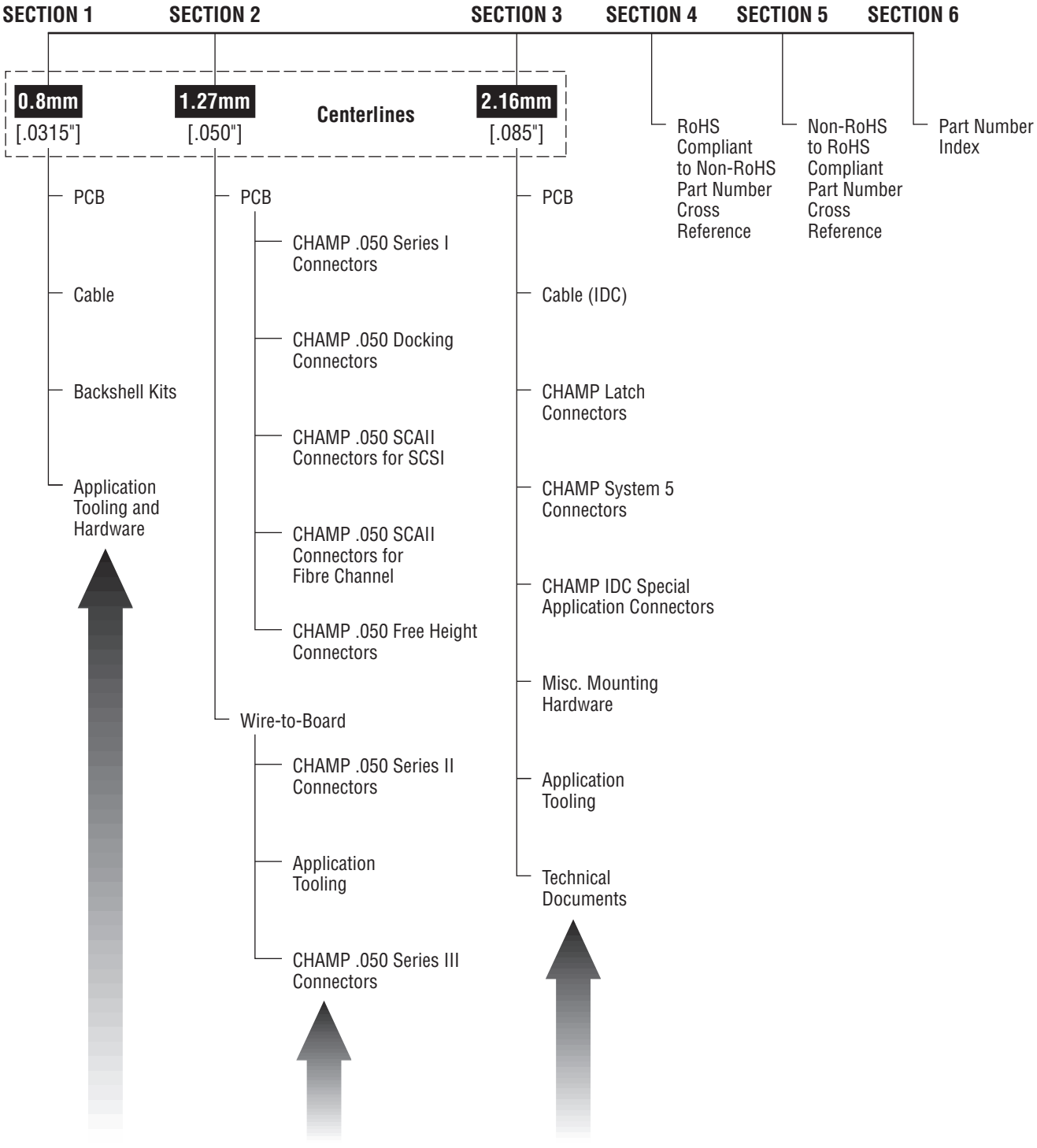
tyco

Electronics

CHAMP Interconnection System

AMP

Flowchart of CHAMP Connectors: How This Catalog is Organized...



Catalog 1-1773441-4
Issued 10-05

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

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Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

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See inside back cover for Global Contacts and phone numbers.

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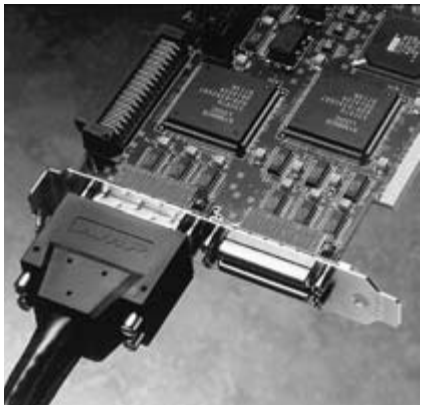

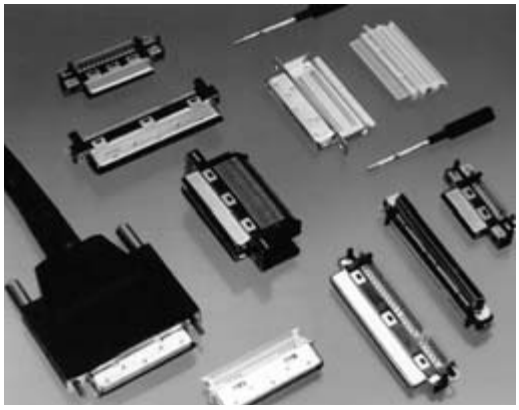

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Engineering Notes

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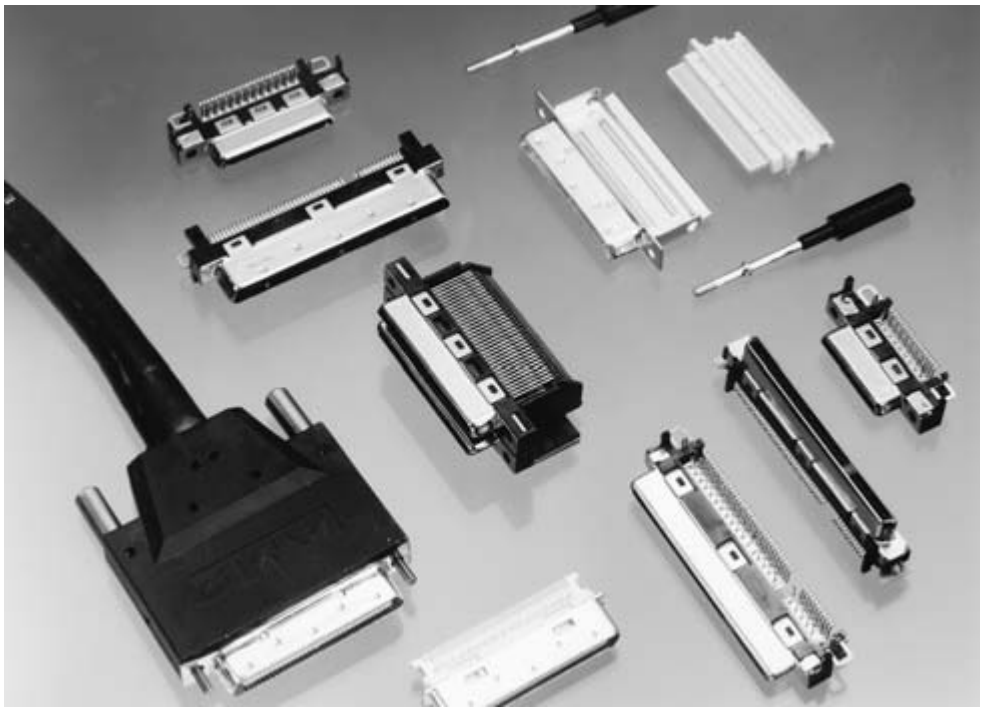
CHAMP 0.8mm Centerline Connectors (SCSI-3, VHDCI)



Product Facts

- **EMI shielded high density and low profile I/O system**
- **Contacts on 0.8mm centerlines—offer 30% linear PC board space savings**
- **Low profile right angle PC connector, 5.0mm high—a 50% reduction in height**
- **Available in thru-hole, surface mount, and hybrid PC board lead configuration—combination of surface mount and thru-hole leads**
- **Depending on contact design, durability cycles range from 500 up to 2000 insertion cycles**
- **Contact tips recessed for ESD and damage protection**
- **M2 threaded hardware for panel mounting**
- **PC board connectors available in 50- and 68-position receptacle assemblies, and 50-position plug assemblies**
- **Cable plug connectors accept 30 AWG [0.05mm^2] solid or stranded wire and are available in 36-, 50- and 68-position assemblies**
- **Contacts are insulation displacement type (IDC) and can be quickly terminated by the CHAMPOMATOR 2.5 Semi-Automatic Termination Machine**
- **Metal-shell backshell kits feature integral cable braid termination and a choice of squeeze-to-release latches or jackscrew mating hardware**
- **Enclosure cover for backshell kit made of UL 94V-0 rated ABS**
- **Die cast backshell with integral cable braid termination and strain relief for 68-position offset cable plugs**
- **Produced under a Quality Management System certified to ISO 9001**

  A copy of the certificate is available upon request.

The CHAMP 0.8mm High Density Interconnection System is designed for high density, low profile (5.0mm), shielded applications featuring two rows of contacts on 0.8mm centerlines. Typical applications include:

- Docking Connectors
- Shielded I/O Connectors
- Removable Floppy / CD-ROM drives
- Network Bridges / Routers / Hubs
  - Multiple Low Profile and High Density I/O's
- Severely Limited "Backpanel" I/O Area
- PC / File Server Controller Cards
  - Next Generation SCSI I/O or VHDCI

The CHAMP 0.8mm 68-position connector system was developed to support the VHDCI (Very High Density Cable Interconnect) specification. Multiple options are available including single and stacked right angle receptacles and standard as well as offset cable plugs.

Contacts on 0.8mm centerlines provide 30% linear board space savings, and 5.0mm low profile housing provide approximately 50% reduction in height when compared to other interconnection systems.

Cable plug connectors accept 30 AWG [0.05mm^2] solid or stranded wire, and feature insulation displacement crimp (IDC) terminations. Incorporated in the design are precision insert molded contacts with tips recessed for ESD and damage protection.

Backshell kits offer additional protection and are composed of: a) Hermaphroditic metal shells with integral cable braid termination and strain relief, b) Choice of squeeze-to-release latches or jackscrew mating hardware, c) Backshell covers made of UL 94V-0 rated ABS/PC complete the cable connector assembly, d) die cast backshell with integral cable braid termination and strain relief for 68-position offset cable plugs.

Application tooling for the cable plug connectors consists of the CHAMPOMATOR 2.5 semi-automatic termination machine, and a bench mounted arbor press and die set for terminating and installing the backshell kit.

Technical Documents

Product Specification
108-1471

Application Specification
114-6057

Test Report
501-335

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CHAMP 0.8mm Centerline Printed Circuit Board Connectors

Standard Receptacle, Right Angle

Material and Finish

Housing and Pin Spacer — UL 94V-0 rated thermoplastic, black, SMT compatible

Inserts — UL 94V-0 rated thermoplastic, natural, SMT compatible

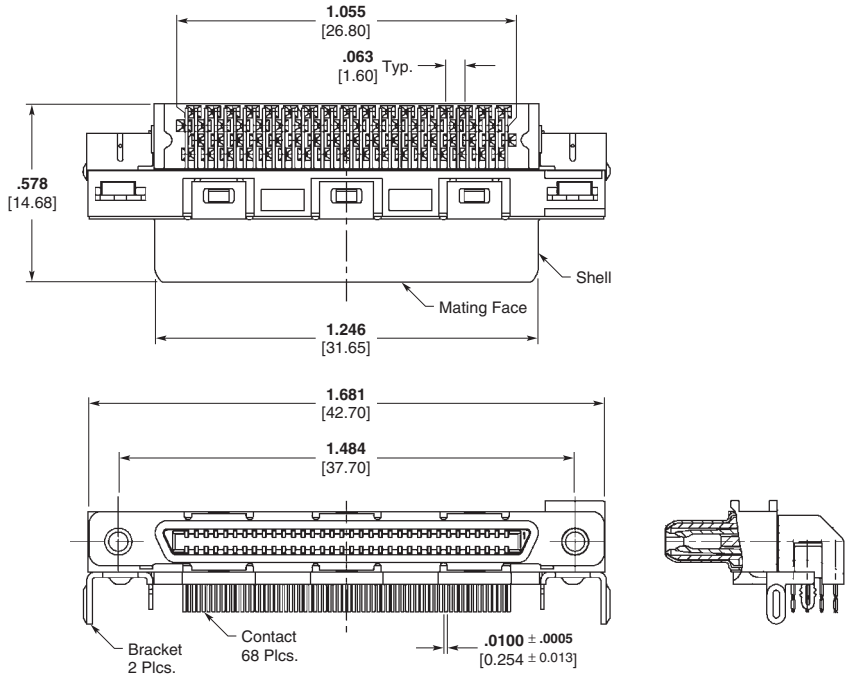
Shell — Steel, plated .000197 [0.00500] min. bright tin over .000098 [0.00250] min. copper

Contacts — Phosphor bronze, duplex plated .000003 [0.000076] min. gold over .000029 [0.00076] min. palladium nickel on mating end, .000148 [0.00375] min. bright tin-lead on solder end, all over .000050 [0.00127] min. nickel under plating

Boardlocks — Brass, plated .000148 [0.00375] min. bright tin-lead over .000050 [0.00127] min. nickel

Durability — 500 insertion cycles

Base Part Number 796055-x



Product Facts

- **EMI shielded high density and low profile I/O system**
- **Precision insert molded contacts on 0.8mm centerlines offer 30% linear PC board space savings**
- **Low profile right angle PC connector, 5.0mm high — a 50% reduction in height**
- **Contact tips recessed for ESD and damage protection**
- **Contacts are insulation displacement (IDC) and can be quickly terminated by the CHAMPOMATOR 2.5 Semi-Automatic Termination Machine**
- **Metal-shell backshell kits feature integral cable braid termination**

Part Number	No. of Pos.	Mount Type	Mount Style	Style	Description/ Finish	Mating Part
787973-1	36	Thru-Hole	Solder	Single	30µ" Au & Sn	787131-2
1658751-1	50	Thru-Hole	Solder	Single	30µ" Au & Sn	786930-1 (Kit 787131-1)
796055-1	68	Thru-Hole	Solder	Single	30µ" Au & Sn	787131-3 or Offset 787979-1, 787775-1, 787801-1
787254-1	68	Thru Hole	Solder	Single	3µ Au/30µ" Pb & Sn. 4.70 (.185) posts	787775-1
787254-2	68	Thru Hole	Solder	Single	3µ Au/30µ" Pb & Sn. 4.70 (.185) posts	787775-1
787254-3	68	Thru Hole	Solder	Single	3µ Au/30µ" Pb & Sn. 3.75 (.148) posts	787775-1
787254-4	68	Thru Hole	Solder	Single	3µ Au/30µ" Pb & Sn. 4.70 (.185) posts	787775-1
796055-1	68	Thru-Hole	Solder	Single	30µ" Au & Sn	786930-3
796055-2	68	Thru-Hole	Solder	Single	30µ" Au & Sn	786930-3
1364973-2	68	Thru-Hole	Solder	Single	30µ" Au & Sn	787254-1 w/ pre-installed screwlocks

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CHAMP 0.8mm Centerline Printed Circuit Board Connectors (Continued)

Hybrid Receptacle, Low Profile, Shielded, Hybrid Leads

Material and Finish

Housing — UL 94V-0 rated thermoplastic, black, SMT compatible

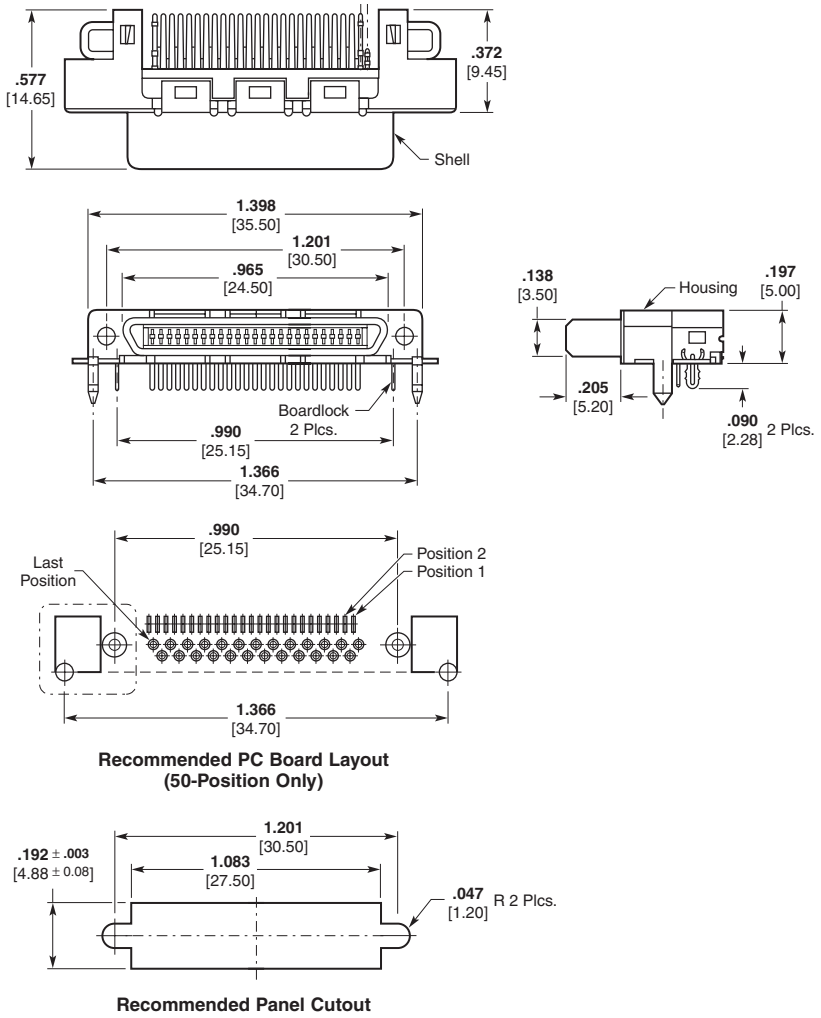
Inserts — UL 94V-0 rated thermoplastic, natural, SMT compatible

Shell — Steel, plated .000197 [0.00500] min. bright tin over .000098 [0.00250] min. copper

Contacts — Phosphor bronze, duplex plated .000003 [0.000076] min. gold over .000029 [0.00076] min. palladium nickel on mating end, .000148 [0.00375] min. bright tin-lead on solder end, all over .000050 [0.00127] min. nickel under plating

Boardlocks — Brass, plated .000148 [0.00375] min. bright tin-lead over .000050 [0.00127] min. nickel

Receptacle
Part Number 787096-1



Recommended PC Board Layout (50-Position Only)

Recommended Panel Cutout

Part Number	No. of Pos.	Mount Type	Mount Style	Style	Description/ Finish	Mating Part
787641-1	36	Thru-Hole	Solder	Single	3µ Au/30µ" Pb & Sn.	786930-2
787096-1	50	Thru-Hole	Solder	Single	3µ Au/30µ" Pb & Sn.	—

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CHAMP 0.8mm Centerline Printed Circuit Board Connectors (Continued)

Stacked Receptacle Right Angle

Part Number 787962-1 (2.08mm*)
Part Number 787962-2 (3.55mm*)

Material and Finish

Housing and Pin Spacer — UL 94V-0 rated thermoplastic, black, SMT compatible

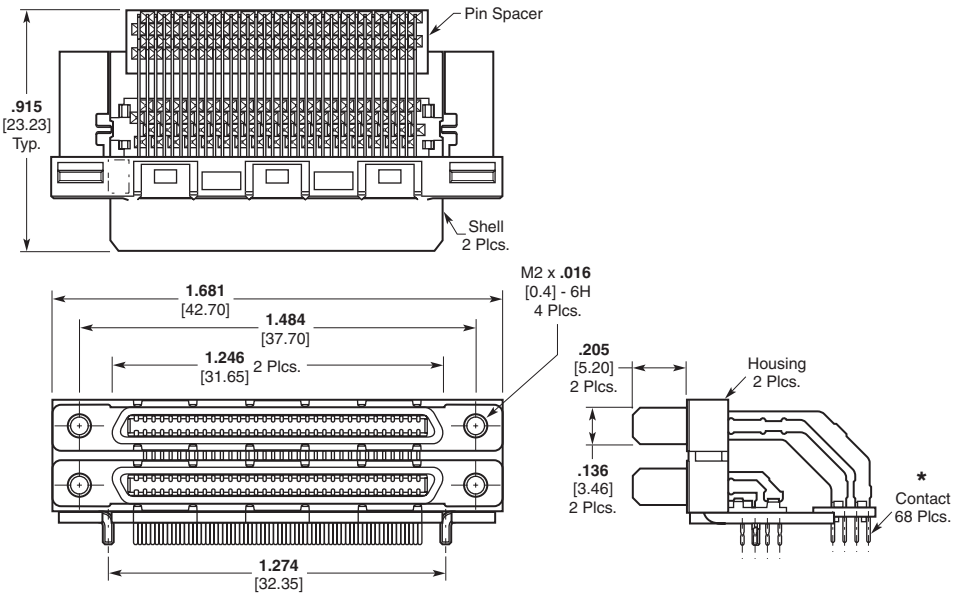
Inserts — UL 94V-0 rated thermoplastic, natural, SMT compatible

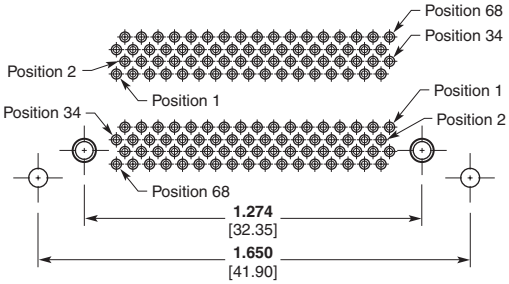
Shell — Steel, plated .000197 [0.00500] min. bright tin over .000098 [0.00250] min. copper

Contacts — Phosphor bronze, duplex plated .000003 [0.000076] min. gold over .000029 [0.00076] min. palladium nickel on mating end, .000148 [0.00375] min. bright tin-lead on solder end, all over .000050 [0.00127] min. nickel under plating

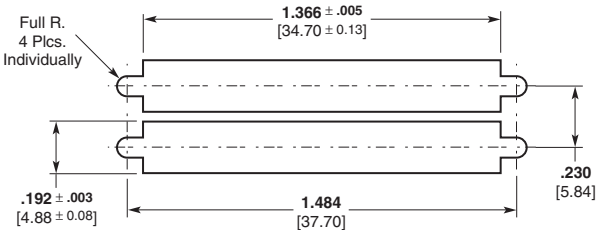
Boardlocks — Brass, plated .000148 [0.00375] min. bright tin-lead over .000050 [0.00127] min. nickel

Durability — 500 insertion cycles





Recommended PC Board Layout



Recommended Panel Cutout

Part Number	No. of Pos.	Mount Type	Mount Style	Style	Description/ Finish	Mating Part
787962-1	68	Thru Hole	Solder	Stacked	30µ" Au & Sn. Top D inverted (Kit 796063-1 has 4 screwlocks 787004-1)	787979-1, 787775-1, 787801-1
787962-2	68	Thru Hole	Solder	Stacked	30µ" Au & Sn. Top D inverted (Kit 796063-1 has 4 screwlocks 787004-1)	787979-1, 787775-1, 787801-1
1489050-1	68	Thru Hole	Solder	Stacked	30µ" Au & Sn. Top D inverted, no alignment posts	796064-1, 787979-1, 787775-1, 787801-1, 1364308-1
1364306-1	68	Thru Hole	Solder	Stacked	30µ" Au & Sn. Top D inverted, with cover. Kit 1489192-1 has 2 screwlocks 787004-1	796064-1, 787979-1, 787775-1, 787801-1, 1364308-1
1489232-1	68	Thru Hole	Solder	Stacked	30µ" Au & Sn. Top D inverted, no alignment posts, with cover	796064-1, 787979-1, 787775-1, 787801-1, 1364308-1
1489232-2	68	Thru Hole	Solder	Stacked	30µ" Au & Sn. Top D inverted, no alignment posts, with cover	796064-1, 787979-1, 787775-1, 787801-1, 1364308-1

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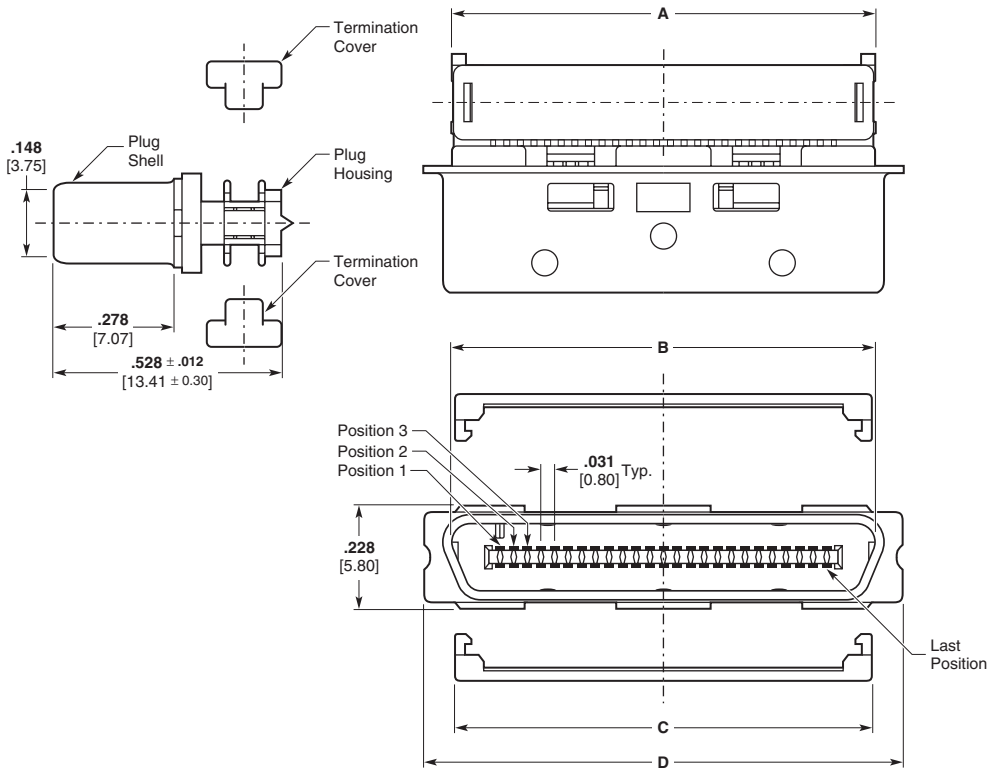
CHAMP 0.8mm Centerline Cable Connectors

Standard Plugs



No. of Positions	Dimensions				Part Numbers	Mating Part
	A	B	C	D		
36	**.750** 19.05	**.754** 19.15	**.739** 18.77	**.877** 22.28	787131-2	787641-1, 787973-1
50	**.970** 24.65	**.974** 24.75	**.959** 24.37	**1.098** 27.88	787131-1	1658751-1, 787096-1
68	**1.254** 31.85	**1.258** 31.95	**1.243** 31.57	**1.381** 35.08	787131-3	787254-1, 787254-2, 787254-3, 796055-1, 796055-2

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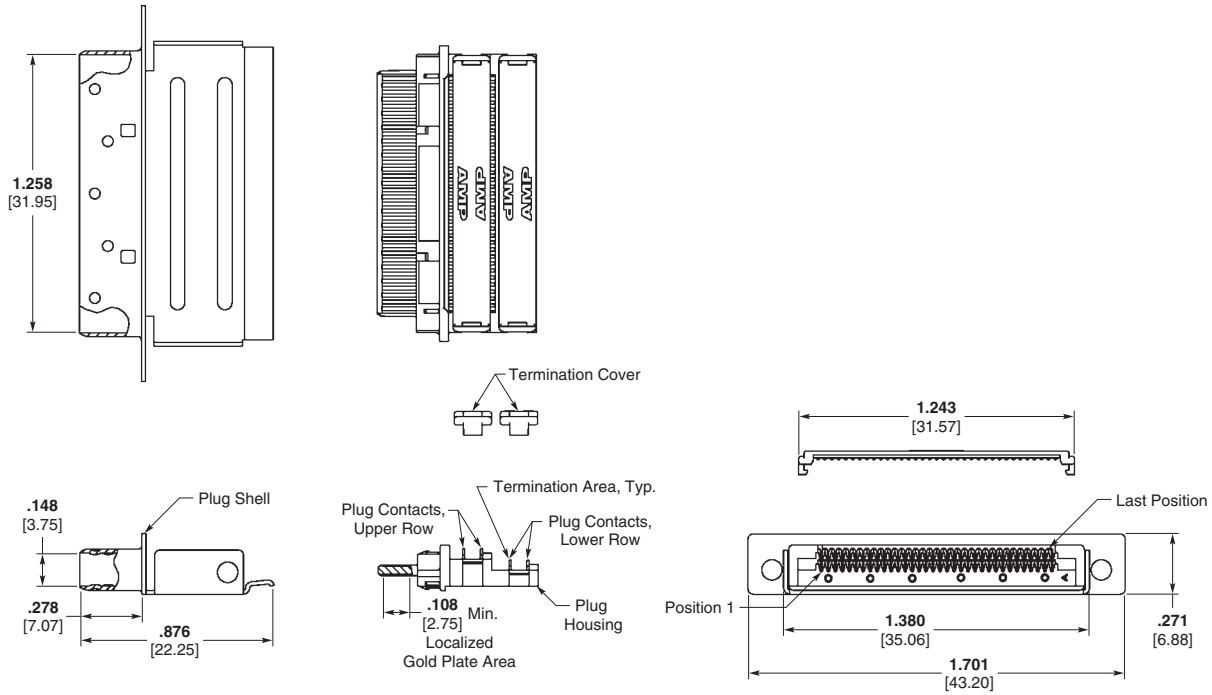
CHAMP 0.8mm Centerline Cable Connectors (Continued)

Offset Plugs for Stacked Receptacles



Part Number	No. of Pos.	Mount Type	Termination	Style	Description/ Finish	Mating Part
796064-1	68	Thru-Hole, Cable Connector	Solder IDC	Offset	30µ" Au & Sn. Unassembled Kit, Small shell (30 AWG)	787962-1, 787962-2
787979-1	68	Thru-Hole Cable Connector	Solder IDC	Offset	30µ" Au & Sn. Unassembled Kit Unshielded (30 AWG)	787962-1, 787962-2
787775-1	68	Thru-Hole Cable Connector	Solder IDC	Offset	30µ" Au & Sn. Unassembled Kit (30 AWG)	787962-1, 787962-2
787801-1	68	Thru-Hole Cable Connector	Solder IDC	Offset	30µ" Au & Sn. Unassembled Kit, /jackscrews (30 AWG)	787962-1, 787962-2

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CHAMP 0.8mm Centerline Connector Backshell Kits

Standard

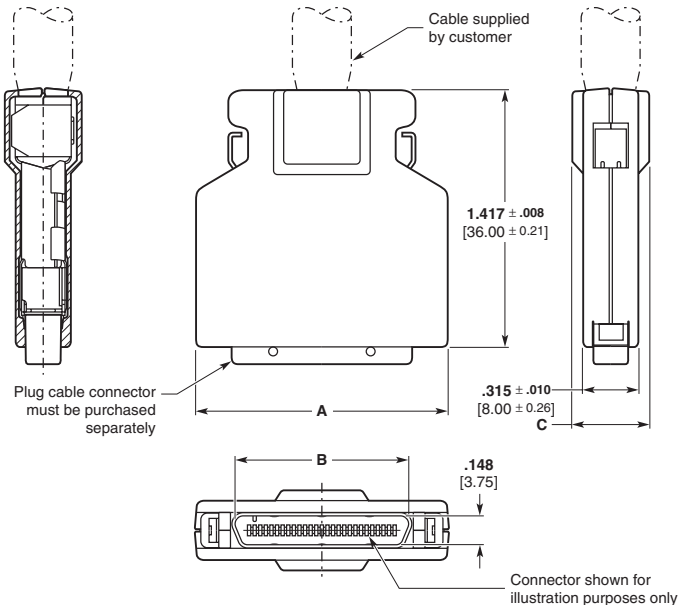
With Squeeze-to-Release Latches

Material and Finish

Backshells — Steel, plated .000197 [0.005] min. bright tin-lead over .000098 [0.0025] min. copper

Spring Latches — Stainless Steel

Spring Latch Covers — UL 94V-0 rated, ABS/PC alloy, black



No. of Positions	Dimensions			Part Nos.
	A	B	C	Bulk Kits (100 Assemblies)
36	**1.197** 30.40	**.754** 19.15	**.394** 10.00	787231-1
50	**1.417** 36.00	**.974** 24.75	**.433** 11.00	787133-1
68	**1.701** 43.20	**1.258** 31.95	**.442** 11.22	787229-1

With Jackscrew Fastener

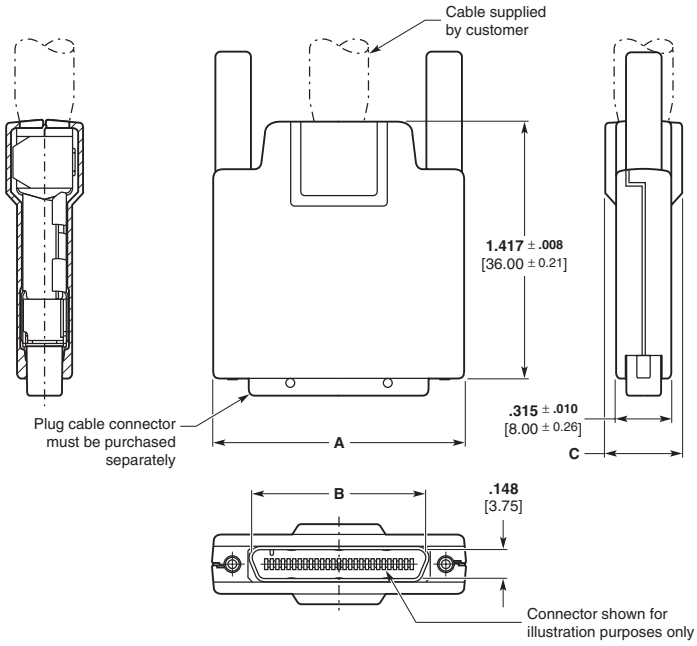
Material and Finish

Backshells — Steel, plated .000197 [0.005] min. bright tin-lead over .000098 [0.0025] min. copper

Jackscrews — Steel, plated blue chromate over zinc

Jackscrew Head — ABS/PC, black

Jackscrew Covers — UL 94V-0 rated, ABS/PC alloy, black



Note: Recommended wire size — 30 AWG [0.05mm²], insulation diameter range — .022-.025 [0.56-0.64]

Wire must be approved by Tyco Electronics.

No. of Positions	Dimensions			Part Nos.
	A	B	C	Bulk Kits (100 Assemblies)
50	**1.417** 36.00	**.974** 24.75	**.433** 11.00	787233-1
68	**1.701** 43.20	**1.258** 31.95	**.442** 11.22	787191-1

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CHAMP 0.8mm Centerline Connector Backshell Kits (Continued)

Offset, 68-Position Plug Kit

Material and Finish

Backshells — LCP, 94V-0, natural

Termination Covers — LCP, 94V-0, natural

Shell — Carbon steel, plated .000200 [0.00508] min. tin-lead over .000050 [0.00127] min. copper

Contacts — Phosphor bronze, AMP-DURAGOLD plated .0000030 [0.000076] min. gold on mating end, .000050 [0.00127] min. tin-lead on solder end, all over .000050 [0.00127] min. nickel underplate

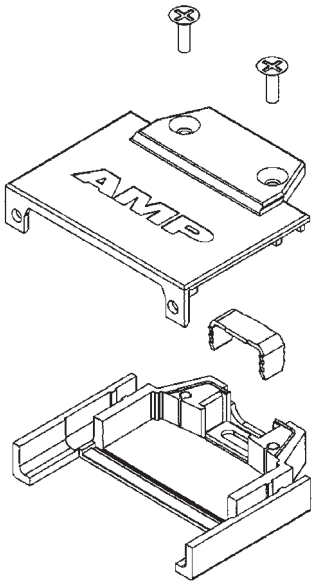
68-Position Backshell Kit, (Unassembled)

Material and Finish

Backshells — Zinc plated .000100 [0.00254] min. nickel over .000200 [0.00508] min. copper

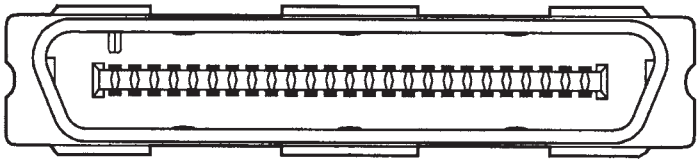
Strain Relief — Carbon steel plated .000050 [0.00127] min. bright tin-lead over .000050 [0.00127] min. nickel

Screws — Stainless steel



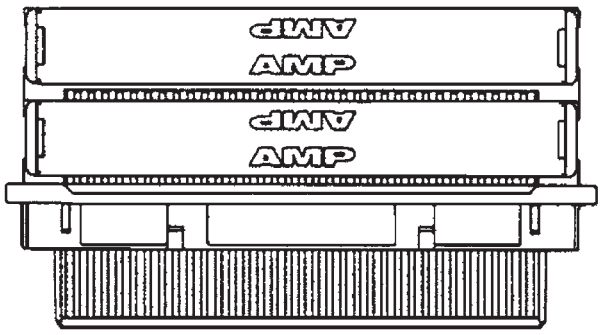
Part Number 788362-1

Plug Kit — Unassembled, Shielded Cable Connector



68-Position — Part Number 787131-3

Plug Kit — Unassembled, Shielded Cable Offset Cable Connector



68-Position — Part Number 787775-1

Part Number	No. of Pos.	Mount Type	Style	Description/ Finish	Mating Part
787231-1 (ROHS)	36	B/Shell Kit	180	With Latchspring (needs 787003-3 latch posts)	STD 787973-1, 787973-2[1] HYBRID 787641-1
787133-1 (ROHS)	50	B/Shell Kit	180	With Latchspring (needs 787003-3 latch posts)	1658751-1, 787096-1
787233-1	50	B/Shell Kit	180	With jackscrews (needs 787004-3)	1658751-1, 787096-1
787229-1 (ROHS)	68	B/Shell Kit	180	With Latchspring (needs 787003-3 latch posts)	787254-1, 787254-2, 787254-3, 787254-4, 796055-1, 796055-2
787191-1	68	B/Shell Kit	180	Used with 787801-1, w/o jackscrews	787254-1, 787254-2, 787254-3, 787254-4, 796055-1, 796055-2
788362-1	68	B/Shell Kit	Offset	Used with 787801-1, w/o jackscrews	787962-1, 787962-2, 1489050-1, 1364306-1, 1489232-1, 1489232-2

[1] Contact Tyco Electronics for RoHS Part Number information.

Catalog 1-1773441-4
Issued 10-05

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UK: 44-141-810-8967

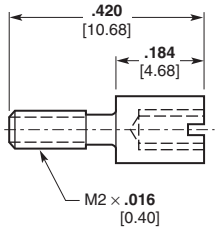
CHAMP 0.8mm Centerline Connector Application Tooling and Hardware

Screwlock, Boardmount

Part Number 787004-3—
Bulk (quantity 200)

Material and Finish

Stainless steel



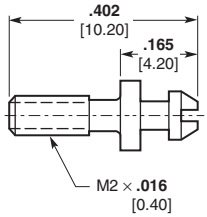
Designed for Use with
.044 ± .003 [1.12 ± 0.08] Thick Panel

Latching Post, Boardmount

Part Number 787003-3—
Bulk (quantity 200)

Material and Finish

Stainless steel



Designed for Use with
.044 ± .003 [1.12 ± 0.08] Thick Panel

Backshell Kit Tooling

To crimp and assemble backshell kits over the plastic housings, use the following:

Description	Part Number	Instruction Sheet
Arbor Press	91085-2	408-7777
Die Set	122842-1 for 50-Position 122842-2 for 68-Position 122842-3 for 36-Position	408-4040

Standard Cable Connectors

Manual Tooling

Description	Part Number	Instruction Sheet
Mini Manual Arbor Frame Assy.	91295-1	408-9817
Manual Arbor Frame Assy.	91085-2	408-7777
Mass Termination Assy.	543580-1	408-4264
Cutter Assembly	543610-1	408-4264

Semiautomatic (Medium to High Volume) Tooling

Description	Part Number	Customer Manual
CHAMPOMATOR 2.5 Machine	354786-7	409-5839
Control Module	852423-1 (120 VAC)	409-5791

Offset Cable Connectors

Manual Tooling

Description	Part Number	Instruction Sheet
Mini Manual Arbor Frame Assy.	91295-1	408-9817
Manual Arbor Frame Assy.	58024-1	408-6923
Mass Termination Assy.	543630-1	408-4333

Semiautomatic (Medium to High Volume) Tooling

Description	Part Number	Customer Manual
CHAMPOMATOR 2.6 Machine	662300-1	409-5892
Control Module	852423-4 (120 VAC)	409-5791

Catalog 1-1773441-4
Issued 10-05

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Engineering Notes

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CHAMP .050 Centerline Connectors (Series I, VESA, Docking, SCSI, Blindmate, SCAII, Free Height, Series II, Series III)

CHAMP .050 Series Connectors meet the needs for high density .050 inch [1.27mm] contact centerlines required by constantly emerging miniaturized designs. These connectors allow the printed circuit board designer to maximize valuable PC board real estate without sacrificing interconnection capability.

The trapezoidal, D-shaped mating face is a familiar industry standard, along with the ribbon, or leaf, contact design that is durable enough to withstand the rigors of repeated mating.

Whether the application need is for board-to-board, or wire-to-board interconnections, the CHAMP .050 Series connector family provides a solution.

Board-to-Board Connectors

The **Series I** is an all-plastic connector system used for internal board-to-board interconnections. The Right Angle and Vertical connectors are available in both plug and receptacle genders, which permits parallel, perpendicular, and in-line interconnection geometries. Receptacle connectors also serve as card edge connectors. Position sizes available range from 20 to 200 positions.

Series I connectors use a single spring fixed plug and compliant receptacle contact combination that is tolerant of variations in mating depth. This tolerance allows the connectors to accommodate printed circuit board warpage.

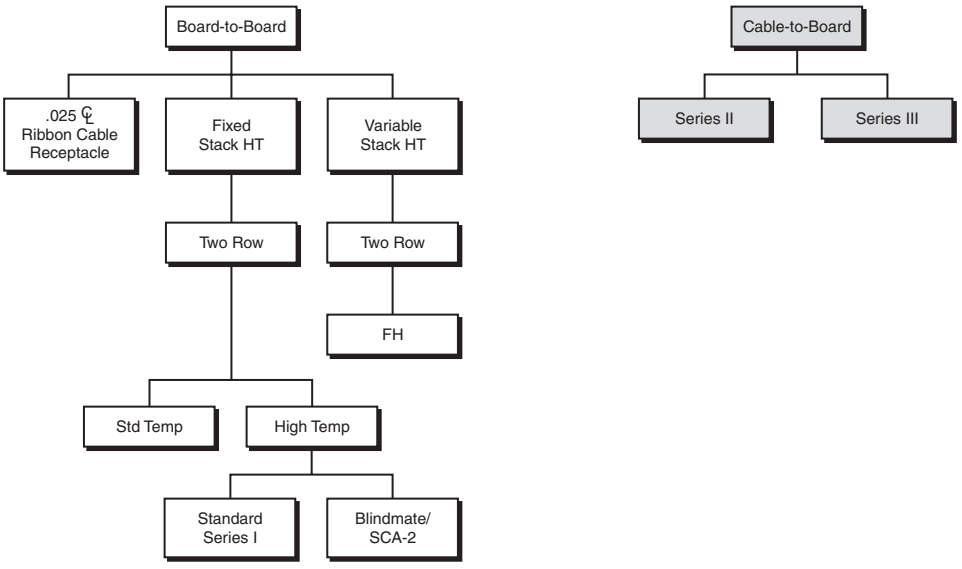
In addition to the high density and unique contact design, Series I connector's options include a high temperature LCP plastic housing material, polarization to PC board.

Both connector configurations can provide parallel, perpendicular, and in-line interconnections.

CHAMP .050 Series I Docking Connector is designed for use on new notebook type PCs. This product group has been developed to provide an improved ESD (Electrostatic Discharge) protection by means of shielding. Two versions are available, board-to-board connector and board-mount connector to mate with wiremount plug connectors.

CHAMP .050 Series I, Blindmate Single Connector Attachment (SCA 2) is an 80-position configuration with integral blindmating capabilities. It is capable of carrying required SCSI data, control, power and auxiliary signals. Interconnections are simplified by the SCA 2 connector's diverse architecture design that will support the requirements for narrow and wide SCSI operations.

High Density Interconnection System CHAMP .050 Series Connector Family



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CHAMP .050 Centerline Connectors (Series I, VESA, Docking, SCSI, Blindmate, SCAII, Free Height, Series II, Series III) (Continued)

The 40-position CHAMP .050 Series I, Blindmate Single Connector attachment (SCA 2) answers the industry's need for one connector that is suitable for the direct attachment of Fibre Channel disk drives to backplanes and motherboards.

The CHAMP .050 Series, SCA 2 connector in a 40-position configuration has been designed for serial transfer Fibre Channel devices, and carries all signals as required by the Fibre Channel Physical Interface and the Fibre Channel Arbitrated Loop Standards. In addition, all required power and auxiliary signals are carried by the same single attachment connector.

Designed and manufactured with the Disk Drive Industry's quality requirements as the driving motivation, the 40-position SCA 2 connector features the industry accepted polarized "D" connector interface. Features include housings made of UL 94V-0 rated IR reflow process compatible high temperature material, gold-over-nickel plated ribbon style contacts, Advanced Ground Contacts (AGC) with integral metal hold-down, and complete power sequencing capabilities. In addition to these features, the CHAMP Series I, Blindmate SCA 2 connector is fully compatible with existing CHAMP .050 Series I connectors.

Blindmate SCA 2 connectors are the interface for 3.5 Fibre Channel disk drives and will permit direct drive attachment to backplane arrays, which can eliminate costly cable assemblies and adapter boards while improving system reliability.

The CHAMP .050 Series, SCA 2 Connector in a 20-position configuration has been designated the interface for the Gigabit Interface Converter specification. A straddle-mount plug is used on the GBIC, a vertical receptacle is available for direct attachment to a backplane and a right angle receptacle is available for adapter card applications.

For additional information on this new technology, contact Tyco Electronics.

The **FH**, or Free Height, connectors are also an all-plastic connector system for internal board-to-board interconnections with a single spring leaf contact design. These connectors may be considered as an alternative to the Series I product line, with the added feature of variable stacking heights. The vertical receptacle is available in various housing profiles to permit board stacking heights from .315 inch [8.0mm] to .709 inch [18.0mm] in .040 inch [1.0mm] increments.

Position sizes available range from 40 to 180 positions in both plug and receptacle for right angle and vertical configurations. A feature unique to the FH system is the closed bottom in the housing, which further inhibits contact contamination from flux and solder during processing.

Wire-to-Board Connectors

The **Series II** is a shielded I/O connector system for wire-to-board connections offering maximum EMI protection. The series includes right angle and vertical printed circuit board receptacles and cable plug connectors. The right angle board connectors are available with retention board locks and a stamped metal shield. The vertical connectors incorporate a die cast metal shield. Selected sizes are available in high temperature housing material.

The cable plug connectors use insulation displacement contacts for fast, accurate termination of 28 AWG [0.008 mm^2] stranded, discrete wire, jacketed cable. The cable plug offers a stamped metal backshell with a 180° exit for ESD (Electrostatic Discharge) protection. A plastic enclosure fits over the backshell to provide an aesthetically pleasing appearance. A "squeeze-to-release latch" captivation mechanism is used on the cable plug.

A wide range of position offerings of 14 to 100 are available.

General Product Facts

- **High density .050 [1.27] contact centerlines**
- **Leaf contacts accommodate minor mating misalignment**
- **D-shaped polarized mating face**
- **Variety of application tooling available to meet a wide range of production volumes**

Catalog 1-1773441-4
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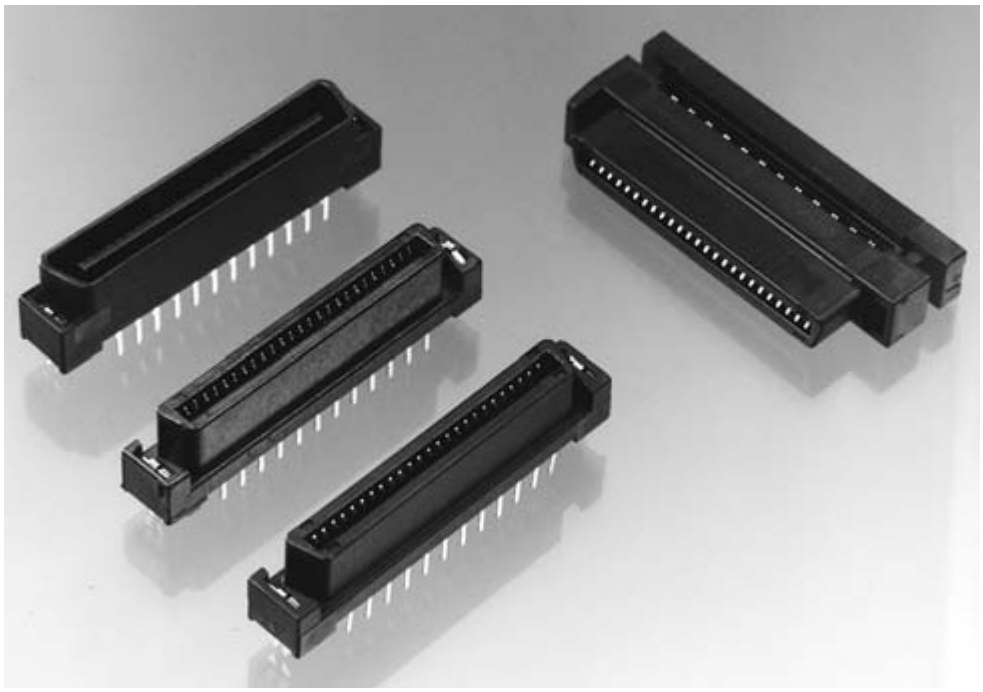
CHAMP .050 Series I Connectors, Printed Circuit Board Connectors

Series I Connectors for Internal Applications

- **All-plastic PC board mounting**
- **Vertical and right angle plugs and receptacles**
- **Parallel, perpendicular, and in-line interconnections**
- **Single-spring contact design for high tolerance to mating depth variations**
- **Receptacle connectors will mate with .062 [1.57] printed circuit boards to allow service as card edge connectors**
- **20 through 200 selected positions**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E-28476**
- **Certified by Canadian Standards Association File No. LR 7189**
- **Produced under a quality management system certified to ISO 9001**



Performance Specifications

Operating Temperature Range — –55°C to +85°C for standard
–55°C to +105°C for high temperature

Current Rating — 1 ampere max.

Voltage Rating — 250 VAC max.

Termination Resistance — 35 milliohms maximum initial

Insulation Resistance — 1,000 megohms minimum initial

Mating Force — 90 grams per contact maximum

Rated Cycle Life — 500 cycles

Technical Documents

Product Specification — 108-5290 — Standard temperature
108-1367 — High temperature

Application Specification — 114-6045

Instruction Sheet — 411-5499

CHAMP .050 Series Connectors meet the needs for high density .050 inch [1.27mm] contact centerlines required by constantly emerging miniaturized designs. These connectors allow the printed circuit board designer to maximize valuable PC board real estate without sacrificing interconnection capability.

The trapezoidal, D-shaped mating face is a familiar industry standard, along with the ribbon, or leaf, contact design that is durable enough to withstand the rigors of repeated mating.

Whether the application need is for board-to-board, or wire-to-board interconnections, the CHAMP .050 Series connector family provides a solution.

Board-to-Board Connectors

The **Series I** is an all-plastic connector system used for internal board-to-board interconnections. The Right Angle and Vertical connectors are available in both plug and receptacle genders, which permits parallel, perpendicular, and in-line interconnection geometries. Receptacle connectors also serve as card edge connectors. Position sizes available range from 20 to 200 positions.

Series I connectors use a single spring fixed plug and compliant receptacle contact combination that is tolerant of variations in mating depth. This tolerance allows the connectors to accommodate printed circuit board warpage.

In addition to the high density and unique contact design, Series I connector's options include a high temperature LCP plastic housing material, polarization to PC board.

Both connector configurations can provide parallel, perpendicular, and in-line interconnections.

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CHAMP .050 Series I Connectors, Printed Circuit Board Connectors (Continued)

Right Angle Plugs

Materials and Finish

Housing and Tine Plate — Glass filled nylon, rated 94V-0, black for standard. LCP, rated 94V-0, black for High Temp.

Contacts — Phosphor bronze selectively plated with minimum of .000030 [0.00076] gold in mating area and tin-lead in solder tail area.

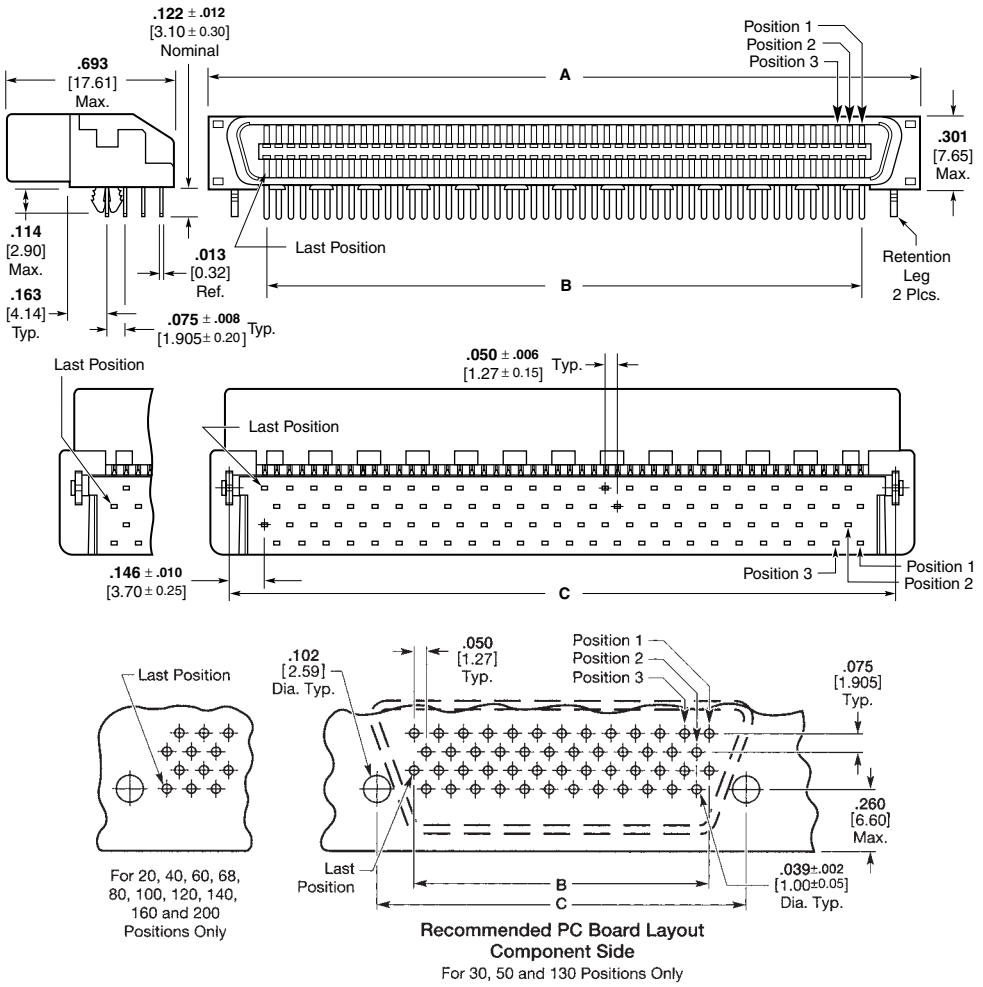
Retention Leg (Board Lock) — Brass, tin-lead plated.

Performance Specifications — Page 19

PC Board Accommodation — .031 [0.79] to .063 [1.60] nominal thickness

Mating Receptacle Connectors — Right Angle — Page 21
Vertical — Page 24
Ribbon Cable — Page 26

Mating Configurations — Page 28



Recommended PC Board Layout
Component Side
For 30, 50 and 130 Positions Only

Pos.	Dimensions			Part Number High Temp.	Part Number Standard Temp.
	A	B	C		
20	**.891** 22.63	**.450** 11.43	**.741** 18.82	N/A	5-175472-1
30	**1.141** 28.98	**.700** 17.78	**.991** 25.17	N/A	5-175472-3
40	**1.391** 35.33	**.950** 24.13	**1.241** 31.52	557100-5	5-175472-5
50	**1.641** 41.68	**1.200** 30.48	**1.491** 37.87	557100-9	5-175472-6
60	**1.891** 48.03	**1.450** 36.83	**1.741** 44.22	1-557100-3	*3-175472-7
68	**2.091** 53.11	**1.650** 41.91	**1.941** 49.30	1-557100-7	5-175472-8
80	**2.391** 60.73	**1.950** 49.53	**2.241** 56.92	2-557100-1	5-175472-9
100	**2.891** 73.43	**2.450** 62.23	**2.741** 69.62	2-557100-5	6-175472-0
120	**3.391** 86.13	**2.950** 74.93	**3.241** 82.32	2-557100-9	6-175472-1
130	**3.641** 92.48	**3.200** 81.28	**3.491** 88.67	N/A	6-175472-2
140	**3.891** 98.83	**3.450** 87.63	**3.741** 95.02	4-557100-9	N/A
160	**4.391** 111.53	**3.950** 100.33	**4.241** 107.72	3-557100-7[1]	N/A
200	**5.391** 136.93	**4.950** 125.73	**5.241** 133.12	4-557100-1[1]	N/A

*Plating — .000020 [0.00050] Minimum Gold.
[1] Contact Tyco Electronics for RoHS Part Number information.

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CHAMP .050 Series I Connectors, Printed Circuit Board Connectors (Continued)

Right Angle Receptacles

Materials and Finish

Housing and Tine Plate — Glass filled nylon, rated 94V-0, black for standard. LCP, rated 94V-0, black for High Temp.

Contacts — Phosphor bronze selectively plated with minimum of .000030 [.00076] gold in mating area and tin-lead in solder tail area.

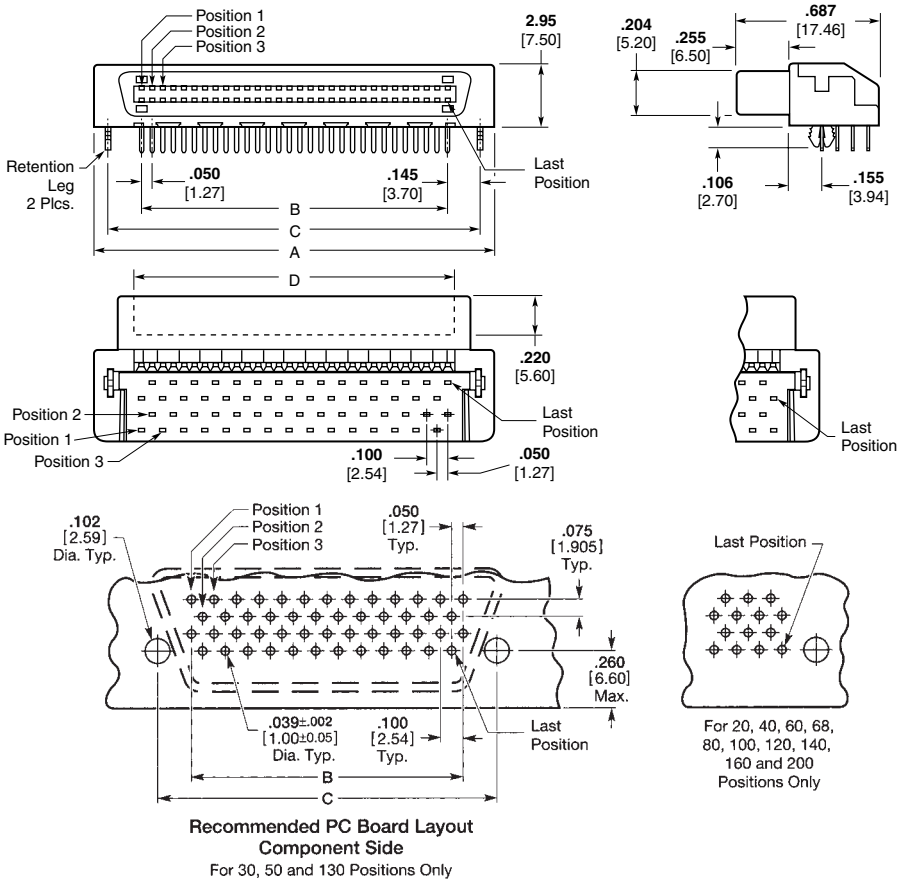
Retention Leg (Board Lock) — Brass, tin-lead plated.

Performance Specifications — Page 19

PC Board Accommodation — .031 [0.79] to .063 [1.60] nominal thickness

Mating Plug Connectors — Right Angle — Page 20
Vertical — Page 22

Mating Configurations — Page 28



Recommended PC Board Layout
Component Side
For 30, 50 and 130 Positions Only

Pos.	Dimensions				Part Number High Temp.	Part Number Standard Temp.
	A	B	C	D		
20	**.891** 22.63	**.450** 11.43	**.741** 18.83	**.524** 13.33	N/A	5-175474-1
30	**1.141** 28.98	**.700** 17.78	**.991** 25.18	**.774** 19.68	N/A	5-175474-3
40	**1.391** 35.33	**.950** 24.13	**1.241** 31.53	**1.024** 26.03	557101-5	5-175474-5
50	**1.641** 41.68	**1.200** 30.48	**1.491** 37.88	**1.274** 32.38	557101-9	5-175474-6
60	**1.891** 48.03	**1.450** 36.83	**1.741** 44.23	**1.524** 38.73	N/A	5-175474-7
68	**2.091** 53.11	**1.650** 41.91	**1.941** 49.31	**1.724** 43.81	1-557101-7	**175474-8
80	**2.391** 60.73	**1.950** 49.53	**2.241** 56.93	**2.024** 51.43	2-557101-1	5-175474-9
100	**2.891** 73.43	**2.450** 62.23	**2.741** 69.63	**2.524** 64.13	*2-557101-5	6-175474-0
120	**3.391** 86.13	**2.950** 74.93	**3.241** 82.33	**3.024** 76.83	2-557101-9	***4-175474-1
130	**3.641** 92.48	**3.200** 81.28	**3.491** 88.68	**3.274** 83.18	N/A	***4-175474-2
140	**3.891** 98.83	**3.450** 87.63	**3.741** 95.03	**3.524** 89.51	4-557101-9	N/A
160	**4.391** 111.53	**3.950** 100.33	**4.241** 107.73	**4.024** 102.21	3-557101-7	N/A

*Part Number without board locks is available — Contact Tyco Electronics at the numbers listed below.
**Plating — .000008 [0.00020] Minimum Gold.
***Plating — .000020 [0.00050] Minimum Gold.

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CHAMP .050 Series I Connectors, Printed Circuit Board Connectors (Continued)

Vertical Plugs

Materials and Finish

Housing — Glass filled nylon, rated 94V-0, black for standard. LCP, rated 94V-0, black for High Temp.

Contacts — Phosphor bronze selectively plated with minimum of .000030 [0.00076] gold in mating area and tin-lead in solder tail area.

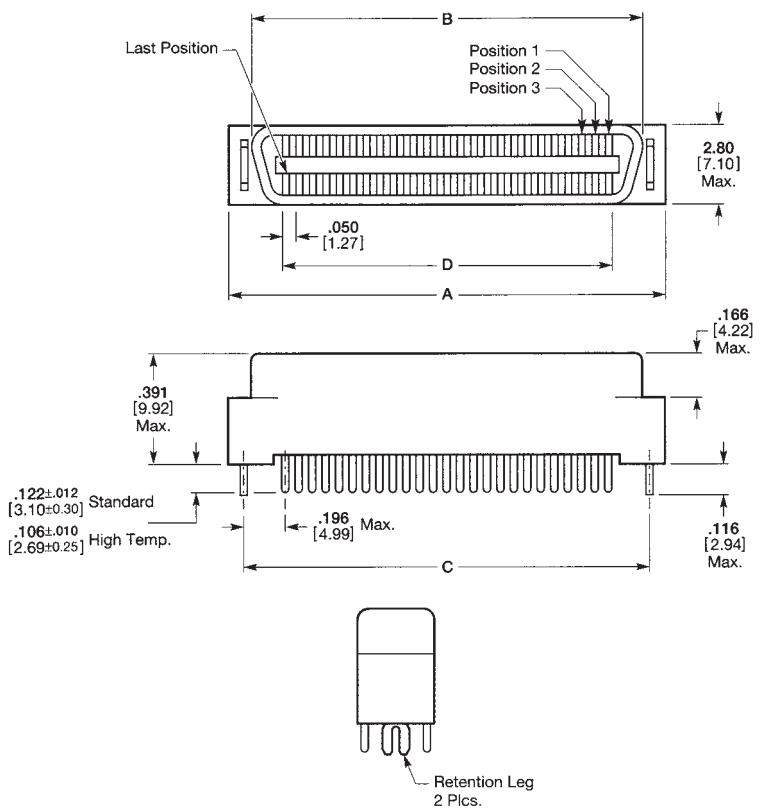
Retention Leg (Board Lock) — Brass, tin-lead plated.

Performance Specifications — Page 19

PC Board Accommodation — .031 [0.79] to .063 [1.60] nominal thickness

Mating Receptacles —
Right Angle — Page 21
Vertical — Page 24
Ribbon Cable — Page 26

Mating Configurations — Page 28



Pos.	Dimensions					Keying Post[2]	Part Number Standard Temp. w/o Post[1]
	A	B	C	D	E[3]		
20	**.947** 24.05	**.776** 19.73	**.843** 21.41	**.450** 11.43	—	5-557102-4	5-175473-1
30	**1.197** 30.40	**1.028** 26.12	**1.093** 27.76	**.700** 17.78	—	N/A	*0-175473-3[4]
40	**1.447** 36.75	**1.278** 32.47	**1.343** 34.11	**.950** 24.13	—	5-557102-5	*0-175473-5[4]
50	**1.697** 43.10	**1.528** 38.82	**1.593** 40.46	**1.200** 30.48	—	5-557102-9[4]	5-175473-6
60	**1.947** 49.45	**1.778** 45.17	**1.843** 46.81	**1.450** 36.83	—	1-557102-3	5-175473-7
68	**2.147** 54.53	**1.978** 50.25	**2.043** 51.89	**1.650** 41.91	—	1-557102-7	**3-175473-8
80	**2.447** 62.15	**2.278** 57.87	**2.343** 59.51	**1.950** 49.53	—	***2-557102-1	5-175473-9
100	**2.947** 74.85	**2.778** 70.57	**2.843** 72.21	**2.450** 62.23	—	2-557102-5	6-175473-0
120	**3.447** 87.55	**3.278** 83.27	**3.343** 84.91	**2.950** 74.93	**1.671** 42.44	2-557102-9	**4-175473-1
130	**3.697** 93.90	**3.528** 89.62	**3.593** 91.26	**3.200** 81.28	**1.795** 45.59	3-557102-3	6-175473-2
160	**4.447** 112.95	**4.278** 108.67	**4.343** 110.31	**3.950** 100.33	**2.171** 55.14	3-557102-7	N/A
180	**4.947** 125.65	**4.843** 123.01	**4.450** 113.03	**4.778** 121.37	—	5-557102-3	N/A

[1] End Board Locks.
[2] End Board Locks and Keying Post. (See PC Board Layout Page 8).
[3] End and Center Board Locks and Keying Post.
[4] Contact Tyco Electronics for RoHS Part Number information.
*Plating — .000008 [.00020] Minimum Gold.
**Plating — .000020 [.00050] Minimum Gold.
***Part Number without board locks is available — Contact Tyco Electronics at the numbers listed below.

Catalog 1-1773441-4
Issued 10-05

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

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Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

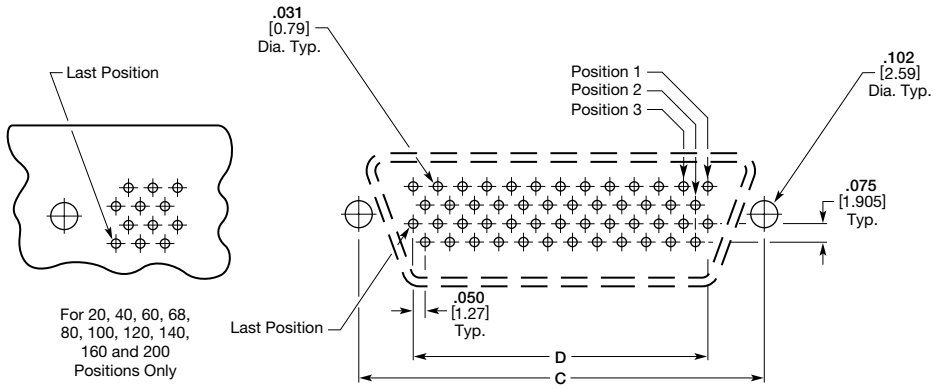
South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

CHAMP .050 Series I Connectors, Printed Circuit Board Connectors (Continued)

Vertical Plug Recommended PC Board Layout

Standard

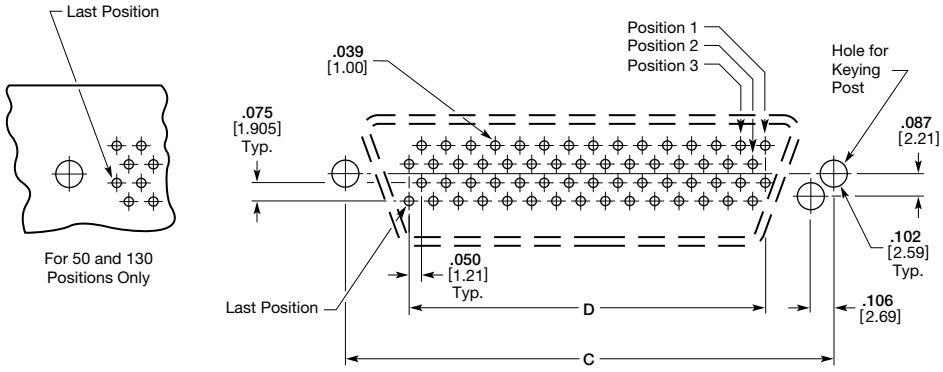
Base Part Numbers 175473 and 557170



Component Side
For 30, 50 and 130 Positions Only

Keying Post

Base Part Number 557102



For 40, 60, 68, 80, 100, 120, 140, 160 and 200 Positions Only

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Issued 10-05

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CHAMP .050 Series I Connectors, Printed Circuit Board Connectors (Continued)

Vertical Receptacles

Materials and Finish

Housing — Glass filled nylon, rated 94V-0, black for standard. PPA, rated 94V-0 for High Temp.

Contacts — Phosphor bronze selectively plated with minimum of .000030 [0.00076] gold in mating area and tin-lead in solder tail area.

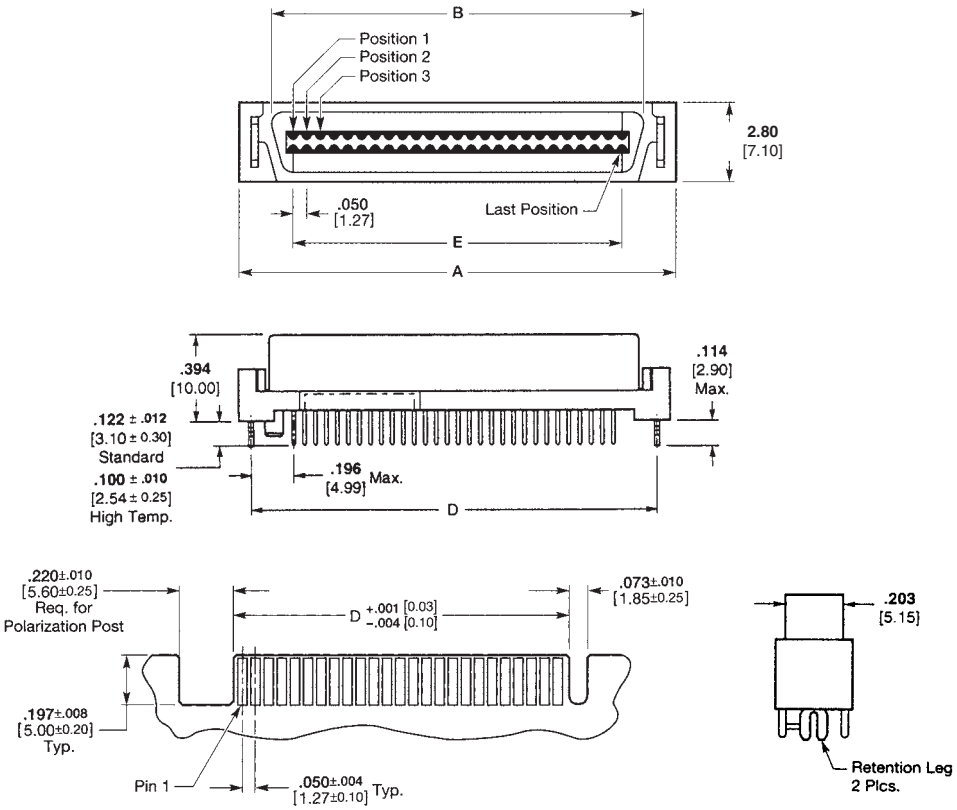
Retention Leg (Board Lock) — Brass, tin-lead plated.

Performance Specifications — Page 19

PC Board Accommodation — .031 [0.79] to .063 [1.60] nominal thickness

Mating Plug Connectors — Right Angle — Page 20
Vertical — Page 22

Mating Configurations — Page 28



Recommended PC Board Layout for Card-edge Applications

Pos.	Dimensions						Keying Post[2]	w/o Post[1]	Part Number Standard Temp. w/o Post[1]
	A	B	C	D	E	F[3]			
20	**.947** 24.05	**.668** 16.97	**.524** 13.33	**.843** 21.41	**.450** 11.43	—	N/A	N/A	**3-175475-1
30	**1.197** 30.40	**.918** 23.32	**.770** 19.58	**1.093** 27.76	**.700** 17.78	—	—	N/A	5-175475-3
40	**1.447** 36.75	**1.168** 29.67	**.985** 25.03	**1.343** 34.11	**.950** 24.13	—	557103-5	N/A	5-175475-5
50	**1.697** 43.10	**1.418** 36.02	**1.274** 32.38	**1.593** 40.46	**1.200** 30.48	—	557103-9	786925-9[4]	5-175475-6
60	**1.947** 49.45	**1.668** 42.37	**1.524** 38.73	**1.843** 46.81	**1.450** 36.83	—	1-557103-3	—	5-175475-7
68	**2.147** 54.53	**1.868** 47.45	**1.724** 43.81	**2.043** 51.89	**1.650** 41.91	—	1-557103-7	1-786925-7[4]	5-175475-8
80	**2.447** 62.15	**2.168** 55.07	**2.024** 51.43	**2.343** 59.51	**1.950** 49.53	—	*2-557103-1	2-786925-1[4]	5-175475-9
100	**2.947** 74.85	**2.668** 67.77	**2.131** 54.13	**2.843** 72.21	**2.450** 62.23	—	*2-557103-5	N/A	6-175475-0
120	**3.447** 87.55	**3.418** 86.82	**3.024** 76.83	**3.343** 84.91	**2.950** 74.93	**1.671** 42.44	2-557103-9	N/A	6-175475-1
130	**3.697** 93.90	**3.406** 86.52	**3.274** 83.18	**3.593** 91.26	**3.200** 81.28	**1.796** 45.59	—	3-786925-3[4]	6-175475-2
140	**3.947** 100.25	**3.668** 93.17	**3.524** 89.51	**3.843** 97.61	**3.450** 87.63	**1.922** 48.82	—	N/A	N/A
160	**4.447** 112.95	**4.160** 105.87	**4.024** 102.21	**4.343** 110.31	**3.950** 100.33	**2.171** 55.14	3-557103-7	N/A	N/A
200	**5.447** 138.35	**5.168** 131.27	**5.024** 127.61	**5.343** 135.71	**4.950** 125.73	**2.671** 67.84	4-557103-1	N/A	N/A

[1] End Board Locks.
[2] End Board Locks and Keying Post.
[3] End and Center Board Locks and Keying Post. (See PC Board Layout Page 10).
[4] Contact Tyco Electronics for RoHS Part Number information.
*Part Numbers without board locks are available — Contact Tyco Electronics at the numbers listed below.
**Plating — .000020 [.00050] Minimum Gold.

Catalog 1-1773441-4
Issued 10-05

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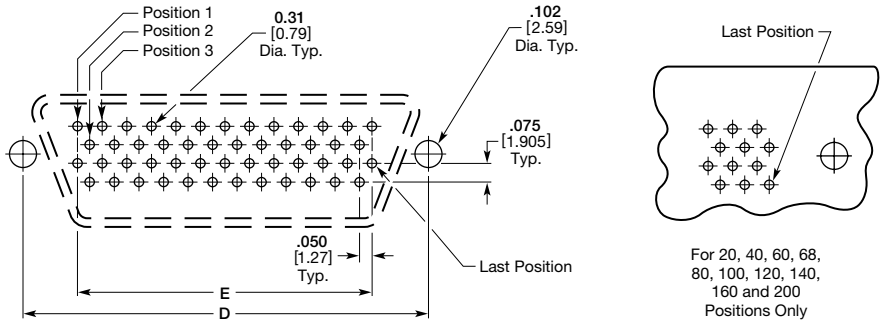
UK: 44-141-810-8967

CHAMP .050 Series I Connectors, Printed Circuit Board Connectors (Continued)

Vertical Receptacle Recommended PC Board Layout

Standard

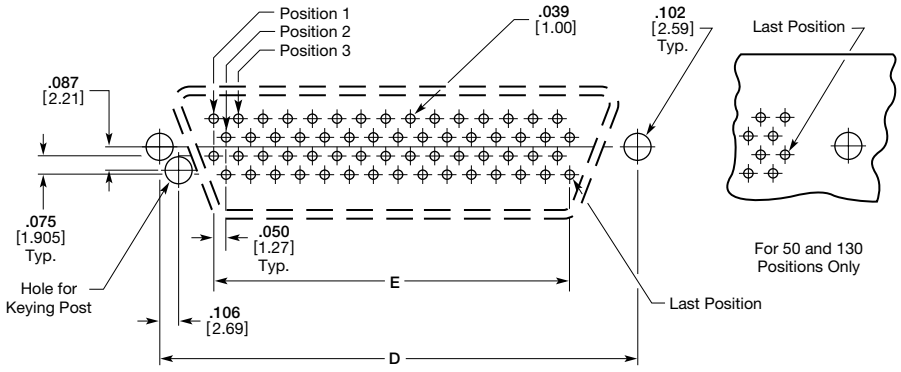
Base Part Numbers 175475 and 786925



Component Side
For 30, 50 and 130 Positions Only

Keying Post

Base Part Number 557103



Component Side
For 40, 60, 68, 80, 100, 120, 140, 160 and 200 Positions Only

Catalog 1-1773441-4
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CHAMP .050 Series I Connectors, Printed Circuit Board Connectors (Continued)

Receptacle Assembly for .025 [0.64] Ribbon Cable

Materials and Finish

Housing and Stuffer — 94V-0 rated LCP, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold in mating area, .000150 [0.00381] min. tin-lead on terminating end, all over .000050 [0.00127] min. nickel

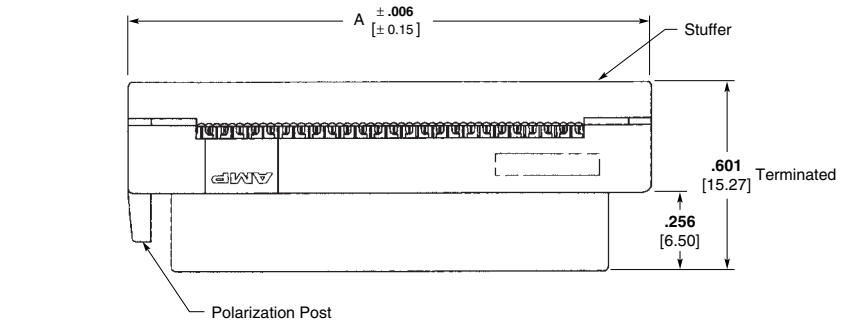
Performance Specifications — Page 19

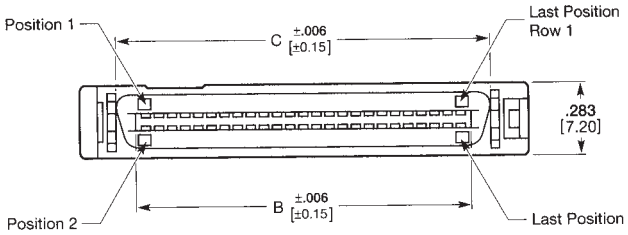
Mating Plug Connectors — Right Angle — Page 20 Vertical — Page 22

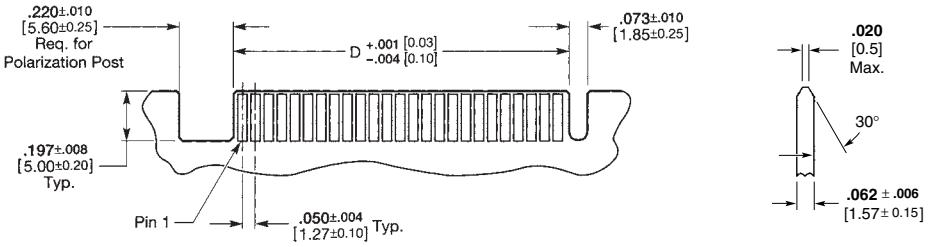
Mating Configurations — Page 28

Packaging — Tubes

Application Tooling — Page 27







Recommended PC Board Layout for Card-edge Applications

No. of Positions	Dimensions				Part Numbers with Polarization Post
	A	B	C	D	
40	**1.447** 36.75	**1.025** 26.03	**1.168** 29.67	**1.012** 25.70	1-557089-6
50	**1.697** 43.10	**1.275** 32.38	**1.418** 36.02	**1.267** 32.18	1-557089-1
68	**2.147** 54.53	**1.725** 43.81	**1.868** 47.25	**1.717** 43.61	1-557089-2
80	**2.447** 62.15	**2.025** 51.43	**2.168** 55.07	**2.017** 51.23	1-557089-3
100	**2.947** 74.85	**2.525** 64.13	**2.668** 67.77	**2.517** 63.93	1-557089-5

Catalog 1-1773441-4
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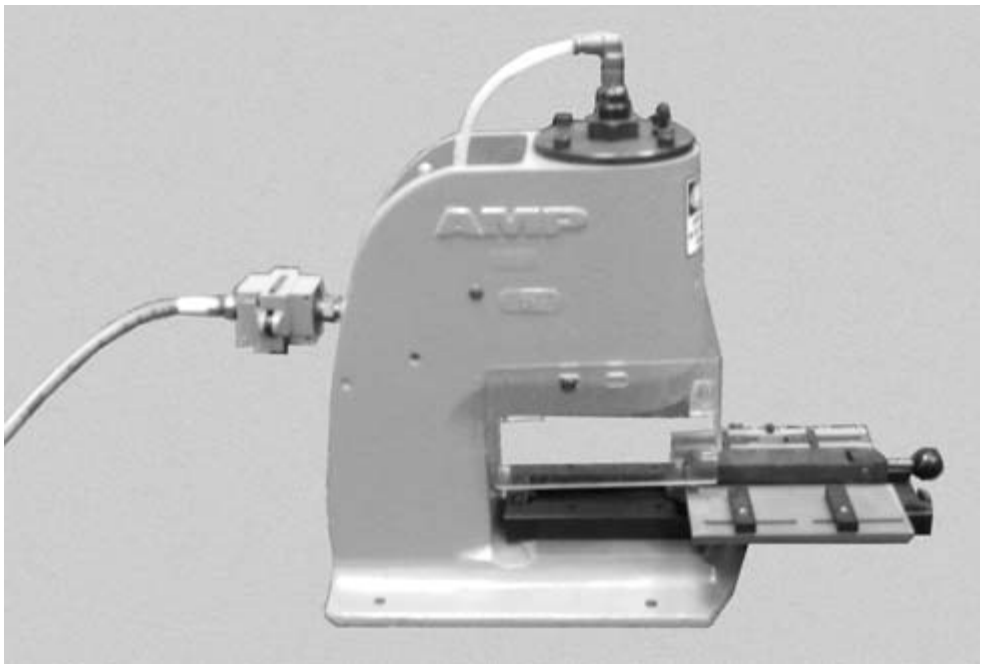
UK: 44-141-810-8967

CHAMP .050 Series I Connectors, Printed Circuit Board Connectors (Continued)

Application Tooling (.025 Centerline Ribbon Cable Receptacle)

Pneumatic Auto-Cycle Unit Part Number 91112-3

This tool, equipped with **AMP Connector-Specific Kit Part Number 679177-1,** and used with **Base Assembly Universal Arbor Tool Part Number 768338-2,** terminates CHAMP .050 Series I connectors to **.025 [0.64] centerline ribbon cable.**



Manual Arbor Tool Part Number 91085-2

This Manual Arbor Tool is ideal for small to medium size runs, while the Pneumatic Auto-Cycle Unit satisfies most needs for medium to large runs. Both machines offer quality termination and minimum waste.

For additional information on CHAMP .050 Series I application tooling call Tyco Electronics at the numbers listed below.

Catalog 1-1773441-4
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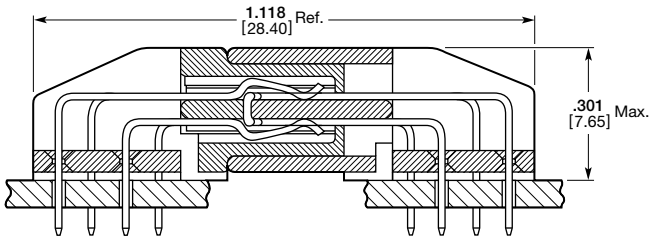
CHAMP .050 Series I Connectors, Printed Circuit Board Connectors (Continued)

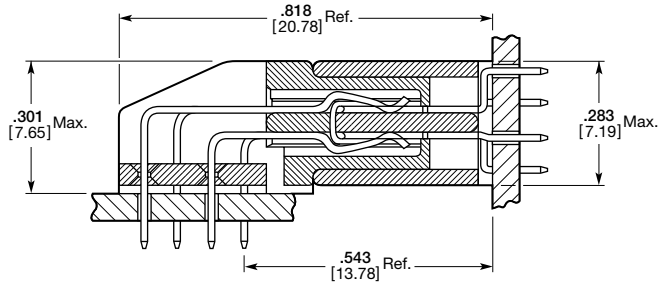
Mating Configurations

In-Line Mating



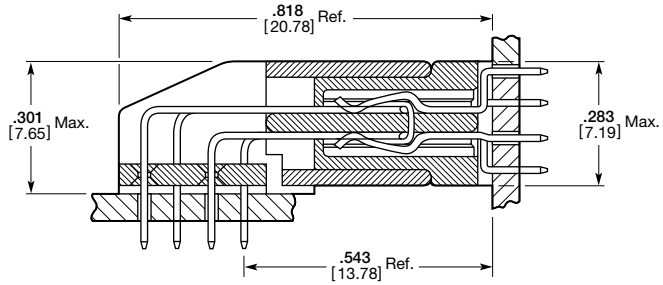
Right-Angle Receptacle Right-Angle Plug

Perpendicular Mating



Right-Angle Receptacle Vertical Plug

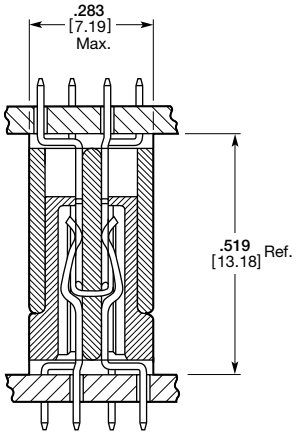
Perpendicular Mating



Right-Angle Plug Vertical Receptacle

Parallel Mating

Vertical Plug



Vertical Receptacle

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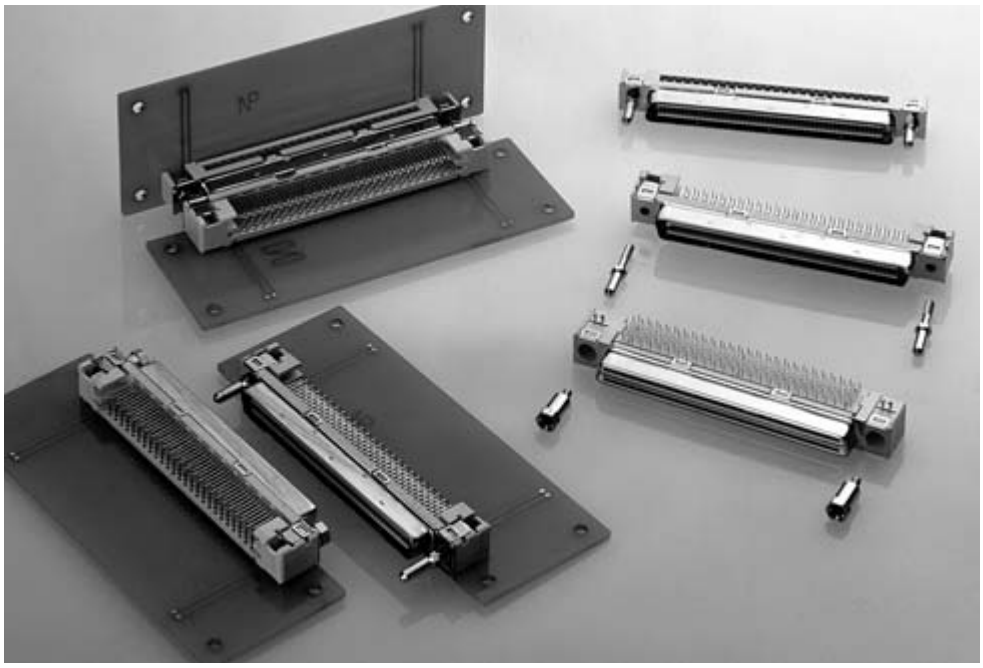
CHAMP .050 Series, Low Profile Docking Connectors Box-to-Box Applications

Product Facts

- **Contacts on .050 [1.27] centerlines**
- **Single leaf contact design provides low mating force**
- **4-row high density contact arrangement**
- **Low profile, only .374 [9.50] high**
- **Choice of .000008 [0.00020] min. or .000030 [0.00076] min. selective gold plated in mating area; tin-lead plated on solder end, all over nickel underplating**
- **Designed for blind mating**
- **ESD protection**
- **Housings made of high temperature LCP material, SMT compatible**
- **Choice of right angle or vertical mount headers**
- **Available in 160 and 200 positions, right angle receptacle and plug assemblies, and 200-position, vertical mount plug assemblies**
- **Boardlocks provide stability prior to soldering**
- **Produced under a Quality Management System certified to ISO 9001**
  A copy of the certificate is available upon request



The CHAMP .050 Series, low profile connectors provide a shielded I/O system for box-to-box interconnection. These headers offer four-row contact configuration, minimizing total PC board real estate requirements, coupled with a low profile, only .374 [9.50] high. In addition, they are designed to facilitate blind mating. CHAMP .050 Series connectors use the industry recognized and accepted ribbon leaf contact design to provide low mating force.

The subminiature D type interface affords positive polarization to assure proper mating. Housings made of high temperature LCP are compatible with IR reflow and other surface mount soldering techniques. These right angle plugs and receptacles, and vertical mount plugs offer both perpendicular and horizontal dock-to-dock mating.

CHAMP .050 Series I Docking Connector is designed for use on new notebook type PCs. This product group has been developed to provide an improved ESD (Electrostatic Discharge) protection by means of shielding. Two versions are available, board-to-board connector and board-mount connector to mate with wiremount plug connectors.

Technical Documents

Product Specification
108-5386

Electrical Characteristics

Termination Resistance —
50 milliohms, max. (initial)
25 milliohms, max. increasing (final)

Dielectric Withstanding Voltage —
500V AC

Insulation Resistance —
100 megohms, min.

Current Rating — 0.5 amp per contact

Voltage Rating — 250V AC

Soldering Heat Resistance —
260°C ±5°C for 10 seconds

Temperature Rating —
–55°C to +85°C

Electrical Modeling —
Available Upon Request

Mechanical Characteristics

Mating Force

Insertion — 90g max. per contact

Extraction — 15g max. per contact

Durability — 5000 cycles

Need more information?

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
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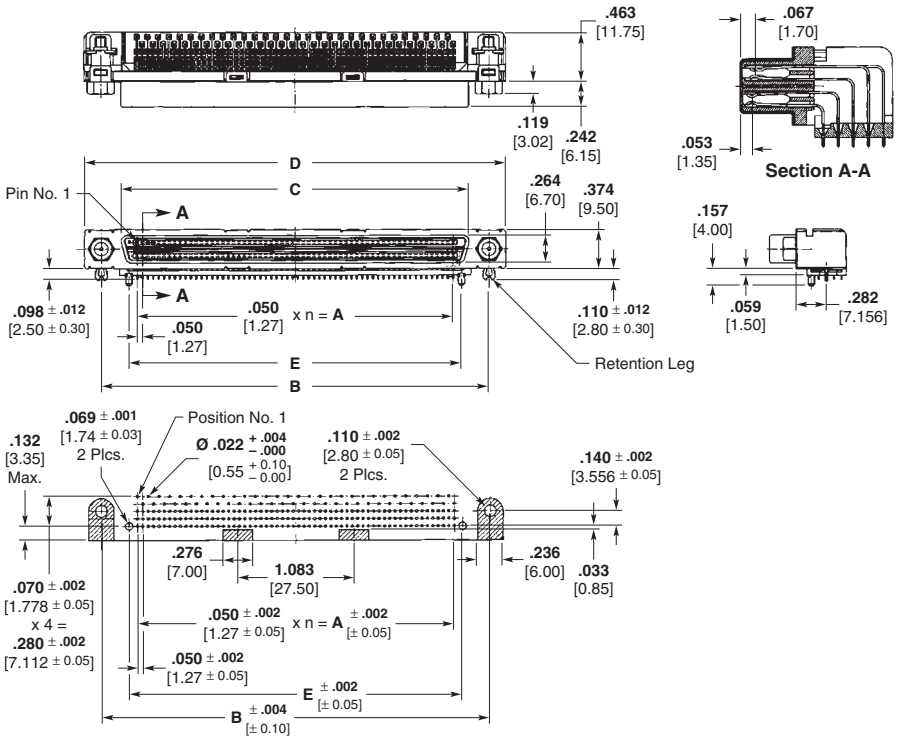
CHAMP .050 Series I Low Profile Docking Connectors

.050 [1.27] Thru-Hole CHAMP Connectors

Material and Finish

Housing — Liquid Crystal Polymer
Contacts — Copper alloy, plated gold in contact area; tin-lead in solder area; all over nickel underplate
Tine Plate — Liquid Crystal Polymer
Shell — Steel, plated nickel
Retention Leg — Brass, plated tin-lead
Guide Socket/Pin — Brass, plated nickel
Ground Plate — Stainless steel

160 Position, Right Angle Receptacles with Retention Legs



Recommended PC Board Mounting Dimensions (Component Side)

Part Number	Au Thickness	No. of Positions	Dimensions					
			n	A	B	C	D	E
917302-2	**.000008** 0.00020	200	49	**2.450** 62.23	**3.122** 79.30	**2.758** 70.05	**3.437** 87.30	**2.604** 66.13

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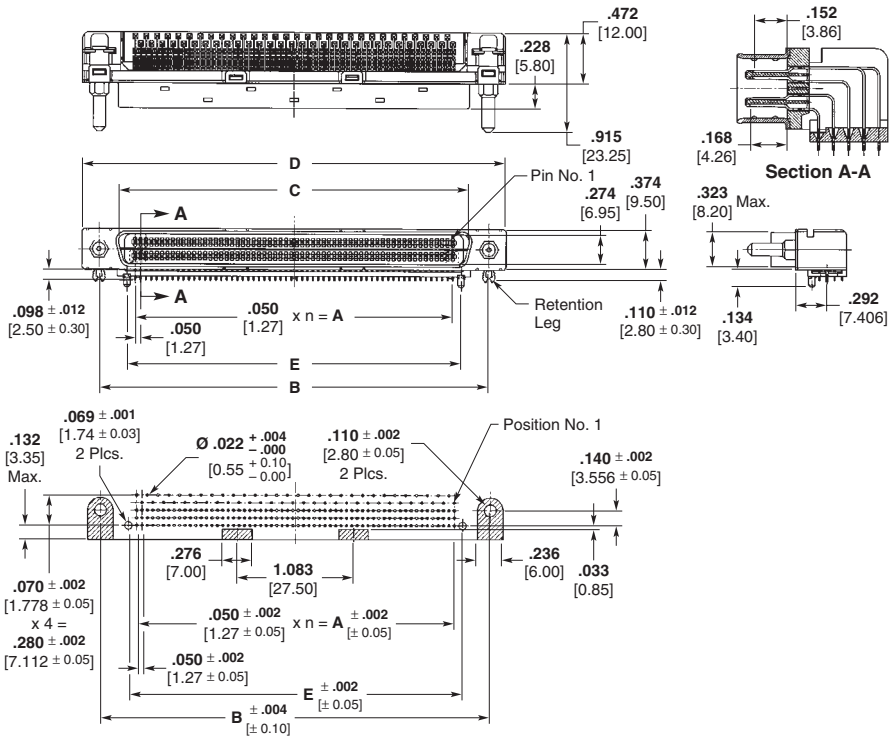
CHAMP .050 Series I Low Profile Docking Connectors (Continued)

.050 [1.27] Thru-Hole CHAMP Connectors (Continued)

160 Position, Right Angle Plugs with Retention Legs



Recommended PC Board Mounting Dimensions (Component Side)

Part Number	Au Thickness	No. of Positions	Dimensions					
			n	A	B	C	D	E
917301-2	.000008 0.00020	200	49	2.450 62.23	3.122 79.30	2.748 69.80	3.437 87.30	2.604 66.13

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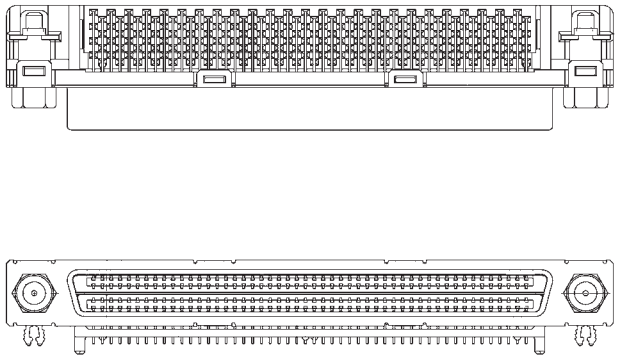
CHAMP .050 Series I Low Profile Docking Connectors (Continued)

.050 [1.27] Thru-Hole CHAMP Connectors (Continued)

200 Position, Right Angle Receptacles



Material and Finish

Housing and Tine Plate — Polyester, natural

Contacts — Copper alloy, plated .000030 [0.00076] min. gold on mating area; .000100 [0.00254] min. tin-lead on solder area; all over .000050 [0.00127] min. nickel underplate

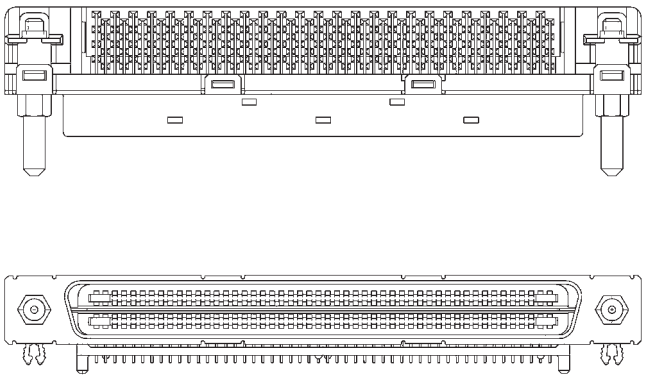
Shell — Carbon steel, plated nickel over copper

G-Plate — Stainless steel

Guide Socket — Brass, plated nickel over copper

Retention Leg — Brass, plated tin-lead over nickel

200 Position, Right Angle Plug



Material and Finish

Housing and Tine Plate — Polyester, natural

Contacts — Copper alloy, plated .000030 [0.00076] min. gold on mating area; .000100 [0.00254] min. tin-lead on solder area; all over .000050 [0.00127] min. nickel underplate

Shell — Carbon steel, plated nickel over copper

G-Plate — Stainless steel

Retention Leg — Brass, plated tin-lead over nickel

Assy. Part Number	Pos.	Style	Type	Solder Tail Length	Alignment Post	Retention Leg	Mating Face Hardware	Sequenced Pins	Comments
787855-1	200	Right Angle	Plug	**.0039** [0.098]	Yes	Yes	Guide Pin	1, 2, 4 9, 50, 51, 52, 99, 100	
787855-2	200	Right Angle	Plug	**.0049** [0.125]	Yes	Yes	Guide Pin	1, 2, 4 9, 50, 51, 52, 99, 100	
787885-1	200	Right Angle	Plug	**.0053** [0.134]	No	Yes	.110 Holes	1, 2, 49, 50, 51, 52, 99, 100	
787913-2	200	Right Angle	Plug	**.0039** [0.098]	No	Yes	.110 Holes	101, 102, 149, 150, 151, 152, 199, 200	
1658240-1	200	Right Angle	Plug	**.0039** [0.098]	No	Yes	.110 Holes	101, 102, 149, 150, 151, 152, 199, 200	Improved Contact Position
787859-1	200	Vertical	Plug	**.0057** [0.145]	Yes	Yes	Guide Pin	1, 2, 4 9, 50, 51, 52, 99, 100	
787886-1	200	Vertical	Plug	**.0057** [0.145]	No	Yes	Guide Pin	1, 2, 49, 50, 51, 52, 99, 100	
787887-1	200	Vertical	Plug	**.0039** [0.098]	No	Yes	Guide Pin	101, 102, 149, 150, 151, 152, 199, 200	
788451-1	200	Vertical	Plug	**.0057** [0.146]	No	Yes	.110 Holes	1, 2, 49, 50, 51, 52, 99, 100	
787851-1	200	Right Angle	Receptacle	**.0039** [0.098]	Yes	Yes	Guide Socket	152, 200	
787851-2	200	Right Angle	Receptacle	**.0049** [0.125]	Yes	Yes	Guide Socket	152, 200	
787882-1	200	Right Angle	Receptacle	**.0039** [0.098]	No	Yes	Guide Socket	101, 102, 149, 150, 151, 152, 199, 200	
1658203-1	200	Right Angle	Receptacle	**.0039** [0.098]	No	Yes	Guide Socket	152, 200	Improved Contact Position
787883-1	200	Right Angle	Receptacle	**.0039** [0.098]	No	Yes	Guide Socket	152, 200	
788450-1	200	Right Angle	Receptacle	**.0039** [0.098]	No	Yes	Special	101, 102, 149, 150, 151, 152, 199, 200	

Catalog 1-1773441-4
Issued 10-05

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UK: 44-141-810-8967

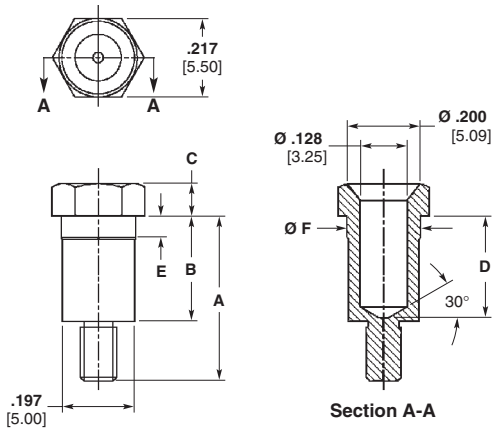
CHAMP .050 Series I Low Profile Docking Connectors (Continued)

Hardware — Docking Connectors

Material and Finish

Brass, nickel plate

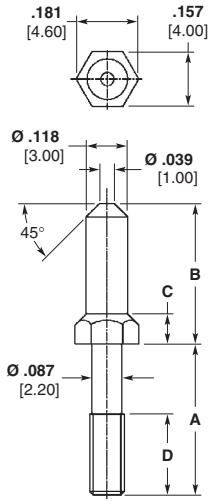
Guide Sockets



Part Number	Dimensions					
	A	B	C	D	E	F
177728-1	**.454** 11.54	**.291** 7.40	**.087** 2.22	**.280** 7.10	**.059** 1.50	**.203** 5.15
177728-2	**.423** 10.74	**.260** 6.60	**.119** 3.02	**.248** 6.30	**.059** 1.50	**.203** 5.15
2-177728-2[1,2]	**.423** 10.74	**.260** 6.60	**.119** 3.02	**.248** 6.30	**.059** 1.50	**.203** 5.15
5-177728-1	**.454** 11.54	**.291** 7.40	**.087** 2.22	**.280** 7.10	**.059** 1.50	**.203** 5.15

[1] Make from -2
[2] Thread locking material applied, except for thread tip area. (Equivalent LOCTITE DRI-LOC 202, 203)

Guide Pin Part Number 177734-1



Part Number	Dimensions			
	A	B	C	D
177734-1	**.441** 11.20	**.411** 10.45	**.087** 2.22	**.236** 6.00
177734-2	**.307** 7.80	**.411** 10.45	**.087** 2.22	**.236** 6.00
177734-3	**.276** 7.00	**.443** 11.25	**.119** 3.02	**.236** 6.00
177734-4	**.409** 10.40	**.443** 11.25	**.119** 3.02	**.236** 6.00
177734-5	**.220** 5.60	**.411** 10.45	**.087** 2.22	**.181** 4.60
2-177734-1[1,2]	**.441** 11.20	**.411** 10.45	**.087** 2.22	**.236** 6.00

[1] Make from -1
[2] Thread locking material applied, except for thread tip area. (Equivalent LOCTITE DRI-LOC 202, 203)

LOCTITE DRI-LOC is a trademark of Loctite Corporation.

Catalog 1-1773441-4
Issued 10-05

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UK: 44-141-810-8967

CHAMP .050 Series I Blindmate, Single Connector Attachment (SCA 2) For SCSI Disk Drives

Product Facts

- **Single I/O connector for 3.5 SCSI Disk Drives**
- **Capable of carrying required SCSI data, control, power and auxiliary signals**
- **Meets the requirements of SFF-8046 and SFF-8048 Specifications & SFF-8451**
- **Supports narrow and wide SCSI**
- **Transitions to Ultra SCSI:**
  - **40 Megabyte/Sec**
- **Designed for backplane applications:**
  - **Eliminates cable related problems**
  - **SCSI bus termination in backplane**
  - **No drive termination required**
- **Integral blindmate capabilities with ± 2mm misalignment tolerances**
- **Receptacle has power sequencing capabilities with two level sequencing pattern**
- **Advanced Ground Contact (AGC) with integral metal hold-down**
- **Completely backward compatible with CHAMP .050 Series I connectors**
- **Disk drive connector options:**
  - **Straddle mount plug**
  - **Vertical plug with thru-hole leads**
  - **Surface mount plug**
- **Backplane Connector options:**
  - **Vertical receptacle with thru-hole leads**
  - **Vertical receptacle with press-fit leads**
  - **Extended height vertical receptacle with thru-hole leads**
  - **Extended height vertical receptacle with press-fit leads**
  - **Extended height right angle receptacles with thru-hole leads**
- **Durable phosphor bronze contacts, plated 0.00076 min. gold on the mating end, 0.00381 min. tin-lead on the solder lead end, all over 0.00127 min. nickel underplating**

The 80-position CHAMP .050 Series I, Blindmate Single Connector Attachment (SCA 2) answers the industry's need for one connector that is suitable for the direct attachment of SCSI disk drives to backplanes and motherboards.

The CHAMP SCA 2 connector, in an 80-position configuration, has been designed for 8-bit and 16-bit SCSI devices, and carries all required SCSI signals as defined by the SPI (SCSI-3 Parallel Interface) proposed Standard. Featuring sequenced contacts, it is capable of carrying all the required SCSI data, control, power and auxiliary signals.

Designed and manufactured with the Disk Drive Industry's quality requirements as the driving motivation, the 80-position SCA 2 connector features the industry accepted polarized "D" interface. Housings are made of UL 94V-0 rated, IR reflow process compatible, high temperature material. The connector has gold-over-nickel plated ribbon-style contacts and Advanced Ground Contacts (AGC) with integral metal hold-down. The receptacle has complete power sequencing capabilities. In addition to these features, the CHAMP Series 1, Blindmate SCA 2 connector is fully compatible with existing CHAMP .050 Series I connectors.

Blindmate SCA 2 connectors are the interface for 3.5 SCSI disk drives and will permit direct drive attachment to backplane arrays, which can eliminate costly cable assemblies and adapter boards while improving system reliability.

- **Produced under a Quality Management System certified to ISO 9001**
  A copy of the certificate is available upon request.
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E-81956**
- **Certified by Canadian Standards Association File No. LR7189**

Performance Specifications

Current rating — 1 amp max.
Voltage rating — 250 VAC max.
Durability — 500 cycles
Operating Temperature Range — -55°C to +105°C
Mating Force — 110 grams/contact pair, max.
Termination Resistance — 35 milliohms max. initial
Insulation Resistance — 1000 megohms min. initial
Vibration Resistance — 10-55-10 Hz for 2 hours

Technical Documents

Product Specification — 108-1548
Application Specification — 114-6061

Catalog 1-1773441-4
Issued 10-05

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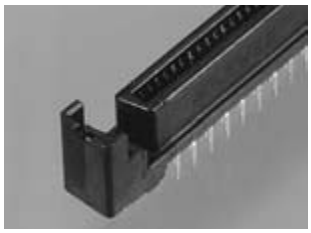
CHAMP .050 Series I Blindmate Receptacle Assemblies

Receptacle Assembly, Vertical Mount Part Number 787311-1 (with solder tines) & Standard retention legs



Material and Finish

Housing — LCP, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel

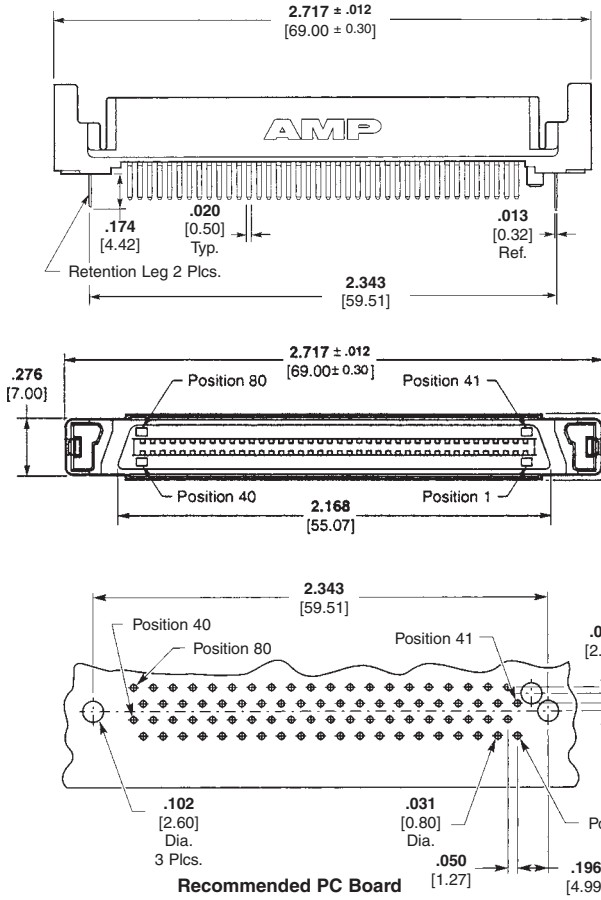
Note: Connector will accommodate mating PC board .063 [1.60] thick.

Part Number 787565-1

Recpt. Assembly — Vertical mount and solder tines (with high-force retention legs)

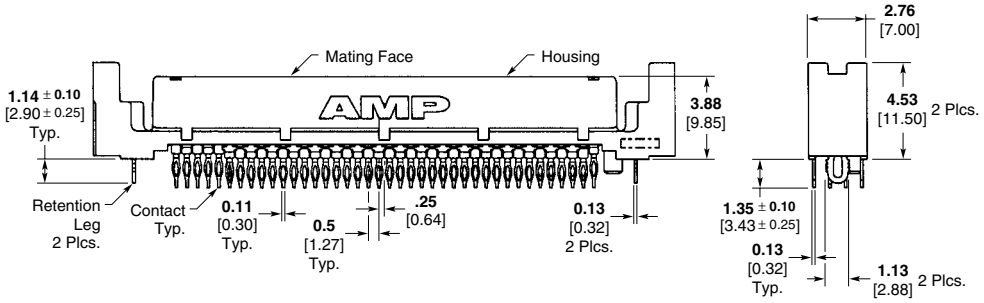
Part Number 787900-1

Recpt. Assembly — Vertical mount (with press-fit tines and high-force retention legs)



Part Number 787565-1

Recommended PC Board Mounting Dimensions (Component Side)



Part Number 787900-1

Catalog 1-1773441-4
Issued 10-05

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Japan: 81-44-844-8013
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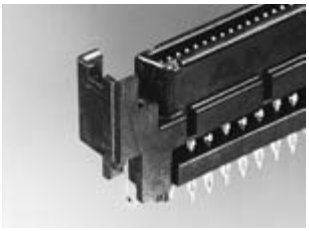
CHAMP .050 Series I Blindmate Receptacle Assemblies (Continued)

Receptacle Assembly, Vertical Mount, Extended Height Press-Fit

Part Number 788395-1 Press-Fit Contacts



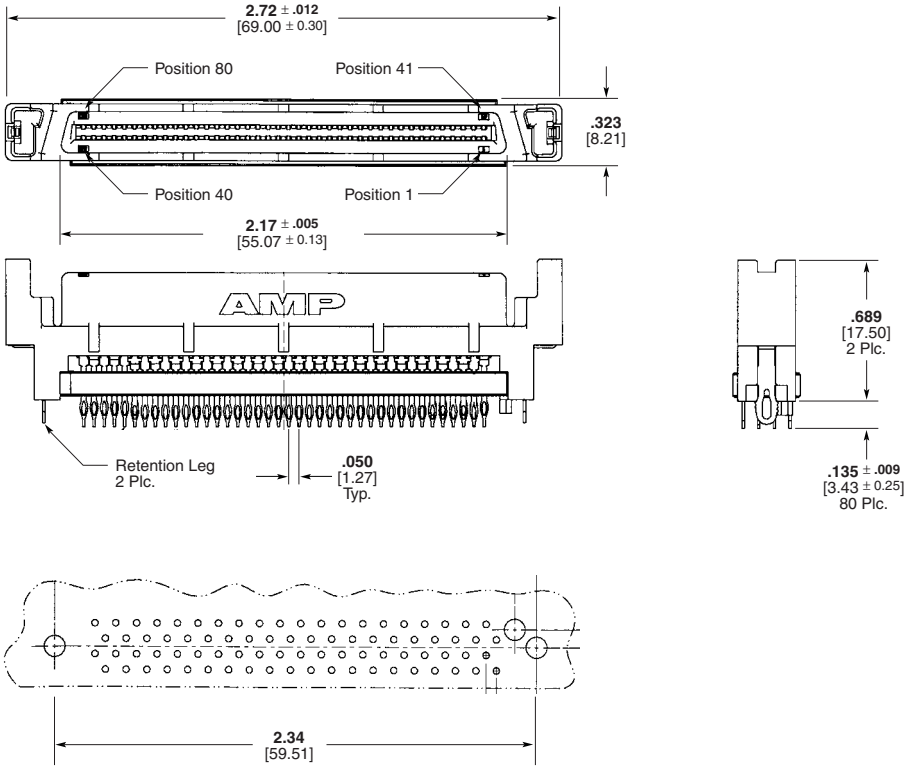
Material and Finish

Housing — LCP, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel

Note: Connector will accommodate mating PC board .063 [1.60] thick.



Recommended Printed Circuit Board Mounting Dimensions – Component Side

Catalog 1-1773441-4
Issued 10-05

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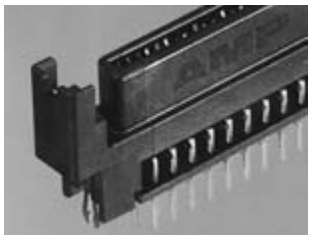
CHAMP .050 Series I Blindmate Receptacle Assemblies (Continued)

Receptacle Assembly, Vertical Mount, Extended Height Part Number 787596-1, 4.57mm Contact Tail Part Number 787596-3, 3.18mm Contact Tail



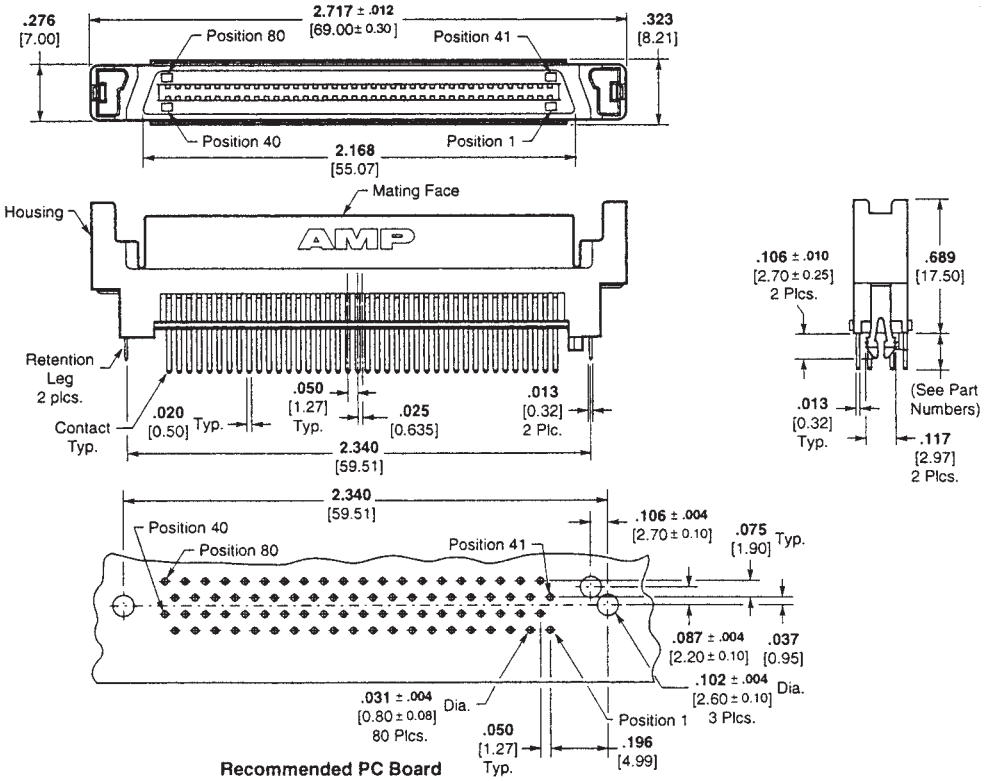
Material and Finish

Housing — Thermoplastic, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min nickel underplating

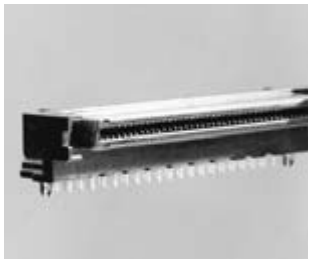
Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel

Note: Connector will accommodate mating PC board .063 [1.60] thick.



Recommended PC Board Mounting Dimensions

Receptacle Assembly, Right Angle, Extended Height Part Number 787535-1



Material and Finish

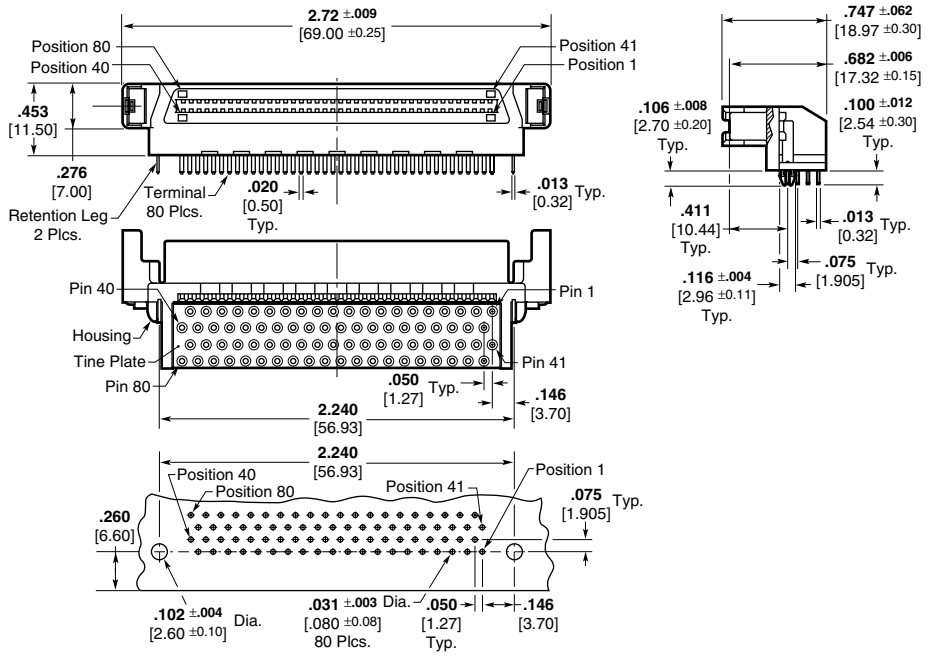
Housing and Tine Plate — LCP, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel

Note:

Connector will accommodate mating PC board .063 [1.60] thick.



Recommended PC Board Mounting Dimensions

Catalog 1-1773441-4
Issued 10-05

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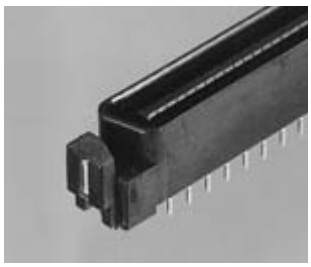
CHAMP .050 Series I Blindmate Plug Assemblies

**Plug Assembly,
Vertical Mount
Part Number 84488-1
(With Polarization Post)**

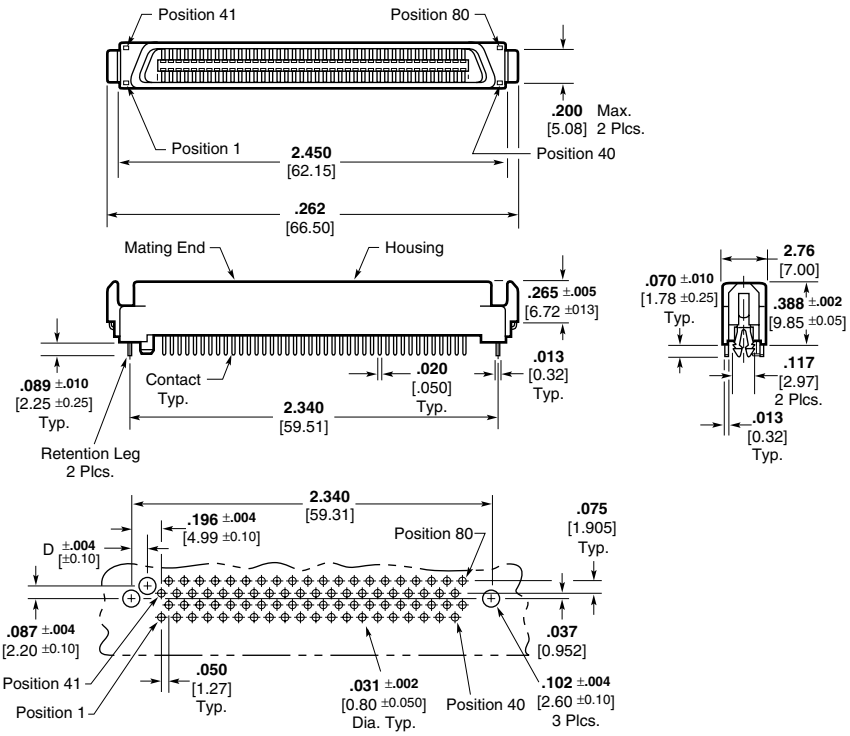


Material and Finish

Housing — LCP, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel



**Recommended PC Board
Mounting Dimensions**

**Plug Assembly, Right Angle,
Surface Mount
Part Number 5-917593-9
(With .000030 [0.00076] min.
Gold Plating)**

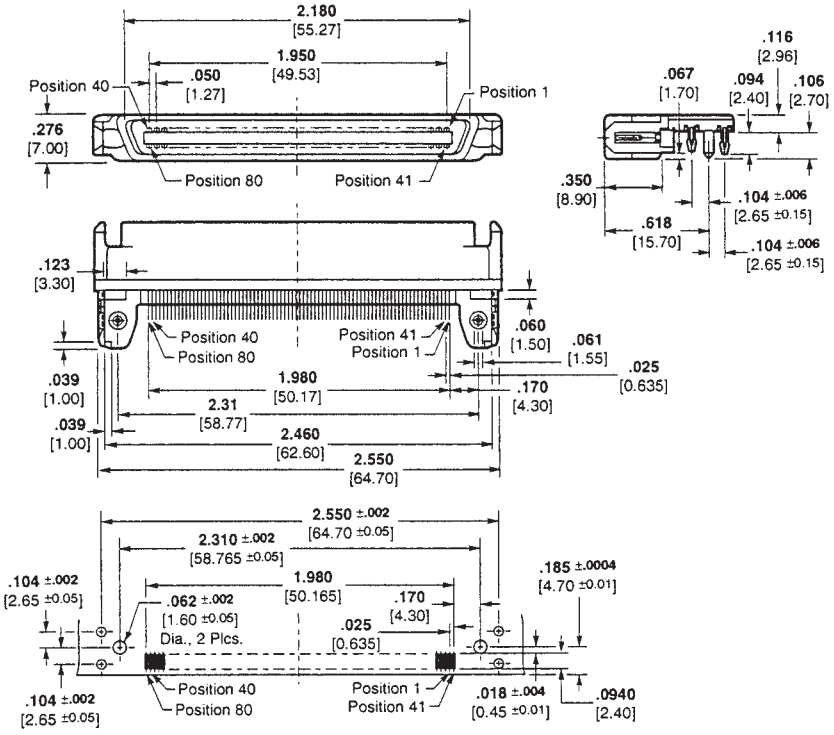
**Part Number 917593-9
(With .000008 [0.0002] min.
Gold Plating)**

Material and Finish

Housing — LCP, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] or .000008 [0.0002] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel



Recommended PCB Layout

Catalog 1-1773441-4
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CHAMP .050 Series I Blindmate Plug Assemblies (Continued)

**Plug Assembly,
Straddle Mount
Part Number 84487-1**

Material and Finish

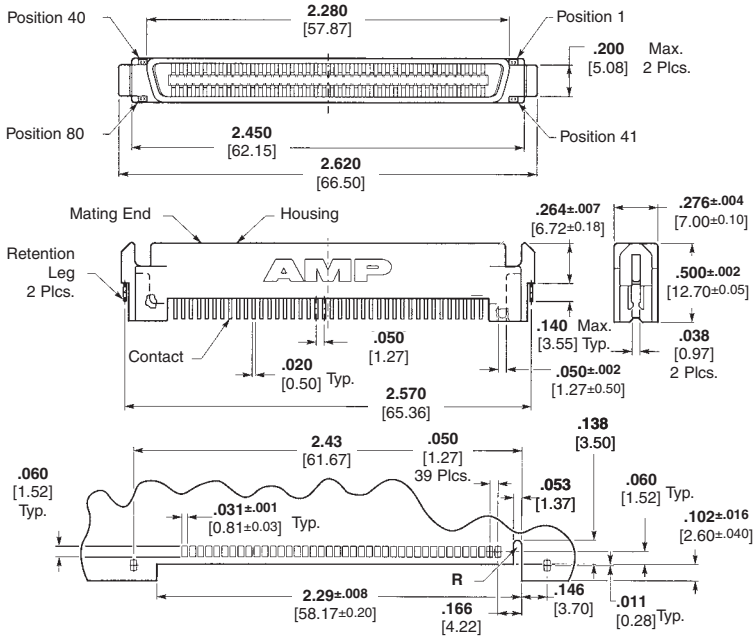
Housing — LCP, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min. nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel

Note:

Connector will accommodate PC board .052 [1.32] max. thickness



**Recommended PC Board
Mounting Dimensions**

Catalog 1-1773441-4
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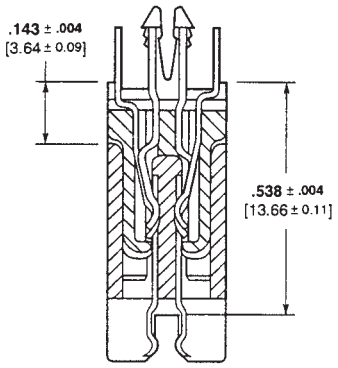
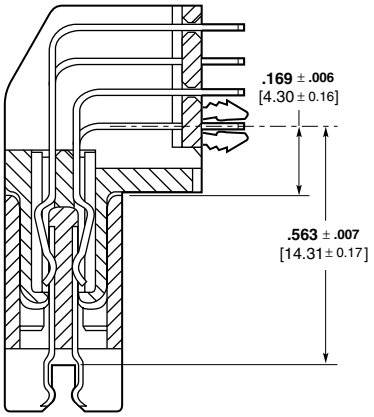
CHAMP .050 Series I Blindmate, Single Connector Attachment (SCA 2) for SCSI Disk Drives

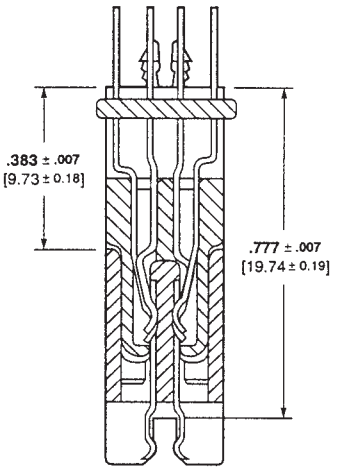
Mating Configurations



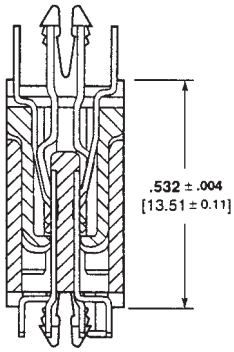
Vertical Receptacle Straddle Mount Plug



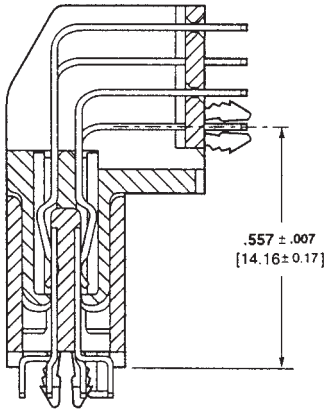
Right Angle Receptacle Straddle Mount Plug (Extended Height)



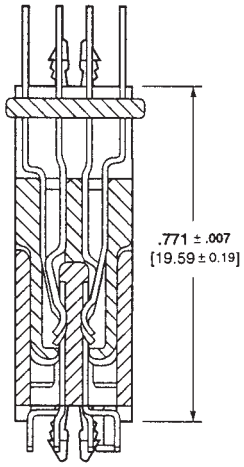
Vertical Receptacle Straddle Mount Plug (Extended Height)



Vertical Receptacle Vertical Plug



(Extended Height) Right Angle Receptacle Vertical Plug



Vertical Plug Vertical Receptacle (Extended Height)

Catalog 1-1773441-4
Issued 10-05

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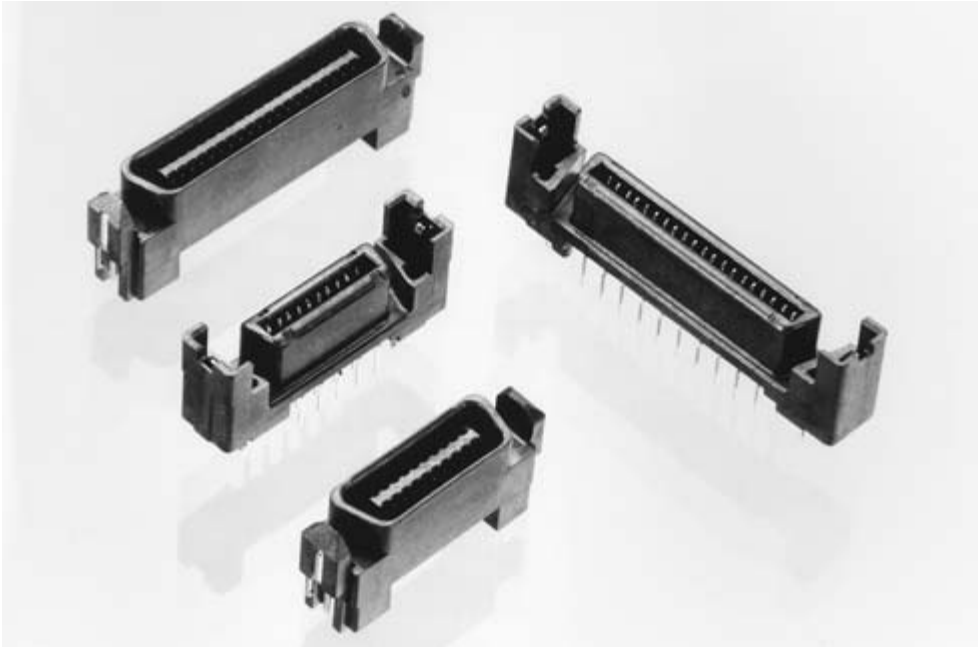
CHAMP .050 Series I Blindmate, Single Connector Attachment (SCA-2) for Fibre Channel — Introduction

Product Facts

- **Capable of carrying all data, control, power and auxiliary signals required by the Fibre Channel Physical Interface, the Fibre Channel Loop Standards, and the Gigabit Interface Converter (GBIC) Specification**
- **Integral blindmate capabilities with ± 2 mm misalignment tolerances**
- **Power sequencing capabilities with two level sequencing patterns**
- **Advanced Ground Contact (AGC) with integral metal hold-down**
- **Completely backward compatible with CHAMP .050 Series I connectors**
- **Durable phosphor bronze contacts, plated 0.00076 min. gold on the mating end, 0.00381 min. tin-lead on the solder lead end, all over 0.00127 min. nickel underplating**
- **Popular ribbon-style contacts**
- **Produced under a Quality Management System certified to ISO 9001**
  A copy of the certificate is available upon request.
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E-81956**
- **Certified by Canadian Standards Association File No. LR7189**



Performance Specifications

Current Rating — 1 amp max.
Voltage Rating — 250 VAC max.
Durability — 500 cycles
Operating Temperature Range — –55°C – +105°C
Mating Force — 90 grams/contact pair
Termination Resistance — 35 milliohms max. initial
Insulation Resistance — 1000 megohms min. initial
Vibration Resistance — 10-55-10 Hz for 2 hours

Technical Documents

Product Specifications — 108-1548
Application Specifications — 114-6061

The 40-position CHAMP .050 Series I, Blindmate Single Connector attachment (SCA 2) answers the industry's need for one connector that is suitable for the direct attachment of Fibre Channel disk drives to backplanes and motherboards.

The CHAMP .050 Series, SCA 2 connector in a 40-position configuration has been designed for serial transfer Fibre Channel devices, and carries all signals as required by the Fibre Channel Physical Interface and the Fibre Channel Arbitrated Loop Standards. In addition, all required power and auxiliary signals are carried by the same single attachment connector.

Designed and manufactured with the Disk Drive Industry's quality requirements as the driving motivation, the 40-position SCA 2 connector features the industry accepted polarized "D" connector interface. Features include housings made of UL 94V-0 rated IR reflow process compatible high temperature material, gold-over-nickel plated ribbon style contacts, Advanced Ground Contacts (AGC) with integral metal hold-down, and complete power sequencing capabilities. In addition to these features, the CHAMP Series I, Blindmate SCA 2 connector is fully compatible with existing CHAMP .050 Series I connectors.

Blindmate SCA 2 connectors are the interface for 3.5 Fibre Channel disk drives and will permit direct drive attachment to backplane arrays, which can eliminate costly cable assemblies and adapter boards while improving system reliability.

The CHAMP .050 Series, SCA 2 Connector in a 20-position configuration has been designated the interface for the Gigabit Interface Converter specification. A straddle-mount plug is used on the GBIC, a vertical receptacle is available for direct attachment to a backplane and a right angle receptacle is available for adapter card applications.

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

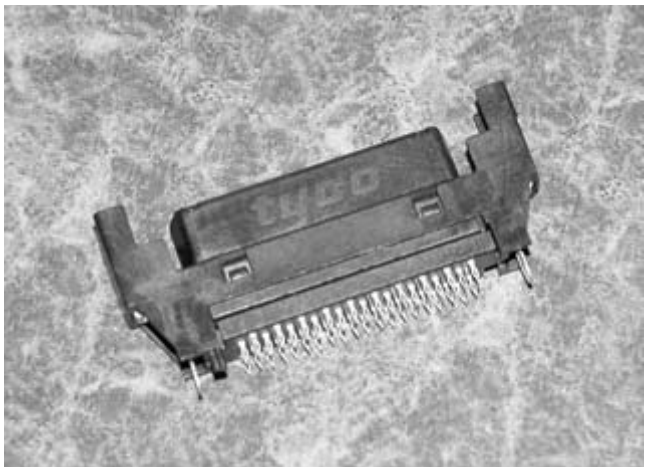
South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

CHAMP .050 Series I Blindmate, NEW 8.5 Gb/s Fibre Channel SCAII Backplane Receptacle

8.5 Gb/s Fibre Channel SCAII Backplane Receptacle

Product Facts

- **8.5 Gb/s speeds**
- **Backward compatible mating (interface compatible)**
- **Meets SFF-8451 with exception of foot print**
- **Meets EIA-700A0AE with exception of foot print**
- **RoHS compliant**
- **Same size as existing product**
- **Power sequencing capabilities with two-level sequencing patterns**
- **ESD ground contact with integral metal hold-down**



Capable of carrying all data, control, power and auxiliary signals required by the Fibre Channel Physical Interface and the Fibre Channel Loop Standards. Integral blindmate capability with ±2mm misalignment tolerances. Power sequencing capabilities with two level sequencing patterns. Durable phosphor bronze contacts plated .000030 [0.00076] min. gold on the mating end, tin plating on the contact tails, all over .000050 [0.00127] min. nickel under plating.

Application

Interface for 3.5 Fibre Channel disk drives and will permit direct drive attachment to backplane arrays, which can eliminate costly cable assemblies and adapter boards while improving system reliability.

Part Number

New Part Number 1761884-1. Enhancement to Tyco Electronics Part Number 788389-1.

Typical Properties

Dielectric Strength — 300 V AC

Durability — 500 cycles

Mating Force — Approx. 4.4kg (9.7 lbs) maximum

Electrical Improvements

Significant reduction in NEXT

Reduction in FEXT

Improved Impedance Profiles

Improved Insertion Loss — 3dB improvement at 4 to 5 GHz frequencies

Elimination of 4.25 GHz resonance point present in existing product

Improved Return Loss — 5dB improvement at 4 to 5 GHz frequencies

Designed for data rates up to 8.5 Gb/s

Environmental Parameters

Operating Temperature — -55°C to +105°C

Summary Comparison between Existing SCA-2 and New Tyco Electronics High Speed SCA-2, .063" Board:

Electrical Improvements

Significant reduction in NEXT

Reduction in FEXT

Improved Impedance Profiles

Improved Insertion Loss — 3 to 4dB improvement at 4 to 5 GHz frequencies

Elimination of 4.25 GHz resonance point present in existing product

Improved Return Loss — 5dB improvement at 4 to 5 GHz frequencies

Designed for data rates in excess of 8.5 Gb/s

Mechanical

Same size as existing product — Mating Interface compatible to existing products

Requires minor changes to board layout

RoHS compliant

Catalog 1-1773441-4
Issued 10-05

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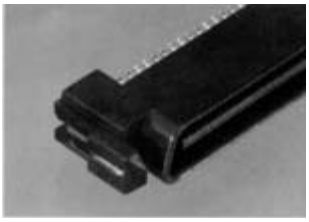
UK: 44-141-810-8967

CHAMP .050 Series I Blindmate, Single Connector Attachment (SCA-2) for Fibre Channel (Continued)

40-Position Plug Assembly, Straddle Mount Part Number 84487-2



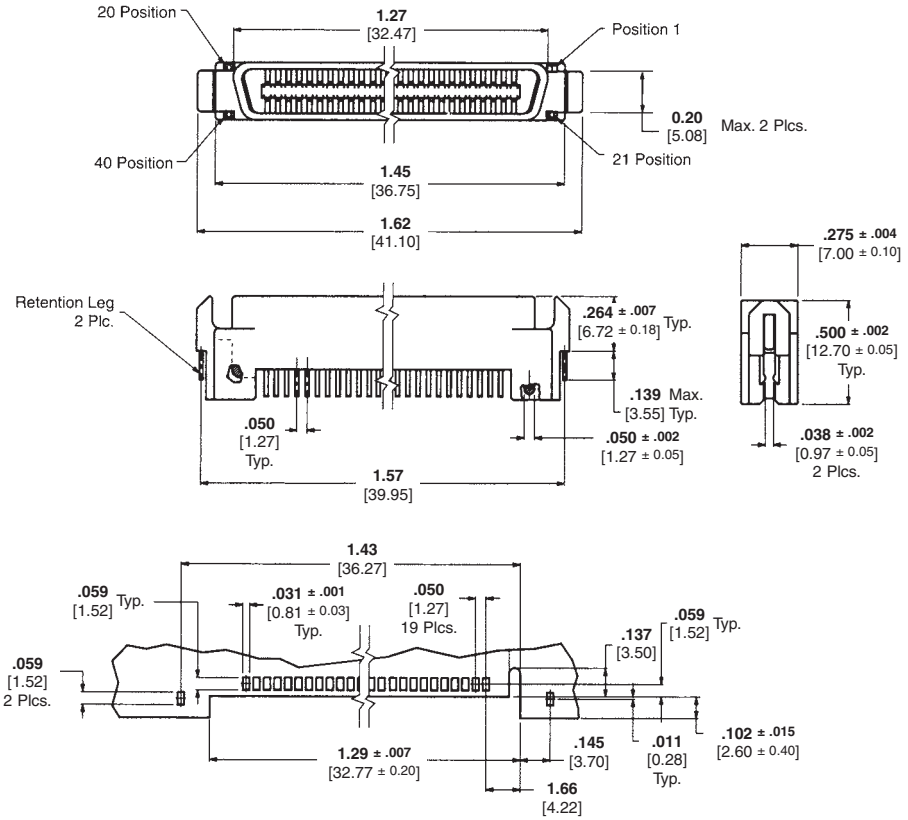
Material and Finish

Housing — Thermoplastic, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min. nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel

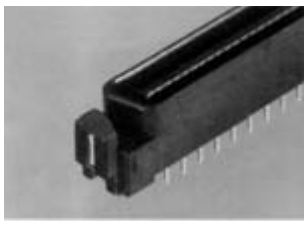
Note: Will accept PCB .052 [1.32] thick, max.



Recommended Printed Circuit Board Mounting Dimensions – Component Side

40-Position Plug Assembly, Vertical Mount Part Number 84488-3

(with Polarization Post)



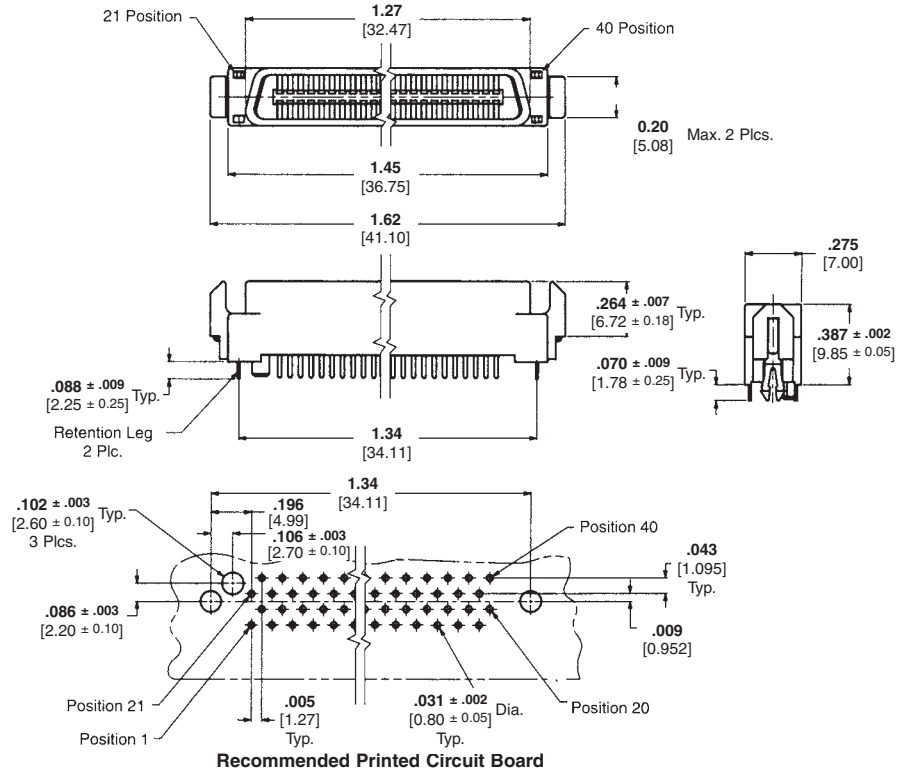
Material and Finish

Housing — Thermoplastic, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min. nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel

Note: Will accept PCB .039 [1.00] thick, max.



Recommended Printed Circuit Board Mounting Dimensions – Component Side

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

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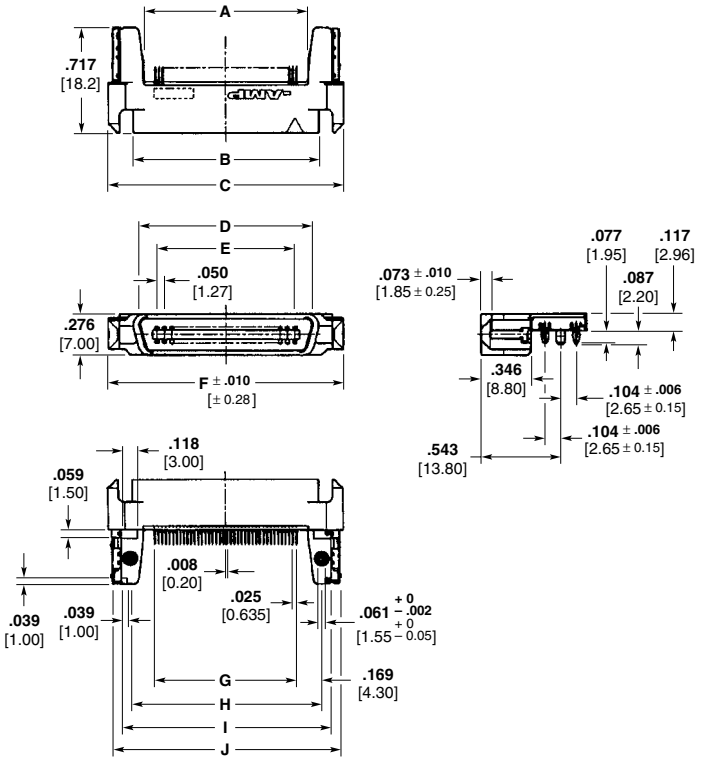
CHAMP .050 Series I Blindmate, Single Connector Attachment (SCA-2) for Fibre Channel (Continued)

40-Position Plug Assembly, Blindmate
Part Number 1123283-5
Part Number 1123283-9
(80-Position)

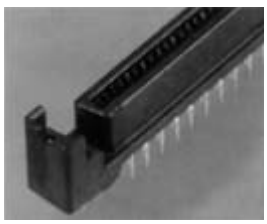
Material and Finish

Housing — LCP, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min. nickel underplating



40-Position Receptacle Assembly, Vertical Mount
Part Number 787317-1
(with Polarization Post, with Solder Tines)
Part Number 796068-1
(with Polarization Post and Press Fit Tines)



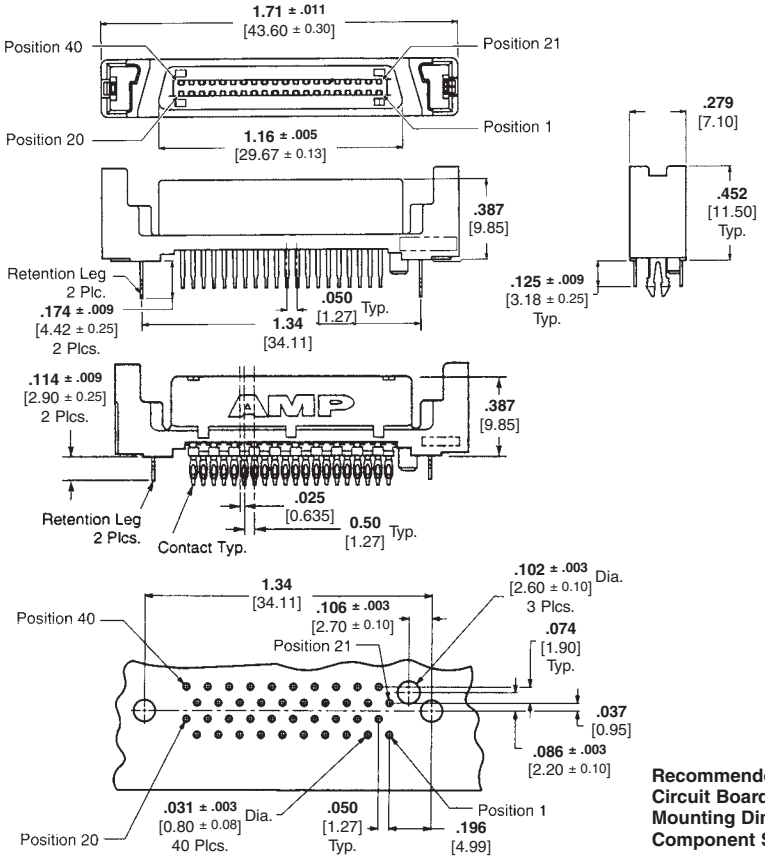
Material and Finish

Housing — Thermoplastic, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min. nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel

Note: Will accept mating PCB .063 [1.60] thick, max.



Recommended Printed Circuit Board Mounting Dimensions – Component Side

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

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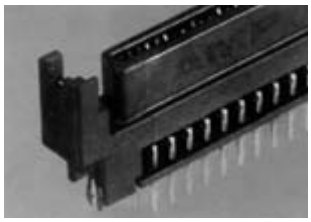
UK: 44-141-810-8967

CHAMP .050 Series I Blindmate, Single Connector Attachment (SCA-2) for Fibre Channel (Continued)

40-Position Receptacle Assembly, Extended Height, Vertical Mount Part Number 787597-1 Contact Tail 4.57mm length

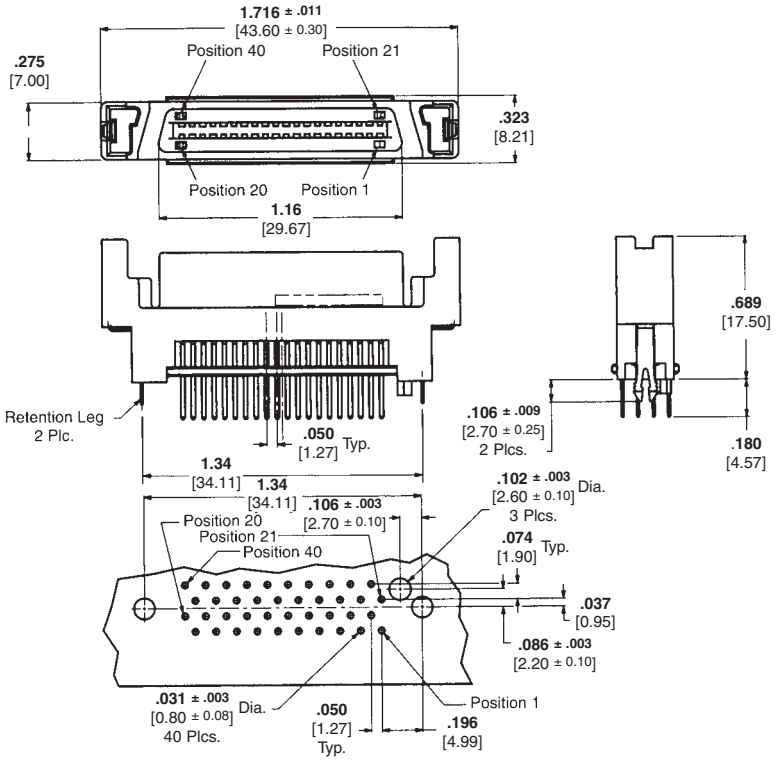


Material and Finish

Housing — Thermoplastic, 94V-0 rated, black

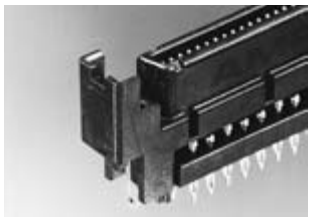
Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min. nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel



Recommended Printed Circuit Board Mounting Dimensions – Component Side

40-Position Receptacle Assembly, Extended Height, Vertical Mount, Press-Fit Part Number 788389-1 Contact Tail 3.43mm length

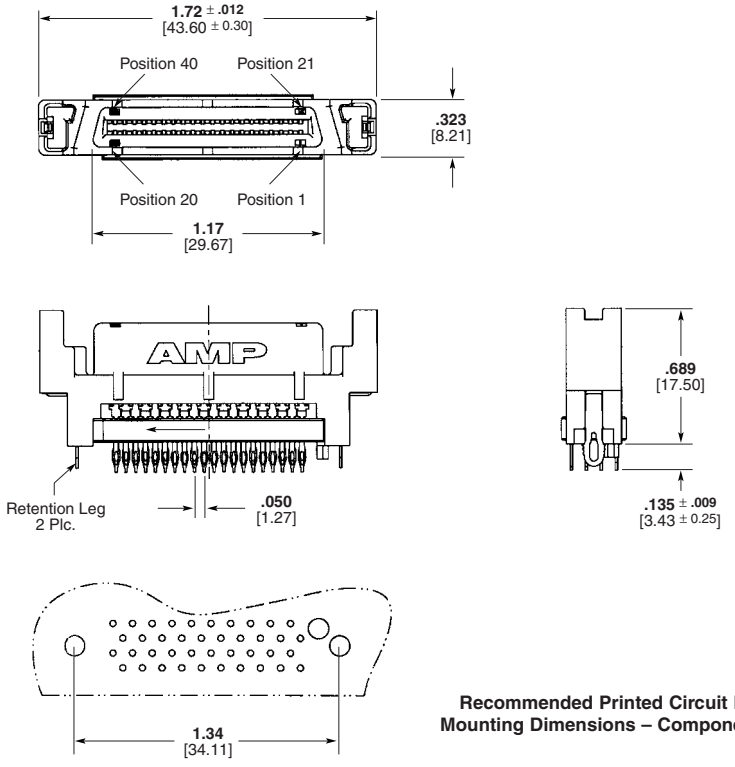


Material and Finish

Housing — Thermoplastic, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min. nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel



Recommended Printed Circuit Board Mounting Dimensions – Component Side

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

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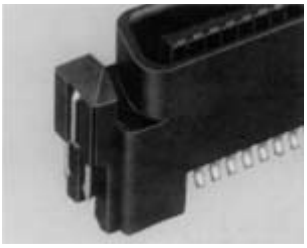
Japan: 81-44-844-8013
UK: 44-141-810-8967

CHAMP .050 Series I Blindmate, Single Connector Attachment (SCA-2) for Fibre Channel (Continued)

20-Position Plug Assembly, Straddle Mount Part Number 84598-1



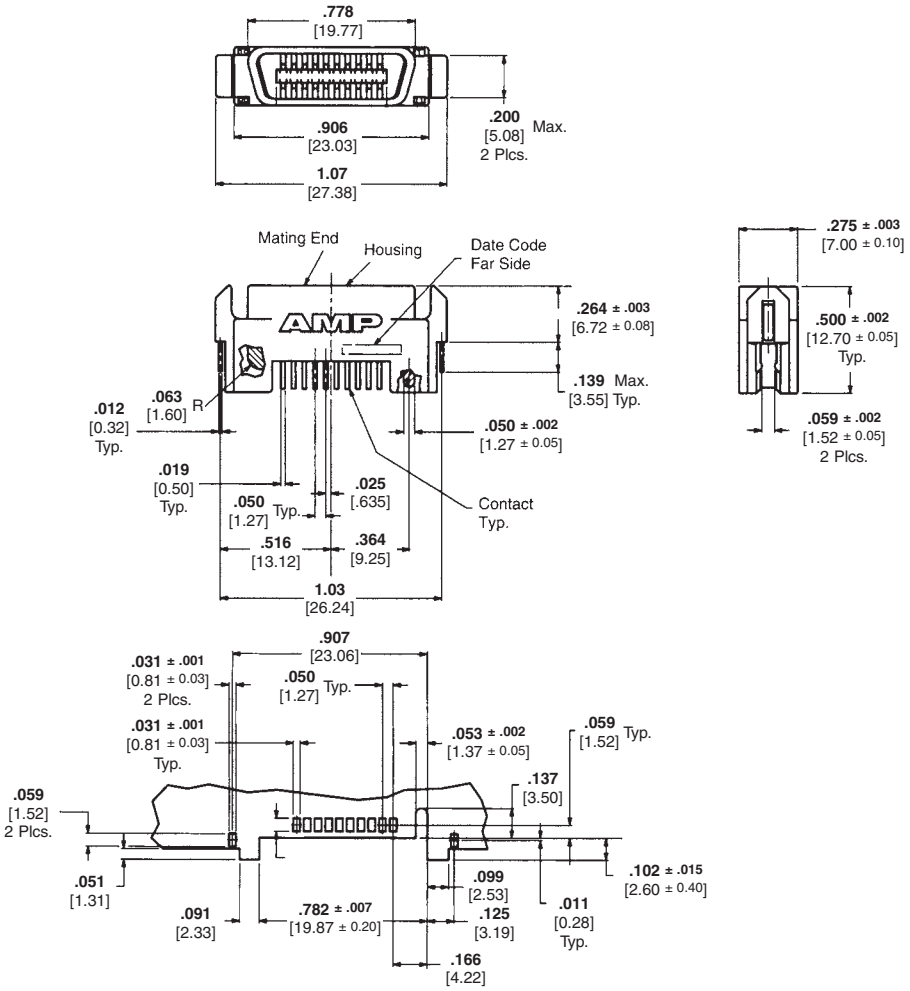
Material and Finish

Housing — Thermoplastic, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min. nickel underplating

Retention Leg — Brass, plated .000030 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel

Note: Will accept PCB .072 [1.82] thick, max.



Recommended PC Board Mounting Dimensions

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

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USA: 1-800-522-6752
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Japan: 81-44-844-8013
UK: 44-141-810-8967

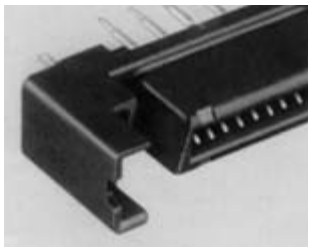
CHAMP .050 Series I Blindmate, Single Connector Attachment (SCA-2) for Fibre Channel (Continued)

20-Position Receptacle Assembly, Vertical Mount Part Number 787646-2

(with Solder Tines, No Polarizing Post)

Part Number 796067-2[1]

(with Press-Fit Tines, No Polarizing Post)



Material and Finish

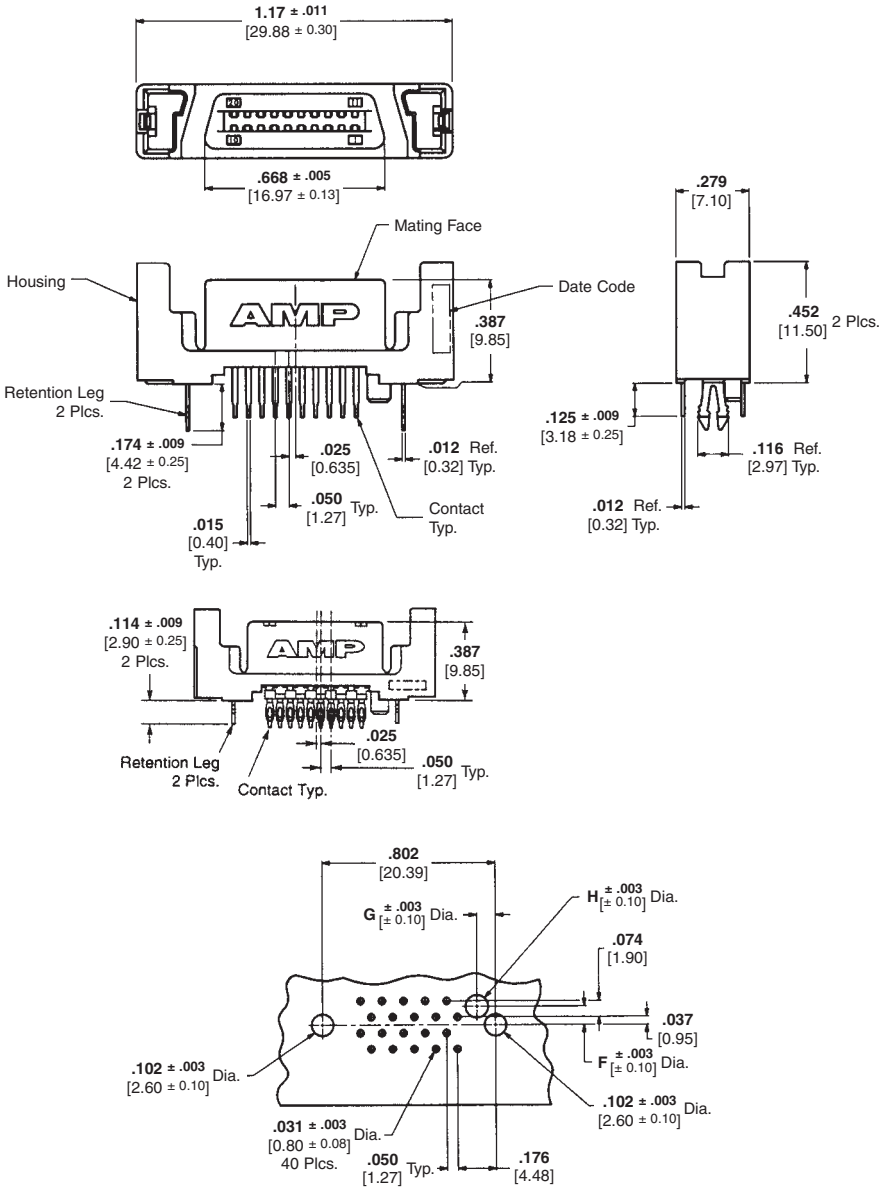
Housing — Thermoplastic, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min. nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel

Note: Will accept PCB .039 [1.00] thick, max.

[1] Contact Tyco Electronics for RoHS Part Number information.



Recommended PC Board Mounting Dimensions Component Side

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

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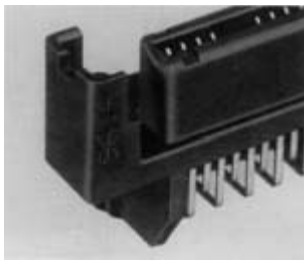
UK: 44-141-810-8967

CHAMP .050 Series I Blindmate, Single Connector Attachment (SCA-2) for Fibre Channel (Continued)

20-Position Right Angle Receptacle Assembly, Board-to-Board
Part Number 787653-1
(2.54 mm Tails)
Part Number 787653-2
(3.05 mm Tails)

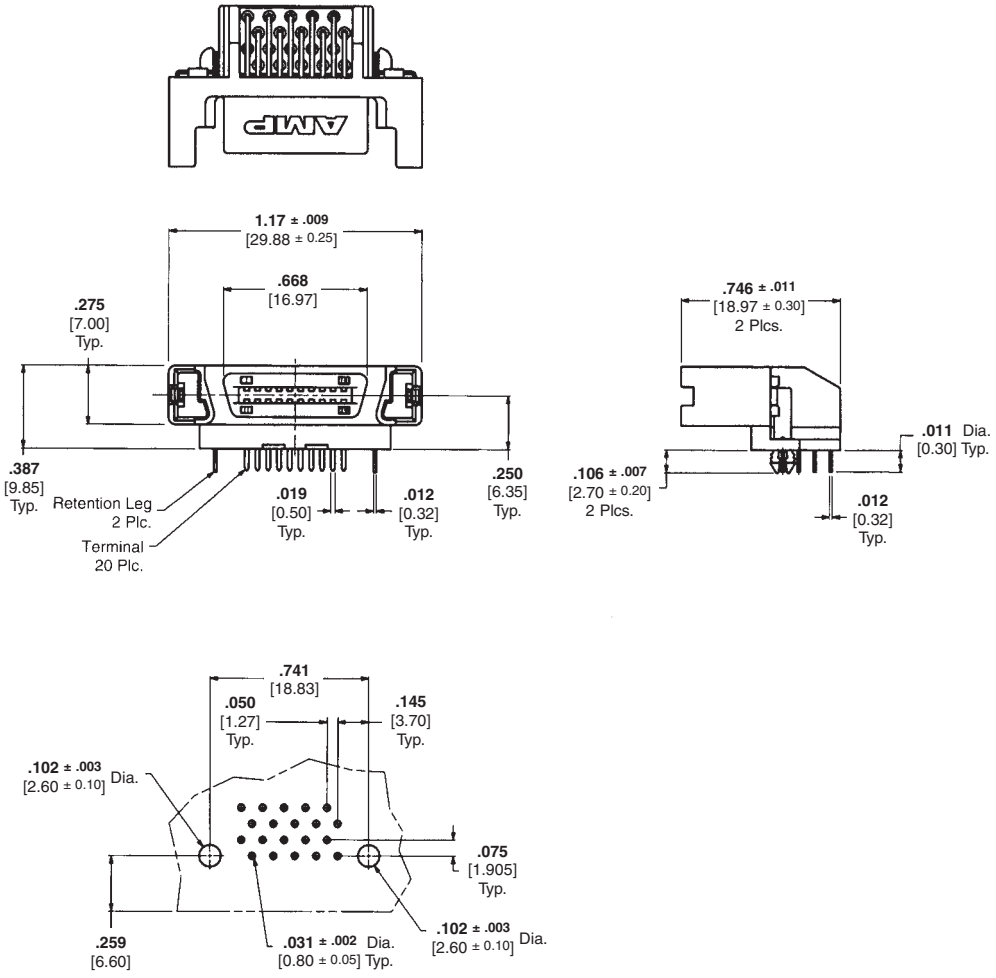


Material and Finish

Housing — Thermoplastic, 94V-0 rated, black

Contacts — Phosphor bronze, plated .000030 [0.00076] min. gold on mating end, .000150 [0.00381] min. tin-lead on solder end, both over .000050 [0.00127] min. nickel underplating

Retention Leg — Brass, plated .000150 [0.00381] min. tin-lead over .000050 [0.00127] min. nickel



Recommended PC Board Mounting Dimensions

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

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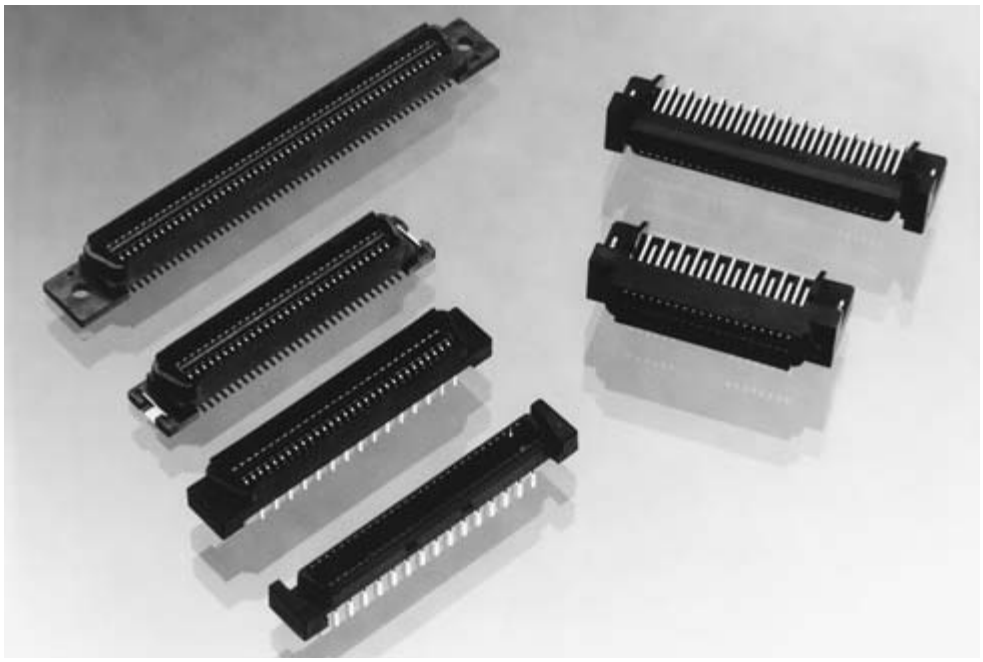
UK: 44-141-810-8967

CHAMP .050 Series I Free Height (FH) Connectors, Board-to-Board Applications

CHAMP .050 Series I FH Connectors for Interconnections Requiring Variable Stacking Heights

- **All plastic headers for board-to-board interconnections**
- **Proprietary single-spring leaf contact design**
- **Right angle and vertical headers available in both plug and receptacle for full range of interconnections including parallel, perpendicular and in-line**
- **Vertical receptacles available in eleven heights for variation of stack height (8mm–18mm in 1mm increments)**
- **40 through 180 positions available in most stack heights**
- **Vertical plug, surface mount, available in 60 and 100 positions**
- **Alternative to Series I**
- **Closed bottom inhibits flux/solder contamination**
- **Detent locking system with tactile feedback**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association File No. LR7189A-319**



The **FH**, or Free Height, connectors are also an all-plastic connector system for internal board-to-board interconnections with a single spring leaf contact design. These connectors may be considered as an alternative to the Series I product line, with the added feature of variable stacking heights. The vertical receptacle is available in various housing profiles to permit board stacking heights from .315 inch [8.0mm] to .709 inch [18.0mm] in .040 inch [1.0mm] increments.

Position sizes available range from 40 to 180 positions in both plug and receptacle for right angle and vertical configurations. A feature unique to the FH system is the closed bottom in the housing, which further inhibits contact contamination from flux and solder during processing.

Performance Specifications

Operating Temperature Range — –55°C to +85°C for Standard

Current Rating — 1 Ampere Max.

Voltage Rating — 250 VAC Max.

Termination Resistance — 35 Milliohms Maximum Initial

Insulation Resistance — 1,000 Megohms Minimum Initial

Mating Force — Refer to Product Specification

Rated Cycle Life — 2000 Cycles

Technical Documents

Product Specification — 108-5309

Instruction Sheet — 411-5519

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

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UK: 44-141-810-8967

CHAMP .050 Series I Free Height (FH) Connectors, Board-to-Board Applications (Continued)

Vertical Receptacles, 8mm Stack

Materials and Finish

Housing, Standard Temperature — Glass-filled nylon 6/6, rated UL 94V-0, black

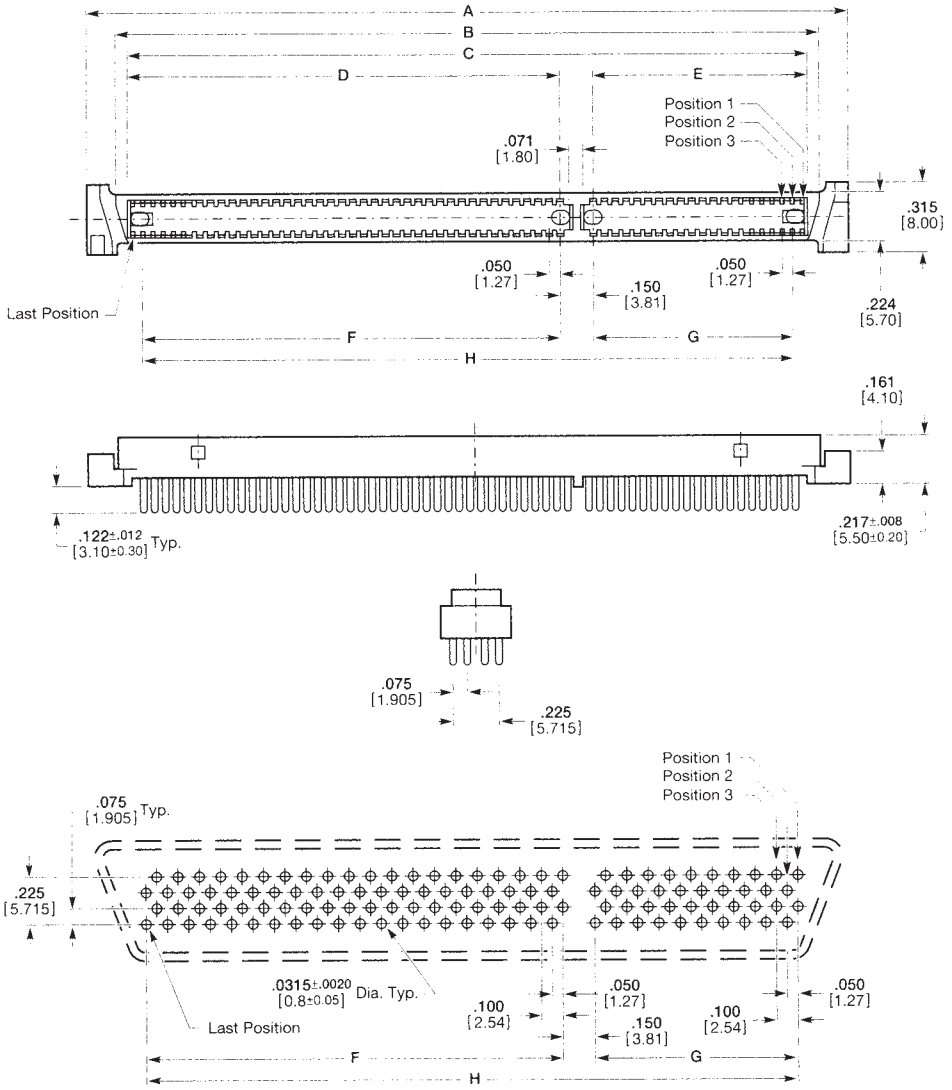
Contacts — Phosphor bronze, selectively plated with minimum of .000012 [0.00030] gold in mating area and tin-lead in solder tail area. Contacts are coated with an anti-flux migration agent.

Performance Specifications — Page 49

PC Board Accommodation — .031 [0.79] to .093 [2.36] nominal thickness

Mating Plug Connectors — Right Angle — Page 57
Vertical — Page 55

Mating Configurations — Page 58



Recommended PC Board Layout
Component Side

Pos.	Dimensions								Standard Temp. Part Number
	A	B	C	D	E	F	G	H	
40	**1.447** 36.75	**1.150** 29.22	**1.029** 26.13	—	—	—	—	**.950** 24.13	917628-1
60	**1.947** 49.45	**1.650** 41.92	**1.529** 38.83	—	—	—	—	**1.450** 36.83	917628-2
80	**2.447** 62.15	**2.150** 54.62	**2.029** 51.53	—	—	—	—	**1.950** 49.53	917628-3
100	**2.947** 74.85	**2.650** 67.32	**2.529** 64.23	—	—	—	—	**2.450** 62.23	917628-4
120	**3.547** 90.09	**3.250** 82.56	**3.129** 79.47	**2.029** 51.53	**1.029** 26.13	**1.950** 49.53	**0.950** 24.13	**3.050** 77.47	917628-5
140	**4.047** 102.79	**3.750** 95.26	**3.629** 92.17	**2.029** 51.53	**1.529** 38.83	**1.950** 49.53	**1.450** 36.83	**3.550** 90.17	917628-6
160	**4.547** 115.49	**4.250** 107.96	**4.129** 104.87	**2.529** 64.23	**1.529** 38.83	**2.450** 62.23	**1.450** 36.83	**4.050** 102.87	917628-7
180	**5.047** 128.19	**4.750** 120.66	**4.629** 117.57	**2.529** 64.23	**2.029** 51.53	**2.450** 62.23	**1.950** 49.53	**4.550** 115.57	917628-8

Catalog 1-1773441-4
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Japan: 81-44-844-8013
UK: 44-141-810-8967

CHAMP .050 Series I Free Height (FH) Connectors, Board-to-Board Applications (Continued)

Vertical Receptacles, 9 and 10mm Stack

Materials and Finish

Housing, Standard Temperature — Glass-filled nylon 6/6, rated UL 94V-0, black

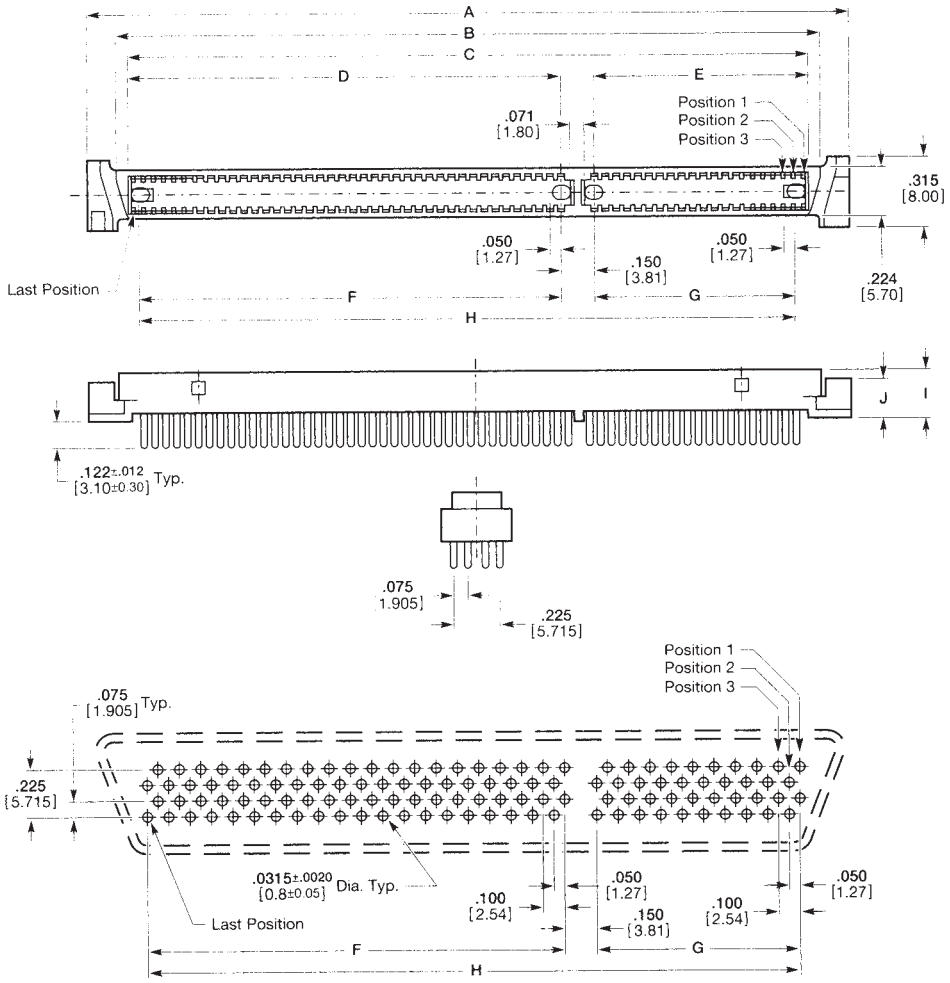
Contacts — Phosphor bronze, selectively plated with minimum of .000012 [0.00030] gold in mating area and tin-lead in solder tail area. Contacts are coated with an anti-flux migration agent.

Performance Specifications — Page 49

PC Board Accommodation — .031 [0.79] to .093 [2.36] nominal thickness

Mating Plug Connectors — Right Angle — Page 57
Vertical — Page 55

Mating Configurations—Page 58



Recommended PC Board Layout
Component Side

Pos.	Dimensions								Standard Temp. Part Number	
	A	B	C	D	E	F	G	H	I = .256 [6.50]	.295 [7.50]
									J = .201 [5.10]	.240 [6.10]
40	**1.447** 36.75	**1.150** 29.22	**1.028** 26.13	—	—	—	—	**.950** 24.13	9mm (Stack Ht.) 917629-1	10mm 917630-1
60	**1.947** 49.45	**1.650** 41.92	**1.528** 38.83	—	—	—	—	**1.450** 36.83	917629-2	917630-2
80	**2.447** 62.15	**2.150** 54.62	**2.028** 51.53	—	—	—	—	**1.950** 49.53	917629-3	917630-3
100	**2.947** 74.85	**2.650** 67.32	**2.528** 64.23	—	—	—	—	**2.450** 62.23	917629-4	917630-4
120	**3.547** 90.09	**3.250** 82.56	**3.128** 79.47	**2.028** 51.53	**1.028** 26.13	**1.950** 49.53	**0.950** 24.13	**3.050** 77.47	917629-5	917630-5
140	**4.047** 102.79	**3.750** 95.26	**3.628** 92.17	**2.028** 51.53	**1.528** 38.83	**1.950** 49.53	**1.450** 36.83	**3.550** 90.17	917629-6	917630-6
160	**4.547** 115.49	**4.250** 107.96	**4.128** 104.87	**2.528** 64.23	**1.528** 38.83	**2.450** 62.23	**1.450** 36.83	**4.050** 102.87	N/A	917630-7
180	**5.047** 128.19	**4.750** 120.66	**4.628** 117.57	**2.528** 64.23	**2.028** 51.53	**2.450** 62.23	**1.950** 49.53	**4.550** 115.57	N/A	917630-8

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CHAMP .050 Series I Free Height (FH) Connectors, Board-to-Board Applications (Continued)

Vertical Receptacles, 11mm to 18mm Stack

Materials and Finish

Housing, Standard Temperature — Glass-filled nylon 6/6, rated UL 94V-0, black

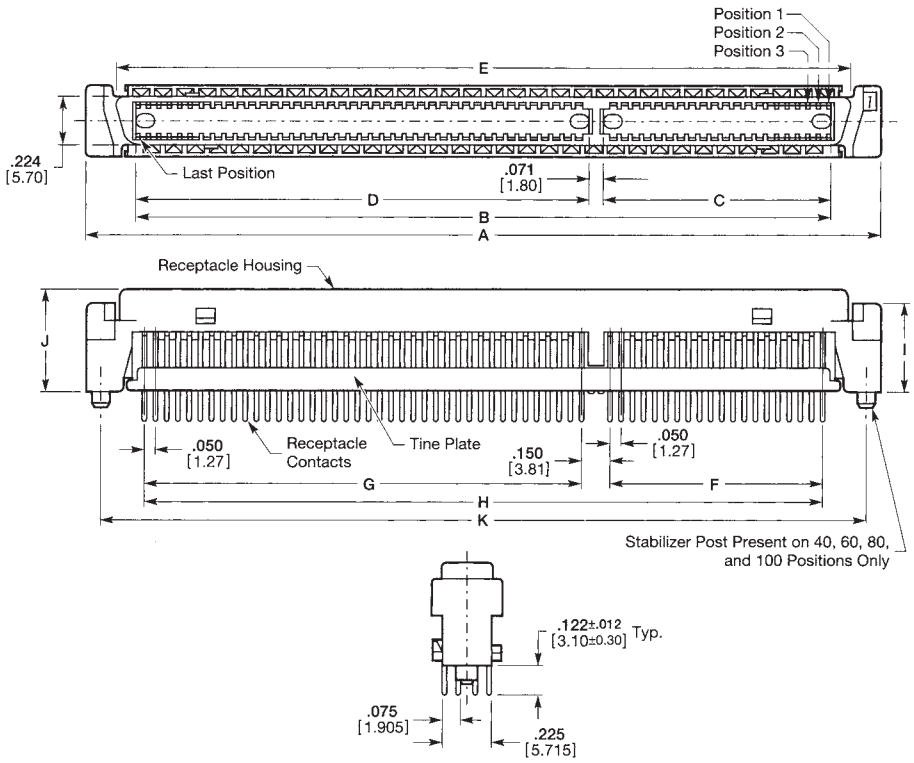
Contacts — Phosphor bronze, selectively plated with minimum of .000012 [0.00030] gold in mating area and tin-lead in solder tail area

Performance Specifications — Page 49

PC Board Accommodation — .031 [0.79] to .093 [2.36] nominal thickness

Mating Plug Connectors — Right Angle — Page 57
Vertical — Page 55

Mating Configurations — Page 58



Pos.	Part Numbers—Standard Temp.							
	Stack Height							
	11mm	12mm	13mm	14mm	15mm	16mm	17mm	18mm
40	176371-1	176372-1	176373-1	176374-1	N/A	176376-1	176377-1	176378-1
60	176371-2	176372-2	176373-2	176374-2	176375-2	176376-2	N/A	176378-2
80	176371-3	176372-3	176373-3	176374-3	176375-3	176376-3	176377-3	176378-3
100	176371-4	176372-4	176373-4	176374-4	N/A	176376-4	176377-4	176378-4
120	176371-5	176372-5	N/A	176374-5	N/A	176376-5	176377-5	176378-5
140	176371-6	176372-6	N/A	176374-6	N/A	176376-6	N/A	176378-6
160	N/A	N/A	N/A	176374-7	N/A	N/A	N/A	176378-7
180	N/A	N/A	N/A	N/A	N/A	N/A	176377-8	176378-8
I	**.280** 7.10	**.319** 8.10	**.358** 9.10	**.398** 10.10	**.437** 11.10	**.476** 12.10	**.516** 13.10	**.555** 14.10
J	**.335** 8.50	**.374** 9.50	**.413** 10.50	**.453** 11.50	**.492** 12.50	**.531** 13.50	**.571** 14.50	**.610** 15.50

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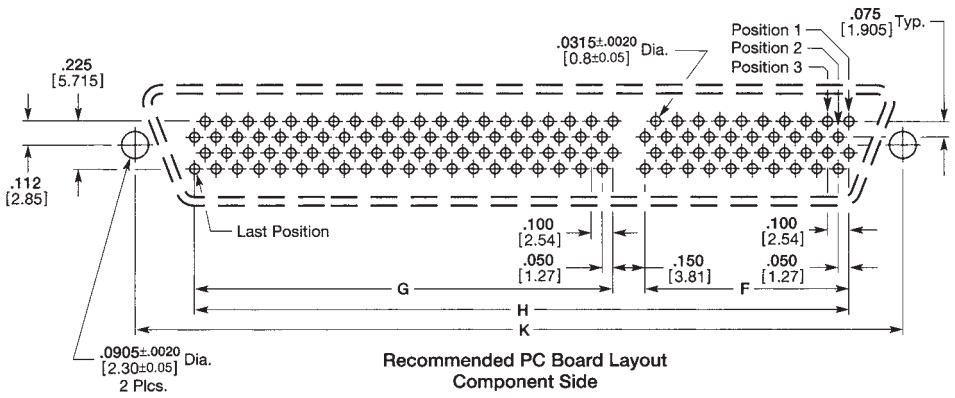
CHAMP .050 Series I Free Height (FH) Connectors, Board-to-Board Applications (Continued)

Vertical Receptacles, 11mm to 18mm Stack
(Continued)



Pos.	Dimensions								
	A	B	C	D	E	F	G	H	K
40	**1.447** 36.75	**1.029** 26.13	—	—	**1.150** 29.22	—	—	**.950** 24.13	**1.343** 34.10
60	**1.947** 49.45	**1.529** 38.83	—	—	**1.650** 41.92	—	—	**1.450** 36.83	**1.843** 46.80
80	**2.447** 62.15	**2.029** 51.53	—	—	**2.150** 54.62	—	—	**1.950** 49.53	**2.343** 59.50
100	**2.947** 74.85	**2.529** 64.23	—	—	**2.650** 67.32	—	—	**2.450** 62.23	**2.843** 72.20
120	**3.547** 90.09	**3.129** 79.47	**1.029** 26.13	**2.029** 51.53	**3.250** 82.56	**.950** 24.13	**1.950** 49.53	**3.050** 77.47	—
140	**4.047** 102.79	**3.629** 92.17	**1.529** 38.83	**2.029** 51.53	**3.750** 95.26	**1.450** 36.83	**1.950** 49.53	**3.550** 90.17	—
160	**4.547** 115.49	**4.129** 104.87	**1.529** 38.83	**2.529** 64.23	**4.250** 107.96	**1.450** 36.83	**2.450** 62.23	**4.050** 102.87	—
180	**5.047** 128.19	**4.629** 117.57	**2.029** 51.53	**2.529** 64.23	**4.750** 120.66	**1.950** 49.53	**2.450** 62.23	**4.550** 115.57	—

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CHAMP .050 Series I Free Height (FH) Connectors, Board-to-Board Applications (Continued)

Right Angle Receptacles

Materials and Finish

Housing, Standard Temperature — Glass-filled nylon 6/6, rated UL 94V-0, black

Contacts — Phosphor bronze, selectively plated with minimum of .000012 [0.00030] gold in mating area and tin-lead in solder tail area

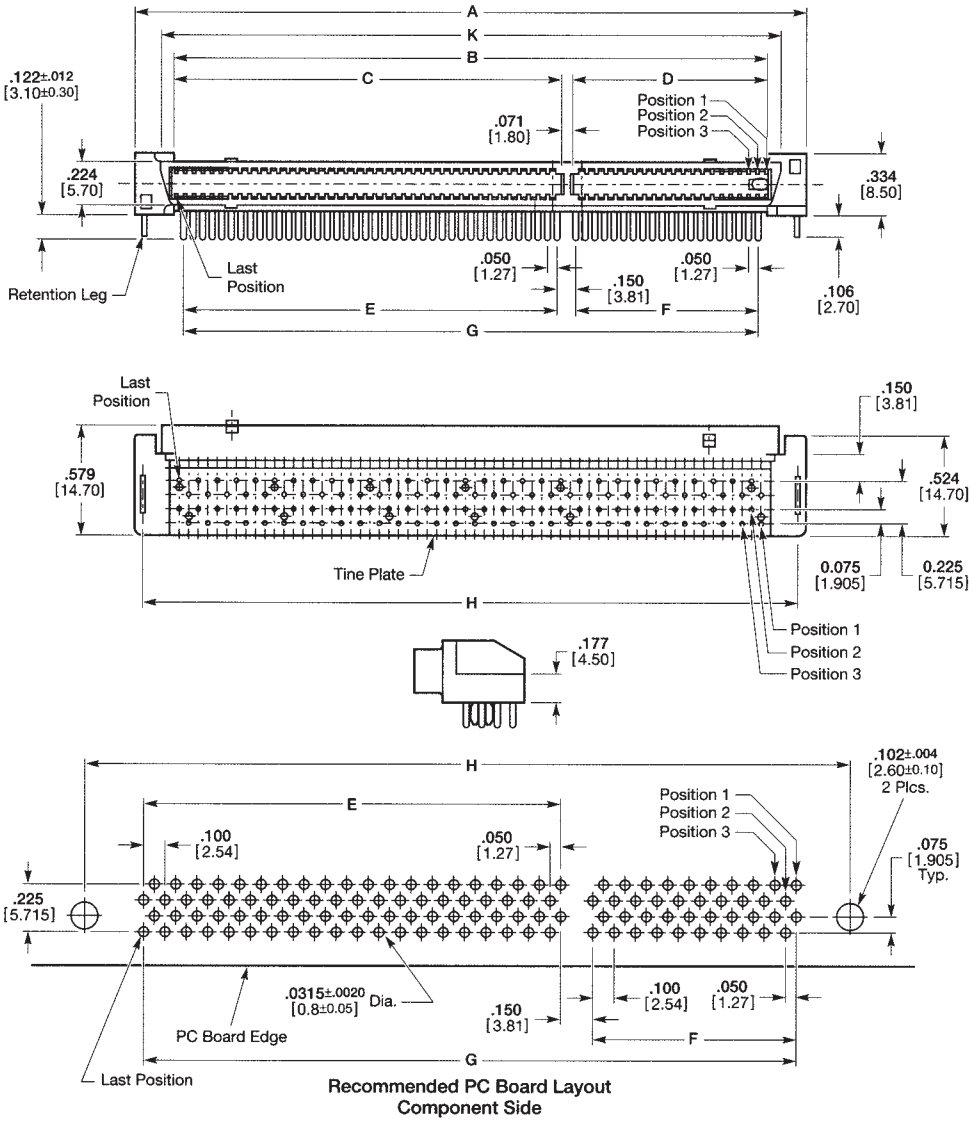
Retention Leg — Brass, tin-lead plated

Performance Specifications — Page 49

PC Board Accommodation — .031 [0.79] to .093 [2.36] nominal thickness

Mating Plug Connectors — Right Angle — Page 57 Vertical — Page 55

Mating Configurations — Page 58



Recommended PC Board Layout
Component Side

Pos.	Dimensions									Standard Temp. Part Number
	A	B	C	D	E	F	G	H	K	
40	**1.447** 36.75	**1.029** 26.13	—	—	—	—	**.950** 24.13	**1.343** 34.10	**1.150** 29.22	N/A
60	**1.947** 49.45	**1.529** 38.83	—	—	—	—	**1.450** 36.83	**1.843** 46.80	**1.650** 41.92	176379-2
80	**2.447** 62.15	**2.029** 51.53	—	—	—	—	**1.950** 49.53	**2.343** 59.50	**2.150** 54.62	176379-3
100	**2.947** 74.85	**2.529** 64.23	—	—	—	—	**2.450** 62.23	**2.843** 72.20	**2.650** 67.32	176379-4
120	**3.547** 90.09	**3.129** 79.47	**2.029** 51.53	**1.029** 26.13	**1.950** 49.53	**.950** 24.13	**3.050** 77.47	**3.443** 87.44	**3.250** 82.56	176379-5
140	**4.047** 102.79	**3.629** 92.17	**2.029** 51.53	**1.529** 38.83	**1.950** 49.53	**1.450** 36.83	**3.550** 90.17	**3.943** 100.14	**3.750** 95.26	176379-6
160	**4.547** 115.49	**4.129** 104.87	**2.529** 64.23	**1.529** 38.83	**2.450** 62.23	**1.450** 36.83	**4.050** 102.87	**4.443** 112.84	**4.250** 107.96	176379-7
180	**5.047** 128.19	**4.629** 117.57	**2.529** 64.23	**2.029** 51.53	**2.450** 62.23	**1.950** 49.53	**4.550** 115.57	**4.943** 125.54	**4.750** 120.66	176379-8

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CHAMP .050 Series I Free Height (FH) Connectors, Board-to-Board Applications (Continued)

Vertical Plugs

Materials and Finish

Housing, Standard Temperature — Glass-filled nylon 6/6, rated UL 94V-0, black

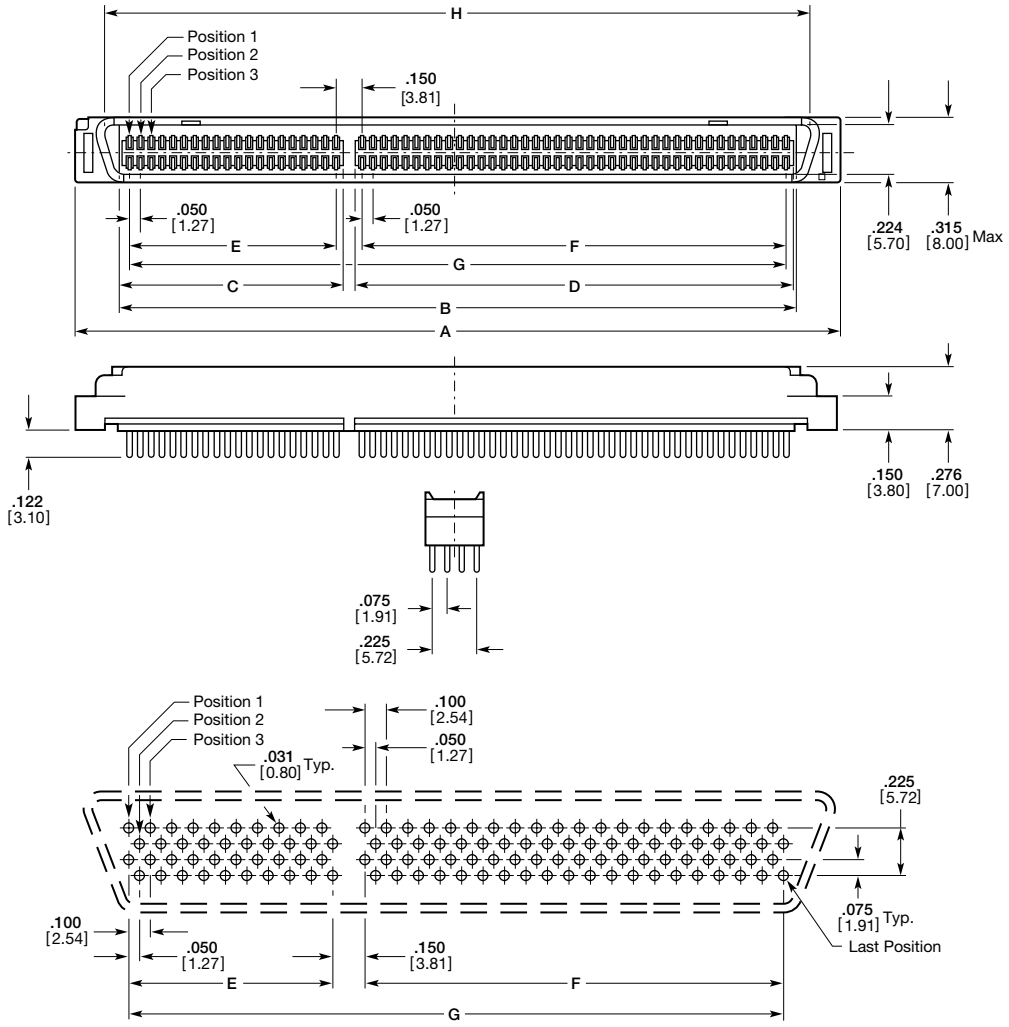
Contacts — Phosphor bronze, selectively plated with minimum of .000012 [0.00030] gold in mating area and tin-lead in solder tail area

Performance Specifications — Page 49

PC Board Accommodation — .031 [0.79] to .093 [2.36] nominal thickness

Mating Receptacles — Right Angle — Page 54
Vertical — Pages 50-53

Mating Configurations — Page 58



Recommended PC Board Layout
Component Side

Pos.	Dimensions								Standard Temp. Part Number
	A	B	C	D	E	F	G	H	
40	**1.447** 36.75	**1.021** 25.93	—	—	—	—	**.950** 24.13	**1.156** 29.37	917631-1
60	**1.947** 49.45	**1.521** 38.63	—	—	—	—	**1.450** 36.83	**1.656** 42.07	917631-2
80	**2.447** 62.15	**2.021** 51.33	—	—	—	—	**1.950** 49.53	**2.156** 54.77	917631-3
100	**2.947** 74.85	**2.521** 64.03	—	—	—	—	**2.450** 62.23	**2.656** 67.47	917631-4
120	**3.547** 90.09	**3.121** 79.27	**1.021** 25.93	**2.021** 51.33	**.950** 24.13	**1.950** 49.53	**3.050** 77.47	**3.256** 82.71	917631-5
140	**4.047** 102.79	**3.621** 91.97	**1.521** 38.63	**2.021** 51.33	**1.450** 36.83	**1.950** 49.53	**3.550** 90.17	**3.756** 95.41	917631-6
160	**4.547** 115.49	**4.121** 104.67	**1.521** 38.63	**2.521** 64.03	**1.450** 36.83	**2.450** 62.23	**4.050** 102.87	**4.256** 108.11	917631-7
180	**5.047** 128.19	**4.621** 117.37	**2.021** 51.33	**2.521** 64.03	**1.950** 49.53	**2.450** 62.23	**4.550** 115.57	**4.756** 120.81	917631-8

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UK: 44-141-810-8967

CHAMP .050 Series I Free Height (FH) Connectors, Board-to-Board Applications (Continued)

Vertical Plug, Surface Mount with Solder Peg

Materials and Finish

Housing — LCP, rated 94V-0, black

Contacts — Phosphor bronze, selectively plated with minimum of .000012 [0.00030] gold in mating area and tin-lead in solder tail area

Solder Peg — Steel, plated tin-lead over copper

Performance Specifications — Page 49

Mating Receptacles — Right Angle — Page 54 Vertical — Pages 50-53

Mating Configurations — Page 58

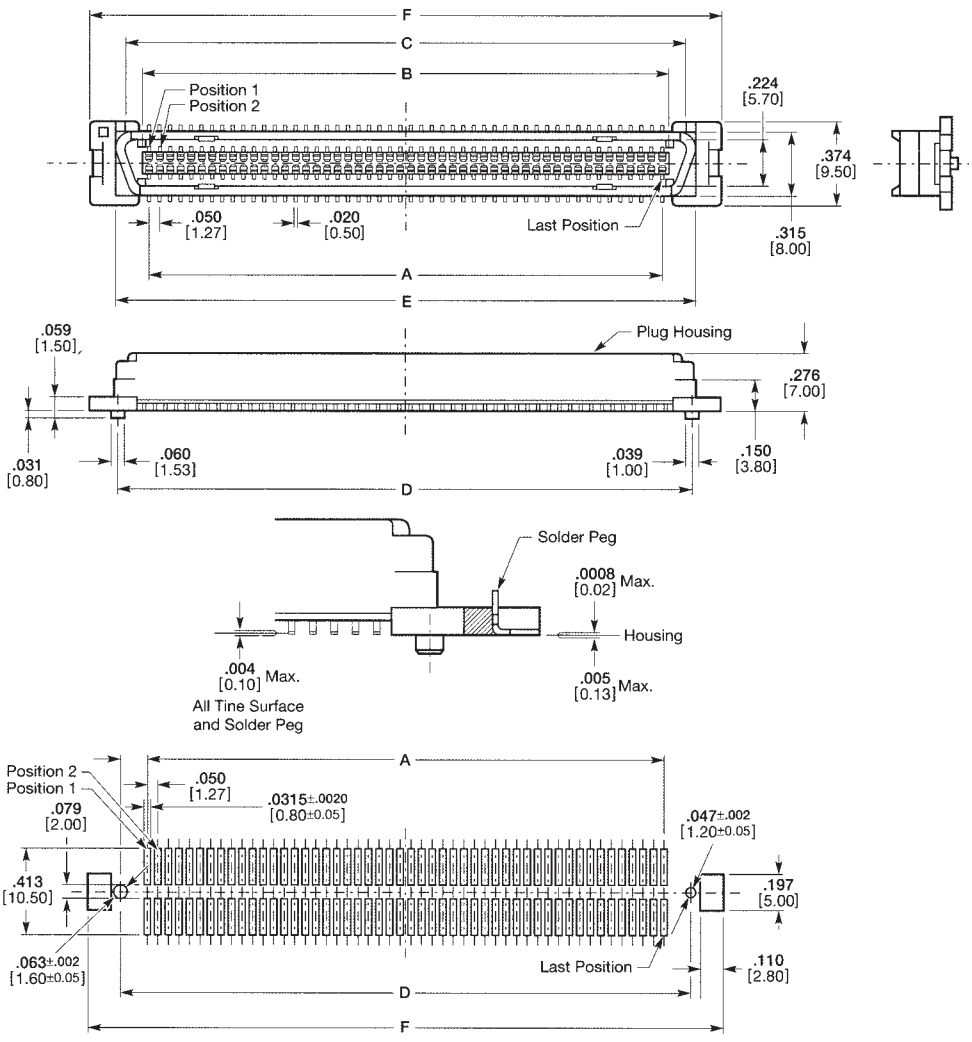
Technical Documents

Product Specification

108-5309

Instruction Sheet

411-5519



Recommended PC Board Layout
Component Side

Pos.	Dimensions						Part Number
	A	B	C	D	E	F	
60	**1.450** 36.83	**1.521** 38.63	**1.656** 42.07	**1.717** 43.60	**1.756** 44.60	**1.992** 50.60	179656-2

Note: A 60-position version is available with mounting flanges in an extended height configuration to generate stack heights from 13mm to 23mm. Part Number 1-917815-2

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CHAMP .050 Series I Free Height (FH) Connectors, Board-to-Board Applications (Continued)

Right Angle Plugs

Materials and Finish

Housing — Glass filled nylon 6/6, rated 94V-0, black

Contacts — Phosphor bronze, selectively plated with minimum of .000012 [0.00030] gold in mating area and tin-lead in solder tail area

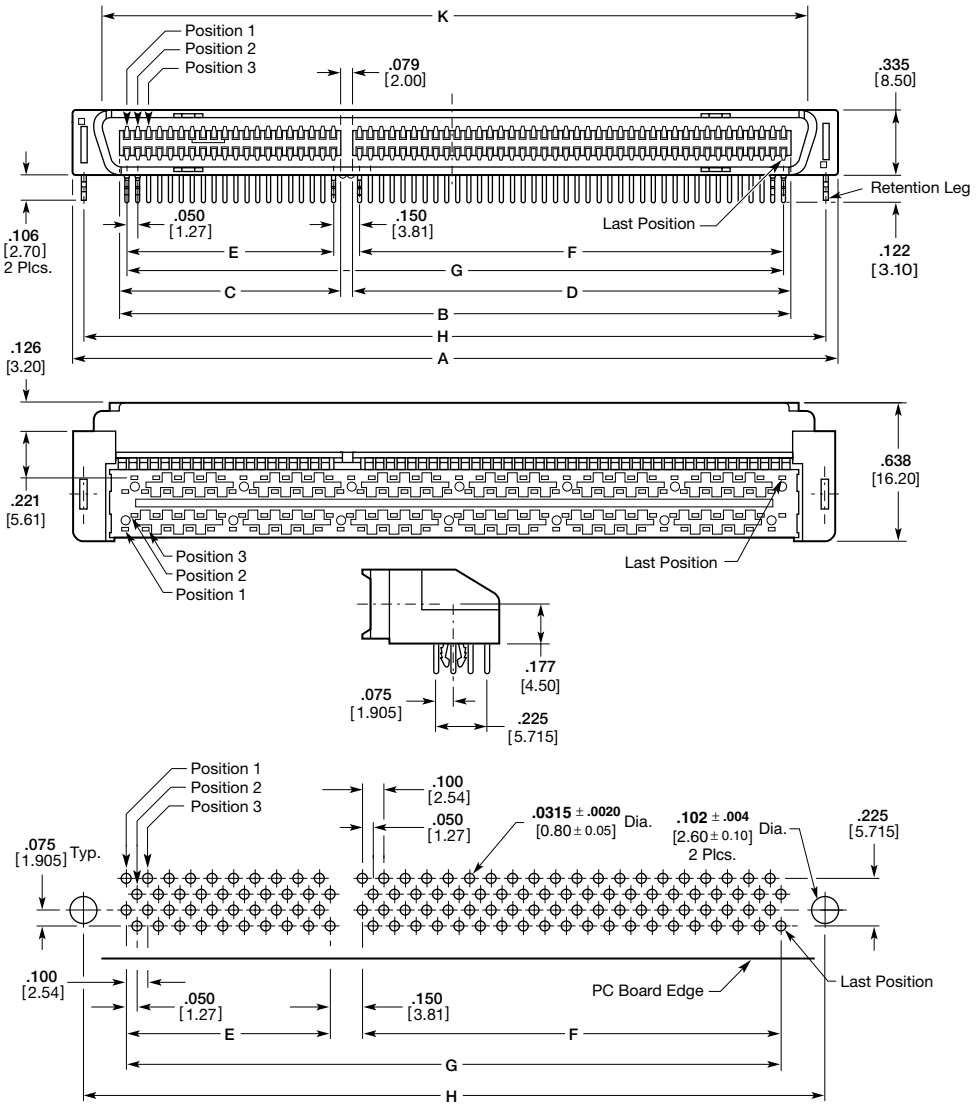
Retention Leg — Brass, tin-lead plated

Performance Specifications — Page 49

PC Board Accommodation — .031 [0.79] to .093 [2.36] nominal thickness

Mating Receptacles — Right Angle — Page 54 Vertical — Pages 50-53

Mating Configurations—Page 58



Recommended PC Board Layout
Component Side

Pos.	Dimensions									Part Number
	A	B	C	D	E	F	G	H	K	
40	**1.447** 36.75	**1.021** 25.93	—	—	—	—	**.950** 24.13	**1.343** 34.10	**1.156** 29.37	176381-1
60	**1.947** 49.45	**1.521** 38.63	—	—	—	—	**1.450** 36.83	**1.843** 46.80	**1.656** 42.07	176381-2
80	**2.447** 62.15	**2.021** 51.33	—	—	—	—	**1.950** 49.53	**2.343** 59.50	**2.156** 54.77	176381-3
100	**2.947** 74.85	**2.521** 64.03	—	—	—	—	**2.450** 62.23	**2.843** 72.20	**2.656** 67.47	176381-4
120	**3.547** 90.09	**3.121** 79.27	**1.021** 25.93	**2.021** 51.33	**.950** 24.13	**1.950** 49.53	**3.050** 77.47	**3.443** 87.44	**3.256** 82.71	176381-5
140	**4.047** 102.79	**3.621** 91.97	**1.521** 38.63	**2.021** 51.33	**1.450** 36.83	**1.950** 49.53	**3.550** 90.17	**3.943** 100.14	**3.756** 95.41	176381-6
160	**4.547** 115.49	**4.121** 104.67	**1.521** 38.63	**2.521** 64.03	**1.450** 36.83	**2.450** 62.23	**4.050** 102.87	**4.443** 112.84	**4.256** 108.11	176381-7
180	**5.047** 128.19	**4.621** 117.37	**2.021** 51.33	**2.521** 64.03	**1.950** 49.53	**2.450** 62.23	**4.550** 115.57	**4.943** 125.54	**4.756** 120.81	176381-8

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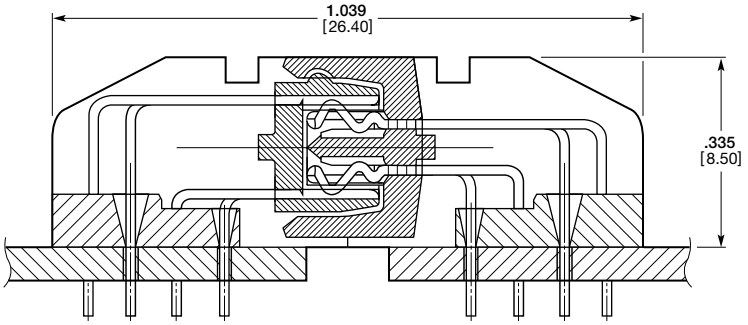
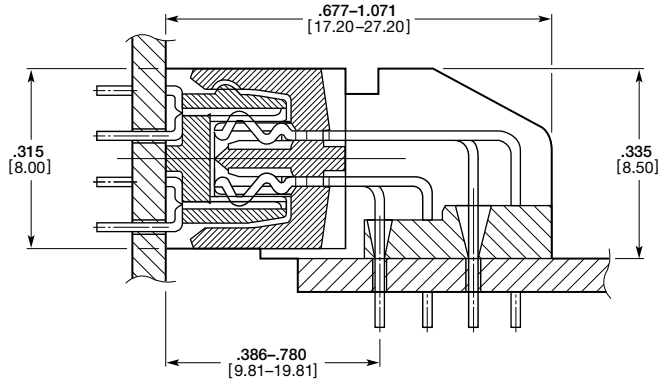
CHAMP .050 Series I Free Height (FH) Connectors, Board-to-Board Applications (Continued)

Mating Configurations

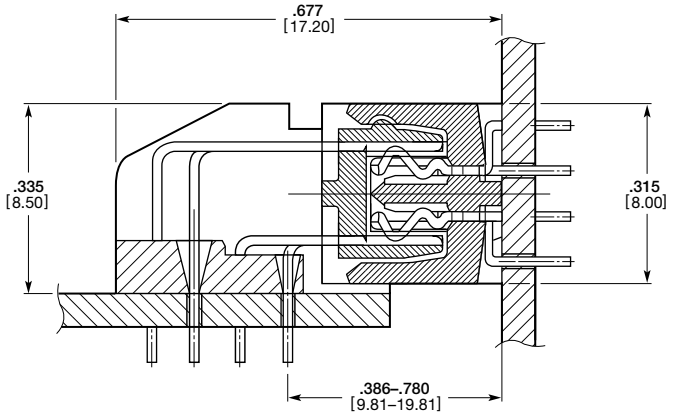
In-Line Mating



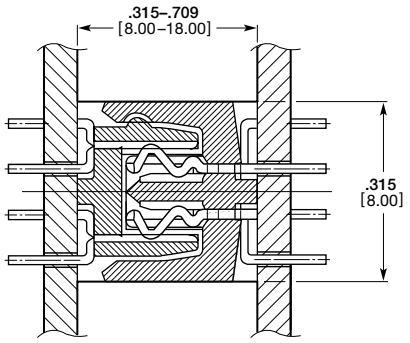
Perpendicular Mating



Perpendicular Mating



Parallel Mating



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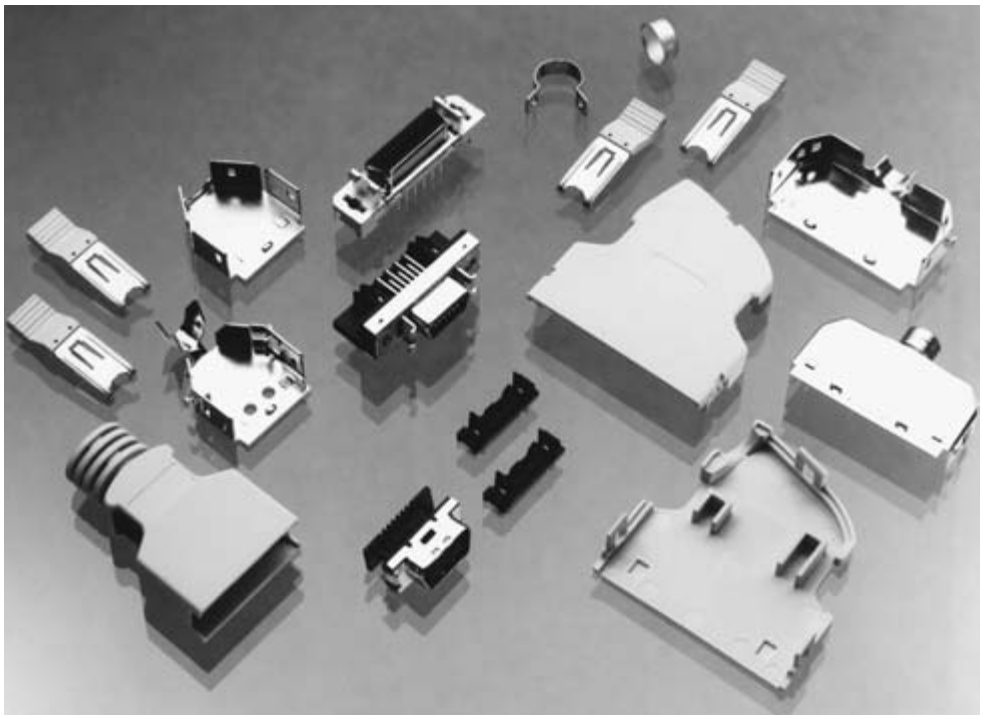
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

CHAMP .050 Series II Connectors, Wire-to-Board Applications

CHAMP .050 Series II Connectors for Shielded I/O Applications

- **Cable plug connectors terminate 28–30 AWG [.08–.09 mm²] wire**
- **180° cable exit**
- **PC board mounting receptacle connectors with rugged zinc die cast body and stamped metal shield**
- **Double-spring contact design to ensure intermateability and conformance to standards**
- **14 through 100 selected positions available**



Performance Specifications

Series II Connector

Operating Temperature Range — –55°C to +85°C for Standard
–55°C to +105°C for High Temp

Current Rating — 1 Ampere Maximum—28 AWG [0.08 mm²]

Voltage Rating — 250 VAC Maximum

Termination Resistance — 35 Milliohms Maximum Initial

Insulation Resistance — 500 Megohms Minimum Initial

Mating Force — 75 Grams Maximum Per Contact

Rated Cycle Life — 500 Cycles

Technical Documents

Product Specification

102-5288

Application Specifications

114-5166 — Integral Cable Clamp

114-5124 — Wire Terminations

Wire-to-Board Connectors

The **Series II** is a shielded I/O connector system for wire-to-board connections offering maximum EMI protection. The series includes right angle and vertical printed circuit board receptacles and cable plug connectors. The right angle board connectors are available with retention board locks and a stamped metal shield. The vertical connectors incorporate a die cast metal shield. Selected sizes are available in high temperature housing material.

The cable plug connectors use insulation displacement contacts for fast, accurate termination of 28 AWG [0.008 mm²] stranded, discrete wire, jacketed cable. The cable plug offers a stamped metal backshell with a 180° exit for ESD (Electrostatic Discharge) protection. A plastic enclosure fits over the backshell to provide an aesthetically pleasing appearance. A "squeeze-to-release latch" captivation mechanism is used on the cable plug.

A wide range of position offerings of 14 to 100 are available.

General Product Facts

- **High density .050 [1.27] contact centerlines**
- **Leaf contacts accommodate minor mating misalignment**
- **D-shaped polarized mating face**
- **Variety of application tooling available to meet a wide range of production volumes**

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

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UK: 44-141-810-8967

CHAMP .050 Series II Connectors, Wire-to-Board Applications (Continued)

Plug Cable Connectors

Materials and Finish

Housing, Covers — Glass-filled PBT, rated 94V-0, black

Contacts — Phosphor bronze, selectively plated with minimum of .000030 [0.00076] gold in mating area and tin-lead in termination area

Performance Specifications — Page 59

Wire Accommodation — 28 AWG [0.08mm²] 7 Strand with .020–.028 [0.51–0.71]* insulation diameter. Most UL Type 2789 wires meet these dimensional requirements

*Depending on type of insulation and applicator tooling.

Mating Receptacle Connectors — Right Angle — Page 62
Vertical — Page 63

Technical Documents

Product Specification

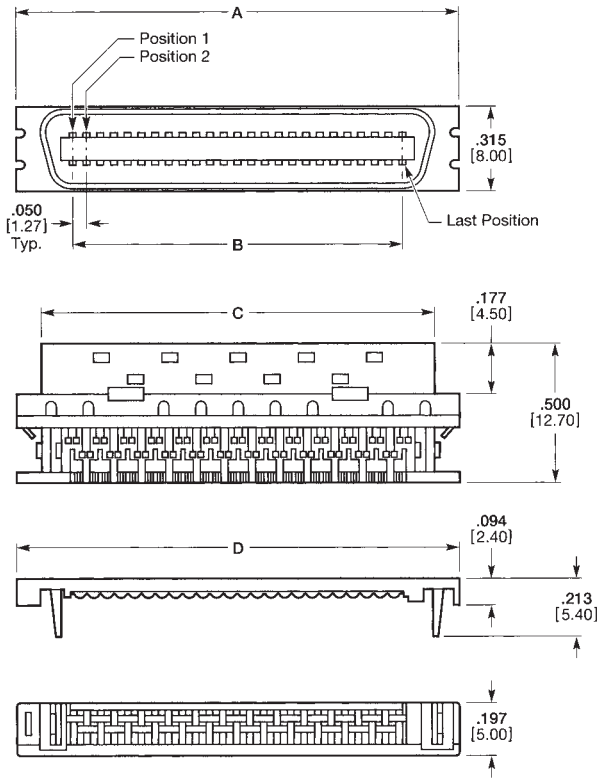
108-5288

Application Specification

114-5166 — integral clamp
114-5124 — wire terminations

Recommended Cable

Montrose/CDT — Part Number CBL-7334
Phone: 1-800-346-6626



Pos.	Dimensions				Part Number 28 AWG [0.08mm²]
	A	B	C	D	
14	**.724** 18.40	**.300** 7.62	**.539** 13.70	**.720** 18.30	2-175677-1
20	**.874** 22.20	**.450** 11.43	**.693** 17.60	**.870** 22.10	2-175677-2
26	**1.024** 26.00	**.600** 15.24	**.843** 21.40	**1.020** 25.90	2-175677-4
36	**1.276** 32.40	**.850** 21.59	**1.091** 27.70	**1.272** 32.30	2-175677-5
50	**1.626** 41.30	**1.200** 30.48	**1.441** 36.60	**1.622** 41.20	2-175677-7
68	**2.075** 52.70	**1.650** 41.91	**1.890** 48.00	**2.071** 52.60	2-175677-8
80	**2.374** 60.30	**2.450** 62.23	**2.693** 68.40	**2.870** 72.90	3-175677-0
100	**2.874** 73.00	**1.950** 49.53	**2.193** 55.70	**2.370** 60.20	2-175677-9

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CHAMP .050 Series II Connectors, Wire-to-Board Applications (Continued)

Enclosure Kits

Materials and Finish

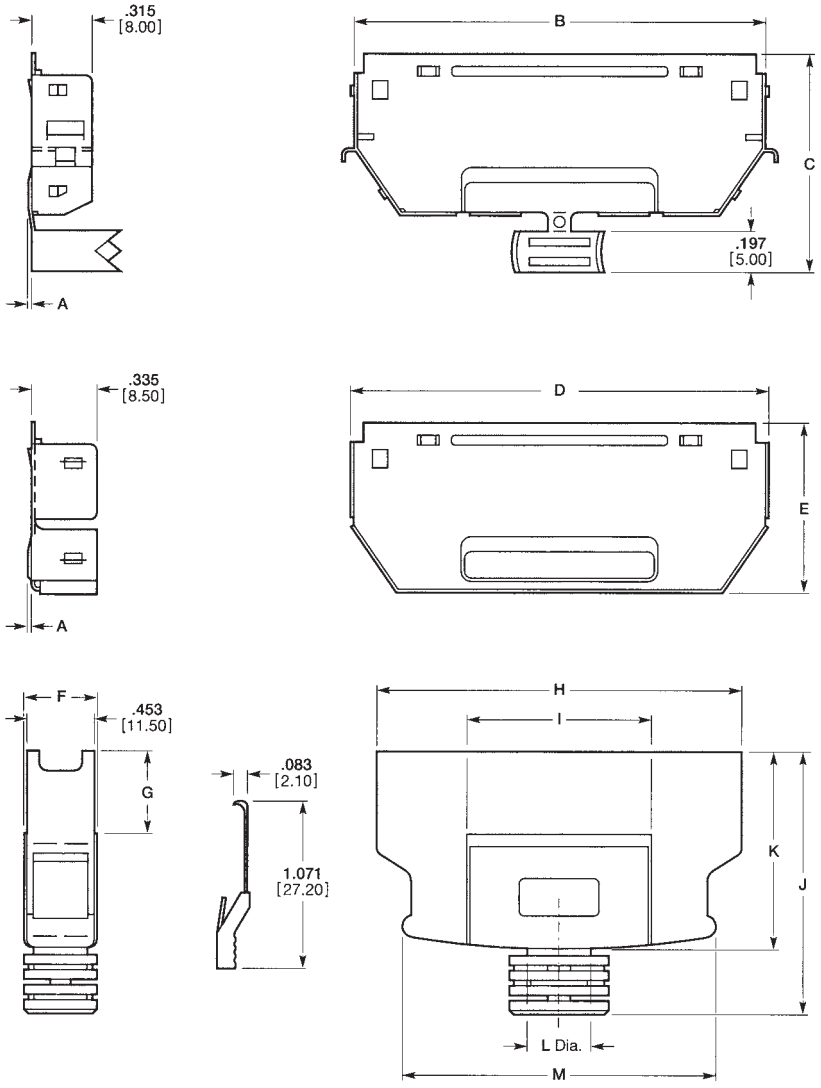
Enclosure — PBT, rated 94V-0, beige white (other colors available, contact Tyco Electronics)

Shields — Steel, plated nickel over copper underplating

Locking Spring — Stainless steel, overmolded with PBT, rated UL 94V-0, beige white

Performance Specifications — Page 59

Cable Connectors — Plug — Page 60



Pos.	Cable Dia.	Dimensions													Part Number
		A	B	C	D	E	F	G	H	I	J	K	L	M	
14	**.169–.240** 4.29–6.10	—	**.783** 19.89	**1.102** 28.00	**0.834** 21.18	**.866** 22.00	**.453** 11.51	—	**1.017** 25.83	**.512** 13.00	**1.654** 42.00	**1.260** 32.00	**.248** 6.30	**0.675** 17.14	176793-1
20	**.212–.256** 5.38–6.50	—	**.933** 23.70	**1.102** 28.00	**0.984** 24.99	**.866** 22.00	**.453** 11.51	—	**1.167** 29.64	**.512** 13.00	**1.654** 42.00	**1.260** 32.00	**.264** 6.70	**0.825** 20.95	176793-2
26	**.232–.272** 5.89–6.91	—	**1.083** 27.51	**1.102** 28.00	**1.134** 28.80	**.866** 22.00	**.453** 11.51	—	**1.317** 33.46	**.512** 13.00	**1.654** 42.00	**1.260** 32.00	**.280** 7.10	**0.975** 24.76	176793-4
36	**.252–.311** 6.40–7.90	—	**1.333** 33.86	**1.102** 28.00	**1.384** 35.15	**.866** 22.00	**.453** 11.51	—	**1.567** 39.80	**.512** 13.00	**1.654** 42.00	**1.260** 32.00	**.319** 8.10	**1.225** 31.11	176793-5
50	**2.83–.335** 7.18–8.51	—	**1.683** 42.75	**1.102** 28.00	**1.734** 44.04	**.866** 22.00	**.453** 11.51	—	**1.917** 48.69	**.512** 13.00	**1.654** 42.00	**1.260** 32.00	**.343** 8.70	**1.575** 40.00	176793-7
68	**.319–.378** 8.10–9.60	**.024** 0.60	**2.133** 54.18	**1.102** 28.00	**2.184** 55.47	**.866** 22.00	**.472** 12.00	**.563** 14.30	**2.367** 60.12	**1.181** 30.00	**1.654** 42.00	**1.260** 32.00	**.386** 9.80	**2.025** 51.43	176793-8
80	**.335–.401** 8.51–10.19	**.024** 0.60	**2.433** 61.80	**1.220** 31.00	**2.484** 63.09	**.984** 25.00	**.465** 11.80	**.614** 15.60	**2.667** 67.74	**1.338** 34.00	**1.772** 45.00	**1.378** 35.00	**.406** 10.30	**2.325** 59.05	1-176793-0
100	**.390–.433** 9.91–11.00	**.051** 1.30	**2.933** 74.50	**1.299** 33.00	**2.984** 75.79	**1.063** 27.00	**.531** 13.50	**.492** 12.50	**3.167** 80.44	**1.496** 38.00	**1.850** 47.00	**1.457** 37.01	**.441** 11.20	**2.825** 71.75	176793-9

Catalog 1-1773441-4
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UK: 44-141-810-8967

CHAMP .050 Series II Connectors, Wire-to-Board Applications (Continued)

Right Angle Receptacles with Boardlocks

Materials and Finish

Housing — Glass-filled nylon, rated 94V-0, black

Contacts — Phosphor bronze, selectively plated with minimum of .000030 [0.00076] gold in mating area and tin-lead in solder tail area

Retention Leg (Boardlock) — Phosphor bronze, tin-lead over nickel underplate

Shield — Steel, nickel plated over copper underplate

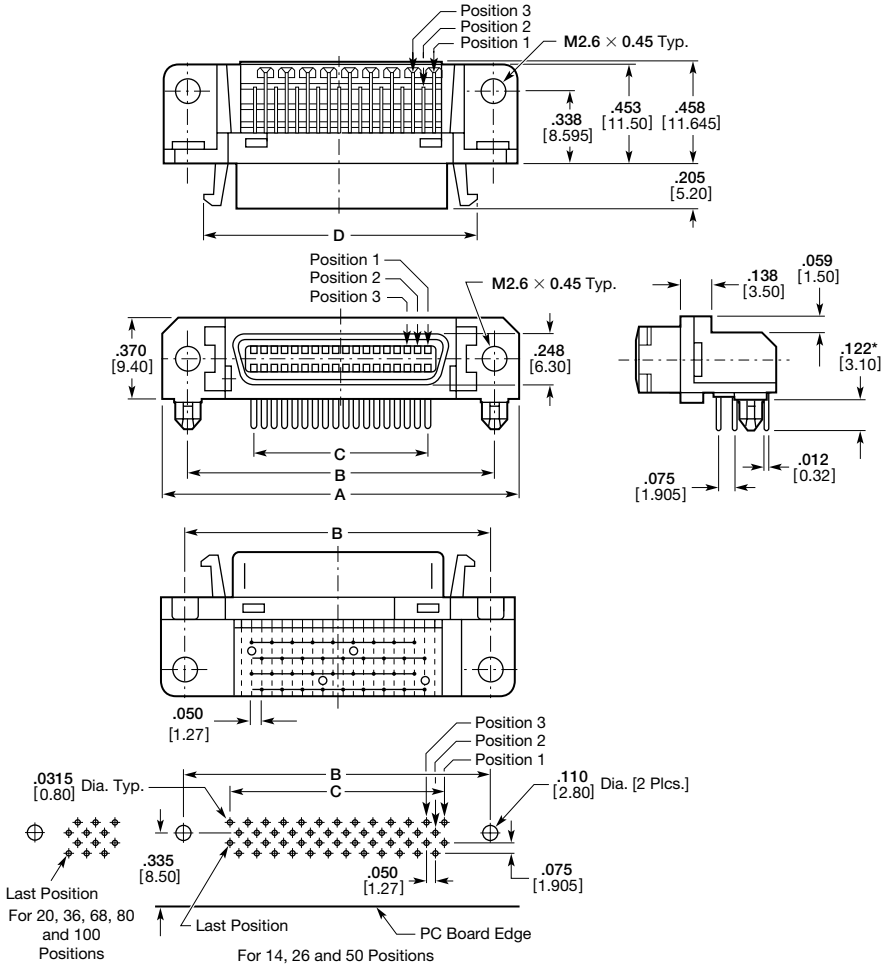
Frame — Die cast zinc, nickel plated

Performance Specifications — Page 59

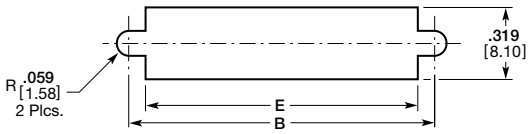
PC Board Accommodation — .062 [1.60]–.093 [2.36] nominal thickness

Panel Accommodation — .079 [2.00] maximum thickness

Mating Plug Connectors — Cable — Page 60



Recommended PC Board Layout Component Side



Recommended Panel Cutout

Pos.	Dimensions					Part Number
	A	B	C	D	E	
14	**.300** 7.62	**.931** 23.64	**.497** 12.62	**.773** 19.64	**1.163** 29.54	917738-1
20	**.450** 11.43	**1.081** 27.45	**.647** 16.43	**.923** 23.45	**1.313** 33.35	917738-2
26	**.600** 15.24	**1.231** 31.26	**.797** 20.24	**1.073** 27.26	**1.463** 37.16	917738-4
36	**.850** 21.59	**1.481** 37.61	**1.047** 26.59	**1.323** 33.61	**1.713** 43.51	917738-5 1-917738-5
50	**1.200** 30.48	**1.831** 46.50	**1.397** 35.48	**1.673** 42.50	**2.063** 52.40	917738-7 1-917738-7
68	**2.513** 63.83	**2.281** 57.93	**1.650** 41.91	**2.123** 53.93	**2.134** 54.20	2-178238-8
80	**2.813** 71.45	**2.581** 65.55	**1.950** 49.53	**2.423** 61.55	**2.437** 61.90	3-178238-0
100	**3.313** 84.15	**3.081** 78.25	**2.450** 62.23	**2.923** 74.25	**2.937** 74.60	2-178238-9

*Alternate tail lengths: .153 [3.90] and .087 [2.20] available. Contact Tyco Electronics at the numbers listed below.

Catalog 1-1773441-4
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Japan: 81-44-844-8013
UK: 44-141-810-8967

CHAMP .050 Series II Connectors, Wire-to-Board Applications (Continued)

Vertical Receptacles

Materials and Finish

Housing — Glass-filled nylon, rated 94V-0, black

Contacts — Phosphor bronze, selectively plated with minimum of .000030 [0.00076] gold in mating area and tin-lead in solder tail area

Shield — Steel, plated nickel over copper underplate

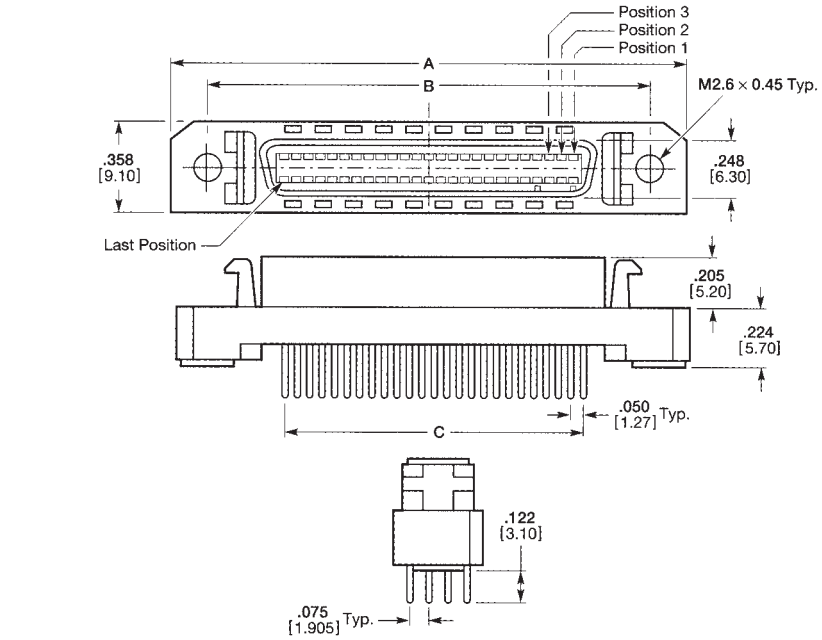
Frame — Die cast zinc, plated nickel over copper underplate

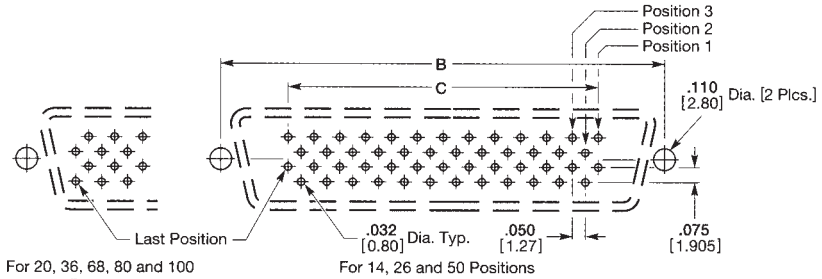
Performance Specifications — Page 59

PC Board Accommodation — .062 [1.60]–.093 [2.40] nominal thickness

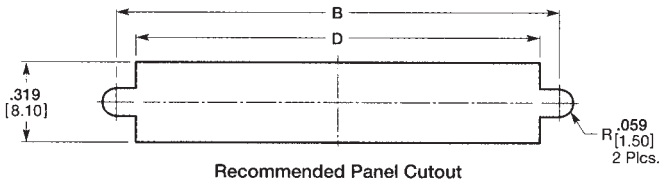
Panel Accommodation — .079 [2.0] maximum thickness

Mating Plug Connectors — Cable — Page 60





Recommended PC Board Layout
Component Side



Recommended Panel Cutout

Pos.	Dimensions				Part Number
	A	B	C	D	
14	**1.163** 29.54	**0.931** 23.64	**0.300** 7.62	**.783** 19.90	2-175887-1
20	**1.313** 33.35	**1.081** 27.45	**0.450** 11.43	**.973** 23.80	2-175887-2
26	**1.463** 37.16	**1.231** 31.26	**0.600** 15.24	**1.087** 27.60	2-175887-4
36	**1.713** 43.51	**1.481** 37.61	**0.850** 21.59	**1.335** 33.90	2-175887-5
50	**2.063** 52.40	**1.831** 46.50	**1.200** 30.48	**1.685** 42.80	2-175887-7
68	**2.513** 63.83	**2.281** 57.93	**1.650** 41.91	**2.134** 54.20	2-175887-8
80	**2.813** 71.45	**2.581** 65.55	**1.950** 49.53	**2.437** 61.90	3-175887-0
100	**3.313** 84.15	**3.081** 78.25	**2.450** 62.23	**2.937** 74.60	2-175887-9

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CHAMP .050 Series II Connectors, Wire-to-Board Applications (Continued)

Discrete Wire Application Tooling

For Terminating Cable to Series II Plug Connectors (Base Part Number 175677) (for low to medium volume production)

CHAMPOMATOR 2.5 Terminating Machine Part Number 354786-6 (less accessories) Controller Part Number 852423-1 (USA/120 VAC)

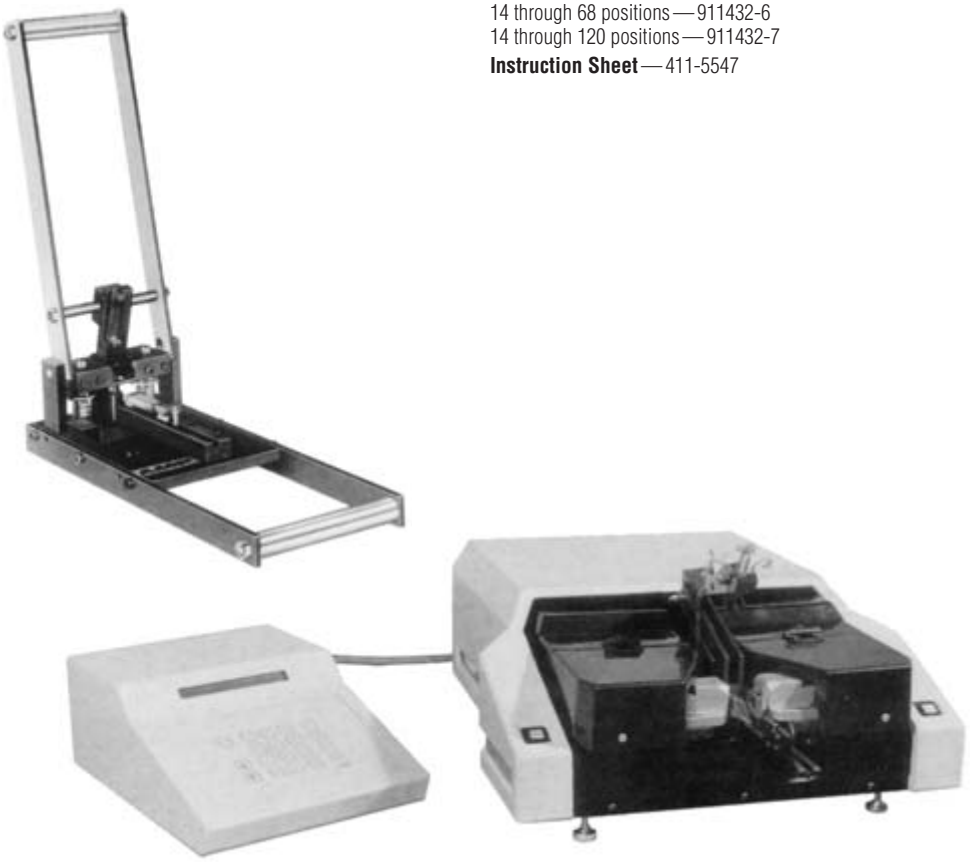
Accessories available separately; contact your Tyco Electronics Representative at the numbers listed below.

Series II Tooling Package Part Number 768900-5

Instruction Sheet — 408-4054
Connector Size — 14 through 100

Hand Applicator, Series II Part Number 911123-1

Connector Sizes — 14 through 50 positions
Instruction Sheet — 411-5389



Arbor Tool & Tooling Package

Connector Sizes —
14 through 68 positions — 911149-6
14 through 120 positions — 911149-7

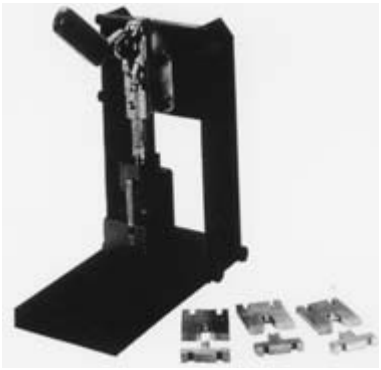
Extra Lacing Stations available. Order Wire Comb Kit
14 through 68 positions — 911432-6
14 through 120 positions — 911432-7

Instruction Sheet — 411-5547

For Crimping Integral Ferrules of Enclosure Kits (Base Part Number 176793)

Toggle Bench Tool Part Number 919620-1

Instruction Sheet — 411-5628



Manual Arbor Tool Part Number 915697-2

Instruction Sheet — 411-5558

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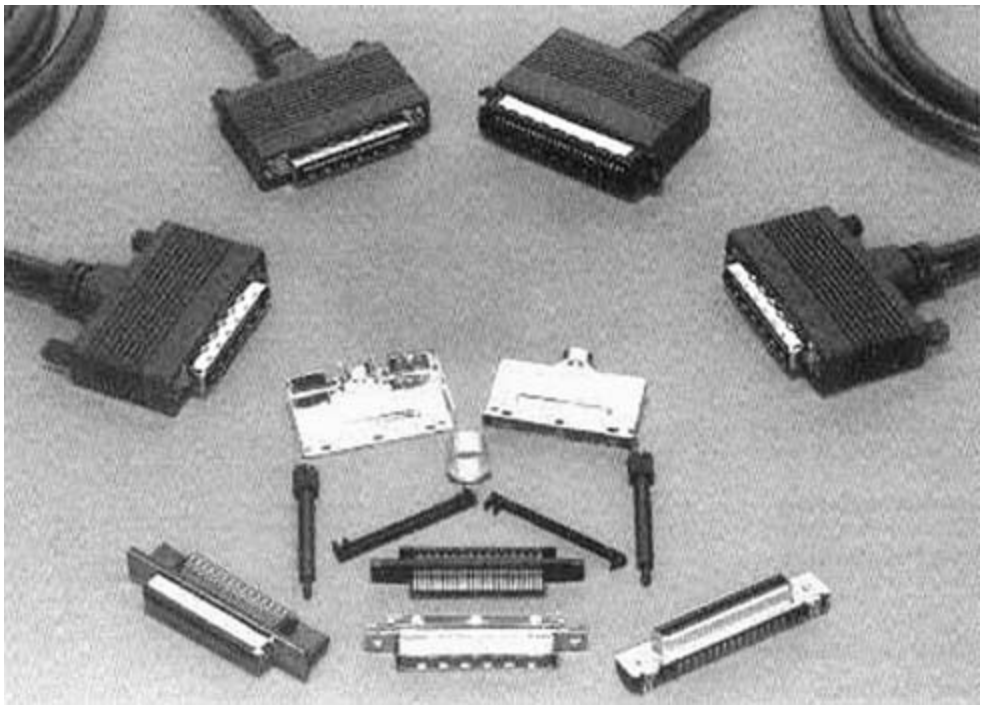
CHAMP .050 Series III Connectors

Series III Connectors for Shielded I/O Applications

Product Facts

- **Proprietary single-spring leaf contact design**
- **Screw lock captivation**
- **132 ohm differential impedance cable for demanding transmission requirements**
- **Right angle and vertical receptacle headers**
- **Post molded cable assemblies with 180° exit**
- **Available in 60-position only**



Performance Specifications

Operating Temperature Range — -55°C to +105°C

Current Rating — 1 amp max.

Voltage Rating — 250 VAC max.

Termination Resistance — 65 milliohms max. initial

Insulation Resistance — 100 megohms, min.

Mating Force — 200 grams max. per contact pair

Rated Cycle Life — 500 Cycles

Panel Attachment	Mount Angle	Status	Part Number
No	Vertical	Active	557038-2[1]
Yes	Right Angle	Active	557104-5[1]

[1] Contact Tyco Electronics for RoHS Part Number information.

Common Features

Brand — Tyco Electronics

RoHS/ELV Compliance — Not reviewed for ELV/RoHS compliance

Lead Free Solder Processes — Not reviewed for lead free solder process

Mating Type — Receptacle

Number of Positions — 60

Terminate To — Printed circuit board

Special PCB Retention — Yes

Mating Connector Lock — Without

Housing Material Temperature — High

Contact Mating Area Plating — Gold (50)

Product Series — Series III

Common Properties

Centerline — .050 [1.27]

PCB Thickness — .063 [1.60]

Termination Post Length — .118 [3.00]

Housing Material — Liquid Crystal Polymer (LCP)

Housing Flammability Rating — UL 94V-0

Color — Black

Contact Material — Phosphor bronze

Solder Tail Plating — Tin-lead

Shield Material — Carbon steel

Shield Plating — Tin-cobalt

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Engineering Notes

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CHAMP .085 Centerline Miniature Ribbon Connector Systems (Ribbon Cable, Standard CHAMP Connectors, Centronics, IEEE 488)

The CHAMP Connector is fully intermateable and interchangeable with existing connectors of a similar design. Applications for this type of connector are widely diversified and include all phases of the Telecommunications industry, including original telephone manufacturing, Operating Telephone Companies, Cable Reclamation, Cable Manufacturing and Bay Connectorization. In addition, the CHAMP Connector line is ideally suited for use in computer terminals, test equipment, business and copying machines, telemetering and various equipment used in the security industry.

The CHAMP Connector product line includes not only the network of Standard CHAMP Connectors, but also a growing network of Shielded CHAMP connectors and other capabilities to meet various Federal Communications Commission (FCC) requirements for the control of electromagnetic interface (EMI).

This catalog is organized to provide you with the basic information necessary to select the CHAMP connector system best suited for your specific application. It contains general information to acquaint you with the complete family of connectors, accessories and application tooling.

Illustrations and descriptions are provided in this catalog to assist in the selection of a connector and appropriate hardware and accessories recommended for the most common applications.

Included is information on insulation displacement concept (IDC) connectors and printed circuit board connectors which are designed for specific field and industrial applications. Tyco Electronics offers connectors for Small Computer Systems Interface (SCSI) application. Our 50-position Shielded CHAMP Connectors with bail lock hardware serves this important standard.

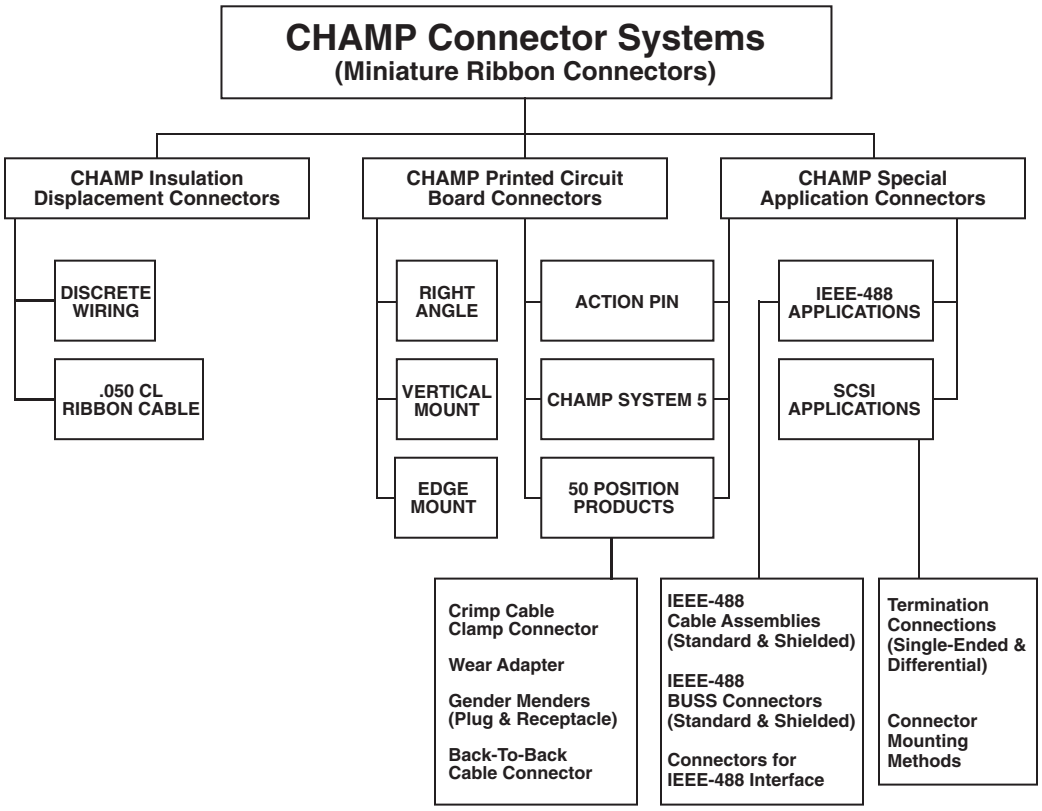
Part numbers are contained for all individual plugs and receptacles with their vital dimensions. Part numbers for the various types of mounting hardware are also contained. Panel cutout dimensions are provided for all connector configurations for panel mount applications.

All accessory items are illustrated and dimensioned. These include standard snap-on strain relief covers, standard slide-on covers, tapered slide-on covers, snap-on strain reliefs and dust covers.

Since your specific application will determine the degree of semi-automatic or manual applicator tooling required, complete specifications on applicator tooling are included in the applicator tooling section.

If you have an unusual request or application, Tyco Electronics welcomes the opportunity to help you solve it. Ask your Tyco Electronics Sales Engineer, or contact Tyco Electronics at the numbers listed below.

Bellcore/Telecordia GR-1217-CORE Generic requirements for separable electrical connectors used in telecommunications hardware.



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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Locking Hardware for CHAMP Connector Systems

CHAMP Cable Connectors have been classified by Underwriters Laboratories for use in "Environmental Air Spaces as described in Articles 300-22C and 800-3D of the National Electrical Code".

CHAMP Cable Connectors have been Listed by Underwriters Laboratories for use as Communication Circuit Accessories File No. E81956

Listed

Recognized under the Component Recognition Program of Underwriters Laboratories Inc., File No. E-28476

Certified by Canadian Standard Association File No. LR 16455

Conforms to FCC Rules, Part 68, Subpart F.

Need more information?

Call Technical Support at the numbers listed below.

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

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

Use of CHAMP connector systems involves other important decisions; choice of locking hardware, and choice of strain relief system/covers. Since the finished connection includes two connector halves (plug/male and receptacle/female), careful planning is essential to mechanically protect contact terminations and to maintain electrical integrity of mated connectors.

Locking Hardware Options

Locking hardware is used to secure mating CHAMP connectors and to prevent unintentional separation. The following choices grew from widely-varied application needs—for reasons of economics, convenience, sophistication, or standardization, for example. Refer to Instruction Sheet IS 3160.

Locking Latch (CHAMP-LOK Connector Design)

Standard CHAMP connectors (except those for IEEE and shielded applications) are provided with guide tracks and slots (on plugs) and lead-in ramps (on receptacles) to allow use of a simple metal locking clip for securing mated connectors. The U-shaped locking latch is designed in three sizes—with the same basic part number, but with different dash numbers: No. 552723-1 is used for 36- and 50-position connectors, 552723-2 for 14- and 24-position connectors, and 552723-3 for 64-position connectors.

No tools are required for this locking system. Simply slide the latch onto guide tracks until tabs snap into slots. As connector halves are mated, tabs engage with lead-in ramps and spring over locking shoulder into receptacle slots. Locking is assured by an audible click. To release, push the latch forward to free tabs from slots. Note that locking latches cannot be used in rear-panel-mount applications because of panel interference, nor can they be used with CHAMP shielded and competitive connectors. However, when CHAMP-LOK latches are used in conjunction with snap-in strain relief covers (panel-mount applications only), no other hardware is necessary.

Screw Lock Hardware

Screw lock hardware is generally used in sensitive or sophisticated applications *where positive locking is required*—to secure connectors to PC boards, to panels, and/or to each other. In cable-to-cable applications, two captive screws threaded into pretapped holes are generally the only screw lock requirements. In mounted applications, receptacle assemblies are usually fastened to boards or panels—with standoff screws, nuts, and bolts. The head of this special standoff screw has a threaded hole that accepts a captive screw, used to secure the mating connector. Screw lock hardware kits vary with connector types and applications—panel or board thickness, front- or rear-panel mount, for example.

Bail Lock Hardware (Standard or Bent)

Bail Lock hardware provides both locking and quick-release capabilities at both ends of mated connectors. *Flanges on CHAMP plug connectors must be open ended for all bail lock applications.* The open-end flanges accept bail clips (straight or bent 90°) mounted to a mating receptacle connector. Standard bail clips are used where access to lock and release is not a problem. Bent bail locks are used primarily with right angle (90°) cable terminations where space is limited. Typical hardware kits include bail clips, flat and lock washers, mounting screws and nuts.

CHAMP Connectors with Integral Latches

These special CHAMP connectors are designed with an integral latching system that eliminates the need for additional locking hardware. Receptacle assemblies are preassembled with two plated steel spring catches (one at each end) that latch into cutout slots in mating plug connectors. To release a mated pair, simply depress catches into recessed areas and disengage. Note, however, that integral latches are not repairable or replaceable. Integral-latch connectors are presently available in 24-, 36-, 50- and 64-position sizes.

J-Hook Hardware

The J-hook is a precision-formed metal bracket used as an alternate quick-fastening method for assembly hardware. Two tabs fit into recesses in the connector housing flange for screw-fastening. The inverted end of the J-hook snaps on the end of a mating connector, and holds it in place. This hardware is also used in confined areas instead of bent bail lock—with 90° two-piece, low- or standard-profile strain relief covers.

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

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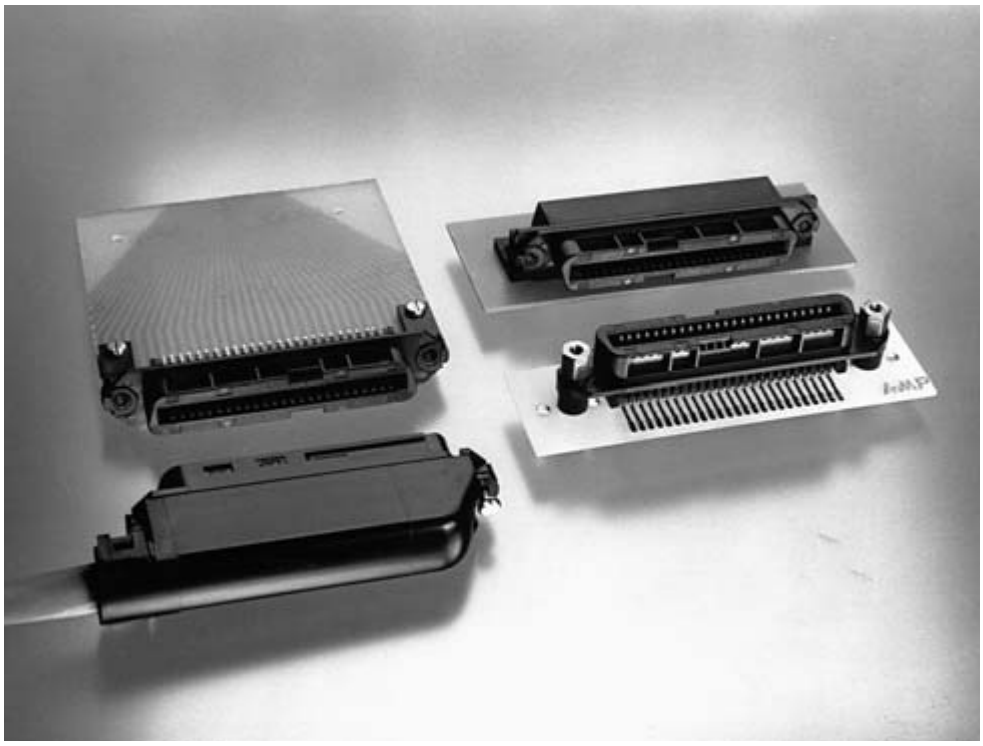
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

CHAMP Printed Circuit Board (PCB) Connectors

Product Facts

- **Capable of being used with single- or double-sided printed circuit boards**
- **Eliminates the need to hand solder, except for Edge Mount Connectors**
- **Connectors fully intermateable with others of similar design**
- **UL 94V-O self-extinguishing thermoplastic housings and accessories**
- **Connectors available in 14, 24, 36, 50 and 64 positions with a choice of mounting methods: screw, bail mount, or locking latch types**
- **Capable of accommodating printed circuit board thicknesses of .062 [1.57], .093 [2.36] or .125 [3.18]**
- **Diversified applications throughout the following markets — medical equipment, data control systems, telephone interconnect systems and electronic instrumentation (commercial and industrial)**
- **Operating temperature range of -40°C to +105°C**



CHAMP Printed Circuit Board Connectors are fully intermateable with existing connectors of a similar design. They are capable of accommodating printed circuit board thicknesses from .062-.125 [1.57-3.18].

Applications for this type of connector are widely diversified and are used in the following markets:

- Medical Equipment
- Data Control Systems
- Telephone Interconnect Systems
- Electronic Instrumentation (Commercial and Industrial)

The connector is designed for high density wave solderable applications, eliminating the need for hand soldering, except for Edge Mount Connectors and can be applied to either single- or double-sided boards. The surface mounting area is minimal and allows full usage of available printed circuit land area.

These connectors are available in 14, 24, 36, 50 and 64 positions with a choice of mounting methods for your specific needs, i.e. screw, bail mount or locking latch types. Board mounting for Right Angle Connectors is accomplished by nut and bolt, pop riveting or an optional self-tapping screw arrangement. Edge and Vertical Mount Connectors are board mounted by a wide choice of hardware applicable to your specific applications.

The connector requires minimum hardware and installation time and is compatible with conventional printed circuit mass production soldering processes, thereby providing cost savings.

For additional information concerning the CHAMP Printed Circuit Board Connectors, contact your Tyco Electronics Sales Engineer or contact Tyco Electronics at the numbers listed below.

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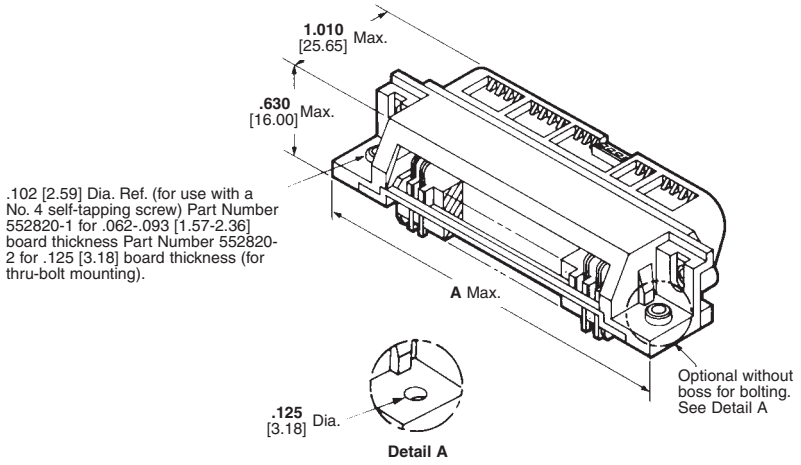
UK: 44-141-810-8967

CHAMP PCB Connectors, Right Angle Connector Specifications

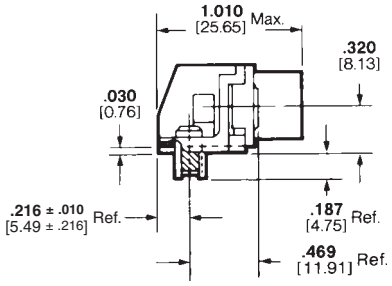
Material and Finish

Housing, Bracket, Plate and Comb — Black thermoplastic, 94V-0 rated

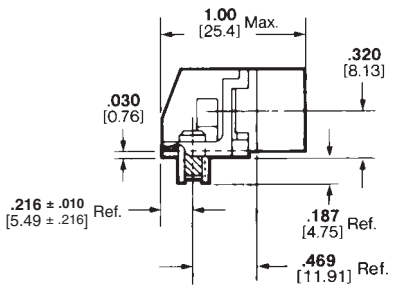
Terminal — Selectively plated gold over nickel plated high strength copper alloy, tin plated tails



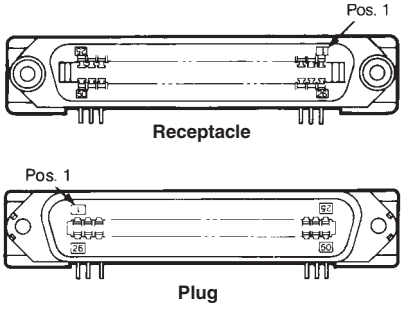
Receptacle–Side View



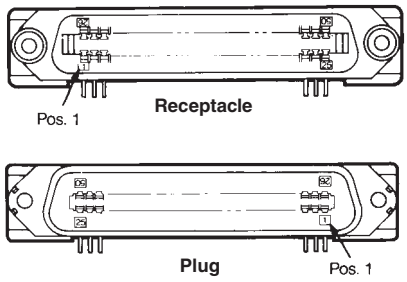
Plug–Side View



Standard Orientation



Reverse Orientation



Self-Tapping

No. of Pos.	Dim. A	Part Numbers			
		Standard Orientation		Reverse Orientation	
		Receptacle	Plug	Receptacle	Plug
14	**1.750** 44.45	552738-1	—	552738-2	—
24	**2.175** 55.25	552740-1 552791-1[1]	552741-1	—	—
36	**2.685** 68.20	552742-1	552743-1	—	—
50	**3.280** 83.31	552725-1[2]	552726-1	552725-3	552726-3
64	**3.875** 98.43	552744-1	552745-1	552744-2	—

[1] For IEEE-488 applications.
[2] For Part Number 552725-1, net wt = 24.384 g.

Thru-Bolt Mounting (See Detail A)

No. of Pos.	Dim. A	Part Numbers	
		Standard Orientation Receptacle	Reverse Orientation Receptacle
24	**2.175** 55.25	—	552791-4[1]
36	**2.685** 68.20	552742-3	—
50	**3.280** 83.31	552725-2	—
64	**2.175** 55.25	—	552741-1

[1] For IEEE-488 applications.

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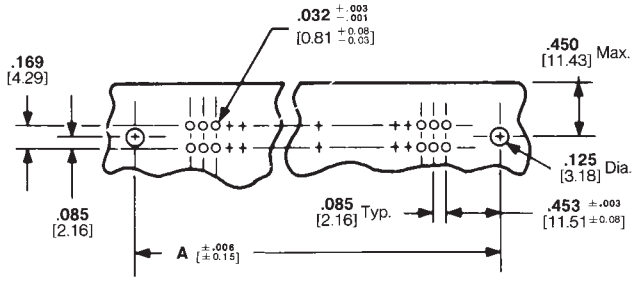
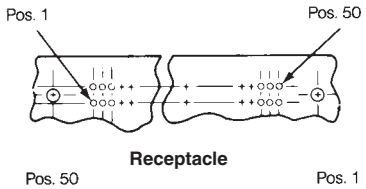
CHAMP PCB Connectors, Right Angle Connector Specifications (Continued)

Recommended PC Board Mounting Dimensions

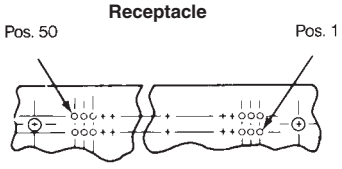


No. of Positions	Dimension A
14	**1.416** 35.97
24	**1.842** 46.79
36	**2.352** 59.74
50	**2.946** 74.83
64	**3.542** 89.97

Standard Orientation

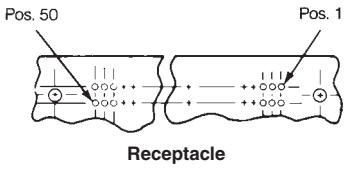


Receptacle

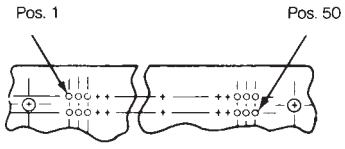


Plug

Reverse Orientation

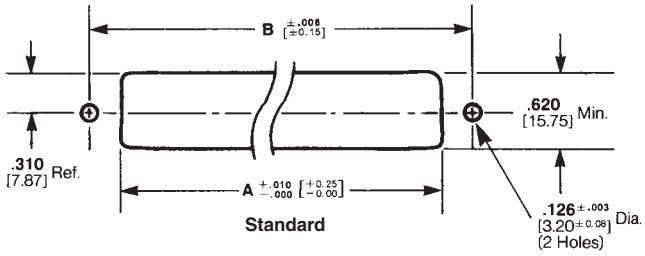


Receptacle



Plug

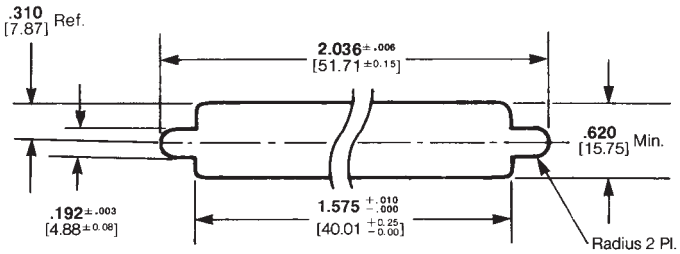
Panel Mount Cutout Dimensions (Rear Panel Mount Only)



Standard

No. of Positions	Dimensions	
	A	B
14	**1.152** 29.26	**1.416** 35.97
24	**1.575** 40.01	**1.842** 46.79
36	**2.085** 52.96	**2.352** 59.74
50	**2.700** 68.58	**2.946** 74.83
64	**3.275** 83.19	**3.542** 89.97

Panel thickness range: .062 [1.57] for rear panel mount applications. For 24-position IEEE-488 metric version. .062-.093 [1.57-2.36] may be used.



IEEE-488 Metric

Catalog 1-1773441-4
Issued 10-05

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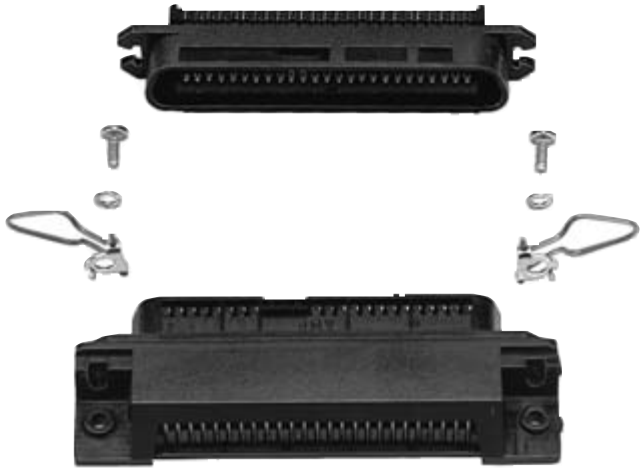
CHAMP PCB Connectors, Right Angle Connector Hardware Kits

Only fastening hardware supplied, other items shown for reference purposes

Screw Lock Hardware Kit
Part Number 552631-1
Rear Panel Mount Only
(One kit required per assembly)
For PC board-to-panel applications
(Panel thickness .062 [1.57] max.)



Bail Lock Hardware Kit
Part Number 552561-3
(For use with 180° Strain Relief Cover)
(One kit required per assembly)
For PC board-to-cable applications

Bent Bail Lock Hardware Kit
Part Number 552561-4
(For use with 90° Strain Relief Cover)
(One kit required per assembly)
For PC board-to-cable applications

CHAMP-LOK Connector Kit
Part Numbers 552723-1 (36- and 50-Position),
552723-2 (14- and 24-Position)
and 552723-3 (64-Position Only)
(One latch required per assembly)
For PC board-to-cable applications

Screw Lock Hardware Kit
Part Number 229911-1
(two required per assembly)
For PC board-to-cable applications

Notes: 1. Recommended right angle connector PC board mounting hardware to be a No. 4 self-tapping screw, Part Number 552820-1 for .062-.093 [1.57-2.36] and Part Number 552820-2 for .125 [3.18] board thickness.
2. Metric hardware is also available for use with the 24-Position Right Angle Receptacle per IEEE-488 Part Number 552791-1.
• For Standard Mount—Part Number 552633-3
• For Rear Panel Mount—Part Number 552633-4

Catalog 1-1773441-4
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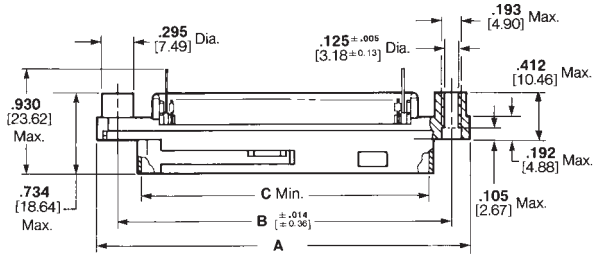
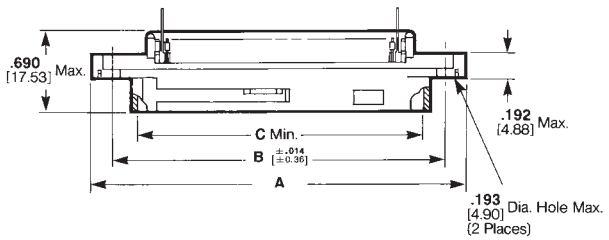
CHAMP PCB Connectors, Vertical and Edge Mount Connector Specifications

Plug

Vertical Mount Style PV—Plug, Screw Lock

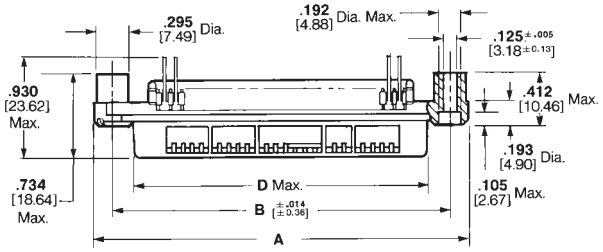


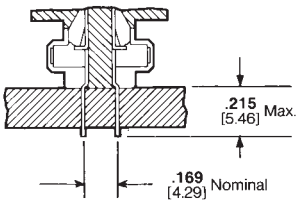
Edge Mount Style PE—Plug, Screw Lock



Receptacle

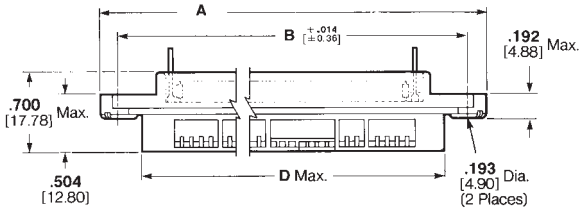
Style RV—Receptacle, Screw or Bail Lock

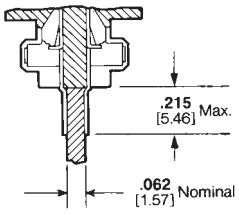




End View
Vertical Mount

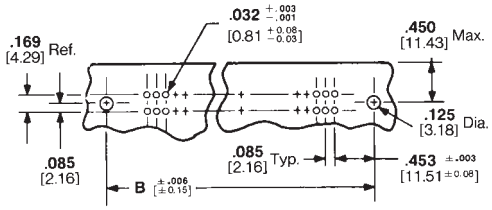
Style RE—Receptacle, Screw or Bail Lock





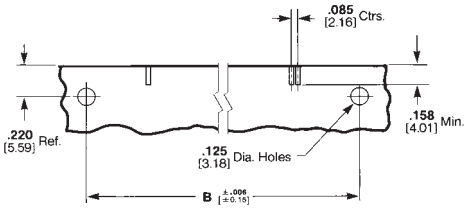
End View
Edge Mount

PC Board Thickness Range: .062-.125 [1.57-3.18]



Recommended PC Board
Mounting Dimensions

PC Board Thickness .062 [1.57]



Recommended PC Board
Mounting Dimensions

No. of Positions	Dimensions				Part Numbers			
					Plug		Receptacle	
	A	B	C	D	Style PV Vertical Mount	Style PE Edge Mount	Style RV Vertical Mount	Style RE Edge Mount
14	**1.750** 44.45	**1.416** 35.97	**1.001** 25.43	**1.000** 25.40	552209-1	—	552212-1	—
24	**2.175** 55.25	**1.842** 46.79	**1.426** 36.22	**1.425** 36.20	552221-1	—	552224-1[1]	—
36	**2.685** 68.20	**2.352** 59.74	**1.936** 49.17	**1.935** 49.15	552232-1	—	552235-1	552241-1
50	**3.280** 83.31	**2.946** 74.83	**2.531** 64.29	**2.530** 64.26	552116-1	552126-1	552118-1	552130-1
64	**3.875** 98.43	**3.542** 89.97	**3.126** 79.40	**3.125** 79.38	552243-1	—	552246-1	—

[1] .189 [4.80] Diameter Mounting Hole, for IEEE Application.
[2] Printed circuit board material—glass-filled polyester 94V-0 rated.
[3] Order all hardware required separately.

Catalog 1-1773441-4
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CHAMP PCB Connectors, Vertical Mount Connector Hardware Kits

Only fastening hardware supplied, other items shown for reference purpose

Screw Lock Hardware Kit—Part Number 552563-1
(One kit required per assembly)

Bent Bail Lock Hardware Kit—Part Number 552562-2
(One kit required per assembly)

Bail Lock Hardware Kit—Part Number 552562-1
(One kit required per assembly)

J-Hook Screw Lock Hardware Kit—Part Number 552690-1
(One kit required per assembly)

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CHAMP PCB Connectors, Edge Mount Connector Hardware Kits

Only fastening hardware supplied, other items shown for reference purpose

Screw Lock Hardware Kit—Part Number 552675-1
(One kit required per assembly)

Catalog 1-1773441-4
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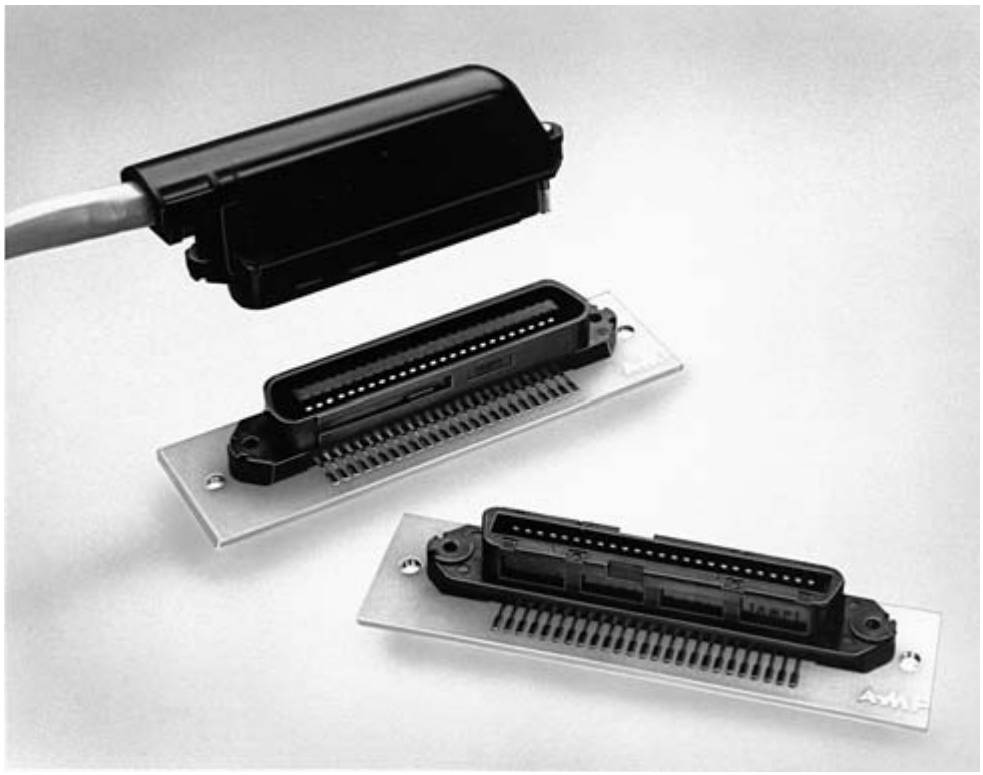
CHAMP PCB Connectors, ACTION PIN Connectors

Product Facts

- **Capable of being used with single- or double-sided printed circuit boards**
- **Eliminates the need to hand solder, except for Edge Mount Connectors**
- **Connectors fully intermateable with others of similar design**
- **UL 94V-O self-extinguishing thermoplastic housings and accessories**
- **Capable of accommodating printed circuit board thicknesses of .062 [1.57], .093 [2.36] or .125 [3.18]**
- **Diversified applications throughout the following markets — medical equipment, data control systems, telephone interconnect systems and electronic instrumentation (commercial and industrial)**
- **Operating temperature range of -40°C to +105°C**



ACTION PIN connectors for printed circuit board applications combine the high reliability of the CHAMP Insulation Displacement connector interface with the utilization and cost savings of ACTION PIN terminals. They are available in both plug and receptacles in 14-, 24-, 36-, 50- and 64-position sizes.

The connectors are supplied preloaded with contacts and a plastic cover which serves as the bearing surface to press the connector into the board. Rapid assembly is made possible by use of a simple arbor tool. The plastic cover also serves as a dust cover which may be left in place until ready to use.

The connectors may be mounted on PC boards with a thickness of .062 [1.57] to .125 [3.18]. They are designed for interface with standard CHAMP IDC cable-to-panel plugs or receptacles and are available for use with screw lock, bail lock or unique CHAMP-LOK connector locking clip hardware.

The design of the ACTION PIN terminal permits insertion into printed circuit boards having either plated-thru or unplated holes. In plated-thru holes, completely reliable termination may be accomplished either by press fit of the pins or by both press fitting and subsequent conventional soldering. In unplated holes, the pins must be soldered in place.

For the connectors with self-retained contacts, hardware to secure connector to the PC board may not be required if unmating force of mating connectors does not exceed 1 lb. [4.45 N] per terminal (50 lbs. [222.4 N] for 50 positions.)

Catalog 1-1773441-4
Issued 10-05

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

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South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

CHAMP PCB Connectors, ACTION PIN Connectors (Continued)

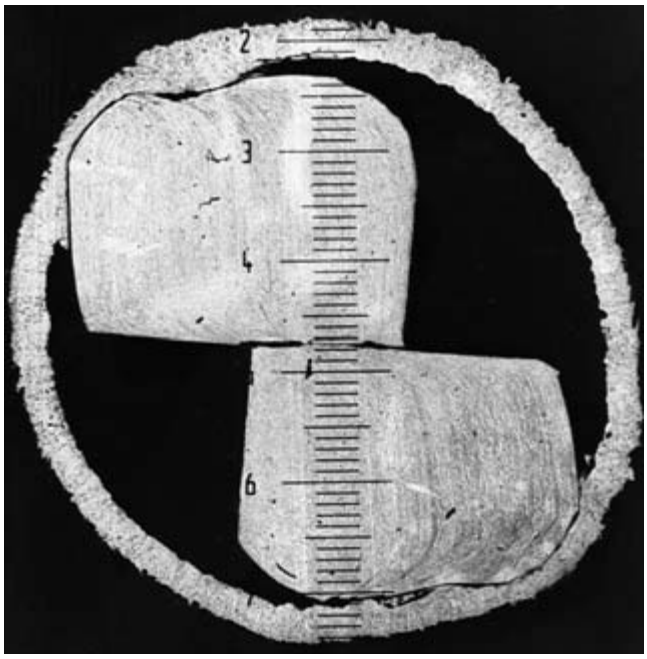
ACTION PIN connectors make a gas-tight press-fit connection when properly applied in plated thru holes. Proper hole diameters and plating thickness must be maintained to assure optimal performance.

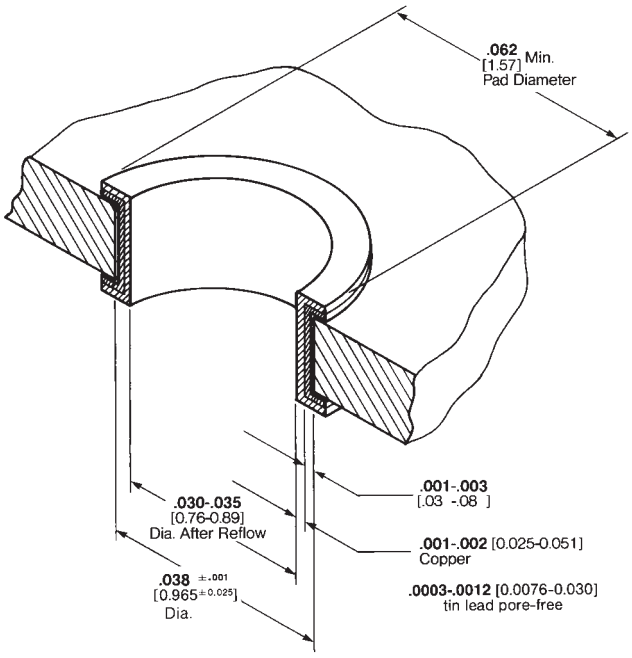
No damage to plated-thru holes

Rupturing just one layer of a PC board can render the board useless. The fact that there are frequently as many as 10,000 plated-thru holes in a multilayer board underlies the importance of using a pin-joining method which is inherently rupture-free.

Relaxed tolerances

ACTION PIN contacts allow printed circuit panels to be processed more economically by permitting greater tolerance in hole size. Finished plated-thru hole diameters .030-.035 [0.76-0.89] for press fit are acceptable as illustrated at right.



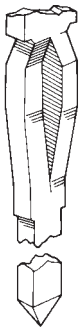


Gas-tight, stored-energy connection

The spring properties of the ACTION PIN contact assure a constant supply of stored energy to keep the pin securely in the hole and to keep the electrical contact between the pin and hole wall gas tight.

Multiple insertion

Insertion forces significantly lower than interference-fit pins allow mass insertion of ACTION PIN contacts with a simple insertion tool. ACTION PIN contacts require an insertion force of less than 40lb. [177.9N] per contact.



Consult Handbook HB 5697 for assembly procedures.

For more information on Tyco Electronics ACTION PIN Contacts request specification 108-26003.

Plated-Thru Hole Dimensions

Hole Type	Drill Size	Drilled Hole Dia. ±.0010 [±0.025]	Plating Thickness		Hole Dia. After Plating	Copper Hardness (Knoop)	Reference Pad Diameter
			Copper	Tin/Lead			
Plated Thru	No. 62 or 0.98 mm	**.038** 0.97	**.001-.002** 0.03-0.05	**.0003-.0012** .0076-.030	**.030-.035** 0.76-0.89	150 Max.	**.062** 1.57
Non-Plated Thru	No. 62 or 0.98 mm	**.038** 0.97	—	—	—	—	**.062** 1.57

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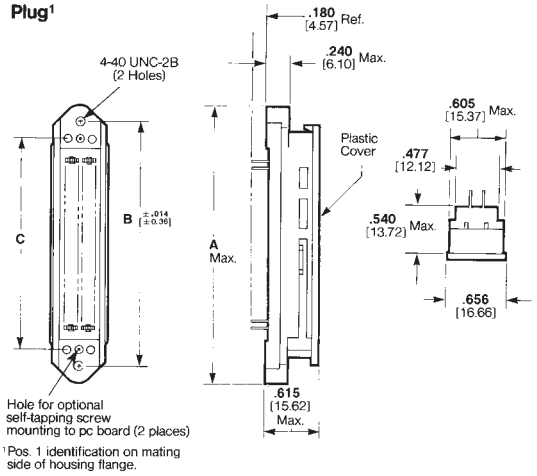
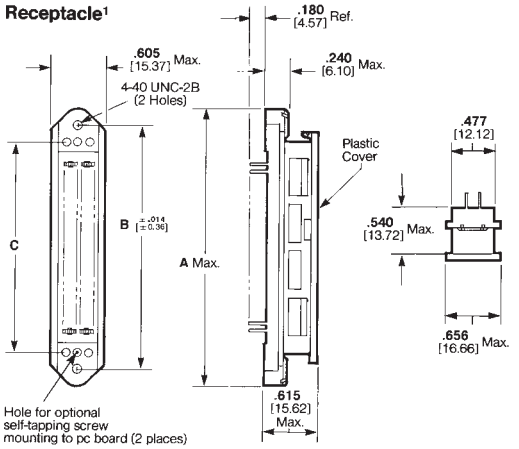
CHAMP PCB Connectors, ACTION PIN Connector Specifications

Plug[1]



[1] Pos. 1 identification on mating side of housing flange.

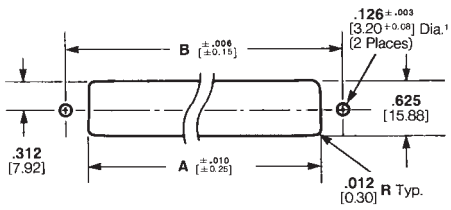
Receptacle[1]



No. of Positions	Dimensions			Part Numbers	
	A	B	C	Plug	Receptacle
14	**1.750** 44.45	**1.416** 35.97	**1.016** 25.81	—	553443-1
24	**2.175** 55.25	**1.842** 46.79	**1.442** 36.63	553444-2	553443-2
36	**2.685** 68.20	**2.352** 59.74	**1.952** 49.58	553444-3	553443-3
50	**3.280** 83.31	**2.946** 74.83	**2.546** 64.67	553444-4 554758-1[1,2]	553443-4 554753-1[1] 557984-1[3]
64	**3.875** 98.43	**3.542** 89.97	**3.142** 79.81	553444-5 554759-1[1]	553443-5

[1] Connector contains self retained terminals and net wt. = 15.946 g.
[2] For capacitive filtered connector, order Part Number 93510-X.
[3] Shielded for screw lock application.

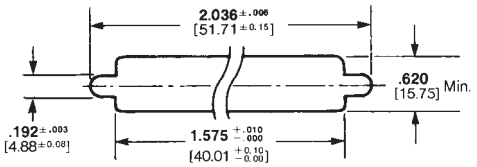
Panel Cutout Dimensions (Rear Panel Mount)



No. of Positions	Dimensions	
	A	B
14	**1.151** 29.24	**1.416** 35.97
24	**1.575[1]** **40.01**	**1.842** **46.79**
36	**2.085** 52.96	**2.352** 59.74
50	**2.700** 68.58	**2.946** 74.83
64	**3.275** 83.19	**3.542** 89.67

[1] See Panel Cutout for IEEE-488.

Panel Cutout for 24-Position IEEE-488 Metric



Note: Panel thickness range .0-62-.093 [1.57-2.36] for metric applications; .062 [1.57] for standard 4-40 hardware applications.

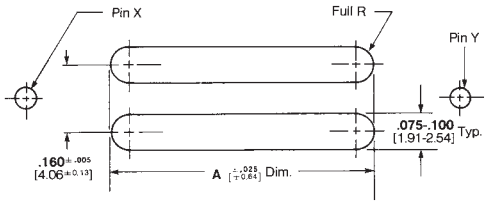
ACTION PIN

PC Board Nesting Fixture Requirements

Preferred Material: G-10 or FR-4 glass filled epoxy, aluminum is acceptable.

Note: PC board slot pattern shall be true positioned on fixture within .010 [0.25] by pin X and pin Y. Pin location and size to be determined by customer.

Minimum of .275 [6.99] slot depth minus customer board thickness.



No. of Positions	Dimension
	A
14	**.625** 15.88
24	**1.050** 26.67
36	**1.560** 39.62
50	**2.155** 54.74
64	**2.750** 69.85

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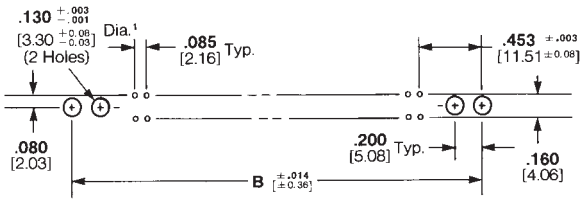
CHAMP PCB Connectors, ACTION PIN Connector Specifications (Continued)

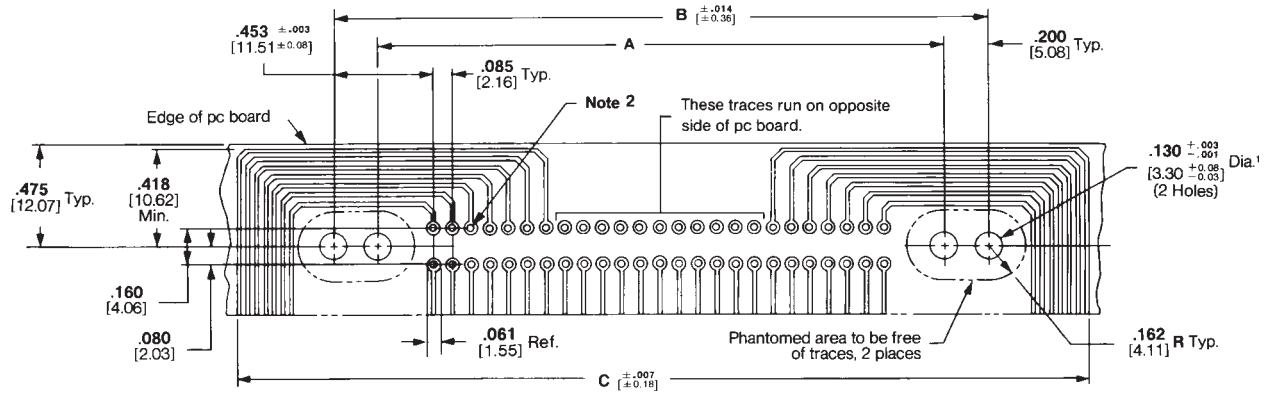
Recommended PC Board Mounting Dimensions



1 For IEEE-488 applications hole in PC board to be .171 [4.34] to accommodate standoff.

Notes:
1. Recommended PC Board Hole Information:
   A. Before thru-hole plating—.037-.039 [0.94-0.99] Dia.
   B. Copper thru-hole plating thickness—.001-.002 [0.03-0.05]
   C. Tin-Lead thru-hole plating thickness—.0003-.0012 [.008-0.030] pore free
   D. Finished hole after reflow—.030-.035 [0.76-0.89] Dia.
   E. Non-plated thru-hole—.032-.034 [0.81-0.86] Diameter
   F. Terminal holes located within true position of .008 [0.20]
2. Optional .125 [3.18] Dia. hole for mounting with self-tapping screw for .062 [1.57] and .093 [2.36] PC board thk. use 1/4" [6.35 mm] screw length; for .125 [3.18] PC board thk. use .312 [7.93] length.

ACTION PIN Double Sided PC Board Dimensions



1 For IEEE-488 applications hole in PC board to be .171 [4.34] to accommodate standoff.

No. of Positions	Dimensions		
	A	B	C
14	**1.016** 25.81	**1.416** 35.97	**1.852** 47.04
24	**1.442** 36.63	**1.842** 46.79	**2.358** 59.89
36	**1.952** 49.58	**2.352** 59.74	**3.028** 76.91
50	**2.546** 64.67	**2.946** 74.83	**3.782** 96.06
64	**3.142** 79.81	**3.542** 89.97	**4.458** 113.23

Notes: 1. Optional hole for mounting with self-tapping screw—.125 [3.18] Dia. (2 Places).
2. Suggested printed circuit board hole information.
   A. Before thru-hole plating—.037-.039 [0.94-0.99] Dia.
   B. Copper thru-hole plating thickness—.001-.002 [0.03-0.05]
   C. Tin-Lead thru-hole plating thickness—.0003-.0012 [.008-0.030] pore free
   D. Finished hole after reflow—.030-.035 [0.76-0.89] Dia.
   E. Non-plated thru-hole—.032-.034 [0.81-0.86] Diameter

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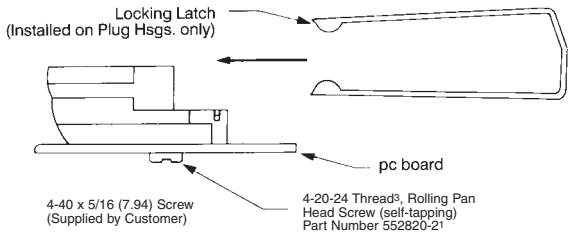
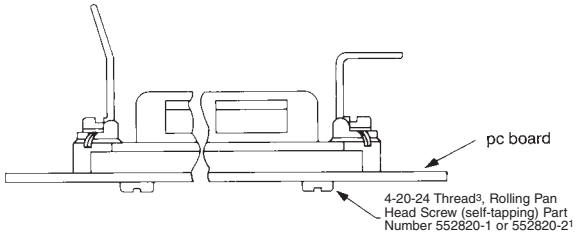
CHAMP PCB Connectors, ACTION PIN Connector Hardware

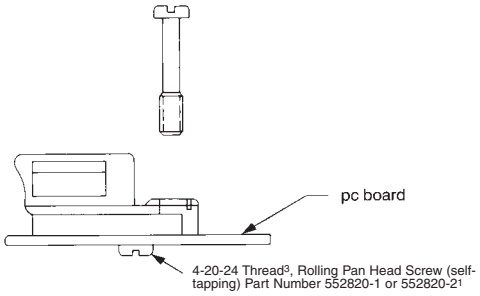
Only fastening hardware supplied. Other items shown for reference purposes.



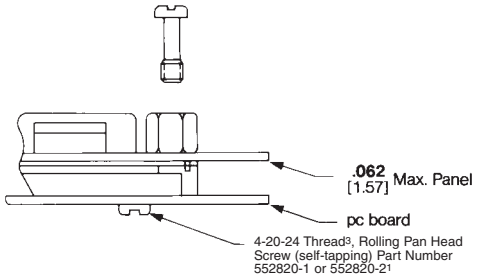
CHAMP-LOK Connector Hardware
Part Number 552723-1 (36- or 50-Position Locking Latch)
Part Number 552723-2 (14- or 24-Position Locking Latch)
Part Number 552723-3 (64-Position Locking Latch)
(one latch required per assembly)
For PC Board-to-Cable applications



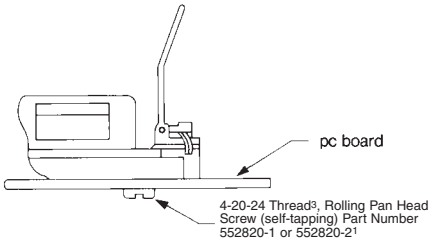
Bent Bail Lock Hardware Kit
Part Number 552561-4
(one kit required per assembly)
For PC Board-to-Cable with 90° cover applications



Screw Lock Hardware
Part Number 229911-1
(two screws required per assembly)
For PC Board-to-Cable applications



Screw Lock Hardware Kit
Part Number 552631-1
(Rear panel mount applications)
(one kit required per assembly)
For PC Board-to-Panel-to-Cable applications



Bail Lock Hardware Kit
Part Number 552561-3
(one kit required per assembly)
For PC Board-to-Cable with 180° cover applications

[1] Part Number 552820-1 used for board thickness .062-.093 [1.57-2.36]; Part Number 552820-2 used for board thickness .125 [3.18].
[2] Hole in PC board .171 [4.34] to accommodate standoff.
[3] If unmated force of mating connector does not exceed 1 lb. per terminal, 4-40 rolling pan head screw may not be required (for self-retained terminals only.)

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UK: 44-141-810-8967

Shielded CHAMP PCB Connectors

Product Facts

- **Excellent protection from electromagnetic interference or electrostatic discharge to sensitive circuitry**
- **Connectors compatible and intermateable with all others of similar design**
- **Available in three different panel-mount styles**
- **The shielded right angle, edge-mount and vertical-mount CHAMP connectors for PC board application are rear panel-mounted**
- **Choice of fastening hardware—standard screw lock, bail lock, metric screw locks per IEEE-488 applications**
- **Connectors available in kit form or preassembled versions**
- **Thick die-cast metal shell offers superior shielding over a wide frequency range**
- **Shell protects equipment from inadvertent electrostatic discharge**
- **Housings are stackable**
- **Applied cost savings**
- **Available in 24, 36 and 50 positions**

Shielded CHAMP Connectors afford excellent protection from electromagnetic interference or electrostatic discharge to sensitive circuitry. These connectors are completely compatible and intermateable with all others of a similar design, yet they are unique because of their superior construction.

They are available in three different panel-mount styles. Each style consists of an appropriate CHAMP connector and a rugged die-cast metal shell. The shielded right angle, edge mount and vertical mount CHAMP connector versions for PC board applications must be rear panel-mounted.

A choice of fastening hardware is available in each of the styles noted above. They include standard screw lock, bail lock or metric screw lock as required by IEEE-488.

Each connector is shipped in bulk or individual kit form and consists of the die cast metal shell and appropriate style connector. After PC board mounting, it is easily installed to the panel with the appropriate hardware kit, which is ordered separately.

The thick die-cast metal shell offers superior shielding over a wider frequency range than drawn sheet metal or plated/filled plastics. This shell also protects the equipment from inadvertent electrostatic discharge because the die-casting, together with the fastening hardware, assures a reliable chassis ground connection.

Due to its inherent rigidity, the die-cast housing may be stacked without distortion or bending of connector flanges and panel. This advantage contributes to the overall effectiveness of the system.

The Shielded CHAMP right angle PC board connector offers a low-cost transition to or from double-sided circuitry, the Shielded CHAMP edge-mount and vertical-mount connectors also allow accessibility to both sides of double-sided boards. All three of these styles are available in 24-, 36- and 50-position sizes.

A 50-position Shielded ACTION PIN receptacle is also available. See page 78 for part numbers and dimensions.

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Shielded CHAMP Right Angle PCB Connectors

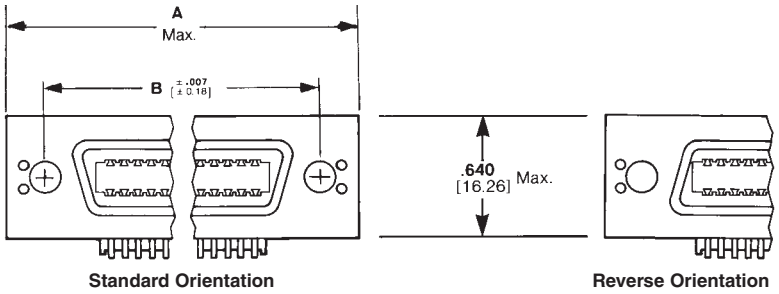
Preassembled Screw Lock

Material and Finish

Housing, Bracket, Connector Comb and Terminal Support Plate — Thermoplastic (black)

Terminals — Selectively plated gold over nickel plated high strength copper alloy, tin plated tails

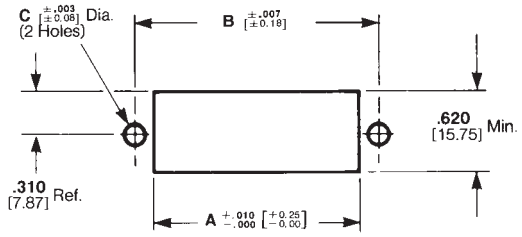
EMI Shield — Nickel plated die casting



No. of Positions	Preassembled Screw Lock				
	Dimensions		Screw Size	Part Numbers	
	A	B		Standard	Reverse
24	**2.205** 56.01	**1.842** 46.79	6-32	553811-1[1]	553811-2[1]
50	**3.305** 83.95	**2.946** 74.83	4-40	553813-3[2]	553813-4[2]

[1] Can be used with Interface Bus Application per IEEE-488.
[2] For capacitive filtered connector, order Part Number. 93533-X.

Recommended Panel Cutout (Rear Panel Mounting Only)



No. of Positions	Preassembled Screw Lock		
	Dimensions		
	A	B	C
24	**1.575** 40.01	**1.842** 46.79	**.152** 3.86
50	**2.700** 68.58	**2.946** 74.83	**.126** 3.20

Panel thickness range: .062 [1.57] max. Loose Piece and Preassembled Connector, .062-.093 [1.57-2.36] for metric per IEEE-488 on loose piece connectors.
[1] Dimensions C=.192 ± .003 [4.88± 0.08] for metric hardware per IEEE-488 applications.

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UK: 44-141-810-8967

Shielded CHAMP Right Angle PCB Connectors (Continued)

Preassembled Bail Lock

Material and Finish

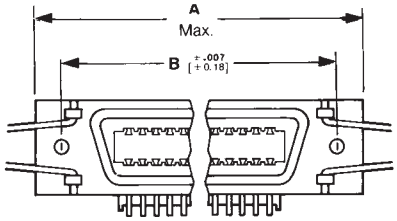
Housing, Bracket Adaptor Comb and Terminal Support Plate — Polyester, black

Bail-Clip — Passivated stainless steel

Receptacle Shield — Bright nickel over copper plated die casting

Terminals — Selectively plated gold over nickel plated high strength copper alloy, tin plated tails

Ground Bracket — Zinc plated carbon steel

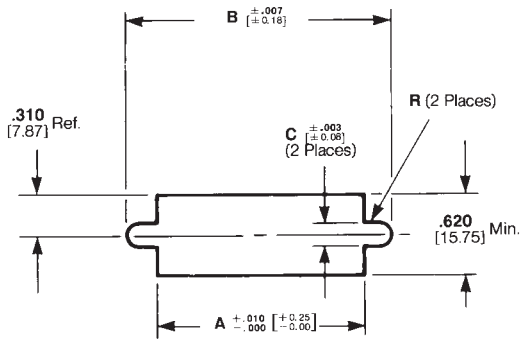


Standard Orientation

No. of Positions	Preassembled Shielded Bail Lock			
	Dimensions		Screw Size	Part Number Standard
	A	B		
36	**2.710** 68.83	**2.352** 59.74	4-40	555233-1
50	**3.305** 83.95	**2.946** 74.83	4-40	554901-11

[1] SCSI applicable

Recommended Panel Mount Cutout (Rear Panel Mounting Only)



No. of Positions	Preassembled Shielded Bail Lock		
	Dimensions		
	A	B	C
36	**2.316** 58.83	**2.478** 62.94	**.126** 3.20
50	**2.910** 73.91	**3.072** 78.03	**.126** 3.20

Panel Thickness Range: 0.62 [1.57] Max., Preassembled Connectors

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Shielded CHAMP Right Angle PCB Connectors (Continued)

Board Locking Grounding

Material and Finish

Housing, Bracket Adapter Comb and Terminal Support Plate — Polyester, black

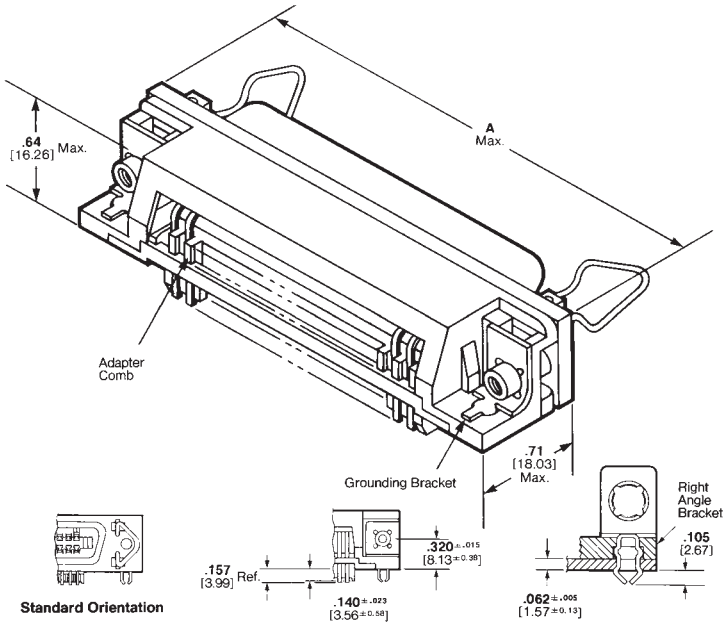
Bail-Clip — Passivated stainless steel

Receptacle Shield — Bright nickel over copper plated die casting

Terminals — Selectively plated gold over nickel plated high strength copper alloy, tin plated tails

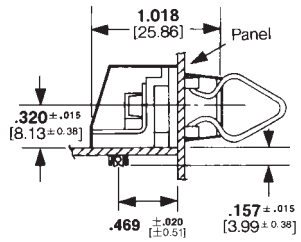
Ground Bracket — Tin-lead plated carbon steel

Note: See page 82 for Suggested Panel Cutout, Rear Panel Mounting Dimensions

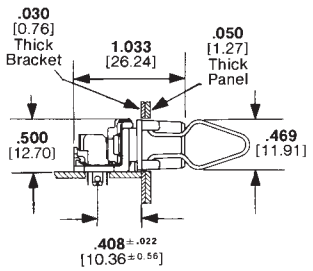


Rear Panel Mounting Detail (Shown for reference only)

Standard Profile Connector



Low Profile Connector



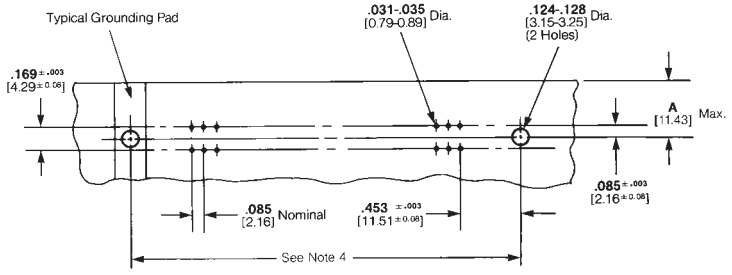
(See chart footnotes)

No. of Positions	Dimension A	Hardware Type	Screw Size	Part Numbers		
				Standard	Reverse	Low-Profile
24	**2.205** 56.01	Screw Lock	6-32	554923-2[1]	554923-1[1]	557724-1[6] 555139-1[7] 555139-2[7]
36	**2.715** 68.96	Bail Lock	4-40	555119-1[1] 555520-2[1,5]	—	
50	**3.320** 84.33	Screw Lock	4-40	557932-2[8]	557932-1[8]	

Special Low-Profile Connectors—Compatible with IBM PC AT and PC XT Computer Modules

No. of Positions	Dimension A	Hardware Type	Screw Size	Part Numbers	
				Standard	Reverse
50	**3.310** 8407	Bail Lock	4-40	555149-1[2,3]	555149-3[3]

Recommended PC Board Mounting Dimensions



1. Maximum PC board thickness is .062 [1.57], A = .450
2. SCSI applicable
3. Maximum PC board thickness is .062 [1.57], A = .386
4. 1.842 ± .006 [46.79 ± 0.15] 24 Pos. 2.352 ± .006 [59.74 ± 0.15] 36 Pos. and 2.946 ± .006 [74.83 ± 0.15] 50 Pos.
5. Has drawn metal shield
6. Shielded, standard orientation, board lock, compatible with vapor phase & IR reflow
7. Shielded with ground bracket 4-40 thread (low profile)
8. Plated Backshell

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South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Shielded CHAMP Right Angle PCB Connector Hardware Kits

(Only fastening hardware supplied; other items shown for reference purposes.)

Material and Finish

Bracket — Zinc plated carbon steel

Pan Head Screw — Passivated stainless steel

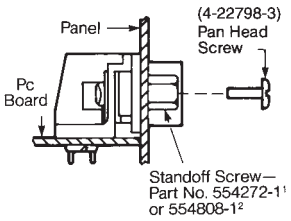
Screw Lock — Zinc plated with yellow chromate over steel

Metric Screw Lock — Black oxide coated carbon steel

Screw Lock Hardware Kit
Part Number 554272-1
(one kit required per assembly)

Metric Screw Lock Hardware Kit
for 24-Pos. IEEE-488 Application Only
Part Number 554808-1
(one kit required per assembly)

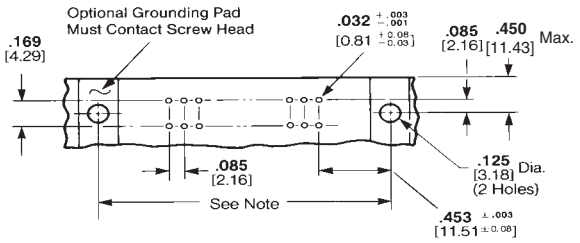
Preassembled Shield Hardware Mounted View



[1] Contains two 4-40 X .65 [16.51] long standoff screws, plus two 4-40 X .312 [7.92] long pan head screws.

[2] Contains two metric standoff screws with M 3.5 X 0.6-6H (internal threads) and 6-32 UNC-2A (external threads), for IEEE-488 applications.

Recommended PC Board Mounting Dimensions



Note: 1.842 ± .006 [46.79 ± 0.15] 24-Position, 2.352 ± .006 [59.74 ± 0.15] 36-Position, and 2.946 ± .006 [74.83 ± 0.15] 50-Position.

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Shielded CHAMP Vertical Mount PCB Connectors

Material and Finish

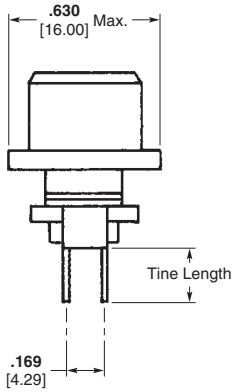
Housing — Thermoplastic (black)

Terminals — Selectively plated gold over nickel plated high strength copper alloy, tin plated tails

EMI Shield — Nickel plated die casting

Screw Lock

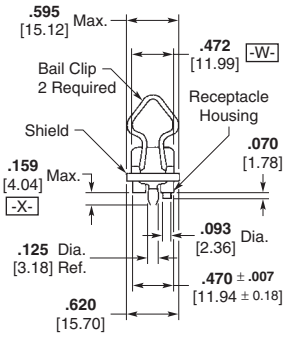
Bail Lock



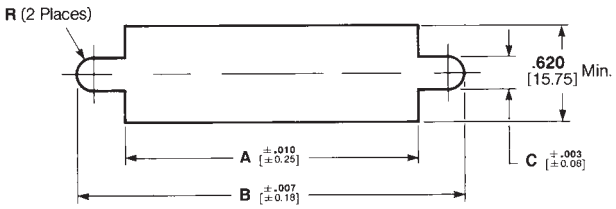
No. of Positions	Tine Length	Screw Lock 6-32 Hole	Bail Lock 4-40 Hole	Board Lock w/Bail Lock
24	**.115** 2.92	554501-1[1]	—	—
36	**.215** 5.46	—	554145-4	—
50	**.180** 4.57	—	—	406874-1[2]

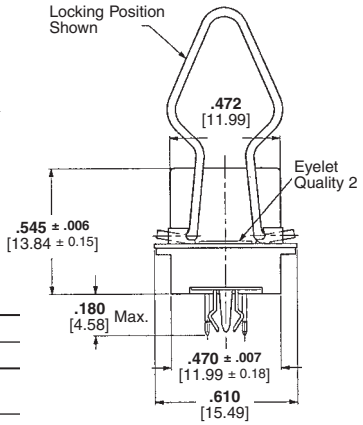
[1] Can be used with Interface Bus Applications per IEEE-488.
[2] See view A.

Recommended Panel Cutout for Preassembled and Metric Application per IEEE-488 (Rear Panel Mount Only)



Standard





View A
Low Profile

No. of Positions	Screw Lock A	Screw Lock B	Screw Lock C	Bail Lock A	Bail Lock B	Bail Lock C
24	**1.575** 40.01	**1.994**[1] 50.65	**.152**[1] 3.86	**1.806** 45.87	**1.968** 49.99	**.126** 3.20
36	**2.085** 52.96	**2.478** 62.94	**.126** 3.20	**2.316** 58.83	**2.478** 62.94	**.126** 3.20
50	**2.700** 68.58	**3.072** 78.03	**.126** 3.20	**2.910** 73.91	**3.072** 78.03	**.126** 3.20

[1] For IEEE-488 Metric Applications Dimension—B = 2.036 [51.71] (Screw Lock Only), C = .192 [4.88].

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Shielded CHAMP Vertical Mount PCB Connector Hardware Kits

Only fastening hardware supplied, other items shown for reference purposes.

Material and Finish

Pan Head Screw — Zinc plated steel
Metric Standoff Screw — Black oxide coated steel

Screw Lock

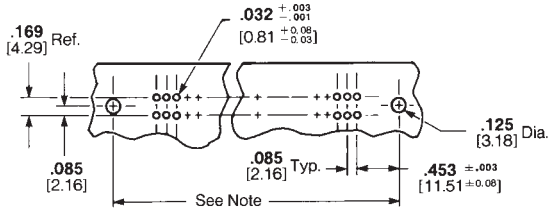
Part Number 554043-2 (Screw)

Metric
Part Number 554858-1 (Kit)

Recommended PC Board Mounting Hardware Screw Length for PC Board Thickness

Screw Length (Maximum)	PC Board Thickness
.260 6.60	**.062** 1.57
.290 7.37	**.093** 2.36

Recommended PC Board Mounting Dimensions



PC Board Thickness Range: .062-.125 [1.58-3.18]

Note: 1.842 ± .006 [46.79 ± 0.15] 24-Position, 2.352 ± .006 [59.74 ± 0.15] 36-Position, and 2.946 ± .006 [74.83 ± 0.15] 50-Position.

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CHAMP Insulation Displacement Concept (IDC) Connectors

Product Facts

- **Wide wire range**
- **Connectors available in 14, 24, 36, 50 and 64 positions with a choice of mounting methods: screw lock type, bail lock type and locking latch type**
- **Self-extinguishing thermoplastic housings and accessories**
- **Contacts on .085 [2.16] centers in dual position arrangements**
- **Optional dust covers and snap-on strain relief covers**

CHAMP Insulation Displacement Concept (IDC) Connectors provide a low cost method of terminating unstripped solid or stranded copper wires and cables to connectors. Application for the CHAMP IDC Connectors are widely diversified and are designed for specific field and industrial applications.

Connectors and Housing

Plug and receptacle connectors are furnished pre-loaded with contacts on .085 [2.16] centers. Connectors are available in 14, 24, 36, 50 and 64 positions, in standard black housings and molded from self-extinguishing plastic material for high impact and dielectric strength. Housing material is rated at an Oxygen Index Rating of 28% minimum.

Terminals

The terminal is precision formed of high conductivity, high strength copper alloy with 30 microinch gold minimum over 50 microinch nickel plating in contact area. The wire terminating area (rear of terminal) is stamped like a slotted reversed “U” and each leg contains a wire slot and strain relief slot with precisely controlled dimensions.

Wire Range and Types

The terminal is designed to accept 26-22 AWG [0.4-0.64 mm] solid wire and 28-22 AWG [0.08-0.4 mm^2] stranded wire (7 strands). The terminal is designed to accommodate most types of insulation — PVC, polyethylene, irradiated polyethylene and polypropylene.

Covers and Strain Relief

Several types of accessories are available to complete the connector assembly and to provide strain relief and protection. Made of high impact strength thermoplastic materials, all covers and strain relief have inner ribs that confine each wire in the wire termination slots.

Testing

Extensive testing, both laboratory and actual application have been conducted on this entire product line. These tests included heat aging, temperature cycling as well as shock and vibration. Both electrical and mechanical test results have met or exceeded performance objectives and copies of these test results are available from Tyco Electronics.

Applicator Tooling

Since your specific application will determine the degree of tooling required, consult pages 128 thru 132 in the application tooling section.

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UK: 44-141-810-8967

CHAMP IDC Connectors (Continued)

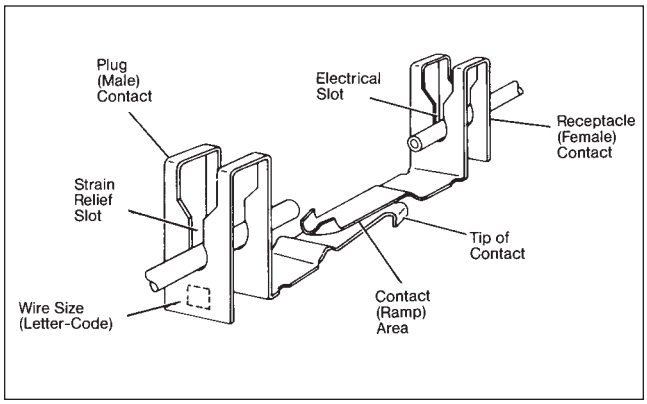
The Insulation Displacement Concept

The process of terminating unstripped wires and cable by using insulation displacement technology was developed for the telephone industry over two decades ago. However, Tyco Electronics was one of the first manufacturers to recognize, research, and produce slotted beam terminations for widespread commercial use. The 50-position CHAMP connector was a creditable forerunner in this reliable technique which is used for both discrete and mass terminations. Illustration shows how the system works. As an unstripped insulated wire is forced into a slot which is narrower than the conductor diameter, the following phenomena occur:

1. Insulation is displaced from the sides of the conductor.

2. As the wire is pushed deeper into the slot, the bared conductor is deformed by the sides of the slot. This wiping interaction creates a clean metal-to-metal union.

3. The sides of the slot deflect to a final wire/slot dimension, like a spring member, and bear against the wire with a residual force that maintains high contact pressure during the life of the termination.



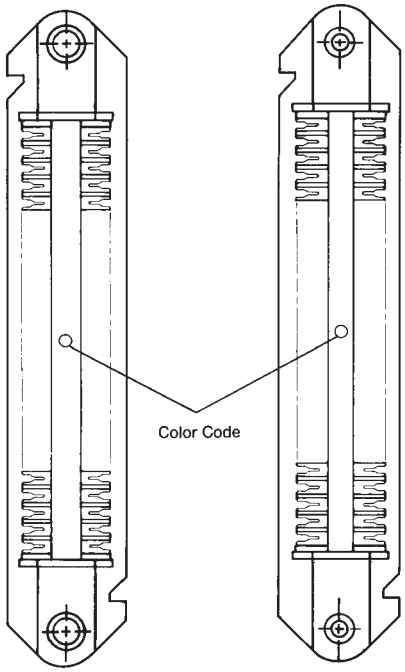
Terminal Materials and Performance

All slotted terminals in CHAMP connector systems are precision formed from high-strength copper alloy, and are selectively plated by a technique called AccuPlate plating process. This highly advanced method provides 30 microinches minimum gold plating over 50 microinches minimum of nickel underplate on contact areas, and nickel plating (noted for its proven wear characteristics) on ramp or wear area. Durability rating for mating/unmating is 200 cycles, minimum.

Note: The CHAMP connector contacts are current-rated at up to three and one half amperes. Exceptions are CHAMP Latch contacts, rated at one ampere. Keep in mind, however, that indicated current ratings do not necessarily mean that all contacts in a connector can be operated simultaneously at full-rated current. Variables must be considered, such as: connector size, contact density and material, wire size and type, ambient temperature, and PC board design (in cable-to-board applications). Consult connector product specifications for contact ratings.

CHAMP Connector and Terminal Identification

Slotted terminals in CHAMP connector systems will accept solid or stranded (7 strands, maximum) copper conductors within 22 to 28 AWG range. Note that contact slots are designed with carefully-calibrated dimensions and accept a specific wire range and insulation diameter. The following chart shows how color-coded housings (center dot on wire side) and letter-coded terminals (stamped on outside slot) work in tandem for proper wire selection and terminations:



Plug (Male) **Receptacle (Female)**

Color Code (HSG.)	Letter Code (Contact)	Wire Range (AWG)	Ins.Dia.* (Max.In.)
Red	A	One No. 24 Solid (Use B Slot)	**045** [1.14]
Blue	B	One No. 24-26 Solid or 24 Stranded	**.045** [1.14]
Green	C	One No. 22 Solid or Stranded	**.045** [1.14]
Yellow	E	One No. 26, 27, or 28 Stranded	**.045** [1.14]
Orange	H	Two No. 26 Solid... Each Wire	**.034** [0.86]
Pink	J	Two No. 24 Solid... Each Wire	**.034** [0.86]
Brown	F	One No. 22 Solid or Stranded	**.056** [1.42]
White	K	No. 24-26 Solid or Stranded (F Slot)	**.056** [1.42]

* Depends upon type of insulation and applicator tool.

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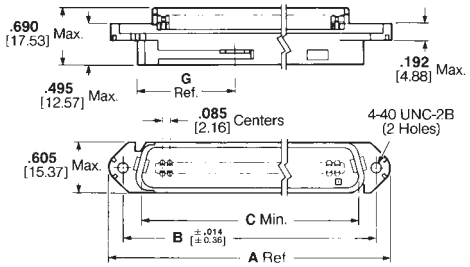
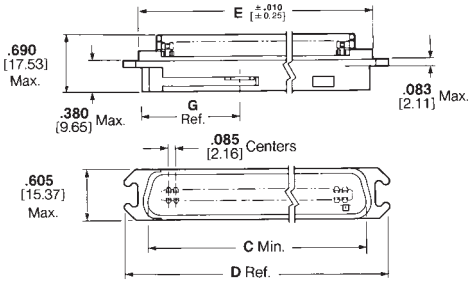
CHAMP IDC Connector Specifications

Plug

Style PS—Plug, Screw Lock (Thick Flange)[1]

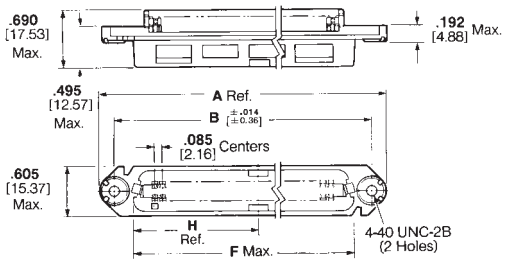


Style PB—Plug, Bail Lock

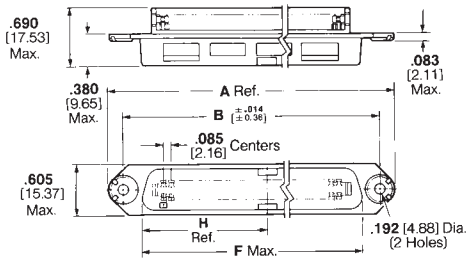


Receptacle

Style RS—Receptacle, Screw or Bail Lock (Thick Flange)[1]



Style RP—Receptacle, Panel Mount, Screw or Bail Lock (Thin Flange)[2]



[1]Thick flange connectors are typically for cable-to-cable screw lock applications.

[2]Thin flange connectors are typically for panel mount applications.

No. of Positions	Dimensions							
	A	B	C	D	E	F	G	H
14	**1.750** 44.45	**1.416** 35.97	**1.001** 25.43	**1.526** 38.76	**1.196** 30.38	**1.000** 25.40	**.644** 16.36	**.401** 10.19
24	**2.175** 55.25	**1.842** 46.79	**1.426** 36.22	**1.951** 49.56	**1.621** 41.17	**1.425** 36.20	**.646** 16.41	**.825** 20.96
36	**2.685** 68.20	**2.352** 59.74	**1.936** 49.17	**2.462** 62.53	**2.132** 54.15	**1.935** 49.15	**1.118** 28.40	**.854** 21.69
50	**3.280** 83.31	**2.946** 74.83	**2.531** 64.29	**3.056** 77.62	**2.726** 69.24	**2.530** 64.26	**1.123** 28.52	**1.461** 37.11
64	**3.875** 98.43	**3.542** 89.97	**3.126** 79.40	**3.651** 92.74	**3.321** 84.35	**3.125** 79.38	**1.608** 40.84	**1.562** 39.67

Note: These dimensions apply to all mating faces of all types of CHAMP Connectors.

No. of Positions	Wire Size				Housing Color Dot Des.	Contact Letter Code	Part Numbers			
	Solid		7 Strand				Plug		Receptacle	
	AWG	mm	AWG	mm²			Style PS	Style PB	Style RS	Style RP
14	22	0.65	22	0.40	Green	C	552300-1	—	—	—
24							552301-1	552317-1	552305-1	2-552322-1
36							—	552318-1	—	—
50							552173-1	552319-1	552064-1	2-552324-1
64							552303-1	552320-1	552307-1	—
14	24-26	0.51-0.40	24	0.20	Blue	B	552282-1	552270-1	552312-1	2-552271-1
24							552283-1	552272-1	552313-1	2-552273-1
36							552284-1	552274-1	552314-1	2-552275-1
50							229974-1	552032-1	229975-1	2-552001-1
64							552285-1	552276-1	552315-1	2-552277-1
24	—	—	26-27-28	0.14, 0.10, 0.09	Yellow	E	552443-1	552469-1	—	2-552474-1
36							552444-1	552470-1	—	2-552475-1
50							552390-1	552471-1	552391-1	—
64							552488-1	—	—	—

Notes: 1. A panel mount 50-position plug connector is available in thin flange with .187 [4.75] diameter mounting hole, Part Number 552686-1, which has B slot contacts.
2. Style RP is not compatible with integral locking latch receptacle. For thin flange panel mount plug connectors all standard mounting hardware may be utilized with the exception of bail lock mounting hardware.
3. Acceptable conductor insulations are polyvinyl chloride (PVC), polyethylene, irradiated polyethylene, polypropylene and TEFLON. **Maximum insulation diameter .045 [1.14] for tools that mass terminate conductors on one side at a time. For tools that insert one conductor per side at a time, .043 [1.09] insulation diameter is the maximum.** As a rule, harder insulations require smaller conductor insulation diameters.

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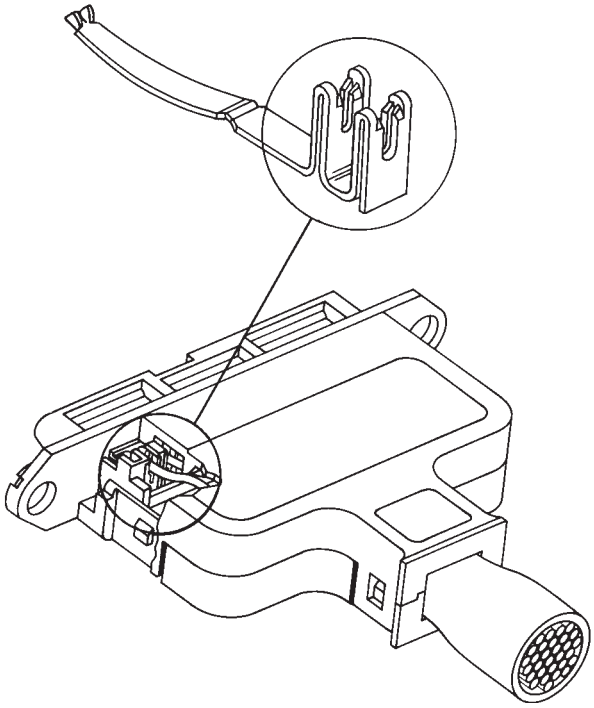
CHAMP IDC Connector Specifications (Continued)

Large Insulation Wire Connectors

Miniature Ribbon IDC Connectors that can accommodate 22 AWG wire with insulation diameters up to .056 [1.42]. The F-slot contacts handle large insulation diameter conductors using a folded beam contact design.

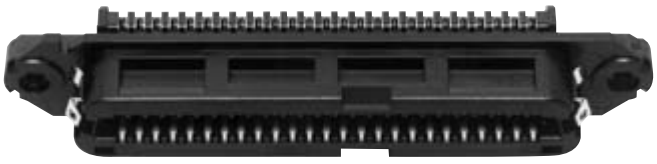
Only connector supplied.
180° Cover and Cable shown for reference



No. of Positions	Wire Size				Housing Color Dot Des.	Part Numbers	
	Solid		7 Strand			Plug	Receptacle
	AWG	mm	AWG	mm²		Style PS	Style RS
50	22	0.64	22	0.40	Brown	556039-1	555227-1
64						556409-1	—

These special CHAMP connectors are designed with an integral latching system that eliminates the need for additional locking hardware. Receptacle assemblies are preassembled with two plated steel spring latches (one at each end) that latch into cutout slots in mating plug connectors. To release a mated pair, simply depress latches into recessed areas and disengage. Note, however, that integral latches are not repairable nor replaceable. Integral-latch connectors are presently available in 50- and 64-position sizes.

Integral Locking Latch Receptacle



No. of Positions	Housing Color Dot Des.	Contact Letter Code	Part Numbers
50	Blue	B	553921-1
64			554381-2

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CHAMP IDC Connectors Cable-to-Cable Applications for 50-Position Connector Kits

Cable-to-Cable Plug and Receptacle with Tapered Cover and Screw

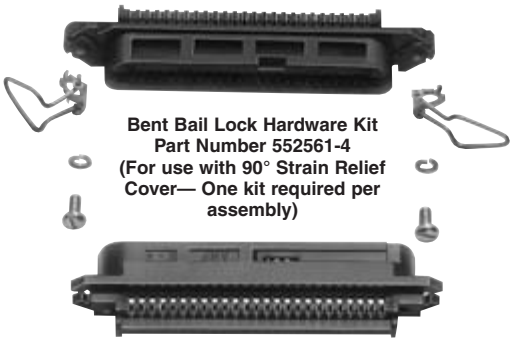
Wire Size				Housing Color Dot Des.	Contact Letter Code	Cable Diameter Range	Dust Cover	Kit Part Numbers			
Solid		7 Strand						Plug		Receptacle	
AWG	mm	AWG	mm²					Black	Gray	Black	Gray
22	0.64	22	0.4	Green	C	Up to **.550** 13.97	No	552382-1	—	552383-1	—
24-26	0.51-0.40	24	0.20	Blue	B	**.350-.425** 8.89-10.80	No	229912-1	229912-4	229913-1	229913-4
							No	—	*6-229912-2	*6-229913-1	—
							Yes	1-229912-1	—	1-229913-1	—
							Yes	*6-229912-3	*6-229912-4	*6-229913-3	—
						.425-.500 10.80-12.70	No	2-229912-1	—	2-229913-1	—
							Yes	3-229912-1	—	3-229913-1	—
—	—	26, 27, 28	0.14-0.10, 0.09	Yellow	E	**.350-.425** 8.26-10.80	No	552402-1	—	552403-1	—

* Part Numbers with prefix of "6" are bulk packed in quantities of 500.

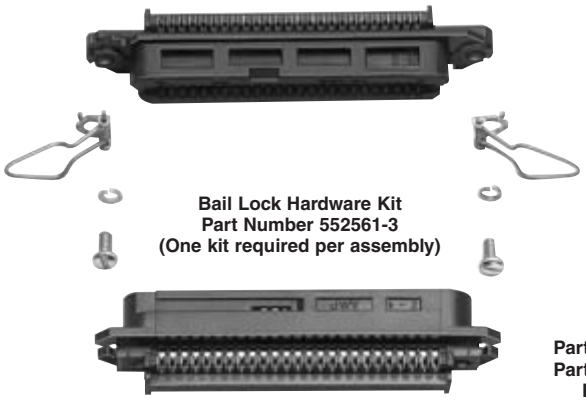
Cable-to-Cable Hardware Kits

Only fastening hardware supplied, other items shown for reference purposes.

Screw Lock Hardware Kit
Part Number 229911-1
(Two required per assembly)



Bent Bail Lock Hardware Kit
Part Number 552561-4
(For use with 90° Strain Relief Cover— One kit required per assembly)



Bail Lock Hardware Kit
Part Number 552561-3
(One kit required per assembly)

CHAMP-LOK Connector Hardware Kit
(One locking latch required per assembly)
Part Number 552723-1 (36- or 50-Position Locking Latch)
Part Number 552723-2 (14- or 24-Position Locking Latch)
Part Number 552723-3 (64-Position Locking Latch)

Catalog 1-1773441-4
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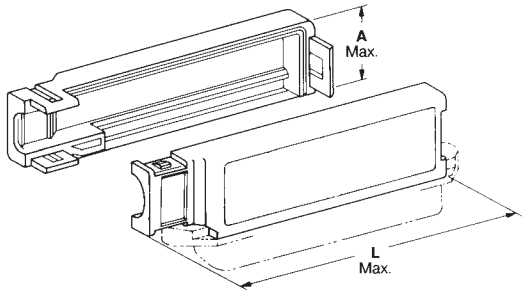
CHAMP IDC Connectors Cable-to-Cable Accessories

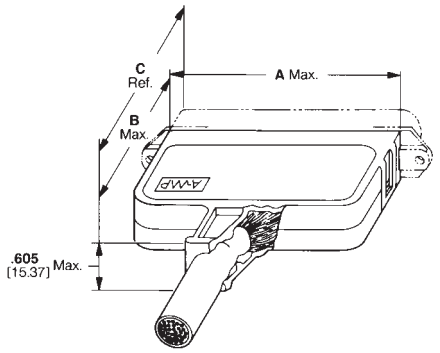
90° Snap-On Strain Relief Cover



No. of Pos.	Dimensions A	Dimensions L	Cable Range Diameter*	Part Numbers
14	**.684** 17.37	**1.863** 47.32	**.185-.230** 4.70-5.84	552412-1
			.250-.300 6.35-7.62	1-552412-1
24	**.684** 17.37	**2.288** 58.12	**.250-.300** 6.35-7.62	552413-1
			.305-.360 7.75-9.14	1-552413-1
36	**.684** 17.37	**2.798** 71.07	**.305-.360** 7.75-9.14	552414-1
			.330-.380 8.38-9.65	3-552414-1
50	**.684** 17.37	**3.388** 86.06	**.340-.400** 8.64-10.16	552014-1
	.922 23.42	**3.388** 86.06	**.315-.415** 8.00-10.54	1-552011-1
			.415-.465 10.54-11.81	552011-1
	1.127 28.63	**3.590** 91.19	**.475-.540** 12.07-13.72	552731-1
64	**1.127** 28.63	**4.183** 106.25	**.410-.475** 10.41-12.07	552496-1
			.475-.540 12.07-13.72	1-552496-1
			.540-.605 13.72-15.37	2-552496-1

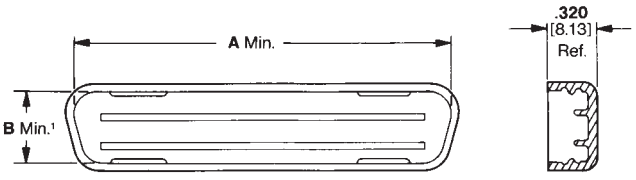
*Strain relief cover cable diameter range is a guideline. The appropriate strain relief cover depends on cable stiffness, cable packing and fillers.

180° Snap-On Strain Relief Cover



No. of Pos.	Dimensions A	Dimensions B	Dimensions C	Cable Range Diameter*	Part Numbers
14	**.994** 25.25	**1.455** 36.96	**1.824** 46.33	**.175-.220** 4.45-5.59	552079-1
				.220-.265 5.59-6.73	1-552079-1
				.265-.310 6.73-7.87	2-552079-1
24	**1.419** 36.04	**1.455** 36.96	**1.824** 46.33	**.230-.280** 5.84-7.11	552076-1
				.280-.320 7.11-8.13	1-552076-1
				.320-.380 8.13-9.65	2-552076-1
36	**1.934** 49.12	**1.455** 36.96	**1.824** 46.33	**.290-.360** 7.37-9.14	552073-1
				.360-.430 9.14-10.92	552073-5
				.430-.500 10.92-12.70	552073-6
50	**2.520** 64.01	**1.555** 39.50	**1.924** 48.87	**.330-.380** 8.38-9.65	3-552008-1
				.380-.430 9.65-10.92	2-552008-1
				.430-.490 10.92-12.45	552008-1
				.480-.550 12.19-13.97	4-552008-1
				.430-.500 10.92-12.70	—
64	**3.119** 79.22	**1.655** 42.04	**2.024** 51.41	**.480-.540** 12.19-13.72	552082-1
				.540-.610 13.72-15.49	569025-1

Dust Cover



No. of Pos.	Plug Cover (Blue) A	Plug Cover (Blue) Part No.	Receptacle Cover (Red) A	Receptacle Cover (Red) Part No.
24	**1.575** 40.01	229968-4	**1.421** 36.09	229969-4
36	**2.085** 52.96	—	**1.931** 49.05	229969-3
50	**2.700** 68.58	229968-1	**2.526** 64.16	229969-1
64	**3.275** 83.19	229968-2	**3.121** 79.27	229969-2

1B Dimension—.610 [15.49] Plug and .478 [12.14] Receptacles

Catalog 1-1773441-4
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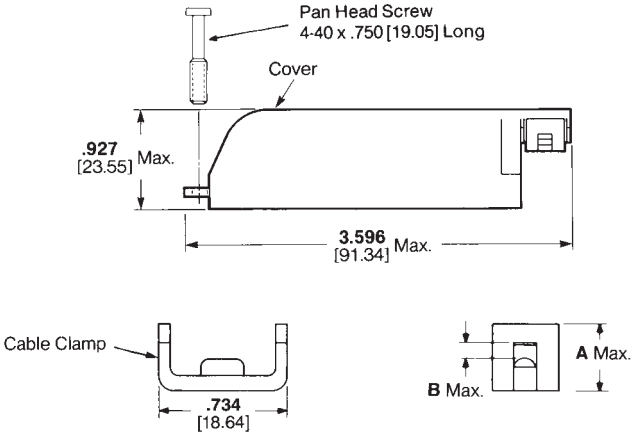
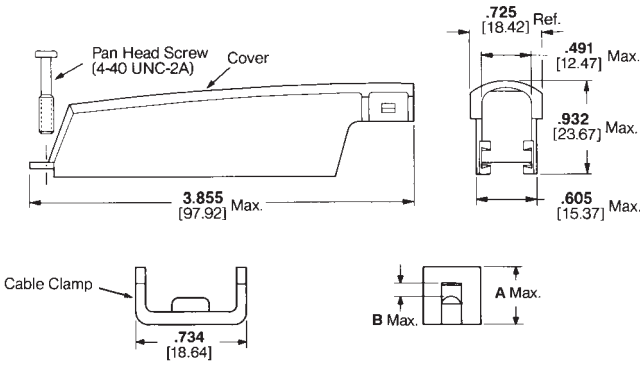
CHAMP IDC Connectors Cable-to-Cable Accessories (Continued)

90° Standard Slide-On Strain Relief Cover Kit (for 50 Position Only)



90° Tapered Slide-On Strain Relief Cover Kit (for 50-Position Only)



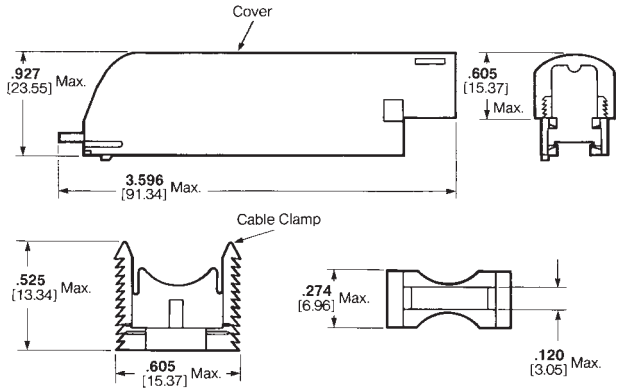
Cable Range Diameter	Dimensions		Kit Part Numbers		Component Part Numbers			
	A	B	Standard Cover	Tapered Cover	Cable Clamp	Screw	90° Tapered Cover	90° Slide-On Cover
.425-.500 10.80-12.70	**.475** 12.07	**.202** 5.13	552960-1	552560-5	1-229910-1	229911-1	229909-1	552617-1
.350-.425 8.89-10.80	**.380** 9.65	**.107** 2.72	552960-2	552560-1	229910-1	229911-1	229909-1	552617-1
.325-.370 8.26-9.40	**.380** 9.65	**.057** 1.45	—	—	2-229910-1	229911-1	229909-1	552617-1
.300-.325 7.62-8.26	**.380** 9.65	**.022** .056	—	—	3-229910-1	229911-1	229909-1	552617-1
.500-.550 12.70-13.97	**.540** 13.72	**.267** 6.78	552960-5	—	4-229910-1	229911-1	229909-1	552617-1

90° Standard Slide-On Strain Relief Cover and Adjustable Cable Clamp (for 50-Position Only) (recommended for use with CHAMP-LOK Connector or Screw Lock hardware)

Cable Dia. — .425 [10.80] Max.

Cover — Black—Part Number 552760-1,
Gray—Part Number 552760-2

Cable Clamp — Black—Part Number 552763-1,
Gray—Part Number 552763-2



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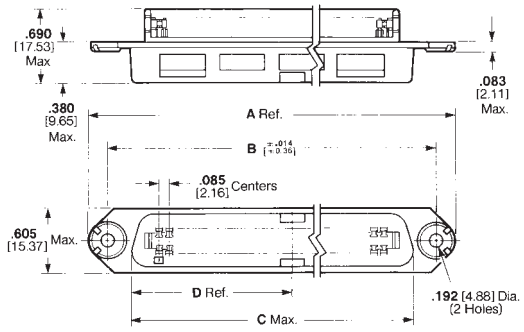
CHAMP IDC Connectors Cable-to-Panel Applications

Panel Mount Accessories

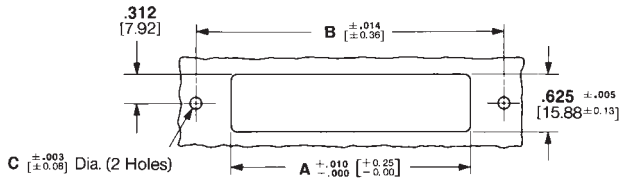
Style RP—Receptacle, Panel Mount, Screw or Bail Lock (Thin Flange)

Note: See page 90 for Style RP part numbers.



No. of Positions	Dimensions			
	A	B	C	D
14	**1.750** 44.45	**1.416** 35.97	**1.000** 25.40	**.401** 10.19
24	**2.175** 55.25	**1.842** 46.79	**1.425** 36.20	**.825** 20.96
36	**2.685** 68.20	**2.352** 59.74	**1.935** 49.15	**.854** 21.69
50	**3.280** 83.31	**2.946** 74.83	**2.530** 64.26	**1.461** 37.11
64	**3.875** 98.43	**3.542** 89.97	**3.125** 79.38	**1.562** 39.67

Panel Cutout Dimensions

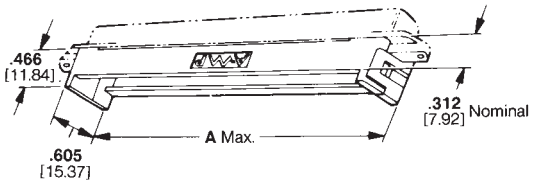


Note: Panel thickness range—.062-.125 [1.57-3.18] for front panel mount—Panel range .062-.093 [1.57-2.36] for rear panel mount with metric hardware per IEEE-488 and .062 [1.57] max. with standard hardware.

No. of Positions	Dimensions			Rear Panel Mount[1]		
	A	B	C	A	B	C
14	**1.063** 27.00	**1.416** 35.97	**.126** 3.20	**1.151** 29.24	**1.416** 35.97	**.149** 3.78
24	**1.488** 37.80	**1.842** 46.79	**.126** 3.20	**1.575** 40.01	**1.842** 46.79	**.149**[2] 3.78
36	**1.998** 50.75	**2.352** 59.74	**.126** 3.20	**2.085** 52.96	**2.352** 59.74	**.149** 3.78
50	**2.593** 65.86	**2.946** 74.83	**.126** 3.20	**2.700** 68.58	**2.946** 74.83	**.149** 3.78
64	**3.188** 80.98	**3.542** 89.97	**.126** 3.20	**3.275** 83.19	**3.542** 89.97	**.149** 3.78

[1] For screw lock hardware version only.
[2] .192 [4.88] for IEEE-488 metric applications.

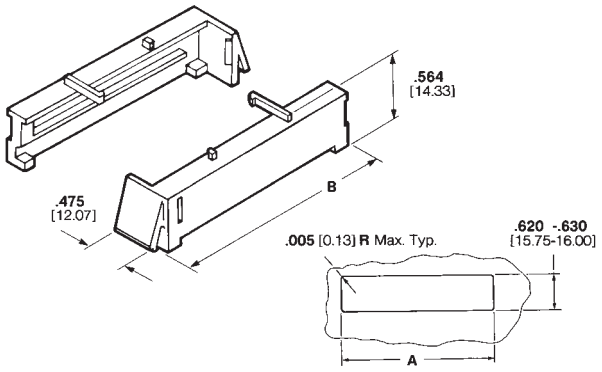
Snap-On Strain Relief



Note: Two required per connector assembly.

No. of Positions	Dimensions A	Low Profile Part Number
24	**1.467** 37.26	1-552298-1
36	**1.977** 50.22	1-552297-1
50	**2.572** 65.33	1-552027-1
64	**3.167** 80.44	1-552296-1

Snap-In Panel Mount Strain Relief
No additional panel mounting hardware required.



Note: Two required per assembly.

No. of Positions	Dimensions		Panel Thickness	Color	Part Number
	A	B			
50	**2.695-2.700** 68.45-68.58	**2.514** 63.86	**.090** 2.29	Black	552962-3

Notes: 1. For use with thin flange connectors only.
2. Recommended for use with CHAMP-LOK Connector Assembly Hardware. No panel mounting hardware necessary when utilized.
3. Strain Relief recommended for installation of Panel Mount Connectors to prevent inadvertent contact or conductor damage.

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CHAMP IDC Connectors Cable-to-Panel Hardware Kits

Only fastening hardware supplied, other items shown for reference purposes.

Screw Lock Hardware Kit
Part Number 552568-1
(For rear panel mount applications, max. panel thickness shall be .062 [1.57].)
(One kit required per assembly)

Bail Lock Hardware Kit
Part Number 552567-1
(One kit required per assembly)

Bent Bail Lock Hardware Kit
Part Number 552567-2
(For use with 90° strain relief cover—One kit required per assembly)

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Shielded CHAMP Cable Connectors

Product Facts

- **Designed for shielding, NOT just as metal shell connector**
- **Available in 24-, 36- and 50-position plugs and receptacles**
- **Available in bail and screw lock plug and thru-hole receptacle styles with pre-loaded insulation displacement contacts in a choice of two wire slot sizes**
- **Capable of using any standard CHAMP connector applicator tooling**
- **Unique, high tensile strain relief with adjustable ratchet**
- **Conducive to post molding simply by deleting 180° cover kit**
- **No outer crimp ferrule required**
- **Fully compatible with all die cast, metal shell panel mount CHAMP connectors in a variety of termination styles, and intermateable with all those of a similar design**

The CHAMP Connector product line continues to expand, fulfilling the needs of the various industries. The Shielded CHAMP Cable Connectors have been specifically designed to produce the optimum in shielding effectiveness while still offering low initial cost and ease of assembly with the applied-cost-savings of a proven insulation displacement system.

Shielded CHAMP Cable Connectors are available in 24-, 36- and 50-position plugs and receptacles with either bail lock or screw lock plug and thru-hole receptacle styles. Connectors are shipped with contacts preloaded and are ready for termination in all standard CHAMP Connector applicator tooling. Two different contact sizes are available—B-slot, 24 AWG [0.51 mm] and 26 AWG [0.04 mm] (solid) or 24 AWG [0.20 mm^2] (7-strand); and E-slot, 26-27-28 AWG [0.14-0.10-0.09 mm^2] (7-strand) wire.

Superior shielding performance is achieved due to minimal leakage from a specially designed two-piece, precision formed shield. Positive contact with the panel mounted connector is obtained by the interface of metal “spring fingers” which protrude through small openings around the perimeter of the plug and contact plate on receptacle. Highly effective braid termination is achieved with an outstanding stored energy design incorporated into the two-piece shield.

In addition to the superior shielding effectiveness, another important feature of the connector is the design of the outer plastic strain relief cover, which uses a ratcheting wedge that provides greater strain relief as more tension is applied to the cable. Should post molding be desired, the 180° cover kit may be deleted.

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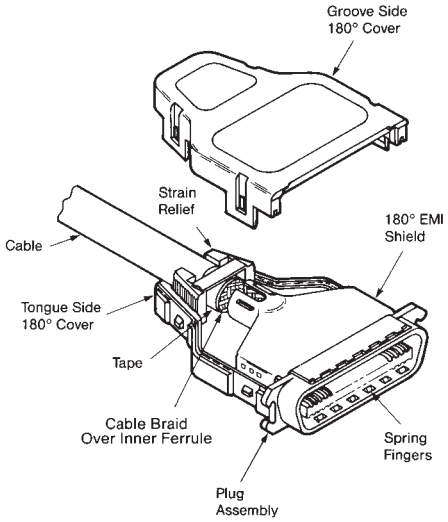
UK: 44-141-810-8967

Shielded CHAMP Cable Connector Kits

Plug Connectors and Kits

How to determine proper kit part number:

1) Select 24-, 36- or 50-Position plug connector
2) Select bail or screw lock connector
3) Select B or E slot for wire to be terminated
4) Measure cable jacket outside diameter and wire bundle diameter for correct size ferrule selection
5) See chart for ordering information on page 100



Material and Finish

Housing and Cover — Thermoplastic, black

Terminals — Gold over nickel plated high strength copper alloy

Shield — Bright nickel plated carbon steel

Strain Relief — Flame retardant nylon, black

Ferrule — Copper alloy

Hardware — Zinc plated steel

Metric Shoulder Screw — Black oxide plated, carbon steel

Specifications

Insulation Diameter — .045 [1.14] max.

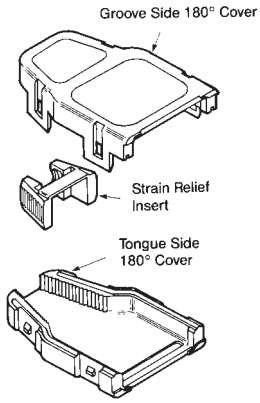
Terminal Center-to-Center Spacing —.085 [2.16]

Slot Designation (stamped on contacts which are preloaded in housing):
B-Slot — 24 AWG [0.51 mm] and 26 AWG [0.40 mm] (solid) or 24 AWG [0.20 mm^2] (7 strand)
E-Slot — 26-27-28 AWG [0.12-0.10-0.09 mm^2] (7 strand) wire

Note: Connector kits shipped unassembled.

Accessories

Cover Kit
(Sold Separately)



Captive Pan Head Screw
Part Number 554726-1

4-40 X .265[6.73] long
(2 required)
(Sold Separately—Bulk packed in quantities of 500)

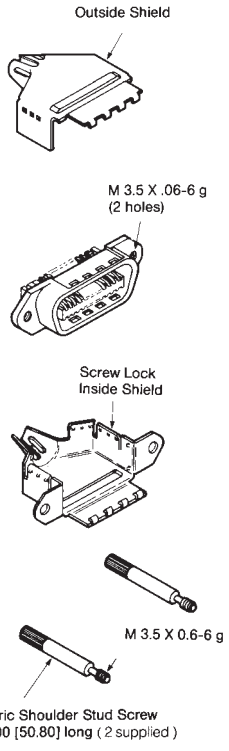
Inner Ferrule
(Sold Separately)
(See Page 99)

Bail Lock

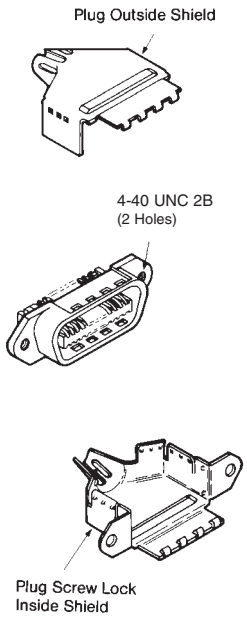
Connector Kit

Screw Lock

Connector Kit (Metric)



Standard Connector Kit



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Shielded CHAMP Cable Connector Kits (Continued)

Receptacle Connectors and Kits

How to determine proper kit part number:

1) Select 36- or 50-Position receptacle connector
2) Select B or E slot for wire to be terminated
3) Measure cable jacket outside diameter and wire bundle diameter for correct size ferrule selection
4) See chart for ordering information on page 100

Material and Finish

Housing and Cover — thermoplastic, black

Terminals — gold over nickel plated high strength copper alloy

Shield — bright nickel plated carbon steel

Strain Relief — flame retardant nylon, black

Ferrule — copper alloy

Hardware — zinc plated steel

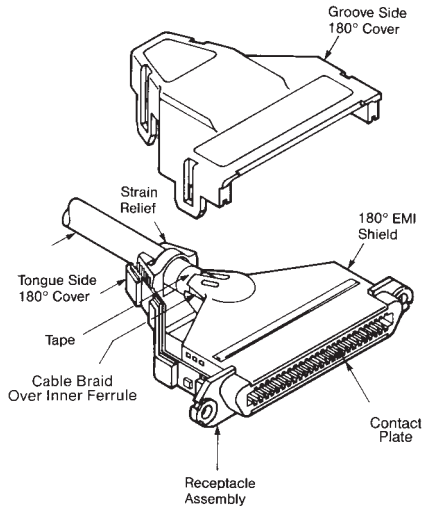
Specifications

Insulation Diameter — .045 [1.14] max.

Terminal Center-to-Center Spacing — .085 [2.16]

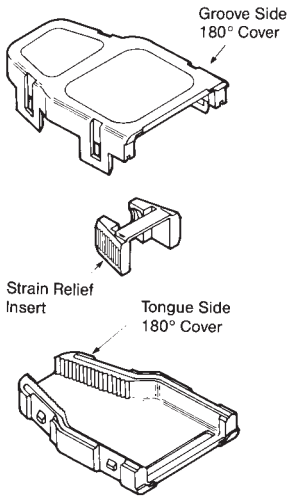
Slot Designation (stamped on contacts which are preloaded in housing):
B-Slot — 24 AWG [0.51] mm] and 26 AWG [0.40 mm] (solid) or 24 AWG [0.20 mm^2] (7 strand)
E-Slot — 26-27-28 AWG [0.12-0.10-0.09 mm^2] (7 strand) wire

Note: Connector kits shipped unassembled.



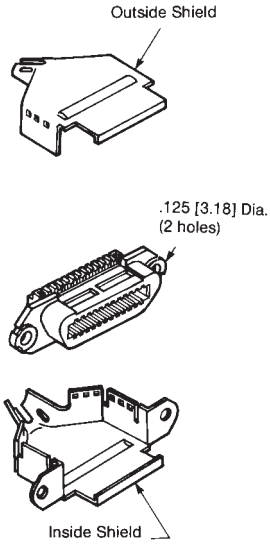
Screw or Bail Lock Connector Assemblies

Cover Kit
(Sold Separately)



Inner Ferrule
(Sold Separately)

Connector Kit — Supplied



Ferrule Part Numbers[1]

Inside Diameter	Part Number
.250 6.35	554725-1
	554266-3
.300 7.62	554725-2
	554266-4
.350 8.89	554725-3
	554266-5

Ferrule Part Numbers[1]

Inside Diameter	Part Number
.400 10.16	554725-4
	554266-6
.450 11.43	554725-5
	554266-7
.500 12.7	554725-6
	554266-8

[1] Bulk packed in quantities of 100 per bag.

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Shielded CHAMP Cable Connector Kits (Continued)

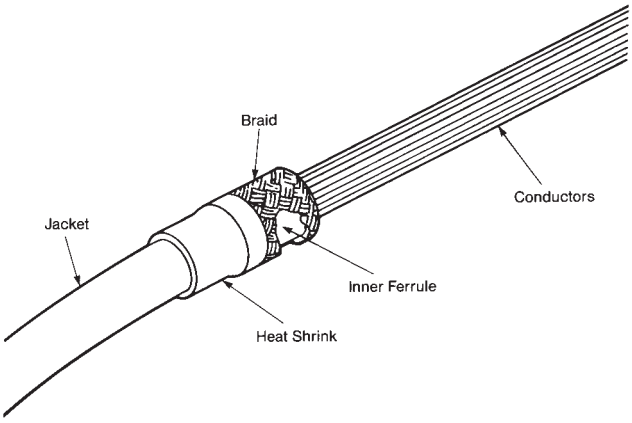
Inner Ferrule on Jacket

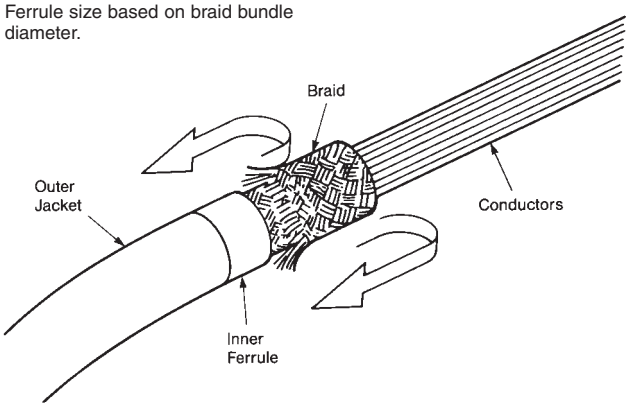
No. of Positions	Cable Diameter (Less Than)
24	**.300** 7.62
36	**.350** 8.89
50	**.400** 10.16

Inner Ferrule on Braid*

No. of Positions	Cable Diameter (Greater Than)
24	**.300** 7.62
36	**.350** 8.89
50	**.400** 10.16

* Ferrule size based on braid bundle diameter.

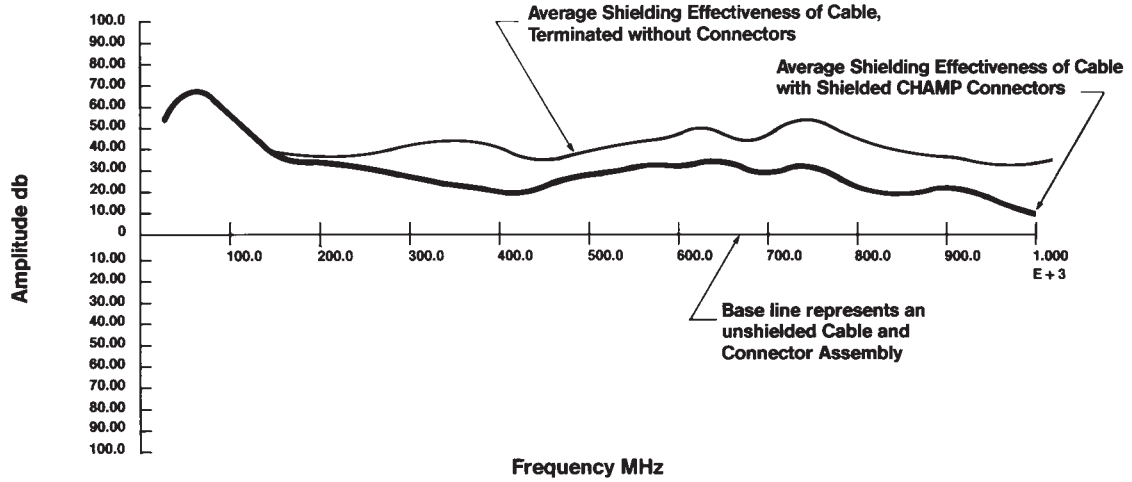




No. of Positions	Cable Range	Part Numbers						
		Shielded Plug Kit				Shielded Receptacle Kit		
		Screw Lock		Bail Lock		Screw or Bail Lock		Cover Kits
		B Slot	E Slot	B Slot	E Slot	B Slot	E Slot	
24	**.250-.500** 6.35-12.70	554948-4[5] 554948-2[4]	554948-3[3]	—	—	—	—	554944-1
36	**.250-.500** 6.35-12.70	554951-2	—	554950-2	554950-1	—	—	554945-1
50	**.350-.625** 8.89-15.88	554945-2[6]	554954-1	554953-2[1]	554953-1[1]	554955-2	554955-1	554946-1[2] 554946-2

[1] SCSI applicable.
[2] For cable diameter of .500 [12.70] or less use -1 kit. For cable diameter greater than .500 [12.70] use -2 kit.
[3] Connector with M3.5 threads kits includes M3.5 x 2.00 [50.80] standoff stud.
[4] 4-40 UNC-2B hole size.
[5] M3.5 x 0.6-6G, shoulder stud screws (2) supplied.
[6] Contact Tyco Electronics for RoHS Part Number information.

Typical Cable Assembly (Shielding Effectiveness)



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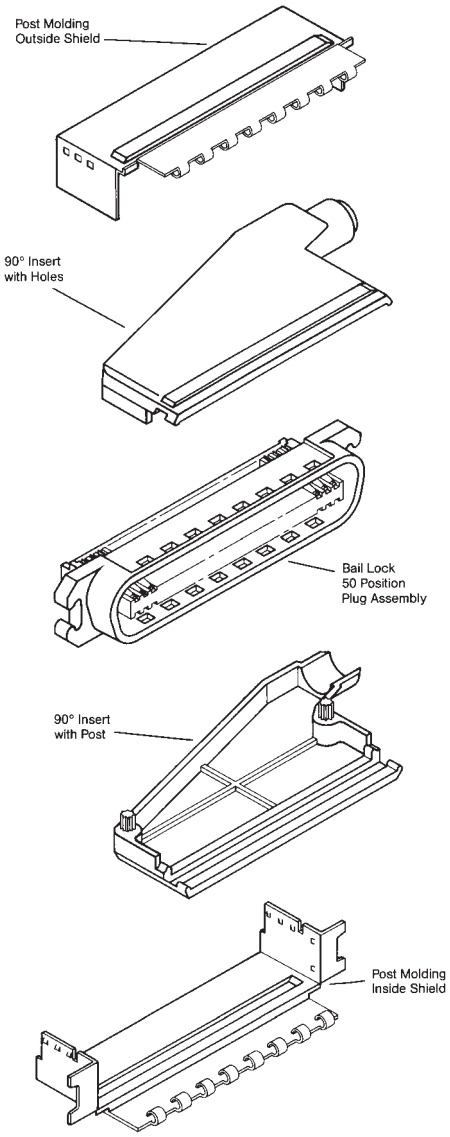
Shielded CHAMP Cable Connector Kits (Continued)

50-Position Plug Kit 90° Cable Exit for Post Molding Operation

(Available in 50-position only)



Wire Size				Housing Color Dot Description	Connector Color	Kit Part Number
Solid		7 Strand				
AWG	mm	AWG	mm²			
24-26	0.51-0.40	24	0.20	Blue	Gray	5-555012-1
—	—	26-27-28	0.14, 0.10, 0.09	Yellow	Gray	5-555012-2

Notes: Kit components only supplied (500 pcs. bulk packaged).
Copper foil wrap. Solder operation and post molding is completed by customer.
For post mold application, contact Tyco Electronics.
Maximum cable bundle diameter is .370 [9.40].

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Shielded CHAMP Panel Mount Connector Hardware

Screwlock Hardware Components (Order separately) (Only fastening hardware supplied, other items shown for reference purposes)

Material and Finish

Strain Relief — Thermoplastic (black)
Nut and Washers — Zinc plated carbon steel
Screw Lock — Zinc plate with yellow chromate over carbon steel
Metric Screw Lock — Black oxide coated carbon steel

Snap-on Strain Relief Part Number 1-552298-1 (2 required)

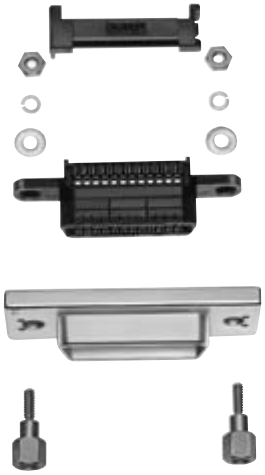
Nut Part Number 21068-4* (2 required)

Washer Part Number 21074-2* (2 required)

Flat Washer Part Number 21108-4 (2 required)
Connector and Shield not included

Standoff Mounting Stud Part Number 229995-1 (2 required)

Screw Lock Hardware



Snap-on Strain Relief Part Number 1-552298-1 (2 required)

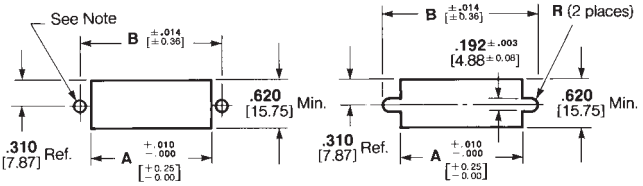
Connector and Shield not included

Metric Screw Lock Hardware

For Front Panel Mount Metric Screw Lock Hardware Kit Part Number 553636-2

For Rear Panel Mount Metric Screw Lock Hardware Kit Part Number 553636-3
*Commercial item

Recommended Panel Cutout for Front and Rear Panel Mounting



Standard Hardware Application

Metric Hardware per IEEE-488 Application

Note: .126 ± .003 [3.2 ± 0.08] for front panel mount and .149 ± .003 [3.78 ± 0.08] for rear panel mount.

No. of Positions	Standard Hardware				Metric Hardware	
	Front Panel Mount		Rear Panel Mount		Front or Rear Panel Mount	
	A	B	A	B	A	B
24	**1.488** 37.80	**1.842** 46.79	**1.575** 40.01	**2.036** 51.71	**1.575** 40.01	**2.036** 51.71

Panel Thickness Range: .125 [3.18] max. for front panel mount; .062 [1.57] max. for standard rear panel mount, .062-.093 [1.57-2.36] for metric rear panel mount.
Note: For application tooling, see pages 128 thru 132.

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CHAMP Latch Low Profile Connectors

Product Facts

- **Ready to use connectors—strain relief covers preassembled to connector bodies**
- **Overall assembled dimension of .820 [20.83]**
- **Simple one-step termination operation**
- **May be used in "dead-end" or "daisy-chain" applications**
- **Hardware kits available for Cable-to-Cable or Cable-to-Panel applications**
- **Available in 24, 36 and 50 positions**
- **Capable of mass termination without time consuming soldering and prestripping of wire**
- **Terminates .050 [1.27] centerline 26 AWG [0.40 mm] (solid); 28 AWG [0.08-0.09 mm^2] (stranded); 28 AWG [0.32 mm] (solid) or 30 AWG [0.25 mm] (solid) copper ribbon cable, including certain twisted pair types from .032-.045 [0.81-1.14] thick**
- **Available in standard connectors, preassembled and loose-piece shielded**

The CHAMP Latch Low-Profile Connector comes ready to use—just slide the cable in and squeeze. The underside of the strain relief cover is fluted to assist in proper cable orientation. Plastic "barbs" sticking up from the connector body act as guides for proper cable alignment during insertion. When terminated, these "barbs" pierce the cable insulation between the conductors and lock on to the strain relief cover.

Another advantage to this connector is its overall assembled dimension (.820 [20.83]), which takes up less space inside or outside of the equipment.

Standard connectors are available in 14-, 24-, 36- and 50-position plugs or receptacles. Shielded CHAMP Latch Connector version receptacles are available loose piece and preassembled in 24, 36, and 50 positions. A 64-position plug or receptacle can be supplied with an assembled height of 1.130 [28.70]. For 64-position plug and receptacle part numbers and specifications, contact Tyco Electronics at the numbers listed below. CHAMP Latch Connectors provide a fast, reliable means of mass terminating .050 [1.27] centerline ribbon cable without time-consuming soldering and prestripping of wire. They are capable of terminating 26 AWG [0.40 mm] (solid); 28 AWG [0.08-0.09 mm^2] (stranded) 28 AWG [0.32 mm] (solid) or 30 AWG [0.25 mm] (solid) copper ribbon cable.

Termination of CHAMP Latch Low Profile Connectors is accomplished in a simple one-step operation using the appropriate CHAMP Latch tooling. See page 132. The ability to make "daisy chain" terminations requires nothing more than depressing the stop bar on the hand tool or repositioning the stop bar provided on the base plate for the manual applicator.

The housings and covers are constructed of black thermoplastic. The terminals are gold over nickel plated high strength copper alloy on the mating face and gold flash over nickel plate on the terminating side. The mating face consists of 2 rows of terminals on .085 [2.16] centers. Terminating side consists of terminals on .100 [2.54] centers for an effective .050 [1.27] staggered termination. EMI Shield, for Shielded Connectors, are die cast zinc with nickel plating.

Connector hardware kits are available for Cable-to-Cable (Screw Lock, Bail Lock and CHAMP-LOK connectors) applications, and Cable-to-Panel (Screw Lock, Bail Lock, Metric Screw Lock for IEEE-488 Applications and CHAMP-LOK connector) applications.

Note: CHAMP Latch connectors have been tested on a wide variety of .050 [1.27] centerline cables conforming to Tyco Electronics drawings 746395, 746396 and 86901. If cables other than those specified are used, forward sample of cable for approval to Tyco Electronics at the address listed at the back of this catalog.

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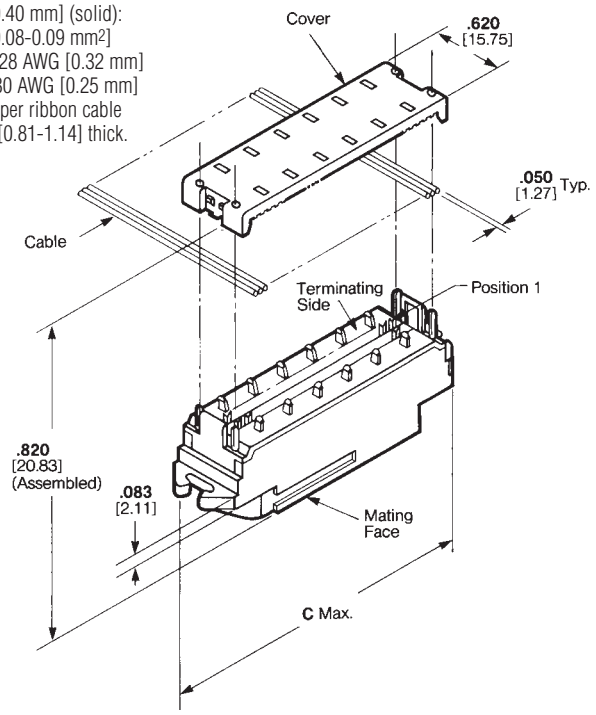
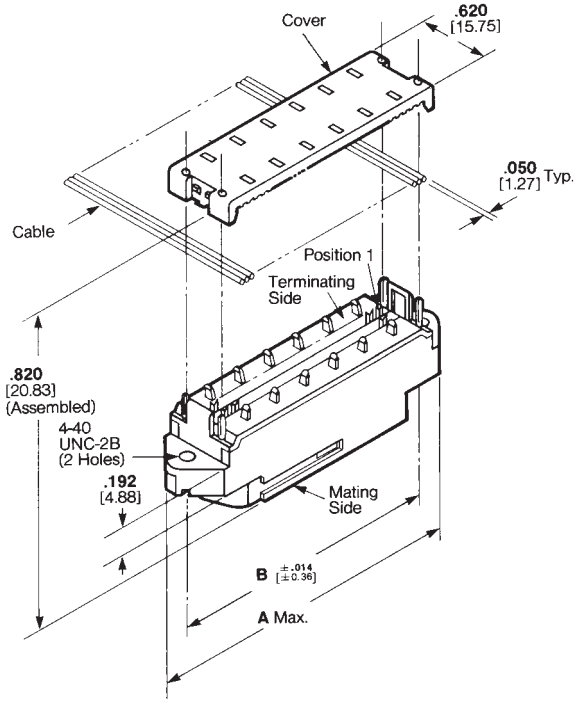
CHAMP Latch Low Profile Connectors—Standard

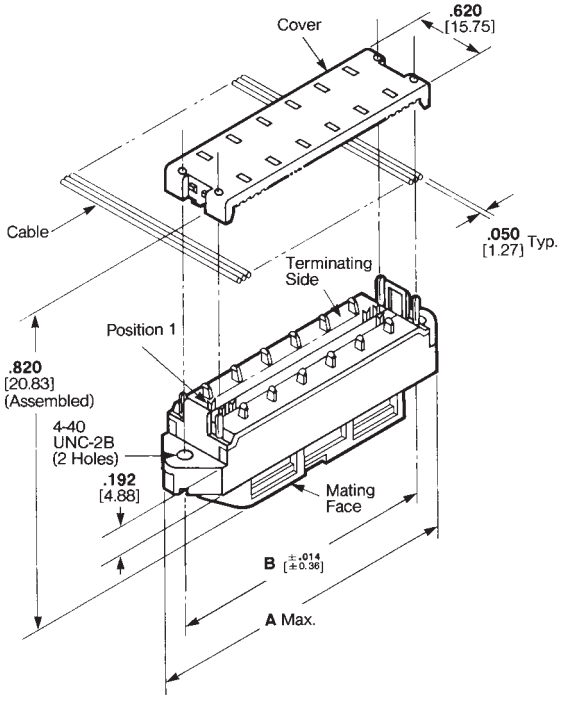
Wire Range:
26 AWG [0.40 mm] (solid):
28 AWG [0.08-0.09 mm²]
(stranded; 28 AWG [0.32 mm]
(solid) or 30 AWG [0.25 mm]
(solid) copper ribbon cable
.032-.045 [0.81-1.14] thick.



Bail Lock Assembly



Screw Lock Assembly



Screw Lock Receptacle Assembly

Notes:
1. Cover shown loose but shipped ready to terminate.
2. Cable conforming to Tyco Electronics specifications to be furnished by customer.
3. Mating face consists of 2 rows of terminals on .085 [2.16] centers.
   Terminating side consists of terminals on .100 [2.54] centers for an effective
   .050 [1.27] termination.

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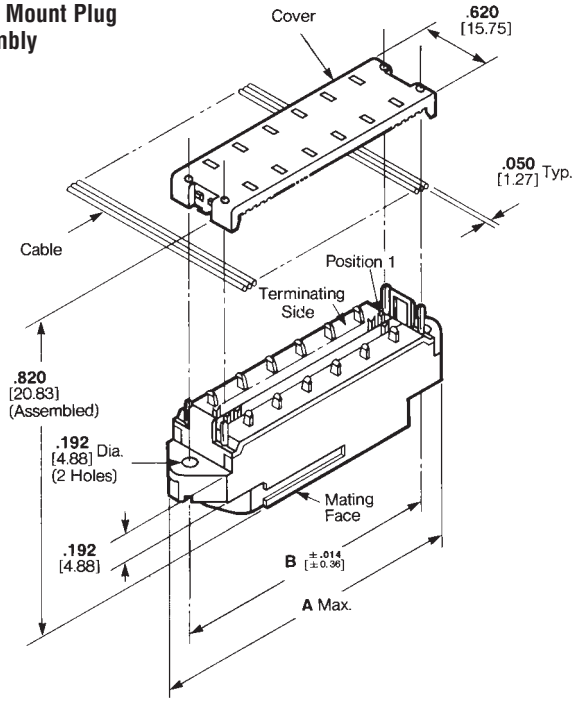
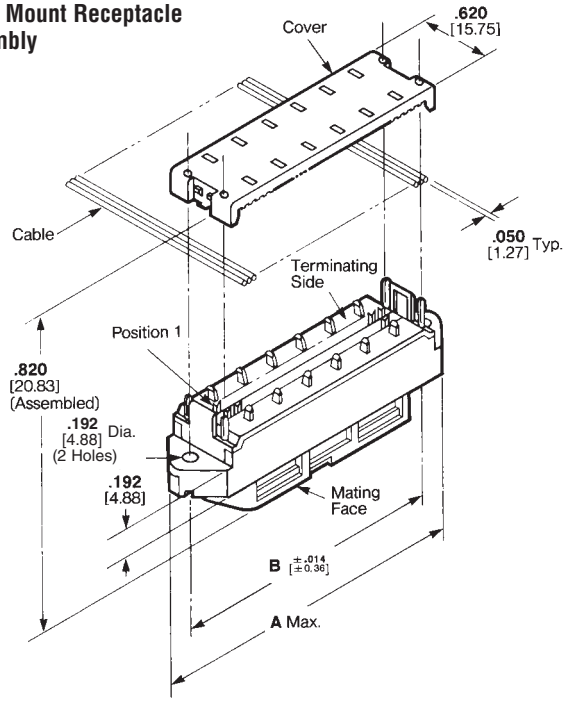
CHAMP Latch Low Profile Connectors—Standard (Continued)

Panel Mount Plug Assembly

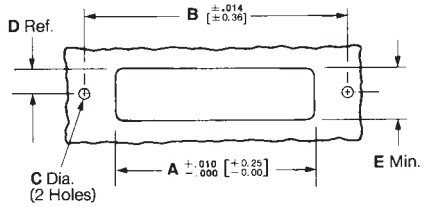


Panel Mount Receptacle Assembly



No. of Positions	Dimensions A	Dimensions B	Part Numbers: Bail Lock Plug Assembly	Screw Lock Plug Assembly	Screw Lock Receptacle Assembly	Panel Mount Plug Assembly	Panel Mount Receptacle Assembly
14	**1.750** 44.45	**1.416** 35.97	—	553596-1	553597-1	—	—
24	**2.175** 55.25	**1.842** 46.79	—	553598-1	553599-1	554103-1	554088-1
36	**2.685** 68.20	**2.352** 59.74	554084-1	553600-1	553601-1	—	554089-1
50	**3.280** 83.31	**2.946** 74.83	554085-1	553602-1	553603-1	—	554090-1

Recommended Panel Cutout



No. of Pos.	Front Panel Mount[1] A	B	C	D	E	Rear Panel Mount[2] A	B	C	D	E
14	**1.063** 27.00	**1.416** 35.97	**.126** 3.20	**.320** 8.13	**.640** 16.26	**1.151** 29.24	**1.416** 35.97	**.149** 3.78	**.310** 7.87	**.620** 15.75
24	**1.488** 37.80	**1.842** 46.79	**.126** 3.20	**.320** 8.13	**.640** 16.26	**1.575** 40.01	**1.842** 46.79	**.149**[3] 3.78	**.310** 7.87	**.620** 15.75
36	**2.000** 50.80	**2.352** 59.74	**.126** 3.20	**.320** 8.13	**.640** 16.26	**2.085** 52.96	**2.352** 59.74	**.149** 3.78	**.310** 7.87	**.620** 15.75
50	**2.700** 68.58	**2.946** 74.83	**.126** 3.20	**.320** 8.13	**.640** 16.26	**2.700** 68.58	**2.946** 74.83	**.149** 3.78	**.310** 7.87	**.620** 15.75

Front Panel Mount Panel Thickness Range: .062-.125 [1.57-3.18].
Rear Panel Mount Panel Thickness Range: .062 [1.57] Max. Standard Hardware–.062-.093 [1.57-2.36] Metric Hardware.

1 For front panel mount application, install from the front of the panel to avoid excessive bending of the cable. Bending of the cable will occur if cable assembly is mounted from the rear of the panel.
2 Screw Lock version only.
3 For IEEE-488 applications, refer to preassembled shielded panel cutouts page 110.

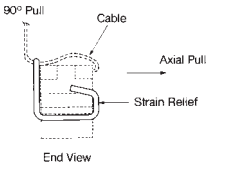
CHAMP Latch Cable Strain Relief Clip

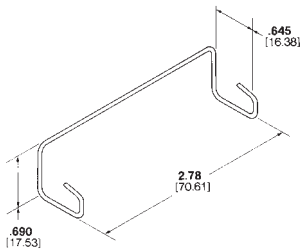
The CHAMP Latch Cable Strain Relief Clip, 50-position, is used only with a Low Profile Standard CHAMP Latch Connector.

The Strain Relief Clip snaps on the connector and over the cable. The clip provides a positive strain relief for cable in axial and 90° directions.

Material

Stainless steel wire, .050 [.127] diameter





CHAMP Latch Cable Strain Relief Clip Part Number 554099-1

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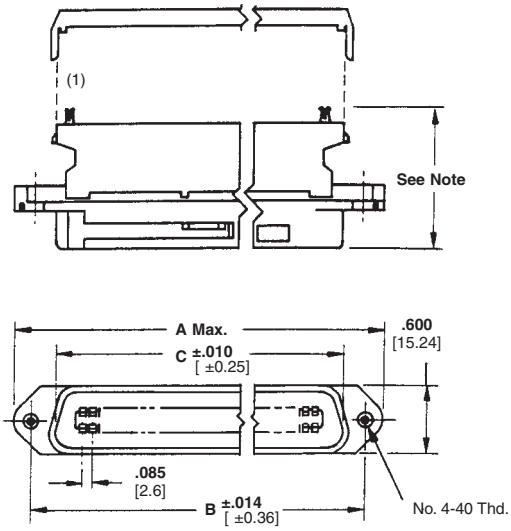
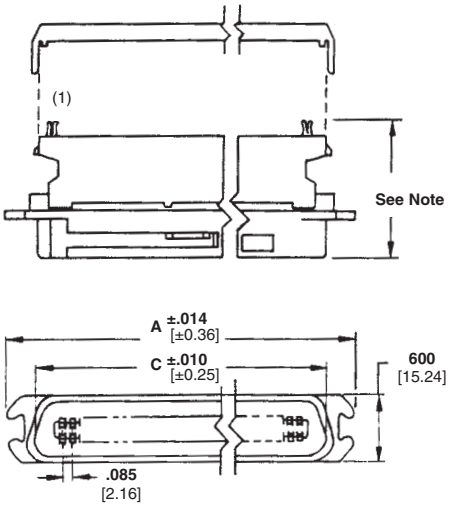
CHAMP Latch Low Profile Connectors 64-Position

CHAMP Latch Connectors 64-Position

Style PS



Style PB

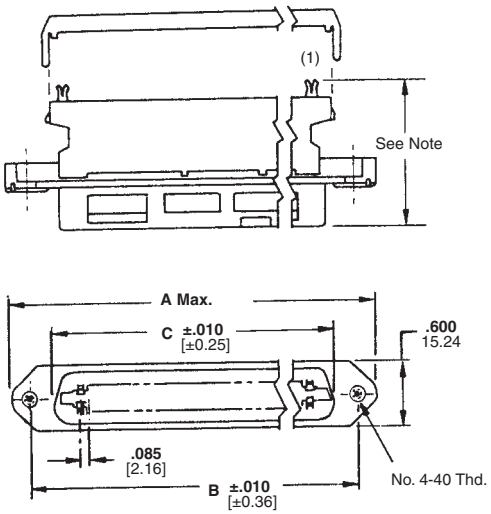


Connector Code:
PS = Plug, Screw Lock
PB = Plug, Bail Lock
RS = Receptacle, Screw or Bail Lock
RP = Receptacle, Panel Mount, Screw or Bail Lock

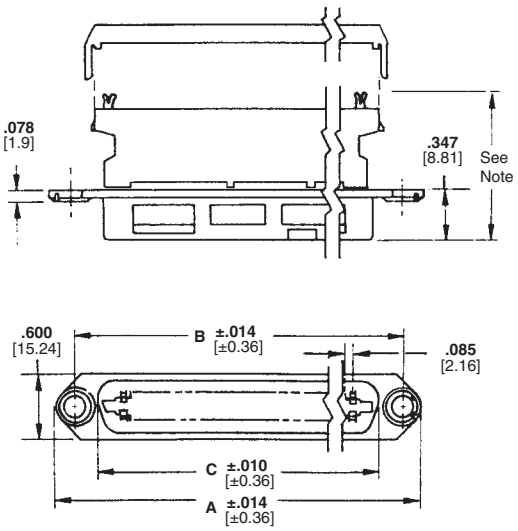
Note: 1.130 [28.7] without strain relief cover
1.168 [29.67] with strain relief cover

Style	Dimension			Part Number
	A	B	C	
PS	**3.875** 98.43	**3.542** 89.97	**3.135** 79.63	552837-1
PB	**3.651** 92.74	—	**3.135** 79.63	552933-1
RS	**3.875** 98.43	**3.542** 89.97	**3.115** 79.12	552838-1
RP	**3.875** 98.43	**3.542** 89.97	**3.115** 79.12	552843-1

Style RS



Style RP



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CHAMP Latch Low Profile Connectors Cable-to-Cable Hardware Kits

Only fastening hardware supplied, other items shown for reference purposes.

Screw Lock Hardware Kit
Part Number 229911-1
(two required per assembly)

CHAMP-LOK Connector Hardware Kit
Part Number 552723-1 (36- and 50-Position)
Part Number 552723-2 (14- and 24-Position)
(one locking latch required per assembly)

Bail Lock Hardware Kit
Part Number 552561-3
(one kit required per assembly)

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UK: 44-141-810-8967

CHAMP Latch Low Profile Connectors Cable-to-Cable Hardware Kits (Continued)

Only fastening hardware supplied, other items shown for reference purposes.

Screw Lock Hardware Kit
Part Number 552568-2
(Rear Panel Mount Application—.062 [1.57] max. panel thickness—one kit required per assembly)

For Front Panel Mount
.062-.125 [1.57-3.18]
Part Number 553636-2

For Rear Panel Mount
.062-.093 [1.57-2.36]
Part Number 553636-3

Metric Screw Lock Hardware Kit for IEEE-488 Application
(one kit required per assembly)

Bail Lock Hardware Kit
Part Number 552567-3
(one kit required per assembly)

Catalog 1-1773441-4
Issued 10-05

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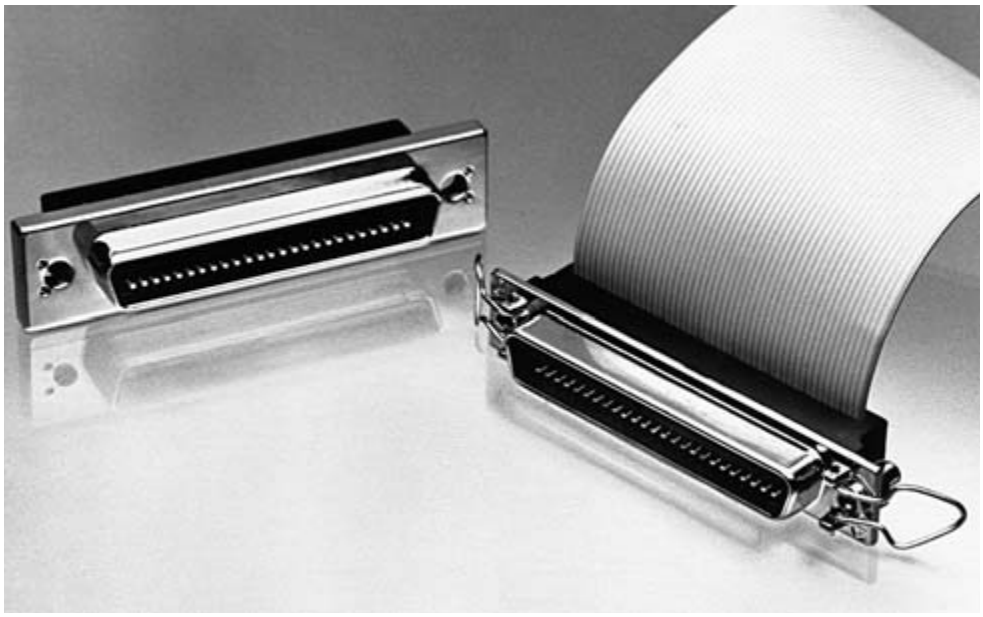
Shielded CHAMP Latch Connectors



Product Facts

- Ready to use strain relief covers preassembled to connectors
- Simple one-step termination
- Dead end or daisy-chain applications
- Hardware kits available for panel mounting
- Terminates conductors without time-consuming soldering
- Terminates .050 [1.27] centerline 26 AWG [0.40 mm], 28 AWG [0.32 mm] and 30 AWG [0.25 mm] (solid) or 28 AWG [0.08-0.09 mm^2] (stranded) wire
- Connectors Recognized under the Component Program of Underwriters Laboratories Inc. File No. E28476
- Cable Recognized under the Component Program of Underwriters Laboratories Inc.
- Connectors CSA Certified, File No. LR-7189
- No cable stripping; simultaneous termination of all conductors
- One-step termination with Tyco Electronics application tooling
- Terminates varying thicknesses of flat, woven, shielded (properly prepared) and other ribbon cable with conductors on .050 [1.27] centers as well as discrete wires
- Self-registration of wires — compatible product and tooling designs eliminate registration problems
- Wide selection of sizes in all configurations
- Positive, uniform latching of contacts and housing with cover eliminates cover warpage
- Easy, visual inspection of terminations during assembly; electrical probing capability after assembly
- All polymeric parts manufactured from a UL Recognized 94 V-0 rated material
- Receptacles with recessed covers provide positive locking feature for ejection style pin headers with latches
- Shielded connectors provide RFI/EMI protection

Shielded CHAMP Latch panel mount connectors are designed to provide the optimum in EMI protection at the chassis and still permit mating with CHAMP Connectors and other compatible connectors in 24-, 36- and 50-position sizes.

The housing and covers are constructed of black thermoplastic. The terminals are gold over nickel plated high strength copper alloy on the mating face and gold flash over nickel plate on the terminal side. The mating face consists of 2 rows of terminals on .085 [2.16] centers. Terminating side consists of terminals on .100 [2.54] centers for an effective .050 [1.27] staggered termination. Die cast shields are die cast zinc with nickel plating. Hardware kits are available for panel mount in standard or IEEE metric screw lock.

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Shielded CHAMP Latch Panel Mount Connectors

CHAMP Latch Connectors for .050 [1.27] Ribbon Cable

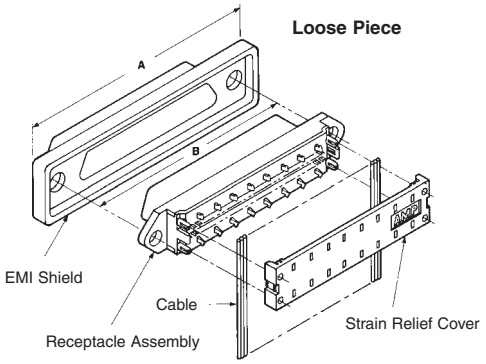
Material and Finish

Housing and Strain Relief Clip — Thermoplastic (black)

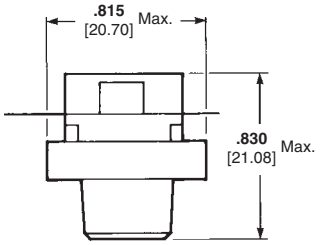
Terminals — Gold over nickel plated high strength copper alloy on mating face and gold flash over nickel plate on terminating side

EMI Shield — Nickel plated die casting

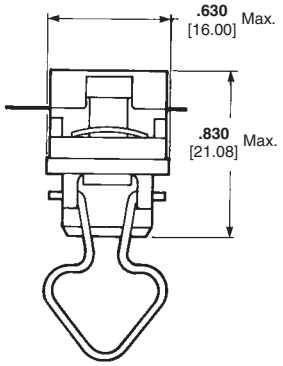
Loose Piece



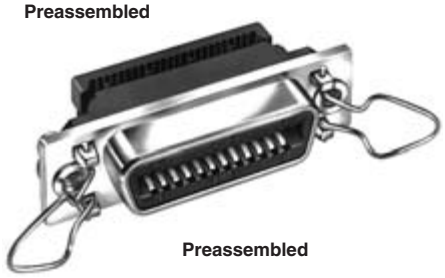
Loose Piece End View



Preassembled Bail Lock End View



Preassembled

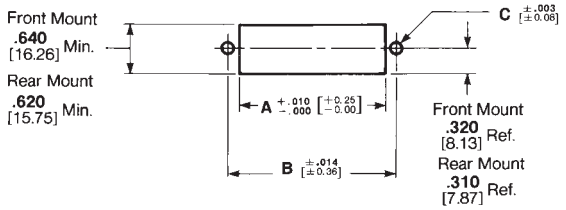


Preassembled

Number of Positions	Loose Piece			Preassembled				
	Dimension		Part Number	Bail Lock			Screw Lock	
				Dimension		Part Number	Part Number	
	A	B		A	B	4-40 Hole	6-32 Hole	4-40 Hole
24	**2.380** 60.45	**1.842** 46.79	554349-1[3]	**2.205** 56.01	**1.842** 46.79	—	554434-1[3]	—
36	**2.380** 60.45	**2.352** 59.74	554348-1	**2.715** 68.96	**2.352** 59.74	554436-2 555983-1[1]	—	—
50	**3.475** 88.27	**2.946** 74.83	554350-1	**3.310** 84.07	**2.947** 74.85	554902-1[1,2]	—	554436-2[2]

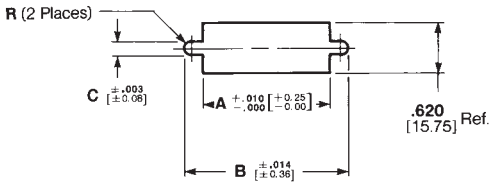
[1] Does not have boss feature. Boss is a .040 [1.02] shoulder on front of shield.
[2] SCSI applicable.
[3] Can be used with Interface Bus Applications per IEEE-488.

Recommended Panel Cutouts for Front and Rear Panel Mountings



Loose Piece Standard Hardware Application

Recommended Panel Cutouts for Rear Panel Mounts Only.



Preassembled and Metric Application for IEEE-488

No. of Pos.	Loose Piece					
	Front Panel Mount			Rear Panel Mount		
	A	B	C	A	B	C
24	**1.488** 37.80	**1.842** 46.79	**.126** 3.20	**1.575** 40.01	**1.842** 46.79	**.149** 3.78
36	**2.000** 50.80	**2.352** 59.74	**.126** 3.20	**2.085** 52.96	**2.352** 59.74	**.149** 3.78
50	**2.700** 68.58	**2.946** 74.83	**.126** 3.20	**2.700** 68.58	**2.946** 74.83	**.149** 3.78

No. of Pos.	Preassembled					
	Ball Lock			Screw Lock		
	A	B	C	A	B	C
24	**1.806** 45.87	**1.968** 49.99	**.152** 3.86	**1.575** 40.01	**1.994** 50.65	**.152**[1] 3.78
36	**2.316** 58.83	**2.478** 62.94	**.126** 3.20	**2.085** 52.96	**2.478** 62.94	**.126** 3.20
50	**2.910** 73.91	**3.072** 78.03	**.126** 3.20	**2.700** 68.58	**3.072** 78.03	**.126** 3.20

[1] For IEEE-488 Metric Applications Dimension.
C = .192 [4.88] B = 2.036 [51.71]

Catalog 1-1773441-4
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UK: 44-141-810-8967

Shielded CHAMP Latch Panel Mount Connectors (Continued)

Material and Finish

Mounting Stud — Bright zinc plated carbon steel

Pan Head Screw — Passivated stainless steel

Metric Standoff Stud — Black oxide coated carbon steel

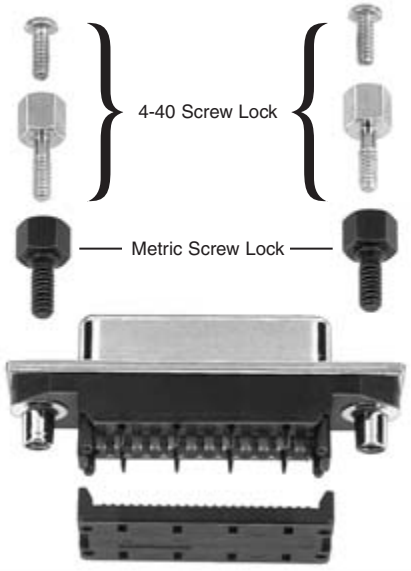
CHAMP Latch Connector Hardware Kits

Only fastening hardware supplied, other items shown for reference purposes.

Loose Piece Shield

Metric Screw Lock Hardware Kit per IEEE-488 Application
For Front Panel Mount Part Number 553636-2
For Rear Panel Mount Part Number 553636-3

Preassembled Shield



Part Number 554272-1
(for use with 4-40 Screw Lock, Rear Panel Mount Only)

Metric Screw Lock Hardware Kit for 24-Position IEEE-488, Preassembled, Part Number 554808-1 Rear Panel Mount Only

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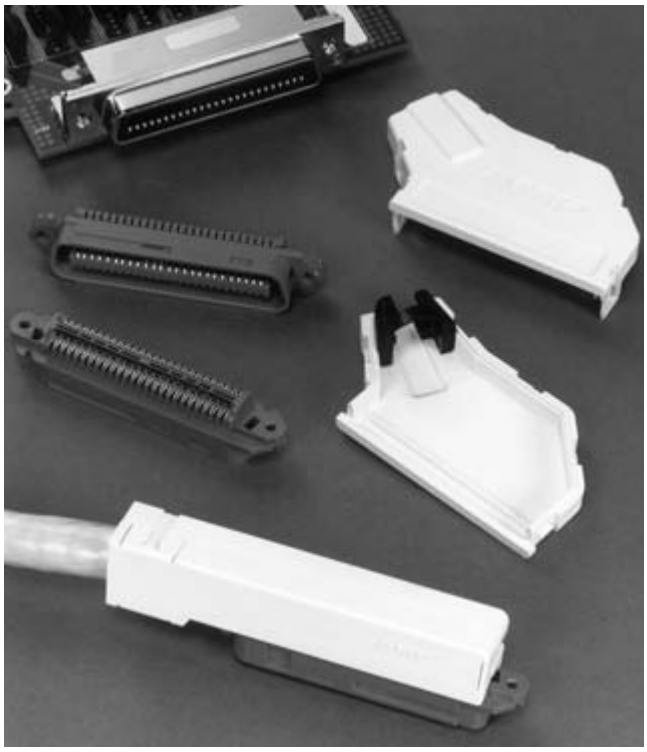
CHAMP System 5 Connectors

Product Facts

- **Concentrated I/O hub port with Category 5 performance**
- **12 Ports in one hub connection**
- **Category 5 performance without board compensation**
- **Supported by a complete LAN cabling system**
  (Request Publication 296129)



The proven, reliable CHAMP Connector, with its many years of experience, is now available as a Category 5 connector to meet the high-speed date requirements of today's LAN applications.

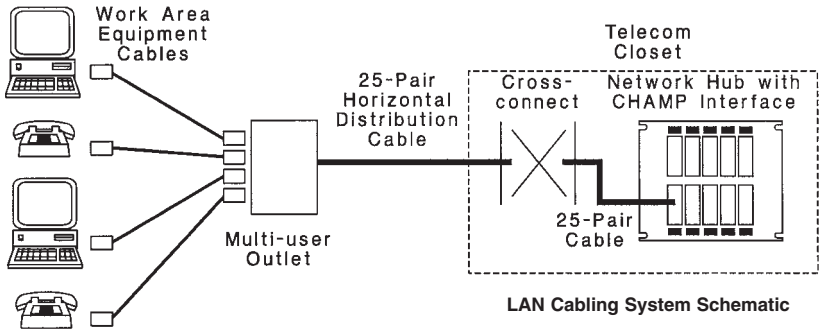
Category 5 is a performance specification for cable and connectors defined for a frequency bandwidth to 100 MHz. A Category 5 cabling system will accommodate high data rates such as 100 Mbps for 100BASE-T Ethernet of 155 Mbps ATM.

With CHAMP System 5 Connectors, only the plug (male) connector is compensated to achieve Category 5 performance. When mated with any standard CHAMP receptacle, PC board or cable mount, Category 5 performance is achieved. Mating receptacles do not require any compensation.

The plug has been designed using flex-film circuitry, as well as a change in the wiring pattern, to reduce Near-End Crosstalk (NEXT). NEXT is the undesirable coupling of signals between pairs in cables and connectors.

In addition to Category 5 performance, CHAMP System 5 Connectors provide a concentrated I/O port which can support up to twelve 2-pair ports in a single connection. This concentrated I/O saves on both panel space and PC board real estate to support the constant effort in the miniaturization of electronics.

CHAMP System 5 Connectors are also supported by a complete LAN cabling system that extends from the hub out to the individual workstations.



LAN Cabling System Schematic

Catalog 1-1773441-4
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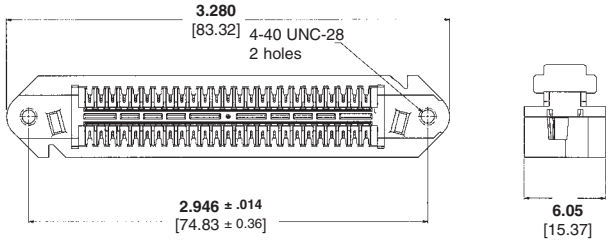
CHAMP System 5 Connectors (Continued)

Plugs

Material and Finish

Housing — Red thermoplastic
Terminals — Selectively plated gold over nickel plated high strength copper alloy

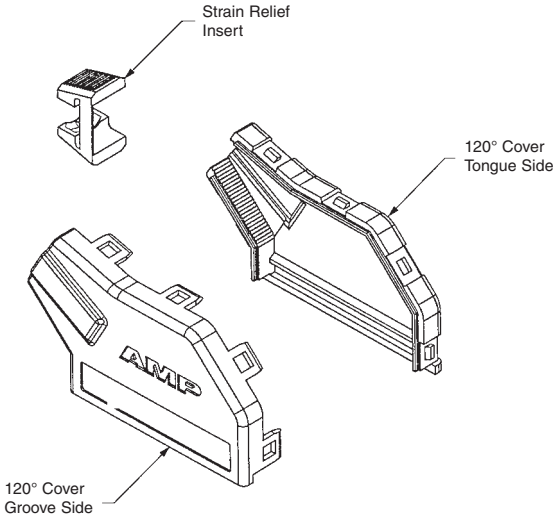


Description	Dim A	Dim B	Dim C	Part No.
24 AWG Solid Wire	**3.280** 83.32	**2.946** 74.83	**.690** 17.53	1-558693-1

120° Strain Relief

Material and Finish

Housing — Light almond thermoplastic



Cable Diameter Range	Part Number
.350-.680 8.89-17.27	569336-1

Catalog 1-1773441-4
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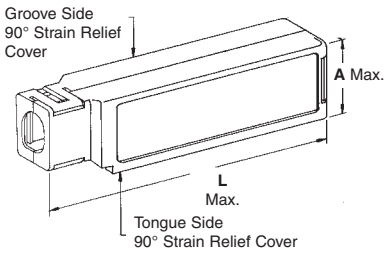
CHAMP System 5 Connectors (Continued)

90° Strain Relief

Material and Finish

Housing — Light almond thermoplastic



Part Number 552731

Cable Diameter Range	Dimensions		Part Number	
	A	L	Connector (Red)	Cover (Almond)
.650-.750 16.51-19.05	**.685** 17.40	**3.878** 98.50	1-558693-1	569335-1
.475-.540 12.07-13.72	**.112** 2.845	**3.878** 98.50	1-558693-1	552731-1

PC Board Mount Options

Although any CHAMP receptacle will provide Category 5 performance when mated with the CHAMP System 5 plug, following are two popular right angle, board mount styles:

Part Number 557932-1: Right Angle, Shielded Receptacle; Shielded Backshell

Part Number 553813-3: Right Angle, Shielded Receptacle; Backshell Not Shielded

See page 82 for more details on these receptacles

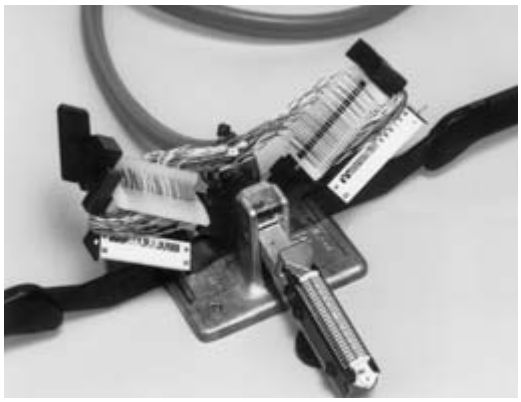
Tooling

The standard portable hand-operated tool (MI-1) is designed for field applications and medium volume production and is capable of terminating the CHAMP System 5 Plugs. The proper color-code bar must be used and the CHAMP System 5 Connector wiring pattern followed.

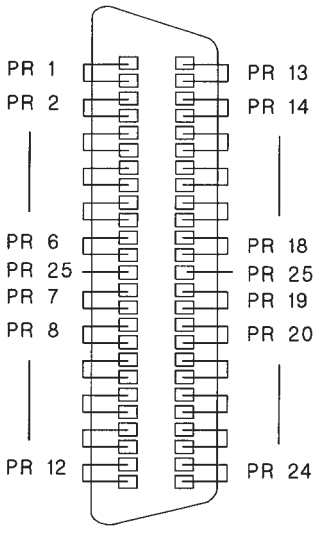
MI-1 Portable Hand Operated Tool (Butterfly)
Part Number 229378-1

Color Code Bar
Part Number 224105-1

CHAMP System 5 Connector CHAMPOMATOR 2.5 Terminating Machine
(See Page 131)



Wiring Pattern



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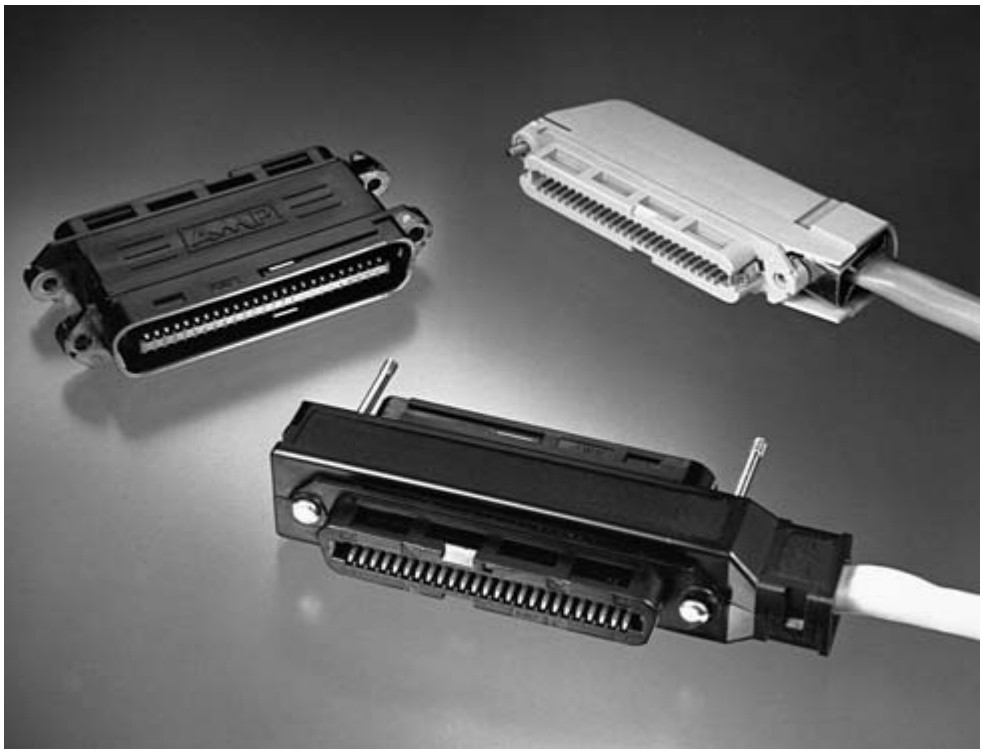
CHAMP IDC Connectors for Special Applications

Product Facts

- For factory cable assembly applications
- Provides for up to a 10% savings in time over conventional cable strain relief methods when used in mass production cable assembly operations
- May be utilized for booted cables
- Metal cable clamp may only be engaged with a special CHAMPOMATOR semi-automatic wire insertion tool
- Once cable clamp is engaged, strain relief is provided
- Maximum cable diameter .450 [11.43]
- Provided with dust covers



The CHAMP Connector Systems are widely diversified and have expanded to meet not only the demands of the telecommunications industry, but also the needs of the computer markets. The CHAMP Connector product lines includes not only the Standard Connectors, but a growing network of Special and Shielded CHAMP Connectors for various special applications. All special items are illustrated and dimensioned on the following pages (51 thru 60) to assist you in selecting the proper application for your needs.

CHAMP Connector with Crimp Cable Clamp (50-Position Only)

This connector is used for the mass production of 25 Pair Cable Assemblies. The Tyco Electronics CHAMPOMATOR Machine is used to terminate this style connector. The connector is also available in an Integral Latch version.

Wear Adapter (50-Position Only)

This one-piece disposable assembly saves wear on more expensive mounted test equipment and is applicable when frequent plugging/unplugging is necessary. The Wear Adapter is prewired and can be used with all connectors of similar design.

Multiple Wire Connector (50-Position Only)

This special connector is designed to terminate two unstripped conductors into one terminal position for economical half tapping and daisy chain (bridging) applications. The panel mount receptacles are preloaded with contacts for 24 or 26 AWG [0.51 or 0.40 mm] solid wire with a maximum insulation diameter of .034 [0.86] per wire.

CHAMP Back-to-Back Connector (50-Position Only)

The 25 pair connector allows systems to grow by adding an electrical connection into an existing cable-to-cable or cable-to-panel application. The kit includes a bonded plug/receptacle assembly, two-piece cover to outer cable diameter range of .380 to .400 [9.65 to 10.16] and two pan head screws. Instruction Sheet 6503 describes terminating procedures with a Tyco Electronics arbor frame applicator and special assembly.

Other specials available are the CHAMP IEEE-488 Cable Assemblies and Connectors in Standard and Shielded versions. The connectors are available in panel mount and PC board styles.

Methods of panel mounting the Small Computer System Interface (SCSI) 50-position Connectors are shown on page 125 for reference purposes.

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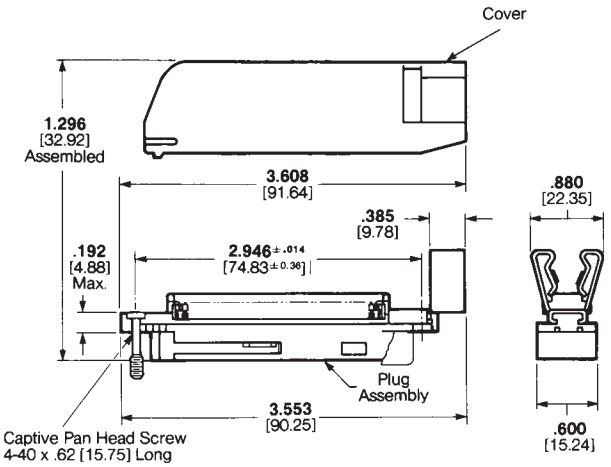
CHAMP IDC Connectors for Special Applications (Continued)

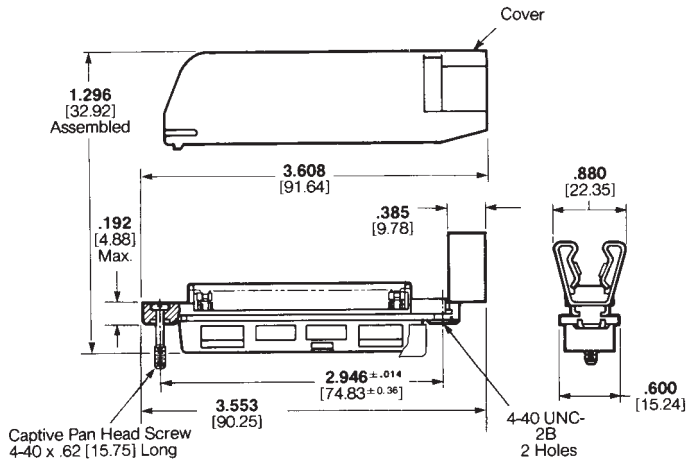
CHAMP Connector with Crimp Cable Clamp (For 50-Position Only)

Note: A Special Tyco Electronics CHAMPOMATOR Machine is used to terminate this style connector.

Consists of:
CHAMPOMATOR 3A Terminating Machine Part Number 1-761420-4.



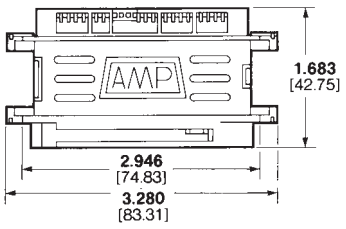
50-Position Plug Assembly



50-Position Receptacle Assembly

Wire Size				Housing Color Dot Description	Contact Letter Code	Housing Color	Part Numbers	
Solid		7 Strand						
AWG	mm	AWG	mm²				Plug	Receptacle
24-26	0.51-0.40	24	0.20	Blue	B	Gray	553213-3	553212-3

50-Position Wear Adapter (Plug to Receptacle Assembly) Part Number 552705-1



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UK: 44-141-810-8967

CHAMP IDC Connectors for Special Applications, Multiple Wire Connector and Back-to-Back Connector Assembly (50-Position Only)

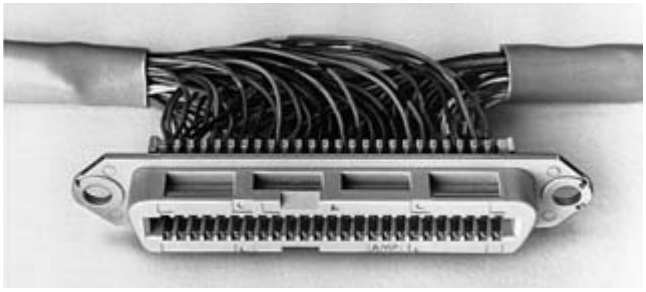
Product Facts

- **No prestripping of wire required**
- **Positive electrical contact through redundant contact points**
- **Eliminates time-consuming soldering**
- **Standard 50-position receptacle connector configuration**
- **Terminals constructed of high strength copper alloy with gold over nickel plating in contact area**
- **Utilizes standard CHAMP connector screw lock, bail lock and locking latch hardware**
- **Economical approach to half-tapping and daisy chain applications**

Multiple Wire Connectors

(50-Position Only)

The Multiple Wire CHAMP Connector extends the unique technology of the regular CHAMP connector to provide the capability of terminating two conductors into one terminal position. Use of the Multiple Wire connector offers the labor savings of insulation displacement technology versus the conventional means of hand soldering the terminals. They are available in 50-position receptacle configurations with a molded strain relief and the necessary hardware for panel mount applications. The connector consists of a molded thermoplastic housing with receptacle contacts constructed of high strength copper alloy with gold over nickel plate.



Receptacle Assembly—J Slot
Part Numbers 552827-1 (Gray) and 552827-2 (Black)

Multiple Wire Strain Relief[1]
Part Number 552851-2 (Black)

[1] Available for use with 50-position thin flange connector only.
Notes: 1. J Slot for 24 AWG [0.51 mm] solid wire only. (Pink Color Dot)
2. Max. insulation dia. .034 (0.86)

For Snap-In Panel Mount Strain Relief, see Panel Mount Connector Accessories on page 95.

Application Tooling

Termination is accomplished by using the special MI-1 applicator for 26 AWG [0.40 mm] solid wire only, Part Number 2-229378-0 or the CHAMP discrete wire applicator for 26-24 AWG [0.40-0.51] solid wire, Part Number 231593-1.

Product Facts

- **No prestripping of wire required**
- **Positive electrical contact through redundant contact points**
- **Leads can be dressed to desired configuration**
- **Terminals constructed of high strength copper alloy with gold over nickel plating**
- **Easy plug-in insertion into existing cables**

Notes:
1. Cable to customer supplied.
2. Acceptable cable diameter range is .380-.400 [9.65-10.16].

Wire Ranges —
1. 24 AWG [0.20 mm^2] (7 strand) or 26 AWG [0.40 mm] (solid) and 24 AWG [0.51 mm] (solid)–B Slot.
2. 26 AWG [0.14 mm^2], 27 AWG [0.10 mm^2] or 28 AWG [0.09 mm^2] (strand)–E Slot.

Back-to-Back Connector Assembly

(50-Position Only)

The 50-Position CHAMP Back-to-Back Connector provides the customer with the ability to make an electrical connection into existing cable-to-cable and cable-to-panel applications. The male-to-female connector can be utilized as a bridging connector in central office or PBX Bussing. It also provides a readily accessible interface for test scanning, maintenance or telephone monitoring equipment.

This connector utilizes the insulation displacement technology. To terminate the connector, one half of the unstripped wires are laced through the applicator tool and mass terminated. Reversing the connector allows the mass termination of the remaining connectors. For applicator tooling, see page 65.

Plug/Receptacle 50-Position, B-Slot Kit
Part Number 553257-1 (Cable-to-Cable Application)

Catalog 1-1773441-4
Issued 10-05

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

CHAMP IDC Connectors for Special Applications, Gender Menders

Product Facts

- Kit is preassembled
- Like numbered contacts on both connectors are electrically common
- Allows connections between plug and plug or receptacle and receptacle interfaces
- Terminals constructed of high strength copper alloy with selectively plated gold over nickel plating in contact area
- Hardware is zinc plated steel
- Housing and covers are polyphenylene black

Receptacle Assembly

Plug Assembly

Gender Menders
50-Position with J-Hook Hardware

Materials

Housing and Covers — Polyphenylene, black

Terminals — Selectively plated gold over nickel plating high strength copper alloy

Hardware — Zinc plated steel

Style	With J-Hook Hardware	W/O J-Hook Hardware
Receptacle	—	554875-2
Plug	554876-1	554876-2

Catalog 1-1773441-4
Issued 10-05

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UK: 44-141-810-8967

CHAMP IDC Connectors for Special Applications, Shielded Cable Assemblies

24-Position Shielded CHAMP IEEE-488 Cable Assemblies

Material and Finish

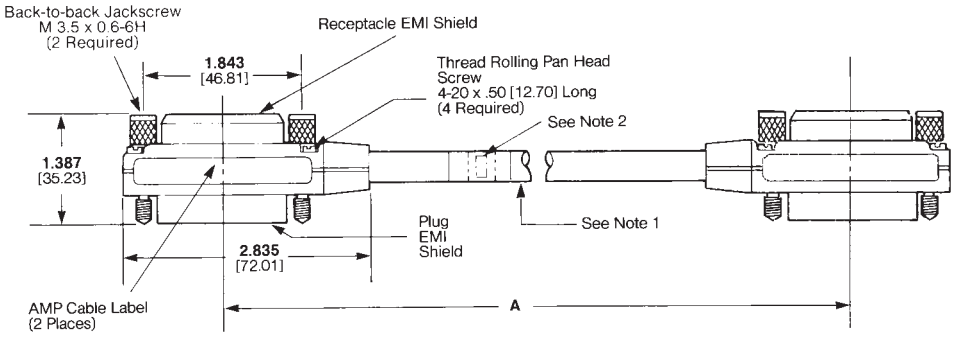
Housing — Thermoplastic, black

Terminals — Selectively plated gold over nickel plated high strength copper alloy

Metric Jackscrew — Black oxide plated, carbon steel

EMI Shield — Nickel plated non-ferrous die casting

Notes:
1. Cable (24) conductors 26 AWG [0.12-0.15 mm²], (2) 24 AWG [0.20 mm²] drain wires with double foil and braided shields.
2. Manufacturer's data code.
3. Cable assemblies are available in special lengths. For further information contact Tyco Electronics at the numbers listed below.



Dimension A		Part Numbers
in.	m	
19.68	0.5	553577-1[1]
39.37	1.0	553577-2[1]
78.74	2.0	553577-3[1]
118.11	3.0	553577-4[1]
157.48	4.0	553577-5[1]
236.22	6.0	553577-6[1]
314.96	8.0	553577-7[1]

[1] Contact Tyco Electronics for RoHS Part Number information.

Catalog 1-1773441-4
Issued 10-05

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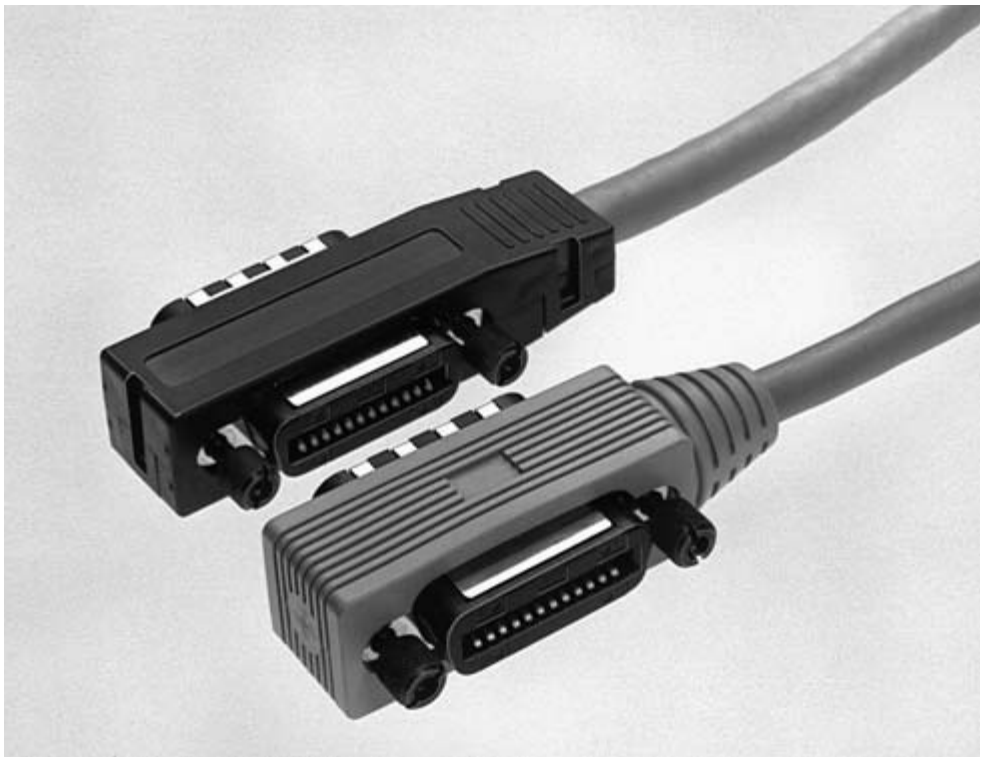
UK: 44-141-810-8967

CHAMP IDC Connectors for Special Applications, Shielded Back-to-Back Cable Connectors

Product Facts

- Conforms to IEEE-488 specifications
- Superior shielding effectiveness
- Fully intermateable and compatible with all other IEEE-488 interfaces
- Conducive to post molding techniques
- Available in back-to-back configuration
- Design includes a two-piece, precision stamped metal shell that encloses the 24-position back-to-back connector
- Connector design allows shields to accept a cable range of .300 to .450 [7.62 to 11.43] diameter
- Acceptable wire sizes of 26, 27 and 28 AWG [0.12, 0.10 and 0.09 mm^2] 7 strand



The Shielded CHAMP Connector

Back-to-Back Cable Connector Kit is currently available in a true 24-position IEEE-488 configuration.

The IEEE-488 Kit consists of a 24-position back-to-back connector assembly, a plug shield, a receptacle shield and two jackscrews. By ordering different dash numbers of the ferrule, you may obtain the appropriate diameter inner ferrule to accommodate the particular size cable to be terminated.

A two-piece, snap-on strain relief cover kit is also available for those who do not wish to post mold the terminated assembly.

Wire termination of the back-to-back (plug-to-receptacle) connector assembly is facilitated by the unique, one-piece insulation displacement contact design. Applicator tooling is specifically designed to mass terminate unstripped wires into their respective slotted beams. Each wire is cut to length simultaneously as termination occurs, and 24 wires are terminated at the same time. See pages 128 thru 131 for application tooling.

The two precision-stamped shields are then assembled over the terminated connector assembly. The spring fingers of these shield halves captivate and reliably maintain contact with the braid of the cable, previously positioned over the inner ferrule prior to connector assembly termination.

The spring fingers allow the shields to accept a cable range of .300 to .450 [7.62 to 11.43] in diameter, and due to their stored energy design, provide continuity of shield to braid regardless of temperature, shock, vibration and other external influence. Installation of the black, plated metric jackscrews in accordance with IEEE-488 specifications finalize the assembly.

Catalog 1-1773441-4
Issued 10-05

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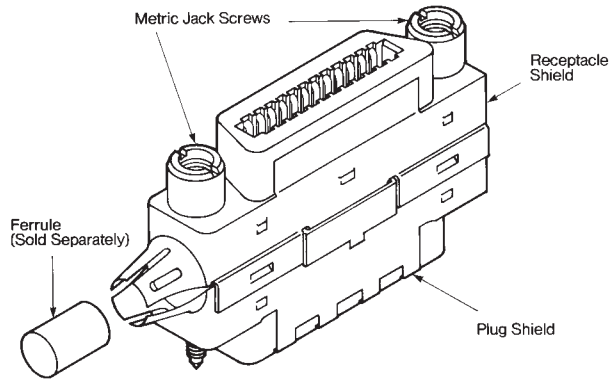
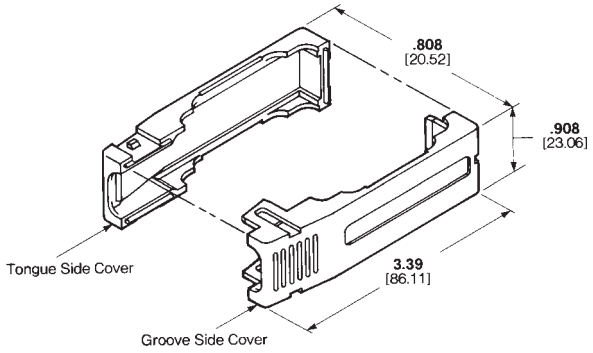
UK: 44-141-810-8967

CHAMP IDC Connectors for Special Applications, Shielded Back-to-Back Cable Connectors (Continued)

24-Position Back-to-Back Kit



24-Position Back-to-Back Cover Kit



Cable Connectors

Connector Styles	Cable Diameter Range	Post Moldable	Kit Part Number	Snap-on Cover Part Number
Back-to-Back	**.300-.375** 7.62-9.53	Yes	555182-1	554831-1

Inner Ferrules

Inside Diameter	Part Numbers
.300 7.62	554725-2
.350 8.89	554725-3
.400 10.16	554725-4

24-Position Interface Bus Connector

Part Number 554815-1

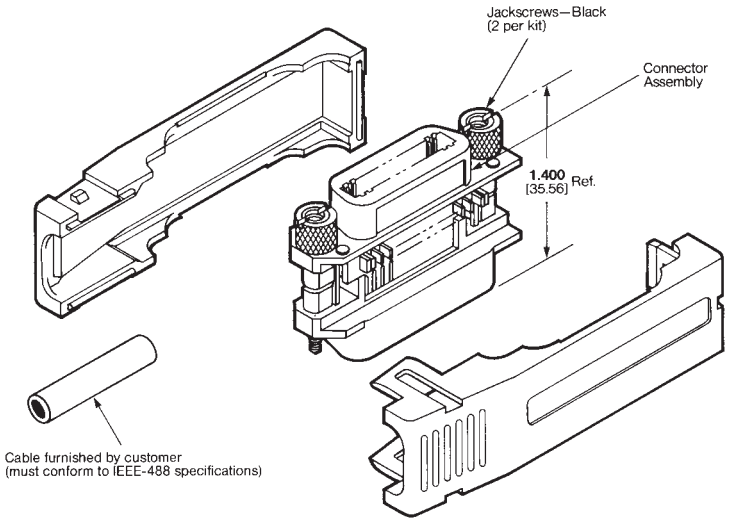
Snap-on Covers— Part Number 554831-1

Material and Finish

Housing and Cover — Black, thermoplastic

Jackscrews — Black oxide plated carbon

Terminals — High strength copper alloy with gold over nickel plating in contact area



Catalog 1-1773441-4
Issued 10-05

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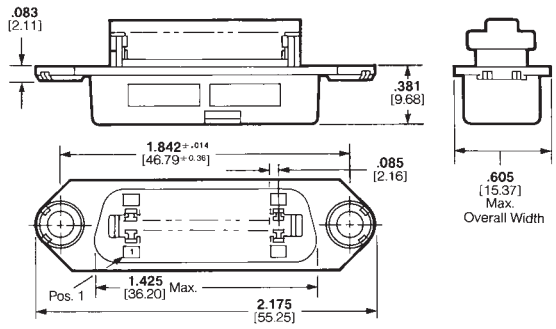
CHAMP IDC Connectors for Special Applications, Interface Bus IDC Connector Panel Mount Applications

Panel Mount Receptacle (24-Position)

Material and Finish

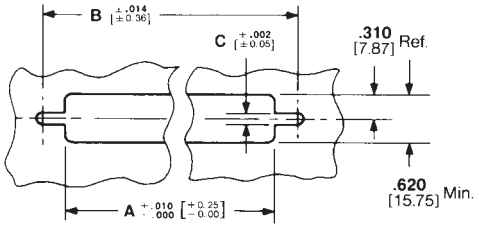
Housing — Black thermoplastic
Contacts — Selectively plated gold over nickel plated on high strength copper alloy

Note: For tooling, see pages 128 thru 132.



Wire Size				Housing Color Dot Designation	Contact Letter Designation	Part Number (thin flange)
Solid		7-Strand				
AWG	mm	AWG	mm²			
22	0.64	22	0.40	Green	C	2-552322-1
24-26	0.51-0.40	24	0.20	Blue	B	2-552273-1
—	—	26-27-28	0.14-0.10-0.09	Yellow	E	2-552474-1

Panel Cutout Dimensions



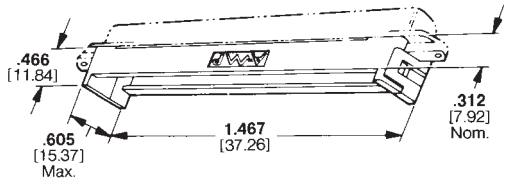
Description	Dimensions		
	A	B	C
Front Panel	**1.488** 37.80	**2.036** 51.71	**.126** 3.20
Rear Panel	**1.575** 40.01	**2.036** 51.71	**.192** 4.88

Note: Panel Thickness Range .062-.125 [1.57-3.18] for front panel mount applications.
Panel Thickness Range .062-.093 [1.57-2.36] for rear panel mount applications.

Snap-On Strain Relief, 24-Position (2 parts required per each assembly)

Material and Finish

Black thermoplastic



Low Profile
Part Number 1-552298-1

Panel Mount Metric Screw Lock Hardware Kits (one kit required per each assembly)

Material and Finish

Nut and Lock Washer — Zinc plated carbon steel
Metric Mounting Screw — Black oxide plated carbon steel

For Front Panel Mount
Part Number 552633-3

For Rear Panel Mount
Part Number 552633-4

Catalog 1-1773441-4
Issued 10-05

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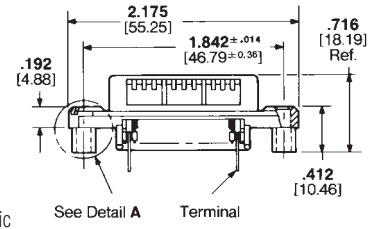
CHAMP IDC Connectors for Special Applications, Interface Bus PCB Connector Applications

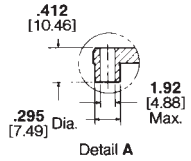
Vertical Mount Receptacle (24-Position) Part Number 552224-1



Material and Finish

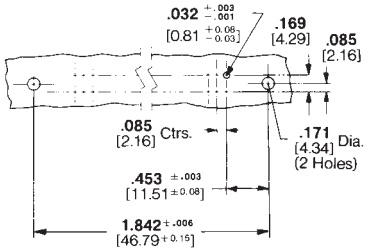
Housing — Polyester thermoplastic (black)

Terminals — Selectively plated gold over nickel plated on high strength copper alloy, tin plated tails



Style RV

Recommended Printed Circuit Board Mounting Dimensions (24-Position Only)



Note:
PC Board Thickness—
.125 [3.18] maximum

Edge Mount Screw Lock Hardware Kits (one kit required per assembly)

Mounting Bracket
Part Number 552656-1

Metric Standoff Stud
Part Number 552634-3

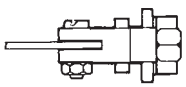
Note: 4.40 x 3/8 [9.53] screws and nuts for mounting brackets are customer supplied items.

Vertical Mount Screw Lock Hardware Kits (one kit required per assembly)

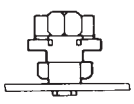
Order all hardware separately

For Standard Mount
Part Number
552767-1

Standard Mount



Standard Mount



Catalog 1-1773441-4
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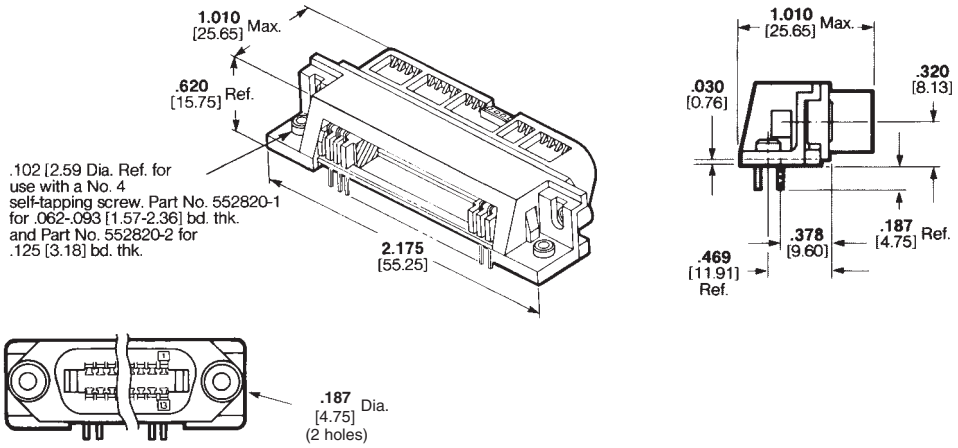
CHAMP IDC Connectors for Special Applications, Interface Bus PCB Connector Applications (Continued)

Right Angle Mount Receptacles (24-Position)

Material and Finish

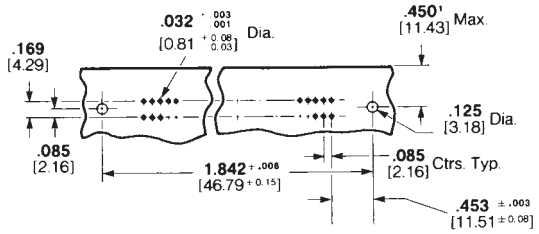
Housing, Bracket and Plate — Polyester thermoplastic (black)

Terminals — Selectively plated gold over nickel plated high strength copper alloy, tin plated tails



Part Number 552791-1 (Standard Orientation)

Recommended PC Board Mounting Dimensions (24-Position Only)

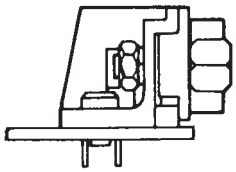


[1] For rear panel mounting applications.

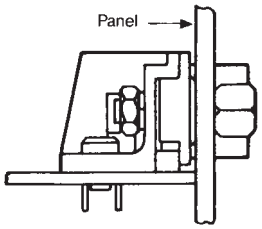
Right Angle Mount Hardware Kit

Note: Only fastening hardware supplied, other items shown for reference purposes.

Standard Mount



Rear Panel Mount[1]



[1] Panel Thickness Range: .062-.093 [1.57-2.36] for rear panel mount metric applications.

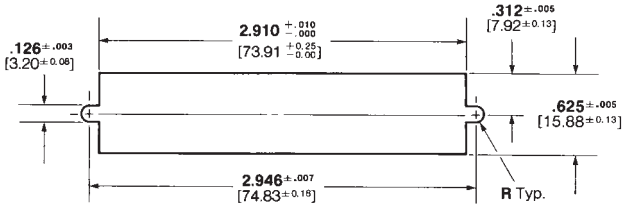
Shielded CHAMP Connectors

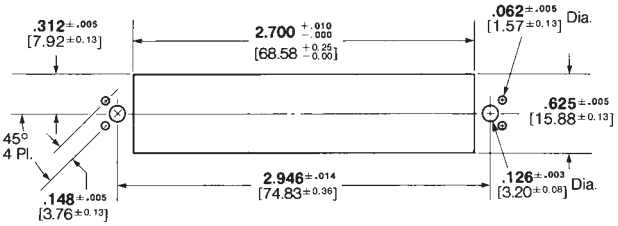
Connectors to be used with 24-Position Interface Bus Applications per IEEE-488

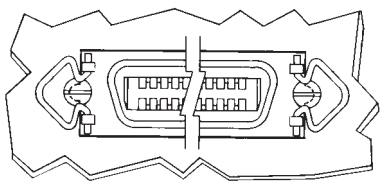
Type of Connector	For Part Numbers and Specifications, See Pages:
Discrete Wire	102
CHAMP Latch	109
Right Angle	82-85
Vertical Mount	86-87

CHAMP IDC Connectors for Special Applications, Connector Panel Cutouts for SCSI Applications

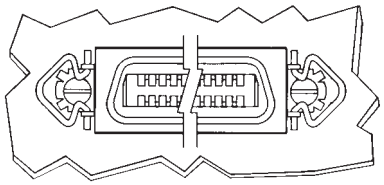
Methods of panel mounting the Small Computer System Interface (SCSI) 50-Position Connectors



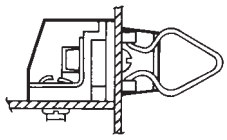




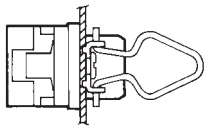
Connector Position from Front of Panel



Connector Position from Front of Panel



SCSI Mounted Preassembled Screw Lock Connector



SCSI Mounted Preassembled Bail Lock Connector

Loose Piece Shielded Connectors (Rear Mount of Bails)[1]

Connector Type	Applicable Base Part Number
CHAMP Latch	554350[2]

Loose Piece Shielded Connectors (Front Mount of Bails)

Connector Type	Applicable Base Part Number
CHAMP Latch	554350[2]

Preassembled Shielded Bail Lock Connectors[1]

Connector Type	Applicable Base Part Number
CHAMP Latch	554902
Right Angle	554901

Preassembled Shielded Screw Lock Connectors (Front Mount of Bail Clips by Use of Hardware Kit No. 554818-2)

Connector Type	Applicable Base Part Number
CHAMP Latch	554436
Right Angle	553813

[1] Panel Thickness: .062 [1.57] Max.
[2] For SCSI mount of bails, two 4-40 screws .750 [19.05] long and two 4-40 hex nuts are required.

Catalog 1-1773441-4
Issued 10-05

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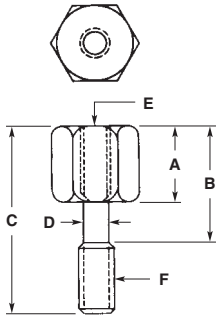
CHAMP .085 Centerline Connectors Miscellaneous Mounting Hardware

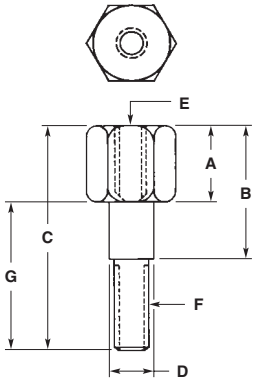
The following information on miscellaneous mounting screws and hardware components is offered for individuals designing Panel Mount or Cable-to-Cable Screw Locking Systems. For more information concerning this subject, contact Tyco Electronics at the numbers listed below.

Standoff Mounting Screw Part Number 552657-1



Dimensions					
A	B	C	D	E	F
.250 6.35	**.400** 10.16	**.650** 16.51	**.091** 2.31	4-40	4-40

Standoff Mounting Studs



Dimensions							Part Number
A	B	C	D	E	F	G	
.239 6.07	**.347** 8.81	**.640** 16.26	**.141** 3.58	4-40	4-40	**.401** 10.20	229995-2
.250 6.35	**.605** 15.37	**1.000** 25.40	**.112** 2.84	4-40	4-40	**.750** 19.05	552113-1
.256 6.50	**.339** 8.61	**.650** 16.51	**.165** 4.19	M 3.5 x .6	4-40	**.394** 10.01	552634-3
.193 4.90	**.335** 8.51	**.650** 16.51	**.185** 4.70	M 3.5 x .6	4-40	**.457** 11.61	552634-4
.256 6.50	**.457** 11.61	**.750** 19.05	**.183** 4.65	M 3.5 x .6	4-40	**.494** 12.55	552634-7
.193 4.90	**.394** 10.00	**.688** 17.48	**.183** 4.65	M 3.5 x .6	4-40	**.495** 12.57	552634-9

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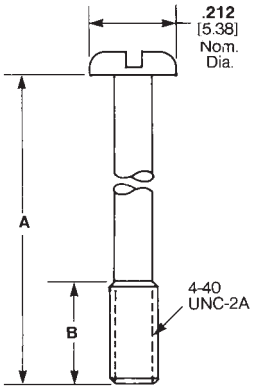
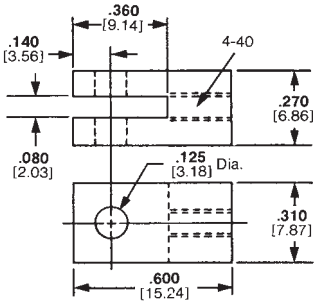
CHAMP .085 Centerline Connectors Miscellaneous Mounting Hardware (Continued)

Captive Pan Head Screw

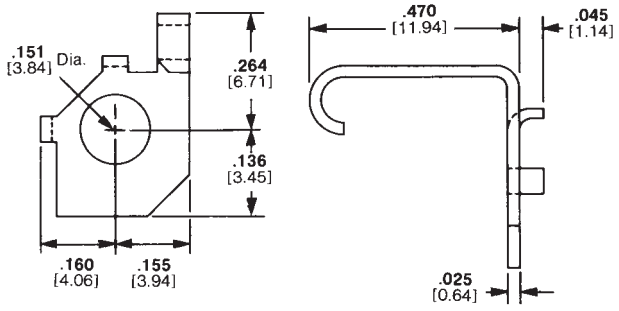


Dimensions		Part Number
A	B	
.750 19.05	.250 6.35	229911-1
.620 15.75	.250 6.35	229911-2
1.750 44.45	.130 3.30	229911-3
1.000 25.40	.200 5.08	229911-4
.425 10.80	.100 2.54	229996-2
.350 8.89	.100 2.54	229996-3

Mounting Bracket Part Number 552656-1



J-Hook Latch for Panel Mount Receptacle to 90° Cable Exit Plug Part Number 552655-1



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CHAMP .085 Centerline Connectors Application Tooling

Portable Hand Operated Tool (MI-1)
Refer to IS 408-7559

Lacing Fixture
Refer to IS 408-7559

Standard Tool Part Number 229378-1

The standard portable hand-operated tool (MI-1) is designed for field applications and medium volume production and is capable of terminating all connectors up to 50 positions with 90° wire dress.

Lacing Fixture Part Number 230328-3

90° or 180° wire dress can be obtained with the MI-1 tool by using the removable lacing combs and placing them in the lacing fixture (shown above and ordered separately) all connectors up to 50 positions. Will not accommodate 64 positions.

Comb Kit* (6 per kit) Part Number 230327-1

For greater productivity, additional operators can use additional comb sets and lacing fixtures with a single tool.

*50-position Comb No. 231619-1 is for small conductor diameter insulation (less than .035 [0.89]) and two are required per MI-1 Tool.

Note: Best results obtained with conductor diameter to .045 [1.14] Max. with PVC insulation.

Half-Tap Tool Part Number 229378-3

For half-tap (daisy chain), 90° wire dress applications.

Multiple Wire Tool (90° wire dress) Part Number 2-229378-0

Multiple Wire Conversion Kit Part Number 230596-1

If required, the standard tool may be converted to multiple wire termination capability by use of separate multiple wire tools or a simple conversion kit.

50-Position Tool Part Number 231925-1

64-Position Tool Part Number 231880-2

F-Slot conversion tool for existing MI-1 Part Number 231928-1

For termination of F-Slot Cable Connectors.

64-Position Tool Part Number 231880-1 Reference IS 408-9412

The 64-position Comb Kit No. 231619-3 for small conductor diameter insulation (less than .035 [0.89]).

For termination of 64-position, 90° wire dress connectors only.

Back-to-Back Connector Tool Part Number 2-229378-3

For termination of IEEE-488 back-to-back cable connectors, Part Numbers. 554815, 555182 and 555183.

Conversion Kit, Color Code Bar Part Number 224105-1

For termination of CHAMP System 5 Connectors.

Palm Grip Hand Tool Kit
Part Number 229764-2, 14-64 Positions
Part Number 229451-2, 50-Position Only
Refer to IS 408-7642

The Palm Grip Hand Tool Kit is recommended for field application and low volume production. The kit includes the items listed in the chart below.

Item	Part Number
Palm Grip Tool	229451-1
Index Slides for:	
14 Positions	229706-1
24 Positions	229707-1
36 Positions	229708-1
50 Positions	229621-1
64 Positions	229709-1
Cable Clamp	229622-1
Ratchet Release	229765-1
Insertion/Extraction Tool	230238-1
Tool Carrying Case	229710-1

T-Handle Wire Insertion Tool
Part Number 229384-1
Refer to IS 408-7558

The T-Handle Wire Insertion Tool is designed for minor repair work on all CHAMP connectors. It does not have the capacity of shearing the wire in the termination process.

Terminal Insertion/Extraction Tool
Part Number 230238-1
Refer to IS 408-7787

The Insertion/Extract tool is designed to replace damaged contacts in the CHAMP plug and receptacle connectors.

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CHAMP .085 Centerline Connectors Application Tooling (Continued)

Product Facts

- **Terminates discrete wire and laminated cable using the insulation displacement termination technique**
- **Accepts 14-, 24-, 36-, 50- or 64-Position CHAMP Connectors**
- **Contains tooling assembly and conversion kits for each position**
- **Designed to terminate laminated cable with 28-24 AWG [0.08-0.2mm²] (stranded) or 28-24 AWG [0.32-0.51mm] (solid) conductors on .085 [2.16] centerline spacing**
- **Produces reliable electrical path between conductor and contact**
- **Able to terminate most conductors up to .045 [1.14] insulation diameter**

Arbor Tooling

CHAMP Miniature Applicator System

The CHAMP Arbor Tool System is capable of terminating approved laminated cables on .085 [2.16] centers without cable preparation and discrete wires in 14-, 24-, 36-, 50- and 64-position CHAMP insulation displacement connectors.

The system consists of a manual Arbor Tool and Applicator.

Applicators are compatible with Arbor Tooling currently applying other Tyco Electronics products.

The Arbor Tool offers speed gained by true mass termination and a production oriented system offering maximum flexibility and efficiency. Connector and cable size conversions can be accomplished with a minimum of downtime.

90° Dress CHAMP Applicator and Manual Arbor Tool

180° Dress CHAMP Applicator and Manual Arbor Tool

Description	Connector Positions	Part Numbers	
		Laminated Cable on .085 [2.16] Centerline	Discrete Wire Cable 90°/180° Dress
CHAMP Applicator Only	14 thru 64	231592-2[1]	231593-2[2]
CHAMP Applicator with Manual Arbor Tool for large wire (.058 [1.47]Max.)	24 thru 64	—	820805-1[3]

Use with Manual Arbor Tool Part Number 91085-2 refer to Instruction Sheet 408-7777
[1] Refer to Instruction Sheet 408-3137
[2] Refer to Instruction Sheet 408-3133
[3] Refer to Instruction Sheet 408-9856

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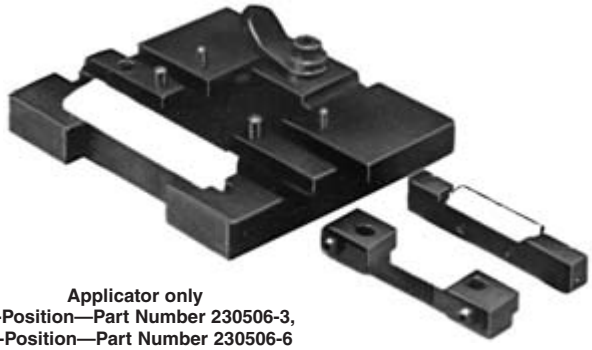
CHAMP .085 Centerline Connectors Application Tooling (Continued)

Tooling for 24- and 50-Position Back-to-Back Connectors Only

Tooling consists of the manual arbor tool and applicator which accepts the preassembled "back-to-back" connectors. The operator positions the connector and laces wires of the cable through the combs across the connector and by actuating the handle, terminates one side of the connector. This process is repeated on the other side of the connector. The terminated connector assembly is removed from the tool and the strain relief cover and jackscrews are installed to complete the connector assembly.

Manual Arbor Tool and Applicator
50-Position—Part Number 230506-1,
24-Position—Part Number 230506-5
Refer to Instruction Sheet 408-6503



Applicator only
50-Position—Part Number 230506-3,
24-Position—Part Number 230506-6
Refer to Instruction Sheet 408-6503

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CHAMP .085 Centerline Connectors Application Tooling (Continued)

CHAMPOMATOR 2.5 Terminating Machine Part Number 354786-X

Product Facts

- **Low applied costs**
- **Automatic termination of jacket cable**
- **Single-or double-ended assemblies**
- **Microprocessor controlled**
- **Stored program capability**
- **Selective termination of connector positions**
- **Rapid tooling changeover for different connector types**
- **Handles a variety of Tyco Electronics insulation-displacement connectors**
- **Terminated most jacketed cable**
- **Remote programming and data retrieval**
- **180° or 90° wire dress**

Controller required.
Accessories available separately.

Controller Applicator

CHAMPOMATOR 2.5 Terminating Machine

Part Number	Customer Description	Manual	IS
354786-2	180° Wire Dress	409-5786	408-9867
354786-3	90° Wire Dress		
1-354786-5	CAT 5 180° Wire Dress		
354786-8	CAT 5 90° Wire Dress		

The CHAMPOMATOR 2.5 terminating machine is the compact, high-productivity way to terminate a variety of Tyco Electronics connectors using insulation-displacement contacts. The machine efficiently terminates wires manually sorted from multiconductor cables. The user-determined termination sequence may include full termination of all contacts or selective termination of some, such as for various RE-232 wiring patterns.

The machine is microprocessor controlled and programmed by a membrane switch key-board. The easy programming simplifies the process and reduces training requirements. The machine's internal storage capability can retain up to 350 cable assemblies, which can be easily retrieved by number or name. Production data and diagnostics can also be accessed through the controller. Off-line programming is also possible with a host or personal computer.

The machine can accommodate a variety of connectors through a change in tooling packages, that may be purchased separately.

A Category 5 tooling kit includes the necessary tooling to terminate the 50-position CHAMP System 5 connector 1-558693-1 on 24 AWG [0.2 mm^2] conductors with .038 [.965] maximum insulation diameter.

Connectors can be terminated with straight (180°) or right angle (90°) wire dress.

Specifications

Length — 25 [635]
Width — 23 [584]
Height — 10 [254]
Weight — 95 lb [43 kg] approx.
Electrical Requirements — 120 VAC, 50/60 Hz, single phase, 1A
Air Requirements — 80 psi [5.52 bars*] at .75 scfm
* One bar = 100 kPa

Production Rates

Net production rates for fully loaded connectors depend on cable type, connector style and connector size. The machine cycle rate is one pair per second.

For more detailed information, request Catalog 82247.

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CHAMP .085 Centerline Connectors Application Tooling (Continued)

CHAMP Latch Hand Tool
Part Number 231561-1

IS 408-3135

This tool is capable of terminating ribbon cable with 26 AWG [0.46 mm] (solid); 28 AWG [0.32 mm] (solid) and 28 AWG [0.08-0.09 mm^2] (stranded) or 30 AWG [0.25 mm] (solid) conductors to 24-, 36- and 50-position low profile connectors.

If using other AMP-LATCH Ribbon Cable Connectors, use Hand Tool Kit Part Number 768340-1 (IS 408-9828) and Locator Kit Part Number 768351-1 (IS 408-9839). Tool Kit includes bench mount for increased productivity. This provides the most versatile and economical tooling.

CHAMP Latch Applicator (only)
Part Number 231576-1

IS 408-3134

Shown installed in
Manual Arbor Tool
Part Number 91085-2

IS-408-7777

This tooling is capable of terminating the same solid or stranded conductors as the hand tool. The tooling is a two-piece kit that includes a locator and a cable stop insert.

The locator features a connector track to support the connector, a connector stop to position the connector and a cable guide to align the cable with the connector.

The reversible cable stop insert accommodates dead-end (flush) or daisy-chain (feed-thru) terminations with .200 [5.08] minimum spacing between connectors.

If using other AMP-LATCH Ribbon Cable Connectors use Arbor Tool Part Number 91085-2 or Pneumatic Auto-Cycle Tool, Part Number 91112-3 (IS 408-6732) with base tool Part Number 768338-1 (IS 408-9827), and Locator Kit, Part Number 768351-1 (IS 408-9839).

For 64-Position CHAMP Latch Connectors use tooling only, Part Number 230536-1.

IS 408-6504

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CHAMP .085 Centerline Connectors Technical Documents

Various technical documents are available for your use:

Product Specifications describe technical performance characteristics and verification tests. Intended for the design engineer, the component engineer and the quality engineer.

108-1287	CHAMP Termination Connectors
108-1698	CHAMP System 5 Connectors
108-6005	CHAMP Connectors
108-6019	CHAMP ACTION PIN Connectors
108-6040	CHAMP Interface Bus, EMI/RFI Shielded Cable Assembly
108-6076	CHAMP Latch Low Profile Connectors
108-6078	CHAMP Printed Circuit Board Connectors

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

114-6027	CHAMP ACTION PIN Connectors
114-6030	CHAMP Latch Low Profile Connectors
114-6036	CHAMP Printed Circuit Board Connectors
114-6041	CHAMP Cable Connectors

Instruction Sheets provide instructions for assembling or applying the product. Intended for the manufacturing assembler or operator.

408-3117	CHAMP ACTION PIN Connectors
408-3133	CHAMP Discrete Wire Tooling Assembly Part Number 231593-2
408-3134	CHAMP Latch Tooling Kit Part Number 231576-1
408-3135	CHAMP Hand Tool Part Number 231561-1 for CHAMP Latch Low Profile Connectors
408-3137	CHAMP Connector Applicator 231592-2 for Laminated Cable
408-3158	CHAMP Latch Low Profile Connectors
408-3159	Strain Relief Hardware for CHAMP Connectors
408-3160	Mounting Hardware for CHAMP Connectors
408-3170	CHAMP Shielded Connectors 90° IEEE-488 Kit
408-3171	CHAMP Shielded Connectors Back-to-Back IEEE-488 Kit
408-3182	CHAMP Self Retained ACTION PIN Connectors
408-3188	CHAMP Shielded Connectors
408-3201	CHAMP Edge Mount Printed Circuit Board Connectors
408-3381	CHAMP System 5 Connectors
408-6503	CHAMP Back-to-Back Tooling Assemblies
408-6504	CHAMP Latch (64-Position) Tooling Assembly Part Number 230536-1
408-7558	CHAMP T-Handle Wire Insertion Tool Part Number 229384-1
408-7559	Application and Maintenance of CHAMP Multi-Insertion (MI-1) Hand Tool 14-, 24-, 36- and 50-Position
408-7564	CHAMP Cable-to-Cable and Cable-to-Panel Connectors
408-7642	CHAMP Palm Grip Insertion Tool
408-7672	CHAMP Printed Circuit Board Connectors
408-7787	CHAMP Insertion/Extraction Tool Part Number 230238-1
408-8329	Part Numbers 1339220-1 and 1339220-3
408-9412	Application and Maintenance of CHAMP Multi-Insertion (MI-1) Hand Tool, 64-Position
408-9856	CHAMP Discrete Wire Tooling Assembly Part Number 820805-1
408-9867	CHAMPOMATOR 2.5 Tooling Kit

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Engineering Notes

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RoHS Compliant to Non-RoHS Part Number Cross Reference

RoHS Compliant Part No.	Non-RoHS Part No.
58024-1	58024-1
91085-2	91085-2
91112-3	91112-3
91295-1	91295-1
122842-1	122842-1
122842-2	122842-2
122842-3	122842-3
176793-1	176793-1
176793-2	176793-2
176793-4	176793-4
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229451-1	229451-1
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2-552496-1	2-552496-1
552617-1	552617-1
552634-3	552634-3
552634-4	552634-4
552634-7	552634-7
552634-9	552634-9
552655-1	552655-1
552656-1	552656-1
552686-1	552686-1
552705-1	552705-1
552723-1	552723-1
552723-2	552723-2
552723-3	552723-3
552731-1	552731-1
552760-1	552760-1
552760-2	552760-2
552763-1	552763-1
552763-2	552763-2
552767-1	552767-1
552827-1	552827-1
552827-2	552827-2
552837-1	552837-1
552838-1	552838-1
552843-1	552843-1
552851-2	552851-2
552933-1	552933-1
552962-3	552962-3
553212-3	553212-3
553213-3	553213-3
553443-1	553443-1
553443-2	553443-2
553443-3	553443-3
553443-4	553443-4
553443-5	553443-5
553444-2	553444-2
553444-3	553444-3
553444-4	553444-4
553444-5	553444-5
553596-1	553596-1
553597-1	553597-1
553599-1	553599-1
553600-1	553600-1
553601-1	553601-1
553602-1	553602-1
553603-1	553603-1
554043-2	554043-2
554084-1	554084-1
554085-1	554085-1
554088-1	554088-1
554089-1	554089-1
554090-1	554090-1
554099-1	554099-1
554103-1	554103-1
554266-3	554266-3
554266-4	554266-4
554266-5	554266-5
554266-6	554266-6
554266-7	554266-7
554266-8	554266-8
554725-1	554725-1
554725-2	554725-2
554725-3	554725-3
554725-4	554725-4
554725-5	554725-5
554725-6	554725-6
554753-1	554753-1
554758-1	554758-1
554759-1	554759-1
554808-1	554808-1
554815-1	554815-1
554831-1	554831-1
554902-1	554902-1
554944-1	554944-1
554945-1	554945-1
554946-1	554946-1
554946-2	554946-2
554948-2	554948-2
554948-3	554948-3
554948-4	554948-4
554950-1	554950-1
554950-2	554950-2
554951-2	554951-2
554953-1	554953-1
554953-2	554953-2
554954-1	554954-1
554955-1	554955-1
554955-2	554955-2
5-555012-1	5-555012-1
5-555012-2	5-555012-2
555182-1	555182-1
555227-1	555227-1
556039-1	556039-1
556409-1	556409-1

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

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Japan: 81-44-844-8013
UK: 44-141-810-8967

RoHS Compliant to Non-RoHS Part Number Cross Reference (Continued)

RoHS Compliant Part No.	Non-RoHS Part No.
557984-1	557984-1
1-558693-1	1-558693-1
569025-1	569025-1
569335-1	569335-1
569336-1	569336-1
662300-1	662300-1
679177-1	679177-1
1-761420-4	1-761420-4
768338-1	768338-1
768338-2	768338-2
768340-1	768340-1
768351-1	768351-1
768900-5	768900-5
786930-4	786930-1
786930-5	786930-2
786930-6	786930-3
787003-3	787003-3
787004-3	787004-3
787096-2	787096-1
787133-1	787133-1
787229-1	787229-1
787231-1	787231-1
787311-4	787311-1
787317-4	787317-1
787535-3	787535-1
787565-2	787565-1
787596-4	787596-1
787596-5	787596-3
787597-3	787597-1
787646-4	787646-2
787653-3	787653-1
787653-4	787653-2
787900-2	787900-1
788389-2	788389-1
788395-2	788395-1
796068-3	796068-1
820805-1	820805-1
852423-1	852423-1
852423-4	852423-4
911123-1	911123-1
911149-6	911149-6
911149-7	911149-7
911432-6	911432-6
911432-7	911432-7
915697-2	915697-2
919620-1	919620-1
1734037-1	2-557101-1
1734037-4	557101-5
1734037-5	557101-9
1734037-7	1-557101-7
1-1734037-0	2-557101-5
1-1734037-2	2-557101-9
1-1734037-4	4-557101-9
1-1734037-6	3-557101-7
1734098-4	1-557089-6
1734098-5	1-557089-1
1734098-7	1-557089-2
1734098-8	1-557089-3
1-1734098-0	1-557089-5
1734099-6	1-557100-3
1734099-7	1-557100-7
1734099-8	2-557100-1
1-1734099-0	2-557100-5
1-1734099-2	2-557100-9
1-1734099-4	4-557100-9
1734100-2	5-557102-4
1734100-6	1-557102-3
1734100-7	1-557102-7
1734100-8	2-557102-1
1-1734100-0	2-557102-5
1-1734100-1	5-557102-5
1-1734100-2	2-557102-9
1-1734100-3	3-557102-3
1-1734100-6	3-557102-7
1-1734100-8	5-557102-3
1734101-4	557103-5
1734101-5	557103-9
1734101-6	1-557103-3
1734101-7	1-557103-7
1734101-8	2-557103-1
1-1734101-0	2-557103-5
1-1734101-2	2-557103-9
1-1734101-4	3-557103-7
1-1734101-5	4-557103-1
1761371-1	1761371-1
1761983-1	21108-4
5021068-4	21068-4
5021074-2	21074-2
5084487-1	84487-1
5084487-2	84487-2
5084488-1	84488-1
5084488-3	84488-3
5084598-1	84598-1
3-5175472-7	3-175472-7
5-5175472-1	5-175472-1
5-5175472-3	5-175472-3
5-5175472-5	5-175472-5
5-5175472-6	5-175472-6
5-5175472-8	5-175472-8
5-5175472-9	5-175472-9
6-5175472-0	6-175472-0
6-5175472-1	6-175472-1
6-5175472-2	6-175472-2
3-5175473-8	3-175473-8
4-5175473-1	4-175473-1
5-5175473-1	5-175473-1
5-5175473-6	5-175473-6
5-5175473-7	5-175473-7
5-5175473-9	5-175473-9
6-5175473-0	6-175473-0
6-5175473-2	6-175473-2
5175474-8	175474-8
4-5175474-1	4-175474-1
4-5175474-2	4-175474-2
5-5175474-1	5-175474-1
5-5175474-3	5-175474-3
5-5175474-5	5-175474-5
5-5175474-6	5-175474-6
5-5175474-7	5-175474-7
5-5175474-9	5-175474-9
6-5175474-0	6-175474-0
3-5175475-1	3-175475-1
5-5175475-3	5-175475-3
5-5175475-5	5-175475-5
5-5175475-6	5-175475-6
5-5175475-7	5-175475-7
5-5175475-8	5-175475-8
5-5175475-9	5-175475-9
6-5175475-0	6-175475-0
6-5175475-1	6-175475-1
6-5175475-2	6-175475-2
2-5175677-1	2-175677-1
2-5175677-2	2-175677-2
2-5175677-4	2-175677-4
2-5175677-5	2-175677-5
2-5175677-7	2-175677-7
2-5175677-8	2-175677-8
2-5175677-9	2-175677-9
3-5175677-0	3-175677-0
2-5175887-1	2-175887-1
2-5175887-2	2-175887-2
2-5175887-4	2-175887-4
2-5175887-5	2-175887-5
2-5175887-7	2-175887-7
2-5175887-8	2-175887-8
2-5175887-9	2-175887-9
3-5175887-0	3-175887-0
5176371-1	176371-1
5176371-2	176371-2
5176371-3	176371-3
5176371-4	176371-4
5176371-5	176371-5
5176371-6	176371-6
5176372-1	176372-1
5176372-2	176372-2
5176372-3	176372-3
5176372-4	176372-4
5176372-5	176372-5
5176372-6	176372-6
5176373-1	176373-1
5176373-2	176373-2
5176373-3	176373-3
5176373-4	176373-4
5176374-1	176374-1
5176374-2	176374-2
5176374-3	176374-3
5176374-4	176374-4
5176374-5	176374-5
5176374-6	176374-6
5176374-7	176374-7
5176375-2	176375-2
5176375-3	176375-3
5176376-1	176376-1
5176376-2	176376-2
5176376-3	176376-3
5176376-4	176376-4
5176376-5	176376-5
5176376-6	176376-6
5176377-1	176377-1
5176377-3	176377-3
5176377-4	176377-4
5176377-5	176377-5
5176377-8	176377-8
5176378-1	176378-1
5176378-2	176378-2
5176378-3	176378-3
5176378-4	176378-4
5176378-5	176378-5
5176378-6	176378-6
5176378-7	176378-7
5176378-8	176378-8
5176379-2	176379-2
5176379-3	176379-3
5176379-4	176379-4
5176379-5	176379-5
5176379-6	176379-6
5176379-7	176379-7
5176379-8	176379-8
5176381-1	176381-1
5176381-2	176381-2
5176381-3	176381-3
5176381-4	176381-4
5176381-5	176381-5
5176381-6	176381-6
5176381-7	176381-7
5176381-8	176381-8
2-5178238-8	2-178238-8
2-5178238-9	2-178238-9
3-5178238-0	3-178238-0
5179656-2	179656-2
5229911-1	229911-1
5229911-2	229911-2
5229911-3	229911-3
5229911-4	229911-4
5229912-1	229912-1
5229912-4	229912-4
1-5229912-1	1-229912-1
2-5229912-1	2-229912-1
3-5229912-1	3-229912-1
6-5229912-1	6-229912-1
6-5229912-3	6-229912-3
6-5229912-4	6-229912-4
5229913-1	229913-1
5229913-4	229913-4
1-5229913-1	1-229913-1
2-5229913-1	2-229913-1
3-5229913-1	3-229913-1
6-5229913-1	6-229913-1
6-5229913-3	6-229913-3
5229995-1	229995-1
5229995-2	229995-2
5229996-2	229996-2
5229996-3	229996-3
5406874-1	406874-1
5552116-1	552116-1
5552118-1	552118-1
5552126-1	552126-1
5552130-1	552130-1
5552209-1	552209-1
5552212-1	552212-1
5552221-1	552221-1
5552224-1	552224-1
5552232-1	552232-1
5552235-1	552235-1

RoHS Compliant to Non-RoHS Part Number Cross Reference (Continued)

RoHS Compliant Part No.	Non-RoHS Part No.
5552241-1	552241-1
5552243-1	552243-1
5552246-1	552246-1
5552382-1	552382-1
5552383-1	552383-1
5552402-1	552402-1
5552403-1	552403-1
5552560-1	552560-1
5552560-5	552560-5
5552561-3	552561-3
5552561-4	552561-4
5552562-1	552562-1
5552562-2	552562-2
5552563-1	552563-1
5552567-1	552567-1
5552567-2	552567-2
5552567-3	552567-3
5552568-1	552568-1
5552568-2	552568-2
5552631-1	552631-1
5552633-3	552633-3
5552633-4	552633-4
5552657-1	552657-1
5552675-1	552675-1
5552690-1	552690-1
5552725-1	552725-1
5552725-2	552725-2
5552725-3	552725-3
5552726-1	552726-1
5552726-3	552726-3
5552738-1	552738-1
5552738-2	552738-2
5552740-1	552740-1
5552741-1	552741-1
5552742-1	552742-1
5552742-3	552742-3
5552743-1	552743-1
5552744-1	552744-1
5552744-2	552744-2
5552745-1	552745-1
5552791-1	552791-1
5552791-4	552791-4
5552820-1	552820-1
5552820-2	552820-2
5552960-1	552960-1
5552960-2	552960-2
5552960-5	552960-5
5553257-1	553257-1
5553636-2	553636-2
5553636-3	553636-3
5553811-1	553811-1
5553811-2	553811-2
5553813-3	553813-3
5553813-4	553813-4
5553813	553813
5553921-1	553921-1
5554145-4	554145-4
5554216-3	554216-3
5554217-4	554217-4
5554272-1	554272-1
5554348-1	554348-1
5554349-1	554349-1
5554350-1	554350-1
5554350	554350
5554381-2	554381-2
5554434-1	554434-1
5554436-2	554436-2
5554436	554436
5554501-1	554501-1
5554726-1	554726-1
5554815	554815
5554858-1	554858-1
5554875-2	554875-2
5554876-1	554876-1
5554876-2	554876-2
5554901-1	554901-1
5554901	554901
5554902	554902
5554923-1	554923-1
5554923-2	554923-2
5555057-1	555057-1
5555119-1	555119-1
5555139-1	555139-1
5555139-2	555139-2
5555149-1	555149-1
5555149-3	555149-3
5555182	555182
5555183	555183
5555233-1	555233-1
5555520-2	555520-2
5555983-1	555983-1
5557724-1	557724-1
5557932-1	557932-1
5557932-2	557932-2
5787096-1	787096-1
5787131-1	787131-1
5787131-2	787131-2
5787131-3	787131-3
5787191-1	787191-1
5787233-1	787233-1
5787254-1	787254-1
5787254-2	787254-2
5787254-3	787254-3
5787641-1	787641-1
5787775-1	787775-1
5787801-1	787801-1
5787851-1	787851-1
5787851-2	787851-2
5787855-1	787855-1
5787855-2	787855-2
5787859-1	787859-1
5787882-1	787882-1
5787883-1	787883-1
5787885-1	787885-1
5787886-1	787886-1
5787887-1	787887-1
5787913-2	787913-2
5787962-1	787962-1
5787962-2	787962-2
5787973-1	787973-1
5787979-1	787979-1
5788362-1	788362-1
5788450-1	788450-1
5788451-1	788451-1
5796055-1	796055-1
5796055-2	796055-2
5796064-1	796064-1
5917593-9	917593-9
5-5917593-9	5-917593-9
5917628-1	917628-1
5917628-2	917628-2
5917628-3	917628-3
5917628-4	917628-4
5917628-5	917628-5
5917628-6	917628-6
5917628-7	917628-7
5917628-8	917628-8
5917629-1	917629-1
5917629-2	917629-2
5917629-3	917629-3
5917629-4	917629-4
5917629-5	917629-5
5917629-6	917629-6
5917630-1	917630-1
5917630-2	917630-2
5917630-3	917630-3
5917630-4	917630-4
5917630-5	917630-5
5917630-6	917630-6
5917630-7	917630-7
5917630-8	917630-8
5917631-1	917631-1
5917631-2	917631-2
5917631-3	917631-3
5917631-4	917631-4
5917631-5	917631-5
5917631-6	917631-6
5917631-7	917631-7
5917631-8	917631-8
5917738-1	917738-1
5917738-2	917738-2
5917738-4	917738-4
5917738-5	917738-5
5917738-7	917738-7
1-5917738-5	1-917738-5
1-5917738-7	1-917738-7
6123283-5	1123283-5
6123283-9	1123283-9
6364306-1	1364306-1
6364308-1	1364308-1
6364973-2	1364973-2
6489050-1	1489050-1
6489232-1	1489232-1
6489232-2	1489232-2
6658203-1	1658203-1
6658240-1	1658240-1
6658751-1	1658751-1

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Engineering Notes

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Hong Kong: 852-2735-1628
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UK: 44-141-810-8967

Non-RoHS to RoHS Compliant Part Number Cross Reference

Non-RoHS Part No.	RoHS Compliant Part No.
21068-4	5021068-4
21074-2	5021074-2
21108-4	1761983-1
58024-1	58024-1
84487-1	5084487-1
84487-2	5084487-2
84488-1	5084488-1
84488-3	5084488-3
84598-1	5084598-1
91085-2	91085-2
91112-3	91112-3
91295-1	91295-1
122842-1	122842-1
122842-2	122842-2
122842-3	122842-3
3-175472-7	3-5175472-7
5-175472-1	5-5175472-1
5-175472-3	5-5175472-3
5-175472-5	5-5175472-5
5-175472-6	5-5175472-6
5-175472-8	5-5175472-8
5-175472-9	5-5175472-9
6-175472-0	6-5175472-0
6-175472-1	6-5175472-1
6-175472-2	6-5175472-2
3-175473-8	3-5175473-8
4-175473-1	4-5175473-1
5-175473-1	5-5175473-1
5-175473-6	5-5175473-6
5-175473-7	5-5175473-7
5-175473-9	5-5175473-9
6-175473-0	6-5175473-0
6-175473-2	6-5175473-2
175474-8	5175474-8
4-175474-1	4-5175474-1
4-175474-2	4-5175474-2
5-175474-1	5-5175474-1
5-175474-3	5-5175474-3
5-175474-5	5-5175474-5
5-175474-6	5-5175474-6
5-175474-7	5-5175474-7
5-175474-9	5-5175474-9
6-175474-0	6-5175474-0
3-175475-1	3-5175475-1
5-175475-3	5-5175475-3
5-175475-5	5-5175475-5
5-175475-6	5-5175475-6
5-175475-7	5-5175475-7
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2-175677-8	2-5175677-8
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176381-1	5176381-1
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176381-4	5176381-4
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176381-6	5176381-6
176381-7	5176381-7
176381-8	5176381-8
176793-0	1-176793-0
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176793-8	176793-8
176793-9	176793-9
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177734-1	177734-1
177734-4	177734-4
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2-178238-9	2-5178238-9
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224105-1	224105-1
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229378-3	229378-3
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2-229378-3	2-229378-3
229384-1	229384-1
229451-1	229451-1
229451-2	229451-2
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229622-1	229622-1
229706-1	229706-1
229707-1	229707-1
229708-1	229708-1
229709-1	229709-1
229710-1	229710-1
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229765-1	229765-1
229909-1	229909-1
229910-1	229910-1
1-229910-1	1-229910-1
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229911-1	5229911-1
229911-2	5229911-2
229911-3	5229911-3
229911-4	5229911-4
229912-1	5229912-1
229912-4	5229912-4
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3-229912-1	3-5229912-1
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6-229912-3	6-5229912-3
6-229912-4	6-5229912-4
229913-1	5229913-1
229913-4	5229913-4
1-229913-1	1-5229913-1
2-229913-1	2-5229913-1
3-229913-1	3-5229913-1
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6-229913-3	6-5229913-3
229968-1	229968-1
229968-2	229968-2
229968-4	229968-4
229969-1	229969-1
229969-2	229969-2
229969-3	229969-3
229969-4	229969-4
229974-1	229974-1
229975-1	229975-1
229995-1	5229995-1
229995-2	5229995-2
229996-2	5229996-2
229996-3	5229996-3
230238-1	230238-1
230327-1	230327-1
230328-3	230328-3
230506-1	230506-1
230506-3	230506-3
230506-5	230506-5
230506-6	230506-6
230536-1	230536-1
230596-1	230596-1
231561-1	231561-1
231576-1	231576-1
231592-2	231592-2
231593-1	231593-1
231593-2	231593-2
231619-3	231619-3
231880-1	231880-1
231880-2	231880-2
231925-1	231925-1
231928-1	231928-1
354786-2	354786-2
354786-3	354786-3
354786-6	354786-6
354786-7	354786-7
354786-8	354786-8
1-354786-5	1-354786-5
406874-1	5406874-1
543580-1	543580-1
543610-1	543610-1
543630-1	543630-1
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552008-1	552008-1
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3-552008-1	3-552008-1
4-552008-1	4-552008-1
552011-1	552011-1
1-552011-1	1-552011-1
552014-1	552014-1
1-552027-1	1-552027-1
552032-1	552032-1
552064-1	552064-1
552073-1	552073-1
552073-5	552073-5
552073-6	552073-6
552076-1	552076-1
1-552076-1	1-552076-1

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Non-RoHS to RoHS Compliant Part Number Cross Reference (Continued)

Non-RoHS Part No.	RoHS Compliant Part No.
2-552076-1	2-552076-1
552079-1	552079-1
1-552079-1	1-552079-1
2-552079-1	2-552079-1
552082-1	552082-1
552113-1	552113-1
552116-1	5552116-1
552118-1	5552118-1
552126-1	5552126-1
552130-1	5552130-1
552173-1	552173-1
552209-1	5552209-1
552212-1	5552212-1
552221-1	5552221-1
552224-1	5552224-1
552232-1	5552232-1
552235-1	5552235-1
552241-1	5552241-1
552243-1	5552243-1
552246-1	5552246-1
552270-1	552270-1
2-552271-1	2-552271-1
552272-1	552272-1
2-552273-1	2-552273-1
2-552273-1	2-552273-1
552274-1	552274-1
2-552275-1	2-552275-1
552276-1	552276-1
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552282-1	552282-1
552283-1	552283-1
552284-1	552284-1
552285-1	552285-1
1-552296-1	1-552296-1
1-552297-1	1-552297-1
1-552298-1	1-552298-1
552300-1	552300-1
552301-1	552301-1
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552307-1	552307-1
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552313-1	552313-1
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552317-1	552317-1
552318-1	552318-1
552319-1	552319-1
552320-1	552320-1
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2-552324-1	2-552324-1
552382-1	5552382-1
552383-1	5552383-1
552390-1	552390-1
552391-1	552391-1
552402-1	5552402-1
552403-1	5552403-1
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552414-1	552414-1
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552633-4	5552633-4
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552634-4	552634-4
552634-7	552634-7
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552655-1	552655-1
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552657-1	5552657-1
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552820-2	5552820-2
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552838-1	552838-1
552843-1	552843-1
552851-2	552851-2
552933-1	552933-1
552960-1	5552960-1
552960-2	5552960-2
552960-5	5552960-5
552962-3	552962-3
553212-3	553212-3
553213-3	553213-3
553257-1	5553257-1
553443-1	553443-1
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553443-3	553443-3
553443-4	553443-4
553443-5	553443-5
553444-2	553444-2
553444-3	553444-3
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553599-1	553599-1
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553601-1	553601-1
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553603-1	553603-1
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553636-3	5553636-3
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553811-2	5553811-2
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553813	5553813
553921-1	5553921-1
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554103-1	554103-1
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554216-3	5554216-3
554217-4	5554217-4
554266-3	554266-3
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554266-5	554266-5
554266-6	554266-6
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554266-8	554266-8
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554501-1	5554501-1
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554758-1	554758-1
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554831-1	554831-1
554858-1	5554858-1
554875-2	5554875-2
554876-1	5554876-1
554876-2	5554876-2
554901-1	5554901-1
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554902-1	554902-1
554902	5554902
554923-1	5554923-1
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554944-1	554944-1
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554946-1	554946-1
554946-2	554946-2
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554948-3	554948-3
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554951-2	554951-2
554953-1	554953-1
554953-2	554953-2
554954-1	554954-1
554955-1	554955-1
554955-2	554955-2
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5-555012-2	5-555012-2
555057-1	5555057-1
555119-1	5555119-1
555139-1	5555139-1
555139-2	5555139-2
555149-1	5555149-1
555149-3	5555149-3
555182-1	555182-1
555182	5555182
555183	5555183

Catalog 1-1773441-4
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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
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South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Non-RoHS to RoHS Compliant Part Number Cross Reference (Continued)

Non-RoHS Part No.	RoHS Compliant Part No.
555227-1	555227-1
555233-1	5555233-1
555520-2	5555520-2
555983-1	5555983-1
556039-1	556039-1
556409-1	556409-1
1-557089-1	1734098-5
1-557089-2	1734098-7
1-557089-3	1734098-8
1-557089-5	1-1734098-0
1-557089-6	1734098-4
1-557100-3	1734099-6
1-557100-7	1734099-7
2-557100-1	1734099-8
2-557100-5	1-1734099-0
2-557100-9	1-1734099-2
4-557100-9	1-1734099-4
557101-5	1734037-4
557101-9	1734037-5
1-557101-7	1734037-7
2-557101-1	1734037-1
2-557101-5	1-1734037-0
2-557101-9	1-1734037-2
3-557101-7	1-1734037-6
4-557101-9	1-1734037-4
1-557102-3	1734100-6
1-557102-7	1734100-7
2-557102-1	1734100-8
2-557102-5	1-1734100-0
2-557102-9	1-1734100-2
3-557102-3	1-1734100-3
3-557102-7	1-1734100-6
5-557102-3	1-1734100-8
5-557102-4	1734100-2
5-557102-5	1-1734100-1
557103-5	1734101-4
557103-9	1734101-5
1-557103-3	1734101-6
1-557103-7	1734101-7
2-557103-1	1734101-8
2-557103-5	1-1734101-0
2-557103-9	1-1734101-2
3-557103-7	1-1734101-4
4-557103-1	1-1734101-5
557724-1	5557724-1
557932-1	5557932-1
557932-2	5557932-2
557984-1	557984-1
1-558693-1	1-558693-1
569025-1	569025-1
569335-1	569335-1
569336-1	569336-1
662300-1	662300-1
679177-1	679177-1
1-761420-4	1-761420-4
768338-1	768338-1
768338-2	768338-2
768340-1	768340-1
768351-1	768351-1
768900-5	768900-5
786930-1	786930-4
786930-2	786930-5
786930-3	786930-6
787003-3	787003-3
787004-3	787004-3
787096-1	787096-2
787096-1	5787096-1
787131-1	5787131-1
787131-2	5787131-2
787131-3	5787131-3
787133-1	787133-1
787191-1	5787191-1
787229-1	787229-1
787231-1	787231-1
787233-1	5787233-1
787254-1	5787254-1
787254-2	5787254-2
787254-3	5787254-3
787311-1	787311-4
787317-1	787317-4
787535-1	787535-3
787565-1	787565-2
787596-1	787596-4
787596-3	787596-5
787597-1	787597-3
787641-1	5787641-1
787646-2	787646-4
787653-1	787653-3
787653-2	787653-4
787775-1	5787775-1
787801-1	5787801-1
787851-1	5787851-1
787851-2	5787851-2
787855-1	5787855-1
787855-2	5787855-2
787859-1	5787859-1
787882-1	5787882-1
787883-1	5787883-1
787885-1	5787885-1
787886-1	5787886-1
787887-1	5787887-1
787900-1	787900-2
787913-2	5787913-2
787962-1	5787962-1
787962-2	5787962-2
787973-1	5787973-1
787979-1	5787979-1
788362-1	5788362-1
788389-1	788389-2
788395-1	788395-2
788450-1	5788450-1
788451-1	5788451-1
796055-1	5796055-1
796055-2	5796055-2
796064-1	5796064-1
796068-1	796068-3
820805-1	820805-1
852423-1	852423-1
852423-4	852423-4
911123-1	911123-1
911149-6	911149-6
911149-7	911149-7
911432-6	911432-6
911432-7	911432-7
915697-2	915697-2
917593-9	5917593-9
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917628-1	5917628-1
917628-2	5917628-2
917628-3	5917628-3
917628-4	5917628-4
917628-5	5917628-5
917628-6	5917628-6
917628-7	5917628-7
917628-8	5917628-8
917629-1	5917629-1
917629-2	5917629-2
917629-3	5917629-3
917629-4	5917629-4
917629-5	5917629-5
917629-6	5917629-6
917630-1	5917630-1
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917630-3	5917630-3
917630-4	5917630-4
917630-5	5917630-5
917630-6	5917630-6
917630-7	5917630-7
917630-8	5917630-8
917631-1	5917631-1
917631-2	5917631-2
917631-3	5917631-3
917631-4	5917631-4
917631-5	5917631-5
917631-6	5917631-6
917631-7	5917631-7
917631-8	5917631-8
917738-1	5917738-1
917738-2	5917738-2
917738-4	5917738-4
917738-5	5917738-5
917738-7	5917738-7
1-917738-5	1-5917738-5
1-917738-7	1-5917738-7
919620-1	919620-1
1123283-5	6123283-5
1123283-9	6123283-9
1364306-1	6364306-1
1364308-1	6364308-1
1364973-2	6364973-2
1489050-1	6489050-1
1489232-1	6489232-1
1489232-2	6489232-2
1658203-1	6658203-1
1658240-1	6658240-1
1658751-1	6658751-1
1761371-1	1761371-1

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

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Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
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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.

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