745508-2	—	—	—	—	

*For split-ring ferrules, Min. O.D. is .040 [1.02] smaller than Max. O.D.

**For inner and outer ferrules, Min. O.D. is .050 [1.27] smaller than Max. O.D. At the Max. cable O.D. the Min. insulation thickness is .060 [1.52].

Note: Refer to page 148 for Application Tooling for ferrules.

Hardware

**Commoning Strip
(for HDF-20 Plugs,
Size 20 Pin Contacts)**

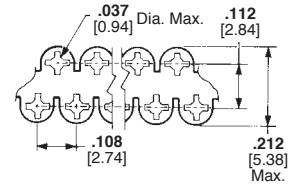
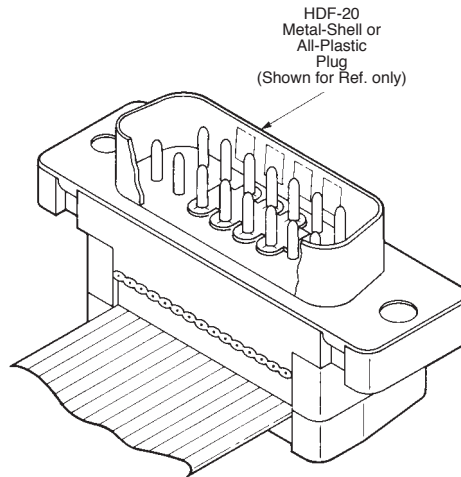
Material and Finish:

Brass, .004 [0.10] thick, tin plated

Part No. 206918-2
(Continuous Strip)

Related Product Data:

Used with HDF-20 Plugs—
page 131



Notes:

1. Use punching tool to remove undesired pin commoning locations on commoning strip. Use mating receptacle to seat strip over pins in plug. Punching tool is not supplied by Tyco Electronics.
2. Sold in strip form, strip contains 10,000 commoning locations.

**Male Screw Retainers
for Metal-Shell
Connectors
(HDE and HDP)**

Material and Finish:

Male Screw—Steel, zinc plated clear or yellow chromate

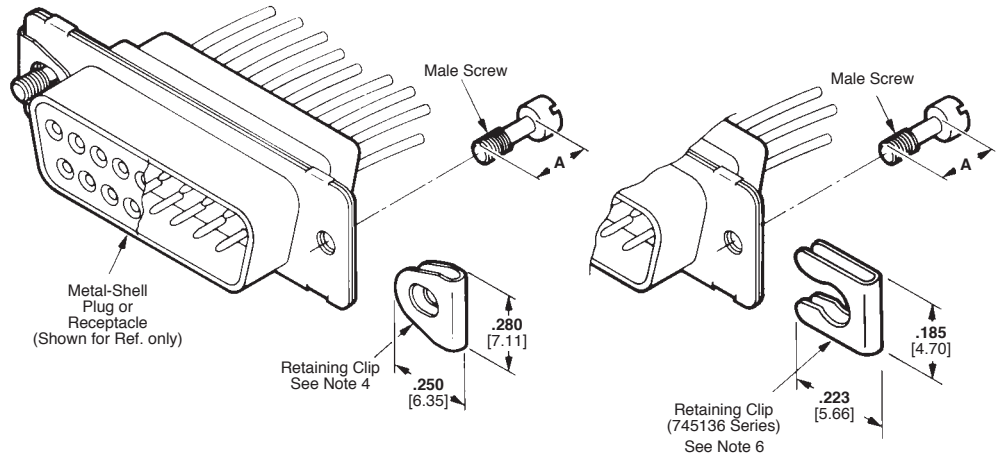
Retaining Clip—.012 [0.31] stainless steel

Related Product Data:

Connectors used with:
HDE Metal-Shell—pages 119 & 120
HDP Metal-Shell—pages 95-107

Technical Documents:

Instruction Sheet—408-7837



Male Screw Finish	Thread Size	Dimension A	Male Screw Retainer Kit No.	
			Individual	Bulk Packed*
Yellow Chromate	4-40	.220 5.59	205980-1 787354-1**	205980-3 —
		.200 5.08	745136-1	745136-2
	M3 (Metric)	.225 5.72	207871-1	—
	Clear Chromate	4-40	.220 5.59	205980-4
.200 5.08			745136-3	745136-4

*Each part is individually bulk packed for multiple kit orders.

** Phillips Head Screw

- Notes:**
1. All parts are packaged unassembled.
 2. Each kit is comprised of two male screws and two retaining clips. Male screw retainers are also furnished as part of cable clamp kits (pages 142 and 143).
 3. Male screw retainers mate with female screwlocks (page 149), with HDF metal-shell connectors featuring 4-40 threaded inserts (page 153) and with HD metal-shell board mount connectors featuring 4-40 threaded inserts or female screwlocks.
 4. Retaining clip must be assembled onto connector flanges with threaded hole toward wire side of connector.
 5. All screws have straight slotted heads except where noted.
 6. Retaining clip must be assembled onto connector flanges with notched side of retainer toward mating side of connector.

Hardware (Continued)

Material and Finish:

Male Screw—Steel, zinc plated yellow chromate

Retaining Clip—.012 [0.51] stainless steel

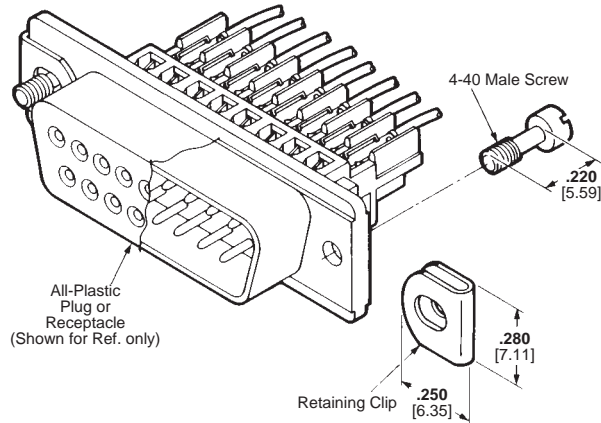
Related Product Data:

Connectors used with:
HDE All-Plastic—pages 117 & 118

Technical Documents:

Instruction Sheet—408-7837

Male Screw Retainers for All-Plastic Connectors (HDE)



Kit Numbers:

745647-1 (Individually packaged, see Note 2)

745647-2 (Bulk packed)*

*Each part is individually bulk packed for multiple kit orders.

Notes: 1. All parts are packaged unassembled.

2. Each kit is comprised of two 4-40 male screws and two retaining clips.

3. Male screw retainers mate with female screwlocks (page 153), with HDF All-Plastic connectors featuring 4-40 threaded inserts (page 130), with HD All-Plastic board mount connectors featuring integral standoffs with 4-40 threaded inserts and female screwlocks.

4. Retaining clips must be assembled onto connector flanges with threaded hole toward wire side of connector.

Male Screw Retainers for Metal-Shell and All-Plastic Connectors (HDF)

Material and Finish:

Male Screw—Steel, zinc plated clear chromate

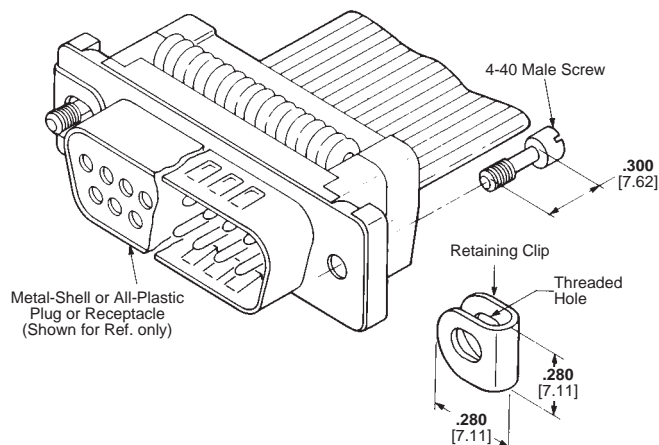
Retaining Clip—.012 [0.51] stainless steel

Related Product Data:

Connectors used with:
HDF Metal-Shell and All-Plastic—pages 130 & 131

Technical Documents:

Instruction Sheet—408-7837



Kit Numbers:

746881-1 (Individually packaged, see Note 2)

746881-2 (Bulk packed)*

*Each part is individually bulk packed for multiple kit orders.

Notes: 1. All parts are packaged unassembled.

2. Each kit is comprised of two male screws and two retaining clips.

3. Male screw retainers mate with female screwlocks (page 153), and with HD board mount connectors featuring female screwlocks.

4. Retaining clips must be assembled onto connector flanges with threaded hole toward wire side of connector.

Hardware (Continued)

Material and Finish:

All Parts—Cold rolled steel, zinc plated clear or yellow chromate

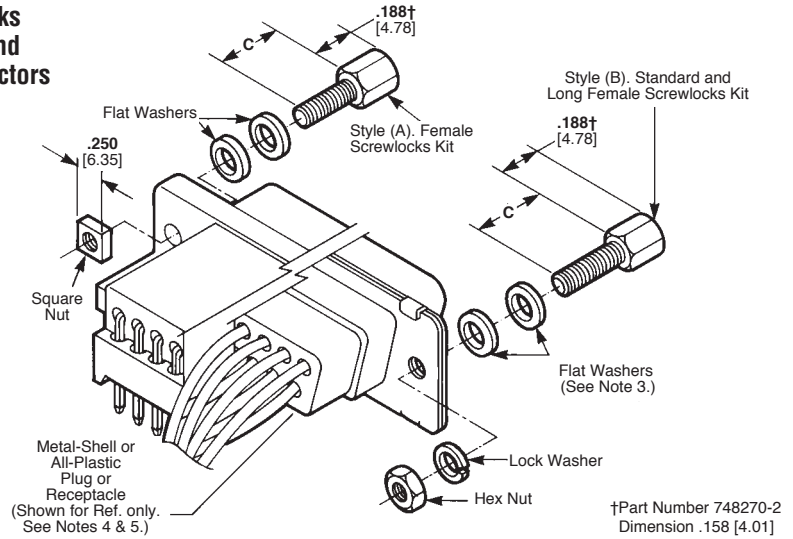
Related Product Data:

Connectors used with:
HDE Metal-Shell or All-Plastic—pages 117-120
HDF Metal-Shell or All-Plastic—pages 130 & 131
HDP Metal-Shell—pages 95-107
HD Board Mount—pages 55-72, 83-90, 92-94

Technical Documents:

Instruction Sheet—408-7837

Female Screwlocks for Metal-Shell and All-Plastic Connectors (HDE, HDF, HDP)



Nut Driver, Part No. 811262-1
 (Used for assembling female screwlocks to connector flange)

Connector Used with	Style	Dimension C	Thread Size	Finish	Kit Number	
					Individual	Bulk Packed ^Δ
HD All-Plastic Right-Angle Plugs and Receptacles	(A)	.250 6.35	4-40	Yellow Chromate	207952-1	—
				Clear Chromate	207952-3	—
HDE Metal-Shell or All-Plastic Plugs and Receptacles	(B)	.250 6.35	4-40	Yellow Chromate	745563-1	745563-2
				Clear Chromate	745563-3	745563-4
HDP or HDF Metal-Shell or All-Plastic Plugs and Receptacles	(B)	.312 7.93	4-40	Yellow Chromate	205817-1	205817-2
				Clear Chromate	205817-3	205817-4
			M3 (Metric)	Yellow Chromate	207872-1	—
				Clear Chromate	207872-3	—
HD or HDF All-Plastic Plugs and Receptacles with Integral Standoffs	(B)	.560 14.22	4-40	Yellow Chromate	207719-1	207719-2
				Clear Chromate	207719-3	207719-4
			2-56*	Clear Chromate	747223-3	—

* 2-56 is the male thread size. The female thread size is 4-40.

^Δ Each part is individually bulk packed for multiple kit orders.

- Notes:**
1. All parts are packaged unassembled.
 2. Each female screwlock kit is comprised of two assemblies as illustrated above.
 3. One or two flat washers may be required for panel thicknesses less than .060 [1.52]. Female screwlocks are not recommended for panel thicknesses greater than .060 [1.52].
 4. Female screwlocks with 2-56 thread size are to be used with cable clamps with mounting flanges. Female screwlocks with 4-40 and M3 (Metric) thread sizes can be used with all other cable clamps.
 5. Female screwlocks mate with male screw retainers (pages 151 and 152).
 6. Short female screwlocks cannot be used with HDF connectors (pages 130 & 131)

Individual Screwlocks

(Washers and Nuts not included)

Connector Used with	Style	Dimension C	Thread Size	Finish	Screwlocks	
					Individual	Bulk Packed ^Δ
HD All-Plastic Right-Angle Plugs and Receptacles	(A)	.250 6.35	4-40	Yellow Chromate	207953-2	—
				Clear Chromate	207953-3	—
				Clear Chromate	—	205818-3 ^{ΔΔ}
				Yellow Chromate	748558-3	748558-4
HDP or HDF Metal-Shell or All-Plastic Plugs and Receptacles	(B)	.312 7.93	4-40	Clear Chromate	748270-2	205818-2 ^{ΔΔ}
				Yellow Chromate	748270-2	205818-2 ^{ΔΔ}
			M2.6** (Metric)	Clear Chromate	749765-3	—
				M3*** (Metric)	Clear Chromate	747404-3
(Special)	.185 4.70	4-40	Clear Chromate	747877-3	—	

^{ΔΔ}With captivated star washer. No additional hardware included.

†Part No. 748270-2 Dimension .158 [4.01]

**M2.6 is the female thread size. The male thread size is 4-40.

***M3 is the female thread size. The male thread size is 4-40.

Hardware (Continued)

Slide Latches

Material and Finish:

4-40 Screws, Washers and Hex Nuts—Steel, zinc plated yellow chromate

2-56 Screws, Washers and Hex Nuts—Steel, zinc plated clear chromate

Slide Latch—Stainless steel

Related Product Data:

Connectors used with:

HDE Metal-Shell or All-Plastic—pages 117-120

HDF Metal-Shell or All-Plastic—pages 130 & 131

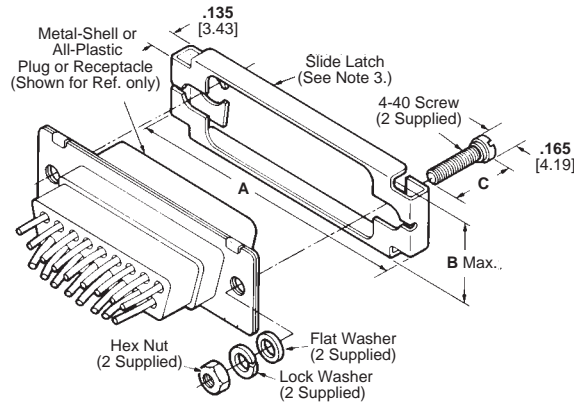
HDP Metal-Shell—pages XX

HD Board Mount—pages XX

Technical Documents:

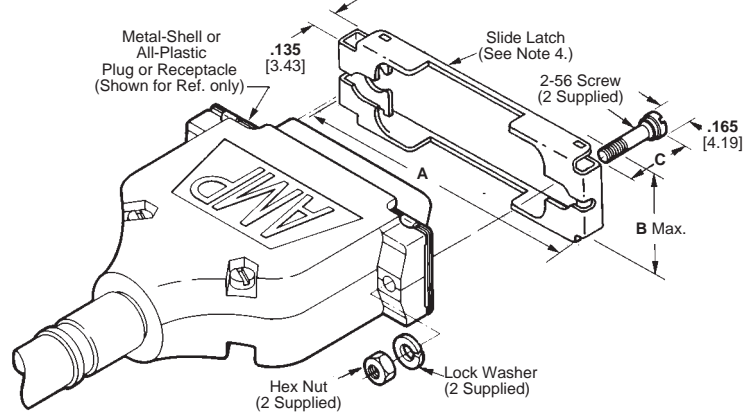
Instruction Sheet—408-6551

Style I



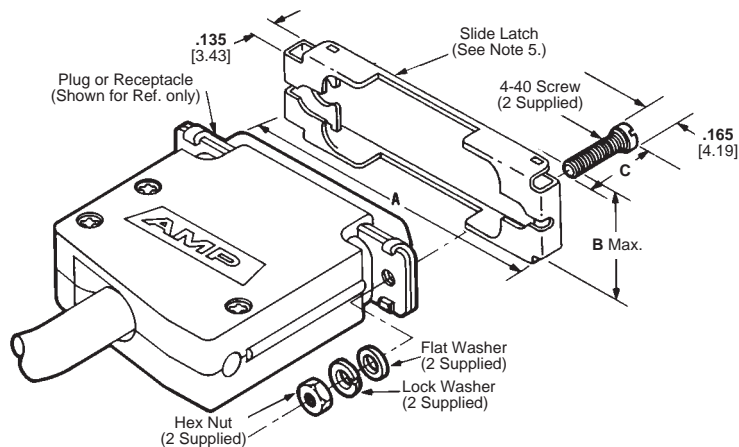
For Shell Sizes 1 and 4

Style II



For Shell Sizes 2, 3 and 5

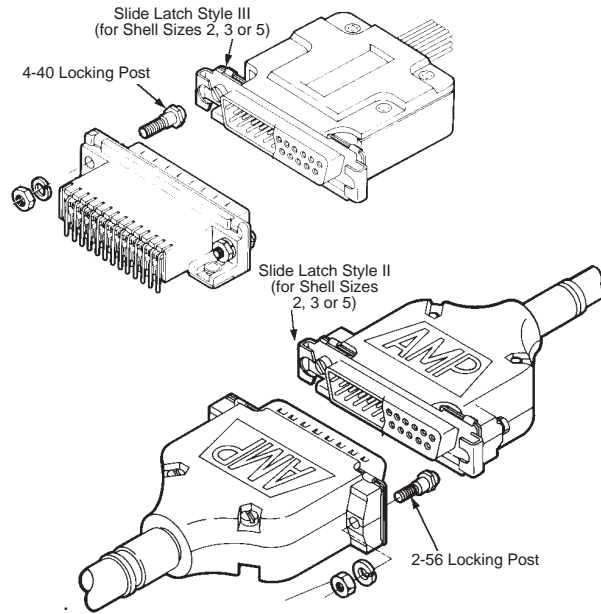
Style III



For Shell Sizes 2, 3 and 5

Hardware (Continued)

Slide Latches



Typical Applications of Locking Posts and Slide Latches

Shell Size	Style	Dimensions			Slide Latch Kit Numbers		Side Latch Only
		A	B	C	Individual	Bulk Packed*	
1	I	1.397 35.48	.490 12.45	.415 10.54	745404-1	—	164890-1
	II	1.725 43.82	.470 11.94	.547 13.89	745583-1	—	749027-1
2	II	1.725 43.82	.470 11.94	.415 10.54	745583-5	745583-6	749027-1
		1.725 43.82	.470 11.94	.450 11.43	745583-7	—	—
	III	1.725 43.82	.470 11.94	.415 10.54	—	786653-1 ⁷	—
		1.725 43.82	.490 12.45	.290 7.37	749028-1 ⁷	—	—
		1.725 43.82	.437 11.10	.415 10.54	—	786138-1 ⁷	—
		2.265 57.53	.470 11.94	.547 13.89	745584-1	—	749996-1
3	III	2.265 57.53	.470 11.94	.415 10.54	745584-3	—	749996-1
	I	2.913 73.99	.490 12.45	.415 10.54	745407-1	—	164890-4
5	III	2.819 71.60	.575 14.61	.415 10.54	745578-3	—	749997-1

*Each part is individually bulk packed for multiple kit orders.

- Notes:**
1. All parts are packaged unassembled.
 2. Each kit is comprised of a slide latch and two screws, flat washers (if required), lock washers and hex nuts. Style I slide latches are also furnished as part of cable clamp kits (page 147).
 3. Style I slide latches can be used with cable clamps that do not extend beyond the front flange of the connector or on connectors without cable clamps.
 4. Style II slide latches can be used with any cable clamp that has the mounting ear configuration as shown above.
 5. Style III slide latches can be used on connectors without cable clamps or with cable clamps that do not have the mounting ear configuration shown with Style II above.
 6. Slide latches mate with locking posts (page 156).
 7. No nuts, washers, or lockwashers.

Hardware (Continued)

Slide Latch Clip Assembly for Unfiltered Mating Half

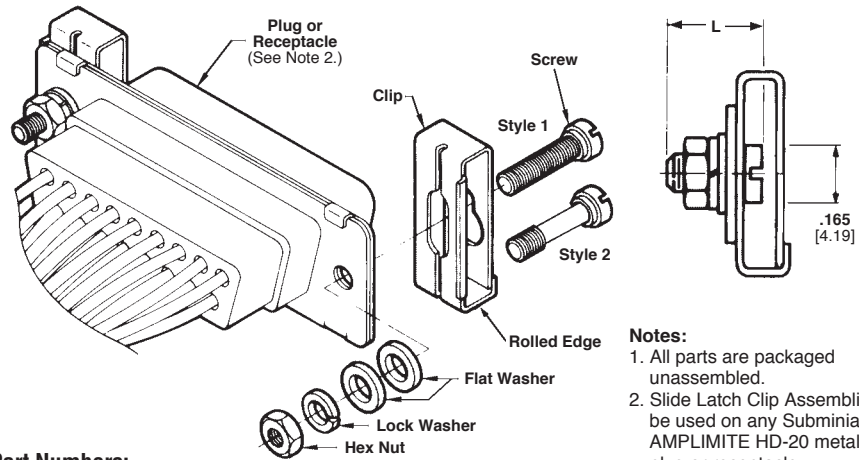
Material and Finish:

Screw, Washers and Hex Nut—Cold rolled steel, zinc plated clear chromate

Clip—Stainless steel

Technical Documents:

Instruction Sheet—408-7785



Notes:

1. All parts are packaged unassembled.
2. Slide Latch Clip Assemblies can be used on any Subminiature D AMPLIMITE HD-20 metal-shell plug or receptacle.
3. Slide Latch Clip Assemblies mate with Locking Post Assemblies shown below.

Kit Part Numbers:

Thread Size	Screw Length	Pkg.	Screw Style	Part No.
	L			
4-40	.415	Unit	1	206942-1
	10.54	Bulk		206942-2
2-56	.547	Unit	2	748078-1**
	13.89	—		—

† Two assemblies per package.

* Each part is individually bulk packed for multiple kit orders.

** Designed for cable clamps with mounting ears. No flat washers included.

Cable Connectors

Locking Post Assembly

Material and Finish:

All Parts—Cold rolled steel, zinc plated clear or yellow chromate

Related Product Data:

Connectors used with:
HDE Metal-Shell or All-Plastic—pages 117-120

HDF Metal-Shell or All-Plastic—pages 130 & 131

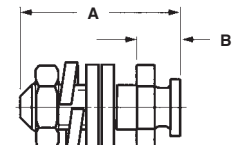
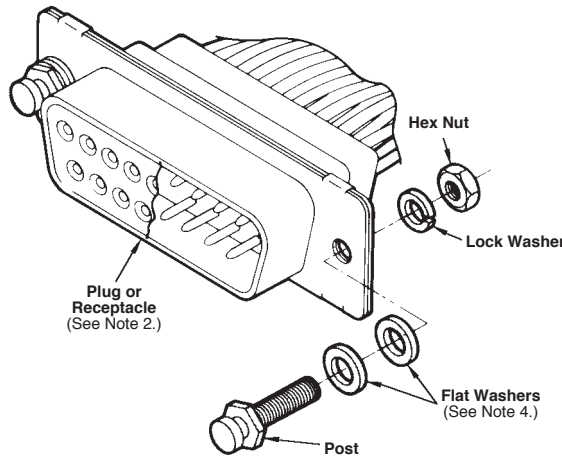
HDP Metal-Shell—pages 95-107

HD Board Mount—pages 55-72, 83-90, 92-94

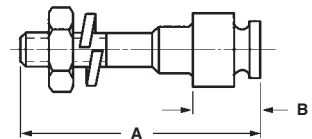
Instruction Sheets—

408-6551

408-7785



Part No. 206514-1



Part No. 747242-1

Notes:

1. All parts are packaged unassembled.
2. Each kit is comprised of two complete assemblies, as illustrated above.
3. For front panel mounting, it is recommended that a shim be used between the connector flange and panel to prevent bowing of the flange.
4. Locking posts with 2-56 thread size are to be used with cable clamps with mounting flanges. Locking posts with 4-40 thread size can be used with all other cable clamps
5. Locking posts mate with slide latches (page 154).

Thread Size	Locking Post Finish	Dimensions		Locking Post Kit Number (See Note 4)	
		A	B	Individual	Bulk Packed*
4-40	Yellow Chromate	.410	.110	206514-1	206514-3
	Clear Chromate	.410	.110	206514-4	—
	Yellow Chromate	10.41	2.79	206514-6	206514-7
2-56	Yellow Chromate	.615	.172	747242-1	—
	Clear Chromate	.615	.172	747242-3	—
	Yellow Chromate	15.62	4.37	—	—

*Each part is individually bulk packed for multiple kit orders.

Material

.015 [0.38] Stainless steel

Related Product Data:

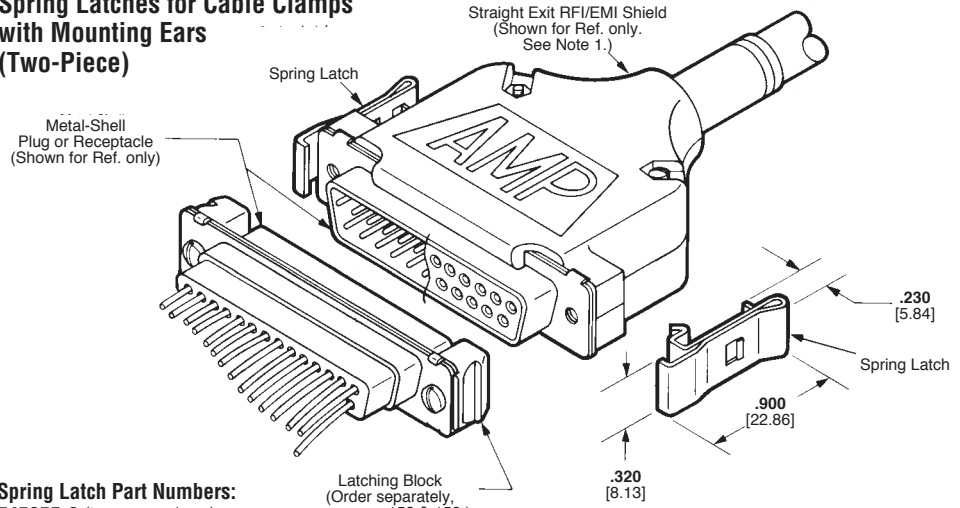
Connectors used with:
HDE Metal-Shell—pages 119 & 120
HDP Metal-Shell (Tin plated only)—pages 95-107

Technical Documents:

Instruction Sheet—408-9130

Hardware (Continued)

Spring Latches for Cable Clamps with Mounting Ears (Two-Piece)



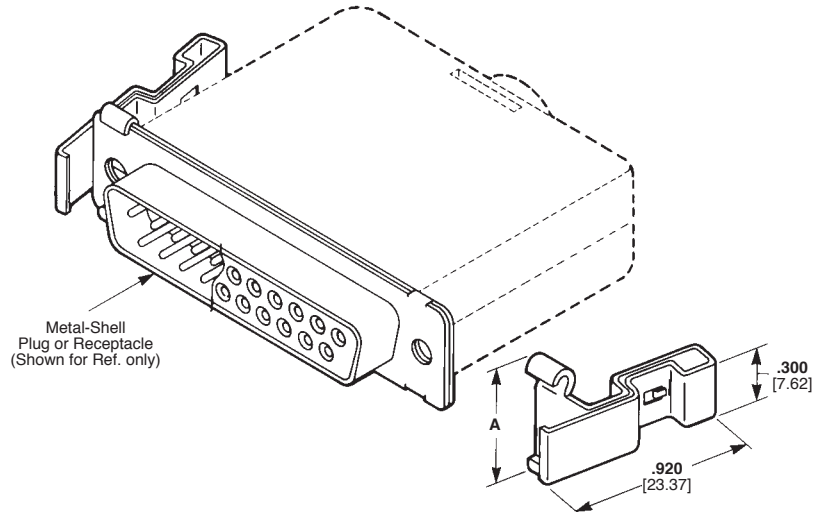
Spring Latch Part Numbers:
745255-2 (two per package)
745255-3 (bulk packed)*

*Two-piece spring latches are individually bulk packed for multiple part orders.

- Notes:**
1. Two-piece spring latches can be used with RF/EMI shields (pages 146).
 2. Two-piece spring latches mate with latching blocks (pages 158 & 159).

Typical Application of Two-Piece Spring Latches with Straight Exit RF/EMI Shield

Spring Latches (Two-Piece)



Material:

Stainless steel

Related Product Data:

Connectors used with:
HDE Metal-Shell—pages 119 & 120
HDP Metal-Shell—pages 95-107

Technical Documents:

Instruction Sheet—408-9131

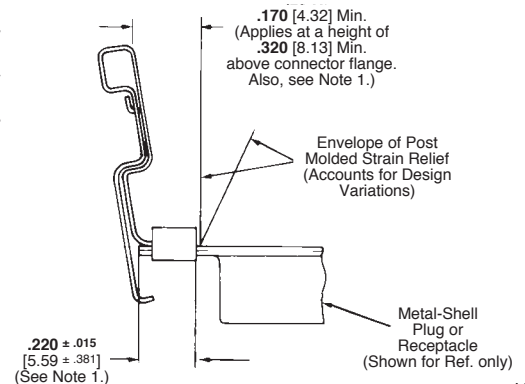
Spring Latch Part Numbers

Size	Dimension A	Two Per Package	Bulk Packed*
1-4	.540 13.72	745779-2	745779-3
5	.650 16.51	745779-5	—

*Two-piece spring latches are individually bulk packed for multiple part orders.

- Notes:**
1. These dimensions must be maintained to assure satisfactory operation of the spring latches.
 2. Two-piece spring latches mate with latching blocks (pages 158 & 159).

Typical Application of Two-Piece Spring Latches with Post Molded Strain Relief



Hardware (Continued)

Material and Finish:

Latching Blocks—Zinc

Pan Head Screws—Steel, zinc plated

Related Product Data:

Connectors used with:

HDE Metal-Shell or All-Plastic—
pages 117-120

HDF Metal-Shell or All-Plastic—
pages 130 & 131

HDP Metal-Shell—pages XX

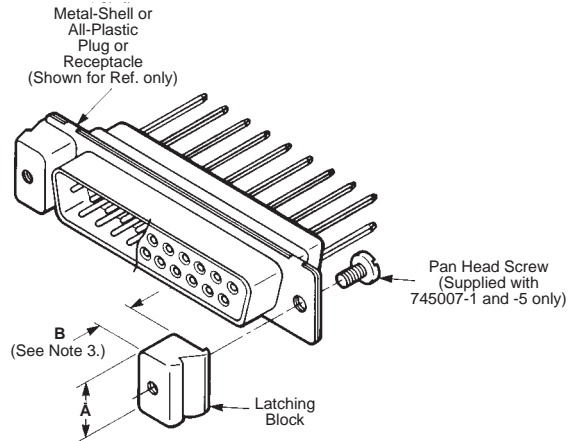
HD Board Mount—pages XX

Mating/Panel Mounting—page 141

Technical Documents:

Instruction Sheet—408-9128

Latching Blocks with Threaded Hole



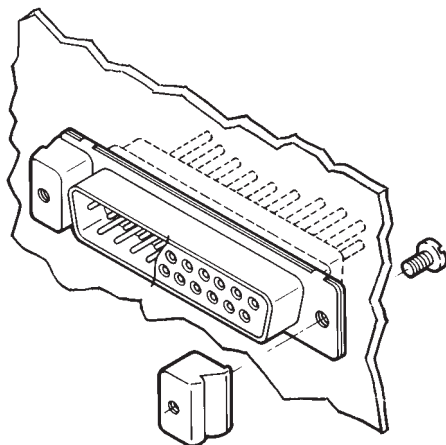
Shell (No. of Contact Pos.)	Dimensions		Panel Thickness	Thread Size	Rear-Panel Latching Block Part No.		Front-Panel Latching Block Part No.	
	A	B			Individual	Bulk Packed*	Individual	Bulk Packed*
1 thru 4 (9 thru 37)	.400	.190	.060	M3 (Metric)	745403-1	745403-2	—	—
	10.16	4.83	1.52	4-40	745403-8	—	—	—
	.400	.220	.030	4-40	747717-2	—	—	—
5 (50)	.400	.250	—	M3 (Metric)	—	—	745007-1	—
				4-40	—	—	208101-1	208101-2
	10.16	6.35	—	4-40	—	—	745007-5	—
				4-40	—	—	208101-8	208101-9

*Bulk packed for multiple part orders.

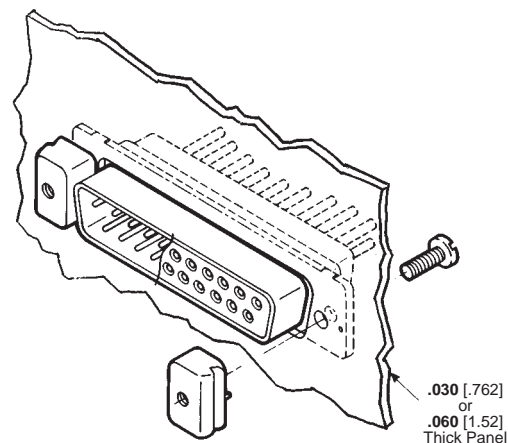
**Individual kits contain two latching blocks per package.

Notes:

1. All parts are packaged unassembled.
2. Each front panel latching block kit is comprised of two latching blocks. Two pan head screws of the appropriate length and thread size to be supplied by customer.
3. B dimension .250 [6.35] is for connector flange mounting, .220 [5.59] is for use with .030 [0.76] thick panels, and .190 [4.83] is for use with .060 [1.52] thick panels.
4. Latching blocks mate with spring latches (page 157).



Typical Application of Front-Panel Mounted Subminiature D Connector using Front-Panel Latching Blocks



Typical Application of Rear-Panel Mounted Subminiature D Connector using Rear-Panel Latching Blocks

Hardware (Continued)

Material

Latching Blocks—Zinc

Related Product Data:

Connectors used with:

HDE Metal-Shell or All-Plastic—pages 117-120

HDF Metal-Shell or All-Plastic—pages 130 & 131

HDP Metal-Shell—pages XX

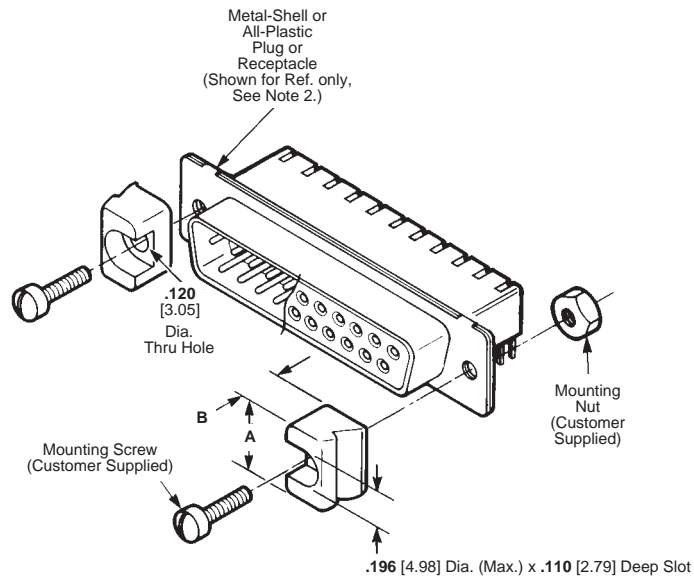
HD Board Mount—pages XX

Mating/Panel Mounting—page 141

Technical Documents:

Instruction Sheet—408-9128

Latching Blocks with Slot Recess and Thru Hole



Shell (No. of Contact Pos.)	Dimensions		Panel Thickness	Rear-Panel Latching Block Part No.		Front-Panel Latching Block Part No.	
	A	B		Individual	Bulk Packed*	Individual	Bulk Packed*
1 thru 4 (9 thru 37)	.400 10.16	.160 4.06	.090 2.29	747080-2	—	—	—
		.190 4.83	.060 1.52	745245-2	745245-3	—	—
		.250 6.35	—	—	—	745286-2	745286-3
5 (50)	.530 13.46	.190 4.83	.060 1.52	—	—	745245-5	—

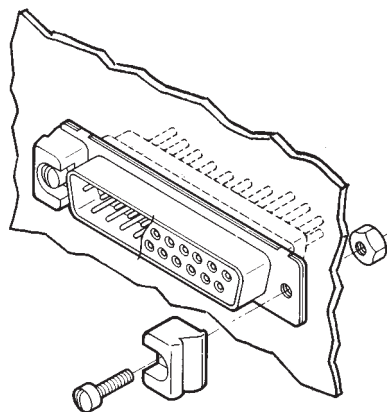
*Bulk packed for multiple part orders.

**Individual kits contain two latching blocks per package.

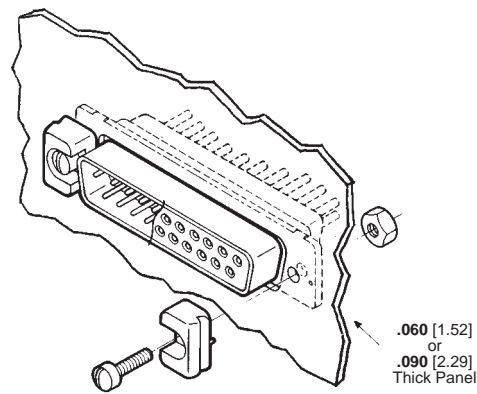
Notes: 1. Mounting screws and nuts are to be supplied by Customer.

2. These latching blocks allow mounting screws to be installed thru the front of the block and to be screwed into the bracket of a right-angle connector, a fixed insert in a connector mounting flange, or a nut behind the connector mounting flange (as illustrated above).

3. Latching blocks mate with spring latches (page 157).



Typical Application of Front-Panel Mounted Subminiature D Connector using Front-Panel Latching Blocks



Typical Application of Rear-Panel Mounted Subminiature D Connector using Rear-Panel Latching Blocks

Hardware (Continued)

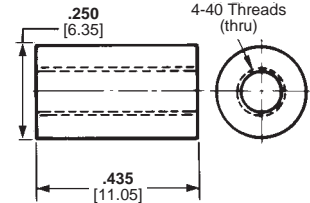
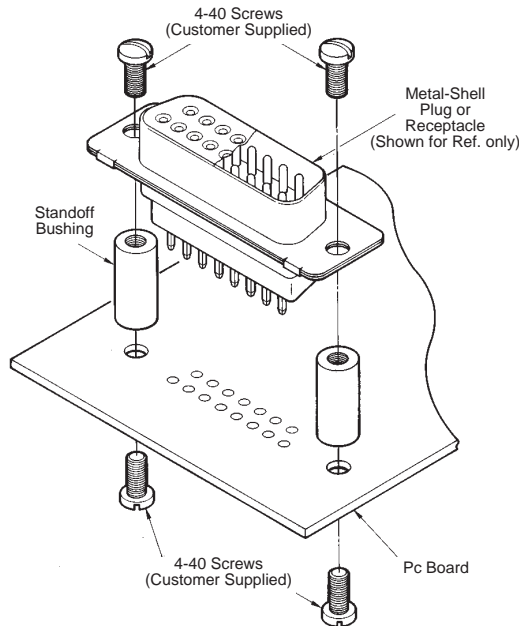
Standoff Bushings

Material:

Aluminum

Related Product Data:

Connectors used with:
HD Straight Posted—
pages 81-90, 92-94



Kit Numbers:

205933-3 (two bushings per package)

205933-4 (bulk packed)*

*Parts are individually bulk packed for multiple part orders.

Cable Connectors

Keying Plug (for Size 20 Socket Contacts)

Material:

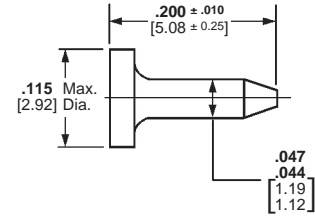
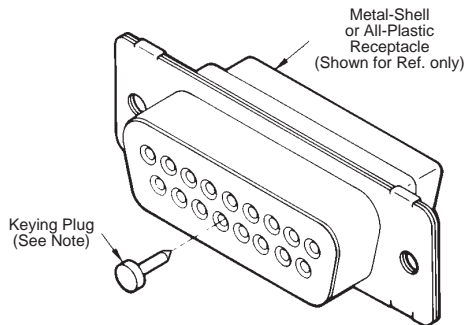
Polyphenylene oxide

Related Product Data:

Connectors used with:
All HDE, HDP and HD Receptacles
with Socket Contacts

Keying Plug

499712-1 (AMP-LATCH) can be used on HD22 Socket Contacts



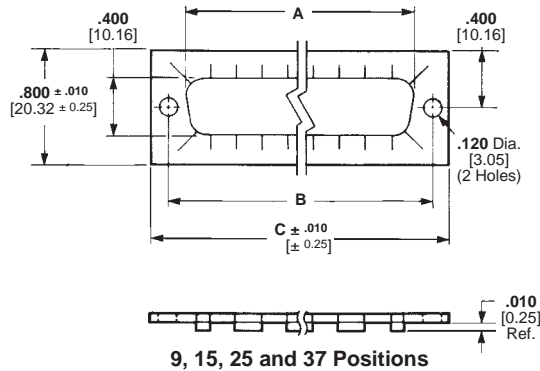
Part Number: 206509-1

- Notes:**
1. Keying plug is installed taper-end first into front of receptacle.
 2. Sold individually.

EMI/RFI Gaskets

Material and Finish:

Brass, .006 [0.15] thick;
bright tin plated



Shell Size (No. of Contact Pos.)	Dimensions			Gasket Part No.
	A	B	C	
1 (9)	.746 18.95	.984 24.99	1.220 30.99	747024-3
2 (15)	1.074 27.28	1.312 33.32	1.555 39.50	747025-3
3 (25)	1.614 41.00	1.852 47.04	2.100 53.34	745776-3
4 (37)	2.266 57.56	2.500 63.50	2.730 69.34	745777-3

Part Number Index

Note: This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

Part No.	Page	Part No.	Page	Part No.	Page
57034	130	205729	143	344644	80
57040	130	205730	143	344645	80
58237	104, 113, 125	205731	143	344646	80
58238	104, 113, 125	205732	143	344647	80
58273	93	205817	153	344651	80
58274	93	205818	153	344652	80
66504	105	205933	160	390377	38
66505	105	205980	151	390378	37
66506	105	206390	143	390379	37
66507	105	206393	143	390399	37
66569	106	206471	137	440144	133
66570	106	206472	137	440183	45, 46, 47
66682	105	206478	143	440184	45, 46, 47
66683	105	206509	160	440362	133
88450	25	206514	156	440391	45, 46, 47
91164	92, 94	206942	156	440392	45, 46, 47
91165	92, 94	206971	72	440394	45, 46, 47
91166	92, 94	206973	71	440395	45, 46, 47
91167	92, 94	207345	142	440397	45, 46, 47
91168	92, 94	207463	98	440398	45, 46, 47
106505	73	207464	98	440407	49
106506	73	207467	142	440408	49
106507	73	207470	142	440409	49
106508	73	207473	142	543424	104, 113, 125
164531	79	207476	142	543425	104, 113, 125
164532	79	207516	98	745007	158
164533	79	207661	98	745036	98
164534	79	207719	87, 89, 153	745051	88
164535	79	207826	90	745052	88
164890	155	207827	90	745053	88
166051	79	207828	90	745054	88
166052	79	207829	90	745057	90
166053	79	207841	90	745058	90
166054	79	207871	151	745059	90
166291	79	207872	153	745071	88
166292	79	207908	142	745072	88
166293	79	207952	87, 89, 153	745073	88
166294	79	207953	153	745074	88
167292	79	208006	88	745076	90
167293	79	208007	88	745077	90
167294	79	208008	88	745078	90
167295	79	208009	88	745079	90
167296	79	208010	88	745080	90
188987	77	208101	158	745081	137
188988	77	338168	73	745082	137
188989	77	338169	73	745112	64
188990	77	338170	73	745113	64
205201	105	338171	73	745114	64
205202	105	338238	77	745115	64
205203	98	338239	77	745116	64
205204	98	338240	77	745121	144
205205	98	338241	77	745122	144
205206	98	338309	75	745129	149, 150
205207	98	338310	75	745130	149, 150
205208	98	338311	75	745131	69
205209	98	338312	75	745132	69
205210	98	338313	75	745134	137
205211	98	338314	75	745135	98
205212	98	338315	75	745136	151
205310	105	338316	75	745171	146, 149
205311	105	344642	80	745172	146, 149
205718	143	344643	80	745173	146, 149

Part Number Index (Continued)

Part No.	Page	Part No.	Page	Part No.	Page
745174	146, 150	745461	94	747020	64
745175	146, 150	745465	94	747021	64
745182	83	745491	120	747022	63
745183	84	745492	119	747024	160
745185	84	745493	120	747025	160
745186	83	745494	119	747043	129
745187	84	745495	120	747051	130
745189	84	745496	119	747052	129
745191	84	745497	120	747053	130
745201	118	745498	119	747080	159
745203	117	745508	149, 150	747089	92
745205	118	745530	141	747090	92
745207	117	745536	64	747091	92
745209	118	745547	140	747098	146, 150
745211	117	745550	140	747099	146, 149
745215	117	745553	140	747100	146, 150
745229	105	745560	140	747140	92
745230	105	745563	153	747141	92
745245	159	745578	155	747142	92
745253	105	745583	155	747143	92
745254	105	745584	155	747144	92
745255	157	745589	94	747145	92
745266	126	745599	94	747150	86
745267	126	745612	94	747190	84
745269	126	745647	152	747193	64
745270	126	745652	147, 149	747194	147
745271	69	745653	147, 149	747194	149
745286	159	745776	160	747197	63
745287	106	745777	160	747223	153
745288	106	745779	157	747236	55
745306	145	745781	56	747238	55
745311	145	745782	56	747242	156
745351	63	745783	56	747250	55
745352	63	745784	56	747252	55
745354	63	745820	84	747275	129, 130
745355	63	745833	146, 149	747299	86
745392	69	745854	146, 149	747301	86
745394	69	745883	98	747302	84
745395	69	745884	98	747303	129
745396	69	745886	84	747306	129
745397	69	745906	98	747315	84
745403	158	745907	98	747318	130
745404	155	745908	98	747321	130
745407	155	745909	98	747375	85
745410	83	745918	147, 149	747404	153
745411	83	745919	147, 149	747418	62
745412	83	745922	92	747459	71
745413	83	745925	92	747460	71
745414	83	745928	92	747461	71
745434	60	745959	83	747462	71
745435	60	745967	86	747467	72
745436	60	745968	85	747468	72
745437	60	745984	66	747470	72
745438	59	745988	66	747497	63
745439	59	745990	65	747515	121
745440	59	745992	66	747516	122
745441	59	745994	65	747522	100
745454	94	745996	66	747523	100
745455	94	746785	129	747531	121
745456	94	746789	129	747532	122
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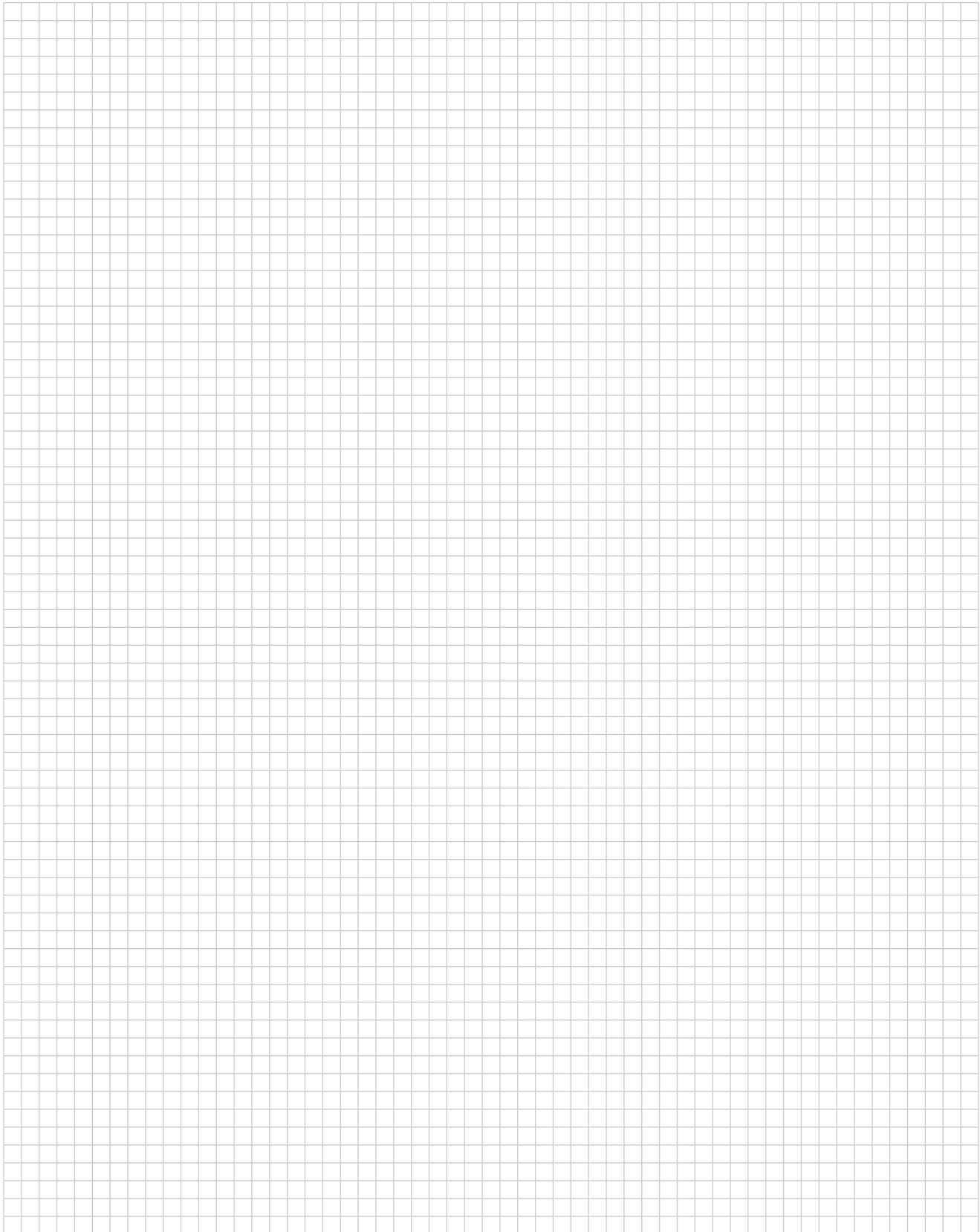
Part Number Index (Continued)

Part No.	Page	Part No.	Page	Part No.	Page
747547	121	747946	123	748677	146
747548	122	747947	124	748678	144
747554	100	747948	123	748688	92
747555	100	747949	124	748696	110
747563	121	747950	123	748826	72
747564	122	747951	102	748831	91
747570	100	747952	102	748865	68
747571	100	747953	102	748872	72
747577	100	747954	102	748873	72
747578	100	747955	102	748901	67
747579	104, 113, 125	747956	102	748904	68
747580	104, 113, 125	747957	102	748907	70
747704	85	747958	102	748909	70
747706	86	747959	102	748948	71
747707	86	747960	102	748952	72
747708	86	747973	146, 147	748953	72
747709	86	748003	85	748979	67
747713	92	748026	85	748981	67
747714	92	748027	85	748989	70
747715	92	748078	156	749014	83
747717	158	748146	93	749019	91
747740	120	748270	153	749027	155
747741	120	748333	114	749028	155
747746	146, 147	748364	110	749030	91
747784	144, 146	748365	110	749069	8
747786	91	748366	110	749070	8
747824	137	748367	110	749080	17
747832	65	748368	110	749081	17
747833	65	748394	54	749087	26
747834	65	748468	111	749111	13
747835	65	748469	111	749190	19
747836	66	748470	111	749192	19
747837	66	748471	111	749193	19
747838	66	748472	111	749195	19
747839	66	748473	112	749196	19
747840	55	748474	112	749197	19
747841	55	748475	112	749198	19
747842	55	748476	112	749199	19
747843	55	748477	112	749201	19
747844	56	748481	54	749202	19
747845	56	748482	54	749204	19
747846	56	748483	54	749205	19
747847	56	748485	92	749206	19
747848	61	748526	100	749207	19
747850	61	748536	100	749210	15
747852	62	748558	153	749234	54
747853	62	748565	110	749246	103
747854	62	748566	110	749374	91
747871	85	748567	110	749608	19
747872	85	748568	110	749609	19
747877	153	748569	110	749611	24
747904	134	748610	114	749621	13
747905	134	748612	86	749626	138
747908	134	748634	111	749639	54
747909	134	748635	111	749656	21
747912	134	748636	111	749699	15
747913	134	748639	112	749717	110
747916	134	748640	112	749721	8
747917	134	748641	112	749755	6
747943	124	748642	112	749763	100
747944	123	748643	112	749765	153
747945	124	748676	146	749767	54

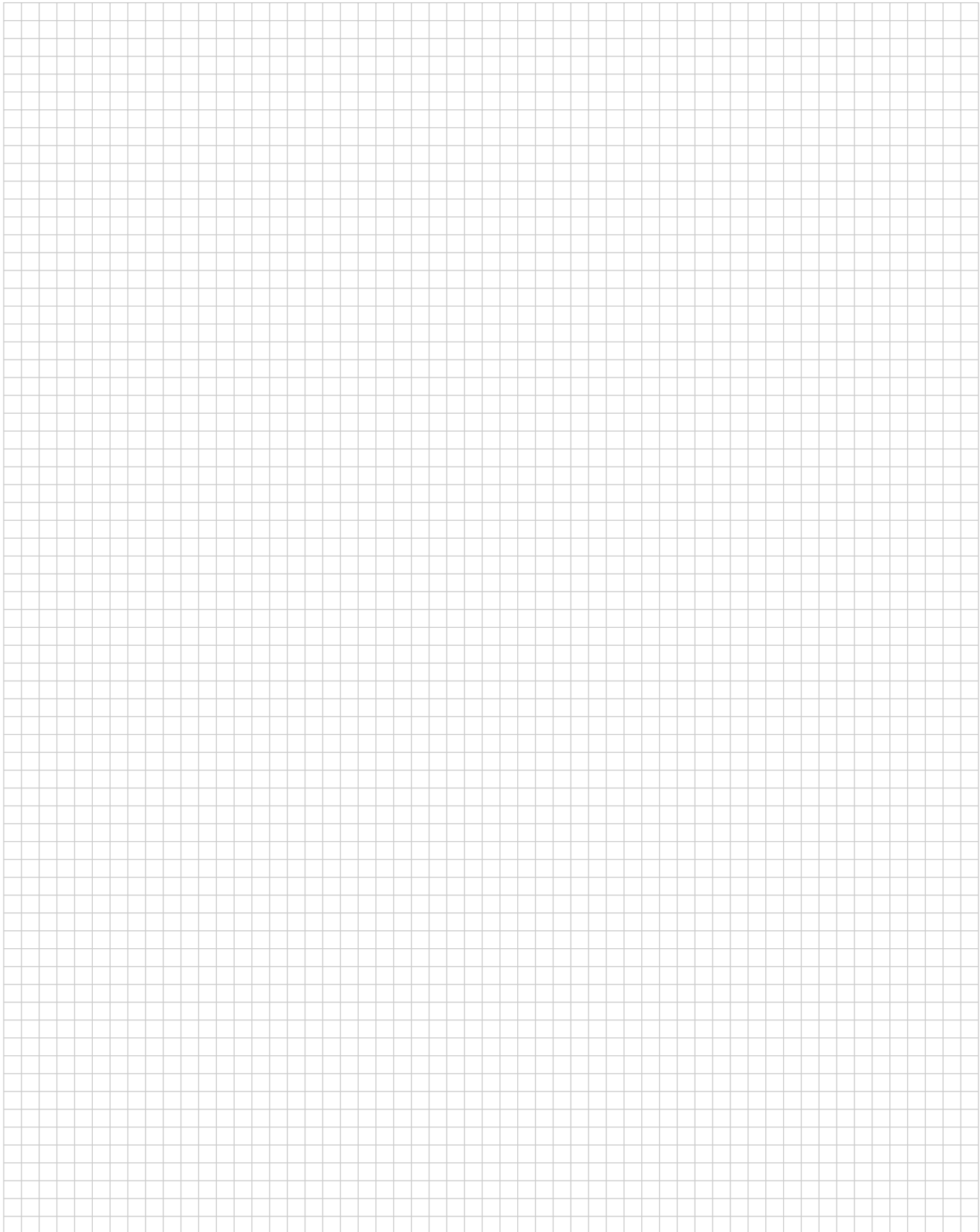
Part Number Index (Continued)

Part No.	Page	Part No.	Page	Part No.	Page
749768	54	786382	91	788740	54
749769	54	786387	48	788750	51
749771	54	786534	93	788751	51
749798	91	786554	11	788752	51
749808	139	786555	11	788753	51
749809	139	786556	11	788754	51, 52
749812	139	786557	11	788755	51
749813	139	786583	110	788756	51
749854	17	786585	26	788757	51
749877	22	786653	155	788781	51
749878	23	786830	93	788782	51
749889	19	786862	21	788792	57
749892	93	786865	21	788793	57
749914	138	786929	100	788794	57
749915	138	787032	25, 38	788795	57
749916	138	787043	25, 38	788796	58
749996	155	787082	7	788797	58
749997	155	787169	7	788798	58
750060	93	787170	7	788799	58
750078	138	787171	7	788800	58
750100	138	787176	93	788801	58
750101	138	787177	93	788802	58
750254	6	787190	7	788803	58
750255	6	787266	7	788816	110
750257	6	787354	151	788817	110
750342	6	787362	7	971111	130
750450	24	787394	7	1364027	51
750489	91	787395	7	1392010	74, 76
750636	100	787543	17	1393480	74
750640	21	787656	9	1393481	74, 76
750644	7, 26	787678	9	1393482	76
750678	86	787679	9	1393483	80
750732	6	787683	86	1393487	76
750752	17, 20	787685	86	1393497	76
750820	32	787686	85	1470250	54
750821	32	787695	110	1483489	76
750823	31	787908	100	1571650	135
750831	33	788433	48	1571651	135
750833	33	788458	93	1571652	135
750850	34	788489	52	1571653	135
750913	12	788490	52	1571654	135
786090	25, 38	788491	52	1571655	135
786138	155	788508	48	1571656	135
786152	17	788573	52	1571657	135
786155	11	788575	52	1658293	110
786200	32	788623	91		
786356	91	788624	54		

Engineering Notes



Engineering Notes



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Estonia – Tallinn
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 Fax: +49-6251-133-1600
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 Fax: +49-2247-305-122

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Ireland – Dublin
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 Fax: +39-011-4031-116

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 Fax: +370-5-21-31-403

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 Fax: +31-73-6212-365
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 Fax: +40-1-312-0574

Russia – Moscow
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 Fax: +7-095-926-55-05

Russia – St. Petersburg
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 Fax: +7-812-325-32-88

Scotland – Dundee
Madison Cable Products
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 Fax: +44-1382-505060

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 Fax: +421-48-415-20-13

Slovenia – Ljubljana
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 Fax: +386-1561-3240

South Africa – Port Elizabeth
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 Fax: +27-41-486-1314

Spain – Barcelona
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