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Teflon is a registered trademark of the Dupont Company.

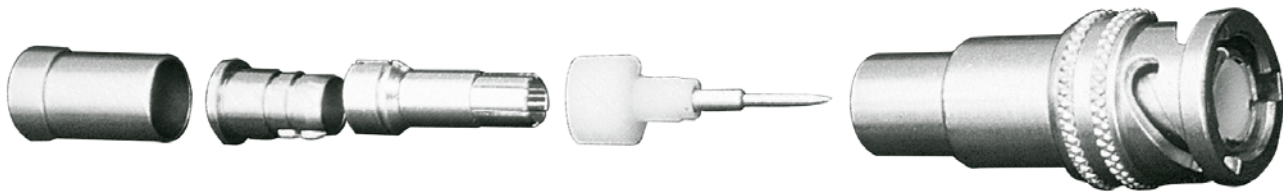


## RF INTERCONNECT PRODUCTS

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### *Introduction*

Established in 1960, Trompeter is a manufacturer of high value wireline coax, triax, and twinax transmission line connectors, cable, and the tools required for assembly. In addition, the company has a broad line of patch panel insertion-controlled interconnect modules and a rapid response cable assembly business. The firm is ISO-9001 registered and enjoys an international presence in the Telecommunications, Broadcast, and Military/Aerospace markets.



### *MIL-STD-1553B Digital Data Bus Applications*

Twinax /Triax connectors are used in military applications to protect data signals from extraneous noise through non-signal-carrying shielding. Interfacing connectors must provide contact surfaces isolated from each other and from their outer shields. MIL-STD-1553B addresses twinax applications for computerized/multiplexed digital data distribution systems servicing the many functions of Command, Control, Communications, Computers and Intelligence (C<sup>4</sup>I) which was originally designed for military aircraft. MIL-STD-1553B applications are found in military surface ships, battle tanks, helicopters, missiles, space vehicles, combat aircraft and in many ground applications such as data networks and perimeter security for airports, armories, and other government installations.

The great advantages of additional information, automation and weight savings, which are necessary for the complex demands of aircraft operations are realized by using a single transmission cable instead of the complicated, heavy, dedicated multiple cable used in the past. A 78Ω twinax cable was selected to provide the transmitted digital information with the needed protection from magnetic, electrostatic and electromagnetic pulse (EMP) interference. Complete shielding of the twisted pair along the transmission path and all electrical contacts within multi-pin connectors must be maintained.

*Trompeter* provides matching components of Twinax/Triax connectors and cable for improving the transmission capabilities and interference rejection of data transmission systems. Trompeter components will meet or exceed MIL-STD-1553B requirements (for airborne and ground checkout) and MIL-STD-1760 "External Stores".

## *Quality Standard and Custom Components*

For over thirty years, Trompeter's product offerings have grown as a result of new and modified designs for unusual applications. With Trompeter's tradition of custom components comes our reputation for providing rugged products that have been designed to perform to your expectations and to meet your specific mechanical requirements. The growth of our product line, from 78 components in 1964 to more than 7,000 end items (over 20,000 configurations), is proof of our engineering and manufacturing capabilities.

### *Why compromise your design?*

A minor modification might be an affordable solution to your design needs.

### *Why settle for less than Trompeter?*

Superior quality is paramount.

### *Trompeter components meet your most demanding requirements...*

When performance is critical.

When compromise is not an acceptable solution.

When cost savings detract from the integrity of your design.

## *ISO 9001 Registration*

The main value of being an ISO 9001 Registered company is in the assurance to our customers that we have a solid quality system in place, and that it is well documented. DET Norske Veritas (DNV) has certified that Trompeter is in compliance with established systems and policies. ISO 9001 Quality System Standard is a document outlining twenty elements of quality that Trompeter has addressed in order to meet registration requirements. An accredited ISO 9001 auditor must verify, through on-site audits, that a company has a well documented quality system in place that meets the requirements of ISO 9001, and that the company is working in accordance with the documented system. Trompeter's quality system is also certified by numerous other accredited agencies. ISO 9001 registration makes Trompeter an edge in the global market by giving customers the assurance that they are dealing with a company dedicated to meeting their quality expectations.

## *3-Year Warranty*

All Trompeter products carry a "**Three Year Warranty**" (*except the battery powered cable stripper*) and meet or exceed the highest industrial and government standards, such as MIL-C-39012 and MIL-C-49142. More importantly, Trompeter connectors are designed to meet your design specifications which are often more demanding and less forgiving. We have built our business on responding to your special needs for uncompromising performance in a world of increasing pressure from global competition. If, within three (3) years of shipment, any of our products fail to meet your expectations due to defects in material or workmanship, we will gladly repair or replace it free of charge.

## *Custom Product Requests*

The products in this catalog are your first resource for solving your special interconnect problems. If you cannot find an adequate solution, then we invite you to consult with us for your special requirements. If you have an application which requires a new product, or a modification to one of our existing products, please fill out a copy of the Custom Products Request Form on page 137 and fax it to us. Please submit one complete form for each product requested. Requests for new/modified products are evaluated weekly, and you will receive a response within 3-5 working days.

## SPACE-QUALIFIED CONNECTORS

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### *Outgassing Requirements for Space Rated Connectors*

Trompeter has a long and proud history of servicing space applications. **NASA** uses the specification (**SP-R-0022**), Vacuum Stability Requirements of Polymeric Material for Space Application, to qualify materials for use in spacecraft. This has also become the standard in the commercial space industry. This specification governs the "outgassing" of non-metallic materials. Outgassing occurs when a non-metallic material is placed into a vacuum, subjected to heat, and some of its constituents are volatilized.

One of the bi-products of outgassing is that the material loses a portion of its mass. This is referred to as Total Mass Loss, or TML. Under the NASA specification, the material's TML should not exceed 1.0% of the total specimen mass. This issue is very important because shrinkage may contribute to the failure of a connector as the connector components will no longer fit properly.

Another bi-product of outgassing is Collectable Volatile Condensable Material (CVCM). This represents the quantity of outgassed matter that condenses and collects on a surface. Under the NASA specification, the maximum condensable material allowed is 0.1% of the total specimen mass. This is very critical in a thermal/vacuum environment because it is the condensed material that will contaminate optical and sensory surfaces causing them to possibly fail.

Some polymeric materials meet the requirements of a TML less than 1.0% and CVCM of less than 0.1% through the normal manufacturing process. Other polymeric materials, while not within limits after their manufacture, can be brought within vacuum stability limits by vacuum baking for a specific period of time (usually 48 hours at maximum use temperature at a pressure less than  $10^{-5}$  torr). If a material cannot be vacuum baked, its exposure area is 13cm<sup>2</sup> or less, and is out of sight of a payload or other critical surfaces, then a TML not greater than 3.0% and a CVCM not greater than 1.0% is acceptable.

Test conditions are ASTM E-595 or ASTM F-1227. The test consists of heating a sample to 125°C for 24 hours under a  $10^{-5}$  torr vacuum and measuring the weight loss and any material that condenses on an adjacent cold surface area (25°C). The most common candidates for outgassing in Trompeter product lines include:

1. Silicon rubber per ZZ-R-765E/GEN (Federal Spec), Class 2B, Grade 40, 50, 60, and 70. Almost all of Trompeter's gaskets are manufactured from this material. These materials require a post process (by Trompeter) at 200°centigrade for 6 hours minimum.
2. Ink. Trompeter uses Markem™ series 7224 inks (in a variety of colors) for part marking. Only blue 7224 Markem ink has acceptable TML (0.43%) and CVCM (0.07%) readings after a post cure process. While this is acceptable, Trompeter recommends impression stamping the connector rather than ink marking.
3. Shrinkable strain relief/sealing sleeve. Sleeves made from Kynar™ material meets the requirement for outgassing at 0.14% TML and 0.02% CVCM.
4. Insulators. At Trompeter, the majority of dielectric insulators are made from PTFE. (Teflon™ is Dupont's trademark for PTFE, FEP, and PFA fluoropolymer resins). PTFE has excellent TML (0.07%) and CVCM (0.01%) readings. The loss rate is about one-tenth of the acceptable maximum rates for spacecraft uses.

*For a list of connectors which meet outgassing requirements, contact our technical support staff.*

## TWINAX/TRIAX CONNECTOR SPECIFICATIONS

Trompeter offers a broad line of connectors manufactured to meet or exceed the Mil-Specs governing twinax connectors. In fact, Mil-C-49142 was created from the Trompeter concentric twinax/triax connector design.

triax applications. Use this chart to determine the proper connector type to be used in your application, based on the environment and electrical requirements of your design. Trompeter's technical support staff is available to answer any specification questions you may have.

The following information reflects the specification requirements for each family of connectors in both twinax and

### *MIL-STD-1553B Data Bus General Specifications Guide*

| Characteristic Requirements  | 70 Series<br>TRB/TRT    | 80 Series<br>TRC/TRN    | 150 Series<br>TRS/TTM | 450 Series<br>TCS |
|--|-------------------------|-------------------------|-----------------------|-------------------|
| <b>Nominal Impedance</b>   | Non-constant            | Non-constant            | Non-constant          | Non-constant      |
| <b>Frequency Range</b>   | 0-500 MHz               | 0-500 MHz               | 0-500 MHz             | 0-2 MHz           |
| <b>Voltage Rating (max.) @ sea level</b>   | 400 VRMS                | 500 VRMS                | 400 VRMS              | 900 VRMS          |
| <b>Voltage Rating (max.) @ 70,000 ft.</b>  | 100 VRMS                | 125 VRMS                | 100 VRMS              | N/A               |
| <b>Insulation Resistance</b>   | 5000 MΩ                 | 5000 MΩ                 | 5000 MΩ               | 5000 MΩ           |
| <b>Dielectric Withstanding Voltage</b><br>(between center cond. & inter. cond.)        | 1200 VRMS               | 1500 VRMS               | 1200 VRMS             | 900 VAC           |
| <b>Dielectric Withstanding Voltage</b><br>(between inter. cond. & outer cond.)         | 500 VRMS                | 500 VRMS                | 500 VRMS              | N/A               |
| <b>RF High Potential Withstanding Voltage</b><br>(between center cond. & inter. cond.) | 800 VRMS                | 1000 VRMS               | 500 VRMS              | 900 VAC @ 60 Hz   |
| <b>RF High Potential Withstanding Voltage</b><br>(between inter. & outer cond.)        | 200 VRMS<br>@ 5-7.5 MHz | 350 VRMS<br>@ 5-7.5 MHz | 125 VRMS              | N/A               |

*Specifications continued on page 6...*

*\* Specifications are minimum unless otherwise stated. Trompeter connectors are designed to exceed all minimum specifications.*

## TWINAX/TRIAX CONNECTOR SPECIFICATIONS

### *MIL-STD-1553B Data Bus General Specifications Guide (cont.)*

| Characteristic Requirements  | 70 Series<br>TRB/TRT  | 80 Series<br>TRC/TRN                    | 150 Series<br>TRS/TTM                   | 450 Series<br>TCS                       |
|--|---|---|---|---|
| Corona Level (min.)  | 200 VRMS<br>@ 70,000 ft.  | 375 VRMS<br>@ 70,000 ft.                | 125 VRMS<br>@ 70,000 ft.                | 250 VAC<br>@ 50,000 ft.                 |
| Rise Time Degradation (max.)   | 400 rs  | N/A                                     | 800 rs                                  | 800 rs                                  |
| Permeability of Nonmagnetic Material   | <2.0 mu except hermetic versions  |   |   |   |
| Hermetic Seal<br>(Where Applicable)  | <1 x 10 <sup>-8</sup> cc/sec  | N/A                                     | <1 x 10 <sup>-6</sup> cc/sec            | N/A                                     |
| Connector Durability   | 500 cycles minimum @ 12 cycles per minute max.  |   |   |   |
| Temperature Range  | -65° to +165°C  | -65° to +165°C                          | -65° to +200°C                          | -65° to 125°C                           |
| Force to Engage and Disengage<br>Longitudinal (max.)                               | 4 pounds  | 5 pounds                                | 4 pounds                                | 3 pounds                                |
| Torque (max.)  | 2.5 inch-pounds   | 4 inch-pounds                           | 2.5 inch-pounds                         | 2.5 inch-pounds                         |
| Center Contact Retention<br>Axial Force (min.)                                     |   |   |   |   |
| Plug   | 6 pounds  | 6 pounds                                | 4 pounds                                | 6 pounds                                |
| Jack   | 6 pounds  | 6 pounds                                | 2 pounds                                | 6 pounds                                |
| Coupling Proof Torque<br>(Threaded types only)                                     | 15 inch-pounds  | 15 inch-pounds                          | 10 inch-pounds                          | N/A                                     |
| Coupling Mechanism Retention Force<br>(min.)                                       | 100 pounds  | 100 pounds                              | 70 pounds                               | 100 pounds                              |
| Cable Retention Force (min.)   | 40 pounds<br>.200-.325 inch<br>cable OD   | 65 pounds<br>.242-.419 inch<br>cable OD | 40 pounds<br>.120-.215 inch<br>cable OD | 40 pounds<br>.120-.180 inch<br>cable OD |
| Salt Spray (corrosion)   | 48 hrs minimum exposure (Standard nickel plating)<br>500 hrs minimum available (Call factory for plating types). Standard for 450 Series. |   |   |   |
| Moisture Resistance (10 cycles)  | Total 240 hour minimum exposure   |   |   |   |
| Thermal Shock (5 cycles)<br>(No physical damage/Pass DWV)                          | Total 5 hours 50 minutes min -65°C to +85°C   |   |   | -65°C to +125°C                         |
| Specified Shock (sawtooth waveform,<br>within peak - 50g's, duration -11ms)        | No discontinuity allowed. Velocity-change of shock pulse 10% of ideal value   |   |   |   |
| Vibration, High-frequency (36 cycles)<br>(15g peak, 10-2000 Hz-10Hz in 20 Minutes) | Total 12 hour minimum. No physical damage or loosening of parts.<br>No discontinuity allowed.   |   |   |   |

\* Specifications are minimum unless otherwise stated. Trompeter connectors are designed to exceed all minimum specifications.

## TWINAX/TRIAX CONNECTOR INTRODUCTIONS

### *Twinax/Triax Connectors*



#### **70 Series**

*Miniature 2, 3, 4 lug, and Push-on (TRB)*

*Built to Last Premium Quality  
Superior Mechanical Performance  
Rugged Physical Properties  
Extreme Reliability*

Signals require protection from extraneous noise through non-signal carrying shielding. These interfacing connectors must provide contact surfaces isolated from each other, as well as from the outer shield. Trompeter twinaxial/triaxial connectors are designed with two (2) concentric contacts that are isolated from each other and the shielding connection.

#### **FEATURES**

- ▲ All metallic parts are machined/formed to extremely close tolerances.
- ▲ All bodies are made of top quality brass with bright nickel-plated, non-tarnish finish.
- ▲ Fully enclosed, heat-treated, beryllium-copper outer conductor spring (not half hard slotted brass) a patented feature!
- ▲ Heat-treated, beryllium-copper center socket contact with 50 millionths inch gold plating.

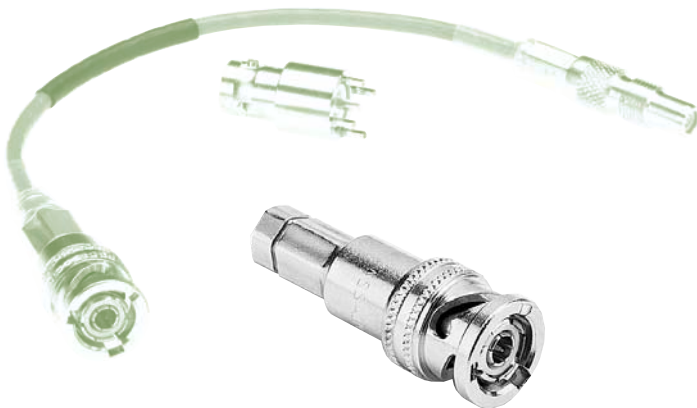
#### **370 Series**

*Miniature Threaded (TRT)*

These concentric twinax/triax connectors are ideal for applications where weight is not a primary concern. They are commonly used in digital data bus, video pair, MIL-STD-1553B (airborne/ground, primary/redundant), base-band circuit and any application for "noise-free guarded" circuits.

#### **FEATURES**

- ▲ Same size as BNC/TNC connectors. Large body versions are available to accommodate larger cables.
- ▲ Field serviceable, wrench crimp versions for cables with up to .475" outer diameters.
- ▲ Tool crimp versions for quick termination of cables with up to .250" outer diameters.
- ▲ 3-lug, 4-lug, and threaded versions provide different levels of mechanical stability and keying.
- ▲ Does not require mechanical alignment for mating.
- ▲ QPL'd to MIL-C-49142 (see list on page 8).
- ▲ Meets MIL-C-49142, 48-hour salt spray requirement.
- ▲ Special plating available to satisfy MIL-STD-1344, 500-hour salt spray requirement.
- ▲ Push-on versions for test cable applications.
- ▲ Fewer pieces to assemble.
- ▲ Hermetically sealed versions are available (page 13).



## 70/370 SERIES CONNECTORS: QPL'D TO MIL-C-49142

### MIL-C-49142 Qualified Products List

Trompeter has always been a leader in twinax connector design and development. This time we've designed a new connector style to meet the requirements of MIL-C-49142, Category G. Trompeter is the only manufacturer to be qualified to category G.

What is category G? It is the section of the Mil-Spec that requires tool crimping of the TRB (70) series connectors. We are also qualified to category A which is for wrench crimp TRB connectors.

The following is the latest list from Defense Electronic Supply Center (DESC) of qualified Trompeter Electronics' parts. Keep this list handy and make as many copies as needed. QPL'd parts must be ordered by the *MIL-Number*. Many of Trompeter's 70 Series concentric twinax connectors are QPL'd to MIL-C-49142. QPL'd versions are silver plated and can be ordered using the *Government Designation part numbers listed*. Corresponding standard nickel plated connectors can be ordered using the standard part numbers.

| MIL-NUMBER     | TROMPETER NUMBER |
|----------------|------------------|
| M49142/03-0001 | PL75-7           |
| M49142/03-0002 | PL75-7           |
| M49142/03-0005 | 305-0042-1       |
| M49142/03-0007 | PL75-9           |
| M49142/03-0008 | PL75-47          |
| M49142/03-0009 | PL75-60          |
| M49142/03-0011 | 305-0811-1       |
| M49142/03-0016 | PL75MC213        |
| M49142/03-0017 | PL75MC-201       |
| M49142/03-0101 | PL75Y-7          |
| M49142/03-0102 | PL75Y-7          |
| M49142/03-0105 | 305-0042Y-1      |
| M49142/03-0107 | PL75Y-9          |
| M49142/03-0108 | PL75Y-47         |
| M49142/03-0109 | PL75Y-60         |
| M49142/03-0111 | 305-0811Y-1      |
| M49142/03-0116 | PL75MCY-213      |
| M49142/03-0117 | PL75MCY-201      |
| M49142/03-0201 | PL75S-7          |
| M49142/03-0202 | PL75S-7          |
| M49142/03-0205 | 305-0042S-1      |
| M49142/03-0207 | PL75S-9          |
| M49142/03-0208 | PL75S-47         |
| M49142/03-0209 | PL75S-60         |
| M49142/03-0211 | 305-0811S-1      |
| M49142/03-0216 | PL75MCS-213      |
| M49142/03-0217 | PL75MCS-201      |
| M49142/04-0004 | BJ76             |
| M49142/04-0104 | BJ76Y            |
| M49142/04-0204 | BJ76S            |
| M49142/05-0001 | BJ79-7           |
| M49142/05-0002 | BJ79-7           |
| M49142/05-0006 | 305-0042-7       |
| M49142/05-0007 | BJ79-9           |
| M49142/05-0008 | BJ79-47          |
| M49142/05-0009 | BJ79-60          |
| M49142/05-0011 | 305-0811-3       |
| M49142/05-0016 | BJ79MC-213       |
| M49142/05-0017 | BJ79MC-201       |
| M49142/05-0101 | BJ79Y-7          |
| M49142/05-0102 | BJ79Y-7          |
| M49142/05-0106 | 305-0042Y-7      |
| M49142/05-0107 | BJ79Y-9          |
| M49142/05-0108 | BJ79Y-47         |
| M49142/05-0109 | BJ79Y-60         |
| M49142/05-0111 | 305-0811Y-3      |
| M49142/05-0116 | BJ79MCY-213      |
| M49142/05-0117 | BJ79MCY-201      |
| M49142/05-0201 | BJ79S-7          |
| M49142/05-0202 | BJ79S-7          |
| M49142/05-0206 | 305-0042S-7      |
| M49142/05-0207 | BJ79S-9          |
| M49142/05-0208 | BJ79S-47         |
| M49142/05-0209 | BJ79S-60         |
| M49142/05-0211 | 305-0811S-3      |
| M49142/05-0216 | BJ79MCS-213      |
| M49142/05-0217 | BJ79MCS-201      |

| MIL-NUMBER     | TROMPETER NUMBER |
|----------------|------------------|
| M49142/06-0001 | CJ70-7           |
| M49142/06-0002 | CJ70-7           |
| M49142/06-0006 | 305-0042-4       |
| M49142/06-0007 | CJ70-47          |
| M49142/06-0008 | CJ70-9           |
| M49142/06-0009 | CJ70-60          |
| M49142/06-0011 | 305-0811-2       |
| M49142/06-0016 | CJ70MC-213       |
| M49142/06-0017 | CJ70MC-201       |
| M49142/06-0101 | CJ70Y-7          |
| M49142/06-0102 | CJ70Y-7          |
| M49142/06-0106 | 305-0042Y-4      |
| M49142/06-0107 | CJ70Y-47         |
| M49142/06-0108 | CJ70Y-9          |
| M49142/06-0109 | CJ70Y-60         |
| M49142/06-0111 | 305-0811Y-2      |
| M49142/06-0116 | CJ70MCY-213      |
| M49142/06-0117 | CJ70MCY-201      |
| M49142/06-0201 | CJ70S-7          |
| M49142/06-0202 | CJ70S-7          |
| M49142/06-0206 | 305-0042S-4      |
| M49142/06-0207 | CJ70S-47         |
| M49142/06-0208 | CJ70S-9          |
| M49142/06-0209 | CJ70S-60         |
| M49142/06-0211 | 305-0811S-2      |
| M49142/06-0216 | CJ70MCS-213      |
| M49142/06-0217 | CJ70MCS-201      |
| M49142/08-0001 | PL375-7          |
| M49142/08-0002 | PL375-7          |
| M49142/08-0005 | 305-0042-9       |
| M49142/08-0006 | PL375-47         |
| M49142/08-0008 | PL375-60         |
| M49142/08-0010 | 305-0811-5       |
| M49142/08-0011 | 305-0486-1       |
| M49142/08-0016 | PL375MC-213      |
| M49142/08-0017 | PL375MC-201      |
| M49142/09-0001 | BJ379-7          |
| M49142/09-0002 | BJ379-7          |
| M49142/09-0006 | BJ379-47         |
| M49142/09-0007 | 305-0042-11      |
| M49142/09-0009 | BJ379-60         |
| M49142/09-0011 | 305-0811-7       |
| M49142/09-0012 | 305-0486-3       |
| M49142/09-0016 | BJ379MC-213      |
| M49142/09-0017 | BJ379MC-201      |
| M49142/10-0001 | BJ376            |
| M49142/11-0001 | CJ370-7          |
| M49142/11-0002 | CJ370-7          |
| M49142/11-0006 | CJ370-47         |
| M49142/11-0007 | 305-0042-12      |
| M49142/11-0009 | CJ370-60         |
| M49142/11-0011 | 305-0811-6       |
| M49142/11-0012 | 305-0486-2       |
| M49142/11-0016 | CJ370MC-213      |
| M49142/11-0017 | CJ370MC-201      |



# MINIATURE PLUGS & JACKS 70/370 SERIES, TRB/TRT

PL75MC-202 Shown

**CABLE PLUG TOOL CRIMP**

- 3-lug **PL75MC-** ⚠
- 2-lug **PL74MC-** ⚠
- 4-lug **PL75MCFL-** ⚠
- Threaded **PL375MC-** ⚠

*For polarizations, call factory*

PL74C-202 Shown

**CABLE PLUG TOOL CRIMP**

- 2-lug **PL74C-** ⚠
- 3-lug **PL75C-** ⚠
- 4-lug **PL75CFL-** ⚠
- Threaded **PL375C-** ⚠

*\* Length depends on Cable Group*

PL74-9 Shown

**CABLE PLUG WRENCH CRIMP**

- 2-lug **PL74-** ⚠
- 3-lug **PL75-** ⚠
- 4-lug **PL75FL-** ⚠
- Threaded **PL375-** ⚠

PL73C-202 Shown

**CABLE PLUG TOOL CRIMP, PUSH-ON**

**PL73C-** ⚠

PL73-9 Shown

**CABLE PLUG WRENCH CRIMP, PUSH-ON**

**PL73-** ⚠

*Order Large Body version for cables with jacket dia. greater than .323".*

CJ70-9 Shown

**CABLE JACK WRENCH CRIMP**

- 3-lug **CJ70-** ⚠
- 2-lug **CJ70TL-** ⚠
- 4-lug **CJ70FL-** ⚠
- Threaded **CJ370-** ⚠

PLR74C-201 Shown

**RIGHT ANGLE CABLE PLUG TOOL CRIMP**

- 2-lug **PLR74C-** ⚠
- 3-lug **PLR75C-** ⚠
- 4-lug **PLR75CFL-** ⚠
- Threaded **PLR375C-** ⚠

*For cable groups 201-223 only. Contact the factory for other cables.*

CJ70C-202 Shown

**CABLE JACK TOOL CRIMP**

- 3-lug **CJ70C-** ⚠
- 2-lug **CJ70CTL-** ⚠
- 4-lug **CJ70CFL-** ⚠
- Threaded **CJ370C-** ⚠

ADRMF70 Shown

**RIGHT ANGLE TRB ADAPTER**

TRB MALE TO FEMALE

- 3-lug **ADRMF70**
- 2-lug **ADRMF70TL**
- Threaded **ADRMF370**
- 4-lug **ADRMF70FL**

AD78 Shown

**TRB COUPLING ADAPTER (BARREL CONNECTOR)**

- 3-lug **AD78**
- 2-lug **AD78TL**
- 4-lug **AD78FL**
- Threaded **AD378**

⚠ - Refers to the cable group table on pages 91-133

# MINIATURE BULKHEAD JACKS 70/370 SERIES, TRB/TRT

BJ377 Shown

**BULKHEAD JACK**  
FRONT MOUNT, SOLDER POT

3-lug **BJ770**  
Ground tab **BJ770GL**  
2-lug **BJ77TL**  
4-lug **BJ77FL**  
Threaded **BJ377**

Mounting Hole: D4.125

(Hermetically sealed version available, pg.13)

BJ79C Shown

**BULKHEAD CABLE JACK**  
TOOL CRIMP

3-lug **BJ79C-△**  
2-lug **BJ79CTL-△**  
4-lug **BJ79CFL-△**  
Threaded **BJ379C-△**

Mounting Hole: D3.109

For polarizations, contact the factory.

BJ378 Shown

**FEED-THRU BULKHEAD JACK** Threaded

3-lug **BJ78**  
2-lug **BJ78TL**  
4-lug **BJ78FL**  
Threaded **BJ378**

Mounting Hole: D3.187

(Hermetically sealed version available, pg.13)

BJ379-7 Shown

**BULKHEAD CABLE JACK**  
WRENCH CRIMP

3-lug **BJ79-△**  
2-lug **BJ79TL-△**  
4-lug **BJ79FL-△**  
Threaded **BJ379-△**

Mounting Hole: D3.160

BJ76 Shown

**BULKHEAD JACK**  
REAR MOUNT, SOLDER POT

3-lug **BJ76**  
2-lug **BJ76TL**  
4-lug **BJ76FL**  
Threaded **BJ376\***

Mounting Holes: D3.240 w/o solder lug/D3.208 w/ solder lug  
(\* Hermetically sealed version avail. pg.13)

BJ75 Shown

**INSULATED BULKHEAD JACK**  
REAR MOUNT, SOLDER POT

3-lug **BJ75**  
2-lug **BJ75TL**  
4-lug **BJ75FL**  
Threaded **BJ375**

Mounting Hole: D2.140

BJ74-9 Shown

**INSULATED BULKHEAD CABLE JACK**  
WRENCH CRIMP

3-lug **BJ74-△**  
2-lug **BJ74TL-△**  
4-lug **BJ74FL-△**  
Threaded **BJ374-△**

Mounting Hole: D2.140

BJ74C-202 Shown

**INSULATED BULKHEAD CABLE JACK**  
TOOL CRIMP

3-lug **BJ74C-△**  
2-lug **BJ74CTL-△**  
4-lug **BJ74CFL-△**  
Threaded **BJ374C-△**

Mounting Hole: D2.140

BJ73 Shown

**INSULATED FEED-THRU JACK**

3-lug **BJ73**  
2-lug **BJ73TL**  
4-lug **BJ73FL**  
Threaded **BJ373**

Mounting Hole: D2.140

BJ72 Shown

**INSULATED BULKHEAD JACK**  
FRONT MOUNT

3-lug **BJ72**  
2-lug **BJ72TL**  
4-lug **BJ72FL**  
Threaded **BJ372**

Mounting Hole: D2.140

△ - See cable group table on pages 91-133. "D" mounting holes see page 54. For polarizations, contact the factory.

# MINIATURE CIRCUIT BOARD JACKS 70/370 SERIES

CBJ70 Shown

**TWINAX/TRIAX TRB CONCENTRIC CIRCUIT BOARD JACK**

3-lug  
2-lug  
4-lug  
(TRT) Threaded

**CBJ70  
CBJ70TL  
CBJ70FL  
CBJ370**

CBBJ79 Shown

**TWINAX/TRIAX TRB NON-INSULATED CONCENTRIC FEMALE 3-LUG BULKHEAD MOUNT**

3-lug  
2-lug  
4-lug  
Threaded

**CBBJ79  
CBBJ79TL  
CBBJ79FL  
CBBJ379**

| MODEL NO. | LTR CODE | A DIM | B DIM | C DIM | D DIM |
|-----------|----------|-------|-------|-------|-------|
| CBJR70    | -        | .24   | .050  | .090  | .0625 |
| CBJR70A   | A        | .34   | .058  | .090  | .070  |

**TWINAX/TRIAX TRB RIGHT ANGLE CONCENTRIC CIRCUIT BOARD JACK**

3-lug

**CBJR70  
CBJR70A**

**TWINAX/TRIAX TRB NON-INSULATED CONCENTRIC FEMALE 3-LUG BULKHEAD MOUNT**

3-lug  
2-lug  
4-lug  
Threaded

**CBBJ79  
CBBJ79TL  
CBBJ79FL  
CBBJ379**

Mounting Hole: D3.109

**TWINAX/TRIAX TRB INSULATED CONCENTRIC FEMALE 3-LUG BULKHEAD MOUNT**

3-lug

**CBBJ74**

Mounting Hole: D2.109

| MODEL NO. | LTR CODE | A DIM | B DIM | C DIM | D DIM | E DIM |
|-----------|----------|-------|-------|-------|-------|-------|
| CBBJR79   | -        | .24   | .565  | .050  | .090  | .0625 |
| CBBJR79A  | A        | .34   | .665  | .058  | .090  | .070  |

**RIGHT ANGLE CIRCUIT BOARD BULKHEAD JACK**

Standard Version

3-lug  
2-lug  
4-lug  
Threaded

**CBBJR79  
CBBJR79TL  
CBBJR79FL  
CBBJR379**

\* FOR MODEL # 305-0789 DIA = .0410

**TWINAX/TRIAX TRB INSULATED CONCENTRIC FEMALE 3-LUG BULKHEAD MOUNT**

3-lug

**CBBJ74**

Mounting Hole: D2.109

| MODEL NO. | LTR CODE | A DIM | B DIM | C DIM | D DIM |
|-----------|----------|-------|-------|-------|-------|
| CBBJR74   | -        | .345  | .778  | .050  | .0625 |
| CBBJR74A  | A        | .445  | .878  | .058  | .070  |

MAX PANEL THICKNESS .140

**RIGHT ANGLE INSULATED CIRCUIT BOARD BULKHEAD JACK**

Insulated Version

3-lug  
2-lug  
4-lug  
Threaded

**CBBJR74  
CBBJR74TL  
CBBJR74FL  
CBBJR374**

**RIGHT ANGLE CIRCUIT BOARD BULKHEAD JACK**

Standard Version

3-lug  
2-lug  
4-lug  
Threaded

**CBBJR79  
CBBJR79TL  
CBBJR79FL  
CBBJR379**

Add "A" for tall versions  
example: **CBBJR79A**

See diagram above

\* **305-0789**

Mounting Hole: D3.125

**RIGHT ANGLE INSULATED CIRCUIT BOARD BULKHEAD JACK**

Insulated Version

3-lug  
2-lug  
4-lug  
Threaded

**CBBJR74  
CBBJR74TL  
CBBJR74FL  
CBBJR374**

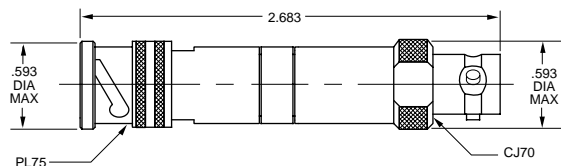
Add "A" for tall versions example: **CBBJR74A**

Mounting Hole: D2.140

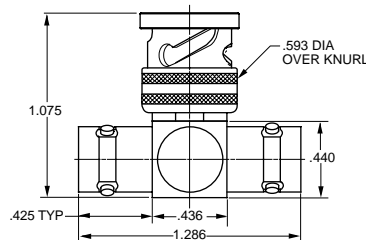
"D" mounting holes see page 54.

# TRB SERIES PAD / PARALLELING / T ADAPTER

## TRB SERIES PAD TRB 3-LUG PLUG AND JACK



BN73 Shown



TRB "T" ADAPTER

3-lug

BN73

2-lug

BN73TL

TRT "T" ADAPTER

4-lug

BN73FL

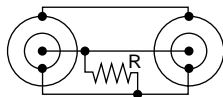
Threaded

BN373

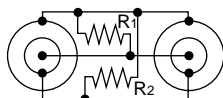
### PART NUMBER

### CIRCUITRY SCHEMATIC

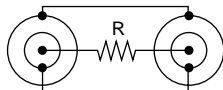
TNG2-R



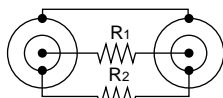
TNG2A-R1-R2



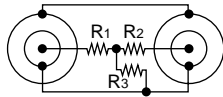
TNG3-R



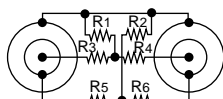
TNG3A-R1-R2



TNG4-R1-R2-R3



TNG4A-R1-R2-R3-R4-R5-R6

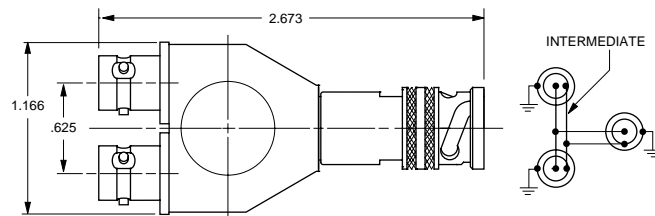


R-Resistance (1/2 W 1%)

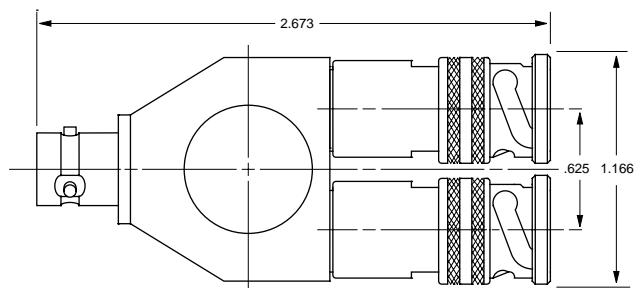
Substitute resistive value for each "R<sub>N</sub>" unless all values are identical.

## FIXED PARALLELING JACKS

TN2A Shown



TN2 Shown



### FIXED PARALLELING JACK

Two Plugs, One Jack

3-lug

TN2

2-lug

TN2TL

4-lug

TN2FL

Threaded

TN2T

Two Jacks, One Plug

3-lug

TN2A

2-lug

TN2TLA

4-lug

TN2FLA

Threaded

TN2TA

\* Other options available including Random Paralleling. Contact the factory for more information.

For Adapters, see pages 47-50. For Terminations, see page 45-46. For Impedance Matching Adapters, see page 47.

# HERMETICALLY SEALED CONNECTORS

## Concentric Twinax/Triax

Hermetic seals *prevent leakage* through the bulkhead from *inside* of the connector. Trompeter's miniature size hermetically sealed connectors include the feed-through BJ78HS, the front mounted BJ77HS, the rear mounted BJ79HS and the newly designed threaded BJ379HS. In the subminiature size we offer the front mounted BJ157HS and BJ157FLHS (four lug version). The BJ3150HS and BJ3150SHS offer a threaded rear mount version with a safety wire option. These connectors are designed for bulkhead mounting in vacuum chambers, or where toxic and other gases are present. These connectors have leakage rates of  $1 \times 10^{-8}$  atm cc/second. The 150 Series have leakage rates of  $1 \times 10^{-6}$  atm cc/ second.



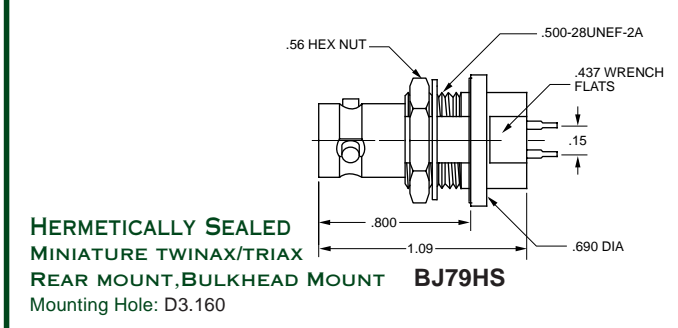
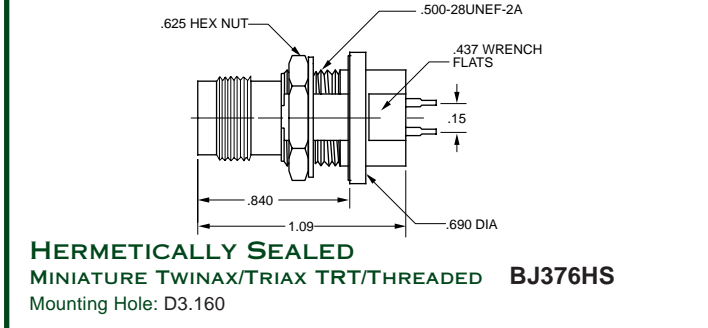
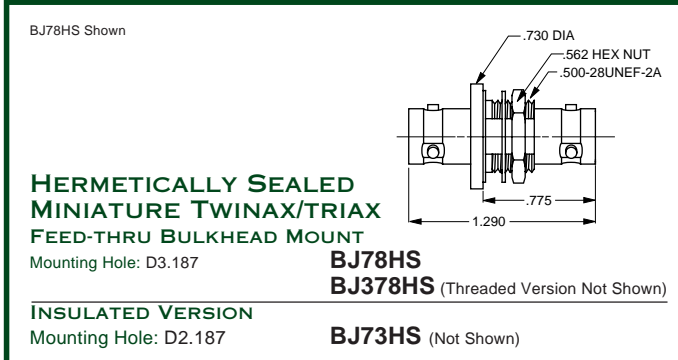
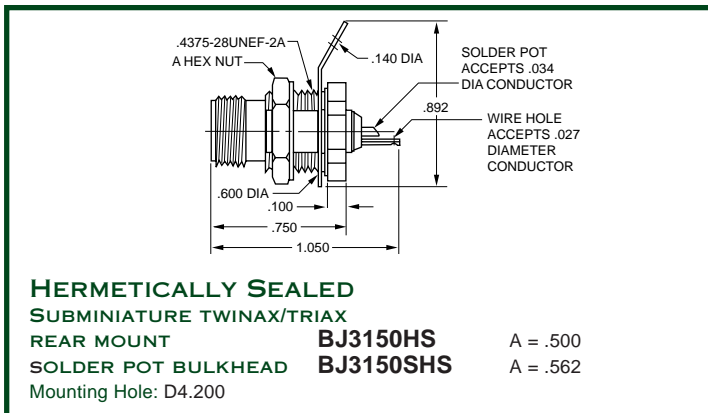
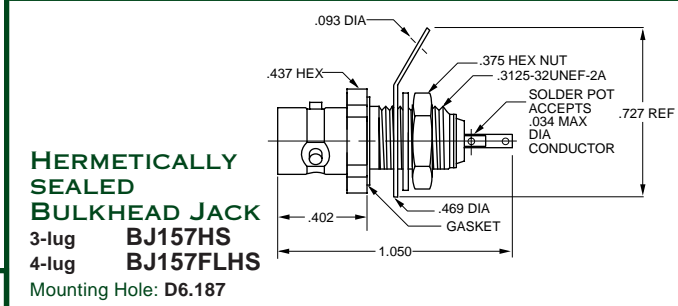
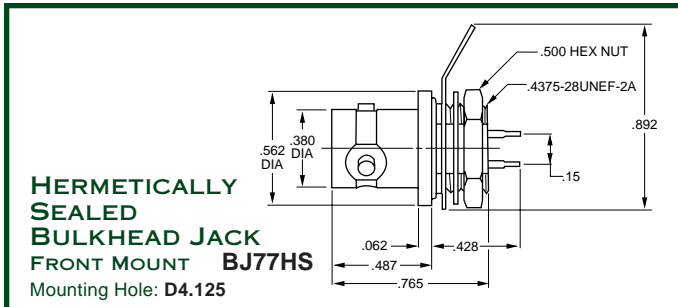
### FEATURES

- ▲ Standard TRB/MIL-C-49142
- ▲ Glass to Metal Seals
- ▲ Sustains Extreme Temperature Ranges
- ▲ Standard Brass Body
- ▲ Gold Plated Contacts

### BENEFITS

- ▲ The Most Mechanical and Environmentally Reliable Method
- ▲ Wide Range of Application Usage
- ▲ More Cost Effective than Stainless Steel
- ▲ Reliable Connections

They all meet MIL-C-49142 specifications. Standard non-hermetic connector types such as the BJ78 could leak between the contacts and dielectrics. Hermetically sealed connectors can be used in commercial, military, and industrial applications where toxic gas maybe present. Hermetic connectors are highly beneficial in reactors, gas/petro plants, oil drilling sites, liquid test and measurement, and space applications. They are reliable under the most severe atmospheric conditions.



Note: Only a select few of our hermetically sealed connectors are shown here. Contact the factory for more information. "D" Mounting holes see page 54

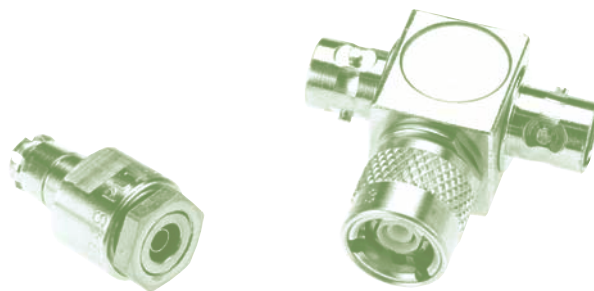
## TWINAX/TRIAX 150 SERIES INTRO / SIZE 8 MATING CONTACTS

### 150 Series

Miniature 2,3, 4-lug, & Push-on (TRS)

### 3150 Series

Miniature Threaded (TTM)



150/3150 Series are concentric twinax/triax connectors for high density and weight reduction applications. They are commonly used in digital data bus, video pair, MIL-STD-1553B (primary/redundant), baseband circuit and in any application for "noise-free guarded" circuits. TRS/TTM push-on connectors are designed for blind mate rack and panel applications. The male plug mates with any TRS/TTM jack and are ideally suited for test cable applications.

#### FEATURES

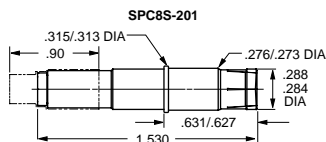
- ▲ Same size as TPS/TCM connectors.
- ▲ Solderable Wrench Crimp versions for cables with up to .215" outer diameter.
- ▲ Tool Crimp versions for quick termination of cables with up to .250" outer diameter.
- ▲ 3-lug, 4-lug, and threaded versions provide different levels of mechanical stability and keying.
- ▲ Does not require mechanical alignment for mating.
- ▲ Meets MIL-C-49142, 48-hour salt spray requirement.
- ▲ Special plating available to satisfy MIL-STD-1344 500-hour salt spray requirement.
- ▲ Push-on versions for test cable applications.
- ▲ Fewer pieces to assemble.
- ▲ Hermetically sealed versions available (see page 13).

### Mating Twinax Size 8 Contacts for Digital Data Bus Multi-pin Connectors

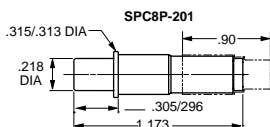
This pair of **scoop-proof** concentric contacts fits the Size 8 cavity of MIL-C-38999 series 1, 3, & 4 and MIL-STD-1760 "External Stores" type connectors.

#### FEATURES

- ▲ Fits MIL-C-17/176-00002 and other twinax/triax cables
- ▲ Heat treated beryllium copper spring members
- ▲ Gold plated, Full Crimp contacts



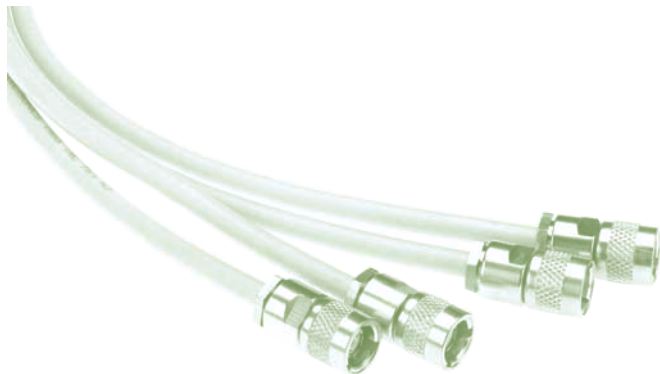
TROMPETER PART NO.  
SOCKET **SPC8S-201**



TROMPETER PART NO.  
PIN **SPC8P-201**



# SUB-MINIATURE JACKS & PLUGS 150/3150 SERIES TRS/TTM



## Sub-miniature Jacks & Plugs

Sub-miniature concentric twinax/triax connectors increase packing density up to 246%. They are designed for high density applications where digital, video pair or baseband noise-free guarded circuits are required. The 3-lug, 4-lug, and threaded versions improve mechanical stability and provide "error-free" redundant data bus capabilities. The wrench crimp version accommodates cables with other jacket diameters up to .215" and the tool crimp versions up to .250".

PL155-29 Shown

**CABLE PLUG  
WRENCH CRIMP**

3-lug  
4-lug  
Threaded

**PL155-<sup>△</sup>  
PL155FL-<sup>△</sup>  
PL3155-<sup>△</sup>**

BJ159-29 Shown

**BULKHEAD JACK  
REAR MOUNT, WRENCH CRIMP**

3-lug  
4-lug  
Threaded

**BJ159-<sup>△</sup>  
BJ159FL-<sup>△</sup>  
BJ3159-<sup>△</sup>**

Mounting Hole: D4.125

PL155AC-207 Shown

**CABLE PLUG  
TOOL CRIMP**

3-lug  
4-lug  
Threaded

**PL155AC-<sup>△</sup>  
PL155ACFL-<sup>△</sup>  
PL3155AC-<sup>△</sup>**

BJ159AC Shown

**BULKHEAD JACK  
REAR MOUNT, TOOL CRIMP**

3-lug  
4-lug  
Threaded

**BJ159AC-<sup>△</sup>  
BJ159ACFL-<sup>△</sup>  
BJ3159AC-<sup>△</sup>**

Mounting Hole: D4.125

PLR3155AC-201 Shown

**RIGHT ANGLE  
CABLE PLUG  
TOOL CRIMP**

3-lug  
4-lug  
Threaded

**PLR155AC-<sup>△</sup>  
PLR155ACFL-<sup>△</sup>  
PLR3155AC-<sup>△</sup>**

CJ150-29 Shown

**CABLE JACK  
WRENCH CRIMP**

3-lug  
4-lug  
Threaded

**CJ150-<sup>△</sup>  
CJ150FL-<sup>△</sup>  
CJ3150-<sup>△</sup>**

CJ150AC-207 Shown

**CABLE JACK  
TOOL CRIMP**

3-lug  
4-lug  
Threaded

**CJ150AC-<sup>△</sup>  
CJ150ACFL-<sup>△</sup>  
CJ3150AC-<sup>△</sup>**

<sup>△</sup> - Refers to Cable Group Table see pages 91-133. "D" mounting holes see page 54

# SUBMINIATURE BULKHEAD JACKS 150/3150 SERIES TRS/TTM

BJ157 Shown

**BULKHEAD JACK**  
FRONT MOUNT, SOLDER POT

3-lug **BJ157**  
4-lug **BJ157FL**  
Threaded **BJ3157**

(Hermetically sealed version available, pg.13) Mounting Hole: D6.187

BJ158 Shown

**FEED-THROUGH JACK**

3-lug **BJ158**  
4-lug **BJ3158**

Threaded Mounting Hole: D5.190/D4.190 (Threaded)

**BULKHEAD JACKS**  
FLANGE MOUNT, SOLDER POT

3-lug **BJ157F-△**  
4-lug **BJ157FFL-△**  
Threaded **BJ3157F-△**

BJ155 Shown

**INSULATED BULKHEAD JACK**  
REAR MOUNT, SOLDER POT

3-lug **BJ155**  
4-lug **BJ155FL**  
Threaded **BJ3155**

Mounting Hole: D9.148

**HOLE CONFIGURATION:**

△ # of holes/ Type-Dimension

A Dim = .425 **2/Clear** - .103" diameter - **2C(S)**  
**2/Threaded** - .099-56UNF-2B - **2T(S)**

B Dim = .687 **4/Clear** - .103" diameter - **4C(S)**  
**4/Threaded** - .099-56UNF-2B - **4T(S)**

(S) = Comes with Stainless Steel Phillips #3-56 Pan Head Screws  
Maximum Panel Thickness .187

BJ154-29 Shown

**INSULATED BULKHEAD JACK**  
REAR MOUNT, WRENCH CRIMP

3-lug **BJ154-△**  
4-lug **BJ154FL-△**  
Threaded **BJ3154-△**

Mounting Hole: D9.116

BJ152 Shown

**INSULATED BULKHEAD JACK**  
FRONT MOUNT, SOLDER POT

3-lug **BJ152**  
4-lug **BJ152FL**  
Threaded **BJ3152**

Mounting Hole: D9.208

BJ154AC-207 Shown

**INSULATED BULKHEAD JACK**  
REAR MOUNT, TOOL CRIMP

3-lug **BJ154AC-△**  
4-lug **BJ154ACFL-△**  
Threaded **BJ3154AC-△**

Mounting Hole: D9.116

BJ150 Shown

**BULKHEAD JACK**  
REAR MOUNT, SOLDER POT

3-lug **BJ150**  
4-lug **BJ150FL**  
Threaded **BJ3150**

Mounting Hole: D4.250

BJ153 Shown

**INSULATED FEED-THROUGH JACK**

3-lug **BJ153**  
4-lug **BJ153FL**  
Threaded **BJ3153**

Mounting Hole: D9.116

△ - Refers to the cable group table see pages 91-133. "D" Mounting holes see page 54 △ - Replace with item from related table (same page).



# SUBMINIATURE 150/3150 SERIES

**BULKHEAD MOUNT JACK WITH PC TAILS**  
**305-1222**  
 Mounting Hole: D4.125

**BULKHEAD PUSH-ON PLUG FRONT MOUNT, SOLDER POT**  
**PL151**  
 Mounting Hole: C1.088

**CIRCUIT BOARD JACK**  
 CBJ157 Shown  
**CBJ157**  
**CBJ157FL**  
**CBJ3157**  
 3-lug  
 4-lug  
 Threaded  
 Max Board Thickness .125

**BULKHEAD PUSH-ON JACK FRONT MOUNT, SOLDER POT**  
**BJ151**  
 Mounting Hole: C1.088

**RIGHT ANGLE CIRCUIT BOARD JACK**  
 CBJR157 Shown  
**CBJR157**  
**CBJR157FL**  
**CBJR3157**  
 3-lug  
 4-lug  
 Threaded

**PUSH-ON CABLE PLUG WRENCH CRIMP**  
 PL153-29 Shown  
**PL153-△**

**"T" ADAPTER**  
 BN153 Shown  
**BN153**  
**BN153FL**  
**BN3153**  
 3-lug  
 4-lug  
 Threaded

**TWINAX/TRIAX TRS SUBMINIATURE RIGHT ANGLE BULKHEAD REAR MOUNT 3-LUG**  
**CBBJR159**  
 Max Panel Thickness: .125 D-Hole: D4

**TRS/TTM COUPLING ADAPTER (BARREL CONNECTOR)**  
 AD158 Shown  
**AD158**  
**AD158FL**  
**AD3158**  
 3-lug  
 4-lug  
 Threaded

**PUSH-ON CABLE PLUG TOOL CRIMP**  
**PL153AC-△**

△ - Refers to Cable Group Table see pages 91-133. "D" mounting holes see page 54

## TWINAX/TRIAX SERIES INTRODUCTIONS

### 450 Series

*Sub-miniature Twinax 3-lug & 4-lug*

### 3450 Series

*Sub-miniature Twinax Threaded*

Concentric connectors designed for MIL-STD-1553B airborne digital databus weight reduction applications.

#### FEATURES

- ▲ 3-lug, 4-lug & threaded versions.
- ▲ Field installation full crimp design. No soldering required.
- ▲ Fully inspectable assembly process (no blind or questionable solder connections)
- ▲ Total of ten (10) polarized & keyed combinations.
- ▲ Three different keyings for 3-lug versions.
- ▲ Two interchangeable pin & socket arrangements.
- ▲ Fewer pieces to assemble.
- ▲ Meets MIL-C-49142, 48-hour salt spray requirement.
- ▲ Standard plating to satisfy MIL-STD-1344, 500-hour salt-spray requirement.
- ▲ Weatherproof designs utilize sealing gaskets and heat shrink tubing.
- ▲ Fits MIL-C-17/176-00002 & other twinax/triax cables.
- ▲ Compatible with Raychem designs but utilizing military crimp tools (intermateable replacement).



### 80 Series

*Standard 2-lug & 3-lug (TRC)*

### 380 Series

*Standard Threaded (TRN)*



Used in digital data bus, video pair, MIL-STD-1553B (primary/redundant data bus), MIL-STD-1397 (ship-board data bus), baseband circuit and any application for noise-free guarded circuits.

#### FEATURES

- ▲ Standard "C" sized concentric connectors.
- ▲ Used with larger twinax/triax cables with outer diameters of .250"-.615".
- ▲ Does not require mechanical alignment for mating.

### 30 Series

*Miniature 2-Pin Polarized, 2-lug (TWBNC)*

### 330 Series

*Miniature 2-Pin Polarized, Threaded (TWTNC)*

Used in digital data bus, video pair, MIL-STD 1553B (airborne/ground primary/redundant), baseband circuit and any application for "noise-free guarded" circuits. They are not recommended for new designs. MIL-STD-1553B permits designer discretion for use of concentric designs in lieu of the two-pin connector.

#### FEATURES

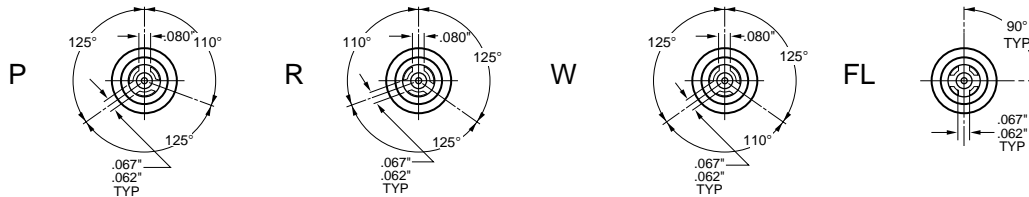
- ▲ Same size as BNC/TNC connectors
- ▲ Fully enclosed beryllium copper spring fingers
- ▲ Stepped Dielectric



# CONCENTRIC TWINAX 450 SERIES

## Concentric Twinax 450 Series

### 3-lug & 4-lug Keyings



The 450 Series was designed for airborne digital data bus applications utilizing the MIL-STD-1553B data bus. The 450 Series will fit most twinax cables.

Refer to page 20 for photo of intermediate contacts.

Connectors are available in five different coupling configurations which include 3-lug versions with three (3) separate keyings, a 4-lug, and a threaded version with safety wire holes.

Diagrams shown above are for plugs.

| BULKHEAD JACK<br>REAR MOUNT, SOLDER POT                   |          | COUPLING TYPE | KEY CODE | INTERMEDIATE CONTACT PIN | SOCKET |
|---|----------|---------------|----------|--------------------------|--------|
| <p>Mounting Holes:<br/>DD8.130<br/>DD8.125 (Threaded)</p> | 3-lug    | P             | BJ450PP  | BJ450PS                  |        |
|   | 3-lug    | R             | BJ450RP  | BJ450RS                  |        |
|   | 3-lug    | W             | BJ450WP  | BJ450WS                  |        |
|   | 4-lug    | FL            | BJ450FLP | BJ450FLS                 |        |
|   | Threaded | -             | BJ3450P  | BJ3450S                  |        |

| BULKHEAD JACK<br>FRONT MOUNT, SOLDER POT  |          | COUPLING TYPE | KEY CODE | INTERMEDIATE CONTACT PIN | SOCKET |
|---|----------|---------------|----------|--------------------------|--------|
| <p>Mounting Holes:<br/>DD8.250<br/>DD8.125 (Threaded)</p> <p>BJ457FLP-1 SHOWN</p> | 3-lug    | P             | BJ457PP  | BJ457PS                  |        |
|   | 3-lug    | R             | BJ457RP  | BJ457RS                  |        |
|   | 3-lug    | W             | BJ457WP  | BJ457WS                  |        |
|   | 4-lug    | FL            | BJ457FLP | BJ457FLS                 |        |
|   | Threaded | -             | BJ3457P  | BJ3457S                  |        |

| RIGHT ANGLE CABLE PLUG<br>ALL CRIMP |          | COUPLING TYPE | KEY CODE                 | INTERMEDIATE CONTACT PIN | SOCKET |
|-------------------------------------|----------|---------------|--------------------------|--------------------------|--------|
| <p>PLR455ACPP-201</p>               | 3-lug    | P             | PLR455ACPP- $\triangle$  | PLR455ACPS- $\triangle$  |        |
|                                     | 3-lug    | R             | PLR455ACRP- $\triangle$  | PLR455ACRS- $\triangle$  |        |
|                                     | 3-lug    | W             | PLR455ACWP- $\triangle$  | PLR455ACWS- $\triangle$  |        |
|                                     | 4-lug    | FL            | PLR455ACFLP- $\triangle$ | PLR455ACFLS- $\triangle$ |        |
|                                     | Threaded | -             | PLR3455ACP- $\triangle$  | PLR3455ACS- $\triangle$  |        |

| RFI JACK CAPS & BULKHEAD JACK TERMINATIONS<br>FOR USE WITH 450 SERIES PLUGS<br>REAR MOUNT |                       | TERMINATIONS              |                           |  |
|---|-----------------------|---------------------------|---------------------------|--|
| COUPLING TYPE   | RFI CAPS              | INTERMEDIATE CONTACT PIN  | SOCKET                    |  |
| 3-lug   | RFI457- $\triangle$   | TBJ451P- $\triangle$ -R   | TBJ451S- $\triangle$ -R   |  |
| 3-lug   | RFI457- $\triangle$   | TBJ451P- $\triangle$ -R   | TBJ451S- $\triangle$ -R   |  |
| 3-lug   | RFI457- $\triangle$   | TBJ451P- $\triangle$ -R   | TBJ451S- $\triangle$ -R   |  |
| 4-lug   | RFI457FL- $\triangle$ | TBJ451FLP- $\triangle$ -R | TBJ451FLS- $\triangle$ -R |  |
| Threaded  | RFI3457- $\triangle$  | TBJ3451P- $\triangle$ -R  | TBJ3451S- $\triangle$ -R  |  |

$\triangle$  - Refers to Cable Group Table see pages 91-133. "D" mounting holes see page 54  $\triangle$  - For Chain options, see page 45.

# CONCENTRIC TWINAX 450 SERIES

## 450 Series

### Intermediate Contact Assemblies

PIN/SOCKET

PS450AC-



SOCKET/PIN

SP450AC-



The 450 Series includes cable jacks and plugs with interchangeable contact assemblies. The contact and body assemblies may be ordered separately (see the facing page). Cable connectors accept cables with a maximum outer diameter of .180" and conductors to .025".

Contact the factory for exact specifications. For Trompeter connectors which meet outgassing requirements, contact our technical support staff for more information. Compatible with Raychem DK-621 Series.

Refer to page 19 for Keyings.

| BULKHEAD CABLE JACK<br>REAR MOUNT, ALL CRIMP                         | COUPLING<br>TYPE | KEY<br>CODE | BODY<br>ASSEMBLY ONLY | ASSEMBLY<br>INTERMEDIATE CONTACT |             |
|--|------------------|-------------|-----------------------|----------------------------------|-------------|
|  |                  |             |                       | PIN                              | SOCKET      |
| <p>BJ459ACFL-202<br/>Mounting Holes: DD8.156, DD8.125 (Threaded)</p> | 3-lug            | P           | BJ459ACP-             | BJ459ACPP-                       | BJ459ACPS-  |
|  | 3-lug            | R           | BJ459ACR-             | BJ459ACRP-                       | BJ459ACRS-  |
|  | 3-lug            | W           | BJ459ACW-             | BJ459ACWP-                       | BJ459ACWS-  |
|  | 4-lug            | FL          | BJ459ACFL-            | BJ459ACFLP-                      | BJ459ACFLS- |
|  | Threaded         | -           | BJ3459AC-             | BJ3459ACP-                       | BJ3459ACS-  |

| CABLE JACK<br>ALL CRIMP | COUPLING<br>TYPE | KEY<br>CODE | BODY<br>ASSEMBLY ONLY | ASSEMBLY<br>INTERMEDIATE CONTACT |             |
|-------------------------|------------------|-------------|-----------------------|----------------------------------|-------------|
|                         |                  |             |                       | PIN                              | SOCKET      |
| <p>CJ450ACFLP-202</p>   | 3-lug            | P           | CJ450ACP-             | CJ450ACPP-                       | CJ450ACPS-  |
|                         | 3-lug            | R           | CJ450ACR-             | CJ450ACRP-                       | CJ450ACRS-  |
|                         | 3-lug            | W           | CJ450ACW-             | CJ450ACWP-                       | CJ450ACWS-  |
|                         | 4-lug            | FL          | CJ450ACFL-            | CJ450ACFLP-                      | CJ450ACFLS- |
|                         | Threaded         | -           | CJ3450AC-             | CJ3450ACP-                       | CJ3450ACS-  |

| CABLE PLUG<br>ALL CRIMP | COUPLING<br>TYPE | KEY<br>CODE | BODY<br>ASSEMBLY ONLY | ASSEMBLY<br>INTERMEDIATE CONTACT |             |
|-------------------------|------------------|-------------|-----------------------|----------------------------------|-------------|
|                         |                  |             |                       | PIN                              | SOCKET      |
| <p>PL455ACR-221</p>     | 3-lug            | P           | PL455ACP-             | PL455ACPP-                       | PL455ACPS-  |
|                         | 3-lug            | R           | PL455ACR-             | PL455ACRP-                       | PL455ACRS-  |
|                         | 3-lug            | W           | PL455ACW-             | PL455ACWP-                       | PL455ACWS-  |
|                         | 4-lug            | FL          | PL455ACFL-            | PL455ACFLP-                      | PL455ACFLS- |
|                         | Threaded         | -           | PL3455AC-             | PL3455ACP-                       | PL3455ACS-  |

| RFI PLUG CAPS & TERMINATIONS<br>PLUGS FOR USE WITH 450 SERIES JACKS |           | TERMINATIONS<br>INTERMEDIATE CONTACT |                              |
|---|-----------|--------------------------------------|------------------------------|
| COUPLING<br>TYPE  | RFI CAPS  | PIN TO MATE WITH<br>SOCKETS          | SOCKETS TO MATE<br>WITH PINS |
| 3-lug   | RFI455-   | TNG451P- -R                          | TNG451S- -R                  |
| 3-lug   | RFI455-   | TNG451P- -R                          | TNG451S- -R                  |
| 3-lug   | RFI455-   | TNG451P- -R                          | TNG451S- -R                  |
| 4-lug   | RFI455FL- | TNG451FLP- -R                        | TNG451FLS- -R                |
| Threaded  | RFI3455-  | TNG3451P- -R                         | TNG3451S- -R                 |

- Refers to Cable Group Table see pages 91-133. "D" mounting holes see page 54 - Chain options see page 45

# STANDARD TWINAX/TRIAX THREADED 80/380 SERIES, TRC/TRN

PL80-9 Shown

**CABLE PLUG**

2-lug  
3-lug  
Threaded

**PL80-**   
**PL803-**   
**PL380-**

Larger bodies available to accommodate cable sizes, contact the factory.

CJ80-7 Shown

**CABLE JACK  
WRENCH CRIMP**

2-lug  
3-lug  
Threaded

**CJ80-**   
**CJ803-**   
**CJ380-**

Top Drawing: BJ89F-10 Shown

**BULKHEAD CABLE JACKS**

**WRENCH CRIMP, FLANGE MOUNT** 2-lug **BJ89F-**   
3-lug **BJ893F-**   
Threaded **BJ389F-**

**WRENCH CRIMP, D HOLE MOUNT** 2-lug **BJ89-**   
3-lug **BJ893-**   
Threaded **BJ389-**

Mounting Holes: DD6.250 / D11.250 - Cable Groups: -14A, -16, -61, -62

BJ80 Shown

**BULKHEAD JACK  
SOLDER POT**

2-lug **BJ80**  
3-lug **BJ803**  
Threaded **BJ380**

Mounting Hole: D1.156

CBBJ82 SHOWN

**CIRCUIT BOARD  
BULKHEAD JACK**

2-lug **CBBJ82**  
3-lug **CBBJ823**  
Threaded **CBBJ382**

Maximum Panel Thickness: .190 Mounting Hole: C6.250

BJ83 Shown

**INSULATED  
FEED-THRU JACK**

2-lug **BJ83**  
3-lug **BJ833**  
Threaded **BJ383**

Mounting Hole: D1.350

BN83-1 Shown

**TRC "T" ADAPTER**

2-lug **BN83-1**  
3-lug **BN833-1**  
Threaded **BN383-1**

For other chain options see page 45

BJ88 Shown

**FEED-THRU JACK**

2-lug **BJ88**  
3-lug **BJ883**  
Threaded **BJ388**

Mounting Hole: D1.343

- Refers to Cable Group Table, see pages 91-133. "D" mounting holes are on page 54

# TWO-PIN POLARIZED 30/330 SERIES TWBNC/TWTNC Mil-C-3655 Interface

**CABLE PLUG**  
TWTNC POSITIVE ALIGNING  
TWO-PIN POLARIZED

**PLPA330**

PL30 Shown

**CABLE PLUG**  
WRENCH CRIMP, TWO-PIN POLARIZED

2-lug Threaded

**PL30-△**  
**PL330-△**

**CIRCUIT BOARD BULKHEAD JACK**  
RIGHT ANGLE-TWO-PIN  
POLARIZED TWINAX (TWBNC)

Mounting Hole: D3.125

**CBBJR39A**

BJ30 Shown

**BULKHEAD JACK**  
FRONT MOUNT, SOLDER POT  
TWO-PIN POLARIZED

2-lug Threaded

Mounting Hole: D5.130

**BJ30**  
**BJ330**

BJ31 Shown

**BULKHEAD JACK**  
REAR MOUNT, SOLDER POT  
TWO-PIN POLARIZED

2-lug Threaded

Mounting Hole: D3.280

**BJ31**  
**BJ331**

BJ38 Shown

**FEED-THROUGH JACK**  
TWO-PIN POLARIZED

2-lug Threaded

Mounting Hole: D3.160

**BJ38**  
**BJ338**

BJ39 Shown

**BULKHEAD CABLE JACK**  
REAR MOUNT, WRENCH CRIMP  
TWO-PIN POLARIZED

2-lug Threaded

Mounting Hole: D3.218

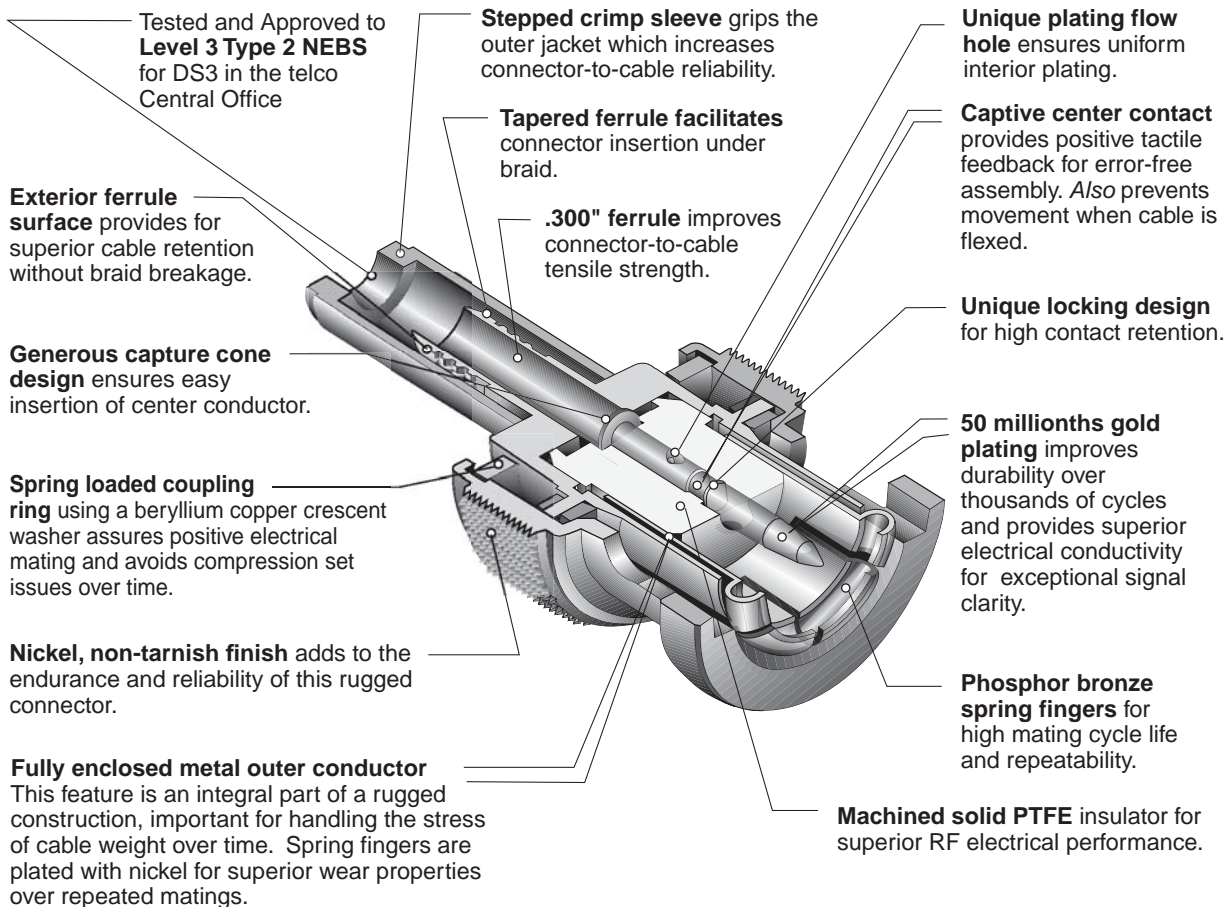
**BJ39-△**  
**BJ339-△**

△ - Refers to Cable Group Table, see pages 91-133. "D" mounting holes are on page 54. Note: Only 30/330 Series have two-pin polarizations.

# BNC COAX CONNECTOR INTRO

## Trompeter's BNC Coax Tool Crimp Connector

18 reasons why our BNC connectors outperform the competition every time!



## BNC Coax Wrench Crimp Connector

### WRENCH CRIMP FEATURES

- ▲ 3-piece construction
- ▲ Captive center contact pin in cone assembly
- ▲ Spring-loaded coupling ring using a beryllium-copper crescent washer
- ▲ Freely rotating captured insert inside the clamp-nut assembly
- ▲ Stepped captured insert inside the clamp-nut assembly
- ▲ 360° metal-to-metal, sandwich braid capture of the outer-braid-to-cone assembly. (No insulation between the clamping surfaces)
- ▲ Machined barb on the end of the cone assembly

### WRENCH CRIMP BENEFITS

- ▲ Faster, easier assembly
- ▲ Prevents pistoning of the center contact when cable is flexed. Does not rely on cable for positioning.
- ▲ Pre-loading the ring assures positive full mating. Reduces intermittences and rocking of mated connector. Assures mating in rugged applications.
- ▲ Permits braid and jacket clamping without rotary movement. Prevents breaking the center conductor. Prevents twisting/tearing the braid. Increases connector-to-cable tensile pull-strength.
- ▲ Grips the cable's outer jacket (25% of cable strength). Increases connector-to-cable tensile pull-strength.
- ▲ Provides a true metal-to-metal continuous shield which minimizes EMI/RFI, PTFE; jacket cold-flow problems. Increases connector-to-cable tensile pull-strength.
- ▲ Grabs the inside of the cable braid for easier assembly. Enhances the strength of the braid and jacket clamp.



Hermetically Sealed Coax Connectors Available, Contact the Factory.

# MINIATURE COAX 20/220 SERIES, BNC PLUGS & JACKS

UPL220 Shown

**CABLE PLUG** 50Ω **PL220-**

**TOOL CRIMP** 75Ω **UPL220-**

**CABLE JACK** 50Ω **CJ20-**

**WRENCH CRIMP** 75Ω **UCJ20-**

PL20-1 Shown

**CABLE PLUG** 50Ω **PL20-**

**WRENCH CRIMP** 75Ω **UPL20-**

CJ220-001 Shown

**CABLE JACK** 50Ω **CJ220-**

**TOOL CRIMP** 75Ω **UCJ220-**

PL21-1 Shown

**BULKHEAD PLUG**

**FRONT MOUNT, SOLDER POT**

50Ω **PL21**

75Ω **UPL21**

**W/ SOLDER LUG**

50Ω **PL21SL**

75Ω **UPL21SL**

Mounting Hole: C2.085

**BULKHEAD CABLE JACK**

**REAR MOUNT, TOOL CRIMP**

50Ω **BJ220-**

75Ω **UBJ220-**

Mounting Hole: D3.100

**CABLE PLUG** 75Ω **UPLR220-**

**90° RIGHT ANGLE, FULL CRIMP**

**CABLE PLUG** 75Ω **UPLFF220-**

**45° ANGLE, FULL CRIMP**

**BNC ADAPTER**

**RIGHT ANGLE**

**75Ω BNC** **UADRMF220**

BN23 Shown

**BNC "T" ADAPTER**

50Ω **BN23**

75Ω **UBN23**

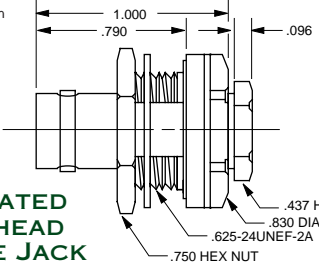
**BNC COUPLING ADAPTER** 50Ω **AD28**

(Barrel connector) 75Ω **UAD28**

- Refers to Cable Group Table, see pages 91-133. "D" mounting holes are on page 54



# MINIATURE COAX 20/220 SERIES, BNC BULKHEAD JACKS



BJ26-1 Shown

1.000  
.790  
.096

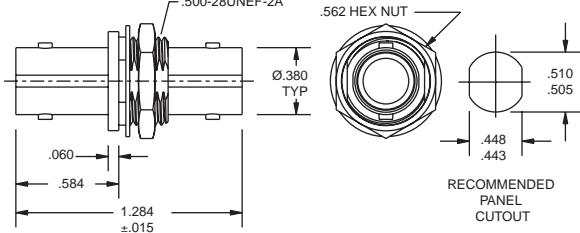
**INSULATED BULKHEAD CABLE JACK**  
WRENCH CRIMP, REAR MOUNT

.437 HEX  
.830 DIA MAX  
.625-24UNEF-2A  
.750 HEX NUT

50Ω  
75Ω

**BJ26-△**  
**UBJ26-△**

Mounting Hole: D2.187  
GF-Ground filter version page 38



.500-28UNEF-2A  
.562 HEX NUT

Ø.380 TYP

.510  
.448  
.443

RECOMMENDED PANEL CUTOUT

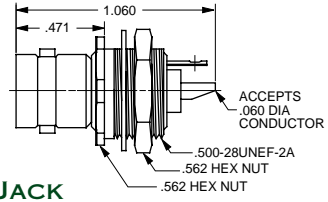
.060  
.584  
1.284 ±.015

**NON-INSULATED BULKHEAD JACK**  
FEED-THROUGH

50Ω  
75Ω

**BJ224**  
**UBJ224**

Mounting Hole: DD3.156



BJ27 Shown

1.060  
.471

ACCEPTS .060 DIA CONDUCTOR

.500-28UNEF-2A  
.562 HEX NUT

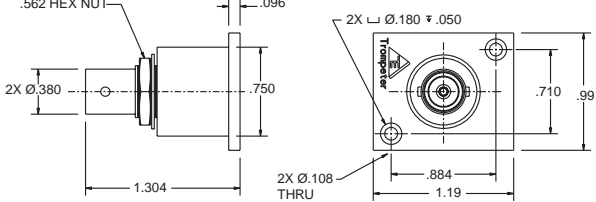
50Ω  
75Ω

**INSULATED BULKHEAD JACK**

FRONT MOUNT, SOLDER POT

Mounting Hole: D3.147

**BJ27**  
**UBJ27**



.562 HEX NUT

Ø.380  
2X Ø.180 ±.050

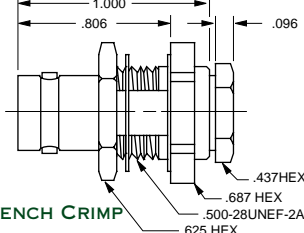
1.304  
.750  
.884  
1.19  
.710  
.99

2X Ø.108 THRU

**INSULATED BULKHEAD JACK**  
RECESSED INSULATED ADAPTER (RIA)  
FEED-THROUGH

75Ω

**UBJ224-RIA**



BJ29-1 Shown

1.000  
.806  
.096

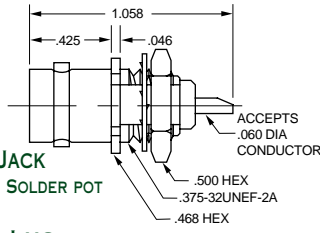
**BULKHEAD CABLE JACK**  
REAR MOUNT, WRENCH CRIMP

.437HEX  
.687 HEX  
.500-28UNEF-2A  
.625 HEX

50Ω  
75Ω

**BJ29-△**  
**UBJ29-△**

Mounting Holes: D3.218 (D2.218-Cable Groups 6, 6E,51,52)



1.058  
.425  
.046

ACCEPTS .060 DIA CONDUCTOR

.500 HEX  
.375-32UNEF-2A  
.468 HEX

50Ω  
75Ω

**BULKHEAD JACK**  
FRONT MOUNT, SOLDER POT

50Ω  
75Ω

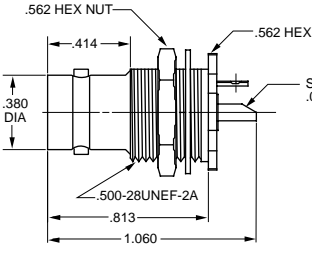
**BJ20**  
**UBJ20**

W/ SOLDER LUG

50Ω  
75Ω

**BJ20SL**  
**UBJ20SL**

Mounting Hole: D5.125



BJ23 Shown

.562 HEX NUT  
.414  
.380 DIA  
.562 HEX

SOLDER POT ACCEPTS .060 DIA CONDUCTOR

.500-28UNEF-2A  
.813  
1.060

50Ω  
75Ω

**BULKHEAD JACK NON-INSULATED**  
**BJ23**  
**UBJ23**

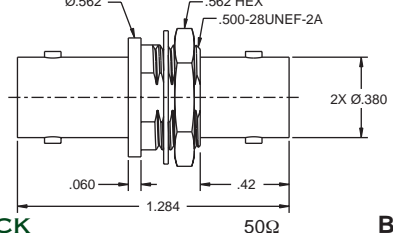
Mounting Hole: D3.147

**INSULATED BULKHEAD CABLE JACK**  
REAR MOUNT, SOLDER POT

50Ω  
75Ω

**BJ21**  
**UBJ21**

Mounting Hole: D3.147



Ø.562  
.562 HEX  
.500-28UNEF-2A

2X Ø.380

.060  
1.284  
.42

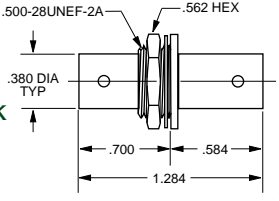
50Ω  
75Ω

**INSULATED BULKHEAD JACK**  
FEED-THROUGH

50Ω  
75Ω

**BJ228**  
**UBJ228**

Mounting Hole: DD3.156



.500-28UNEF-2A  
.562 HEX

.380 DIA TYP

.700  
.584  
1.284

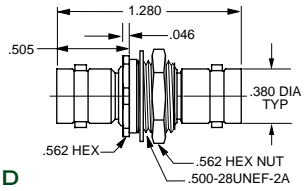
50Ω  
75Ω

**BULKHEAD JACK**  
FEED-THROUGH  
NON-INSULATED

50Ω  
75Ω

**BJ24**  
**UBJ24**

Mounting Hole: DD3.100, (Hermetically sealed version available, call factory).



BJ28 Shown

1.280  
.505  
.046  
.380 DIA TYP

.562 HEX  
.562 HEX NUT  
.500-28UNEF-2A

50Ω  
75Ω

**INSULATED BULKHEAD JACK**  
FEED-THROUGH

50Ω  
75Ω

**BJ28**  
**UBJ28**

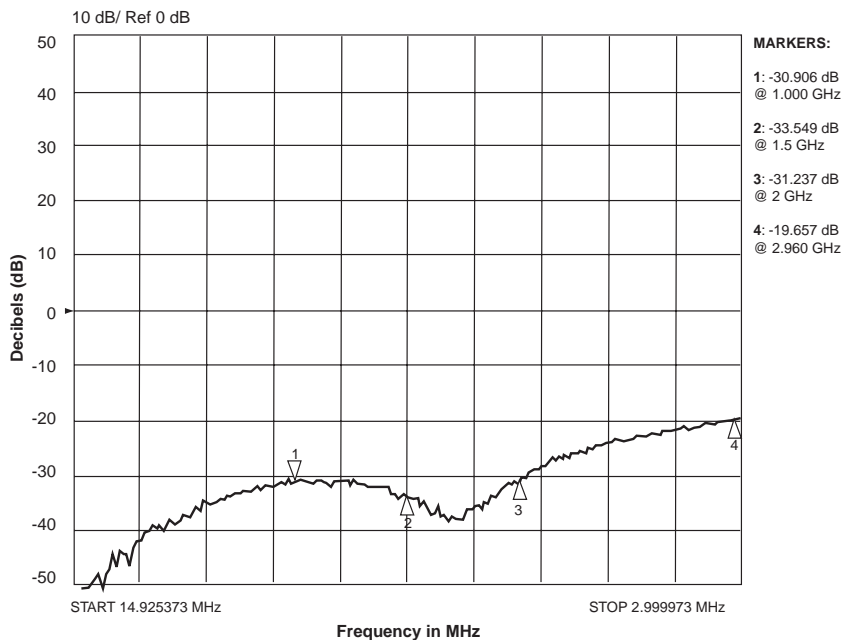
Mounting Hole: D3.156 (Hermetically sealed version available, call factory).  
GF-Ground Filter version available page 38

△ - Refers to Cable Group Table, see pages 91-133. "D" mounting holes are on page 54

# COAX 20/220 SERIES CIRCUIT BOARD JACKS

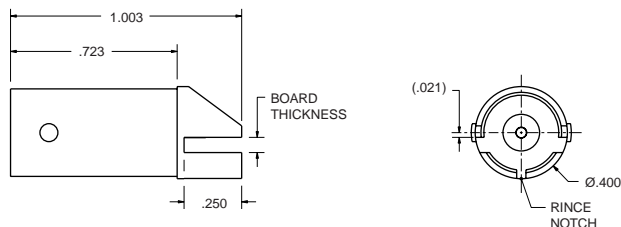
## Edge Mount Circuit Board Jacks

Trompeter manufactures a wide selection of circuit board jacks.



### CIRCUIT BOARD EDGE MOUNT COAX "BNC" STYLE RECEPTACLE 75Ω

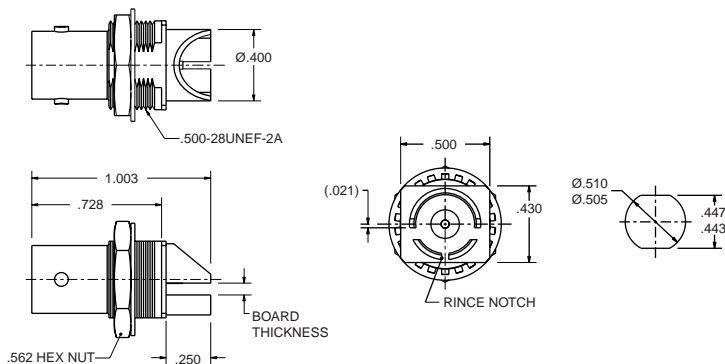
| Part Number | Board Thickness |
|-------------|-----------------|
| UCBJE20-1   | .060 - .064     |
| UCBJE20-2   | .028 - .033     |



### CIRCUIT BOARD BULKHEAD EDGE MOUNT COAX "BNC" STYLE RECEPTACLE 75Ω

Max Panel Thickness: .179

| Part Number | Board Thickness |
|-------------|-----------------|
| UCBBJE20-1  | .060 - .064     |
| UCBBJE20-2  | .028 - .033     |
| UCBBJE20-3  | .084            |

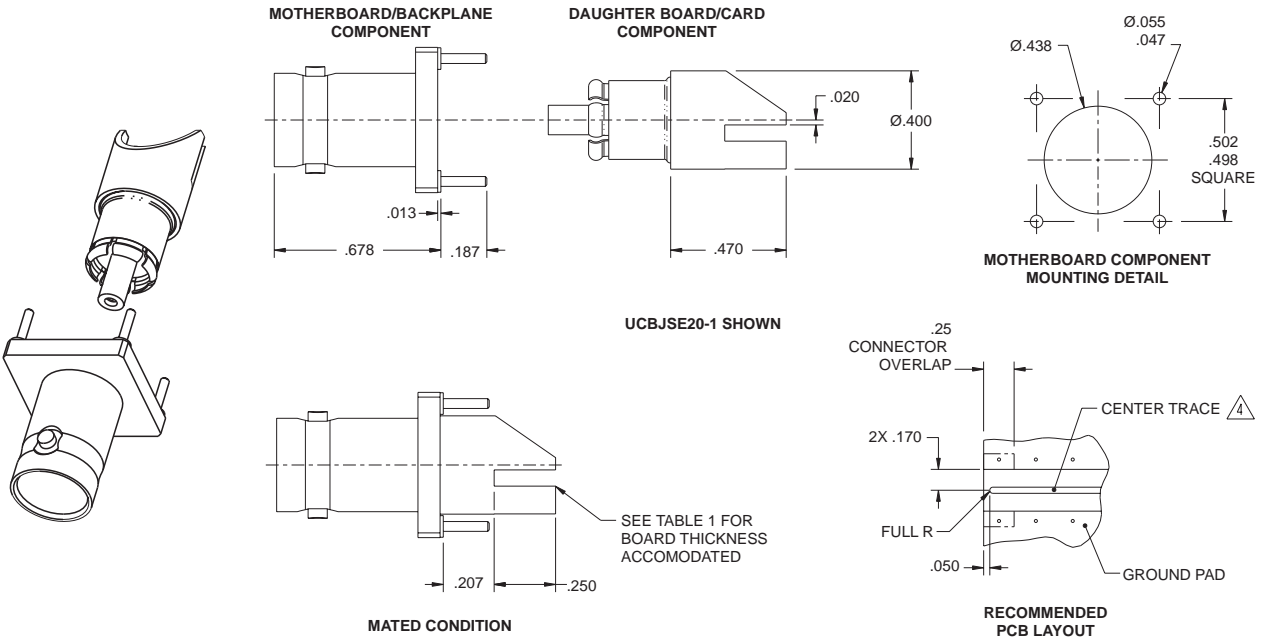


# COAX 20/220 SERIES CIRCUIT BOARD JACKS

## Separable Circuit Board Jacks

Trompeter manufactures a wide selection of circuit board jacks.

| TABLE 1    |                          |
|------------|--------------------------|
| PART NO.   | DAUGHTER BOARD THICKNESS |
| UCBJSE20-1 | .060 - .064              |
| UCBJSE20-2 | .028 - .033              |
| UCBJSE20-3 | .091 - .095              |
| UCBJSE20-4 | .045 - .049              |



△ WIDTH OF CENTER TRACE TO BE DETERMINED BY PCB DESIGNER BASED ON PCB THICKNESS AND DIELECTRIC CONSTANT OF PCB MATERIAL. RECOMMENDATION ASSUMES THE USE OF COPPER BACKED CO-PLANNER MICROSTRIP DESIGN.

### CIRCUIT BOARD JACK 75Ω SEPARABLE MOTHERBOARD TO DAUGHTERBOARD BNC JACK

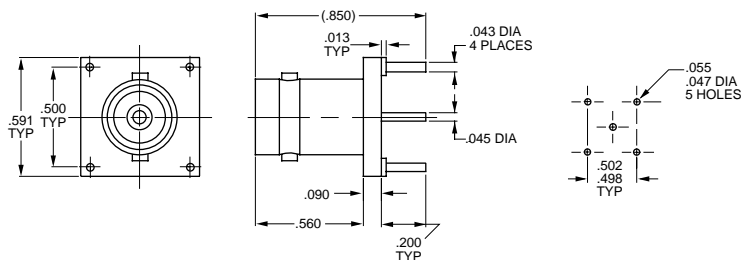
Part Number  
UCBJSE20-(See Table 1)

# COAX 20/220 SERIES CIRCUIT BOARD JACKS

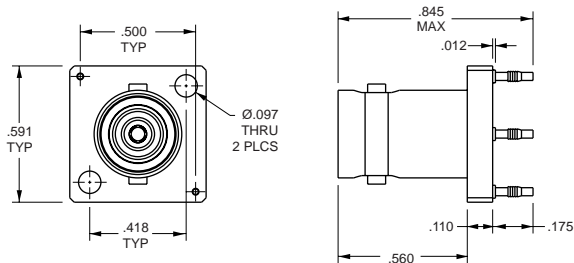
## Circuit Board Jacks...

Trompeter manufactures a wide selection of circuit board jacks, Shown below are the most commonly requested designs.

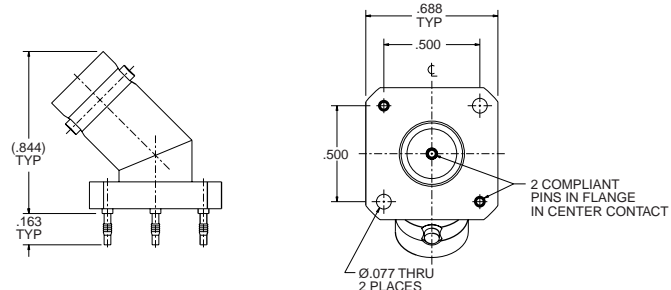
For custom designs, contact the factory or fill out the *Custom Products Request Form* on page 135 and fax it to us.



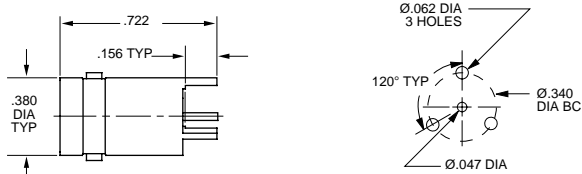
**CIRCUIT BOARD JACK**  
STRAIGHT, 4-LEG 75Ω UCBJ20F



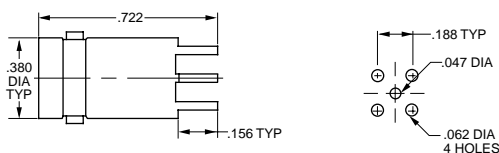
**COAX BNC SURFACE MOUNT**  
COMPLIANT TAIL & MOUNT LEGS  
STRAIGHT 75Ω 105-1829  
Leg Length to Accommodate  
.090 - .130 Board



**COAX BNC SURFACE MOUNT**  
45 DEGREE WITH COMPLIANT  
TAIL CONTACT & MOUNT LEGS 75Ω 105-2033



**CIRCUIT BOARD JACK**  
STRAIGHT, 3-LEG 50Ω CBJ20



**CIRCUIT BOARD JACK**  
STRAIGHT, 4-LEG 50Ω CBJ22

# COAX 20/220 SERIES CIRCUIT BOARD JACKS

**CIRCUIT BOARD JACK**  
STRAIGHT, 4-LEG

75Ω      **UCBJ224**

**CIRCUIT BOARD JACK**  
STRAIGHT, 3-LEG

75Ω      **UCBJ223**

**RIGHT ANGLE COAX BNC**  
CIRCUIT BOARD JACK

75Ω      **UCBJR220**

**RIGHT ANGLE COAX BNC**  
CIRCUIT BOARD JACK

50Ω      **CBJR220**

**CIRCUIT BOARD JACK**  
RIGHT ANGLE, TALL VERSION

50Ω      **CBJR20A**  
75Ω      **UCBJR20A**

| MODEL NO. | LTR CODE | OHM | A DIM | B DIM | C DIM | D DIM | E DIM |
|-----------|----------|-----|-------|-------|-------|-------|-------|
| CBJR20    | -        | 50  | .046  | .24   | .090  | .050  | .0625 |
| UCBJR20   | -        | 75  | .029  | .24   | .090  | .050  | .0625 |

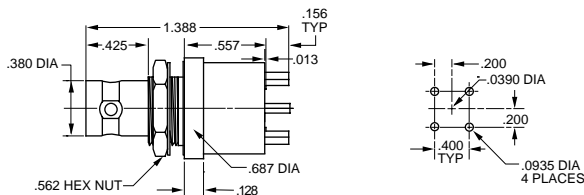
| MODEL NO. | LTR CODE | OHM | A DIM | B DIM | C DIM | D DIM | E DIM |
|-----------|----------|-----|-------|-------|-------|-------|-------|
| CBJR20A   | A        | 50  | .046  | .34   | .090  | .058  | .070  |
| UCBJR20A  | A        | 75  | .029  | .34   | .090  | .058  | .070  |

# COAX 20/220 SERIES CIRCUIT BOARD JACKS

## NON-INSULATED CIRCUIT BOARD BULKHEAD JACK

STRAIGHT, 4-LEG  
Mounting Hole: D3.109

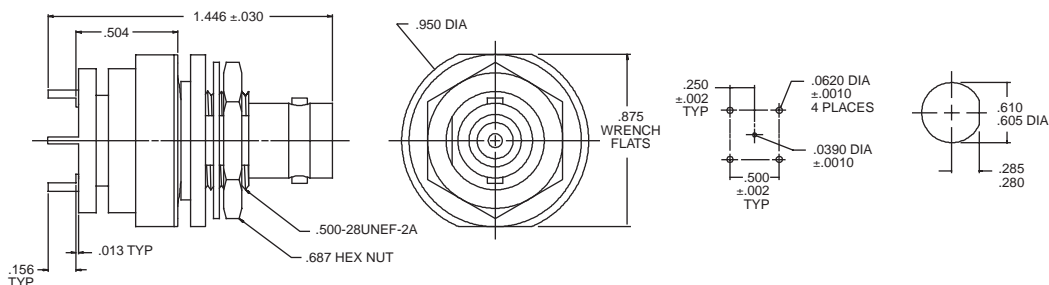
75Ω UCBBJ29



## INSULATED CIRCUIT BOARD BULKHEAD JACK COAXIAL BNC GROUND FILTER INSULATED 4-POST

STRAIGHT  
Mounting Hole: .093

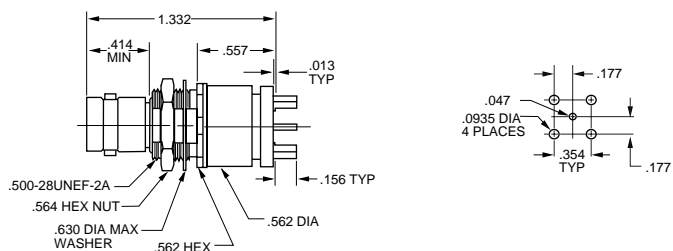
50Ω CBBJ26GF  
75Ω UCBBJ26GF



## INSULATED CIRCUIT BOARD BULKHEAD JACK

STRAIGHT  
Mounting Hole: D3.156

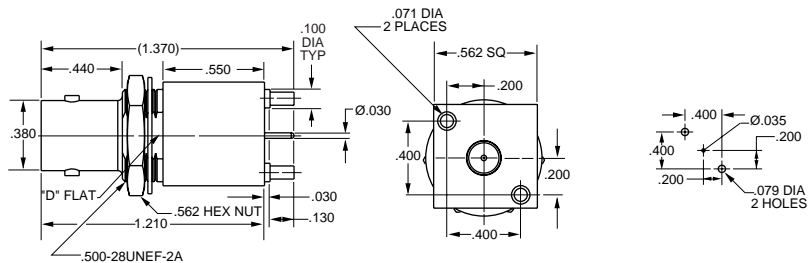
50Ω CBBJ26



## CIRCUIT BOARD BULKHEAD JACK

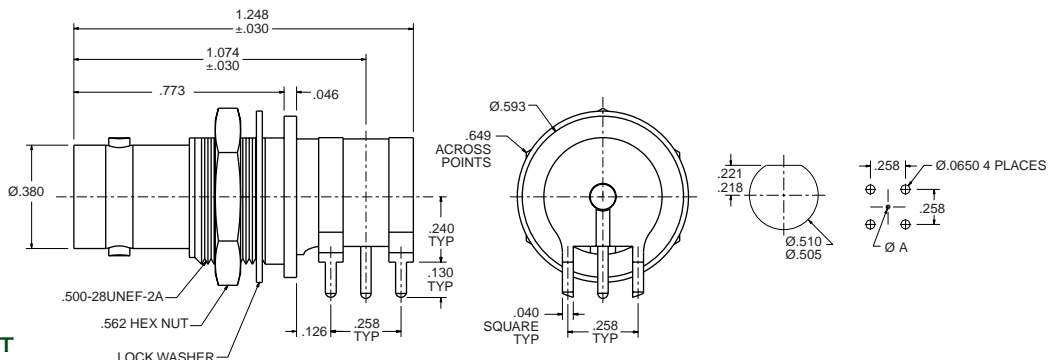
STRAIGHT  
Mounting Hole: D3.060

75Ω UCBBJ23



# COAX 20/220 SERIES CIRCUIT BOARD JACKS

| MODEL NO. | LTR CODE | OHM | Ø A  |
|-----------|----------|-----|------|
| CBBJR229  | -        | 50  | .046 |
| UCBBJR229 | -        | 75  | .029 |

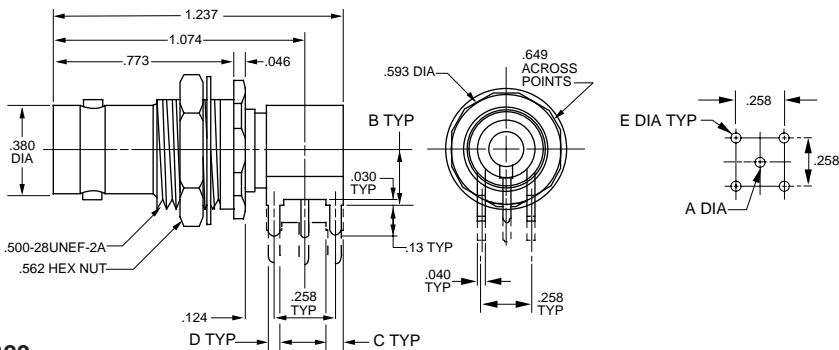


## RIGHT ANGLE CIRCUIT BOARD BULKHEAD JACK

ONE PIECE BODY            50Ω            **CBBJR229**  
     75Ω            **UCBBJR229**

Maximum Panel Thickness: .179 D-Hole: D3

| MODEL NO. | LTR CODE | OHM | A DIM | B DIM | C DIM | D DIM | E DIM |
|-----------|----------|-----|-------|-------|-------|-------|-------|
| CBBJR29   | -        | 50  | .046  | .24   | .090  | .050  | .0625 |
| UCBBJR29  | -        | 75  | .029  | .24   | .090  | .050  | .0625 |
| CBBJR29A  | A        | 50  | .046  | .34   | .090  | .058  | .070  |
| UCBBJR29A | A        | 75  | .029  | .34   | .090  | .058  | .070  |

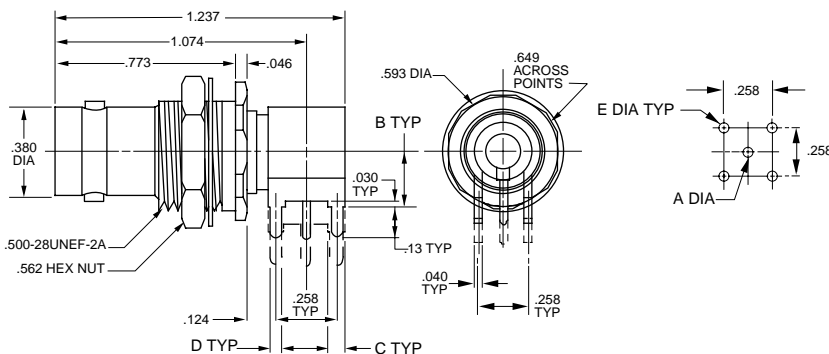


## RIGHT ANGLE CIRCUIT BOARD BULKHEAD JACK

NON-INSULATED            50Ω            **CBBJR29**  
 NON-INSULATED            75Ω            **UCBBJR29**

\* Add "A" for tall versions  
**Example: CBBJR29A**  
 Mounting Holes: D3.156 (Insulated), D3.179 (Non-Insulated)

| MODEL NO. | LTR CODE | OHM | A DIM | B DIM | C DIM | D DIM | E DIM |
|-----------|----------|-----|-------|-------|-------|-------|-------|
| CBBJR26   | -        | 50  | .046  | .24   | .090  | .050  | .0625 |
| UCBBJR26  | -        | 75  | .029  | .24   | .090  | .050  | .0625 |
| CBBJR26A  | A        | 50  | .046  | .34   | .090  | .058  | .070  |
| UCBBJR26A | A        | 75  | .029  | .34   | .090  | .058  | .070  |

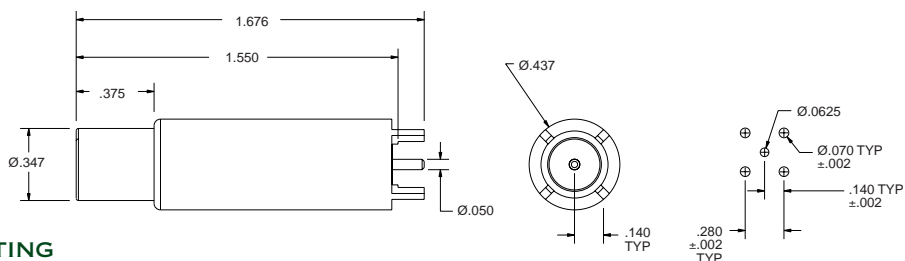


## RIGHT ANGLE CIRCUIT BOARD BULKHEAD JACK

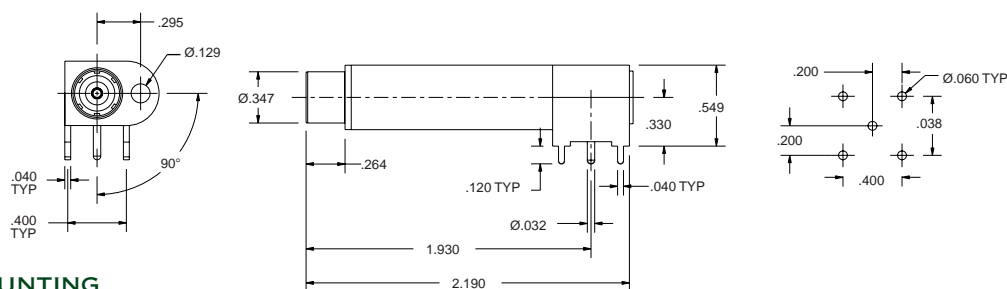
INSULATED            50Ω            **CBBJR26**  
 INSULATED            75Ω            **UCBBJR26**

\* Add "A" for tall versions  
**Example: CBBJR26A**  
 Mounting Holes: D3.156 (Insulated), D3.179 (Non-Insulated)

# MINI-WECO COAX CIRCUIT BOARD JACKS

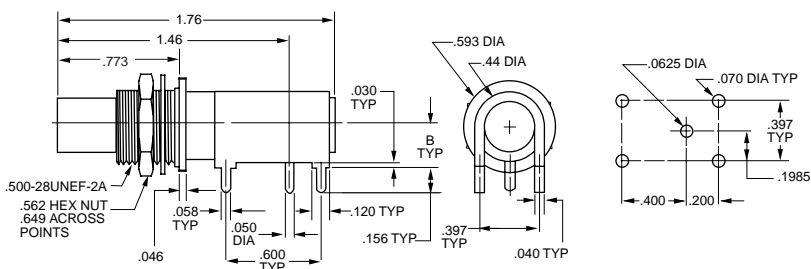


**CIRCUIT BOARD MOUNTING  
MINI-WECO COAXIAL PATCH JACK  
75Ω (.296 SIZE) CBJ12**



**CIRCUIT BOARD MOUNTING  
MINI-WECO COAXIAL PATCH JACK  
RIGHT ANGLE  
75Ω (.296 SIZE) 105-1880**

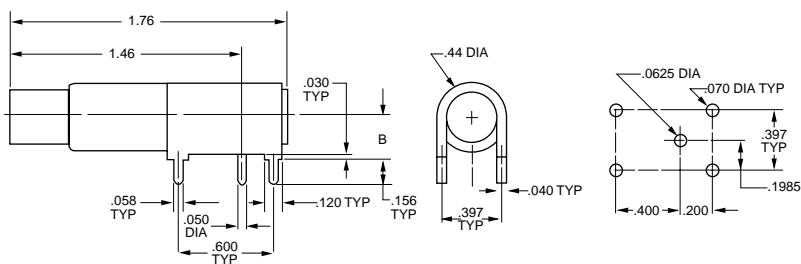
| MODEL NO. | LTR CODE | B DIM |
|-----------|----------|-------|
| CBBJR12   | -        | .24   |
| CBBJR12A  | A        | .34   |



**CIRCUIT BOARD BULKHEAD MOUNTING  
MINI-WECO PATCH JACK  
75Ω RIGHT ANGLE  
LONG LEG VERSION  
Mounting Hole: D3.250**

|                 |                |
|-----------------|----------------|
| <b>CBBJR12</b>  | <b>B = .24</b> |
| <b>CBBJR12A</b> | <b>B = .34</b> |

| MODEL NO. | LTR CODE | B DIM |
|-----------|----------|-------|
| CBJR12    | -        | .24   |
| CBJR12A   | A        | .34   |



**CIRCUIT BOARD MOUNTING  
MINI-WECO PATCH JACK  
75Ω RIGHT ANGLE  
LONG LEG VERSION**

|                |                |
|----------------|----------------|
| <b>CBJR12</b>  | <b>B = .24</b> |
| <b>CBJR12A</b> | <b>B = .34</b> |



# MINIATURE COAX 250 SERIES, MINI-BNC PLUGS & JACKS

The mini-BNC 250 RF connector series from Trompeter was designed specifically for DS3 telco coaxial central office applications to allow higher interconnect density while preserving the positive characteristics of the Trompeter full size BNC. In fact, the 250 series provides for higher density of interconnects in a given area.

**MINIATURE BNC (M-BNC) COAXIAL PLUG**  
STRAIGHT 75Ω **UPL250-△**

**MINIATURE BNC (M-BNC) COAXIAL BULKHEAD JACK**  
STRAIGHT 75Ω **UBJ250-△**

**MINIATURE BNC (M-BNC) COAXIAL CIRCUIT BOARD JACK**  
STRAIGHT 75Ω **UCBJ250**

**MINIATURE BNC (M-BNC) COAXIAL CIRCUIT BOARD JACK**  
RIGHT ANGLE 75Ω **UCBRJ250**

| Part Number | Description                                      | Plating | Bulkhead Mount | PCB OA Thickness |
|-------------|--|---------|----------------|------------------|
| UPL250-026  | Straight plug M-BNC series                       | ni      | n/a            |                  |
| UPL250-025  | Straight plug M-BNC series                       | ni      | n/a            |                  |
| UPL250-014  | Straight plug M-BNC series                       | ni      | n/a            |                  |
| UPL250-009  | Straight plug M-BNC series                       | ni      | n/a            |                  |
| UPLR250-026 | Right angle plug M-BNC series                    | ni      | n/a            |                  |
| UPLR250-025 | Right angle plug M-BNC series                    | ni      | n/a            |                  |
| UBJ250-026  | Bulkhead cable jack                              | ni      | yes            |                  |
| UBJ250-025  | Bulkhead cable jack                              | ni      | yes            |                  |
| UCBJ250-G   | Straight PCB-mounted jack                        | au      | no             |                  |
| UCBJ250-N   | Straight PCB-mounted jack                        | ni      | no             |                  |
| UCBBJ250-G  | Straight PCB-mounted jack                        | au      | yes            |                  |
| UCBBJ250-N  | Straight PCB-mounted jack                        | ni      | yes            |                  |
| UCBJR250-G  | Right angle PCB-mounted jack                     | au      | no             |                  |
| UCBJR250-N  | Right angle PCB-mounted jack                     | ni      | no             |                  |
| UCBBJR250-G | Right angle PCB-mounted jack                     | au      | yes            |                  |
| UCBBJR250-N | Right angle PCB-mounted jack                     | ni      | yes            |                  |
| UCBJE250-1  | PCB-edge mounted SMT jack                        | au      | no             | 0.032            |
| UCBJE250-2  | PCB-edge mounted SMT jack                        | au      | no             | 0.064            |
| UCBBJE250-1 | PCB-edge mounted SMT jack                        | au      | yes            | 0.032            |
| UCBBJE250-2 | PCB-edge mounted SMT jack                        | au      | yes            | 0.064            |
| UAD258      | M-BNC jack to M-BNC jack adapter, Barrel adapter | ni      | yes            |                  |



△ - Refers to Cable Group Table, see pages 91-133. "D" mounting holes are on page 54

# MINIATURE COAX THREADED 40/240 SERIES, TNC

PL40-1 Shown

**CABLE PLUG WRENCH CRIMP**

50Ω  
75Ω

**PL40-**   
**UPL40-**

CJ40-1 Shown

**CABLE JACK WRENCH CRIMP**

50Ω  
75Ω

**CJ40-**   
**UCJ40-**

**CABLE PLUG TOOL CRIMP**

50Ω  
75Ω

**PL240-**   
**UPL240-**

**CABLE JACK TOOL CRIMP**

50Ω  
75Ω

**CJ240-**   
**UCJ240-**

**BULKHEAD PLUG FRONT MOUNT, SOLDER POT**

50Ω  
75Ω

**PL41**  
**UPL41**

**W/ SOLDER LUG**

50Ω  
75Ω

**PL41SL**  
**UPL41SL**

Mounting Hole: C2.093

**TNC COUPLING ADAPTER (BARREL CONNECTOR)**

50Ω  
75Ω

**AD48**  
**UAD48**

BJ48 Shown

**INSULATED BULKHEAD JACK FEED-THROUGH**

50Ω  
75Ω

**BJ48**  
**UBJ48**

Mounting Hole: D3.156

**GF**-Ground filter version page 38

| MODEL NO. | LTR CODE | OHM | A DIM | B DIM | C DIM | D DIM | E DIM |
|-----------|----------|-----|-------|-------|-------|-------|-------|
| CBJR40    | -        | 50  | .046  | .24   | .070  | .050  | .0625 |
| UCBJR40   | -        | 75  | .029  | .24   | .070  | .050  | .0625 |
| CBJR40A   | A        | 50  | .046  | .34   | .090  | .058  | .070  |
| UCBJR40A  | A        | 75  | .029  | .34   | .090  | .058  | .070  |

**RIGHT ANGLE CIRCUIT BOARD MOUNTING TNC RECEPTACLE**

50Ω  
75Ω

**CBJR40**  
**UCBJR40**

Add "A" for tall versions (see chart)

- Refers to Cable Group Table, see pages 91-133. "D" mounting holes are on page 54

# MINIATURE COAX THREADED 40/240 SERIES, TNC BULKHEAD JACKS

BJ41 Shown

**INSULATED BULKHEAD JACK**  
REAR MOUNT, SOLDER POT

50Ω **BJ41**  
75Ω **UBJ41**  
Mounting Hole: D3.147

BJ40 Shown

**BULKHEAD JACK**  
SOLDER POT

50Ω **BJ40**  
75Ω **UBJ40**  
w/ SOLDER LUG  
50Ω **BJ40SL**  
75Ω **UBJ40SL**  
Mounting Hole: D5.125

BJ46-1 Shown

**INSULATED BULKHEAD JACK**  
REAR MOUNT, WRENCH CRIMP

50Ω **BJ46-**  
75Ω **UBJ46-**  
Mounting Hole: D2.187  
GF-Ground filter version page 38

BJ47 Shown

**INSULATED BULKHEAD JACK**  
FRONT MOUNT, SOLDER POT

50Ω **BJ47**  
75Ω **UBJ47**  
Mounting Hole: D3.147

BJ246-001 Shown

**INSULATED BULKHEAD JACK**  
REAR MOUNT, TOOL CRIMP

50Ω **BJ246-**  
75Ω **UBJ246-**  
Mounting Hole: D2.187  
GF-Ground filter version pg 38

BJ49-1 Shown

**BULKHEAD CABLE JACK**  
WRENCH CRIMP

50Ω **BJ49-**  
75Ω **UBJ49-**  
Mounting Hole: D3.218 / D2.218 (Cable Groups 6, 6E, 51, 52)

BJ249 Shown

**BULKHEAD CABLE JACK**  
TOOL CRIMP

50Ω **BJ249-**  
Mounting Hole: D3.218  
D2.218 (Cable Groups 6, 6E, 51, 52)

CBBJR46 Shown

| MODEL NO. | LTR CODE | OHM | A DIM | B DIM | C DIM | D DIM | E DIM |
|-----------|----------|-----|-------|-------|-------|-------|-------|
| CBBJR46   | -        | 50  | .046  | .24   | .090  | .050  | .0625 |
| UCBBJR46  | -        | 75  | .029  | .24   | .090  | .050  | .0625 |
| CBBJR46A  | A        | 50  | .046  | .34   | .090  | .058  | .070  |
| UCBBJR46A | A        | 75  | .029  | .34   | .090  | .058  | .070  |

**INSULATED CIRCUIT BOARD JACK**  
RIGHT ANGLE

"A" refers to tall versions

50Ω **CBBJR46**  
75Ω **UCBBJR46**  
50Ω **CBBJR46A**  
75Ω **UCBBJR46A**  
Mounting Hole: D3.156

CBBJR49 Shown

| MODEL NO. | LTR CODE | OHM | A DIM | B DIM | C DIM | D DIM | E DIM |
|-----------|----------|-----|-------|-------|-------|-------|-------|
| CBBJR49   | -        | 50  | .046  | .24   | .090  | .050  | .0625 |
| UCBBJR49  | -        | 75  | .029  | .24   | .090  | .050  | .0625 |
| CBBJR49A  | A        | 50  | .046  | .34   | .090  | .058  | .070  |
| UCBBJR49A | A        | 75  | .029  | .34   | .090  | .058  | .070  |

**CIRCUIT BOARD JACK**  
BULKHEAD MOUNT  
RIGHT ANGLE

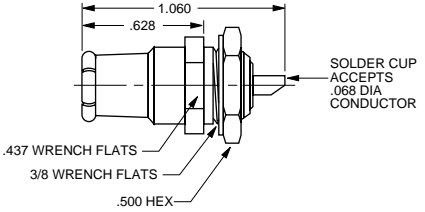
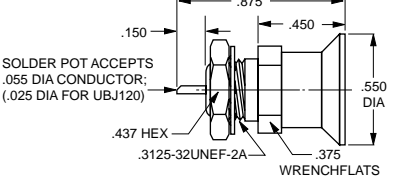
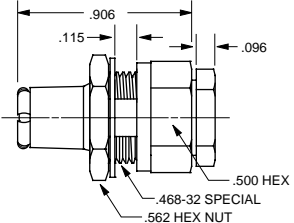


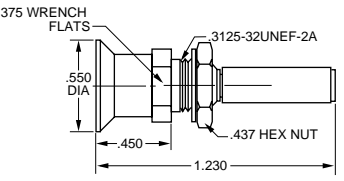


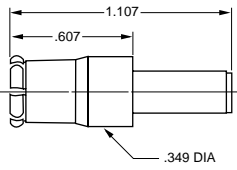


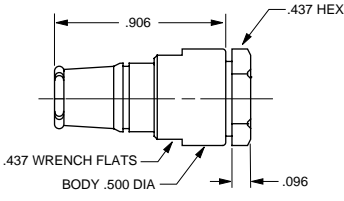


Add "A" for tall versions

50Ω **CBBJR49**  
75Ω **UCBBJR49**  
Mounting Hole: D3.230

⚠ - Refers to Cable Group Table, see pages 91-133. "D" mounting holes are on page 54

# PUSH-ON COAX 120 SERIES

These BNC/TNC push-on jacks and plugs are designed for (U)PL123 blind mate rack and panel applications. The male plugs mate (U)PL122 with any BNC/TNC jack and are ideally suited for test/cable applications.

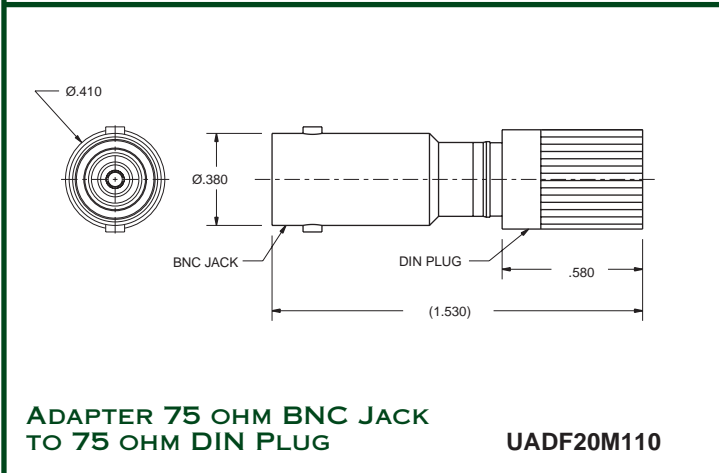
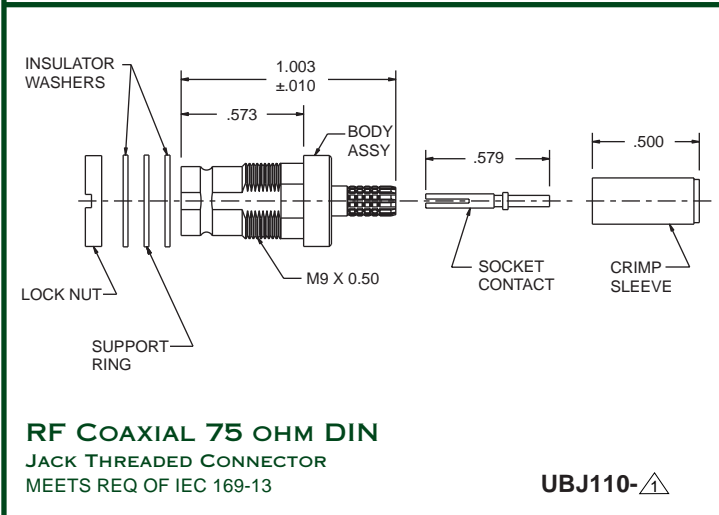
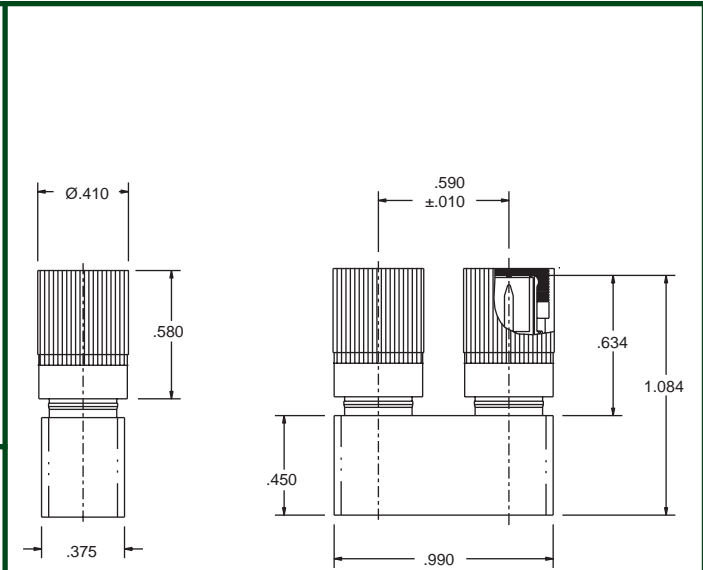
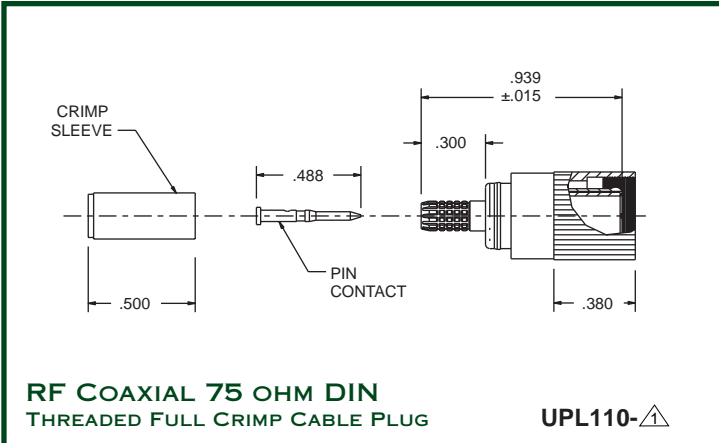
|  |   |
|--|---|
| <p>PL121 Shown</p>  <p><b>PANEL PLUG</b> 50Ω <b>PL121</b><br/>FRONT MOUNT, SOLDER POT 75Ω <b>UPL121</b></p> <p>W/ SOLDER LUG 50Ω <b>PL121SL</b><br/>75Ω <b>UPL121SL</b></p> <p>Mounting Hole: C2.093</p>  |  <p><b>BULKHEAD JACK</b> 50Ω <b>BJ120</b><br/>FRONT MOUNT, SOLDER LUG 75Ω <b>UBJ120</b></p> <p>W/ SOLDER LUG 50Ω <b>BJ120SL</b><br/>75Ω <b>UBJ120SL</b></p> <p>Mounting Hole: C1.120</p>  |
| <p>PL122 Shown</p>  <p><b>PANEL PLUG</b> 50Ω <b>PL122-</b><br/>REAR MOUNT, CABLE ENTRY 75Ω <b>UPL122-</b></p> <p>Mounting Hole: DD5.187</p> |  <p><b>BULKHEAD CABLE JACK</b> 50Ω <b>BJ120C-</b><br/>FRONT MOUNT, TOOL CRIMP 75Ω <b>UBJ120C-</b></p> <p>Limited Cable Groups<br/>Mounting Hole: C1.120</p> |
| <p>PL223-001 Shown</p>  <p><b>CABLE PLUG</b> 50Ω <b>PL223-</b><br/>TOOL CRIMP 75Ω <b>UPL223-</b></p>  | <p>PL123-2 Shown</p>  <p><b>CABLE PLUG</b> 50Ω <b>PL123-</b><br/>WRENCH CRIMP 75Ω <b>UPL123-</b></p>  |

 - Refers to Cable Group Table, see pages 91-133. "D" mounting holes are on page 54

# 110 SERIES - 1.6/5.6 DIN CONNECTORS

Trompeter's 110 series connectors are 30% smaller than the standard BNC currently used for the Coax Central Office termination. With this space savings, 72 interconnects can be placed in the same 1 rack unit panels as 52 BNCs. The 110 series of connectors is available in the following: cable plug, cable jack, a U-Link for connecting two jacks, a right angle circuit board jack, and BNC to DIN adapters.

Trompeter's 110 series works with all the cables currently in use in the central office environment and like all Trompeter connectors, can be made to accommodate any coax cable changes.

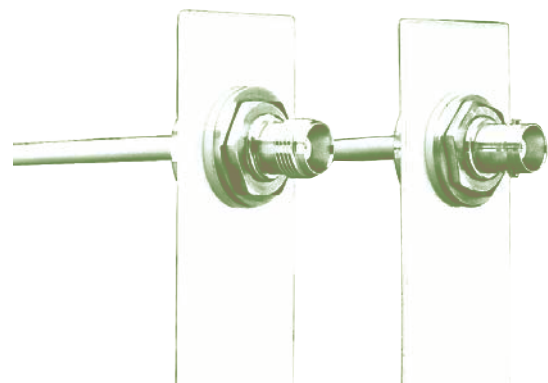
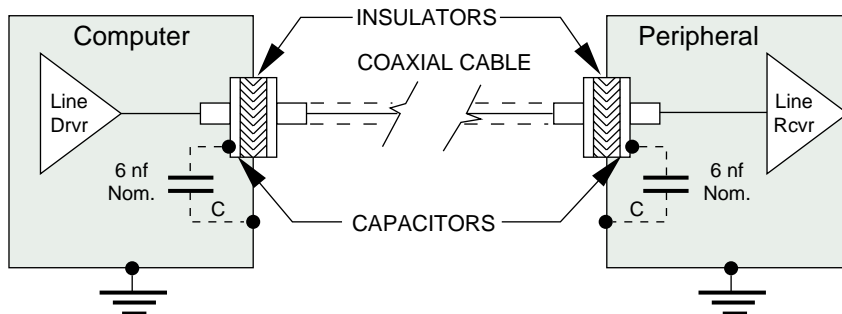


△ - Refers to Cable Group Table - See pages 91-133.

# COAXIAL GROUND FILTER BULKHEAD JACKS

## Coaxial Ground Filter Bulkhead Jacks

Designated in catalog pages by "GF".



### GROUND FILTER SPECIFICATIONS

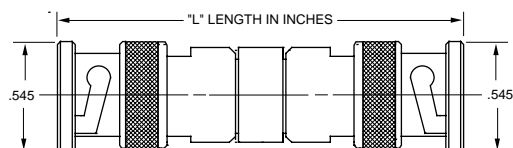
RF Insertion Loss: ..... 0.1 dB max. to 1 GHz  
 Dissipation Factor: ..... 5% max. @ 1 KHz & 25°C  
 Voltage Rating: ..... 200 VDC @ sea level & 25°C  
 Capacitance: ..... 4nF min., 10nF max. @ 1 KHz & 25°C  
 Insulation Resistance: ..... 1 Gighom min. @ 200 VDC & 25°C  
 Dielectric Withstanding  
 Voltage: ..... 500 VDC @ sea level & 25°C for 1 minute  
 Filter RF Attenuation: ..... 1MHz- 1dB, 3MHz- 2dB  
 10MHz- 8dB, 30MHz- 16dB, 100/300/1000MHz- 30dB

These connectors reduce radiated electrical noise to meet the EMI/RFI requirements of F.C.C. Regulation on RFI Interference-Part 15, Subpart J, as a result of Docket 20780, which limits allowable computer and peripheral equipment emissions to a range of 20 to 1000 MHz. Radiated interference from HF components and electrical pulse harmonics are avoided by using a built-in capacitor which acts as a high pass filter to attenuate spurious HF signals while bypassing ground loop, directing contact current flow harmlessly to ground.

| Connector Type     | Mounting Hole | Ohm     | Part Number |
|--------------------|---------------|---------|-------------|
| BNC, WRENCH CRIMP  | D8.094        | 50Ω/75Ω | (U)BJ26GF-△ |
| BNC, TOOL CRIMP    | D8.094        | 50Ω     | BJ226GF-△   |
| BNC, FEED-THROUGH  | D8.094        | 50Ω/75Ω | (U)BJ28GF   |
| BNC, CIRCUIT BOARD | D8.093        | 50Ω/75Ω | (U)CBBJ26GF |
| TNC, WRENCH CRIMP  | D8.094        | 50Ω/75Ω | (U)BJ46GF-△ |
| TNC, TOOL CRIMP    | D8.094        | 50Ω     | BJ246GF-△   |
| TNC, FEED-THROUGH  | D8.094        | 50Ω/75Ω | (U)BJ48GF   |
| TNC, CIRCUIT BOARD | D8.093        | 50Ω/75Ω | (U)CBBJ46GF |

Designate 75Ω version by prefix "U"

### BNC ATTENUATOR

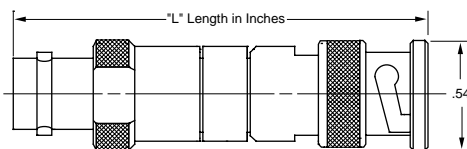


Replace Ω with impedance and dB with dB required.  
 Example: TNA-75-20-BNC

| CONNECTOR TYPE  | L     | PART NUMBER     |
|-----------------|-------|-----------------|
| 50Ω plug & jack | 3.24" | TNA-Ω-dB-BNC    |
| 75Ω plug & jack | 3.24" | UTNA-Ω-dB-BNC   |
| 50Ω plugs       | 3.17" | TNA-Ω-dB-BNC/M  |
| 75Ω plugs       | 3.17" | UTNA-Ω-dB-BNC/M |
| 50Ω jacks       | 3.30" | TNA-Ω-dB-BNC/F  |
| 75Ω jacks       | 3.30" | UTNA-Ω-dB-BNC/F |

Video frequency 10 MHz max. attenuation 20 dB max.

### BNC PADS

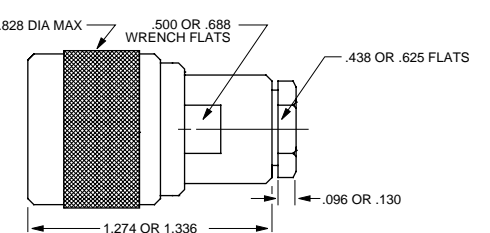
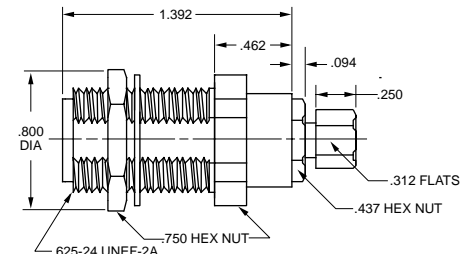
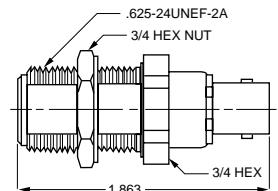
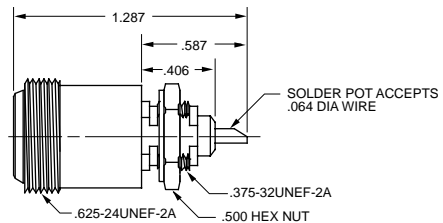
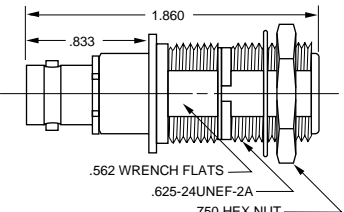
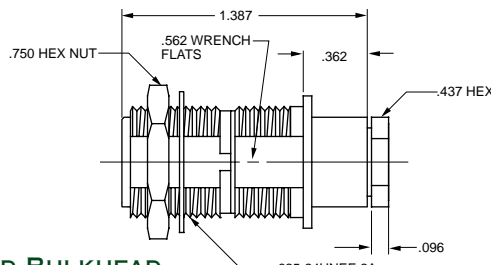
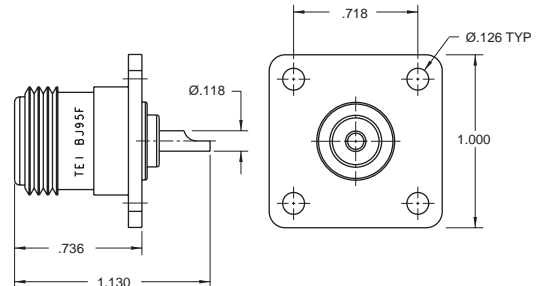
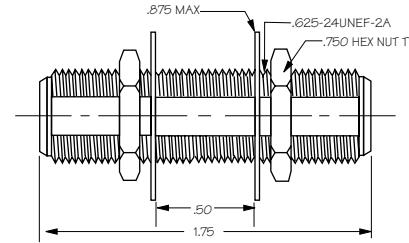


| SCHEMATIC | IMPEDANCE | L     | PART NUMBER |
|-----------|-----------|-------|-------------|
|           | 50Ω       | 2.16" | TNA2-R      |
|           | 75Ω       | 2.16" | UTNA2-R     |
|           | 50Ω       | 2.16" | TNA3-R      |
|           | 75Ω       | 2.16" | UTNA3-R     |
|           | 50Ω       | 3.23" | TNA4-R      |
|           | 75Ω       | 3.23" | UTNA4-R     |

△ - Refers to Cable Group Table, see pages 91-133. "D" mounting holes are on page 54

# COAX "N" CONNECTORS, 90 SERIES

Trompeter's 90 Series incorporates many of the features of our BNC lines including 3-piece wrench crimp configuration, gold plated captive center contacts, beryllium copper female contacts, and PTFE dielectrics. The 90 Series will also accommodate nonflammable plenum coax cables.

|  |   |
|--|---|
| <p>PL95-1 and -6 Shown</p>  <p><b>CABLE PLUG WRENCH CRIMP</b></p> <p>50Ω<br/>75Ω</p> <p><b>PL95- UPL95-</b></p> <p>Large body versions are available, contact the factory.<br/>Size depends on cable group.</p> | <p>BJ95-141 Shown</p>  <p><b>BULKHEAD CABLE JACK WRENCH CRIMP</b></p> <p>50Ω<br/>75Ω</p> <p><b>BJ95- UBJ95-</b></p> <p>Mounting Holes: DD4.310 (Standard body)<br/>DD1.310 (Cable Groups -6A/6B/6E, -48, -50)</p> |
|  <p><b>ADAPTER N TO BNC</b></p> <p>50Ω<br/>75Ω</p> <p><b>AD95 UAD95</b></p> <p>Mounting Hole: DD4.310</p>  |  <p><b>BULKHEAD JACK SOLDER POT</b></p> <p>50Ω<br/>75Ω</p> <p><b>J95 UJ95</b></p> <p>Mounting Hole: D5.310</p>  |
|  <p><b>INSULATED ADAPTER N TO BNC</b></p> <p>50Ω<br/>75Ω</p> <p><b>ADI95 UADI95</b></p> <p>Mounting Hole: DD4.203</p>   | <p>BJ96-1 Shown</p>  <p><b>INSULATED BULKHEAD CABLE JACK WRENCH CRIMP</b></p> <p>50Ω<br/>75Ω</p> <p><b>BJ96- UBJ96-</b></p> <p>Mounting Hole: DD4.203</p>   |
|  <p><b>FLANGE MOUNT BULKHEAD JACK N, SOLDER POT</b></p> <p>50Ω<br/>75Ω</p> <p><b>BJ95F UJ95F (Not Shown)</b></p>  | <p>BJ98-2 Shown</p>  <p><b>FEED-THRU JACK</b></p> <p>50Ω<br/>75Ω</p> <p><b>BJ98-2 UBJ98-2</b></p> <p>Mounting Hole: DD4.50<br/>For panels up to 2.25" thick. For thicker panels call the factory.</p>           |

△ - Refers to Cable Group Table, see pages 91-133. "D" mounting holes are on page 54

# COAX "N" CONNECTORS, 90 SERIES

## COAX "F" CONNECTORS 130 SERIES

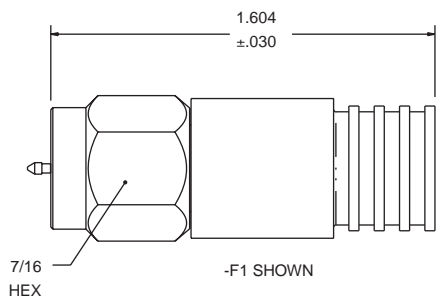
Trompeter's "N" Connector Series is utilized for interconnection on antenna towers, lightning protection boxes, power distribution and ancillary systems. Trompeter offers a complete line of remarkable new 50Ω "N" connectors for current industry standard flexible and corrugated cables.

|  |   |
|--|---|
| <p><b>"N" TYPE BULKHEAD JACK</b><br/>Panel Thk: .250 MAX</p> <p>50Ω <b>BJ92</b></p>  | <p><b>RIGHT ANGLE CIRCUIT BOARD JACK</b><br/>TYPE "N" COAXIAL BULKHEAD<br/>MOUNT RECEPTACLE<br/>DD4.310</p> <p>50Ω <b>CBBJR99</b></p> |
| <p><b>F ADAPTER</b> <b>AD131</b></p>   | <p><b>BETWEEN SERIES COAXIAL FEMALE</b><br/>BNC TO MALE "F" ADAPTER <b>75Ω AD1300</b></p>   |
| <p><b>F JACK</b></p> <p><b>AD1300</b><br/>75 OHM COAXIAL FEMALE BNC<br/>TO MALE "F" ADAPTER</p> <p><b>BNC PLUG</b></p> <p><b>AD1300</b><br/>BNC TO "F" ADAPTER</p> <p>The connector solution for CATV appliances! Whether you are dealing with a set-top box or a cable modem, convert your problem F connector jack to a BNC at the jack or socket and enable Carrier Class performance. Face it, the single largest technical problem with the HFC delivery network used by cable TV service providers is the F connector. The F was selected back when CATV was a one way residential only entertainment delivery system for television.</p> <p>What better way to bring your system performance up to Carrier Class than to convert from the F connector to the Telco standard connector, the Trompeter BNC series? Now it's simply using the Trompeter AD1300 between series adapter (drawing above), which converts your F jack into a BNC jack at the device.</p> |   |

Cable group table, See pages 91-133.



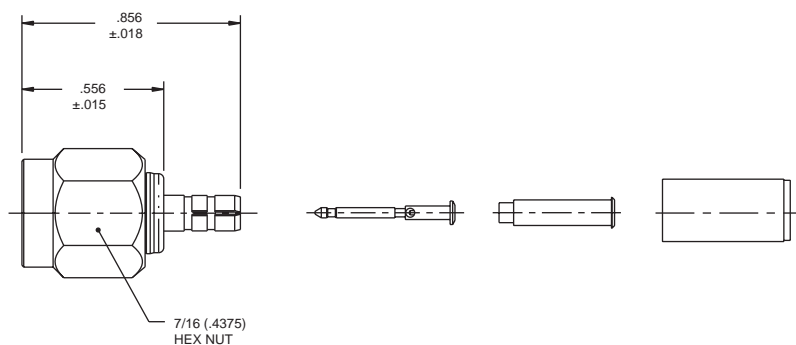
# COAX "F" CONNECTORS 130 SERIES



| PART NO   | A DIM | CABLES ACCOMMODATED                                      |
|-----------|-------|--|
| PL130C-F1 | .360  | COMMSCOPE<br>6 SERIES QUAD<br>(P/N 5740)<br>(P/N F6SSVV) |
| PL130C-F2 | .324  | BELDEN 6 SERIES<br>(P/N 82120)<br>(P/N 9114)             |
| PL130C-F3 | .360  | COMMSCOPE<br>59 SERIES<br>(P/N S 59 HEC)                 |

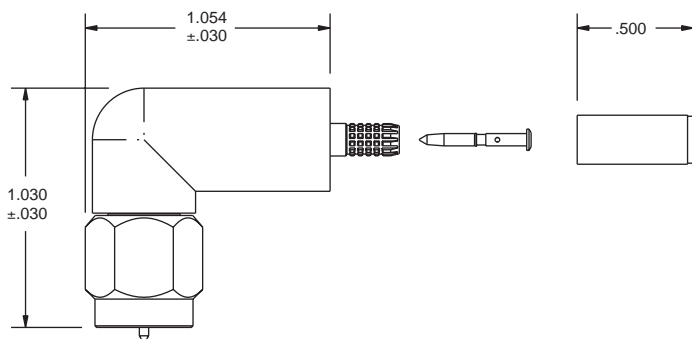
**75 OHM MALE TYPE "F" COAXIAL CABLE PLUG**  
(Patent #5860833)

**PL130C-**(see dash number from chart on right)



**75 OHM "F" TYPE TOOL CRIMP PLUG**

**PL130SC-**(see dash number from chart on right)

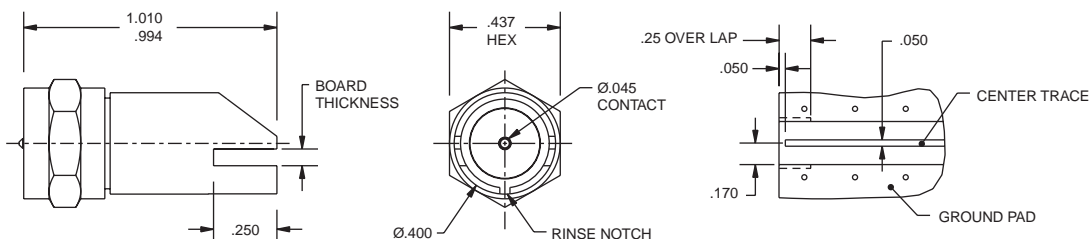


**75 OHM RIGHT ANGLE "F" STYLE FULL CRIMP CABLE PLUG**  
**PLR130SC-**(see dash number from chart on right)

| DASH NO | CABLES ACCOMMODATED                             | A HEX |
|---------|---|-------|
| -001    | RG-178, -196                                    | .178  |
| -002    | HEWLETT PACKARD<br>8120 - 1107                  | .197  |
| -003    | RG-174, 316                                     | .178  |
| -004    | RG-179, 187                                     | .178  |
| -005    | NORTHERN ELECTRIC<br>DBL - SHLD RG-187          | .197  |
| -006    | GC875GPI, GRUMMAN<br>DBL - SHLD RG-188          | .197  |
| -007    | 275-3991, MICRODOT                              | .178  |
| -008    | RG-195, -180<br>421-111, ESSEX                  | .178  |
| -009    | 8218, BELDEN<br>YR23023 BELDEN<br>21-597, ESSEX | .178  |
| -011    | RG-58, RG-141,<br>RG-303, TCC-50-2              | .213  |
| -013    | RG-59   | .255  |
| -013A   | TCC-75-2  | .255  |
| -013B   | RG-62   | .255  |
| -014    | 8212, BELDEN                                    | .255  |
| -015    | 730A, LUCENT                                    | .290  |
| -015A   | RG-71   | .290  |
| -016    | 724, LUCENT<br>8281, BELDEN                     | .324  |
| -017    | RG-6  | .344  |
| -018    | 9268, BELDEN                                    | .255  |
| -019    | 8279, BELDEN                                    | .255  |
| -020    | 9248, BELDEN                                    | .290  |
| -021    | 88240, BELDEN                                   | .213  |
| -022    | 88241, 88269, BELDEN                            | .255  |
| -023    | 89108, BELDEN                                   | .255  |
| -024    | 89120, BELDEN                                   | .290  |
| -025    | 734A, LUCENT                                    | .255  |
| -026    | 735A, LUCENT                                    | .178  |
| -027    | KS19224L2, LUCENT                               | .178  |

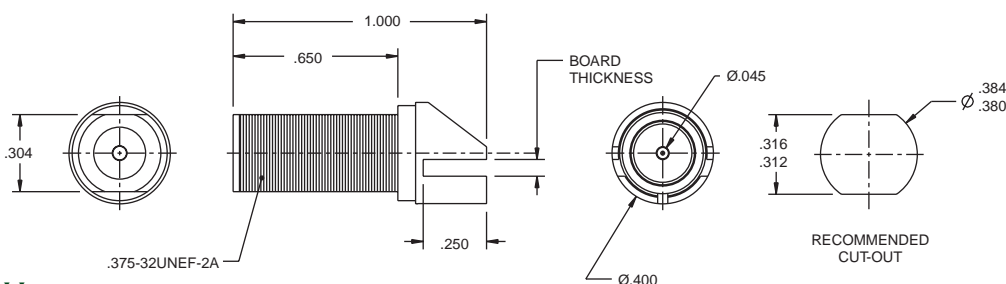
# COAX "F" CONNECTORS 130 SERIES

| PART NO    | BOARD THICKNESS |
|------------|-----------------|
| CBPLE130-1 | .060 - .064     |
| CBPLE130-2 | .028 - .033     |
| CBPLE130-3 | .090 - .094     |

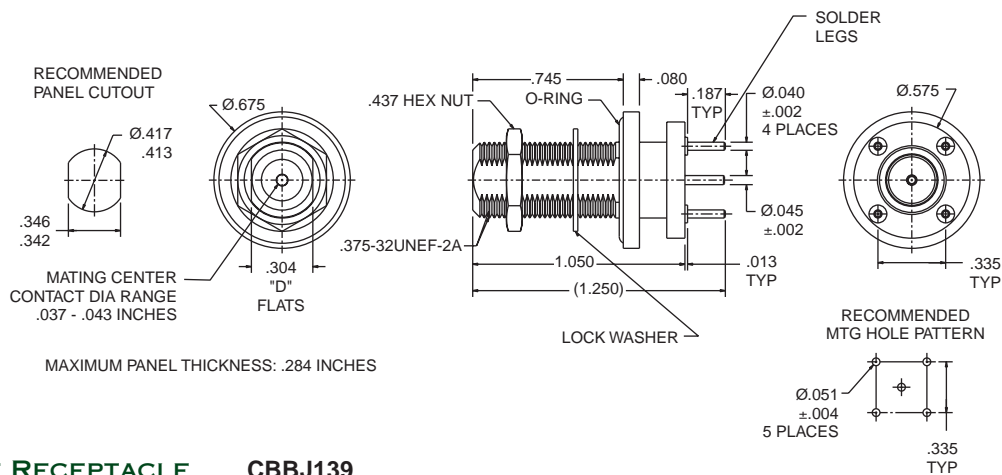


**CIRCUIT BOARD EDGE MOUNT  
"F" STYLE MALE PLUG      CBPLE130-1,-2, or -3**

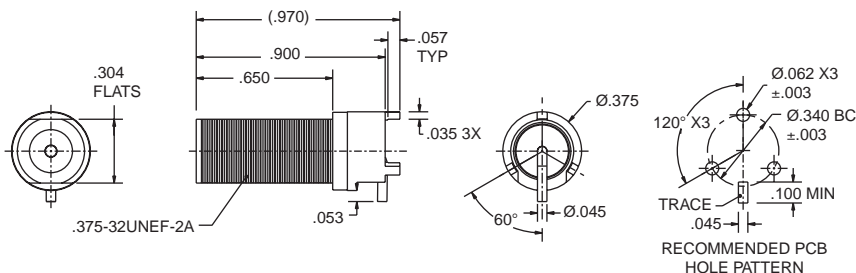
| PART NO   | BOARD THICKNESS |
|-----------|-----------------|
| CBJE130-1 | .060 - .064     |
| CBJE130-2 | .028 - .033     |
| CBJE130-3 | .090 - .094     |



**CIRCUIT BOARD EDGE MOUNT  
"F" STYLE FEMALE JACK      CBJE130-1, -2, or -3**

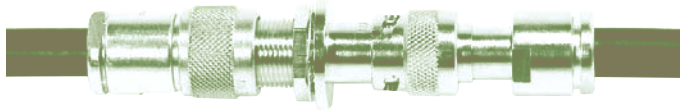


**"F" SERIES, BULKHEAD,  
CIRCUIT BOARD MOUNT RECEPTACLE      CBBJ139**



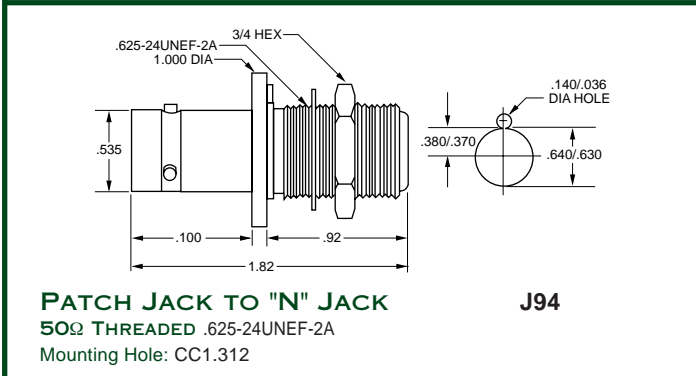
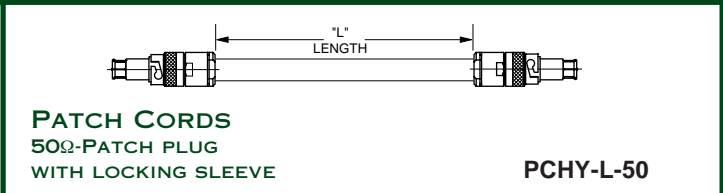
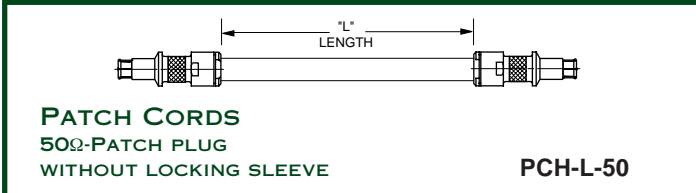
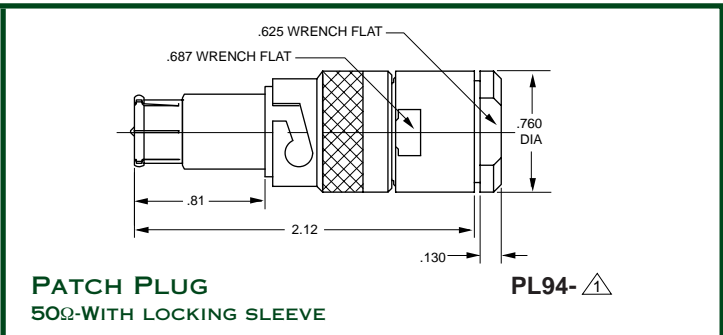
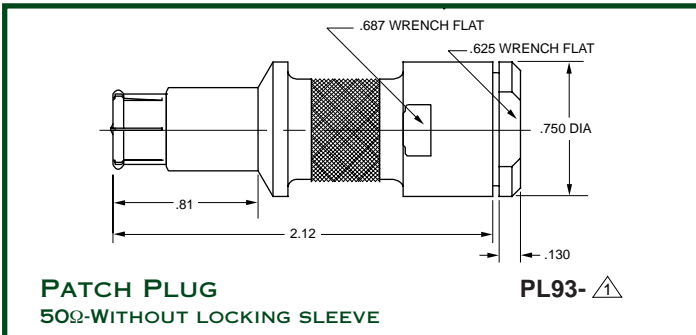
**"F" SERIES 3-POST CIRCUIT  
BOARD MOUNT RECEPTACLE  
WITH SPECIAL RIGHT ANGLE  
CONTACT      105-2137**

# LOW VSWR CONNECTORS



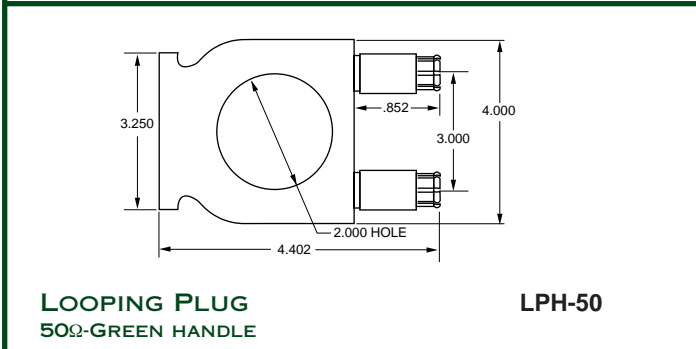
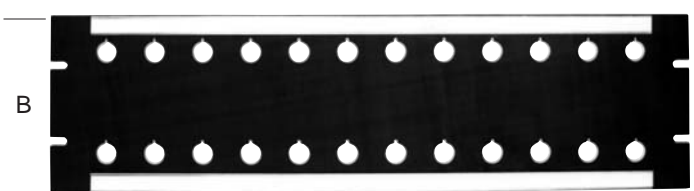
"N" Plug Patch Jack Patch Plug

Trompeter's 50Ω low VSWR (1.11:1) patching system has been developed for use at frequencies up to 3GHz and at power levels up to 500 watts. J94 jack accepts a "N" male plug in back and the PL93 or PL94 in the front of the panels shown, or a custom panel of your own design. Patch plugs incorporate a push-fit design that snap into position in the jack and are available with, or without a bayonet locking feature. Normal jack spacing is 3" center-to-center. For a minimum bend radius when patching adjacent jacks, use Trompeter standard patch cords made with RG8 cable with a minimum length of 14". Otherwise the minimum length is 18". Panels loaded at no additional cost.



**PANELS FOR J94**

| # of Holes | Notching | Panel Type    | Height    | Part#          |
|------------|----------|---------------|-----------|----------------|
| 12         | Open     | Common Ground | A = 1.75" | <b>JSH-12</b>  |
| 12         | Closed   | Insulated     | A = 1.75" | <b>JSHI-12</b> |
| 24         | Open     | Common Ground | B = 5.25" | <b>JSH-24</b>  |
| 24         | Closed   | Insulated     | B = 5.25" | <b>JSHI-24</b> |



"L"-replace with length in inches. - Refers to cable group table, see pages 91-133. "D" mounting hole, page 54. For standard panels see pages 51-54.

# 50Ω SUB-MINIATURE COAX 50/350 SERIES, TPS/TCM JACKS & PLUGS

PL50-1 Shown

|                     |     |          |                  |
|---------------------|-----|----------|------------------|
| <b>CABLE PLUG</b>   | 50Ω | 3-lug    | <b>PL50-</b> ⚠   |
| <b>WRENCH CRIMP</b> | 50Ω | 4-lug    | <b>PL50FL-</b> ⚠ |
|                     | 50Ω | Threaded | <b>PL350-</b> ⚠  |

|                                |     |          |               |
|--------------------------------|-----|----------|---------------|
| <b>BULKHEAD JACK</b>           | 50Ω | 3-lug    | <b>BJ50</b>   |
| <b>FRONT MOUNT, SOLDER POT</b> | 50Ω | 4-lug    | <b>BJ50FL</b> |
|                                | 50Ω | Threaded | <b>BJ350</b>  |

Mounting Hole: D6.218

PL50C-001 Shown

|                   |     |          |                   |
|-------------------|-----|----------|-------------------|
| <b>CABLE PLUG</b> | 75Ω | 3-lug    | <b>UPL50C-</b> ⚠  |
|                   | 50Ω | 3-lug    | <b>PL50C-</b> ⚠   |
| <b>TOOL CRIMP</b> | 50Ω | 4-lug    | <b>PL50CFL-</b> ⚠ |
|                   | 50Ω | Threaded | <b>PL350C-</b> ⚠  |

BJ57 Shown

|                                |     |          |               |
|--------------------------------|-----|----------|---------------|
| <b>INSULATED BULKHEAD JACK</b> |     |          |               |
| <b>FRONT MOUNT, SOLDER POT</b> | 50Ω | 3-lug    | <b>BJ57</b>   |
|                                | 50Ω | 4-lug    | <b>BJ57FL</b> |
|                                | 50Ω | Threaded | <b>BJ357</b>  |

Mounting Hole: D4.187

PL53-1 Shown

|                              |     |       |                |
|------------------------------|-----|-------|----------------|
| <b>PUSH-ON PLUG</b>          | 50Ω | 3-lug | <b>PL53-</b> ⚠ |
| <b>WRENCH CRIMP, TPS/TCM</b> |     |       |                |

|  |     |            |               |
|--|-----|------------|---------------|
| <b>TPS PUSH-ON SOLDER POT PANEL JACK</b> | 50Ω |            | <b>BJ51</b>   |
| Max Panel Thk: .088                      | 50Ω | Ground Lug | <b>BJ51GL</b> |

CJ50-1 Shown

|                     |     |          |                  |
|---------------------|-----|----------|------------------|
| <b>CABLE JACK</b>   | 50Ω | 3-lug    | <b>CJ50-</b> ⚠   |
| <b>WRENCH CRIMP</b> | 50Ω | 4-lug    | <b>CJ50FL-</b> ⚠ |
|                     | 50Ω | Threaded | <b>CJ350-</b> ⚠  |

BJ58 Shown

|                       |     |          |               |
|-----------------------|-----|----------|---------------|
| <b>FEED-THRU JACK</b> | 50Ω | 3-lug    | <b>BJ58</b>   |
|                       | 50Ω | 4-lug    | <b>BJ58FL</b> |
|                       | 50Ω | Threaded | <b>BJ358</b>  |

Mounting Hole: D5.190 / D4.190 (Threaded)

|                           |     |          |                |
|---------------------------|-----|----------|----------------|
| <b>CIRCUIT BOARD JACK</b> |     |          |                |
|                           | 50Ω | 3-lug    | <b>CBJ50</b>   |
|                           | 50Ω | 4-lug    | <b>CBJ50FL</b> |
|                           | 50Ω | Threaded | <b>CBJ350</b>  |

BJ59-1 Shown

|                                   |     |          |                  |
|-----------------------------------|-----|----------|------------------|
| <b>BULKHEAD JACK WRENCH CRIMP</b> | 50Ω | 3-lug    | <b>BJ59-</b> ⚠   |
|                                   | 50Ω | 4-lug    | <b>BJ59FL-</b> ⚠ |
|                                   | 50Ω | Threaded | <b>BJ359-</b> ⚠  |

Mounting Hole: D4.187

⚠ - Refers to cable group table, see pages 91-133. "D" mounting holes are on page 54

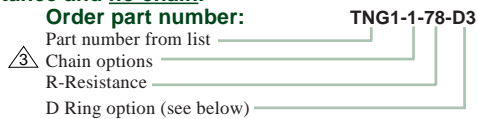
## COAX RFI CAPS & TERMINATIONS

### Coax Terminations and RFI (Dust Caps)

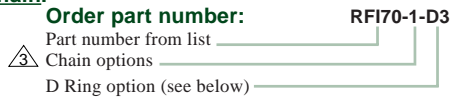
Trompeter provides termination and RFI cap for all our connectors. Resistors are normally 1/4 watt for subminiature connectors and 1/2 watt for miniature and standard size connectors (1% tolerances for all).

#### Ordering Instructions

**For Terminations Example: PL75 Termination for TRB jacks with 78Ω resistance and no chain.**



**For RFI Caps Example: Patch plug cap for a J74 twinax/triax jack with no chain.**



### Chain Options:

| LENGTH                      | CHAIN TYPE                    | CHAIN NUMBERS: |
|-----------------------------|-------------------------------|----------------|
| N/A                         | No Chain                      | -1             |
| 2.5"                        | Brass Chain                   | -2             |
| 2.5"                        | Nylon Chain                   | -3             |
| 3.0"                        | Brass Chain                   | -4             |
| 3.0"                        | Nylon Chain                   | -5             |
| 6.0"                        | Brass Chain                   | -6             |
| 6.0"                        | Nylon Chain                   | -7             |
| 4.0"                        | Brass Chain                   | -8             |
| 4.0"                        | Nylon Chain                   | -9             |
| 10.0"                       | Brass Chain                   | -10            |
| 10.0"                       | Nylon Chain                   | -11            |
| <b>STAINLESS-STEEL ROPE</b> |                               |                |
| 2.5"                        | Jacketed Stainless-steel rope | -12            |
| 3.0"                        | Jacketed Stainless-steel rope | -13            |
| 6.0"                        | Jacketed Stainless-steel rope | -14            |

### Stainless Steel Rope with Mounting Rings

We now *provide* stainless steel rope with "D" rings. To order mounting ring for jacks with the "D" mounting hole numbers listed on the right, add the "D" ring number to the part number.

**For Example: RFI20-12-D2**

#### D Ring Options

| INSIDE DIAMETER | D-RING# | INSIDE DIAMETER | D-RING# |
|-----------------|---------|-----------------|---------|
| .755"           | -D1     | .281"           | -D7     |
| .630"-.635"     | -D2     | .610"           | -D8     |
| .505"-.510"     | -D3     | .567"           | -D9     |
| .439"-.443"     | -D4     | .192"           | -D10    |
| .380"-.384"     | -D5     | 1.005"          | -D11    |
| .317"           | -D6     | .330"           | -DD8    |

### Coax Terminations & RFI Caps

| PARTS TO BE CAPPED   | DESCRIPTION               | TERMINATOR                       | RFI (DUST CAPS)                   |
|----------------------|---------------------------|----------------------------------|-----------------------------------|
| BJ20/CJ20 Series     | BNC, Jack                 | (U)TNASP1-(3)-R (Push on)        | RFI25-(3)                         |
| BJ20/CJ20 Series     | BNC, Jack                 | (U)TNAS1-(3)-R (Short)           | RFI25-(3)                         |
| BJ20/CJ20 Series     | BNC, Jack                 | (U)TNA1-(3)-R                    | RFI25-(3)                         |
| BJ20/CJ20            | BNC, Jack                 | (U)TNAP1-(3)-R                   | RFI25-(3)                         |
| BJ40/CJ40 Series     | TNC, Jack                 | (U)TNH1-(3)-R                    | RFI45-(3)                         |
| BJ50/CJ50 Series     | TPS, Jack                 | TNB1-(3)-R (Push on)             | RFI55-(3)                         |
| BJ50FL/CJ50FL Series | TPS, Jack                 | TNBP1-(3)-R (Push on)            | RFI55FL-(3)                       |
| BJ50/BJ350           | TPS/TCM, Jack             | TNBP1-(3)-R (Push on)            | RFI355-(3)                        |
| BJ95                 | N, Jack                   | (U)TNN1-(3)-R                    | RFI95-(3)                         |
| BJ130                | F, Jack                   | TNF1-(3)-R                       | RFI130-(3)                        |
| J3                   | RCA, Patch Jack           | TP-(3)-R                         | RFI20-(3)                         |
| J3W                  | WECO Patch Jack           | TPW-(3)-R                        | RFI20-(3)                         |
| J8                   | Mini-WECO Coax Patch Jack | TPM-(3)-R                        | RFI50-(3)                         |
| J11                  | Mini-WECO Patch Jack      | TPMW-(3)-R                       | RFI150-(3)                        |
| J94 (90 Series)      | Patch Jack                | TNP1-(3)-R                       | RFI94-(3)                         |
| J94 (90 Series)      | Patch Jack                | TPP-(3)-50 (Push-on)             | RFI94-(3)                         |
| PL20 Series          | BNC, Plug                 | (U)TNAF1-(3)-R                   | RFI21-(3)                         |
| PL50                 | TPS, Plug                 |                                  | RFI57-(3)                         |
| PL50FL               | TPS, Plug                 |                                  | RFI57FL-(3)                       |
| PL220 Series         | BNC, Plug                 | (U)TNAF1-(3)-R                   | RFI21-(3)                         |
| PL40 Series          | TNC, Plug                 | (U)TNHF1-(3)-R                   | RFI41-(3)                         |
| PL95                 | N, Plug                   | (U)TNNBJ1-(3)-R (Bulkhead Mount) | RFI97-(3)/ RFIS97-(3) Safety wire |

Notes: (3) See Chain options. "U" Designates 75 ohm version available. "R" Resistance. If you cannot find the RFI cap or termination you need call the factory.



## TWINAX/TRIAX RFI CAPS & TERMINATIONS

### *Twinax/Triax Terminators and RFI (Dust Caps)*

Trompeter provides Terminations and RFI caps versions of many of our twinax/triax connectors. Resistors are normally 1/8 watt for subminiature connectors and 1/2 watt for miniature and standard size connectors with 1% tolerances for all.



| PARTS TO BE CAPPED   | DESCRIPTION               | TERMINATOR                     | RFI (DUST CAP)  |
|----------------------|---------------------------|--------------------------------|-----------------|
| BJ30/CJ30 Series     | TWBNC Jack                | TNGT1-(3)-R                    | RFI25-(3)       |
| BJ70/CJ70 Series     | TRB, Jack                 | TNG1-(3)-R                     | RFI75-(3)       |
| BJ70FL/CJ70FL        | TRB, Jack                 | TNGFL1-(3)-R                   | RFI75FL-(3)     |
| BJ70TL/CJ70TL        | TRB, Jack                 | TNGTL1-(3)-R                   | RFI75TL-(3)     |
| BJ80/CJ80            | TRC, Jack                 | TNGL1-(3)-R                    | RFI85-(3)       |
| BJ150/CJ150          | TRS, Jack                 | TNGM1-(3)-R                    | RFI155-(3)      |
| BJ150FL/CJ150FL      | TRS, Jack                 | TNGMFL1-(3)-R                  | RFI155FL-(3)    |
| BJ375/CJ375          | TRT, Jack                 | TNT1-(3)-R                     | RFI375-(3)      |
| BJ375/CJ375          | TRT, Jack                 | TNTS1-(3)-R (Safety Holes)     | RFI375-(3)      |
| BJ380/CJ380          | TRN, Jack                 | TNTL1-(3)-R                    | RFI385-(3)      |
| BJ803/CJ803          | TRC, 3-lug Jack           | TNG3L1-(3)                     | RFI853-(3)      |
| BJ3150/CJ3150        | TTM, Jack                 | TNTM1-(3)-R                    | RFI3155-(3)     |
| J72                  | Twinax Patch Jack         | TPT-(3)-R                      | RFI70-(3)       |
| J72L                 | Twinax Patch Jack         | TPTL-(3)-R                     | RFI70-(3)       |
| J152                 | Twinax Submin. Patch Jack | TPTWM-(3)-R                    | RFI150-(3)      |
| PL30                 | TWBNC, Plug               | TNGBJT1-(3)-R                  | RFI21-(3)       |
| PL74                 | TRB, Plug                 | TNGBJTL1-(3)-R                 | RFI77TL-(3)     |
| PL75                 | TRB, Plug                 | TNGBJ1-(3)-R                   | RFI77-(3)       |
| PL75FL               | TRB, Plug                 | TNGBJFL1-(3)-R                 | RFI77FL-(3)     |
| PL80                 | TRC, Plug                 | TNGLF1-(3)-R                   | RFI80-(3)       |
| PL803                | TRC, Plug                 | TNGLF3L1-(3)-R                 | RFI80(3)        |
| PL380                | TRN                       | TNTLF1-(3)-R                   | RFI80(3)        |
| PL150                | Submin. Patch Plug        | TJTWM-(3)-R                    | -               |
| PL155                | TRS, Plug                 | TNGBJM1-(3)-R (Bulkhead Mount) | RFI157-(3)      |
| PL155                | TRS, Plug                 | TNGMF1-(3)-R                   | RFI157-(3)      |
| PL155FL              | TRS, Plug                 | TNGBJMFL1-(3) (Bulkhead Mount) | RFI157FL-(3)    |
| PL155FL              | TRS, Plug                 | TNGMFFL1-(3)-R                 | RFI157FL-(3)    |
| PL3155               | TTM, Plug                 | TNTBJM1-(3)-R (Bulkhead Mount) | RFI3157-(3)     |
| PL3155               | TTM, Plug                 | TNTMF1-(3)-R                   | RFI3157-(3)     |
| PL350                | TCM, Plug                 |                                | RFI357-(3)      |
| PL375                | TRT, Plug                 | TNTBJ1-(3)-R (Bulkhead Mount)  | RFI377-(3)      |
| PL375                | TRT, Plug                 | TNTF1-(3)-R                    | RFI377-(3)      |
| PL380                | TRN, Plug                 | TNTLF1-(3)-R                   | RFI380-(3)      |
| PL803                | TRC, 3-lug, Plug          | TNGLF3L1-(3)-R                 | RFI803-(3)      |
| For 450/3450 Series: | Concentric Twinax         | See pages 19-20                | See pages 19-20 |

**Notes:** (3) = Chain options page 45  
"R" = Resistance

For Chain Options and Ordering Instructions, see page 45.

## ADAPTER: CIRCUITRY SCHEMATICS, IMPEDANCE MATCHING

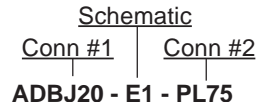
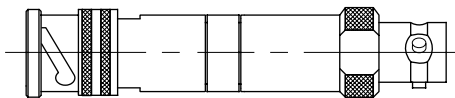
### Custom Adapters Ordering Format

Adapters indexed with a designated number are *standard adapters*, refer to page 50 for identifications.

Adapters index with a "\*" are *custom adapters* and may be ordered using the example below. For adapters not referenced contact the factory.

**ORDERING EXAMPLE:**

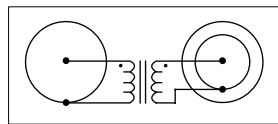
Conn #1      **BJ20**    BNC JACK  
 Schematic    **E1**        CIRCUIT CODE  
 Conn #2      **PL75**    TRB PLUG



### Adapter Circuitry Schematics

| Concentric Twinax/Triax to Concentric Twinax/Triax | 2-Pin Twinax to 2-Pin Twinax | Coax 2-Pin Twinax | Coax to Concentric Twinax/Triax | 2-Pin Twinax to Concentric Twinax/Triax | Coax to Coax |
|--|------------------------------|-------------------|---------------------------------|---|--------------|
| A1   | C1                           | D1                | E1                              | G1                                      | K1           |
| A2   | C2                           | D2                | E2                              | G2                                      | K2           |
| A3   | C3                           | D3                | E3                              | G3                                      | K3           |
| A4   | C4                           | D4                | E4                              | G4                                      |              |
| A5   | C5                           | D5                | E5                              |   |              |
| A6   | C6                           | D6                |                                 |   |              |
| A7   | C7                           | D7                |                                 |   |              |
| A8   |                              | D8                |                                 |   |              |

● BLUE CENTER COND



IMPEDANCE MATCHING SCHEMATIC



### Impedance Matching Adapter

Trompeter has developed a line of *Impedance Matching Adapters* that provides the designer a quick, elegant and affordable solution for connecting mismatched data transfer devices.

Why impedance matching? Impedance Matching exists in order to improve the performance of electronic circuits. A transmission line is properly terminated when the load impedance is equal to the source impedance. This prevents reflections and transfers the maximum signal to the output. Data transfer rates are increasing and frequency is an important component in determining the impedance of a transmission medium. When devices are not properly matched, the higher frequencies create greater signal attenuation.

Trompeter incorporates embedded transformer technology into our rugged in-line adapter package. The transformers are step-up/down and DC isolated so you do not have to contend with your signal floating on a DC level. These *Impedance Matching Adapters* are available in BNC, TNC, TRB and TRT, male and female interfaces. The input/output configurations are interchangeable, i.e. TRB to BNC, with bulkhead mounting options.

For more information on how this product can benefit your design, please refer to the technical paper: '*Signal Transmission in High Frequency/High Density Applications*' (see pages 81-82 in this catalog). For specific information and part numbers please contact the factory.



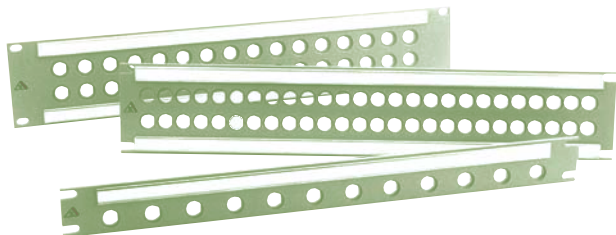








## PATCH PRODUCTS / STANDARD PANEL SPECIFICATIONS



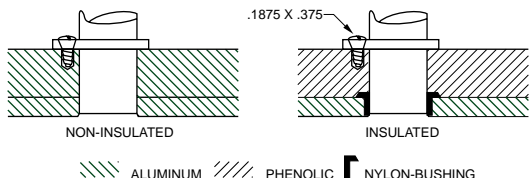
### Trompeter Patch Products

Trompeter offers a wide selection of patching products for military databus, Telemetry, Telecom, Broadcast, CATV, and testing. We offer these products for Twinax, Triax, and Coax cabling and in sizes to meet your space restrictions and environmental requirements.

### Standard 19" Panels

#### In popular sizes and configurations

Available in insulated black phenolic, and insulated or non-insulated aluminum. Aluminum panels are painted standard gray and come with either a phenolic back bar (insulated type), or an iridited aluminum back bar (non-insulated type). Aluminum panels can be painted to suit, or color matched (*special order*). Phenolic panels are available in black only.



Panels available in heights of **1.75 inches (1 RU)** or **3.5 inches (2 RU)**.

### Custom Panels & Marking

Custom panels can be configured to meet your specifications, including special wiring, colors, engraving, or silk-screening (custom marking). Patch jack locations can also be marked on the rear of the panel for easy location of jacks. Please contact your local representative, or fax us your requirements.

### Hole Plugs

#### FOR JACKS AND PANELS

| Hole Plugs for:                    | Hole Diameter | Part Number |
|------------------------------------|---------------|-------------|
| Miniature patch panel (J8)         | .250"         | HP250       |
| Miniature patch jack (J314MW, J11) | .304"         | HP304       |
| Standard patch jack (J314W)        | .375"         | HP375       |
| Standard patch panel (JS, JSI)     | .437"         | HP437       |
| Standard patch panel               | .500"         | HP500       |



HP304



HP375



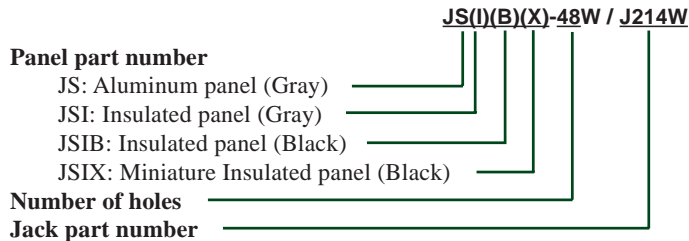
HP437

Front Loading Modular Panels are on page 56.

### Ordering Loaded Panels

Panels can be ordered pre-loaded with any compatible jacks *without* additional labor charge by using the following part number format (provided the mechanical restrictions are recognized).

**EXAMPLE:** Standard 48-hole, Non-insulated Panel (JS-48), loaded with twenty four (24) Standard 75Ω Patch Jacks (J214W)



### Panel Specifications

#### Notching:

|              |             |        |
|--------------|-------------|--------|
| Metal panels | (EIA-310-C) | Open   |
| Phenolic     | (EIA-310-C) | Closed |

#### Materials:

|  |                              |
|--|------------------------------|
| <b>JS Series, Common ground panels</b> |                              |
| Panel                                  | 6061-T6 grade aluminum       |
| Backbar                                | 6061-T6 grade aluminum       |
| <b>JSI Series, Insulated panels</b>    |                              |
| Panel                                  | 6061-T6 grade aluminum       |
| Backbar                                | XXX non-hydroscopic phenolic |
| Jack insulation                        | Nylon sleeves                |

#### Finishes:

|                             |  |
|-----------------------------|--|
| <b>Standard Finish</b>      | FED-STD-595-26307, Light Gray                                    |
| <b>Customer Supplied</b>    | FED-STD-595# or paint chip                                       |
| <b>Chemical Film Finish</b> | MIL-C-5541, Class 1a (Gold tone)<br>MIL-C-5541, Class 3, (Clear) |

#### Identification:

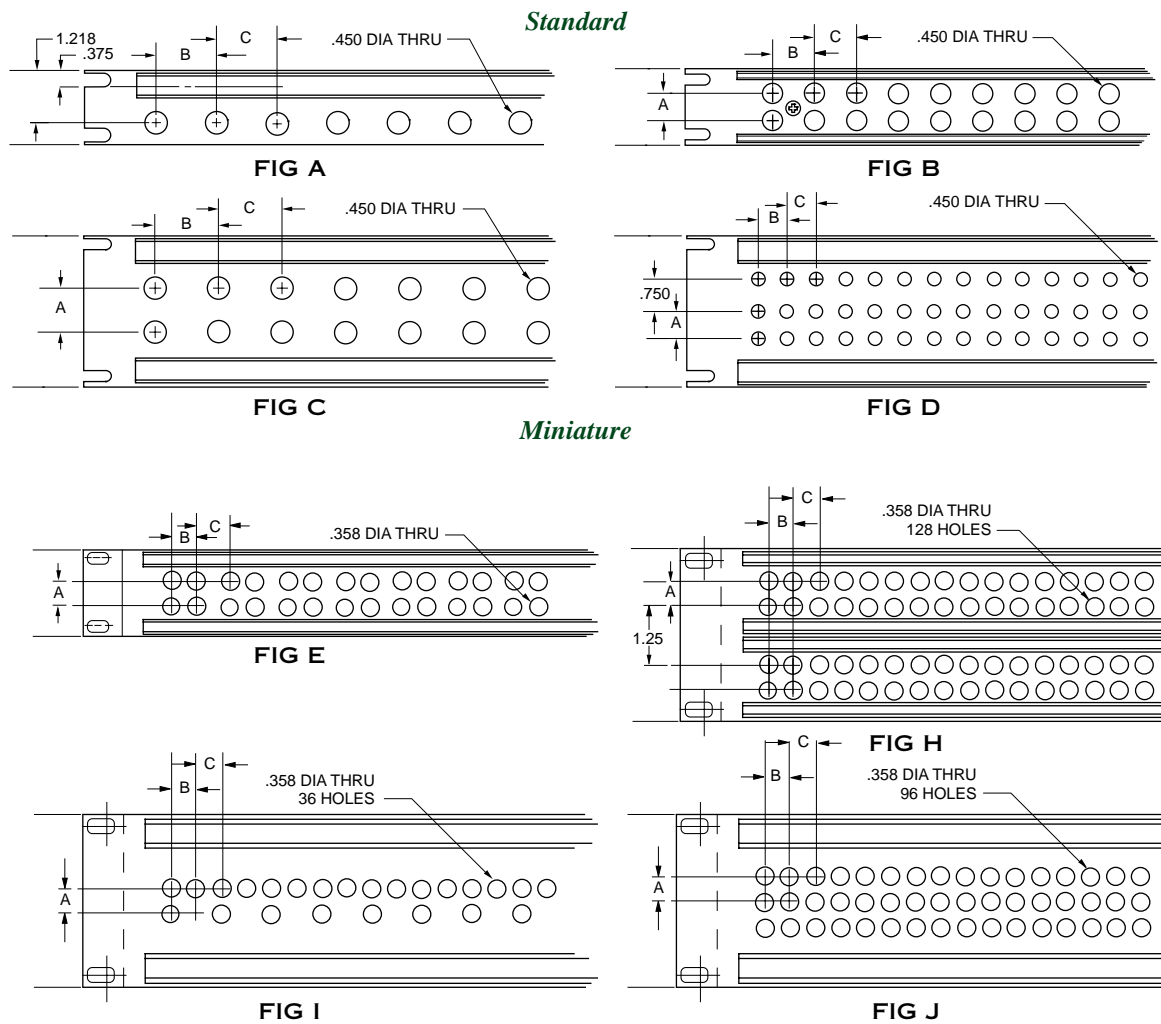
|                           |                   |
|---------------------------|-------------------|
| <b>Designation Strip</b>  | Passivated steel  |
| Standard patch panels     | DS1 .580" x 16.6" |
| Standard patch panels     | DS2 .870" x 16.6" |
| High density patch panels | DS4 .240" x 16.6" |
| <b>Card</b>               | Opaque vinyl      |
| <b>Window</b>             | Clear vinyl       |

#### Modification Kit

19" panels can be modified for use in 23" racks. Call factory and ask for part # 700-0408.



# STANDARD 19" PANELS



## 19" MINIATURE PATCH PANELS FOR: 50Ω J8 SERIES, J8D, AND 75Ω MINI-WECO JACKS

| # of Patch Locations | Panel Height | Hole Spacing |           |      | Fig | Non-Insulated Part Number | Insulated Part Number | Jack Type |
|----------------------|--------------|--------------|-----------|------|-----|---------------------------|-----------------------|-----------|
|                      |              | A            | B         | C    |     |                           |                       |           |
| 32                   | 1.75"        | N/A          | .500      | .500 | A   | JS-32                     | JSI-32                | J8 Series |
| 56                   | 1.75"        | .500         | .500      | .625 | E   |                           | JSIX-56S              | Mini-WECO |
| 56                   | 1.75"        | .500         | .500      | .625 | E   |                           | JSIX-56SF             | Mini-WECO |
| 64                   | 1.75"        | .500         | .500      | .500 | E   |                           | JSIX-64S              | Mini-WECO |
| 64                   | 1.75"        | .500         | .500      | .500 | E   |                           | JSIX-64SF             | Mini-WECO |
| 64                   | 1.75"        | N/A          | .500      | .500 | A   | JS-64                     | JSI-64S               | J8 Series |
| 64                   | 3.50"        | .500         | .500      | .500 | E   | JS-64L                    | JSI-64L               | J8 Series |
| 64                   | 3.50"        | .500         | .500      | .500 | E   |                           | JSIX-64L              | Mini-WECO |
| 96                   | 3.50"        | .500         | .500      | .500 | J   | JS-96A                    | JSI-96A               | J8 Series |
| 96                   | 3.50"        |              | Not Shown |      |     | JS-96B                    | JSI-96B               | J8 Series |
| 128                  | 3.50"        | .500         | .500      | .500 | H   |                           | JSIX-128              | Mini-WECO |

**Miniature 75Ω Coax Patch Panels ...** for high density, low VSWR, 75Ω coaxial applications (microwave, sub-carrier telephone systems, etc.). Trompeter's J12 jack/ PL11C plug combination has a VSWR of 1:04:1 in the 60-80 MHz range. **Miniature 50Ω Coax Patch Panels...** for high density 50Ω patching. 19" panels tapped .312-32-2A to accept J8 and J8D jacks. .50" center-to-center vertical and horizontal hole spacing (unless otherwise noted), insulated and non-insulated panels have stiffener bars.

**Note:** For Front Loading Modular Panels, see pages 56. "D" mounting hole specifications, see page 54. Many other panel configurations are available, contact the factory.

# STANDARD 19" PANELS/ D HOLE SPECIFICATIONS

## STANDARD PATCH PANELS

See page 53 for panel figure diagrams.

### STANDARD 19" PANELS... INSULATED, NON-INSULATED

| # of Holes | Panel Height | A     | Hole Spacing B | C     | (Foot Note) | Fig | Non-insulated Part # | Insulated Part # | Insulated Phenolic Part # |
|------------|--------------|-------|----------------|-------|-------------|-----|----------------------|------------------|---------------------------|
| 12         | 1.75"        | -     | 1.43"          | 1.43" | 1           | A   | JS-12                | JSI-12           |                           |
| 14         | 1.75"        | -     | 1.21"          | 1.21" | 1           | A   | JS-14                | JSI-14           |                           |
| 16         | 1.75"        | -     | 1.00"          | 1.00" | 1           | A   | JS-16                | JSI-16           |                           |
| 20         | 1.75"        | -     | .830"          | .830" | 1           | A   | JS-20                | JSI-20           |                           |
| 24         | 1.75"        | -     | .625"          | .750" | 1           | A   | JS-24S               | JSI-24S          |                           |
| 26         | 1.75"        | -     | .625"          | .625" | 1           | A   | JS-26                | JSI-26           |                           |
| 28         | 1.75"        | -     | .625"          | .625" | 1           | A   | JS-28                | JSI-28           |                           |
| 32         | 1.75"        | .625" | 1.00"          | 1.00" | 2           | B   | JS-32S               | JSI-32S          | JSIB-32S                  |
| 40         | 1.75"        | .625" | .830"          | .830" | 2           | B   | JS-40S               | JSI-40S          | JSIB-40S                  |
| 48         | 1.75"        | .625" | .625"          | .750" | 2           | B   | JS-48S               | JSI-48S          | JSIB-48S                  |
| 52         | 1.75"        | .625" | .625"          | .625" | 2           | B   | JS-52S               | JSI-52S          | JSIB-52S                  |
| 24         | 3.50"        | .625" | 1.43"          | 1.43" | 2           | C   | JS-24L               | JSI-24L          |                           |
| 24         | 3.50"        | 1.00" | 1.43"          | 1.43" | 1           | C   | JS-24W               | JSI-24W          |                           |
| 28         | 3.50"        | .625" | 1.21"          | 1.21" | 2           | C   | JS-28A               | JSI-28A          |                           |
| 28         | 3.50"        | 1.00" | 1.21"          | 1.21" |             | C   | JS-28W               | JSI-28W          |                           |
| 32         | 3.50"        | .625" | 1.00"          | 1.00" | 2           | C   | JS-32A               | JSI-32A          | JSIB-32A                  |
| 36         | 3.50"        | .625" | .625"          | .750" | 2           | I   | JS-36                | JSI-36           |                           |
| 36         | 3.50"        | .625" | .830"          | .830" | 2           | C   | JS-36A               | JSI-36A          |                           |
| 40         | 3.50"        | .625" | .830"          | .830" | 2           | C   | JS-40                | JSI-40           | JSIB-40                   |
| 40         | 3.50"        | 1.00" | .830"          | .830" | 1           | C   | JS-40W               | JSI-40W          | JSIB-40W                  |
| 48         | 3.50"        | .625" | .625"          | .750" | 2           | C   | JS-48                | JSI-48           | JSIB-48                   |
| 48         | 3.50"        | .625" | .625"          | .625" | 2           | C   | JS-48A               | JSI-48A          | JSIB-48A                  |
| 52         | 3.50"        | 1.00" | .625"          | .625" |             | C   | JS-52W               | JSI-52W          | JSIB-52W                  |
| 52         | 3.50"        | .625" | .625"          | .625" | 2           | C   | JS-52                | JSI-52           | JSIB-52                   |
| 56         | 3.50"        | .625" | .625"          | .625" | 2           | C   | JS-56                | JSI-56           | JSIB-56                   |
| 72         | 3.50"        | .625" | .680"          | .680" | 3           | D   | JSS-72               | JSIS-72          |                           |

1 Will not accept dual jacks (e.g. J14, J214, J314, J74) 2 Will not accept jacks requiring hole spacing(A) larger than .625" 3 Will accept 3 barrel jack only

Note: JSIB (Fig. B and C) panels have .459 dia typ.

### "D" HOLE SPECIFICATIONS

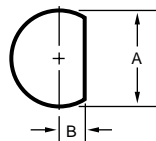
Throughout the catalog you will find "D" holes called out for bulkhead jacks. The "D" hole is the cutout pattern designated for the proper fit of bulkhead jacks into distribution panels.

"D" Hole Type    Maximum panel thickness    **Example: D3.148**

| "D" Hole Type | Double "D" Hole |       |
|---------------|-----------------|-------|
|               | A               | B     |
| D1            | .755"           | .343" |
| D2            | .630"           | .281" |
| D3            | .505"           | .218" |
| D4            | .439"           | .187" |
| D5            | .380"           | .156" |
| D6            | .317"           | .128" |
| D7            | .281"           | .125" |
| D8            | .605"           | .280" |
| D9            | .567"           | .257" |
| D10           | .192"           | .079" |
| D11           | 1.005"          | .470" |

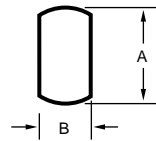
Many other panel hole configurations available, contact the factory.

### "D" HOLES



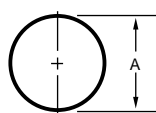
Circular Hole

### DOUBLE "D" HOLES

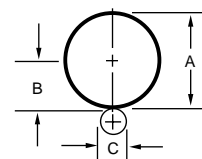


Double Circular Hole

| Circular Hole |             | Double Circular Hole |             |
|---------------|-------------|----------------------|-------------|
|               | A           |                      |             |
| C1            | .317"-.321" | CC1                  |             |
| C2            | .380"-.385" | A                    | .630"       |
| C3            | .442"-.447" | B                    | .370"       |
| C4            | .474"-.480" | C                    | .136"-.140" |
| C5            | .505"-.510" |                      |             |
| C6            | .755"-.760" |                      |             |



CIRCULAR HOLES



# STANDARD TWINAX/TRIAX PATCHING & CABLE ASSEMBLIES

**PATCH JACK** **J70**

PL71-7 Shown **PATCH PLUG** **PL71-7**

**PATCH JACK** **J72**  
**TRB 3-LUG**

**TERMINATION** **TPT-1-R**  
**RFI CAP** **RFI 70-1**

For patch jack, no chain  
For other chain options see page 45.

**PATCH JACK** **J72D**  
**SHIELDED** **J72S-1**

Without hood  
With hood

**PATCH CORD** **PTW-L-Z**  
**PATCH PLUG TO PATCH PLUG** **PTR-L-Z**

Twinax  
Triax

**CABLE ASSEMBLY** **PTWX-L-Z**  
**TRB 3-LUG PLUG TO PATCH PLUG** **PTRX-L-Z**

Twinax  
Triax

**CABLE ASSEMBLY** **PTWY-L-Z**  
**TRB 3-LUG PLUGS** **PTRY-L-Z**

Twinax  
Triax

Bend relief available, call factory.

**PATCH JACK** **J72SM**  
**SINGLE ENTRY WITH 20 DB ISOLATED MONITORING JACK**

ENTRY **J72SM - 1**  
**TRB 3-LUG** **J72SM - 2**  
**TRT THREADED** **J72SM - 3**  
**CABLE (SHOWN)** **J72SM - 4**

**PARALLEL PATCH CORD** **PTWS-L-Z**  
**PTRS-L-R**

Twinax  
Triax

△ - Refers to Cable Group Table, see pages 91-133. Panels are on page 51-54

# STANDARD TWINAX/TRIAX PATCHING

PL71L-9 Shown

**TWINAX PATCH PLUG** **PL71L- $\Delta$**

| DASH NO. | CONNECTOR TYPE |        |  | A DIM | B DIM |
|----------|----------------|--------|--|-------|-------|
|          | P1 & P2        | P3     |  |       |       |
| -1       | BJ20           | BJ77   |  | 1.166 | 1.988 |
| -2       | PL21           | BJ77   |  | 1.185 | 2.177 |
| -3       | PL21           | BJ77   |  | 1.185 | 2.256 |
| -4       | BJ20           | BJ77   |  | 1.166 | 1.988 |
| -5       | BJ20           | PL3155 |  | 1.166 | 2.385 |
| -6       | BJ20           | PL375  |  | 1.166 | 2.666 |
| -7       | UPL21          | BJ77   |  | 1.186 | 2.256 |

**FIXED PARALLELING JACKS** **305-0138**-(see chart)

2 BNC JACKS TO 1 TRB JACK  
2 BNC PLUGS TO 1 TRB JACK  
2 BNC PLUGS TO 1 TRB JACK

**TWINAX PATCH CORD** **Twiax PTWL-L-Z**  
**TRIAx** **Triax PTRL-L-Z**

**TWINAX DUAL PATCH CORD** **DPLTWLS-L-Z**

LPTWL-78 Shown

**TWINAX LOOPING PLUG** **LPTWL-Z**  
**TRIAx** **LPTRL-Z**

**TWINAX PATCH JACK** **J72L**  
**TRB 3-LUG**

**FRONT-LOADING MODULAR PANELS**  
FOR USE WITH J74MST-R PATCH JACKS (PG. 57)

**JSISM-60**

**JSISM-120**

| PANEL DIMENSIONS | MODULES/PANELS | JACKS/MODULE | JACKS/PANEL | PART NUMBER      |
|------------------|----------------|--------------|-------------|------------------|
| 19" X 3.483"     | 10             | 2            | 20          | <b>JSISM-60</b>  |
| 19" X 2.34"      | 10             | 4            | 40          | <b>JSISM-120</b> |

R-Resistance (1/2 W1%), Z- Denotes Cable Impedance.  $\Delta$ - Refers to Cable Group Table, see pages 91-133. Standard and Sub-miniature Panels, see pages 51-54

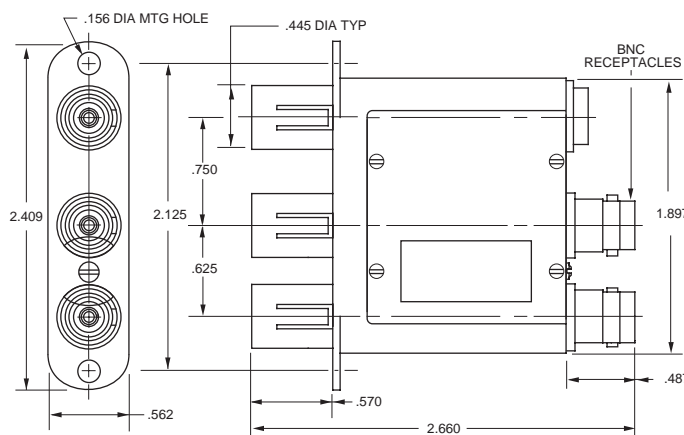


# STANDARD TWINAX/TRIAX NORMAL-THRU PATCH JACKS

## J74 Series

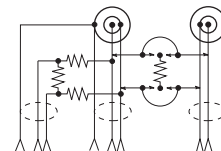


Trompeter's superior J74 Series of twinax/triax patch jacks provide a normal-thru signal path without the use of looping plugs or patch cords. Same body size as our J24 Series coax dual patch jacks. *It offers a self-wiping, self-normalizing switch with gold plated beryllium copper contacts, which provides positive electrical contact with 30,000 minimum mating cycles.* All metallic parts are machined, formed, or die-casted to extremely close tolerances which provide better intermateability improving EMI/RFI suppression and reduced signal loss. The TRB/TRT patch jack bodies are made of top-quality brass with a bright nickel-plated, non-tarnish finish, which resists tarnishing and the associated reduction of conductivity. Dielectrics are made of machined PTFE for superior dielectric properties and heat resistance. When you want performance and long-life, these patch jacks are what you need.



**J74MST-R SCHEMATIC**  
Monitor-Terminated

Plugging into the source side provides a resistive load to the monitored side. Separate 20 dB isolator jack and TRB input jacks for monitoring of the normal-thru signal.



### MONITOR-TERMINATED PATCH JACK PATENT DESIGN

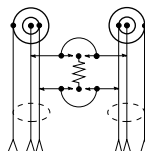
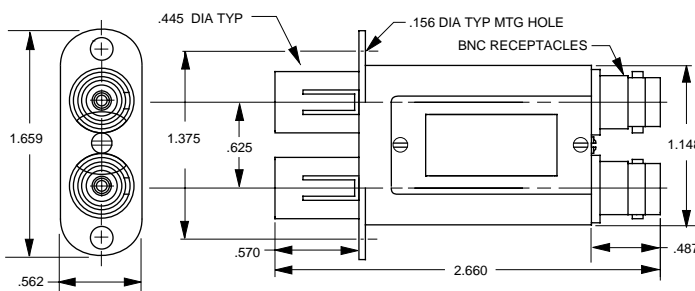
**J74MST-R**

(Use With Front Loading Modular Panels, see page 56)

### NORMAL-THRU PATCH JACK SELF-TERMINATING PATENT DESIGN

**J74T-R**

Provides a resistive load to the unused side of the jack. Insertion of a patch plug into the source side automatically terminates the load side. Plugging into the load side automatically terminates the source side.



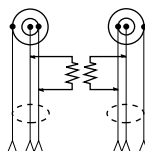
**J74T-R**  
Self-Terminating

Provides a resistive load to the unused side of the jack. Insertion of a patch plug into the source side automatically terminates the load side. Plugging into the load side automatically terminates the source side.

### DUAL PATCH JACK NORMALLY-TERMINATED PATENT DESIGN

**J74-2T-R**

Provides a resistive load.



**J74-2T-R**  
Normally-Terminated

Provides a resistive load.

*R-Resistance (1/2 W 1%). For standard panels see pages 51-54*

# SUBMINIATURE TWINAX/TRIAX PATCHING

PL150-29 Shown

**SUBMINIATURE PATCH PLUG** **PL150-**

**SUBMINIATURE PATCH JACK**  
Cable Entry Mount on JSIX panels (pages 51-54)

**J150-**

**SUBMINIATURE PATCH JACK**  
(Shown) TRS 3-lug  
TRS 4-lug  
TCM Threaded

**J152**  
**J152FL**  
**J3152**

**RFI CAP**  
FOR SUBMINIATURE PATCH JACK, NO CHAIN  
For other chain options see page 45.

**RFI 150-1**

**TERMINATION**  
FOR TRS\* 3-LUG JACK, NO CHAIN  
For other chain options see page 45.  
\*4-lug/threaded versions available

**TNGM1-1-R**

**SUBMINIATURE TWINAX/TRIAX PATCH JACK**  
*Smallest twinax/triax patch jack in the world!*

**J158**

**PATCH CORD**  
SUBMINIATURE PATCH PLUG TO SUBMINIATURE PATCH PLUG

Triax 50Ω, 75Ω  
Twinax 78Ω, 124Ω

**PTRM-L-Z**  
**PTWM-L-Z**

**CABLE ASSEMBLY**  
SUBMINIATURE PATCH PLUG TO TRS 3-LUG PLUG, 4-lug/threaded versions available

Triax 50Ω, 75Ω  
Twinax 78Ω, 124Ω

**PTRMX-L-Z**  
**PTWMX-L-Z**

**CABLE ASSEMBLY**  
TRS\* 3-LUG PLUG TO TRS\* 3-LUG PLUG \*4-lug/threaded versions available

Triax 50Ω, 75Ω  
Twinax 78Ω, 124Ω

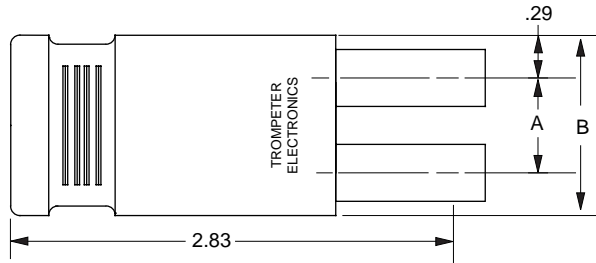
**PTRMY-L-Z**  
**PTWMY-L-Z**

**CABLE ASSEMBLY**  
METAL JUNCTION, RANDOM PARALLELING  
TWINAX 78Ω, 124Ω, TRIAX 50Ω & 75Ω  
TRS\* 3-LUG PLUGS \*4-lug/threaded versions available

**TNM3-Z**

- Refers to cable group table, see pages 91-133. For JSIX subminiature insulated panels see page 51-54. Other Terminations and RFI Caps, See pages 45-46.

# TWINAX/TRIAX STANDARD & SUBMINIATURE LOOPING PLUGS



## Standard Twinax/Triax Looping Plugs

|                                |                  |               |
|--------------------------------|------------------|---------------|
| <b>Handle:</b> A=.625" B=1.20" | <b>Impedance</b> | <b>Twinax</b> |
| PLAIN                          | 78Ω              | LPTW-78       |
| TEST POINT MONITOR             | 78Ω              | LPTW2TP-78    |
| TRB MONITOR                    | 78Ω              | LPTWA-78      |
| PLAIN                          | 124Ω             | LPTW-124      |
| TEST POINT MONITOR             | 124Ω             | LPTW2TP-124   |
| TRB MONITOR                    | 124Ω             | LPTWA-124     |

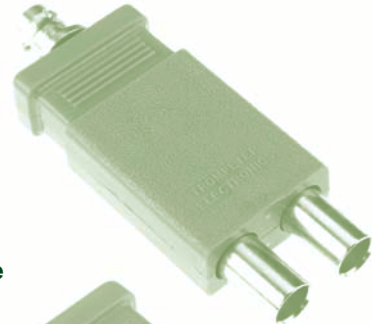
|                                |                  |               |
|--------------------------------|------------------|---------------|
| <b>Handle:</b> A=1.00" B=1.57" | <b>Impedance</b> | <b>Twinax</b> |
| PLAIN                          | 78Ω              | LPLTW-78      |
| TEST POINT MONITOR             | 78Ω              | LPLTW2TP-78   |
| TRB MONITOR                    | 78Ω              | LPLTWA-78     |
| PLAIN                          | 124Ω             | LPLTW-124     |
| TEST POINT MONITOR             | 124Ω             | LPLTW2TP-124  |
| TRB MONITOR                    | 124Ω             | LPLTWA-124    |

|                                |                  |              |
|--------------------------------|------------------|--------------|
| <b>Handle:</b> A=.625" B=1.20" | <b>Impedance</b> | <b>Triax</b> |
| PLAIN                          | 50Ω              | LPTR-50      |
| TRB MONITOR                    | 50Ω              | LPTRA-50     |
| PLAIN                          | 75Ω              | LPTR-75      |
| TRB MONITOR                    | 75Ω              | LPTRA-75     |

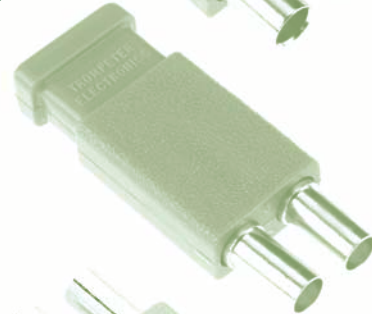
|                                |                  |              |
|--------------------------------|------------------|--------------|
| <b>Handle:</b> A=1.00" B=1.57" | <b>Impedance</b> | <b>Triax</b> |
| PLAIN                          | 50Ω              | LPLTR-50     |
| TRB MONITOR                    | 50Ω              | LPLTRA-50    |
| PLAIN                          | 75Ω              | LPLTR-75     |
| TRB MONITOR                    | 75Ω              | LPLTRA-75    |

### LOOPING PLUG HANDLE EXAMPLES:

TRS/TRB Monitor



Plain Handle



Test Point Monitor

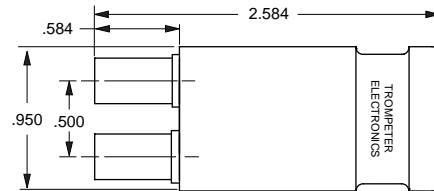


## Subminiature Looping Plugs

|                 |                  |               |
|-----------------|------------------|---------------|
| <b>Handle</b>   | <b>Impedance</b> | <b>Twinax</b> |
| BLUE            | 78Ω              | LPTWM-78      |
| BLUE TRS JACKS  | 78Ω              | LPTWMA-78     |
| BLUE TEST POINT | 78Ω              | LPTWM2TP-78   |

|                 |      |              |
|-----------------|------|--------------|
| BLUE            | 124Ω | LPTWM-124    |
| BLUE TRS JACKS  | 124Ω | LPTWMA-124   |
| BLUE TEST POINT | 124Ω | LPTWM2TP-124 |

|               |                  |              |
|---------------|------------------|--------------|
| <b>Handle</b> | <b>Impedance</b> | <b>Triax</b> |
| YELLOW        | 50Ω              | LPTRM-50     |
| YELLOW        | 75Ω              | LPTRM-75     |



LPTWM-Z SHOWN  
Z = IMPEDANCE

## HIGH FREQUENCY VIDEO PATCHING

The J314MW is a low profile jack designed for HDTV digital applications where space allocation is critical (see Application Notes). Smaller and with a lower profile than the standard WECO jacks, the J314MW allows for 128 ports in the same rack space as 48 standard jacks, a density improvement of 30% more patching. This miniature high frequency dual coaxial "normal-thru" digital patch jack establishes a benchmark for superior mechanical design, wideband performance, dependability and reliability at a highly competitive price.

Designed with a short signal path to better control matched impedance, the robust 75 ohm design offers extended bandwidth of 1MHz to 3GHz with return loss performance of 23dB @ 2.2GHz (the highest frequency required for uncompressed 1080i). This performance is fully 8dB better than the SMPTE292M requirement. The J314MW achieves full uncompressed signal processing capability through 3GHz at performance levels of -20dB in the normal-through condition and -15dB in the patch through mode.

The Trompeter jack is designed lighter and uses fewer moving parts than other designs. The J314MW weighs 36 grams compared to similar competitive products weighing 81 grams on average - a weight savings of 56%! The design provides self-wiping action upon plug insertion, a proven approach for circular plug applications, eliminating the need for heavy and complex dust control plungers and multiple actuators common to other designs.

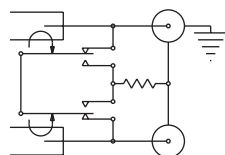
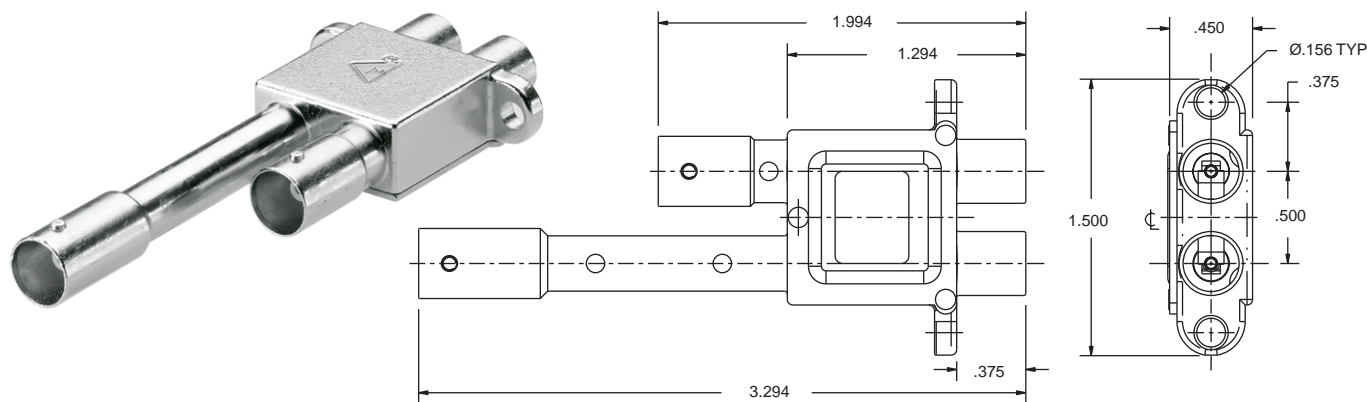
Precision construction, use of the finest materials, true impedance matched components and outstanding RF performance combined with Trompeter's tradition of superior reliability makes this product a benchmark for outstanding value.

### Application Notes:

This mini-WECO patch jack is ideal for mobile video news vans, high density in-station patching, remote site trucks, uplink/downlink stations, and cable headends when higher frequency, high density applications for HDTV video signals are or will be used. Trompeter's new J314MW high frequency miniature dual coaxial "normal-thru" digital patch jack establishes a benchmark for superior mechanical design, wideband performance, dependability and reliability.

Offering a short signal path to better control matched impedance, its robust 75 ohm design also offers extended bandwidth of 1MHz to 3GHz with return loss performance @2.25GHz (the highest frequency required for uncompressed 1080i) that is fully 8dB better than the SMPTE292M requirement.

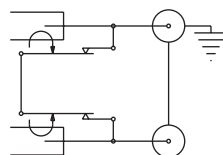
Smaller and with a lower profile than the standard WECO jacks, the J314MW allows for as many as 32 jacks in a one rack unit high panel.



J314MWT

#### J314MWT (Self-terminating)

Inserting a plug into the source side automatically terminates the load side. Insertion into the load side automatically terminates the source side. Either provides a resistive load to the unused side.



J314MW

#### J314MW (Non-terminated)

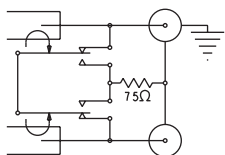
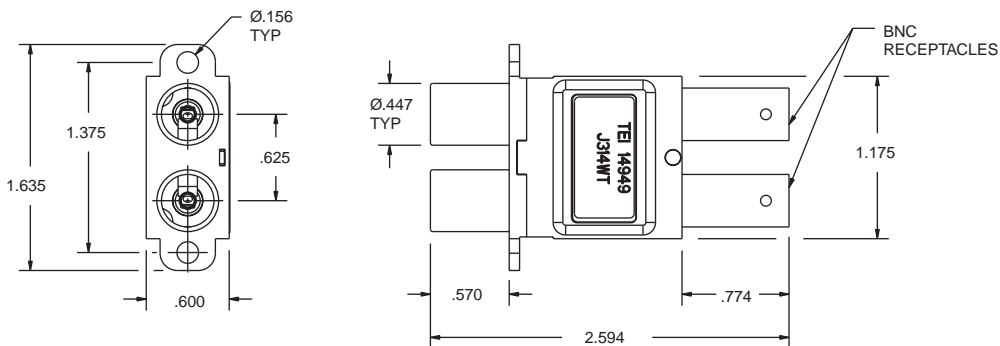
Inserting a plug into either side breaks the normal-through. Normal-thru is BNC to BNC.

### HDTV-READY HIGH FREQUENCY 75 OHM DUAL COAXIAL NORMAL-THRU MINI-WECO PATCH JACK

Un-Terminated  
Terminated

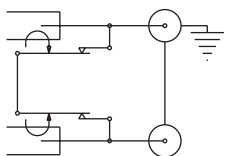
J314MW  
J314MWT

# HIGH FREQUENCY VIDEO PATCHING



**J314WT**

**J314WT (Self-terminating)**  
 Inserting a plug into the source side automatically terminates the load side. Insertion into the load side automatically terminates the source side. Either provides a resistive load to the unused side.



**J314W**

**J314W (Non-terminated)**  
 Inserting a plug into either side breaks the normal-through. Normal-thru is BNC to BNC.



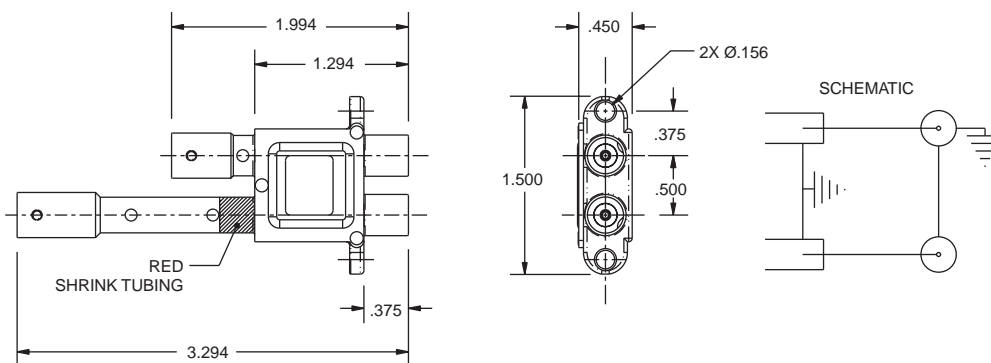
## HDTV-READY HIGH FREQUENCY 75 OHM WECO PATCH JACK, NORMAL-THRU, DUAL COAXIAL

Un-Terminated **J314W**  
 Terminated **J314WT**

## HIGH FREQUENCY VIDEO PATCHING

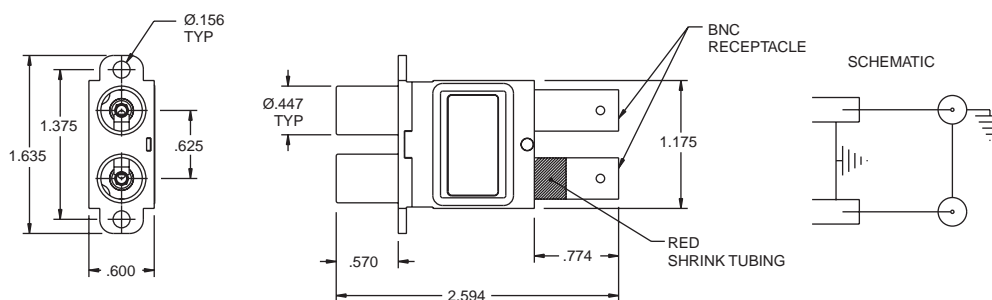
The J315MW is superior quality, high bandwidth, dual video patch jack. This low profile, high performance component is designed for HDTV digital applications where space allocation is critical, such as in video truck application. It is ideal for situations where self-normalling is not practical, usually due to environmental considerations such as high ambient airborne particles or high vibration.

When used in conjunction with the LPMWHF looping plug, a "normal-thru" circuit is achieved, which will pass the full 1.485 Gbps of uncompressed data (2.25GHz of frequency) needed for HDTV, with return loss performance which exceeds SMPTE292M requirements. This high performance is maintained when patching from one location to another, using the PCMWB-L patch cord (call factory).



### HDTV READY HIGH FREQUENCY 75 OHM DUAL COAXIAL MINI-WECO PATCH JACK WITH BNC RECEPTACLES

Un-Terminated **J315MW**

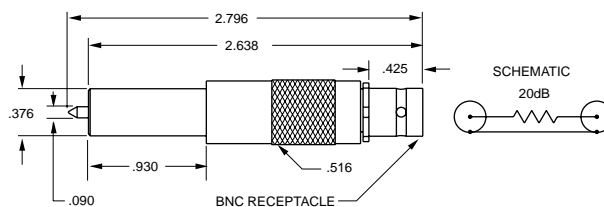


### HDTV READY HIGH FREQUENCY 75 OHM DUAL COAXIAL WECO PATCH JACK WITH BNC RECEPTACLES

Un-Terminated **J315W**

### COAXIAL VIDEO MONITOR PROBE BNC JACK **MP20W**

Monitors J314, J214 and J14 Series without interruption of normal-thru signal.



# STANDARD COAX PATCH JACKS

Patch Jacks J15, J14, J24, and J314 can be mounted vertically or horizontally on 5/8" centers. Mounting tabs are normally "back-to-back" as shown. For side-by-side tabs for horizontal mounting, add the letter "L" for left-hand tabs or "R" for right hand tabs (not available on J24, J214, and J314).

**TERMINATED:**  
PROVIDES A RESISTIVE LOAD TO THE UNUSED SIDE. INSERTING A PLUG INTO THE THE SOURCE SIDE AUTOMATICALLY TERMINATES THE LOAD SIDE. INSERTION INTO THE LOAD SIDE AUTOMATICALLY TERMINATES THE SOURCE SIDE.

**UN-TERMINATED:**  
INSERTING A PLUG INTO EITHER SIDE BREAKS THE NORMAL-THRU.

**MONITOR-TERMINATED:**  
INSERTING A PLUG INTO THE SOURCE SIDE PROVIDES A RESISTIVE LOAD TO THE LOAD SIDE. INSERTION INTO THE LOAD SIDE MONITORS THE NORMAL-THRU SIGNAL ONLY.

**MONITOR:**  
INSERTING A PLUG INTO THE SOURCE SIDE BREAKS THE NORMAL-THRU. INSERTION INTO THE LOAD SIDE MONITORS THE NORMAL-THRU SIGNAL ONLY.

**SCHEMATICS**

**J14 SERIES**  
**50Ω RCA STANDARD**

| Rear Entry  | Configuration      | Center-pin | Part#             |
|-------------|--------------------|------------|-------------------|
| BNC         | Unterminated       | .070"      | <b>J14</b>        |
| BNC         | Terminated         | .070"      | <b>J14T-R</b>     |
| BNC         | Monitor            | .070"      | <b>J14M</b>       |
| BNC         | Monitor-Terminated | .070"      | <b>J14MT-R</b>    |
| TNC         | Unterminated       | .070"      | <b>J14H</b>       |
| TNC         | Terminated         | .070"      | <b>J14HT-R</b>    |
| TNC         | Monitor            | .070"      | <b>J14MH</b>      |
| TNC         | Monitor-Terminated | .070"      | <b>J14MHT-R</b>   |
| Cable Crimp | Unterminated       | .070"      | <b>J14C-△</b>     |
| Cable Crimp | Terminated         | .070"      | <b>J14CT-R-△</b>  |
| Cable Crimp | Monitor            | .070"      | <b>J14MC-△</b>    |
| Cable Crimp | Monitor-Terminated | .070"      | <b>J14MCT-R-△</b> |

**HIGH FREQUENCY NORMAL-THRU WITH MONITOR DUAL COAX PATCH JACK**  
*To be used with grey aluminum insulated panel..JSIS-72 (see page 54)*

**J24WMSTHF-75**

**SCHEMATIC**

**J15 SERIES CABLE REAR ENTRY**  
Normally one BNC or TNC rear entry connection.

| REAR ENTRY   | PREWIRED? | CENTER PIN | 50Ω RCA       |
|--------------|-----------|------------|---------------|
| BNC Single   | Y         | .070"      | <b>J15B</b>   |
| BNC Single   | N         | .070"      | <b>J15BA</b>  |
| BNC Dual     | Y         | .070"      | <b>J15BB</b>  |
| BNC Dual     | N         | .070"      | <b>J15BBA</b> |
| TNC Single   | Y         | .070"      | <b>J15H</b>   |
| TNC Single   | N         | .070"      | <b>J15HA</b>  |
| TNC Dual     | Y         | .070"      | <b>J15HH</b>  |
| TNC Dual     | N         | .070"      | <b>J15HHA</b> |
| Cable Single | N         | .070"      | <b>J15-△</b>  |

| REAR ENTRY   | PREWIRED? | CENTER PIN | 75Ω WE         |
|--------------|-----------|------------|----------------|
| BNC Single   | Y         | .090"      | <b>J15WB</b>   |
| BNC Single   | N         | .090"      | <b>J15WBA</b>  |
| BNC Dual     | Y         | .090"      | <b>J15WBB</b>  |
| BNC Dual     | N         | .090"      | <b>J15WBBA</b> |
| TNC Single   | Y         | .090"      | <b>J15WH</b>   |
| TNC Single   | N         | .090"      | <b>J15WHA</b>  |
| TNC Dual     | Y         | .090"      | <b>J15WHH</b>  |
| TNC Dual     | N         | .090"      | <b>J15WHHA</b> |
| Cable Single | N         | .090"      | <b>J15W-△</b>  |

Standard Panels see pages 42-45. △ - Refers to the cable group table, see pages 91-133. R-Resistance (1/2 W1%)

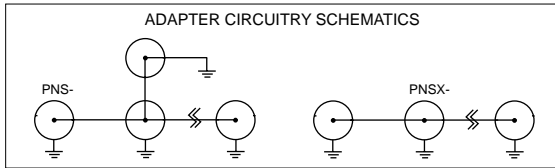
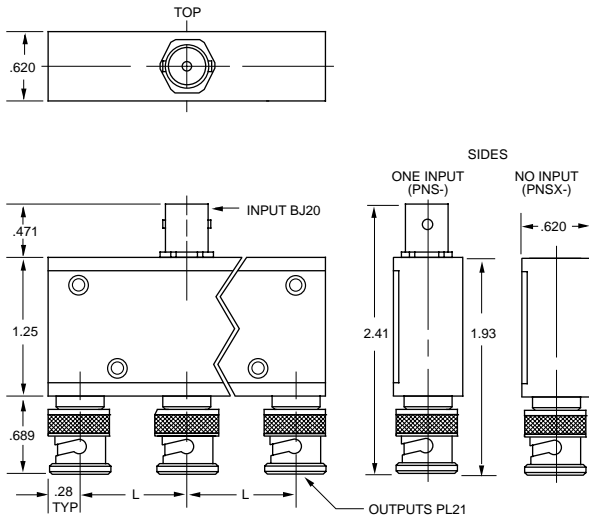
# COAX PATCHING ACCESSORIES

## ADAPTERS

### FIXED PARALLELING

50Ω BNCs

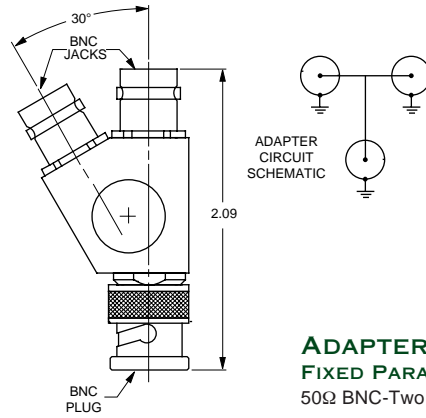
Call factory for 75Ω versions



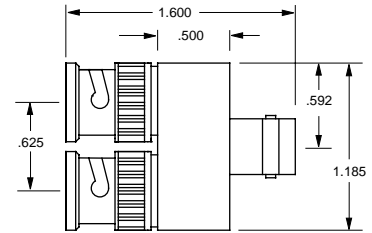
△ = NUMBER OF CONNECTORS

| "L"    | ONE INPUT | NO INPUT |
|--------|-----------|----------|
| 0.625" | PNS-B-△   | PNSX-B-△ |
| 0.750" | PNS-C-△   | PNSX-C-△ |
| 0.830" | PNS-D-△   | PNSX-D-△ |
| 0.875" | PNS-E-△   | PNSX-E-△ |
| 1.000" | PNS-F-△   | PNSX-F-△ |
| 1.125" | PNS-G-△   | PNSX-G-△ |
| 1.210" | PNS-H-△   | PNSX-H-△ |
| 1.250" | PNS-J-△   | PNSX-J-△ |
| 1.430" | PNS-K-△   | PNSX-K-△ |
| .0734" | PNS-L-△   | PNSX-L-△ |

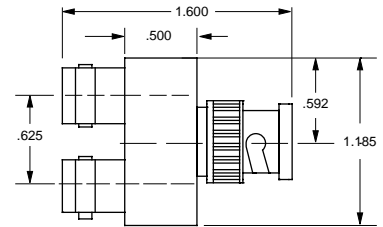
"L" Length in inches  
Also available with push-on connectors, call factory.



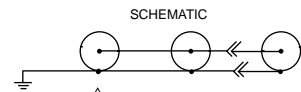
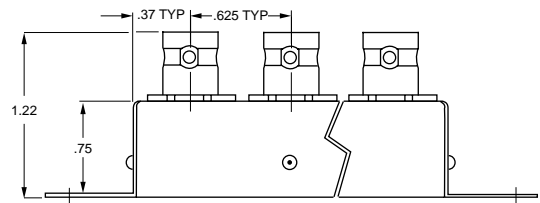
**ADAPTER**  
**FIXED PARALLELING**  
50Ω BNC-Two jacks, One plug **PN2C**



**ADAPTER**  
**FIXED PARALLELING**  
50Ω BNC-One jack, Two plugs **PN2**



**ADAPTER**  
**FIXED PARALLELING**  
50Ω BNC-Two jacks, one plug **PN2A**



△ = NUMBER OF CONNECTORS

**ADAPTERS**  
**MULTIPLE PARALLEL NETWORK**  
50Ω **MPN-△ /BNC**  
50Ω **MPN-△ /TNC**

Contact the Factory for more information



# COAX PATCH JACKS

J3W Shown

**PATCH JACK**  
**BNC REAR INTERFACE**

50Ω RCA Center pin-.070"  
75Ω WE Center pin-.090"

**J3**  
**J3W**

**PATCH JACK**  
**"N"**

50Ω "N", RCA Center pin -.070"  
75Ω "N", WE Center pin -.090"

**J9**  
**UJ9W**

Minimum vertical/horizontal centers .875"

**PATCH JACK**  
**CRIMP**

50Ω RCA Center pin-.070"  
75Ω WE Center pin-.090"

**J3C-⚠**  
**J3CW-⚠**

Microswitch not available.

**PATCH JACK**  
**BNC**

50Ω RCA Center pin-.070"  
75Ω WE Center pin-.090"

**J10**  
**J10W**

Requires special threaded panel .5-.28 UNEF-2A. Contact Factory when ordering panels.

**PATCH JACK**  
**SOLDER POT**

50Ω RCA Center pin-.070"  
75Ω WE Center pin-.090"

**J3D**  
**J3WD**

(WECo 468 type)

**PATCH JACK**  
**TNC**

50Ω RCA Center pin-.070"  
75Ω WE Center pin-.090"

**J5**  
**J5W**

J3E-1 Shown

**PATCH JACK**  
**CABLE ENTRY**

50Ω RCA Center pin-.070"  
75Ω WE Center pin-.090"

**J3E-⚠**  
**J3WE-⚠**

(WECo 447 type) Microswitch not available

**PATCH JACK**  
**SELF-TERMINATING**

BNC 50Ω RCA Center pin-.070"  
BNC 75Ω WE Center pin-.090"  
(WECo 477B type)

TNC 50Ω  
TNC 75Ω

**J13-R**  
**J13W-R**  
**J13H-R**  
**J13WH-R**

**BNC**  
**PATCH JACK**

50Ω RCA Center pin-.070"  
75Ω WE Center pin-.090"

**J3A**  
**J3WA**

External SPDT Microswitch (125-250 VAC, 5 amps/28 VDC, 1amp res, 3 amp. ind)

**PATCH JACK**  
**SELF-TERMINATING**

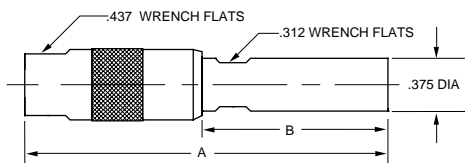
50Ω RCA Center pin-.070"  
75Ω WE Center pin-.090"

**J13C-R-⚠**  
**J13WC-R-⚠**

Cable crimp: Circuit is terminated when plug is removed.

⚠ - Refers to Cable Group Table, see pages 91-133. Standard Panels are on page 51-54. Consult with the factory for special requirements. R = Resistance

# STANDARD & MINI-WECO COAX PATCH PLUGS

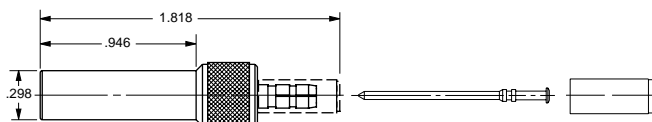


## PATCH PLUG

**SHIELD CRIMP** 50Ω RCA Center pin .070" A=2.73" B=1.50"  
75Ω WE Center pin .090" A=2.45" B=1.22"

**PL1C-△**  
**PL1WC-△**

(WECO 358 type)

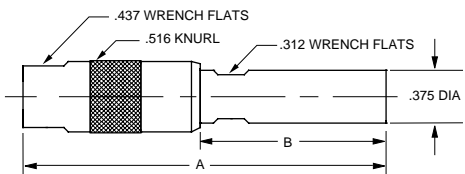


## PATCH PLUG

**STANDARD BNC STRIP DIMENSION**  
**CRIMP CONTACT, CRIMP SHIELD**

(WECO 440 Type)

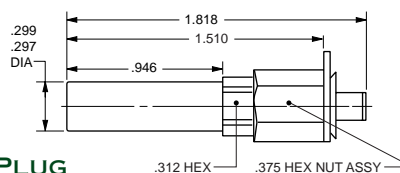
**PL11SC-△**



## PATCH PLUG

### CABLE ENTRY, FIELD SERVICEABLE

For RG58 **50Ω RCA Center pin .070"** A=2.80" B=1.568" ..... **PL1**  
For RG59 **50Ω RCA Center pin .070"** A=2.737" B=1.505" ..... **PL2**  
For RG58 **75Ω WE Center pin .090"** A=2.52" B=1.288" ..... **PL1W**  
For RG59 **75Ω WE Center pin .090"** A=2.457" B=1.225" ..... **PL2W**



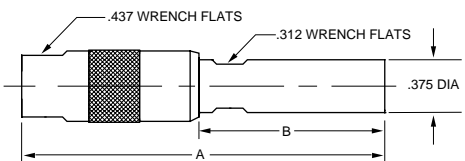
## PATCH PLUG

### STANDARD CRIMP PLUG

#### WITH LOCKING TAB

(WECO 440 Type)

**PL11SCLT-△**



## TERMINATION PLUG

### NO CHAIN

50Ω RCA Center pin .070"

A=2.81" B=1.58"

**TP-1-R**

### NO CHAIN

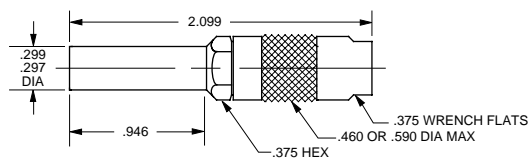
75Ω WE Center pin .090"

A=2.45" B=1.25"

**TPW-1-R**

For other chain options, see page 45.

(WECO 340C type)

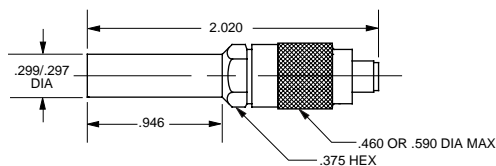


## PATCH PLUG

### SOLDER CONTACT, CRIMP SHIELD

(WECO 440 Type)

**PL11C-△**

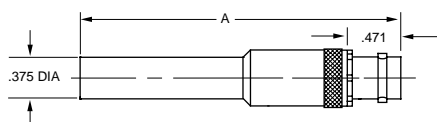


## PATCH PLUG

### CRIMP CONTACT, CRIMP SHIELD

(WECO 440 Type)

**PL11AC-△**



## ADAPTERS

### PATCH PLUG TO BNC/TNC

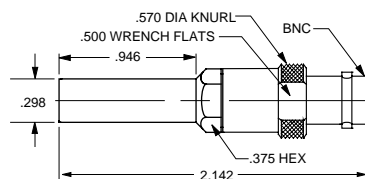
50Ω RCA plug Center pin .070" 50Ω BNC A =2.774" ..... **AD1**

50Ω RCA plug Center pin .070" 50Ω TNC A =2.774" ..... **ADH1**

75Ω WE Center pin .090" 75Ω BNC A =2.83" ..... **AD1W**

75Ω WE Center pin .090" 75Ω TNC A =2.83" ..... **ADH1W**

(WECO 358 type)



## ADAPTER

### 75Ω MINATURE PATCH PLUG (MINI-WECO TYPE)

TO 75Ω BNC

**ADMW12**

△ - Refers to cable group table, see pages 91-133. R-Resistance

# 75Ω MINI-WECO COAX PATCH JACKS

|              | A    | B    | C    |
|--------------|------|------|------|
| <b>J11B</b>  | .264 | .295 | .638 |
| <b>J11MW</b> | .375 | .375 | .728 |

**MINIATURE PATCH JACK**  
MINI-WECO TYPE  
BNC REAR INTERFACE

**J11MW**

|               | A    | B    | C    |
|---------------|------|------|------|
| <b>J11BL</b>  | .264 | .295 | .638 |
| <b>J11MWL</b> | .375 | .375 | .728 |

**MINIATURE PATCH JACK**  
MINI-WECO TYPE  
BNC REAR INTERFACE

**J11MWL**

| PL1MWLT-(DASH NO) |                     |       |
|-------------------|---------------------|-------|
| DASH NO           | CABLE ACCOMMODATED  | A HEX |
| -009              | 8218, BELDEN        | .178  |
|                   | 21-597, ESSEX       |       |
|                   | YR23023, BELDEN     |       |
| -013A             | TCC-75-2, TROMPETER | .255  |
|                   | 8241F, BELDEN       |       |
| -014              | 8212, BELDEN        | .255  |
| -025              | 734A TYPE           | .255  |
| -026              | 735A TYPE           | .178  |
| -027              | KS19224L2 LUCENT    | .178  |

**PATCH PLUG**  
MINI-WECO CRIMP PLUG  
WITH LOCKING TAB

**PL1MWLT-⚠**

**MINIATURE PATCH JACK**  
CABLE ENTRY, FIELD SERVICEABLE MINI-WECO TYPE  
Minimum .64" centers

**J12-⚠**

**MINIATURE PATCH JACK**  
SOLDER POT, MINI-WECO TYPE

**J11D**

**MINIATURE PATCH JACK**  
TPS, MINI WECO TYPE

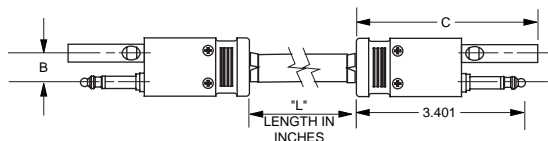
**J11**

**PATCH PLUG**  
MINI-WECO BNC STRIP DIMENSION  
CRIMP CONTACT, CRIMP SHIELD

**PL1MW-⚠**

⚠ - Refer to Cable Group Table, see pages 91-1313.

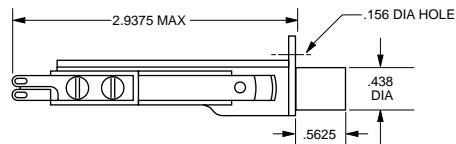
# AUDIO PATCHING, STANDARD COAX PATCHING & LOOPING PLUGS



## AUDIO/VIDEO PATCH CORD

VIOLET, 75Ω WE, .090" CENTER PIN

|             |            |           |           |
|-------------|------------|-----------|-----------|
| AVPCW-L-75  | AVPC-L-50  | B = .625  | C = 3.485 |
| AVPCLW-L-75 | AVPCL-L-50 | B = 1.000 | C = 3.765 |

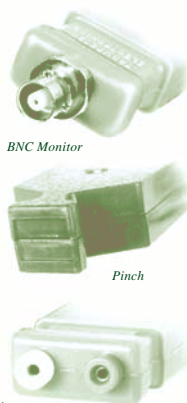
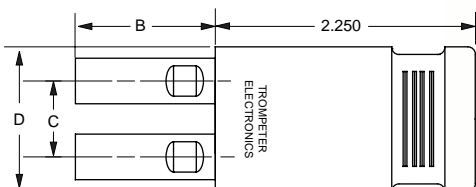


## SINGLE AUDIO JACK

3 CIRCUIT NORMALING  
JJO-42 TYPE

M641/3-2

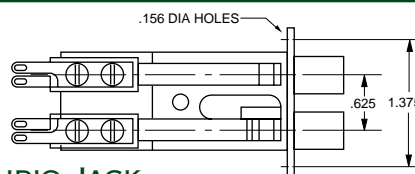
## Standard Coax Looping Plugs



Plain Handle Shown

### LOOPING PLUGS

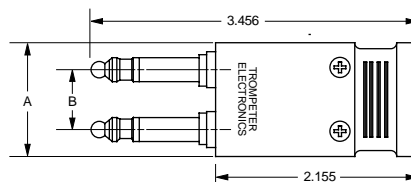
|                                 |            |         |
|---------------------------------|------------|---------|
| Handle: B=1.51" C=.625" D=1.20" | Center Pin | 50Ω RCA |
| PLAIN                           | .070"      | LP-Z    |
| PINCH                           | .070"      | LPP-Z   |
| TEST POINT SINGLE               | .070"      | LPTP-Z  |
| TEST POINT DUAL                 | .070"      | LP2TP-Z |
| BNC MONITOR                     | .070"      | LPA-Z   |



## DUAL AUDIO JACK

3 CIRCUIT NORMALING  
WECO 482A TYPE

MT389



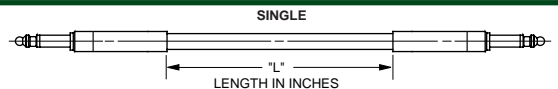
|       |           |           |
|-------|-----------|-----------|
| ALP3  | A = 1.200 | B = .625  |
| ALPL3 | A = 1.570 | B = 1.000 |

## LOOPING PLUG

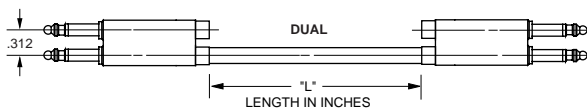
AUDIO (HAIR PIN)  
PLAIN

ALP3/ALPL3

|                                 |            |         |
|---------------------------------|------------|---------|
| Handle: B=1.51" C=1.00" D=1.57" | Center Pin | 50Ω RCA |
| PLAIN                           | .070"      | LPL-Z   |
| TEST POINT SINGLE               | .070"      | LPLTP-Z |
| BNC MONITOR                     | .070"      | LPLA-Z  |



|                                 |            |          |
|---------------------------------|------------|----------|
| Handle: B=1.25" C=.625" D=1.20" | Center Pin | 75Ω WE   |
| PLAIN                           | .090"      | LPW-Z    |
| PINCH                           | .090"      | LPPW-Z   |
| TEST POINT SINGLE               | .090"      | LPWTP-Z  |
| TEST POINT DUAL                 | .090"      | LPW2TP-Z |
| BNC MONITOR                     | .090"      | LPWA-Z   |

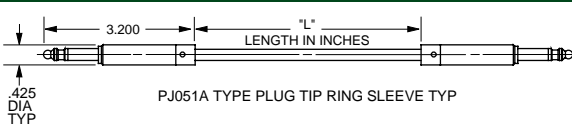


## AUDIO BANTAM PATCH CORDS

SINGLE PLUG  
DUAL PLUG

APCB-L  
APCDB-L

|                                 |            |          |
|---------------------------------|------------|----------|
| Handle: B=1.25" C=1.00" D=1.57" | Center Pin | 75Ω WE   |
| PLAIN                           | .090"      | LPLW-Z   |
| TEST POINT SINGLE               | .090"      | LPLWTP-Z |
| BNC MONITOR                     | .090"      | LPLWA-Z  |



## AUDIO PATCH CORDS

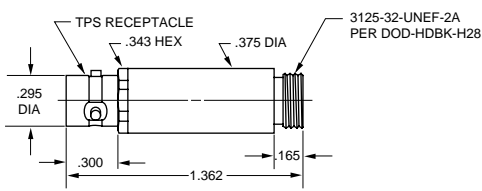
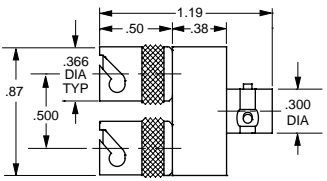
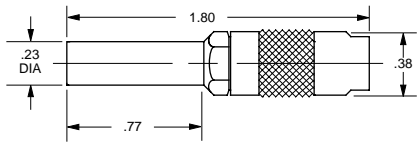
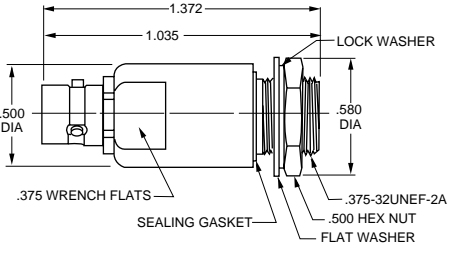
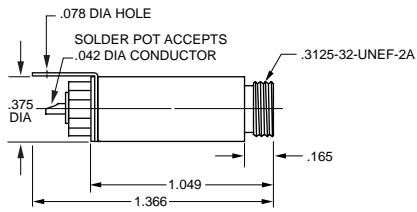
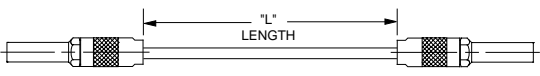
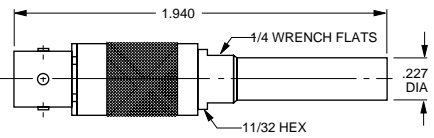

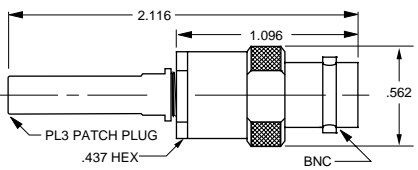
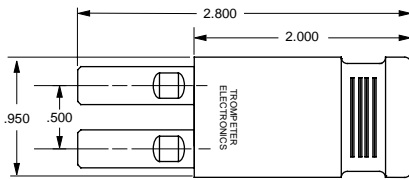
3-CIRCUIT ..... SEE TABLE BELOW

AUDIO PATCHCORDS: SPECIFY COLOR WHEN ORDERING: RED, BLACK, YELLOW, GREEN, BLUE, OR PURPLE

|       |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|
| COLOR | 12"     | 18"     | 24"     | 36"     | 48"     |
|       | APC3-12 | APC3-18 | APC3-24 | APC3-36 | APC3-48 |

Replace "L" with length in inches. For Audio Jack Fields call factory.

# 50Ω MINIATURE COAX PATCHING

|   |  |
|---|--|
|  <p><b>MINIATURE PATCH JACK</b><br/>TPS JACK<br/>TCM JACK (NOT SHOWN)</p> <p>50Ω 3-lug<br/>50Ω 4-lug<br/>50Ω Threaded</p> <p><b>J8</b><br/><b>J8FL</b><br/><b>J308</b></p> |  <p><b>ADAPTER</b><br/><b>FIXED PARALLELING</b><br/>50Ω TPS - ONE JACK, TWO PLUGS</p> <p><b>PNM2</b></p>                |
|  <p><b>MINIATURE PATCH PLUG</b><br/>50Ω SHIELD CRIMP</p> <p><b>PL3C-△</b></p>  |  <p><b>FEED THRU BULKHEAD MOUNT</b><br/>MINIATURE PATCH JACK</p> <p>50Ω <b>J8FT</b></p>                                  |
|  <p><b>MINIATURE PATCH JACK</b><br/>SOLDER POT</p> <p>50Ω <b>J8D</b></p>  |  <p><b>PATCH CORD</b><br/>50Ω MINIATURE PATCH PLUGS</p> <p><b>PCM-L-Z</b></p>  |
|  <p><b>ADAPTER</b><br/>50Ω MINIATURE PATCH PLUG TO 50Ω TPS JACK ...</p> <p><b>ADM1</b></p>   |  <p><b>PATCH CORD</b><br/>50Ω MINIATURE PATCH PLUG TO TPS PLUG</p> <p><b>PCMX-L-Z</b></p>                              |
|  <p><b>ADAPTER</b><br/>50Ω MINIATURE PATCH PLUG TO 50Ω BNC JACK</p> <p><b>ADM2</b></p>   |  <p><b>MINIATURE LOOPING PLUG</b><br/>HANDLE COLOR: GREEN = 50Ω,<br/>VIOLET = 75Ω, WHITE = 93Ω</p> <p><b>LPM-Z</b></p> |

Call factory for other miniature coax products. Z = denotes impedance of connecting cable in ohms

## CUSTOM CABLE ASSEMBLIES

### Custom Cable Assembly Lines

Trompeter's coax patch cords and cable assemblies are of the highest quality and can be ordered in any length. **Trompeter normally stocks popular lengths of 6", 12", 18", 24", 36", 48", 60", and 72"**. Standard coax patch cords and cable assemblies are made with the following cables: **Patch Cords and Cable Assemblies** are available in **50Ω RCA Standard** or **75Ω Western Electric (WECo) Standard**. The two standards are *not* interchangeable. "**L**" denotes the length in inches.

"**Z**" denotes the impedance of the connecting cable. Trompeter stocks many other connector types for 24 to 48 hour turnaround of custom cable assemblies including:

#### D-Subs & Backshells:

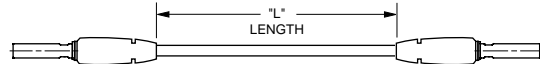
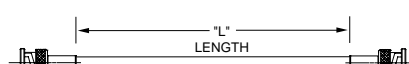
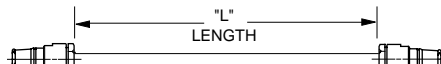
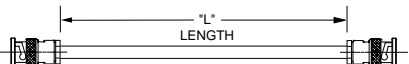
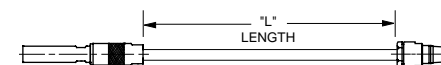
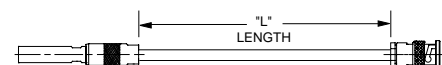
Male & Female 9,15,25,37 pin and more.

#### SMA/SMB/SMCs:

Straight and Right Angles for RG-58, RG-142, RG-174, RG-188, RG-316, and RG-400.



| Impedance | Cable Type | Trompeter Cable Part # |
|-----------|------------|------------------------|
| 50Ω       | RG-58      | TCC-50-2               |
| 75Ω       | RG-59      | TCC-75-2               |
| 93Ω       | RG-62      | N/A                    |

|   |  |
|---|--|
|  <p><b>PATCH CORDS</b> (SEE P/N BELOW)<br/> <b>PATCH PLUG TO PATCH PLUG</b><br/>           50Ω RCA PLUG CENTER PIN .070" <b>PC-L-Z</b><br/>           75Ω WE CENTER PIN .090" <b>PCW-L-Z</b><br/>           75Ω MINI-WECo <b>PCMW-L-Z</b></p>   |  <p><b>CABLE ASSEMBLY</b><br/> <b>BNC PLUG TO BNC PLUG</b><br/>           TOOL CRIMP BNC <b>50Ω PCYC-L-Z</b><br/> <b>75Ω UPCYC-L-Z</b></p>  |
|  <p><b>CABLE ASSEMBLY</b><br/> <b>PUSH-ON PLUG TO PUSH-ON PLUG</b><br/>           50Ω PUSH-ON <b>PCP-L-Z</b><br/>           75Ω PUSH-ON <b>UPCP-L-Z</b><br/>           Wrench Crimp push-on plugs fit both BNC and TNC jacks.</p>  |  <p><b>CABLE ASSEMBLY</b><br/> <b>BNC PLUG TO BNC PLUG</b><br/>           WRENCH CRIMP <b>50Ω BNC PCY-L-Z</b><br/> <b>75Ω BNC UPCY-L-Z</b></p>   |
|  <p><b>CABLE ASSEMBLY</b><br/> <b>PATCH PLUG TO PUSH-ON PLUG</b><br/>           50Ω RCA PLUG CENTER PIN -.070" <b>PCPX-L-Z</b><br/>           TO 50Ω PUSH-ON<br/>           50Ω RCA PLUG CENTER PIN -.070" <b>UPCPX-L-Z</b><br/>           TO 75Ω PUSH-ON<br/>           75Ω WE CENTER PIN -.090" <b>PCPWX-L-Z</b><br/>           TO 50Ω PUSH-ON<br/>           75Ω WE CENTER PIN -.090" <b>UPCPWX-L-Z</b><br/>           TO 75Ω PUSH-ON</p> |  <p><b>CABLE ASSEMBLY</b><br/> <b>PATCH PLUG TO BNC PLUG</b><br/>           50Ω RCA PLUG CENTER PIN .070" <b>PCX-L-Z</b><br/>           TO 50Ω BNC<br/>           50Ω RCA PLUG CENTER PIN .070" <b>UPCX-L-Z</b><br/>           TO 75Ω BNC<br/>           75Ω WE CENTER PIN .090" <b>PCWX-L-Z</b><br/>           TO 50Ω BNC<br/>           75Ω WE CENTER PIN .090" <b>UPCWX-L-Z</b><br/>           TO 75Ω BNC</p> |

# CUSTOM CABLE ASSEMBLIES

Contact our rapid response Custom Cable Assembly Department for your cable needs.  
 These paralleling cables can be specified with many other connector, cable, and color combinations.

### CABLE ASSEMBLIES RANDOM PARALLELING

| JUNCTION | CONNECTORS                   | PART #     |
|----------|------------------------------|------------|
| MOLDED   | 50Ω BNC-Two plugs, one jack  | *PN2B-Z    |
| MOLDED   | 75Ω BNC-Two plugs, one jack  | UPN2B-Z    |
| METAL    | 50Ω BNC-Two plugs, one jack  | PN2BE-Z    |
| METAL    | 75Ω BNC-Two plugs, one jack  | **UPN2BE-Z |
| MOLDED   | 50Ω BNC-Three plugs, no jack | *PN3-Z     |
| METAL    | 50Ω BNC-Three plugs, no jack | PN3E-Z     |
| METAL    | 50Ω BNC-Four plugs, one jack | PN4-Z      |

\* 50Ω or 75Ω Cable only  
 \*\* 75Ω or 93Ω Cable only

### PATCH CORDS TRIPLE PARALLELING

| JUNCTION | STANDARD                 | MAXIMUM LENGTH | PART#      |
|----------|--------------------------|----------------|------------|
| MOLDED   | 50Ω RCA CENTER PIN-.070" | 14"            | PCS-L-Z    |
| METAL    | 50Ω RCA CENTER PIN-.070" | None           | PCSE-L-Z   |
| MOLDED   | 75Ω WE CENTER PIN-.090"  | 14"            | PCWS-L-75  |
| METAL    | 75Ω WE CENTER PIN-.090"  | None           | PCWSE-L-75 |

Note: "Z" replace with impedance in ohms. "L" replace with length in inches.

## CUSTOM CABLE ASSEMBLIES

### Custom Cable Assemblies

Trompeter provides all the flexibility and response of a small cable shop, with the quality system and design control of a major connector manufacturer. For over **35 years**, Trompeter has been producing high quality cable assemblies, and currently provides over 500,000 different configurations using a broad range of RF connectors and cable types. We stock a variety of components for camera, RGB, S-Video, Audio, and many other applications.

### Capabilities

Trompeter can provide coax, twinax, and triax cable assemblies using any cable attached connector. This includes panel mount, data bus, multi-pin, D-Subs, SMA connectors, and patching products. Special marking (ID sleeves/tags, hot stamping, colored cable jacket, etc.) is available. Trompeter offers 24-48 hour turnaround on many standard products with full capabilities for sustained volume delivery. Deliveries can be adjusted to meet your specific needs.



Photo: Twinax/Triax connectors on ruggedized dual twinax/triax test cable (fire retardent cables).

### Quality Assurance... ISO 9001 Registered

Trompeter's assemblies are 100% electrically tested for continuity, shorts, and Hi-Pot. (VSWR, IR, Insertion / Return Loss test capabilities, SPC data available on request).

*Request For Quote...* Please refer to the following guideline when requesting a quote:

| 1   | 2      | 3 | 4     | 5 | 6      |   |        |   |                       |
|-----|--------|---|-------|---|--------|---|--------|---|-----------------------|
| Qty | Conn 1 | / | Cable | / | Conn 2 | / | Length | / | Special Requirements  |
| 12  | UPL220 | / | 735A  | / | PL11C  | / | 60"    | / | Bend relief on Conn 1 |
|     | /      | / | /     | / | /      | / | /      | / | /                     |

- 1 **Quantity** ..... Select quantity
- 2 **Conn1** ..... Select connector type from catalog.
- 3 **Cable** ..... Select cable from pages 91-133.
- 4 **Conn2** ..... Select connector type from catalog.
- 5 **Length** ..... In inches
- 6 Write out any **special** marking, testing, bend relief, packaging, or other **requirements**.

**EXAMPLE SHOWN:** 60 inch coax cable assembly using AT&T 735A, BNC plug, and Mini-WECo patch plug with bend relief on BNC plug.



TOOLS & ACCESSORIES

**Powered Cable Stripper**



This powerful, low-cost, portable hand-held (less than 2.25 lbs) cable stripper delivers, production quality performance, and gives you up to 250 strips per charge (7.2 V Ni-cad battery without memory effect). The replaceable, 3-level cutter head, is preset to strip your coax cable for Trompeter's 220 Series, Tool Crimp BNC connectors. The cutter head has adjustable depth cutter blades for precision tuning. Precision ground, tool steel blades (hardened to Rockwell 64) give you up to 15,000 strips! Rapid Charger/Reconditioner recharges your Ni-Cad in only 1.5 hours!

**Powered Cable Stripper Kits... (1 year Warranty)**

**Includes:** 1 Drive, 1 Ni-Cad Battery Pak, 1 Cutter Head, 1 Rapid Charger/Reconditioner, and 1 Carrying Case.

| CABLE TYPE | STRIPPER/CUTTER HEAD |
|------------|----------------------|
| FOR RG-59  | BCWS/C26T3D          |
| FOR 8281   | BCWS/C26T3U          |

**Cutter Head Guide**

| Cable Outside Diameter | 2-Blade Cut | 3-Blade Cut |
|------------------------|-------------|-------------|
| .070-.110              | C26T2A      | C26T3A      |
| .160-.215              | C26T2B      | C26T3B      |
| .190-.230              | C26T2C      | C26T3C      |
| .235-.270              | C26T2D      | C26T3D      |
| .300-.430              | C26T2E      | C26T3E      |
| .110-.160              | C26T2I      | C26T3I      |
| .271-.305              | C26T2U      | C26T3U      |

**Important Note:** The 3-level cutter heads included in the kits are set to the same stripping dimensions as our STC-F (see below) stripping cassette for Trompeter "Tool Crimp" BNC cable connectors.

Use 2-level cutter heads for Trompeter "Wrench Crimp" BNC cable connectors.

**Additional Accessories...**

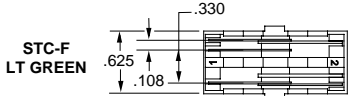
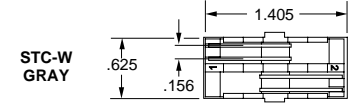
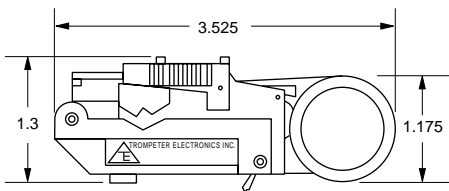
|  |                 |               |                    |
|--|-----------------|---------------|--------------------|
| Extra Cutter heads                                 | See guide above |               |                    |
| DC Driver (only) - Requires cutter head from above |                 |               | <b>BWS</b>         |
| AC Driver (only) - Requires cutter head from above |                 |               | <b>AWS</b>         |
|  | <b>Europe</b>   | <b>UK</b>     | <b>N/S America</b> |
| Rapid Charger/Reconditioner                        |                 |               | <b>BWCC-NSA</b>    |
| Ni-Cad Battery Pak                                 | <b>EBP-EU</b>   | <b>EBP-UK</b> | <b>EBP-NSA</b>     |
| AC Power Converter                                 | <b>AWC-EU</b>   | <b>AWC-UK</b> | <b>AWC-NSA</b>     |
| AC Charger Cord                                    | <b>BWC-EU</b>   | <b>BWC-UK</b> | <b>BWC-NSA</b>     |
| Auto 12V DC Charger                                | <b>DWC</b>      | <b>DWC</b>    | <b>DWC</b>         |

**Manual Cable Stripping Tools**



**Cable Cutting Tool**

Designed to cut Coax cable without compressing dielectric or damaging center conductor.  
CUTTING TOOL **700-0024**



**Cable Stripping Tool**

Tool (only) - Requires blade cassette listed **ST1**  
Cassette (For Tool Crimp BNC Connectors) **STC-F**  
Cassette (For Wrench Crimp BNC Connectors) **STC-W**

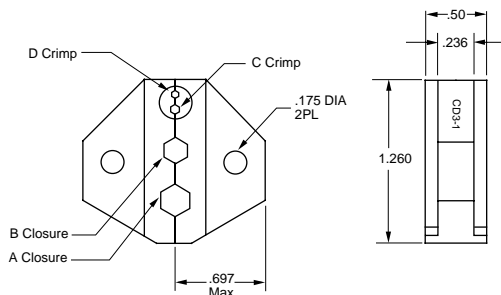
# TOOLS & ACCESSORIES

## Crimp Tools



CT4L (RECOMMENDED)

**CRIMP TOOL** (Die not included, for crimp dies see below)  
**FRAME** CT4L (BLACK W/ LONGER ERGONOMIC HANDLE)



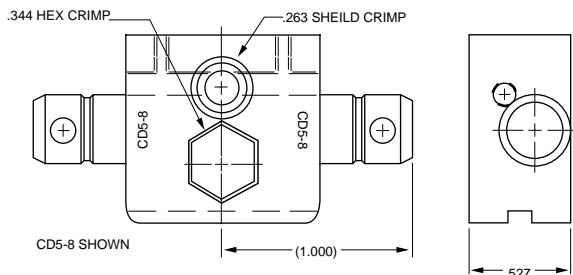
| Outer Sleeve | A    | Embosses | B    | Embosses |
|--------------|------|----------|------|----------|
| CD3-1        | .213 | 1A       | .178 | 1B       |
| CD3-2        | .324 | 2A       | .255 | 2B       |
| CD3-3        | .344 | 3A       | .290 | 3B       |
| CD3-5        | -    | -        | .197 | 5B       |
| CD3-21       | .290 | 290      | .255 | 255      |
| CD3-22       | .404 | 404      | .068 | -        |

For crimp dies not listed, call the factory.



### TWINAX/TRIAX CRIMP TOOL FOR BUSHING/SHIELD

CRIMP TOOL ONLY **M22520/5-01**  
 CRIMP TOOL WITH DIE **M22520/5-01/CD5-#**



(Daniels HX4 or equivalent)

For Standard and Miniature Twinax/Triax patching: 70 Series: TRB/TRT, 150 Series: TRS/TTM, 450 Series: 2-lug/3-lug/threaded connectors.

| Connector Series                                   | Cable Type | Cable Group#                    | Bushing/Shield Crimp Die  | Center Contact Crimp Tool Part #            | Center Contact Positioner Part # |
|--|------------|---------------------------------|---------------------------|---|----------------------------------|
| 70C<br>PLR70C<br>PLR155AC                          | Twinax     | 201-225                         | CD5-8 (Daniels Y778)      | M22520/1-01<br>(Daniels AF8 or equivalent)  | 010-0044 Pin (TP837)             |
|  | Triax      | 301-309                         | CD5-10 (Daniels Y776)     |   | 010-0045 Socket (TP838)          |
| Small Body 150AC                                   | Twinax     | 201-206, 208, 209, 217-223      | CD5-9 (Daniels Y687)      | M22520/2-01<br>(Daniels AFM8 or equivalent) | 010-0041                         |
|  | Triax      | 301-304, 309                    | CD5-11 (Daniels Y777)     |   |                                  |
| Large Body 150AC                                   | Twinax     | 207, 210, 211-216, 224-225      | CD5-8 (Daniels Y778)      | M22520/2-01<br>(Daniels AFM8 or equivalent) | 010-0043                         |
|  | Triax      | 305-306, 308                    | CD5-13 (Daniels Y803)     |   |                                  |
|  | Triax      | 307                             | CD5-10 (Daniels Y776)     |   | M22520/1-01                      |
| PL75MC   | Twinax     | 201-225                         | CD5-14                    | M22520/2-01 (Daniels AFM8 or equiv)         | 010-0096                         |
|  |            | 226                             | CD5-15                    |   | M22520/2-01                      |
| 450AC  | Twinax     | 201-206, 208, 209, 212, 217-223 | CD5-9 (Daniels Y687)      | M22520/2-01                                 | 010-0041                         |
| PLR450   | Twinax     | 201-206, 208, 209, 212, 217-223 | CD5-120 (Daniels Y789(F)) | M22520/2-01<br>(Daniels AFM8 or equivalent) | 010-0041                         |
| M39029/90-529<br>SPC8P-<br>M39029/91-530<br>SPC8S- | Twinax     | 201-205, 217, 218, 221,222      | CD5-4 (Daniels Y631)      | M22520/2-01<br>(Daniels AFM8 or equivalent) | Daniels K709                     |
|  | Triax      | 301-303                         | CD5-7 (Daniels Y775)      |   |                                  |

\* Note: Dies imprint either cavity (A/B) or hex size onto crimp sleeve. Custom dies are available for special imprints.

TOOLS & ACCESSORIES

**Twinax/Triax  
Cable Assembly Tester**



The Twinax/Triax Cable Assembly Tester is designed to test for opens, shorts, and cross wired connectors. The tester comes complete with terminators and testing instructions. This tool is designed to provide quick verification of TRB cable assemblies in the palm of your hands. The compact hand held unit measures 2 3/4" x 4 1/2" and provides versatility for testing connectors in the field. The unit comes in a soft zipper case which includes a 9v battery and terminators for standard TRB plugs. It can also be used for other connector families with an adapter, or short jumper cable when used with the proper termination.

**TWINAX/TRIAX CABLE ASSEMBLY  
CONNECTOR TEST SET 010-0123**

- ▲ 3 Conductors which test for opens, shorts, and cross connects
- ▲ Concentric TRB Interface, which tests both Twinax and Triax
- ▲ Pass/Open/Short LED indicators
- ▲ Easy to follow testing instructions
- ▲ Complete with terminators, carrying case, and a 9V battery.

**BNC Coax Tester**

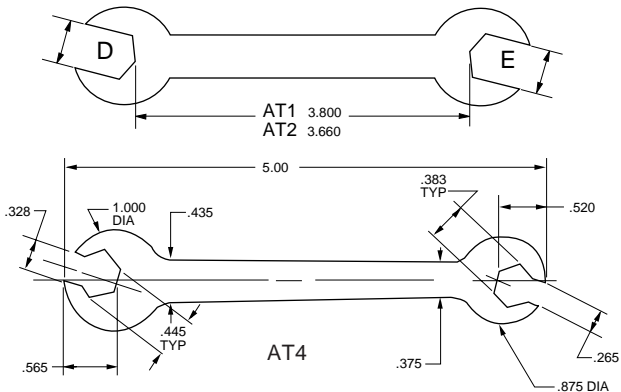
Designed to test for the proper assembly of BNC plugs with coax cables. Tests for center contact pin height and continuity (short or open). The new BNC tester is the same size as the twinax/triax tester but exclusively tests only BNC plugs. Mini-WECO continuity test adapter now available (sold separately).

- ▲ Compact design
- ▲ Pass/Open/Short LED indicators
- ▲ One test required for testing remote cable runs
- ▲ Easy to follow instructions
- ▲ Complete with terminators, case, and 9V battery



**COAX CABLE ASSEMBLY  
CONNECTOR TEST SET  
75Ω BNC PLUG 010-0133**

**MINI-WECO ADAPTER (CONTINUITY ONLY)  
SOLD SEPARATELY 105-1885**



**ASSEMBLY TOOLS**

| WRENCH CRIMP TYPE      | D           | E    |
|------------------------|-------------|------|
| <b>AT1</b> BNC/N/TNC   | .507        | .445 |
| <b>AT2</b> TPS/TCM     | .381        | .318 |
| <b>AT4</b> TPS/TRS/TTM | See Drawing |      |



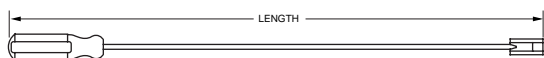
## TOOLS & ACCESSORIES

### Tool Kits



| Tool Kit Part Number | Pin Height Indicator | Crimp Tool 8-Point Indentor | Crimp Tool 12-Point Indentor | BNC/Mini-WEC Co Electrical Gauge | Crimp Die | Center Contact Gauge |
|----------------------|----------------------|-----------------------------|------------------------------|----------------------------------|-----------|----------------------|
| TK4NL-1              | UPLCG-1              | 010-0097                    | Not Included                 | Not Included                     | CD3-19    | Not Included         |
| TK4NL-1A             | UPLCG-1              | 010-0097                    | Not Included                 | Not Included                     | CD3-19    | Not Included         |
| TK4NL-2              | UPLCG-1              | Not Included                | 010-0098                     | Not Included                     | CD3-19    | Not Included         |
| TK4NL-3              | UPLCG-1              | 010-0097                    | 010-0098                     | Not Included                     | CD3-19    | Not Included         |
| TK4NL-4              | Not Included         | 010-0097                    | Not Included                 | 010-0108                         | CD3-19    | Not Included         |
| TK4NL-5              | Not Included         | Not Included                | 010-0080                     | 010-0108                         | CD3-19    | 010-0101             |

**All Tool Kits Include:** Case, *BWS Cable Stripper* with BWS Cutter heads (one *C26T3D* and one *C26T3I*), Cable Cutter (part number *700-0024*), and Ergonomic Crimp Tool w/long handle *CT4L* with Crimp Die *CD3-19* embosses the die cavity size on the crimp sleeve either .178 or .255. Contact the factory for custom tool kits.



#### CONNECTOR REMOVAL TOOLS

| BNC CABLE PLUG     | TYPE        | LENGTH |
|--------------------|-------------|--------|
| RT1XL              | STRAIGHT    | 22.00" |
| RT1L               | STRAIGHT    | 12.00" |
| RTR-1L             | RIGHT ANGLE | 12.00" |
| RTR-1XL            | RIGHT ANGLE | 22.00" |
| RT1S               | STRAIGHT    | 6.00"  |
| RT1SS              | STRAIGHT    | 3.75"  |
|                    |             |        |
| RTC-1L (INSULATED) | STRAIGHT    | 12.00" |
|                    |             |        |
| TPS, TCM, TRS, TTM |             |        |
| RT4L               | STRAIGHT    | 12.00" |
| RT4S               | STRAIGHT    | 6.00"  |
|                    |             |        |
| RTC-4L (INSULATED) | STRAIGHT    | 12.00" |
|                    |             |        |
| TRC, TRN           |             |        |
| RT5XL              | STRAIGHT    | 23.25" |
| RT5L               | STRAIGHT    | 13.25" |
| RT5S               | STRAIGHT    | 7.25"  |

### BNC Coax Assembly Training Video

Trompeter has produced a video which outlines the major features of our BNC design, describes the tools for reliable installation, and gives step-by-step assembly instructions. The BNC Assembly Video is available in VHS format or CD at *no cost* to Trompeter Customers.

▲ For additional information or for a free demonstration, contact your local Sales Representative located on the inside back cover of this catalog or you can log on to our web site at <http://www.trompeter.com> and locate the rep nearest you.



### BNC Bulk Packaging

Bulk packaging for UPL220 Series BNC plugs ... Trompeter offers Tool Crimp BNC's bulk packed in convenient vacuum-formed plastic trays. Bulk packaging is perfect for OEM and high-volume, on-site installations.

#### Includes:

- (50) Body Assemblies
- (51) Crimp Sleeves
- (52) Center Contact Pins
- Assembly Instructions

Example: **UPL220-026/T50**  
 BNC part number  
 Vacuum Tray part number  
 For cable groups see pages 91-133  
 (Not available for cable groups -017)

# TROMPETER CABLE SPECIFICATIONS

## Trompeter Cable Specs

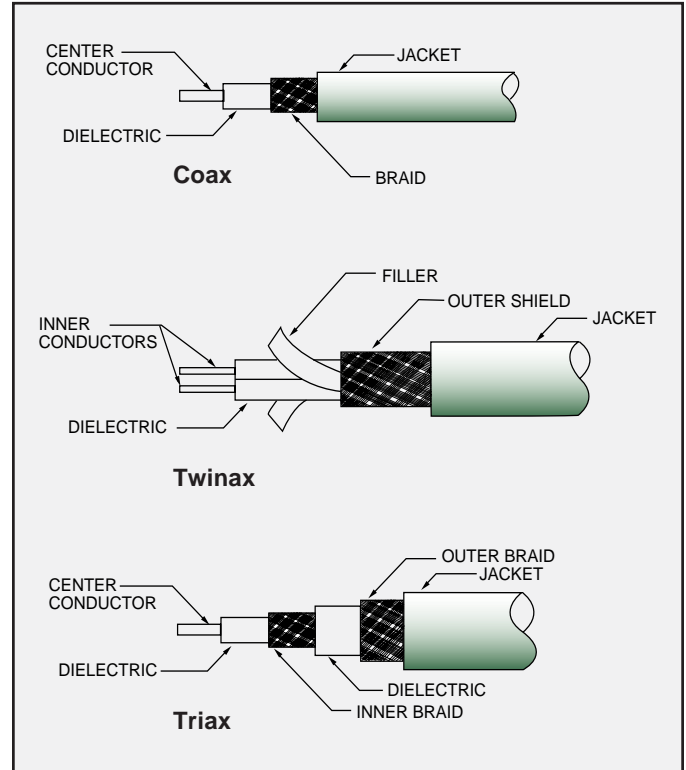
Trompeter cables are manufactured to the listed specifications and offer optimum flexibility, shielding, and performance. Cables with stranded center conductors have greater flexibility and are recommended for short runs at low frequency where constant cable movement might fatigue a single copper-weld center conductor. Trompeter's **M17/176-00002** and **TWAC-78-1F2** are 200°C, Hi-Temp Cables for MIL-STD-1553B data bus applications. Dielectric and fillers made of PTFE (Teflon™) and outer jackets are PFA (Perfluoroalkoxy). All dimensions are in inches. All values without tolerances are *nominal* unless otherwise stated. **TWCH-78-2** has jacket constructed of *flame retardant halogen free polyolefin* with temperature range of -30°C to +80°C.

**TWCP** = Twinax Plenum Cable

**TWCH** = Twinax Blue Flame Retardant Halogen Free Polyolefin Cable

**TRCH** = Triax Yellow Flame Retardant Halogen Free Polyolefin Cable

## CABLE ILLUSTRATIONS



## COAX CABLE SPECS

| Cable Designation            | COAX:              |                  |               |
|------------------------------|--------------------|------------------|---------------|
|                              | TCC-50-2           | TCC-75-2         | RG62 A/U      |
| Impedance (Ohms)             | 50±2               | 75±3             | 93±5          |
| Nominal outer dia.           | 0.195              | 0.242            | 0.242         |
| PVC outer                    | Green              | Violet           | Black         |
| Braid outer dia.             | 0.150 Max          | 0.191 Max        | 0.191 Max     |
| Braid AWG#/Mat'l             | 36/Tinned Cu       | 34/Bare Cu       | 34/Bare Cu    |
| Dielectric outer dia.        | 0.116              | 0.146            | 0.146         |
| Dielectric mat'l             | Solid PE           | Foamed PE        | PE            |
| Conductor outer dia.         | 0.0355             | 0.031            | 0.0253        |
| Conductor strands/Mat'l      | 19/.0071 Tinned Cu | 7/.010 Tinned Cu | Solid/CCS     |
| Operating temperature range  | -40°C to +90°C     | -40°C to 85°C    | -40°C to 80°C |
| Minimum bend radius          | 1.00               | 1.00             |               |
| Max. Opr. VAC (RMS)          | 1.4 KV             | 800 V            | 750 V         |
| Capacitance pF/ft (Max)      | 30.8               | 17.3             | 14.5          |
| Cond. Loop Res. (Ohms/M ft.) |                    | 17.6             |               |
| <b>Atten. dB/100 ft:</b>     |                    |                  |               |
| 1 MHz                        | 0.380              | 0.335            | 0.250         |
| 10 MHz                       | 1.400              | 1.070            | 0.900         |
| 50 MHz                       | 3.40               | 2.40             | 1.90          |
| 100 MHz                      | 4.90               | 3.40             | 2.80          |
| 200 MHz                      | 7.30               | 4.85             | 3.70          |
| 400 MHz                      |                    | 9.00             | 5.20          |
| 1 GHz                        | 28.80              | 12.00            | 8.50          |
| 3 GHz                        |                    | 30.00            |               |
| Shielded Coverage            | 93%                | 93%              | 94.3% Min     |

For high temperature cables, see chart on the next page.

# TROMPETER CABLE SPECIFICATIONS

## TWINAX/TRIAX CABLE SPECS

| Cable Designation            | TWINAX:       |               | HIGH TEMP:      |                 |                |                | TRIAx:         |                |                |                |
|------------------------------|---------------|---------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                              | TWC-78-1      | TWC-78-2      | M17/176-00002   | TWAC-78-1F2     | TWC-124-1A     | TWC-124-2      | TRC-50-1       | TRC-50-2       | TRC-75-1       | TRC-75-2       |
| Impedance (Ohms)             | 78±3          | 78±3          | 77±7            | 77±7            | 124±4          | 124±4          | 50±2           | 50±2           | 75±5           | 75±5           |
| Nominal outer dia.           | 0.150         | 0.242         | 0.129           | 0.095           | 0.150          | 0.245          | 0.156          | 0.245          | 0.189          | 0.245          |
| Outer braid dia.             | 0.108         | 0.195 Max     | 0.102           | 0.070           | 0.105          | 0.195 Max      | 0.121          | 0.210 Max      | 0.150          | 0.205          |
| Core outer dia.              | 0.085         | 0.154         | 0.084           | 0.052           | 0.085          | 0.162          |                |                |                |                |
| Dielectric outer dia.        | 0.043         | 0.076         | 0.042           | 0.026           | 0.043          | 0.080          | 0.047          | 0.116          | 0.073          | 0.116          |
| Inner braid outer dia.       |               |               |                 |                 |                |                | 0.069 Max      | 0.146 Max      | 0.093          | 0.146 Max      |
| Inner jacket outer dia.      |               |               |                 |                 |                |                | 0.101          | 0.175          | 0.130          | 0.175          |
| Conductor outer dia.         | .022          | 0.0370        | 0.0230 Min.     | 0.0149          | 0.0120         | 0.0220         | 0.0150         | 0.0370         | 0.0120         | .0185          |
| Operating temperature Range  | -40°C to 80°C | -40°C to 80°C | -55°C to +200°C | -55°C to +200°C | -40°C to +80°C | -40°C to +80°C | -40°C to +75°C | -40°C to +80°C | -40°C to +80°C | -40°C to +80°C |
| Minimum bend radius (in.)    |               |               | 1.50            | 1.25            | 1.50           | 1.25           | 0.75           | 1.25           | 1.00           | 1.25           |
| Max. Opr. VDC                | 0.6 KV Max    | 2.0 KV        |                 |                 | 0.6 KV         | 2.0 KV         | 2.0 KV         | 6.0 KV         | 2.0 KV         | 6.0 KV Max     |
| Max. Opr. VAC (RMS)          | 0.3 KV Max    | 1.0 KV        | 750 KV Max      | 250             | 0.3 KV         | 1.0 KV         | 1.0 KV         | 2.0 KV         | 1.0 KV         | 2.0 KV Max     |
| Capacitance pf/ft. (Max)     | 20.30 Max (2) | 21.20 (3)     | 24.00           | 23.00           | 12.40          | 12.30 (3)      | 29.50          | 32.00 (1)      | 20.00          | 20.50 (1)      |
| Cond. loop res. (Ohms/M ft.) | 179 Max       | 19.00 Max     | 48.00           | 146.00          | 570.60         | 56.80 Max      |                |                |                |                |
| <b>Atten. dB/100 ft.:</b>    |               |               |                 |                 |                |                |                |                |                |                |
| 1 MHz                        | 2.000         | 0.700         | 1.400           | 2.000           | 3.250          | 0.540          | 2.800          | 0.500          | 0.900          | 0.480          |
| 3 MHz                        | 3.000         | 1.100         | 2.100           |                 | 4.400          | 0.920          | 3.100          | 0.800          | 1.300          | 0.880          |
| 4 MHz                        | 3.500         | 1.400         | 2.400           |                 | 4.800          | 1.060          | 3.300          | 0.900          | 1.500          | 1.010          |
| 5 MHz                        | 4.000         | 1.550         | 2.800           |                 | 5.200          | 1.180          | 3.400          | 1.100          | 1.700          | 1.100          |
| 7 MHz                        | 4.500         | 1.800         | 3.500           |                 | 5.600          | 1.400          | 3.700          | 1.300          | 1.900          | 1.300          |
| 10 MHz                       | 5.300         | 2.200         | 4.50 Max        | 6.500           | 5.900          | 1.650          | 4.100          | 1.500          | 2.400          | 1.500          |
| 20 MHz                       | 7.50          | 3.10          |                 |                 | 8.30           | 2.30           | 5.50           | 2.30           | 3.60           | 2.30           |
| 30 MHz                       | 9.20          | 3.90          |                 |                 | 10.20          | 2.80           | 7.00           | 2.90           | 4.50           | 2.90           |
| 40 MHz                       | 10.60         | 4.50          |                 |                 | 11.80          | 3.20           | 7.50           | 3.40           | 5.40           | 3.30           |
| 50 MHz                       | 11.90         | 5.10          |                 |                 | 13.20          | 3.60           | 9.10           | 3.90           | 6.10           | 3.60           |
| 100 MHz                      | 16.80         | 7.50          |                 |                 | 18.70          | 5.10           | 14.00          | 5.80           | 9.70           | 5.20           |
| 200 MHz                      | 23.70         | 10.50         |                 |                 | 26.40          | 7.20           | 22.00          | 8.80           | 16.50          | 7.60           |
| 500 MHz                      | 37.50         | 16.00         |                 |                 | 41.70          | 11.40          | 40.00          | 15.30          | 28.50          | 10.80          |
| 700 MHz                      | 44.30         | 18.60         |                 |                 | 49.40          | 13.50          | 50.00          | 18.00          | 36.00          | 14.70          |
| 1 GHz                        | 53.00         | 22.50         |                 |                 | 59.00          | 16.20          | 63.00          | 23.00          | 45.00          | 17.60          |
| Shielded coverage            | 93%           | 93%           | 93.3%           | 90% Min.        | 93%            | 93%            | 93% Min.       | 93%            | 93% Min.       | 93%            |
| Twist per ft.                | 8.00          | 4.00          | 11-14           | 16.00           | 8.00           | 4.00           |                |                |                |                |

## TWINAX/TRIAX: PLENUM/HALOGEN FREE CABLE SPECS

**Notes:**

- (1) = Center Conductor to Inner Braid
- (2) = Conductor to Shield
- (3) = Conductor to Conductor

| Cable Designation            | TWINAX:   |           |                |            |                | TRIAx:          |                |
|------------------------------|-----------|-----------|----------------|------------|----------------|-----------------|----------------|
|                              | TWCP-78-1 | TWCP-78-2 | TWCH-78-2      | TWCP-124-2 | TWCP-124-3     | TWCP-124-5      | TRCH-50-2      |
| Description                  | Plenum    | Plenum    | Halogen Free   | Plenum     | Plenum         | Plenum          | Halogen Free   |
| Impedance (Ohms)             | 78±3      | 78±3      | 78±3           | 124±4      | 124±4          | 124±5           | 50±2           |
| Nominal outer dia.           | 0.150     | 0.242     | 0.242          | 0.245      | 0.205          | 0.325           | 0.245          |
| Outer braid dia.             | 0.102     | 0.165     | 0.195          | 0.183      | 0.183          | 0.295           | 0.210          |
| Core outer dia.              |           |           | 0.154          | 0.163      |                |                 |                |
| Dielectric outer dia.        | 0.041     | 0.072     | .076           | 0.080      | 0.062          | 0.134           | 0.116          |
| Inner braid outer dia.       |           |           |                |            |                | 0.043           | 0.146          |
| Inner jacket outer dia.      |           |           |                |            |                |                 | 0.175          |
| Conductor outer dia.         | 0.021     | 0.037     | 0.037          | 0.024      | 0.024          | 0.048           | 0.037          |
| Operating temperature range  | +125°C    | +125°C    | -30°C to +80°C | +125°C     | -10°C to +75°C | -10°C to +125°C | -30°C to +80°C |
| Minimum bend radius (in/ft.) | 1.50      | 2.50      | 1.25           | 2.5        | 2.0            | 3.25            | 1.25           |
| Max. Opr. VDC                |           |           | 2KV            |            | 2500           | 2500            | 6 KV           |
| Max. Opr. VAC (RMS)          |           |           | 1KV            | 1KV        | 1800           | 1800            | 2 KV           |
| Capacitance pf/ft. (Max)     | 19.6 (3)  | 18.6(3)   | 21.2(3)        | 11.5       | 12.0(3)        | 11.0(3)         |                |
| Cond. loop res. (Ohms/M ft.) |           |           | 19.0           | 47.0       | 28.4           | 6.5(3)          | 10.5           |
| <b>Atten. dB/100 ft.:</b>    |           |           |                |            |                |                 |                |
| 1 MHz                        | 2.00      | .60       | 0.70           | .50        | 0.60           | .30             | 0.50           |
| 3 MHz                        | 3.00      | 1.00      | 1.10           | .85        | 0.90           | .47             | 0.80           |
| 4 MHz                        | 3.50      | 1.20      | 1.40           |            | 1.10           | .64             | 0.90           |
| 5 MHz                        | 4.00      | 1.40      | 1.55           | 1.10       | 1.20           | .69             | 1.10           |
| 7 MHz                        | 4.50      | 1.60      | 1.80           | 1.30       | 1.40           | .79             | 1.30           |
| 10 MHz                       | 5.30      | 2.00      | 2.20           | 1.60       | 1.60           | .94             | 1.50           |
| 20 MHz                       | 7.50      | 2.80      | 3.10           | 2.30       | 2.20           | 1.20            | 2.30           |
| 30 MHz                       | 9.20      | 3.50      | 3.90           |            | 2.80           | 1.50            | 2.90           |
| 40 MHz                       | 10.60     | 4.10      | 4.50           |            | 3.20           | 1.70            | 3.40           |
| 50 MHz                       | 11.90     | 4.60      | 5.10           | 3.70       | 3.60           | 2.00            | 3.90           |
| 100 MHz                      | 16.80     | 6.90      | 7.50           | 5.30       | 5.20           | 3.00            | 5.80           |
| 200 MHz                      | 23.70     | 9.90      | 10.50          |            | 7.20           | 4.50            | 8.80           |
| 500 MHz                      | 37.50     | 15.40     | 16.00          |            | 11.40          | 7.00            | 15.30          |
| 700 MHz                      | 44.30     | 18.30     | 18.60          |            | 13.50          | 8.40            | 18.00          |
| 1 GHz                        | 53.00     | 21.80     | 22.50          |            | 16.20          | 11.00           | 23.00          |
| Shielded coverage            | 97%       | 95%       | 93%            | 93%        | 93%            | 93%             | 93%            |
| Twist per ft.                | 8.0       | 4.0       | 4.0            | 4.0        | 6.0            | 6.0             |                |





# TROMPETER GENERAL MATERIAL/FINISH SPECIFICATIONS

## TFS-1: FINISH SPECIFICATIONS

|  |   |
|--|---|
| <b>TFS-1A</b><br>.0001-.0003 max thk Bright Nickel per QQ-N-290, Class 1, Form SB (over)<br>.000080-.000150 thk Bright Copper per MIL-C-14550 (over)<br>.0005 max Electroless Nickel per AMS-2404C, Class 1 (On Aluminum Only)   | <b>TFS-1T<sup>5</sup></b><br>.000050 -.000100 Bright Tin per MIL-T-10727, Type I (Electro Deposited)<br>(over) .000150-.00020 Sulfamate Nickel per MIL-P-27418 (over) .00010-.000150 Copper per MIL-C-14550, Class 4                      |
| <b>TFS-1B</b><br>.000020 -.000030 thk Bright Gold <sup>2</sup> per MIL-G-45204, Type II, Grade C, Class <sup>3</sup> (over)<br>.000050-.000180 thk Bright Nickel <sup>3</sup> per QQ-N-290, Class 1 (over)<br>.000080-.000150 thk Bright Copper <sup>3</sup> per MIL-C-14550   | <b>TFS-1U<sup>5</sup></b><br>.00020-.00030 thk Sulfamate Nickel per MIL-P-27418 (over) .000080-.000150 max thk Copper per MIL-C-14550   |
| <b>TFS-1C<sup>3</sup></b><br>.0003 Watts Nickel per QQ-N-290, Form SB, Class 1 (over)<br>.000010 Nickel per QQ-N-290, Class 1  | <b>TFS-1V<sup>3</sup></b><br>.000200-.000300 max thk Silver per QQ-S-365, Type I (Matte), Grade A (over)<br>.000050-.000180 max thk Sulfamate Nickel per MIL-P-27418, (over)<br>.000080 min-.000150 max thk Bright Copper per MIL-C-14550 |
| <b>TFS-1D</b><br>.0001 min - .000120 max thk Electroless Nickel per AMS 2404C (over)<br>.000080 min - .000150 max thk Bright Copper per MIL-C-14550  | <b>TFS-1W</b><br>.00020 min-.00030 max thk Cadmium Plate per QQ-P-416, Type II Olive Drab, Class (over)<br>.00020 min-.00030 max thk Sulfamate Nickel per MIL-P-27418 (over)<br>.000080 min-.000150 max thk Copper per MIL-C-14550        |
| <b>TFS-1E</b><br>.0002 min -.0003 max thk Bright Electro Tin per MIL-T-10727, Type 1 and solder test per Para. 4.6.3.1   | <b>TFS-1X</b><br>.0002-.0003 thk Nickel per QQ-N-290, Class 1, Form SB Grade G (over)<br>.000080 min-.000150 max Bright Cooper per MIL-C-14550  |
| <b>TFS-1E2</b><br>.0002 min - .0003 max thk Bright Electro Tin per MIL-T-10727, Type 1, and Solder Test per Para.4.6.3.1 (over) .000080 min - .000150 max thk Bright copper per MIL-C-14550  |   |
| <b>TFS-1F<sup>3</sup></b><br>.000020 min - .000030 max thk Bright Gold per MIL-G-45204, Type II, Grade C, Class 00 (over) .000080 min-.000150 max thk Bright Copper per MIL-C-14550 (over) .000050 Nickel Strike per QQ-N-290, Class 1   |   |
| <b>TFS-1G</b><br>.000020 min - .000030 max thk Bright Gold per MIL-G-45024, Type II, Grade C, Class 00   |   |
| <b>TFS-1H</b><br>.0002 min - .0003 max thk Cadmium plate per QQ-P-416, Type II, (supplementary chromate treatment, golden iridescent), Class 3   |   |
| <b>TFS-1M<sup>4</sup></b><br>.000200 min - .000300 max thk Silver per QQ-S-365, Type II (Semi-bright) Grade A (Chromate post treatment) (over) .000080 min - .000150 max thk Bright Copper per MIL-C-14550   |   |
| <b>TFS-1N<sup>5</sup></b><br>.0003 - .0005 thk Cadmium plate per QQ-P-416, Class 2, Type II, Olive Drab (over) .0005 -.000550 thk Electroless Nickel plate per AMS 2404C   |   |
| <b>TFS-1P<sup>3</sup></b><br>1 .00010 min - .00012 max. thk Bright Gold per Mil-G-45204, Type II, Grade C, Class 2<br>2 .000050 min - .000070 max. thk Bright Gold per Mil-G-45204, Type II, Grade C, Class 1<br>3 .000020 min - .000030 max. thk Bright Gold per Mil-G-45204, Type II, Grade C, Class 00 (over) .00010 min - .000150 max. thk Bright Copper per Mil-C-14550 |   |
| <b>TFS-1R1</b><br>.00010 min-.00012 max thk Bright Gold per MIL-G-45204, Type II, Grade C, Class 2 (over) .000010 min-.000015 max thk Bright Gold Strike per MIL-G-45204, Type 1, Grade A, (over) .00010 min-.00015 max thk Bright Copper per MIL-C-14550, Class 4   |   |

## TROMPETER FINISH SPECIFICATION - 1 (TFS-1) NOTES:

- Bright Gold plate on all connector center contacts, pins, sockets, shall be .000050 min - .000070 max thk, Class 1
- Thickness is in accordance with MIL-G-45204B, Para 6.3 "Strikes and Underplating"
- Copper Alloy articles on which a nickel undercoat is not used shall not be used for continuous service at temperatures above 149°C (300°F) QQ-S-365, Para. 3.3.5.
- For use on Brass and Beryllium Copper body (shell) and accessory components when 500 hour salt spray test is specified. (For test conditions, refer to MIL-C-38999, Para. 3.16 and 4.7.12.2, [Method 1001.1 of MIL-STD-1344])
- Plating thickness variations, critical and noncritical areas must be plated to within specified lower limits, except where surfaces cannot be contacted by a .75 inch dia ball, noncritical areas total plating thickness may exceed the specified upper limits by .000150 maximum.

| Materials                      | Alloy or Type  | FED/MIL Spec.                         | Usage   |
|--------------------------------|--|---------------------------------------|---|
| ABS                            | Moldings Type 2  | MIL-STD-1803<br>L-P-1883B             | Looping plug handles, lock pins   |
| Acetal                         | Dupont Delrin  | L-P-392                               | Insulators, cases, bushings   |
| Aluminum                       | 2024-T351  | QQ-A255/6                             | Backbars, cases   |
|                                | 6061-T6  | QQ-A200/8                             | Stiffener bars  |
|                                | 6061-T6  | QQ-A250/11                            | Patch panels  |
|                                | 6061-T6511   | QQ-A200/8                             | Backbars, cases   |
| Beryllium Copper               | 17200 (Bar)  | ASTM-B-194                            | Contact & crescent springs  |
|                                | 17300 (Flat)   | ASTM-B-196 & 197                      | Contact sockets, fingersprings, washers   |
| Brass                          | C26000   | ASTM-B-36                             | Ground lugs, washers  |
|                                | C36000   | ASTM-B-16                             | Connector bodies, coupling sleeves, clamp nuts, hex mtg. nuts, ctr. contact pins, cases |
| Dupont Acetal Resin #500TL     | Homopolymer General Purpose w/ 1.5% Teflon Micropowder (FEP) |                                       | Moldings  |
| Fluorinated Ethylene Propylene |  | ASTM-D-2116                           | Insulators  |
| Hylfon                         | MFA Grade 640  |                                       | Alternate material dielectric   |
| Loctite                        | 495 (Zinc Iridite per ASTM-B633)                             | QQ-2-325<br>Type 2 Class 2 Finish     |   |
| Nylon                          | 6/6 or 6/12  | L-P-410A                              | Insulating bushings   |
| Perfluoroalkoxy (PFA)          |  | ASTM-D-3307                           | Cable jackets   |
| Phenolic                       | XXX  | L-P-513 PBE                           | Patch panels, backbars  |
| Phosphor Bronze                | Alloy 544  | ASTM-B-139                            | Contact springs, lockwashers  |
| Polytetrafluoroethylene (PTFE) |  | ASTM-D-1710                           | Dielectrics, insulators   |
| Polyvinylidene Flouride        |  | MIL-I-23053/8                         | Sealing Sleeves   |
| Rubber                         | Silicone   | ZZ-R-765                              | Gaskets, O-rings, sealing members   |
| Solder                         | Sn60, 62, 63, or 96  | QQ-S-571                              |   |
| Steel                          | C1010-1018   | QQ-S-636                              | MPN cases   |
| Steel CRS                      | Music Wire<br>Type 17-4PH                                    | ASTM-A228 SAE J178<br>AMS-5643 Tubing | Tension springs   |
| Corrosion Resistant Steel      | 303  | QQ-S-763                              | Connector bodies, coupling sleeves, hex mtg. nuts                                       |
|                                | 302  | QQ-S-766                              | Designation strips  |
|                                | 301  | ASTM-484, A582                        |   |
| Thermo-plastic Polyester       | Glass Filled   | MIL-M-24519                           | Heat resistant molded insulators  |
| Vinyl                          | Clear Rigid-Self ext.  | ASTM-D-635                            | Designation strip window  |
|                                | Opaque Rigid-Self ext.                                       | ASTM-D-635                            | Designation strip marking strip   |
| Zinc                           | Alloy #3   | ASTM-B-240/B-86                       | Selected non-functional parts   |

TFS = Trompeter Finish Specifications

| Frequency Range   | Connectors            |                       |                       |                        |                      | Patching  |                      |   |
|-------------------|-----------------------|-----------------------|-----------------------|------------------------|----------------------|---|----------------------|---|
|                   | BNC                   | TNC                   | 70 Series             | 150 Series             | 450 Series           | WE Standard                                       | WE Miniature         | RCA Standard                                      |
| 0-4 GHz           | 0-11 GHz              | 0-500 MHz             | 0-500 MHz             | 0-2 MHz                | 0-1 GHz              | 0-1 GHz   | 0-200 MHz            |   |
| VSWR              | 1.30 Max.             |                       |                       | Not Rated              |                      | 1.04 @ 75 MHz<br>1.12 @ 100 MHz<br>1.18 @ 500 MHz | 1.06 Max.<br>-<br>-  | 1.05 @ 50 MHz<br>1.09 @ 100 MHz<br>1.33 @ 500 MHz |
| Voltage Rating    | 500 VRMS @ Sea Level  | 500 VRMS @ Sea Level  | 400 VRMS @ Sea Level  | 250 VRMS @ Sea Level   | 150 VRMS @ Sea Level | 500 VRMS @ Sea Level                              | 250 VRMS @ Sea Level | 500 VRMS @ Sea Level                              |
|                   | 125 VRMS @ 70,000 ft. | 125 VRMS @ 70,000 ft. | 100 VRMS @ 70,000 ft. | 62.5 VRMS @ 70,000 ft. | Not Rated            | Not Rated   |                      |   |
| Temperature Range | -65°C to 165°C        |                       |                       | -65°C to 200°C         | -65°C to 165°C       | -65°C to 165°C                                    |                      |   |





# SIGNAL TRANSMISSION IN HIGH FREQUENCY/HIGH DENSITY APPLICATIONS

One way to characterize the electronics market is to break it into two segments, components and interconnects. Within the interconnect segment, some signals require ground shielding, stripline and coax, for example, and some do not. Ground-shielded signals are needed:

- to protect the interior signal wire from signal degradation or loss utilizing a specific dielectric material most adjacent to the signal wire;
- to geometrically contain or ground the electromagnetic field associated with electromagnetic wave propagation; and/or
- to shield the signal from external noise or radiation, either via leakage or induction, including the fields created by adjacent wired energy, which is called crosstalk.

Within the shielded interconnects segment, there are hard wired interconnects and disconnectable interconnects. It is the latter type that is the topic of discussion here, where technology drivers and performance issues will be presented.

### Technology Drivers

The customer-driven need for more function and content, as evidence in the next-generation Pentium microprocessors and more widespread use of the World Wide Web, is driving corresponding requirements for system bandwidth, signal density and signal clarity.

Because bandwidth has become such an important issue, fiber or light-based signal transmission is now a viable technology, replacing copper-based electronic signals in many instances. However, because the end termination manifolds of light energy still must be a manageable junction of discreet clean/fast signals, the need for disconnectable copper interconnects has actually increased.

In addition, using digital technology to achieve some of these transmission objectives requires an even greater degree of fault-free interconnect performance. What was once a slight rise in background static on an analog signal at low frequency becomes the loss of an entire stream of binary information in high frequency digital technology.

As wires have progressed from point-to-point continuity paths to transmission lines, so connectors have had to accommodate the performance nuances of higher frequency and density. More information is being moved more rapidly on smaller waveforms, and the resulting demand on connection is proportional.

### Electrical Performance Issues

The most effective connectors are those that, once inserted in a transmission line, disappear. That is, they behave as if there were no connector pair present and the cable and the transmission characteristics of the line predominate. In order to achieve this state, the losses at the connector junction should be equal to or less than the losses in the transmission line.

### Frequency and Wavelength

Since wavelength and frequency are inversely related by the constant "c" (speed of light in a vacuum), at higher frequencies, the wavelengths become smaller. For example, in free space, the wavelength at 1MHz is approximately 300m or 980'; at 300MHz, it is 1m or 39"; and at 1GHz, it is 30cm or 1.2". This reduced wavelength begins to approach typical electrical component length, and at higher frequencies, it becomes significant.

By experience, the effect of a connector is usually of minimal significance until its length approaches approximately 5 percent of wave length being passed. In a physical transmission system, waves do not travel the speed of light due to the drag of the dielectric and conductor losses. For example, for typical connector and copper cable construction, the velocity of propagation is approximately 67 percent of "c", which corresponds to an effective reduction in wavelength from approximately 39" at 300MHz to approximately 26". Five percent of this length is approximately 1.3", which is about the length of a typical RF connector pair.

**Attenuation.** Attenuation is the total amount measured in decibels by which power received is less than power transmitted after a device has been inserted, with corrections for frequency. Also called insertion loss, attenuation applies to an entire connector/cable system. It is the sum of the following four components:

1. copper loss, or resistance, in the conductors;
2. dielectric losses, as a result of the dielectric having high but not infinite resistance, therefore dissipating some energy;
3. reflection losses, due to some of the signal being reflected at various discontinuity; and
4. radiation losses, where the line acts like an antenna and radiates electromagnetic energy at high frequency.

For connector characterization within microwave systems frequencies (in the few hundred megahertz and well into the gigahertz range) the reflection copper losses are the most significant. Other losses present are primarily a result of the cable assembly or design.

Figure 1. Frequency's Effect on Return Loss

| Condition   | Measured Impedance (avg.) | Return Loss |            |             |
|-------------|---------------------------|-------------|------------|-------------|
|             |                           | 1-20 MHz    | 20-300 MHz | 0.300-1 GHz |
| 1. (75/50)  | 60.7Ω                     | >30 dB      | 23.7 dB    | 7.1 dB      |
| 2. (75/-75) | 68.4Ω                     | >30 dB      | 24.5 dB    | 12.4 dB     |
| 3. (75/75)  | 73.7Ω                     | >30 dB      | 25.4 dB    | 21.5 dB     |



## SIGNAL TRANSMISSION IN HIGH FREQUENCY/HIGH DENSITY APPLICATIONS

### Impedance

An inherent characteristic for transmission lines is impedance, which is measured in ohms. Impedance is the ratio of voltage to current in a traveling wave. For a "loss-less" cable, it can be defined in terms of the ratio of inductance to capacitance. In a coaxial construction, it can be alternatively defined as a function of geometry and material properties of the dielectric material between the concentric conductors. This equation can be stated as :

$$Z_0 = \frac{138}{\sqrt{\epsilon}} (\text{Log}_{10} D/d)$$

|            |   |  |
|------------|---|--|
| $Z_0$      | = | character impedance                            |
| $\epsilon$ | = | dielectric constant of the insulation material |
| $D$        | = | inside diameter of the outer conductor         |
| $d$        | = | outside diameter of the inner conductor        |

Physically, impedance can be thought of as the value of resistance that, when connected between the center conductor and shield at the end of the cable, makes the cable appear infinitely long. The most efficient transmission of electrical power, hence maximum signal transfer, occurs when the distributed component impedance matches that of the system.

Impedance mismatch creates a reflected wave of energy, which can be measured and stated in different forms. By defining a reflection coefficient ( $\rho$ ), which is the reflected voltage divided by incident voltage, the measure of reflection losses can be stated as:

$$\begin{aligned} \text{Reflection Loss} \\ (\text{dB}) &= 10 \text{Log}_{10} (1 / 1-\rho^2) \text{ dB} \\ \text{or} \\ \text{Voltage Standing Wave Ratio} \\ (\text{VSWR}) &= (1+\rho) / (1-\rho) \end{aligned}$$

Return loss is the decibel loss due to reflection, and VSWR is a unitless ratio relating incident voltage to reflected voltage. These commonly used terms that quantify the loss associated with reflection are two scales for the same characteristic. They can be equated as follows:

$$\text{Return Loss (dB)} = 20 \text{Log}_{10} \{(\text{VSWR} + 1) / (\text{VSWR} - 1)\}$$

Reflection losses are a function of frequency - increasing with increasing frequency - and impedance mismatch. It is helpful to note that VSWR is the ratio of the maximum standing wave voltage to the minimum standing wave voltage. VSWR, therefore, is infinite for total reflection (i.e. 0 minimum voltage) and is 1.0 for perfect transmission (no reflection). The closer to unity, the better the impedance match and the more efficient the transmission system.

### Three Examples

Figure 1 (on page 81) shows comparison return loss data from 1 MHz through 2 GHz for the following three scenarios:

1. 75Ω system (includes cable and test set); 50Ω BNC connector;
2. 75Ω system; approximate 75Ω BNC connector; and
3. 75Ω system; "true" 75Ω BNC connector.

From this, it is clear that the return loss degrades as a function of the frequency and also as a function of the extent of the impedance mismatch between the connector and cable. At higher frequencies the impedance match becomes more critical.

Other factors influence the reflection loss as well. These include: the homogeneity of a composite dielectric material; the even dispersion of air within and around a dielectric; and the "smoothing" of the mechanical transmissions between the impedance mismatches within the connector. This includes the tandem increase or decrease in sizing of the diameters for the inner and outer conductor, as well as the effect of chamfers/breaks at sharp transitions.

### Other Considerations

Aside from the electrical and electromagnetic performance issues, connectors that disconnect should be capable of toughness, durability and robust in-field use with high counts of repeat mating cycles without failure or interruption. Other nonelectrical performance measures of importance are insertion force and retention force, particularly after repeated matings.

### Conclusion

#### Market Trends,

#### Technical Considerations and Practical Examples for Shielded Disconnectable Interconnects

Market needs are impacting electrical and electromagnetic demands on connector performance. A basic understanding of the physics involved in electrical circuit design and transition lines is necessary to appreciate the impact of losses associated with the connector. This understanding includes resistance, capacitance, inductance, efficiency, reflection losses associated with impedance mismatch, and dielectric losses associated with the materials used for connector dielectrics.

Impedance mismatch between the source, cable and connector is less significant at lower than at higher frequencies. However, as system content and speed increases, the permissible fault tolerances goes down dramatically. In other words, one impact of high technology is greater dependence on tighter tolerance quality and part-to-part repeatability. These discoveries have caused shifts in sourcing, as buying companies mature in their appreciation for robust design engineering and fabrication excellence. The connector industry is not immune from this development. ■

## BNC TOOL/WRENCH CRIMP ASSEMBLY ILLUSTRATIONS

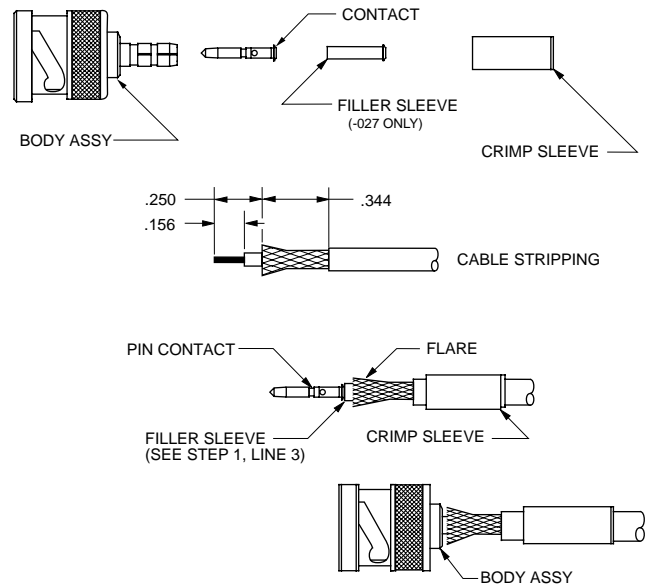
### BNC Coax Tool Crimp Assembly Illustration

#### Step 1

1. Place crimp sleeve onto cable with the step located away from the cut end as shown.
2. Strip cable as shown and flare braid.
3. On connectors with cable group number -027 only, slide filler sleeve fully under braid.
4. Crimp contact pin in position shown.

#### Step 2

1. Push cable assembly into the body until the contact pin snaps into place.
2. Slide crimp sleeve forward over braid, up against the body assembly and crimp in place.



### BNC Coax Wrench Crimp Assembly Illustration

#### Step 1

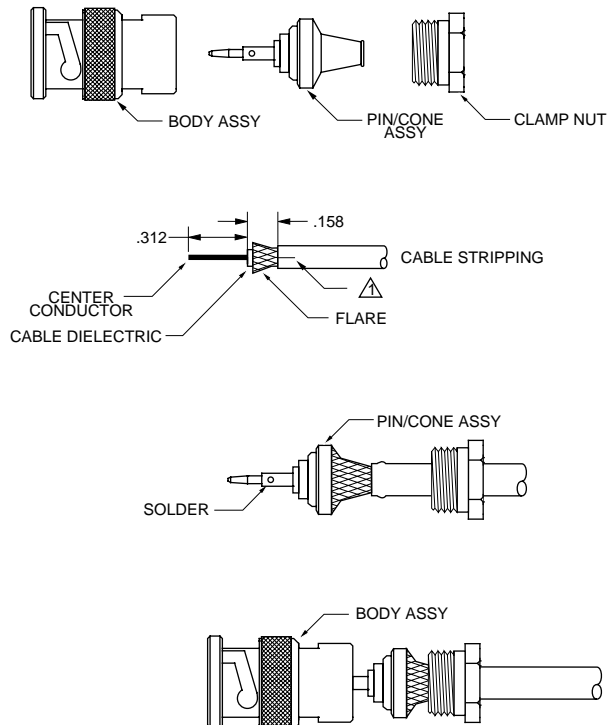
1. Place clamp nut onto cable.
2. Strip cable as shown and flare braid to allow free entry of cone (Lateral slits 180° apart may be required for very inflexible jacket materials).
3. Lightly tin center conductor (optional).

#### Step 2

1. Push edge of cone between cable dielectric and braid (or between foil and braid, if foil is present, and cone I.D. will accept it). Continue to push cable into cone until cable dielectric bottoms against cone dielectric. Center conductor should be visible in pin inspection hole.
2. Solder center conductor into pin.

#### Step 3

1. Bring clamp nut up onto tapered portion of cable.
2. Assemble body and engage with clamp nut.
3. Wrench tighten to 25-30 inch-pounds torque.



*Notes: For Illustration purposes only. Not intended to replace actual installation instructions.*

## ELECTRONIC SYSTEMS WIRING & CABLE

After buying the most expensive “end” equipment, many systems engineers have difficulty in determining the best methods of cabling and interconnecting for the routing of signals with minimal loss, degradation and noise pickup. Simple solutions such as selecting the correct cable, eliminating common mode grounds or physically separating long runs of parallel cables will help make the difference between a good or bad system. It must be emphasized that these good practices must be implemented at the time of initial design and are almost impossible to implement after the system is built. This “interface” engineering will be discussed in following sections titled “**Signal Degradation**” and “**Noise**”.

The systems engineer should study his system parameters and noise environment before selecting his cabling and connector components. Consideration must be given to:

- Signal frequencies
- Voltage and power levels
- Tolerable losses and degradation
- Reflected signals due to discontinuity
- Noise from direct contact common mode and ground loop returns, or radiated stray magnetic and capacitive fields.

Circuit wiring and cabling are susceptible to the pickup of noise, and all low voltage signal and data wiring should be shielded irrespective of the frequency to be transmitted. Coax cable (primarily designed to carry RF) is excellent for digital data transmission. It is relatively inexpensive (RG58, RG122, etc.) and many complete series of coax connectors are readily available.

High speed and broadband digital data must use RF (radio frequency) coax transmission cable since the fast rise time narrow pulse has harmonics reaching into the RF region. For higher frequencies, coax cable **must** be used for point-to-point wiring since it has the transmission characteristics, flexibility and economy necessary for most systems.

### **Impedance Standards of Coax Cables**

The most efficient impedance to use when transmitting a signal (considering only the voltages, currents and powers to be transmitted) is 75 ohm. The **telephone industry**, followed by the **TV industry**, uses 75 ohm almost exclusively for the transmission of voice, video, and data.

The **military services** were faced with a differing need for low radiation angle **omnidirectional antennas** during the period 1920 through 1940 for broadcasting ship to ship, airport tower to low flying aircraft, and base station to ground troops. The only antenna that would fill that need was the **vertical ground plane antenna** (in its many forms) with transmissions at 50 ohm. The military standardized on 50 ohm impedance and spent vast sums of money developing cables and connectors for all of their coax systems. The current general connector standard is MIL-C-39012 (primarily for 50 ohm usage).

The 93 ohm cable was developed to address the need for a **low-capacitance instrumentation** coax cable. By removing some of the coax dielectric and substituting air in the RG59 cable, the distributed capacitance was lowered, thereby creating a lower voltage loss transmission medium (RG62 cable).

More sophisticated cables and connectors of twinax, triax and quadax are now available. These newer components improve external noise rejection and containment of classified signals.

### **Signal Degradation**

Signal degradation in any transmission medium usually consists of voltage amplitude reductions, wave shape changes, phase or delay changes, or power losses where power is transmitted. In most systems the interconnecting cable is the longest transmission path and its selection, manufacture, testing and installation should be carefully considered. Cable should not be randomly selected and installed.

When selecting cable from specifications, always consider the length of the cable run, heat exposure, frequency and power to be transmitted vs. the acceptable losses inherent in the cable, the external noise fields and frequencies to be anticipated or encountered. Also consider the availability of connectors to terminate the cable. Too small a cable will always be cause for excessive losses. Fast rise time digital pulses will have the leading edge distorted due to the high resistance “skin” effect of small coax cables. When selecting a cable for a long run, observe the insertion loss to assure that your signal gets to its destination without too much loss.

**When in doubt select a larger cable!** Incomplete copper coverage in the outer braid over the dielectric will cause transmission line losses and affect the cable's susceptibility to signal leakage or noise pickup. A copper braid coverage 90% is preferred. Skimping on the quality of the copper braid will affect the cable's loop resistance and its “line” and “transfer” impedance. As a good rule of thumb, if the dielectric is visible through the braid (without bending the cable) then the cable should not be used.

Unseen manufacturing faults produce signal path impedance changes or discontinuity which can only be detected by “frequency sweeping” the cable. TV broadcasters have encountered as high as 60 dB losses in short runs due to periodicity and other manufacturing faults that are only detectable by swept frequency testing techniques. RG59, RG62, and other coax cables use copper weld wire for the center conductor. Copperweld is a high resistance steel wire with a copper cladding on the outside and was originally intended to give strength to TV cables when suspended from poles or pulled through ducts. However this steel wire will increase the cable attenuation on a long run (particularly at the lower frequencies) due to the high resistance of the copper clad steel. RG59 and RG62 have approximately 44 ohms per 1000 loop feet as compared to 17 ohms when using pure copper for the same size center conductor. It is also difficult to effectively crimp a center contact pin on the hard steel copperweld wire.

# ELECTRONIC SYSTEMS WIRING & CABLE

Many cable defects are not readily visible and may not show up without proper testing. The reputation of the manufacturer, the type, quantity and quality of material used is more important than cost savings in selecting coax cable.

Be careful that cable does not support heavy equipment or is subject to prolonged exposure to heat in system installations. Do not bend cable beyond the manufacturer's recommended bend radius in order to avoid producing cable discontinuity. Try to space high signal level or power circuits separate from low signal level cables when routing cables.

Signal cables are usually manufactured with polyethylene which is adequate for normal use. Teflon™ dielectric and sheathed cables should be used where high heat or chemical action will attack poly cables (such as in aircraft or industrial plants). The National Fire Underwriters now requires non-fire supporting cable to be used for all open wiring in public buildings (*plenum wiring*). Fire insurance rates can be greatly reduced in computer, nuclear accelerator and other large installations if TFE or FEP cables are used.

All transmission cable manufacturers should provide the electronic characteristics of their cables (including power handling and attenuation per foot versus frequency) to aid the system design engineer in doing a proper job. For instance, RG58C has the following characteristics if built to military specifications:

**Attenuation in dB per 100 foot length**  
(Ambient temperature 100°F in free space at sea level)

|               |     |     |     |     |    |    |    |
|---------------|-----|-----|-----|-----|----|----|----|
| Frequency MHz | 50  | 100 | 200 | 400 | 1K | 3K | 5K |
| Attenuation   | 3.3 | 4.9 | 7.4 | 12  | 24 | 54 | 83 |
| Power (Watts) | 450 | 300 | 200 | 135 | 80 | 40 | 20 |

Note how quickly the cable becomes unusable at the higher frequencies. Lowering the dielectric constant of the dielectric with Teflon™ or foamed Teflon™ and silver plating the inner and outer conductors to increase the skin effect conductivity will greatly improve the high frequency usage. The increase in performance justifies the additional cost. Keep in mind that for a 10 dB loss, only 3/10ths of the transmitted voltage will show up at the receiving end, and only 1/10th of the generated power will be available. (Assuming a reasonably good impedance match.) If the operating temperature is higher than the rated temperature or if the cable is used at high altitudes, the attenuation and power handling capacity should be derated.

Low-priced cable should be carefully considered. Any reduction in the amount of copper in the conductors or in the quality of materials used throughout will effect performance. Many manufacturers provide better performance in their smaller cables by using materials better than minimum Mil Specs require. Cable performance will also degrade with time and can be adversely affected by the environment where it is installed (sun, ozone, salt, sulphur products, etc.). A cable's shielding effectiveness versus the signal frequency to be transmitted should also be considered where noise pickup can be a problem. It is usually financially and physically impossible to undo any damage or replace cables once they are installed and terminated.

All RG59 cables are **not** the same. By adding the word "Type" a manufacturer may bypass minimum spec requirements to reduce pricing. Some manufacturers build a "better than Mil Spec" cable and supply a superior product. They **also** must use the word "Type" since they **exceed** or **deviate** enough from the electrical and mechanical specifications. (This also applies to connectors). Be cautious of "low bid" surplus dealers, distributors, or packaging houses. Inventoried cable may deteriorate with time. The design engineer and installation technician must be aware of the many hidden and unknown cable properties that may be detrimental to the system's performance. Buyers accepting low bids may burden engineers and technicians with future problems due to hidden deficiencies.

### Coax Cable Connectors

Any connector must be able to interconnect with very low DC series resistance (less than 10 milliohms). The impedance of a connector is usually of no consequence below approximately 300 MHz. The connector does not contribute to circuit performance until the signal length approaches 1/20th of a wavelength. 50 ohm connectors can be attached to 75 ohm *video cables* with little detrimental effect. **However, the effect of a connector on a signal is cumulative.** Coax connectors should be impedance matched to the system impedance for frequencies above 300 MHz.

The generation of *intermodulation* and nonlinear distortion caused by the presence of ferromagnetic material in the conductor has become a more prominent factor in the selection of cables and connectors.

**Heat treated beryllium-copper should be used for critical contact springs** to maintain contact resilience. Many manufacturers use ordinary brass which soon loses its contact pressure and the connector becomes noisy or fails.

The systems engineer can no longer afford to take connectors for granted. He must be aware of cable characteristics such as attenuation, phase displacement, and transfer impedance. The systems engineer must also understand the inherent characteristics of the many connector families available and the strengths and weaknesses of individual manufacturers' connector designs. He must be willing to expend the time and effort to specify the quality component his system demands.

The many types and series of coax connectors presently available can cause confusion for users. Many of the lesser known series were designed to address specific problems or were developed by commercial companies for their own proprietary product line. The connector series listed below have gained universal acceptance due to their simplicity and performance. They are produced and stocked by the majority of coax connector manufacturers.

| Nominal Cable Size O.D. | Connector Size | Quick Disconnect | Threaded |
|-------------------------|----------------|------------------|----------|
| .060 to .425            | Standard       | C                | N        |
| .060 to .425            | Miniature      | BNC              | TNC      |
| .060 to .225            | Subminiature   | TPS              | TCM      |

Much can be written to discuss the advantages of one series of connectors over another. Selection is normally based on cost or performance depending upon the system parameters required.



## ELECTRONIC SYSTEMS WIRING & CABLE

### *Connector attachment : Crimping or Soldering*

Crimping is normally used where the speed of attachment is important or where it is virtually impossible to solder due to lack of power (as on the top of a telephone pole or in a cable vault). A special crimp tool quickly and simply installs the connector to the cable. Repair requires a new connector for replacement. Soldering, on the other hand, does not require any special tool. A soldered connection will not corrode provided adequate heat is correctly applied to avoid a "cold solder joint." Some soldered coax connectors may be used over without special tools or replacement parts. This is advantageous on shipboard or in field locations where replacement parts or tools are not always available.

### *Noise*

Electrical noise is by definition, any unwanted interfering voltage, developed within or externally to a system, which reduces the performance of that system. "Noise" has always been a problem and in the past was usually reduced by brute-force filtering which reduced or stopped "noise" **after** it had entered the system. This method was quite expensive, but reasonably effective since signal information voltages were low in frequency and systems were few and not too large or complex.

Present day *communication* and *data systems* are continually becoming larger, more numerous and use higher information rates and frequencies in an atmosphere of expanded electrical and electronic equipment usage. The net result is ever increasing levels of interference and noise which creates an electronic traffic jam of major proportions. This applies equally to *low level analog* and *digital pulse systems*. Filtering is practically useless (or in some cases, completely unusable) since it produces excessive deterioration of the desired pulse waveforms or inaccuracies and distortion of analog signal voltages. Noise reduction is best accomplished by simply stopping "noise" **before** it enters the system.

The following describes how external noise is introduced into systems by the equipment interconnecting wiring, and the improvements that can be realized by installing noise-rejecting type cables and applying good equipment isolation and grounding techniques. Most electronic equipment does not produce random noise and usually performs the singular task it is designed to do. Unwanted noise is picked up by the interconnecting wiring through the direct contact action of ground loops and common mode returns, or by inductive and capacitive pickup of nearby radiated fields. A desired signal in one circuit can be noise to another. Interference can be produced by local circuits within the system or from equipment completely removed and external to the system. Conversely, cables can radiate the signal they are carrying into adjacent circuits (cross-talk), generating interference to other data systems or causing security compromises in classified military communications. This problem can be further compounded by poor cable-to-equipment impedance matching which produces signal reflections and high standing wave ratios. Poorly selected and installed cabling can act as both transmitting and receiving antenna or as undesired primary and secondary windings of coupling transformers, placing interference into the system.

Systems are often designed, fabricated, and installed using the simplest multi-wire cable or grounded coax between equipment, racks, and buildings, not realizing that they will probably encounter and pick up all manner of interference. Nearby electrical equipment such as high power radar, broadcast stations, power distribution mains, fluorescent lighting, arcing motors, teletype and communications circuits are but a few of the noise makers. The lower the system signal voltage level, the greater is the susceptibility to this outside interference.

A system design might work fine on paper or when initially assembled and tested. But it may not perform as anticipated when installed at its final location on ship or shore. You may realize that the completed system has picked up much noise and hum, or is itself radiating interference so heavily that the equipment is unusable. Costly additional effort, parts, and time expended to locate and attempts to eliminate the causes of the noise pickup may meet with little success. Cable-to-equipment interface engineering should be applied at the start of system planning and design to avoid this unnecessary waste. This applies to all systems for low or high frequency signals, for applications in *TV, telemetry, timing, ordnance, environmental testing, computer, telephone, test instrumentation, or normal communications*. Each system must be considered individually, since the signal frequencies and amplitudes within the system and the anticipated external interference will dictate what type of cabling and connection techniques are to be used.

### *Examples of Good Cable Engineering*

*Low-level environmental systems* predominantly use "guarded" balanced and shielded lines to transmit the calibrated transducer test voltage to an isolated charge amplifier.

*TV video* is distributed over 124-ohm "shielded twisted pair" (twinax), instead of coax, in high noise areas to cancel low frequency magnetic field cross-talk and hum.

*Digital applications* in the *computer* and *instrumentation* fields require good high-frequency design engineering when transmitting nanosecond rise time pulses. A 10 nanosecond rise time pulse is equivalent to 100 megahertz RF. Using good coax cabling techniques helps to avoid pulse reflection, false noise triggering or data inaccuracy.

Special care is required to keep noise from entering *information systems* (particularly *aircraft*). *Low level communication circuit* cabling should be space separated and have effective shielding from adjacent parallel power circuits to avoid induced hum.

*Unprotected circuits* (such as *ordnance* and *timing*) can receive false pulsing if exposed to external radiated RF interfering fields.

*High megawatt pulsed radar* will introduce both its carrier and pulsed radio frequency waveform into nearby sensitive low-level unprotected cable runs which act as receiving antennas.

Sometimes the transmitted pulses have amplitudes of hundreds of thousands of volts (as used in *atomic energy testing* or *linear accelerators*) thereby producing large magnetic and capacitive interference fields. These play havoc with local cable-connected instrumentation and electronic equipment.

# ELECTRONIC SYSTEMS WIRING & CABLE

In the case of *nuclear attack*, a tremendous electromagnetic pulse (EMP), transmitted for many miles from ground zero, will induce extremely high voltages in all unguarded and unprotected cable and equipment. It is estimated that a vertical electrical field intensity of 50K volts per meter will be present 62.5 miles from a 10-megaton near-ground explosion. Solid-state transistors and diodes, integrated circuits, front end RF coils, sensitive relays and reeds are typical of the sophisticated elements used today for both military and commercial systems that may fail even though far removed from the fireball area.

The lack of money, time and qualified personnel will not permit complicated and costly post-completion interference cleanup of poorly engineered systems. The use of good coax, twinax, triax, in isolated or guarded circuitry, will do much to suppress outgoing EMI and RFI, reduce incoming noise pickup, and help protect both your system and the adjacent system from mutual interference. Careful cable to equipment interface planning must be exercised to produce workable compatible systems. Design engineers are not free to treat cable installation as casually as they may have in the past.

## Coax Cable

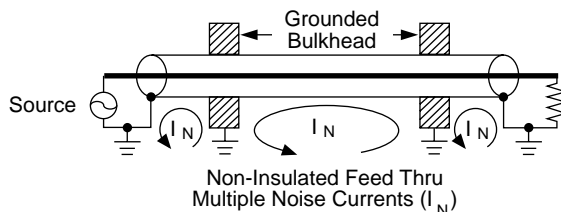
Shielded cable should be used to protect against magnetic and capacitive stray fields in all cases of potential interference (low or high frequency). Grounded coax cable is excellent for use from 20 KHz to 5 GHz for most systems. But even coax, if subjected to very strong interference, will not completely protect the desired signal. Coax cable is a two conductor cable. The outer conductor of a coax cable is not a true shield in that it is also the signal return. A true shield is insulated from the signal carrying conductors and protects the enclosed coaxial conductors. However, the outer conductor of a coax cable is an electrostatic shield and thus protects against capacitive interference. When two conductors at different voltages are placed near one another, a charge difference exists between them. Since a charge difference exists between the two conductors, a capacitive effect also exists between them. Such capacitive effects can give rise to interference signals in both conductors.

To prevent wires which carry low-level signals from being influenced by capacitive effects, you need to surround the low-level signal wire with an electrostatic shield. This type of shielding is effective because external electric fields cannot penetrate an enclosure surrounded by an electrical conductor. Coax cable should be used when low-level signal wire is likely to come in contact with another signal carrying wire. This is especially true when the voltage difference between the signal carrying wire and the source of interference is large. Any external voltage injected in this braid will act as noise to the

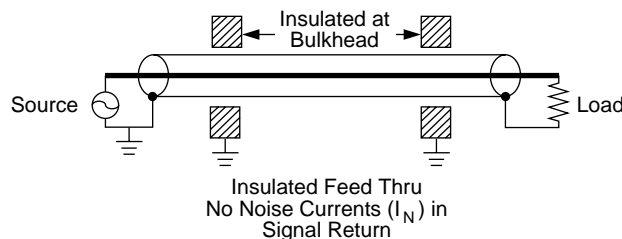
desired signal in the coax. The sophistication of cable and equipment isolation techniques used is dependent upon the frequency of the interfering noise and how it enters the cable system. Any additional measures taken to reduce incoming noise will also reduce outgoing radiation and cross-talk.

## Ground Loops and Common Mode Returns

Coax cable consists of an inner and an outer conductor insulated from each other. Each conductor carries a desired signal current (source to load or return). The outer conductor is usually grounded at the source, load, bulkheads and other intermediate points. "Ground loop" or "common mode" currents caused by potential differences of external noise sources are also simultaneously carried on the outer conductors and noise is introduced into the system, greatly reducing the "signal-to-noise ratio."



Low frequency signals (20 KHz to 6 MHz) are particularly susceptible to both ground loop and common mode interference. Coax cable is recommended in this case with the complete coax chain having a **minimum**-number of outer conductor ground contacts. Reducing the number of ground connections reduces the number of possible ground loops. Major equipment, relays, switches, connectors, patch panels, etc., should be **isolated from ground** with the ultimate design having only one system ground connection at the source.

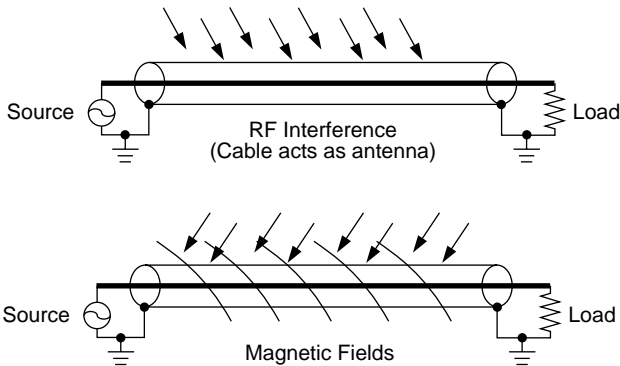


## ELECTRONIC SYSTEMS WIRING & CABLE

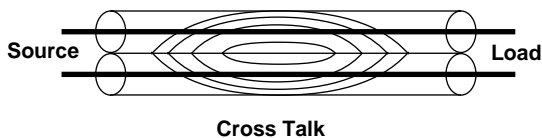
### Radiated Fields

Where strong radiated noise fields exist, such as *high powered radar, broadcast stations, power lines, fluorescent lighting, office and industrial machinery, multiple cable runs*, etc., the cable conductors act as receiving antennas or secondary windings of transformers and pick up externally generated noise. At higher frequencies, a part of the energy associated with the fluctuating current of charge in a conductor is radiated away from the conductor in the form of electromagnetic radiation. Electromagnetic shields make use of the fact that the electromagnetic radiation must simultaneously contain electric and magnetic fields in order to propagate independently through space. Therefore, a shield designed to eliminate electrostatic fields can be used to neutralize the electric field component of an electromagnetic wave. Consequently the outer conductor of a coax cable connected to a ground through a low-impedance path will be an effective shield against electromagnetic interference.

In high-level RF environments, it is desirable to minimize the RF potentials existing between points on a coax shield. The shield should be grounded at both ends of the cable and at intermediate points along the cable. This multi-point grounding of the shield maintains the RF shielding effectiveness of the cable. If coax cable is used in a radiated interference area, the outer conductor should be grounded as often as possible and wherever feasible in order to remove the radiated interference as soon as possible. If your application requires that you address **both** ground loops and radiated interference, you may need to use either twinax or triax cable.



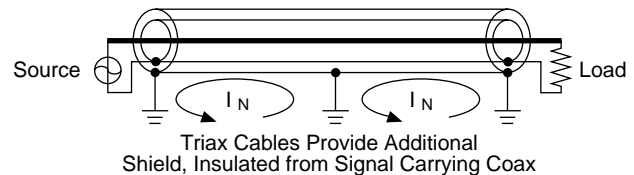
A particularly bad source of noise pickup is the induced currents (cross-talk) encountered in large multiple cable installations.



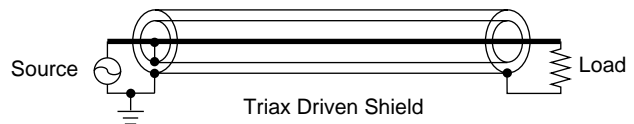
Two improved types of cables are used for additional protection against these radiated sources:

### Triax Cable

Triax cable is coax cable with an additional outer copper braid (insulated from the signal carrying conductors) that acts as a true shield and protects the enclosed coax conductors. This braid or shield is grounded and passes both ground loop and capacitive field noise currents away from the signal carrying coax, thereby greatly improving the “signal to noise” ratio over standard coax cable.

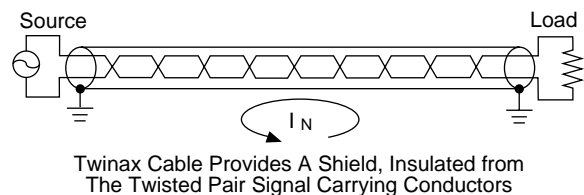


Triax cable is also used in “Driven Shield” applications where the inner conductor and **the first braid** are driven in parallel at the transmitting end and work against the outer braid which is insulated above ground. The inner braid is left floating at the receiving end, providing a “Faraday” shield between the inner conductor and outer braid. In this way the cable’s **distributed capacitance** is greatly reduced, thereby reducing cable losses and loading. This application is most effective in **high frequency transducer data systems** where the distributed capacity in coax cable limits the data accuracy. The two outer braids of the triax cable can be used as a low-impedance (approximately 12 ohms) transmission line to carry high-current pulses to **low impedance laser lamps** or **exploding bridge wire (EBW) ordnance systems**. Triax cable and connectors completely **insulated** from the ground are available for these applications.



### Twinax Cable

Twinax cable is a two-conductor twisted balanced wire line with a specific impedance and a shielding braid around both wires. The twisting of the two balanced-signal-carrying wires cancels any random induced noise voltage pickup, giving protection against any low frequency magnetic noise passing through the copper braid. **Trompeter’s twinax cable design** also lowers cable losses by adding two (2) dielectric fillers under the braid which separates the braid away from the signal pair, thereby lowering the leakage capacitance to ground. Additionally, the coverage is improved to 90% by using more copper wire in the braid and weaving it tighter. Like triax cable, Trompeter’s twinax cable provides protection against ground loops and capacitive fields. Twinax cable usefulness, however, is limited to approximately 15 MHz since it has rather high transmission losses above this frequency. Twinax cable and concentric connectors are available for **low frequency, digital** and **video distribution systems**.





## Bonding & Grounding

Good bonding and grounding are absolutely essential if noise pickup reduction is to be accomplished. Equipment isolation, cabling, bonding, and grounding are all part of the noise pickup and EMI/RFI problem. The method of equipment interconnecting and grounding is a function of the signal frequency and no one simple answer can be provided. The following common conditions require detailed consideration:

- **“Earth” grounds:** require extensive grids, ground rods, and chemical preparation to obtain an extremely low resistance and impedance system ground return.
- **Ground isolation:** In many instances in low-frequency data systems where equipment is widely separated, equipment ground “planes” should be isolated from earth grounds to avoid “noisy” ground loops caused by power and other equipment in the immediate area.
- **Parallel cabling:** Space isolate cabling of similar functions (i.e., RF from RF, video from video, and cables carrying vastly different voltage levels) so that they do not have mutual capacitive or inductive coupling.
- **Termination impedance:** Properly terminate all pulse and high-frequency cables in their characteristic impedance so that the cable reactive components are cancelled out and the voltage standing waves are reduced to a minimum.
- **Cable selection:** The higher the frequency, the faster the pulse rise time, or the longer the cable run; the bigger the cable required to reduce dielectric losses and lessen the distortion of pulse shapes.
- **Grounding location:** If “system” ground and “earth” ground must be connected, it should be done at minimal locations (preferably one) using extremely low-impedance bonding paths and materials. Otherwise, RF and high-frequency bonding should be made frequently to provide the shortest RF path to ground and to prevent the ground return from acting as an additional length of antenna.

## Systems Usage

Most engineers are quite familiar with the longtime use of 75 ohm coax cable in *baseband telephone transmission* installations and its universal use for *broadcast* and *cable TV*. Coax and twinax cables are being used for *local dedicated installations* with the rapid growth of *commercial computer data distribution*. The non-dedicated commercial coax data bus systems (*Ethernet*) tie many terminals to one high bit-rate trunk cable. *Military aircraft systems* call for 78 ohm twinax data bus distribution for main functions of *guidance* and *control, navigation, communications*, etc., per MIL-STD-1553B (TRS and TRB series connectors). MIL-STD-1397 specifies 50 ohm triax in *naval ship digital data bus* applications which use the TRB and TRC series connectors listed in MIL-C-49142.

Interference is becoming a major problem with the proliferation of *digital computer* installations, *data transmission* systems, and *local area networks* (both baseband and broadband). The main interference encountered is caused by the high harmonic content of the digital pulses that fall in the RF region and radiate into free space or cross-talk to other victim cables.

## Choice of Cable Type and Installation:

- **Grounded Coax:** Can pass the high information rates, but is subject to ground loops as well as magnetic and radiated noise pickup.
- **Ungrounded Coax:** Can pass the high information rates, but is subject to magnetic and radiated noise pickup. Substantially lowers the ground loop interference.
- **Triax Cable:** Can pass the high information rates, but is subject to magnetic noise pickup. Substantially lowers the ground loop interference and removes the radiated noise.
- **Twinax Cable:** Passes only medium information rates, but hinders the pickup of magnetic interference due to the “twist” of the signal pair. (Equipment usually operated with balanced inputs and outputs.)
- **Ungrounded versions of Twinax and Triax:** Provide even more ground loop isolation.

The choice of materials to be used in these cables is of major importance. For *commercial installations in public buildings*, the National Electrical Code, Underwriters Lab and local ordinance requirements must be complied with. *Fire wicking cables* routed horizontally through fire walls and vertically floor-to-floor are required to be metal ducted (a very expensive and inflexible mode of construction). *Approved cables made of FEP* can be routed horizontally and vertically, without ducting, in air plenums with a great reduction in size and cost and with much **greater flexibility for future modifications**. Increasing insurance premiums will almost dictate that **flame retardant nontoxic materials** be used in all future public building cable installations to reduce potential loss of life and property. The same applies to *military aircraft cables* which must also be able to withstand exposure to fuel and cleaning solvents. Connectors are available for these special cables.

*Trompeter Electronics, Inc.* has developed coax connectors that are isolated above ground, but have a 6 nanofarad bypass capacitor, shunting the outer braid to ground for high harmonic attenuation. In many instances, interference can be so severe that twinax (balanced-shielded) or triax (shielded coax) cables must be used along with the proper connectors to provide good isolation, bonding and grounding.

As previously discussed, high bit-rate signals require high-frequency transmission cables (coax, twinax, triax and even quadax) to minimize amplitude and frequency distortion and to prevent noise pickup from external interference.

The *design engineer* must select the optimum cable and connectors for maximum reduction of interference due to radiated RF and magnetically coupled or direct contact ground loop noise. This can reduce the number of noise suppression filters and amplifiers required.

A repeated word of caution is offered for those contemplating “digital” use. Low-voltage digital lines should not be placed in the near proximity of high-voltage and high current cables. Nor should a single multifunction connector be used due to the strong probability of cross-talk coupled interference. Physical separation of the cables is the first and best solution, with shielding and isolation above ground being the second consideration. ■

## CABLE GROUP TABLE NOTES / BEND RELIEF BOOTS/SPRINGS

### Cable Group Table Notes

If your cable group is not listed, contact the factory for assistance...

Trompeter provides cable connectors with configurations designed to provide tough, durable terminations on specific cables. Cable connector part numbers reference a specific cable group number for a specific cable type, model, and/or manufacturer. This *ensures* that the connector fits your cable and provides the toughest termination available in the industry.

If you know the **part number** and **manufacturer** of your cable, you can locate the cable's assigned cable group number using the cable group table in the following pages.

▲ If you have a Trompeter connector, you can determine the cable group number by the last hyphenated suffix, (usually 1 to 3 digits).

**Example:** UPL220-026 = cable group number -026

**Note:** All dimensions in the preceding Cable Group Table are in thousandths of an inch.

▲ If you cannot satisfy your connector requirements with the standard cable group number, or have a special requirement, contact your local Trompeter representative listed on the back inside cover of this catalog, or you can visit our website at [www.trompeter.com](http://www.trompeter.com) to find the sales rep nearest you. Contact the factory for more information.

**Note:** Cables of the same type and specification may vary from manufacturer to manufacturer. Always verify the cable group number for your connector type and manufacturer.

The symbol -△ after the part numbers listed in this catalog indicates that you should refer to the cable group table in the preceding pages.

Wrench style = **Wrench Crimp**  
Crimp style = **Tool Crimp**

### Bend Relief Boots/Springs



Minimizes the cable damage when exceeding the cable's minimum bend radius. Bend relief boots are made of tough 105°PVC. Bend relief springs are *plastic coated tempered steel wire* which are assembled as an integral part of the clamp-nut assembly. Available for specific Trompeter connectors, patch cords, and cable assemblies. For bend relief "BR" spring connectors, refer to page 79. Boots may be assembled to the cable connector using **3M ScotchGrip™ No.1099** plastic adhesive or equivalent. Call the factory for availability.

For Plugs: (PL20, PL40)      Black      **ACA-△-0**  
Wrench Crimp Connectors  
(Cable Groups -1,-2, &-5 only)

For Plugs: (PL220 & PL240)      Clear      **ACC-△**  
Tool Crimp Connectors  
(Cable Groups -011 & -013 only)

## CABLE GROUP TABLE

| CABLE MANUFACTURER       | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| 3M                       | SCI 041      | COAX       | -44          | *           | 74          | 12        | 75        |
| ACD CABLE                | 4-27046-3265 | TWINAX     | *            | _           | 194         | 24        | _         |
| ACOME                    | MC7539       | COAX       | -22          | -009        | 151         | 20        | _         |
| AEROSPACE                | 4114         | COAX       | SEE COMMENTS | TOO LARGE   | 345         | 64        | _         |
| AEROSPACE INDUSTRIES INC | 90149        | COAX       | *            | *           | 194         | 30        | _         |
| AEROSPACE WIRE           | 4080         | COAX       | *            | _           | 348         | 102       | 50        |
| ALCATEL                  | 0960 WL      | COAX       | _            | -004        | 93          | 11        | 75        |
| ALCATEL                  | ASNE 0690 WL | COAX       | _            | -004        | 93          | 11        | 75        |
| ALCATEL                  | CDE 003      | TWINAX     | *            | -204        | 140         | 24        | 77        |
| ALPHA                    | 7632         | TWINAX     | *            | _           | 169         | 30        | 600V      |
| ALPHA                    | 8620         | COAX       | -41          | -020        | 270         | 41        | 75        |
| ALPHA                    | 9059         | COAX       | -2           | -013        | 242         | 26        | 75        |
| ALPHA                    | 9102         | COAX       | *            | -023        | 212         | 32        | 75        |
| ALPHA                    | 9108         | TWINAX     | -55          | *           | 210         | 38        | 78        |
| ALPHA                    | 9109         | TWINAX     | _            | -213        | 252         | 37        | 100       |
| ALPHA                    | 9158         | COAX       | -21          | *           | 165         | 35        | 53        |
| ALPHA                    | 9159         | COAX       | *            | *           | 188         | 23        | 75        |
| ALPHA                    | 9174         | COAX       | -5           | -003        | 100         | 21        | 50        |
| ALPHA                    | 9316         | COAX       | -5           | -003        | 98          | 21        | 50        |
| ALPHA                    | 9807         | COAX       | -51          | -016        | 304         | 32        | 75        |
| ALPHA                    | 9817         | TWINAX     | -8           | _           | 327         | 38        | 100       |
| ALPHA                    | 9830         | COAX       | -2           | -013        | 242         | 25        | 75        |
| ALPHA                    | 9840         | COAX       | -2           | -013        | 240         | 25        | 80        |
| ALPHA                    | 9847         | COAX       | _            | -053        | 405         | 64        | 75        |
| ALPHA                    | 9850         | TRIAx      | -13          | TOO LARGE   | 314         | 32        | 75        |
| ALPHA                    | 9858         | COAX       | -1           | -011        | 193         | 36        | 50        |
| ALPHA                    | 2827/2       | TWINAX     | -29          | -207        | 120         | 37        | 600V      |
| ALPHA                    | 2834/2       | TWINAX     | -45          | _           | 137         | 32        | 600V      |
| ALPHA                    | 2837/2       | TWINAX     | *            | *           | 156         | 38        | 600V      |
| ALPHA                    | 9058C        | COAX       | -1           | -011        | 194         | 38        | 50        |
| ALPHA                    | 9179B        | COAX       | -5           | -004        | 101         | 12        | 75        |
| ALPHA                    | 9180B        | COAX       | -4           | *           | 140         | 38        | 95        |
| ALPHA                    | 9187A        | COAX       | -36          | -004        | 105         | 10        | 75        |
| ALPHA                    | 9196A        | COAX       | -44          | -1          | 70          | 11        | 50        |
| ALPHA                    | 9804C        | COAX       | -41          | -020        | 275         | 40        | 75        |
| ALPHA                    | 9814C        | TWINAX     | *            | -213        | 244         | 38        | 75        |
| ALPHA                    | 9818C        | TWINAX     | -8           | _           | 330         | 37        | 100       |
| ALPHA                    | 9825C        | COAX       | -6A          | _           | 400         | 64        | 75        |
| ALPHA                    | 9851C        | COAX       | *            | _           | 405         | 86        | 50        |
| ALPHA                    | 9861C        | COAX       | -1           | -011        | 192         | 38        | _         |
| ALPHA                    | 9871F        | COAX       | *            | -011        | 182         | 37        | 50        |
| ALPHA WIRE               | 2821/2       | TWINAX     | -27          | _           | 138         | 24        | 600V      |
| AMDAHL                   | 215-9000-000 | COAX       | -5A          | -001        | 75          | 12        | _         |
| AMPEX                    | 616-569      | COAX       | -36          | *           | 110         | 15        | _         |

Note: \* = Special contact factory



## CABLE GROUP TABLE

| CABLE MANUFACTURER  | CABLE NUMBER       | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|---------------------|--------------------|------------|--------------|-------------|-------------|-----------|-----------|
| AMPHENOL            | 82-5588            | TWINAX     | -8           | —           | 330         | 39        | —         |
| AMPHENOL CNDA       | 21-1060            | COAX       | -6           | -016        | —           | —         | —         |
| AMPHENOL CNDA       | 621-446-795        | COAX       | -6           | —           | —           | —         | —         |
| ANDREW              | FSJ2-50B           | COAX       | *            | —           | —           | —         | 50        |
| ANDREW              | HJ4-50             | COAX       | *            | —           | —           | —         | 50        |
| ANDREW              | HJ5-50             | COAX       | *            | —           | —           | —         | 50        |
| ANDREW              | LDF2-50-A          | COAX       | *            | —           | —           | —         | 50        |
| ANDREW              | LDF4-50-A          | COAX       | *            | TOO LARGE   | 630         | 189       | 50        |
| ANDREW              | LDF5-50-A          | COAX       | *            | —           | —           | —         | 50        |
| ANIXTER             | 9L759586           | COAX       | —            | *           | 280         | 42        | —         |
| ANIXTER COLUMBIA    | 55                 | COAX       | *            | *           | 143         | 12        | —         |
| ANTENNA SPECIALISTS | 18-73-2            | COAX       | -52          | —           | 246         | 52        | 50        |
| ARGOSY              | 8DV75              | COAX       | -21          | *           | 170         | 24        | 75        |
| ARINC               | 629                | TWINAX     | -8           | TOO LARGE   | 313         | 36        | —         |
| ASTROLAB            | 32001              | COAX       | -5           | *           | 115         | 20        | —         |
| ASTROLABS           | 32081              | COAX       | -5           | -003        | 100         | 20        | 50        |
| ASTRONAUTICS        | 169450             | TRIAx      | -7           | —           | 210         | 23        | —         |
| AT&T (LUCENT)       | 733                | COAX       | —            | -027        | —           | —         | 75        |
| AT&T (LUCENT)       | 1735A              | COAX       | —            | -026        | 128         | 16        | 75        |
| AT&T (LUCENT)       | 2734A              | COAX       | —            | *           | 225         | 32        | 75        |
| AT&T (LUCENT)       | 2735A              | COAX       | -22          | -026        | 140         | 15        | 75        |
| AT&T (LUCENT)       | 734D               | COAX       | -63          | -025        | 236         | 31        | 75        |
| AT&T (LUCENT)       | 735A               | COAX       | *            | -026        | 125         | 16        | 75        |
| AT&T (LUCENT)       | NSI 4609 805 13019 | COAX       | -37          | *           | 166         | 16        | —         |
| AT&T(LUCENT)        | 724                | COAX       | -6           | -016        | 304         | 33        | —         |
| AT&T(LUCENT)        | 728                | COAX       | -6           | -016        | 304         | 33        | 75        |
| AT&T(LUCENT)        | 731                | COAX       | -2           | -015        | 248         | 23        | 75        |
| AT&T(LUCENT)        | 730A               | COAX       | -2B          | -015        | 255         | 25        | —         |
| AT&T(LUCENT)        | 734A               | COAX       | -63          | -025        | 236         | 31        | 75        |
| AT&T(LUCENT)        | KS-19224L2         | COAX       | -31          | *           | 116         | 11        | —         |
| AT&T(W.E.CO)        | 16PEVL             | TWINAX     | -12          | —           | 460         | 51        | —         |
| AT&T(W.E.CO)        | 754E               | TWINAX     | -10          | —           | 420         | 40        | —         |
| AT&T(W.E.CO)        | 760A               | TWINAX     | -11          | TOO LARGE   | 308         | 25        | —         |
| AT&T(W.E.CO)        | 761A               | TWINAX     | -30          | —           | 215         | 21        | —         |
| AT&T/NSI            | 4609 805 13019     | COAX       | —            | *           | —           | —         | —         |
| ATLAS               | 1405-59-U95        | COAX       | -2           | -014        | 242         | 32        | 75        |
| AVAYA               | 1725B              | COAX       | *            | -054        | 325         | 50        | 75        |
| AXON                | A3331B             | TRIAx      | —            | *           | 215         | 20        | —         |
| AXON                | CC6297             | TWINAX     | -55          | —           | 205         | 24        | 124       |
| AXON                | P502805C           | TWINAX     | *            | -201        | 126         | 24        | —         |
| AXON                | P502810            | TWINAX     | -47          | -201        | 135         | —         | 77        |
| AXON                | P506133            | TRIAx      | *            | —           | 213         | 25        | 75        |
| AXON                | P506425            | TWINAX     | -55          | —           | 202         | 25        | 120       |
| AXON                | P507991A           | TWINAX     | *            | -204        | 134         | 24        | —         |

Note: \* = Special contact factory

## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER       | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------------|------------|--------------|-------------|-------------|-----------|-----------|
| AXON               | P512806            | TWINAX     | *            | -217        | 150         | 24        | —         |
| AXON               | P512807            | TWINAX     | *            | -217        | 152         | 24        | —         |
| AXON               | P813856            | TRIAx      | —            | *           | 192         | 24        | —         |
| AXON               | S9702211           | TRIAx      | *            | *           | 197         | 24        | —         |
| AXON               | SRX 50 C           | TRIAx      | *            | —           | —           | —         | —         |
| AXON               | SSTHE2-H1          | TWINAX     | —            | -222        | 151         | 25        | —         |
| AXON               | UKT2407-SPC-HSTP-2 | TWIAx      | *            | -223        | 114         | 24        | 50        |
| BEDEA              | TRIAx 11           | TRIAx      | *            | TOO LARGE   | 438         | 55        | 75        |
| BELDEN             | 8208               | TWINAX     | -25          | —           | 257         | 47        | 300V      |
| BELDEN             | 8212               | COAX       | -2           | -014        | 242         | 32        | 75        |
| BELDEN             | 8213               | COAX       | -6A          | -053        | 405         | 64        | 75        |
| BELDEN             | 8214               | COAX       | *            | TOO LARGE   | 403         | 108       | 50        |
| BELDEN             | 8215               | COAX       | -6E          | -017        | 332         | 28        | 75        |
| BELDEN             | 8216               | COAX       | -5           | -003        | 103         | 20        | 50        |
| BELDEN             | 8218               | COAX       | -22          | -009        | 150         | 17        | 75        |
| BELDEN             | 8219               | COAX       | -1           | -011        | 195         | 37        | 52        |
| BELDEN             | 8221               | COAX       | -2           | -013        | 242         | 25        | 80        |
| BELDEN             | 8227               | TWINAX     | -8           | —           | 330         | 39        | —         |
| BELDEN             | 8232               | TRIAx      | -13A         | TOO LARGE   | 312         | 32        | 75        |
| BELDEN             | 8233               | TRIAx      | -14          | —           | 475         | 64        | 75        |
| BELDEN             | 8237               | COAX       | -6A          | —           | 405         | 85        | 50        |
| BELDEN             | 8238               | COAX       | -6A          | —           | 405         | 48        | 75        |
| BELDEN             | 8240               | COAX       | -1           | -021        | 195         | 32        | 51.5      |
| BELDEN             | 8241               | COAX       | -2           | -013        | 242         | 25        | 75        |
| BELDEN             | 8259               | COAX       | -1           | -011        | 195         | 40        | 50        |
| BELDEN             | 8261               | COAX       | -6A          | —           | 405         | 49        | 75        |
| BELDEN             | 8262               | COAX       | -1           | -011        | 192         | 38        | 50        |
| BELDEN             | 8263               | COAX       | -2           | -013        | 242         | 23        | 75        |
| BELDEN             | 8267               | COAX       | -6A          | —           | 405         | 86        | 50        |
| BELDEN             | 8268               | COAX       | -6B          | TOO LARGE   | 425         | 89        | 50        |
| BELDEN             | 8279               | COAX       | -2A          | -022        | 220         | 25        | 75        |
| BELDEN             | 8281               | COAX       | -6           | -016        | 307         | 30        | 75        |
| BELDEN             | 8422               | TWINAX     | -9           | —           | 231         | 25        | 1000V     |
| BELDEN             | 8441               | TWP        | 30           | —           | 210         | 25        | 300V      |
| BELDEN             | 8450               | TWINAX     | -27          | —           | 121         | 25        | 200V      |
| BELDEN             | 8451               | TWINAX     | -23          | -210        | 140         | 31        | 300V      |
| BELDEN             | 8998               | COAX       | *            | *           | 198         | 32        | —         |
| BELDEN             | 9011               | COAX       | -6A          | -053        | 405         | 64        | 75        |
| BELDEN             | 9054               | COAX       | -2           | -014        | 242         | 32        | 75        |
| BELDEN             | 9060               | COAX       | -41          | *           | 284         | 40        | 75        |
| BELDEN             | 9064               | COAX       | -6A          | —           | 400         | 64        | 75        |
| BELDEN             | 9066               | COAX       | -41          | -020        | 275         | 41        | 75        |
| BELDEN             | 9068               | COAX       | -22          | -009        | 146         | 16        | 75        |
| BELDEN             | 9100               | COAX       | -2           | -014        | 237         | 32        | 75        |

Note: \* = Special contact factory



## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| BELDEN             | 9104         | COAX       | -34          | *           | 243         | 32        | 75        |
| BELDEN             | 9108         | COAX       | *            | -014        | 237         | 32        | 75        |
| BELDEN             | 9110         | COAX       | -2           | -014        | 242         | 32        | 75        |
| BELDEN             | 9112         | COAX       | -2           |             | 242         | 32        | -         |
| BELDEN             | 9114         | COAX       | -41          | -020        | 270         | 40        | 75        |
| BELDEN             | 9116         | COAX       | -41          | -020        | 278         | 38        | 75        |
| BELDEN             | 9141         | COAX       | -6           | -016        | 304         | 33        | 75        |
| BELDEN             | 9146         | COAX       | 4            | -           | -           | -         | -         |
| BELDEN             | 9165         | COAX       | -2           | -013A       | 242         | 30        | 75        |
| BELDEN             | 9167         | COAX       | -2           | -014        | 243         | 32        | 75        |
| BELDEN             | 9168         | COAX       | -41          | -020        | 275         | 40        | 75        |
| BELDEN             | 9169         | COAX       | -2B          | -015        | 249         | 25        | 93        |
| BELDEN             | 9170         | COAX       | -4           | *           | 140         | 22        | 75        |
| BELDEN             | 9171         | COAX       | -2           | -013A       | 242         | 30        | 75        |
| BELDEN             | 9182         | TWINAX     | *            | TOO LARGE   | 350         | 31        | 150       |
| BELDEN             | 9192         | TRIAx      | *            | -           | -           | -         | 75        |
| BELDEN             | 9201         | COAX       | -1           | -021        | 193         | 33        | 52        |
| BELDEN             | 9203         | COAX       | -1           | -021        | 195         | 35        | 50        |
| BELDEN             | 9204         | COAX       | -            | -013        | 241         | 25        | 75        |
| BELDEN             | 9207         | TWINAX     | -8           | -           | 330         | 39        | 100       |
| BELDEN             | 9209         | COAX       | -63          | -019        | 226         | 22        | 75        |
| BELDEN             | 9212         | COAX       | -6A          | -           | 405         | 48        | 75        |
| BELDEN             | 9221         | COAX       | -5           | -004        | 102         | 12        | 75        |
| BELDEN             | 9222         | TRIAx      | -7           | -306        | 239         | 40        | 50        |
| BELDEN             | 9223         | COAX       | -1           | *           | 195         | 30        | 50        |
| BELDEN             | 9228         | COAX       | -2           | -013        | 242         | 25        | 93        |
| BELDEN             | 9231         | COAX       | -6           | -016        | 304         | 32        | 75        |
| BELDEN             | 9232         | TRIAx      | *            | TOO LARGE   | -           | -         | 75        |
| BELDEN             | 9239         | COAX       | -5           | -003        | 104         | 19        | 50        |
| BELDEN             | 9240         | COAX       | -2           | -014        | 241         | 32        | 75        |
| BELDEN             | 9243         | COAX       | -2           | -014        | 242         | 32        | -         |
| BELDEN             | 9244         | COAX       | -2           | -013        | 242         | 25        | 73        |
| BELDEN             | 9248         | COAX       | -41          | -020        | 270         | 36        | 75        |
| BELDEN             | 9250         | TWINAX     | -10          | -           | 420         | 46        | 95        |
| BELDEN             | 9251         | COAX       | -6A          | -           | 405         | 85        | 52        |
| BELDEN             | 9252         | COAX       | *            | -010        | 160         | 30        | 50        |
| BELDEN             | 9254         | COAX       | -22          | -009        | 142         | 19        | 75        |
| BELDEN             | 9258         | COAX       | *            | -           | 247         | 55        | 50        |
| BELDEN             | 9259         | COAX       | -2A          | -023        | 234         | 30        | 75        |
| BELDEN             | 9265         | COAX       | -2           | -014        | 242         | 31        | 75        |
| BELDEN             | 9266         | COAX       | -2           | -013A       | 245         | 31        | -         |
| BELDEN             | 9267         | TRIAx      | *            | *           | 360         | 32        | 75        |
| BELDEN             | 9268         | COAX       | *            | -018        | 260         | 25        | 93        |
| BELDEN             | 9271         | TWINAX     | *            | -           | 243         | 20        | 124       |

Note: \* = Special contact factory

## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| BELDEN             | 9272         | TWINAX     | -9           | -213        | 242         | 37        | 78        |
| BELDEN             | 9273         | COAX       | -3           | -012        | 216         | 35        | 50        |
| BELDEN             | 9274         | COAX       | -2           | -014        | 242         | 32        | 75        |
| BELDEN             | 9275         | COAX       | -2           | -14         | 242         | 32        | 75        |
| BELDEN             | 9284         | COAX       | -41          | -020        | 275         | 40        | —         |
| BELDEN             | 9290         | COAX       | *            | *           | 288         | 37        | 75        |
| BELDEN             | 9291         | COAX       | -2           | -013        | 242         | 25        | 80        |
| BELDEN             | 9292         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| BELDEN             | 9310         | COAX       | *            | -011        | 194         | 35        | 50        |
| BELDEN             | 9311         | COAX       | -1           | -011        | 193         | 37        | 52        |
| BELDEN             | 9386         | COAX       | -41          | -020        | 275         | 40        | —         |
| BELDEN             | 9448         | COAX       | -2           | -013        | 242         | 25        | —         |
| BELDEN             | 9463         | TWINAX     | -9           | -213        | 240         | 37        | 78        |
| BELDEN             | 9555         | COAX       | -2           | -013        | 242         | 23        | 75        |
| BELDEN             | 9587         | COAX       | -41          | -020        | 275         | 40        | 75        |
| BELDEN             | 9589         | COAX       | -2           | —           | 242         | 32        | —         |
| BELDEN             | 9659         | COAX       | -2           | -013A       | 242         | 30        | 75        |
| BELDEN             | 9764         | COAX       | -6A          | —           | 405         | 64        | 75        |
| BELDEN             | 9815         | TWINAX     | -8           | —           | 330         | 37        | 100       |
| BELDEN             | 9841         | TWINAX     | -9           | -215        | 256         | 25        | 120       |
| BELDEN             | 9850         | COAX       | -6B          | —           | 425         | 48        | 75        |
| BELDEN             | 9857         | COAX       | -6A          | —           | 405         | 25        | 125       |
| BELDEN             | 9859         | TWINAX     | *            | -213        | 243         | 38        | 78        |
| BELDEN             | 9860         | TWINAX     | -46          | —           | 440         | 51        | 124       |
| BELDEN             | 9861         | COAX       | -6E          | —           | 332         | 57        | 50        |
| BELDEN             | 9880         | COAX       | -48          | —           | 405         | 86        | 50        |
| BELDEN             | 9888         | TRIAx      | *            | —           | 480         | 108       | 50        |
| BELDEN             | 9907         | COAX       | -1           | -011        | 185         | 37        | 50        |
| BELDEN             | 9913         | COAX       | *            | -050 (90C)  | 411         | 108       | 50        |
| BELDEN             | 9914         | COAX       | *            | TOO LARGE   | 405         | 100       | 50        |
| BELDEN             | 9999         | TWINAX     | —            | —           | 185         | 30        | 78        |
| BELDEN             | 9999         | TWINAX     | -33          | —           | 187         | 30        | 78        |
| BELDEN             | 44319        | COAX       | *            | *           | 298         | 42        | 75        |
| BELDEN             | 46899        | COAX       | -1           | *           | 199         | 24        | 75        |
| BELDEN             | 81553        | TWINAX     | -47          | -201        | 129         | 24        | 77        |
| BELDEN             | 82108        | COAX       | *            | *           | 212         | 32        | 75        |
| BELDEN             | 82120        | COAX       | -34          | -024        | 244         | 40        | 75        |
| BELDEN             | 82121        | COAX       | -52          | -024        | 240         | 40        | 75        |
| BELDEN             | 82240        | COAX       | *            | *           | 159         | 32        | 53.5      |
| BELDEN             | 82241        | COAX       | *            | *           | 193         | 23        | 75        |
| BELDEN             | 82248        | COAX       | *            | *           | 227         | 41        | 75        |
| BELDEN             | 82259        | COAX       | *            | *           | 193         | 30        | 75        |
| BELDEN             | 82269        | COAX       | *            | *           | 197         | 25        | 93        |
| BELDEN             | 82641        | TWINAX     | *            | —           | 106         | 24        | 48        |

Note: \* = Special contact factory



## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| BELDEN             | 82907        | COAX       | -21          | *           | 163         | 36        | 50        |
| BELDEN             | 83241        | COAX       | *            | -011        | 187         | 37        | 50        |
| BELDEN             | 83242        | COAX       | -1           | -012        | 193         | 39        | 50        |
| BELDEN             | 83264        | COAX       | -5           | -004        | 100         | 12        | 75        |
| BELDEN             | 83265        | COAX       | -5A          | -011        | 71          | 10        | 50        |
| BELDEN             | 83266        | COAX       | -22          | -008        | 141         | 12        | 95        |
| BELDEN             | 83267        | COAX       | -36          | -004        | 110         | 12        | 75        |
| BELDEN             | 83269        | COAX       | -5           | -003        | 100         | 18        | 50        |
| BELDEN             | 83284        | COAX       | -5           | -003        | 100         | 21        | 50        |
| BELDEN             | 83303        | COAX       | -44          | —           | 75          | 19        | 600V      |
| BELDEN             | 83310        | TWINAX     | -29          | -207        | 120         | 31        |           |
| BELDEN             | 83317        | TWINAX     | *            | -223        | 112         | 19        | 600V      |
| BELDEN             | 83318        | TWINAX     | -29          | -204        | 132         | 25        | 600V      |
| BELDEN             | 83319        | TWINAX     | *            | -221        | 139         | 32        | NC        |
| BELDEN             | 84142        | COAX       | -1           | -021        | 195         | 37        | 50        |
| BELDEN             | 84303        | COAX       | -21          | -011        | 170         | 37        | 50        |
| BELDEN             | 86262        | COAX       | -2A          | -022        | 220         | 25        | 93        |
| BELDEN             | 87108        | COAX       | -2A          | -023        | —           | —         | —         |
| BELDEN             | 87120        | COAX       | -52          | -024        | 256         | 40        | 75        |
| BELDEN             | 88232        | TRIAx      | *            | *           | 247         | 32        | 75        |
| BELDEN             | 88240        | COAX       | *            | *           | 159         | 32        | 53.5      |
| BELDEN             | 88241        | COAX       | *            | *           | 193         | 23        | 75        |
| BELDEN             | 88281        | COAX       | -41          | *           | 270         | 31        | 75        |
| BELDEN             | 89108        | COAX       | -2A          | -023        | 218         | 32        | 75        |
| BELDEN             | 89120        | COAX       | -52          | *           | 235         | 41        | 75        |
| BELDEN             | 89120        | COAX       |              | *           | 234         | 41        | 75        |
| BELDEN             | 89162        | COAX       | -2A          | -019        | —           | —         | 75        |
| BELDEN             | 89182        | TWINAX     | -54          |             | 307         | 31        | 150       |
| BELDEN             | 89207        | TWINAX     | *            | TOO LARGE   | 267         | 39        | 100       |
| BELDEN             | 89248        | COAX       | -52          | *           | 222         | 40        | 75        |
| BELDEN             | 89259        | COAX       | *            | *           | 192         | 31        | 75        |
| BELDEN             | 89269        | COAX       | -2A          | -022        | 222         | 25        | 93        |
| BELDEN             | 89272        | TWINAX     | -55          | *           | 220         | 39        | 78        |
| BELDEN             | 89292        | COAX       | *            | -052        | 348         | 64        | 75        |
| BELDEN             | 89555        | COAX       | -53          | -019        | 230         | 23        | 75        |
| BELDEN             | 89880        | COAX       | -50          | —           | 375         | 86        | 50        |
| BELDEN             | 89907        | COAX       | -21 (20/90)  | *           | 160         | 37        | 50        |
| BELDEN             | 89913        | COAX       | *            | TOO LARGE   | 364         | 108       | 50        |
| BELDEN             | 89999        | TWINAX     | *            | —           | 178         | 30        | 78        |
| BELDEN             | 92289        | COAX       | *            | *           | 204         | 25        | —         |
| BELDEN             | 513945       | COAX       | —            | -052        | 405         | 64        | 75        |
| BELDEN             | 533945       | COAX       | -41          | -020        | 266         | 41        | 75        |
| BELDEN             | 543945       | COAX       | -2A          | -023        | 232         | 32        | 75        |
| BELDEN             | 549945       | COAX       | —            | -023        | 232         | 32        | 75        |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| BELDEN             | 551945       | COAX       | _            | -023        | 232         | 30        | 75        |
| BELDEN             | 568937       | COAX       | -36          | -027        | 123         | 16        | 75        |
| BELDEN             | 573945       | COAX       | -22          | -009        | 146         | 18        | 75        |
| BELDEN             | 613948       | COAX       | _            | -025        | 348         | 64        | 75        |
| BELDEN             | 633938       | COAX       | _            | *           | 233         | 40        | 75        |
| BELDEN             | 633948       | COAX       | *            | *           | 228         | 40        | 75        |
| BELDEN             | 633948       | COAX       | _            | *           | 228         | 40        | 75        |
| BELDEN             | 643948       | COAX       | *            | *           | 193         | 38        | 75        |
| BELDEN             | 643948       | COAX       | _            | *           | 193         | 32        | 75        |
| BELDEN             | 649948       | COAX       | _            | *           | 199         | 32        | 75        |
| BELDEN             | 673948       | COAX       | *            | *           | 146         | 18        | 75        |
| BELDEN             | 1151A        | COAX       | -2           | -013A       | 247         | 32        | 75        |
| BELDEN             | 1152A        | COAX       | -41          | *           | 280         | 40        | 75        |
| BELDEN             | 1153A        | COAX       | *            | _           | 387         | 64        | 75        |
| BELDEN             | 1162A        | TWINAX     | -8           | _           | 330         | 37        | 100       |
| BELDEN             | 1163A        | COAX       | -6           | -016        | _           | _         | 100       |
| BELDEN             | 1164B        | COAX       | -22          | -009        | 145         | 19        | 75        |
| BELDEN             | 1167A        | COAX       | -22          | -009        | 152         | 20        | 75        |
| BELDEN             | 1167B        | COAX       | -22          | -009        | 146         | 19        | 75        |
| BELDEN             | 1168A        | COAX       | -141         |             | 141         | 37        | _         |
| BELDEN             | 1186A        | COAX       | *            | *           | 265         | 32        | 75        |
| BELDEN             | 1187A        | COAX       | *            | *           | 267         | 32        | 75        |
| BELDEN             | 1189A        | COAX       | *            | *           | 298         | 40        | 75        |
| BELDEN             | 1223A        | COAX       | -41          | -020        | 275         | 40        | 75        |
| BELDEN             | 1263A        | COAX       | *            | -009        | 160         | 21        | 75        |
| BELDEN             | 1406B        | COAX       | -22          | -009        | 146         | 19        | 75        |
| BELDEN             | 1407B        | COAX       | -22          | -009        | 146         | 19        | 75        |
| BELDEN             | 1417B        | COAX       | _            | -009        | 150         | 18        | 75        |
| BELDEN             | 1418B        | COAX       | -22          | -009        | 150         | 15        | 75        |
| BELDEN             | 1426A        | COAX       | -2           | -014        | 242         | 32        | 75        |
| BELDEN             | 1505A        | COAX       | -2           | -025        | 234         | 32        | 75        |
| BELDEN             | 1505F        | COAX       | -2           | _           | 242         | 34        | 75        |
| BELDEN             | 1506A        | COAX       | *            | *           | 201         | 32        | 75        |
| BELDEN             | 1520A        | COAX       | -5           | -004        | 102         | 12        | 75        |
| BELDEN             | 1521A        | COAX       | _            | -004        | 560         | 12        | 75        |
| BELDEN             | 1522A        | COAX       | -36          | -004        | 107         | 12        | 75        |
| BELDEN             | 1523A        | COAX       | -6A          | -053        | 400         | 64        | 75        |
| BELDEN             | 1525A        | COAX       | -6A          | TOO LARGE   | 404         | 64        | 75        |
| BELDEN             | 1530A        | COAX       | -41          | -020        | 270         | 40        | 75        |
| BELDEN             | 1547A        | COAX       | -41          | -020        | 275         | 40        | 75        |
| BELDEN             | 1617A        | COAX       | -6B          | TOO LARGE   | 407         | 64        | 75        |
| BELDEN             | 1671A        | COAX       | -86          | -003        | 87          | 20        | 50        |
| BELDEN             | 1671J        | COAX       | -31          | _           | 127         | 20        | 50        |
| BELDEN             | 1672A        | COAX       | -86          | -004        | 87          | 11        | 75        |

Note: \* = Special contact factory



## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| BELDEN             | 1672J        | COAX       | -31          | -027        | 127         | 11        | 75        |
| BELDEN             | 1673A        | COAX       | —            | —           | 138         | 36        | 50        |
| BELDEN             | 1673J        | COAX       | *            | *           | 178         | 37        | 50        |
| BELDEN             | 1694A        | COAX       | -41          | -020        | 282         | 40        | 75        |
| BELDEN             | 1695A        | COAX       | *            | *           | 235         | 40        | 75        |
| BELDEN             | 1696A        | TWINAX     | *            | -215        | 240         | 31        | 110       |
| BELDEN             | 1800A        | TWINAX     | *            | -212        | 184         | 24        | 110       |
| BELDEN             | 1800B        | TWINAX     | *            | -212        | 180         | 24        | 110       |
| BELDEN             | 1800F        | TWINAX     | -30          | —           | 216         | 24        | 110       |
| BELDEN             | 1807A        | COAX       | -5           | -004        | 110         | 12        | 75        |
| BELDEN             | 1808A        | COAX       | -5           | -004        | 110         | 12        | 75        |
| BELDEN             | 1809A        | COAX       | -63          | -025        | 234         | 32        | 75        |
| BELDEN             | 1824A        | COAX       | *            | *           | 200         | 30        | 75        |
| BELDEN             | 1825A        | COAX       | *            | *           | 200         | 30        | 75        |
| BELDEN             | 1826A        | COAX       | *            | *           | 200         | 30        | 75        |
| BELDEN             | 1828A        | COAX       | -41          | -020        | 270         | 40        | 75        |
| BELDEN             | 1829A        | COAX       | -41          | -020        | 270         | 40        | 75        |
| BELDEN             | 1855A        | COAX       | *            | *           | 159         | 22        | 75        |
| BELDEN             | 1856A        | TRIAx      | *            | TOO LARGE   | 363         | 31        | 75        |
| BELDEN             | 1857A        | TRIAx      | *            | TOO LARGE   | 360         | 31        | 75        |
| BELDEN             | 1858A        | TRIAx      | *            | TOO LARGE   | 520         | 64        | 75        |
| BELDEN             | 1859A        | TRIAx      | *            | TOO LARGE   | 420         | 63        | —         |
| BELDEN             | 1865A        | COAX       | -22          | -09         | 152         | 20        | 75        |
| BELDEN             | 1880A        | TWINAX     | *            | -212        | 184         | 24        | —         |
| BELDEN             | 3072F        | TWINAX     | *            | *           | 320         | 46        | 78        |
| BELDEN             | 3092A        | COAX       | -51          | *           | 298         | 40        | 75        |
| BELDEN             | 4-27046-3265 | TWINAX     | *            | —           | 200         | 23        | —         |
| BELDEN             | 5339b5       | COAX       | —            | -020        | 266         | 40        | 75        |
| BELDEN             | 5339Q5       | COAX       | —            | -016        | 298         | 40        | 75        |
| BELDEN             | 5399B5       | COAX       | —            | -020        | 270         | 40        | 75        |
| BELDEN             | 5439Q5       | COAX       | —            | *           | 265         | 32        | 75        |
| BELDEN             | 5539Y5       | COAX       | —            | -022        | 232         | 25        | 93        |
| BELDEN             | 6139B8       | COAX       | —            | -052        | 348         | 64        | 75        |
| BELDEN             | 6339Q8       | COAX       | —            | -024        | 248         | 40        | 75        |
| BELDEN             | 6439C8       | COAX       | —            | *           | 199         | 32        | 75        |
| BELDEN             | 6439Q8       | COAX       | —            | -023        | 230         | 32        | 75        |
| BELDEN             | 6539Y8       | COAX       | —            | *           | 204         | 25        | 93        |
| BELDEN             | 734A1P       | COAX       | —            | *           | 213         | 32        | 75        |
| BELDEN             | 734D()       | COAX       | —            | -025        | —           | —         | 75        |
| BELDEN             | 734D()T      | COAX       | —            | -025        | —           | —         | 75        |
| BELDEN             | 734D1        | COAX       | —            | -025        | 235         | 32        | 75        |
| BELDEN             | 735A()       | COAX       | *            | -026        | —           | —         | 75        |
| BELDEN             | 735A()T      | COAX       | *            | -026        | —           | —         | 75        |
| BELDEN             | 735A1        | COAX       | *            | -026        | 129         | 16        | 75        |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| BELDEN             | 7700A        | COAX       | -5           | -004        | 107         | 12        | 75        |
| BELDEN             | 7710A        | COAX       | -41          | -020        | 275         | 40        | 75        |
| BELDEN             | 7712A        | COAX       |              | *           | 283         | 40        | 75        |
| BELDEN             | 7713A        | COAX       | -41          | -020        | 275         | 40        | 75        |
| BELDEN             | 7731A        | COAX       | -6A          | -053        | 405         | 64        | 75        |
| BELDEN             | 7732A        | COAX       | *            | _           | 356         | 64        | 75        |
| BELDEN             | 7733A        | COAX       | *            | TOO LARGE   | 355         | 108       | 50        |
| BELDEN             | 7788A        | COAX       | -4           | -009        | 159         | 23        | 75        |
| BELDEN             | 7794A        | COAX       |              | -023        | 235         | 32        | 75        |
| BELDEN             | 7805A        | COAX       | -5           | -003        | 105         | 18        | 50        |
| BELDEN             | 7806A        | COAX       | -1           | -011        | 195         | 37        | 50        |
| BELDEN             | 7807A        | COAX       | -1           | _           | 195         | 44        | 50        |
| BELDEN             | 7808A        | COAX       | *            | *           | 240         | 56        | 50        |
| BELDEN             | 7809A        | COAX       | *            | *           | 300         | 70        | 50        |
| BELDEN             | 7810A        | COAX       | *            | TOO LARGE   | 405         | 108       | 50        |
| BELDEN             | 7810R        | COAX       | *            | _           | 405         | 108       | 50        |
| BELDEN             | 7855A        | COAX       | _            | _           | 320         | 51        | 75        |
| BELDEN             | 8232A        | TRIAX      | -13A         | TOO LARGE   | 315         | 32        | 75        |
| BELDEN             | 8233A        | TRIAX      | -14          | _           | 475         | 48        | 75        |
| BELDEN             | 8241A        | COAX       | -2           | -013        | 242         | 25        | 75        |
| BELDEN             | 8241B        | COAX       | -2           | -013        | 242         | 23        | 75        |
| BELDEN             | 8241F        | COAX       | -2           | -013A       | 242         | 30        | 75        |
| BELDEN             | 8281B        | COAX       | -6           | -016        | 307         | 30        | 75        |
| BELDEN             | 8281F        | COAX       | -51          | -016        | 300         | 33        | 75        |
| BELDEN             | 9062A        | COAX       | -2           | -013        | 242         | 25        | 93        |
| BELDEN             | 9104P        | COAX       | _            | *           | 203         | 32        | 75        |
| BELDEN             | 9116P        | COAX       | *            | *           | 235         | 40        | 75        |
| BELDEN             | 9209A        | COAX       | -2A          | -019        | 220         | 22        | 75        |
| BELDEN             | 9269_        | COAX       | -2           | -013        | 242         | 25        | 93        |
| BELDEN             | 97300 2802   | TWINAX     | *            | -050        | 94          | 12        | _         |
| BELDEN             | 9913F        | COAX       | *            | -050        | 408         | 108       | 50        |
| BELDEN             | 9931F        | COAX       | *            | _           | 405         | 108       | 50        |
| BELDEN             | H 121B       | COAX       | _            | *           | 196         | 32        | 75        |
| BELDEN             | M9100        | COAX       | -2           | -014        | 240         | 32        | _         |
| BELDEN             | M9815        | TWINAX     | -8           | _           | _           | _         | _         |
| BELDEN             | PD7163       | COAX       |              | -004        | 100         | 10        | 75        |
| BELDEN             | SS895        | COAX       | -36          | -027        | 123         | 16        | 75        |
| BELDEN             | YM23969      | COAX       | -34          | *           | 244         | 33        | _         |
| BELDEN             | YQ10474      | TWINAX     | -25          | _           | 268         | 32        | _         |
| BELDEN             | YQ28763      | TWINAX     | -55          | _           | 200         | _         | _         |
| BELDEN             | YQ40343      | COAX       | -5           | -004        | 95          | 12        | 75        |
| BELDEN             | YQ41416      | TRIAX      | -10          | TOO LARGE   | 410         | 63        | 75        |
| BELDEN             | YQ42857      | COAX       | *            | *           | 199         | 35        | 75        |
| BELDEN             | YQ44343      | COAX       | _            | -009        | 142         | 19        | 75        |

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|--------------------|-----------------|------------|--------------|-------------|-------------|-----------|-----------|
| BELDEN             | YR-14910        | TWINAX     | -29          | -202        | 150         | 24        | 78        |
| BELDEN             | YR-15161        | TWINAX     | -29          | —           | —           | —         | —         |
| BELDEN             | YR16411         | TWINAX     | -9           | —           | 247         | 23        | —         |
| BELDEN             | YR-19218        | TWINAX     | -29          | -203        | 150         | 12        | 124       |
| BELDEN             | YR23023         | COAX       | *            | -009        | 160         | 20        | 75        |
| BELDEN             | YR23930         | COAX       | -2           | -014        | 242         | 32        | 75        |
| BELDEN             | YR27110         | COAX       | -22          | -009        | 162         | 21        | 75        |
| BELDEN             | YR27543         | TWINAX     | -27          | *           | 117         | 12        | —         |
| BELDEN             | YR27772         | TWINAX     | *            | —           | 213         | 26        | —         |
| BELDEN             | YR28296         | TWINAX     | —            | -203        | 162         | 12        | —         |
| BELDEN             | YR28314         | COAX       | *            | -009        | 162         | 19        | 75        |
| BELDEN             | YR28365         | COAX       | -2           | -013        | 245         | 25        | 100       |
| BELDEN             | YR28764         | TWINAX     | *            | *           | 383         | 37        | —         |
| BELDEN             | YR39546         | TRIAx      | *            | *           | 370         | 29        | 75        |
| BELDEN             | YR39667         | COAX       | -22          | -009        | 152         | 20        | 75        |
| BELDEN             | YR40974         | COAX       | -36          | -007        | 113         | 12        | 75        |
| BELDEN             | YR41007         | COAX       | -63          | -025        | 235         | 32        | 75        |
| BELDEN             | YR41039         | COAX       | -22          | -009        | 155         | 20        | 75        |
| BELDEN             | YR41679         | COAX       | —            | -014        | 242         | 32        | 75        |
| BELDEN             | YR-44149        | COAX       | *            | *           | 140         | 15        | —         |
| BELDEN             | YR45056         | COAX       | *            | -026        | 131         | 17        | 75        |
| BELDEN             | YR45301         | COAX       | *            | -026        | 131         | 17        | 75        |
| BELDEN             | YR46359         | COAX       | —            | -023        | 235         | 34        | 75        |
| BELDEN             | YR46400         | COAX       | -2A          | -014        | 242         | 33        | 75        |
| BELDEN             | YR46844         | COAX       | —            | -009        | 155         | 20        | 75        |
| BELL LABS          | G243630-1       | COAX       | -4           | -008        | 155         | 10        | —         |
| BELL LABS          | G243630-2       | COAX       | -4           | -008        | 155         | 10        | —         |
| BERKSHIRE          | RG174/U DS      | COAX       | -31          | *           | 125         | 21        | 50        |
| BERK-TEK           | 640070          | COAX       | *            | TOO LARGE   | 353         | 64        | —         |
| BERK-TEK           | BTDC-59D-TT     | COAX       | -2           | —           | 242         | 23        | —         |
| BERK-TEK           | BTDC-59-TT      | COAX       | -2           | -022        | —           | —         | 75        |
| BERK-TEK           | BTX-0113-100175 | TRIAx      | -43          | —           | 175         | 11        | —         |
| BERK-TEK           | E73133          | COAX       | *            | -011        | 185         | 37        | —         |
| BERT-TEK           | 640019          | COAX       | -50          | TOO LARGE   | 375         | 86        | 50        |
| BICC               | 2003            | COAX       | *            | -018        | 260         | 23        | 75        |
| BLACKBOX           | ETN59A          | COAX       | -2           | -013        | 242         | 25        | 75        |
| BOEING             | 380-10045       | TRIAx      | -60          | -305        | 189         | 12        | —         |
| BOEING             | 443-50120-1     | TRIAx      | *            | —           | 187         | 13        | 75        |
| BOEING             | 5720-3280-002   | TWINAX     | —            | -201        | 113         | 24        | —         |
| BOEING             | D3-7619-9/1144  | TRIAx      | *            | —           | —           | —         | —         |
| BOEING             | S280W502        | TWINAX     | -64          | -204        | 140         | 24        | —         |
| BOEING             | STD0098-16-2SJ  | TWINAX     | *            | TOO LARGE   | 188         | 54        | —         |
| BOSCH              | SCC3902002-20B  | TWINAX     | —            | -204        | 138         | 27        | 75        |
| BRAND REX          | H816            | TWINAX     | *            | TOO LARGE   | 360         | 40        | —         |

Note: \* = Special contact factory

## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER             | CABLE TYPE | WRENCH STYLE | CRIMP STYLE    | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------------------|------------|--------------|----------------|-------------|-----------|-----------|
| BRAND REX          | T-12824                  | TRIAX      | *            | TOO LARGE      | 480         | 50        | 75        |
| BRAND REX          | T-13138                  | TRIAX      | *            | TOO LARGE      | 461         | 84        | _         |
| BRAND REX          | T-13913                  | TWINAX     | *            | _              | 240         | 39        | _         |
| BRAND REX          | T-14384                  | TWINAX     | *            | TOO LARGE      | _           | _         | _         |
| BRAND REX          | T-14670                  | TWINAX     | *            | -215           | 237         | 30        | _         |
| BRAND REX          | T-14922                  | TRIAX      | *            | _              | 230         | 29        | _         |
| BRAND REX          | T-15075                  | TWINAX     | *            | TOO LARGE      | 370         | 40        | _         |
| BRAND REX          | T18-11222-24-2/G-0       | TWINAX     | -27          | -223           | 112         | 23        | _         |
| BRAND-REX          | A-779                    | COAX       | -5           | -004           | 90          | 10        | _         |
| BRAND-REX          | B-749                    | COAX       | -44          | 105-1940 (220) | 80          | 12        | _         |
| BRAND-REX          | G719                     | TWINAX     | *            | _              | 225         | 31        | _         |
| BRAND-REX          | LS2SWU-1(M24643/33-01UN) | TWINAX     | *            | _              | 255         | 50        | 75        |
| BRAND-REX          | M17/183-00001            | COAX       | -1           | -011           | 195         | 35        | 50        |
| BRAND-REX          | T- 378                   | COAX       | -6           | -016           | 312         | 31        | _         |
| BRAND-REX          | T-10970                  | TWINAX     | _            | _              | 154         | 25        | 77        |
| BRAND-REX          | T10971                   | TWINAX     | *            | _              | 155         | 25        | _         |
| BRAND-REX          | T-10971                  | TWINAX     | -24          | -221           | 161         | 24        | _         |
| BRAND-REX          | T-13294                  | TWINAX     | *            | TOO LARGE      | 285         | 40        | _         |
| BRAND-REX          | T-13295                  | TRIAX      | *            | _              | 291         | 38        | _         |
| BRAND-REX          | T-14018                  | TRIAX      | -25A         | _              | 250         | 30        | _         |
| BRAND-REX          | T-2948                   | TRIAX      | -26          | _              | 165         | 12        | _         |
| BRAND-REX          | T-385                    | COAX       | -44          | *              | 80          | 12        | _         |
| BRENDGEN           | GX02273D                 | COAX       | *            | -027           | 130         | 9         | 75        |
| BRITISH STANDARDS  | BS 2316                  | TRIAX      | -13A         | TOO LARGE      | 335         | 24        | 72        |
| BRITISH TELECOM    | BT2001                   | COAX       | *            | *              | 181         | 24        | 75        |
| BRITISH TELECOM    | BT3002                   | COAX       | *            | *              | 145         | 12        | 75        |
| BRITISH TELECOM    | BT2003                   | COAX       | *            | -018           | 260         | 23        | 75        |
| BRYANT BROADCAST   | BDS01                    | COAX       | -21          | *              | 177         | 24        | 75        |
| C&M WIRE AND CABLE | 13637                    | COAX       | -1           | -021           | 199         | 36        | 50        |
| C&M WIRE AND CABLE | P-14983                  | COAX       | -5           | -004           | 113         | 16        | 50        |
| CALMONT            | 4141                     | TWINAX     | -24          | -211           | 168         | 12        | _         |
| CANARE             | 5C2VS                    | COAX       | -6           | -016           | 292         | 31        | _         |
| CANARE             | L-3C2VS                  | COAX       | -3           | -019           | 217         | 21        | 75        |
| CANARE             | L-3CFB                   | COAX       | -3           | -022           | 217         | 26        | 75        |
| CANARE             | L-4CFB                   | COAX       | -2           | -014           | 240         | 32        | 75        |
| CANARE             | L-5CFB                   | COAX       | -6           | *              | 303         | 41        | 75        |
| CANARE             | L-7CFB                   | COAX       | -6A          | _              | 402         | 59        | 75        |
| CANARE             | LV-61S                   | COAX       | -2           | -013           | 240         | 24        | 75        |
| CANARE             | LV-77S                   | COAX       | -6           | -016           | 303         | 31        | 75        |
| CANARE             | V3-1.5C                  | COAX       | -5           | -004           | 102         | 11        | 75        |
| CANARE             | V3-3C                    | COAX       | -21          | *              | 173         | 21        | 75        |
| CANARE             | V3-3CFB                  | COAX       | -21          | *              | 173         | 26        | 75        |
| CANARE             | V3-4CFB                  | COAX       | *            | *              | 197         | 31        | 75        |
| CANARE             | V3-5C                    | COAX       | -52          | *              | 237         | 31        | 75        |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER    | CABLE NUMBER       | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|-----------------------|--------------------|------------|--------------|-------------|-------------|-----------|-----------|
| CANARE                | V3-5CFB            | COAX       | —            | -024        | 256         | 41        | 75        |
| CANARE                | V4-1.5C            | COAX       | -5           | -004        | 102         | 11        | 75        |
| CANARE                | V4-3C              | COAX       | -21          | *           | 173         | 21        | 75        |
| CANARE                | V4-3CFB            | COAX       | -21          | *           | 173         | 26        | 75        |
| CANARE                | V4-4CFB            | COAX       | *            | *           | 197         | 31        | 75        |
| CANARE                | V4-5C              | COAX       | -52          | *           | 237         | 31        | 75        |
| CANARE                | V4-5CFB            | COAX       | —            | -024        | 256         | 41        | 75        |
| CANARE                | V5-1.5C            | COAX       | -5           | -004        | 102         | 11        | 75        |
| CANARE                | V5-3C              | COAX       | -21          | *           | 173         | 21        | 75        |
| CANARE                | V5-3CFB            | COAX       | -21          | *           | 173         | 26        | 75        |
| CANARE                | V5-4CFB            | COAX       | *            | *           | 197         | 31        | 75        |
| CANARE                | V5-5C              | COAX       | -52          | *           | 237         | 31        | 75        |
| CANARE                | V5-5CFB            | COAX       | —            | -024        | 256         | 41        | 75        |
| CANFORD               | 36-332 VCM RED     | COAX       | —            | *           | 145         | 20        | 75        |
| CANFORD               | PSF 1/3            | COAX       | -2B          | -015        | 250         | 24        | 75        |
| CANFORD VIDEO         | BBC PSF1/2M        | COAX       | —            | -016        | 295         | 32        | 75        |
| CANFORD VIDEO         | BBC PSF1/3M        | COAX       | -2B          | -015        | 252         | 24        | 75        |
| CAROL                 | C5770              | COAX       | -2           | -022        | 238         | 26        | —         |
| CAROL                 | C5779              | COAX       | *            | -011        | 190         | 40        | 50        |
| CAROL                 | C8000              | TWINAX     | -8           | —           | 326         | 36        | —         |
| CASCO                 | 2C227NPCSN         | TWINAX     | -45          | —           | —           | —         | —         |
| CCI                   | 2592A              | COAX       | -2           | -013        | 242         | 25        | 73        |
| CDT                   | CT100              | COAX       | -34          | -024        | 253         | 39        | 75        |
| CDT                   | CT100(RBS)         | COAX       | -6E          | *           | 315         | 39        | 75        |
| CHAMPLAIN             | 11-02789           | TWINAX     | *            | -221        | 160         | 30        | —         |
| CHAMPLAIN             | 51-04496           | TWINAX     | -47          | —           | —           | —         | —         |
| CHAMPLAIN             | 81-00440           | TWINAX     | -27          | *           | 118         | 19        | —         |
| CHAMPLAIN             | 81-00544           | 120        | *            | —           | 136         | 21        | TWINAX    |
| CHAMPLAIN             | NDBC-TFE-22-2SJ-75 | TWINAX     | -45          | *           | 160         | 31        | 75        |
| CHRYSLER TECHNOLOGIES | JW000043           | TWINAX     | —            | *           | 168         | 25        | 77        |
| CLARK                 | CV7559             | COAX       | -2           | -014        | 242         | 32        | 75        |
| CLARK WIRE            | RG6-SD             | COAX       | -41          | -020        | 275         | 41        | 75        |
| CLARK WIRE & CABLE    | CV752-PLEN         | COAX       | *            | *           | 278         | 32        | —         |
| CLARK WIRE & CABLE    | CV75SM             | COAX       | *            | -009        | 157         | 18        | —         |
| CLARK WIRE & CABLE    | TV559              | TRIAx      | *            | —           | 360         | 30        | 75        |
| CLARK WIRE & CABLE    | TV7559             | TRIAx      | *            | *           | 360         | 31        | —         |
| CLARK WIRE & CABLE    | CV7559             | COAX       | —            | -014        | 242         | 32        | 75        |
| COAXCO                | 1102               | TRIAx      | *            | —           | 145         | 19        | —         |
| COAXCO                | 1258               | COAX       | -44          | *           | 84          | 13        | —         |
| COAXCO                | 0592-18            | TRIAx      | -23          | *           | 138         | 21        | —         |
| COAXCO                | 33-1010-00-02      | TRIAx      | -23          | *           | 144         | 24        | 75        |
| COAXCO                | 33-1102-00-02      | TRIAx      | -23          | —           | 142         | 21        | —         |
| COAXCO                | 33-1102-00-99      | TRIAx      | -23          | *           | 144         | 21        | —         |
| COLEMAN               | 99901              | COAX       | —            | -051        | 348         | 64        | 75        |

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| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| COLEMAN            | 821003       | COAX       | —            | -051        | 348         | 64        | 75        |
| COLEMAN            | 821005       | COAX       | —            | -051        | 348         | 64        | 75        |
| COLEMAN            | 921019       | COAX       | —            | -020        | 268         | 40        | 75        |
| COLEMAN            | 988423       | COAX       | -3           | -012        | 212         | 35        | 50        |
| COLEMAN CABLE      | 92005        | COAX       | -2           | -013        | 242         | 25        | 75        |
| COLEMAN/CCI        | 92004-XX-08  | COAX       | -2           | -013        | 240         | 25        | 75        |
| COLEMAN            | 99969        | COAX       | *            | *           | 200         | 32        | 75        |
| COMM/SCOPE         | 5905         | COAX       | -6A          | -051        | 405         | 48        | 75        |
| COMMSCOPE          | 85           | COAX       | —            | —           | 362         | 106       | 50        |
| COMMSCOPE          | 216          | COAX       | —            | —           | 362         | 106       | 50        |
| COMMSCOPE          | 222          | COAX       | -4           | -009        | 155         | 24        | 75        |
| COMMSCOPE          | 232          | COAX       | -4           | -009        | 155         | 24        | 75        |
| COMMSCOPE          | 242          | COAX       | -6A          | —           | 415         | 64        | 75        |
| COMMSCOPE          | 322          | COAX       | *            | -009        | 160         | 20        | —         |
| COMMSCOPE          | 332          | COAX       | -4           | -009        | 155         | 24        | 75        |
| COMMSCOPE          | 355          | COAX       | —            | —           | 382         | 64        | 75        |
| COMMSCOPE          | 356          | COAX       | -6A          | —           | 415         | 64        | 75        |
| COMMSCOPE          | 357          | COAX       | —            | -024        | 260         | 40        | 75        |
| COMMSCOPE          | 358          | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 401          | COAX       | -22          | -009        | 155         | 20        | 75        |
| COMMSCOPE          | 2035         | COAX       | *            | -026        | 127         | 16        | 75        |
| COMMSCOPE          | 2446         | TWINAX     | *            | TOO LARGE   | 435         | 51        | —         |
| COMMSCOPE          | 3104         | COAX       | -1           | -011        | 188         | 37        | 50        |
| COMMSCOPE          | 3130         | COAX       | -1           | -021        | 201         | 32        | 50        |
| COMMSCOPE          | 3135         | COAX       | -1           | -021        | 199         | 35        | 50        |
| COMMSCOPE          | 3136         | COAX       | -1           | -011        | 199         | 37        | 50        |
| COMMSCOPE          | 3139         | COAX       | -1           | -021        | 202         | 31        | 50        |
| COMMSCOPE          | 3140         | COAX       | -1           | -021        | 195         | 33        | 50        |
| COMMSCOPE          | 3141         | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 3222         | COAX       | *            | TOO LARGE   | 412         | 106       | 50        |
| COMMSCOPE          | 3226         | COAX       | *            | TOO LARGE   | 412         | 106       | 50        |
| COMMSCOPE          | 3227         | COAX       | *            | —           | 412         | 106       | 50        |
| COMMSCOPE          | 3228         | COAX       | *            | —           | 412         | 106       | 50        |
| COMMSCOPE          | 3229         | COAX       | *            | —           | 412         | 106       | 50        |
| COMMSCOPE          | 3246         | COAX       | -6B          | —           | 418         | 86        | 50        |
| COMMSCOPE          | 3247         | COAX       | -6B          | —           | 418         | 86        | 50        |
| COMMSCOPE          | 3249         | COAX       | -6B          | —           | 413         | 86        | 50        |
| COMMSCOPE          | 3250         | COAX       | -48          | TOO LARGE   | 413         | 86        | 50        |
| COMMSCOPE          | 5060         | COAX       | -6           | *           | 308         | 40        | 75        |
| COMMSCOPE          | 5061         | COAX       | -41          | *           | 264         | 40        | 75        |
| COMMSCOPE          | 5065         | COAX       | —            | -009        | 160         | 20        | 92        |
| COMMSCOPE          | 5535         | COAX       | *            | -026        | 128         | 17        | 75        |
| COMMSCOPE          | 5540         | COAX       | *            | *           | 269         | 32        | 75        |
| COMMSCOPE          | 5550         | COAX       | -2           | -013        | 242         | 25        | 75        |

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## CABLE GROUP TABLE

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|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| COMMSCOPE          | 5551         | COAX       | -2           | -015        | 250         | 25        | 75        |
| COMMSCOPE          | 5553         | COAX       | -2           | -014        | 250         | 32        | 75        |
| COMMSCOPE          | 5554         | COAX       | -2           | -014        | 250         | 32        | 75        |
| COMMSCOPE          | 5555         | COAX       | -2           | -015        | 250         | 25        | 80        |
| COMMSCOPE          | 5559         | COAX       | -2           | -013        | 242         | 25        | 75        |
| COMMSCOPE          | 5560         | COAX       | -2           | -015        | 250         | 25        | 73        |
| COMMSCOPE          | 5563         | COAX       | -2           | -013        | 250         | 23        | 75        |
| COMMSCOPE          | 5565         | COAX       | -2           | -014        | 242         | 32        | 75        |
| COMMSCOPE          | 5567         | COAX       | -2           | -014        | 250         | 32        | 75        |
| COMMSCOPE          | 5569         | COAX       | -2           | -014        | 250         | 32        | 75        |
| COMMSCOPE          | 5571         | COAX       | -2           | -014        | 248         | 32        | 75        |
| COMMSCOPE          | 5572         | COAX       | -2           | -014        | 248         | 32        | 75        |
| COMMSCOPE          | 5573         | COAX       | -2           | -014        | 246         | 32        | 75        |
| COMMSCOPE          | 5574         | COAX       | -2           | -014        | 248         | 32        | 75        |
| COMMSCOPE          | 5575         | COAX       | -2           | -014        | 246         | 32        | 75        |
| COMMSCOPE          | 5585         | COAX       | -2           | -014        | 242         | 32        | 75        |
| COMMSCOPE          | 5586         | COAX       | -2           | -014        | 247         | 32        | 75        |
| COMMSCOPE          | 5589         | COAX       | -2A          | -022        | 235         | 25        | 75        |
| COMMSCOPE          | 5700         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5701         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5702         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5713         | COAX       | *            | *           | 290         | 40        | 75        |
| COMMSCOPE          | 5714         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5715         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5720         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5721         | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 5723         | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 5725         | COAX       | -41          | -020        | 276         | 40        | 75        |
| COMMSCOPE          | 5727         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5728         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5729         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5730         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5731         | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 5737         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5738         | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 5740         | COAX       | -6           | *           | 308         | 40        | 75        |
| COMMSCOPE          | 5742         | COAX       | -6           | *           | 308         | 40        | 75        |
| COMMSCOPE          | 5750         | COAX       | -6           | *           | 308         | 40        | 75        |
| COMMSCOPE          | 5765         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5781         | COAX       | -6           | *           | 306         | 40        | 75        |
| COMMSCOPE          | 5782         | COAX       | -6           | *           | 308         | 40        | 75        |
| COMMSCOPE          | 5786         | COAX       | -41          | -020        | 280         | 40        | 75        |
| COMMSCOPE          | 5787         | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 5788         | COAX       | -41          | -020        | 280         | 40        | 75        |

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|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| COMMSCOPE          | 5789         | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 5790         | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 5901         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5902         | COAX       | -6A          | _           | 415         | 64        | 75        |
| COMMSCOPE          | 5903         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5904         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5906         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5908         | COAX       | -6A          | -051        | 405         | 48        | 75        |
| COMMSCOPE          | 5909         | COAX       | -6A          | -051        | 405         | 48        | 75        |
| COMMSCOPE          | 5910         | COAX       | -6A          | -052        | 395         | 64        | 75        |
| COMMSCOPE          | 5912         | COAX       | -6A          | -052        | 395         | 64        | 75        |
| COMMSCOPE          | 5913         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5914         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5914         | COAX       | -6A          | _           | 415         | 64        | 75        |
| COMMSCOPE          | 5915         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5916         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5917         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5918         | COAX       | -6A          | _           | 412         | 64        | 75        |
| COMMSCOPE          | 5920         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5920         | COAX       | -6A          | _           | 415         | 64        | 75        |
| COMMSCOPE          | 5940         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5950         | COAX       | -6A          | -053        | 415         | 64        | 75        |
| COMMSCOPE          | 5950         | COAX       | -6A          | -053        | 405         | 64        | 75        |
| COMMSCOPE          | 5951         | COAX       | -6A          | _           | 405         | 64        | 75        |
| COMMSCOPE          | 5952         | COAX       | -6A          | _           | 415         | 64        | 75        |
| COMMSCOPE          | 5953         | COAX       | -6A          | _           | 415         | 64        | 75        |
| COMMSCOPE          | 6200         | COAX       | -2           | -015        | 242         | 25        | 92        |
| COMMSCOPE          | 6201         | COAX       | -2           | -013        | 242         | 25        | 93        |
| COMMSCOPE          | 6205         | COAX       | *            | -018        | 260         | 25        | 93        |
| COMMSCOPE          | 6605         | COAX       | *            | -018        | 267         | 25        | 93        |
| COMMSCOPE          | 6608         | COAX       | -2           | -015A       | 249         | 25        | 93        |
| COMMSCOPE          | 6609         | COAX       | -2           | -015A       | 249         | 25        | 93        |
| COMMSCOPE          | 6611         | COAX       | -2           | -015A       | 242         | 25        | 93        |
| COMMSCOPE          | 6612         | COAX       | -2           | -015A       | 242         | 25        | 93        |
| COMMSCOPE          | 6615         | COAX       | -2           | -015A       | 249         | 25        | 93        |
| COMMSCOPE          | 7500         | COAX       | -6           | -016        | 304         | 32        | 75        |
| COMMSCOPE          | 7501         | COAX       | -6           | -016        | 304         | 32        | 75        |
| COMMSCOPE          | 7503         | COAX       | -6           | -016        | 304         | 32        | 75        |
| COMMSCOPE          | 7505         | COAX       | -6           | -016        | 305         | 32        | 75        |
| COMMSCOPE          | 7506         | COAX       | -6           | -016        | 304         | 33        | 75        |
| COMMSCOPE          | 7510         | COAX       | -6           | -016        | 304         | 31        | 75        |
| COMMSCOPE          | 7530         | COAX       | _            | -054        | 318         | 51        | 75        |
| COMMSCOPE          | 7536         | COAX       | -4           | -009        | 150         | 23        | 75        |
| COMMSCOPE          | 7537         | COAX       | -4           | -009        | 154         | 23        | 75        |

Note: \* = Special contact factory



## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| COMMSCOPE          | 7538         | COAX       | -37          | -009        | 159         | 22        | 75        |
| COMMSCOPE          | 7551         | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 7573         | COAX       | -2A          | -022        | 220         | 27        | 75        |
| COMMSCOPE          | 7713         | COAX       | *            | TOO LARGE   | 405         | 96        | 50        |
| COMMSCOPE          | 7713         | COAX       | -6A          | —           | 413         | 86        | 50        |
| COMMSCOPE          | 7714         | COAX       | -6B          | TOO LARGE   | 425         | 89        | 75        |
| COMMSCOPE          | 7714         | COAX       | -6B          | —           | 432         | 88        | 50        |
| COMMSCOPE          | 7715         | COAX       | -6B          | —           | 432         | 88        | 50        |
| COMMSCOPE          | 7723         | COAX       | -3           | -012        | 212         | 36        | 50        |
| COMMSCOPE          | 7725         | COAX       | *            | -023        | 220         | 36        | 50        |
| COMMSCOPE          | 7726         | COAX       | -3           | -012        | 220         | 36        | 50        |
| COMMSCOPE          | 7810         | TRIAx      | *            | TOO LARGE   | 325         | 32        | 75        |
| COMMSCOPE          | 7811         | TRIAx      | —            | —           | 360         | 32        | 75        |
| COMMSCOPE          | 7815         | TRIAx      | —            | —           | 480         | —         | 50        |
| COMMSCOPE          | 7820         | TRIAx      | —            | —           | 475         | 64        | 75        |
| COMMSCOPE          | 7825         | TRIAx      | —            | —           | 520         | 71        | 75        |
| COMMSCOPE          | 7826         | TRIAx      | *            | TOO LARGE   | 519         | 68        | —         |
| COMMSCOPE          | 7901         | TWINAX     | *            | TOO LARGE   | 334         | 38        | 100       |
| COMMSCOPE          | 9012         | TWINAX     | -9           | —           | 241         | 37        | 78        |
| COMMSCOPE          | 57603        | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 57604        | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 57605        | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 72001        | COAX       | -22          | -009        | 155         | 20        | 75        |
| COMMSCOPE          | 72012        | COAX       | -22          | -009        | 155         | 20        | 75        |
| COMMSCOPE          | 72312        | COAX       | *            | -026        | 127         | 16        | 75        |
| COMMSCOPE          | 73501        | COAX       | *            | -026        | 130         | 16        | 75        |
| COMMSCOPE          | 73502        | COAX       | *            | -026        | 130         | 16        | 75        |
| COMMSCOPE          | 73503        | COAX       | *            | -026        | 130         | 16        | 75        |
| COMMSCOPE          | 73506        | COAX       | *            | -026        | 127         | 16        | 75        |
| COMMSCOPE          | 73508        | COAX       | *            | -026        | 127         | 16        | 75        |
| COMMSCOPE          | 73509        | COAX       | *            | -026        | 127         | 16        | 75        |
| COMMSCOPE          | 73512        | COAX       | *            | -026        | 126         | 15        | 75        |
| COMMSCOPE          | 75603        | COAX       | —            | -009        | 150         | 22        | 75        |
| COMMSCOPE          | 75604        | COAX       | —            | -009        | 150         | 22        | 75        |
| COMMSCOPE          | 556510       | COAX       | -2           | -014        | 242         | 32        | 75        |
| COMMSCOPE          | 576503       | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 576504       | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 576505       | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE          | 753603       | COAX       | -4           | -009        | 150         | 22        | 75        |
| COMMSCOPE          | 753604       | COAX       | -4           | -009        | 150         | 22        | 75        |
| COMMSCOPE          | 753605       | COAX       | -4           | -009        | 150         | 22        | 75        |
| COMMSCOPE          | 0132K        | COAX       | *            | -024        | 242         | 40        | 75        |
| COMMSCOPE          | 0132V        | COAX       | *            | -024        | 242         | 40        | 75        |
| COMMSCOPE          | 0219K        | COAX       | -1           | -012        | 200         | 36        | 50        |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| COMMSCOPE          | 0243K        | COAX       | -            | -           | 277         | 64        | 75        |
| COMMSCOPE          | 0247K        | COAX       | -41          | -020        | 268         | 40        | 75        |
| COMMSCOPE          | 0247V        | COAX       | -41          | -020        | 268         | 40        | 75        |
| COMMSCOPE          | 0359K        | COAX       | *            | -024        | 241         | 41        | 75        |
| COMMSCOPE          | 0359K        | COAX       | *            | -024        | 241         | 41        | 75        |
| COMMSCOPE          | 2020K        | COAX       | *            | *           | 209         | 32        | 75        |
| COMMSCOPE          | 2020V        | COAX       | *            | *           | 209         | 32        | 75        |
| COMMSCOPE          | 2022K        | COAX       | -2           | -023        | 239         | 32        | 75        |
| COMMSCOPE          | 2022V        | COAX       | -2           | -23         | 239         | 32        | 75        |
| COMMSCOPE          | 2037V        | COAX       | *            | *           | 199         | 32        | 75        |
| COMMSCOPE          | 2039K        | COAX       | *            | *           | 199         | 32        | 75        |
| COMMSCOPE          | 2039V        | COAX       | *            | *           | 199         | 32        | 75        |
| COMMSCOPE          | 2040K        | COAX       | *            | *           | 197         | 25        | 75        |
| COMMSCOPE          | 2040V        | COAX       | *            | *           | 197         | 25        | 75        |
| COMMSCOPE          | 2041K        | COAX       | *            | *           | 205         | 23        | 75        |
| COMMSCOPE          | 2045K        | COAX       | *            | *           | 209         | 32        | 75        |
| COMMSCOPE          | 2045V        | COAX       | *            | *           | 209         | 32        | 75        |
| COMMSCOPE          | 2054K        | COAX       | -            | *           | 161         | 32        | 75        |
| COMMSCOPE          | 2065V        | COAX       | *            | *           | 199         | 32        | 75        |
| COMMSCOPE          | 2068K        | COAX       | -63          | -025        | 219         | 32        | -         |
| COMMSCOPE          | 2096K        | COAX       | *            | *           | 205         | 32        | 75        |
| COMMSCOPE          | 2100K        | COAX       | -21          | *           | 169         | 32        | 50        |
| COMMSCOPE          | 2100V        | COAX       | -21          | *           | 169         | 32        | 53        |
| COMMSCOPE          | 2104K        | COAX       | *            | *           | 166         | 37        | 50        |
| COMMSCOPE          | 2104V        | COAX       | *            | *           | 166         | 37        | 50        |
| COMMSCOPE          | 2125K        | COAX       | -1           | -012        | 200         | 36        | 50        |
| COMMSCOPE          | 2227K        | COAX       | -41          | -020        | 264         | 40        | 75        |
| COMMSCOPE          | 2227V        | COAX       | -41          | *           | 264         | 40        | 75        |
| COMMSCOPE          | 2229V        | COAX       | -41          | -020        | 268         | 40        | 75        |
| COMMSCOPE          | 2249K        | COAX       | *            | *           | 204         | 25        | 93        |
| COMMSCOPE          | 2249V        | COAX       | *            | *           | 206         | 25        | 93        |
| COMMSCOPE          | 2250K        | COAX       | *            | *           | 214         | 25        | 93        |
| COMMSCOPE          | 2250V        | COAX       | *            | *           | 214         | 25        | 93        |
| COMMSCOPE          | 2251K        | COAX       | *            | *           | 207         | 25        | 93        |
| COMMSCOPE          | 2274V        | COAX       | *            | -024        | 241         | 40        | 75        |
| COMMSCOPE          | 2275K        | COAX       | *            | -024        | 241         | 40        | 75        |
| COMMSCOPE          | 2275V        | COAX       | *            | -024        | 241         | 40        | 75        |
| COMMSCOPE          | 2276V        | COAX       | *            | -024        | 241         | 40        | 75        |
| COMMSCOPE          | 2277K        | COAX       | *            | *           | 233         | 40        | 75        |
| COMMSCOPE          | 2277V        | COAX       | *            | *           | 233         | 40        | 75        |
| COMMSCOPE          | 2278K        | COAX       | *            | -024        | 242         | 40        | 75        |
| COMMSCOPE          | 2279K        | COAX       | *            | *           | 237         | 40        | 75        |
| COMMSCOPE          | 2279V        | COAX       | *            | *           | 237         | 40        | 75        |
| COMMSCOPE          | 2281K        | COAX       | *            | TOO LARGE   | 347         | 89        | 50        |

Note: \* = Special contact factory

## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| COMMSCOPE          | 2282K        | COAX       | -            | -           | 359         | 64        | 75        |
| COMMSCOPE          | 2285K        | COAX       | *            | TOO LARGE   | 359         | 64        | 75        |
| COMMSCOPE          | 2286K        | COAX       | -            | -           | 353         | 64        | 75        |
| COMMSCOPE          | 2287K        | COAX       | *            | TOO LARGE   | 380         | 64        | 75        |
| COMMSCOPE          | 2288K        | COAX       | -            | -           | 378         | 64        | 75        |
| COMMSCOPE          | 2291K        | TWINAX     | -25          | -           | 260         | 39        | 100       |
| COMMSCOPE          | 2312K        | COAX       | -            | -           | 534         | 109       | 75        |
| COMMSCOPE          | 2426K        | COAX       | -            | -           | 355         | 106       | 50        |
| COMMSCOPE          | 2427K        | COAX       | -            | -           | 362         | 106       | 50        |
| COMMSCOPE          | 2525K        | COAX       | *            | -016        | 290         | 31        | 75        |
| COMMSCOPE          | 2527K        | COAX       | -41          | *           | 279         | 32        | 75        |
| COMMSCOPE          | 4022(K)      | TWINAX     | *            | -           | 219         | 38        | 78        |
| COMMSCOPE          | 425-0256     | COAX       | -            | -025        | 240         | 33        | 75        |
| COMMSCOPE          | 5060F        | COAX       | -6           | *           | 308         | 40        | 75        |
| COMMSCOPE          | 5060R        | COAX       | -6           | *           | 308         | 40        | 75        |
| COMMSCOPE          | 5550M        | COAX       | -2           | -013A       | 242         | 30        | 75        |
| COMMSCOPE          | 5568M        | COAX       | *            | -025        | 240         | 33        | -         |
| COMMSCOPE          | 5726R        | COAX       | -41          | -020        | 276         | 41        | 75        |
| COMMSCOPE          | 5740F        | COAX       | -6           | *           | 308         | 38        | 75        |
| COMMSCOPE          | 5740H1       | COAX       | -6           | *           | 308         | 40        | 75        |
| COMMSCOPE          | 5740R        | COAX       | -6           | *           | 308         | 40        | 75        |
| COMMSCOPE          | 5913R        | COAX       | -6A          | -           | 415         | 64        | 75        |
| COMMSCOPE          | 5916R        | COAX       | -6A          | TOO LARGE   | 415         | 64        | 75        |
| COMMSCOPE          | 720T1        | COAX       | -22          | -009        | 155         | 20        | 75        |
| COMMSCOPE          | 720T2        | COAX       | -22          | -009        | 155         | 20        | 75        |
| COMMSCOPE          | 734C()       | COAX       | -63          | -025        | 236         | 32        | 75        |
| COMMSCOPE          | 734C1H       | COAX       | -63          | -025        | 236         | 32        | 75        |
| COMMSCOPE          | 734C1P       | COAX       | -63          | *           | 219         | 32        | 75        |
| COMMSCOPE          | 734S( )      | COAX       | -63          | -025        | 236         | 32        | 75        |
| COMMSCOPE          | 734S1H       | COAX       | -63          | -025        | 236         | 32        | 75        |
| COMMSCOPE          | 734ST        | COAX       | -63          | -025        | 236         | 32        | 75        |
| COMMSCOPE          | 734STH       | COAX       | -63          | -025        | 236         | 32        | 75        |
| COMMSCOPE          | 735(#)       | COAX       | *            | -026        | 130         | 16        | 75        |
| COMMSCOPE          | 735()H       | COAX       | *            | -026        | 129         | 16        | 75        |
| COMMSCOPE          | 735()P       | COAX       | *            | -026        | 127         | 16        | 75        |
| COMMSCOPE          | 73501B       | COAX       | -            | -026        | 137         | 16        | 75        |
| COMMSCOPE          | 73501H       | COAX       | *            | -026        | 127         | 16        | 75        |
| COMMSCOPE          | 73501S       | COAX       | -            | *           | 137         | 16        | 75        |
| COMMSCOPE          | 73502H       | COAX       | *            | -026        | 127         | 16        | 75        |
| COMMSCOPE          | 735T(H)      | COAX       | *            | -026        | 129         | 16        | 75        |
| COMMSCOPE          | 735T2        | COAX       | *            | -026        | 126         | 16        | 75        |
| COMMSCOPE          | F1160BV      | COAX       | -6A          | *           | 395         | 64        | 75        |
| COMMSCOPE          | F1160BVV     | COAX       | -6A          | *           | 395         | 64        | 75        |
| COMMSCOPE          | F11SSEF      | COAX       | -6A          | -           | 405         | 64        | 75        |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER      | CABLE NUMBER          | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|-------------------------|-----------------------|------------|--------------|-------------|-------------|-----------|-----------|
| COMMSCOPE               | F11SSVV               | COAX       | -6A          | TOO LARGE   | 395         | 64        | —         |
| COMMSCOPE               | F59 HEC T/CU          | COAX       | *            | *           | 270         | 32        | 75        |
| COMMSCOPE               | F59 HEC/3-22          | COAX       | *            | *           | 265         | 32        | 75        |
| COMMSCOPE               | F59 HEC-2             | COAX       | *            | *           | 265         | 32        | 75        |
| COMMSCOPE               | F5967BVM              | COAX       | -2           | -014        | 240         | 32        | 75        |
| COMMSCOPE               | F5967BVV              | COAX       | -2           | -014        | 240         | 32        | 75        |
| COMMSCOPE               | F59SSEF               | COAX       | *            | *           | 265         | 32        | 75        |
| COMMSCOPE               | F59SSV                | COAX       | *            | *           | 272         | 33        | 75        |
| COMMSCOPE               | F660BVV               | COAX       | -41          | -020        | 272         | 40        | 75        |
| COMMSCOPE               | F6SSEF                | COAX       | -6           | *           | 300         | 40        | 75        |
| COMMSCOPE               | F6SSVM-APDI-22-APD    | COAX       | —            | -020        | 281         | 40        | 75        |
| COMMSCOPE               | F6SSVR                | COAX       | *            | *           | 300         | 40        | 75        |
| COMMSCOPE               | F6SSVV                | COAX       | *            | *           | 300         | 40        | 75        |
| COMMSCOPE               | F6SSVX                | COAX       | *            | *           | 298         | 40        | 75        |
| COMMSCOPE               | HEC/3-22              | COAX       | *            | *           | 265         | 32        | 75        |
| COMMSCOPE               | HEC-2                 | COAX       | *            | *           | 265         | 32        | 75        |
| COMMSCOPE               | OP73801DB             | COAX       | -6           | *           | 290         | 40        | 75        |
| COMMSCOPE               | S59 HEC               | COAX       | *            | *           | 269         | 23        | 75        |
| COMMSCOPE               | VDM230                | COAX       | —            | -009        | 171         | 23        | 75        |
| COMMSCOPE               | WBC-240(R)            | COAX       | *            | *           | 240         | 56        | 50        |
| COMMSCOPE               | WBC-300(R)            | COAX       | -6           | *           | 70          | 70        | 50        |
| COMMSCOPE NETWORK CABLE | 73608 8/30 AWG        | COAX       | *            | *           | 112         | 12        | 75        |
| COMMSCOPE               | 5726                  | COAX       | -41          | -020        | 272         | 40        | 74        |
| COMPOSITE VIDEO         | VA-2/2                | COAX       | —            | -009        | —           | —         | 75        |
| COMPREHENSIVE VIDEO     | CVC-59STXF            | COAX       | -2           | -023        | 236         | 31        | 75        |
| CONDUMEX                | 77827876              | COAX       | *            | *           | 183         | 21        | —         |
| CONDUMEX                | 801289                | COAX       | —            | *           | 304         | 40        | 75        |
| CONSOLIDATED            | 4459                  | COAX       | -5           | -003        | 105         | 19        | 50        |
| CONSOLIDATED            | 4462                  | TRIAx      | *            | —           | 485         | 91        | 50        |
| CONTEL                  | 1429425182            | TWINAX     | *            | —           | 194         | 25        | —         |
| COONER WIRE             | AS 450-3075SR         | COAX       | -36          | —           | 97          | 12        | 75        |
| COONER WIRE             | AS450-3000SR          | COAX       | -44          | *           | 70          | 12        | —         |
| COONER WIRE             | AS471                 | COAX       | -5A          | —           | 65          | 12        | —         |
| COONER WIRE             | CW2040-2675 SR        | COAX       | —            | -026        | 136         | 19        | 75        |
| CPI                     | 33-1102-00-02         | TRIAx      | —            | *           | 145         | 23        | 40        |
| CUSHCRAFT               | 90262                 | COAX       | -1           | -011        | 195         | 39        | 50        |
| DABURN                  | D-43M                 | TWINAX     | -25          | —           | 265         | 19        | —         |
| DEARBORN                | 2498                  | TWINAX     | -8           | TOO LARGE   | 333         | 37        | 100       |
| DEC                     | FEP 17-01246-01/02/03 | COAX       | -3           | -011        | —           | —         | —         |
| DEC                     | FEP17-0246-01/02      | COAX       | -3           | -011        | —           | —         | —         |
| DEC                     | FEP17-0248-01/02      | COAX       | -3           | -011        | —           | —         | —         |
| DELCO                   | 1354                  | COAX       | -51          | -016        | 303         | 33        | 75        |
| DELCO                   | 91783                 | COAX       | -21          | -021        | 194         | 36        | 50        |
| DELCO                   | 389636                | COAX       | *            | -016        | 309         | 31        | 75        |

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## CABLE GROUP TABLE

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|--------------------|---------------------|------------|--------------|-------------|-------------|-----------|-----------|
| DELCO              | 396121              | coax       | _            | -009        | 161         | 24        | 75        |
| DELCO              | 396121              | COAX       | -4           | -009        | 161         | 19        | 75        |
| DELCO              | 396191              | COAX       | _            | -009        | 161         | 24        | 75        |
| DOD                | DOD-DNA-RF-21       | TWINAX     | *            | _           | 260         | 22        | _         |
| DRAKA              | 0.6/3.7             | COAX       | _            | -022        | 237         | 24        | 75        |
| DRAKA              | IMAGE720            | COAX       | _            | -019        | 232         | 31        | 75        |
| DRAKA USA          | 7341101             | CAOX       | *            | *           | 298         | 40        | 75        |
| DRAKA USA          | 7341102             | COAX       | *            | *           | 298         | 40        | 75        |
| DRAKA-HELEX        | 32448A              | COAX       | _            | -030        | _           | _         | 75        |
| DRAKE              | IMAGE1000           | COAX       | _            | -020        | 268         | 39        | 75        |
| DYTRAN             | 6425A03             | COAX       | -1           | -011        | 193         | 37        | 50        |
| ECS                | 322001              | TRIAx      | _            | -306        | 240         | 37        | 50        |
| ECS                | 322401              | TRIAx      | _            | *           | 255         | 25        | 75        |
| ECS                | 352001              | COAX       | -21          | *           | 162         | 42        | 50        |
| ECS                | 392402              | TWINAX     | -24          | *           | 162         | 24        | 100       |
| ECS                | 632101              | TRIAx      | -43          | _           | 169         | 34        | _         |
| ECS                | 3C178TX-C           | TRIAx      | *            | _           | 125         | 13        | 50        |
| ELECTRONIC CABLE   | 412301-75           | COAX       | _            | -009        | 150         | 23        | 75        |
| EMTEQ              | D12502-200          | TWINAX     | -33          | -224        | 205         | 26        | _         |
| EMTEQ              | PFLX200-100         | COAX       | -3           | -012        | 205         | 39        | 50        |
| EMTEQ              | TFLX130-100         | COAX       | _            | _           | 130         | 30        | 50        |
| ENDEVCO            | 3090C               | COAX       | -5B          | -001        | 90          | 12        | 50        |
| ENDEVCO            | PS6960              | TWINAX     | *            | _           | 190         | 37        | _         |
| ERICSSON           | 1301-TZC 751 08     | TRIAx      | *            | -305        | 177         | 12        | _         |
| ERICSSON           | 1301-TZE 101 09     | COAX       | _            | *           | 140         | 13        | 75        |
| ERICSSON           | TZC 750 24          | COAX       | -22          | *           | 143         | 12        | 75        |
| ERICSSON           | TZC 751 08          | TRIAx      | *            | -305        | 179         | 12        | _         |
| ESA/SCC            | 3902/002 VARIANT 20 | TWINAX     | _            | -204        | 149         | 26        | 75        |
| ESA/SCC            | 3902/002-06         | COAX       | *            | -006        | 114         | 19        | 75        |
| ESSEX              | 1000                | COAX       | -6A          | _           | 405         | 85        | _         |
| ESSEX              | 21-004              | COAX       | -6A          | _           | 405         | 85        | _         |
| ESSEX              | 21-025              | COAX       | -2           | _           | 242         | 25        | _         |
| ESSEX              | 21-204              | TRIAx      | -42          | _           | 285         | 36        | _         |
| ESSEX              | 21-529              | TRIAx      | -14          | _           | 460         | 49        | _         |
| ESSEX              | 21-537              | COAX       | -1           | -011        | 195         | 36        | _         |
| ESSEX              | 21-541              | COAX       | -2           | -013        | 242         | 25        | _         |
| ESSEX              | 21-583              | TRIAx      | -15          | TOO LARGE   | 490         | 85        | 53        |
| ESSEX              | 21-597              | COAX       | -22          | -009        | 150         | 17        | _         |
| ESSEX              | 21-780              | COAX       | -6B          | _           | 420         | 87        | _         |
| ESSEX              | 21-795              | COAX       | -2           | _           | 242         | 23        | _         |
| ESSEX              | 421-098             | COAX       | -22          | -008        | 145         | 12        | _         |
| ESSEX              | 421-111             | COAX       | -22          | -008        | 155         | 12        | _         |
| ESSEX              | 421-176             | COAX       | -1           | _           | 195         | 39        | _         |
| ESSEX              | 621-100             | COAX       | -6A          | _           | 405         | 64        | _         |

Note: \* = Special contact factory

## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER  | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|---------------|------------|--------------|-------------|-------------|-----------|-----------|
| ESSEX              | 621-106       | TRIAX      | -7           | _           | 242         | 25        | _         |
| ESSEX              | 621-243       | COAX       | -41          | _           | 270         | 40        | _         |
| ESSEX              | 621-284       | COAX       | -41          | _           | 270         | 40        | _         |
| ESSEX              | 621-715       | COAX       | -1           | *           | 195         | 25        | _         |
| EUROCABLE          | LKRX75S2D4    | COAX       | -22          | -009        | 157         | 20        | 75        |
| EXTRON             | 22-021-01     | COAX       | -5           | -003        | _           | _         | _         |
| EXTRON             | 22-032-02/-03 | COAX       | *            | *           | 107         | 16        | 75        |
| EZ FORM CABLE CORP | EZ FLEX 402   | COAX       | -21          | *           | 163         | 36        | 50        |
| FARINON            | 003-R003      | COAX       | -37          | -009        | 162         | 20        | 75        |
| FILECA             | F2703-51      | TWINAX     | _            | -217        | _           | _         | _         |
| FILECA             | F27-09/9      | TWINAX     | *            | _           | 176         | 31        | _         |
| FILOTEX            | 11820         | TRIAX      | *            | _           | 283         | 37        | 50        |
| FILOTEX            | 63247         | TWINAX     | _            | -212        | 179         | 25        | _         |
| FILOTEX            | 96770         | TWINAX     | -47          | _           | 142         | 24        | _         |
| FILOTEX            | 374693        | COAX       | -22          | -009        | 149         | 20        | _         |
| FILOTEX            | ET39110ED2    | TRIAX      | -15          | TOO LARGE   | 490         | 64        | _         |
| FILOTEX            | L910/39       | COAX       | -22          | -009        | 155         | 20        | _         |
| FILOTEX            | L910-42       | COAX       | -22          | -009        | 155         | 20        | _         |
| FILOTEX            | SP 68150      | TWINAX     | _            | *           | 180         | 27        | 125       |
| FILOTEX            | SP714         | TRIAX      | -23          | _           | 138         | 12        | 75        |
| FLEXTRONICS        | 2001          | COAX       | -22          | *           | 143         | 13        | 75        |
| FLEXTRONICS        | 2003          | COAX       | *            | -018        | 270         | 24        | 75        |
| FOKKER SPACE       | DK75-2-22     | COAX       | *            | -026        | 130         | 17        | 75        |
| FOKKER SPACE       | KBCO-75       | TWINAX     | -29          | -217        | 149         | 24        | _         |
| FUJIKURA           | 1990          | COAX       | -5B          | *           | 102         | 12        | 50        |
| FUJIKURA           | 3C-2V         | COAX       | *            | -019        | 225         | 20        | 75        |
| FUJIKURA           | 3C-2W         | COAX       | _            | _           | 261         | 20        | _         |
| FUJIKURA           | 5C-2V         | COAX       | -6           | -016        | 301         | 31        | _         |
| FURUNO             | RW-6895-0     | COAX       | -22          | *           | 143         | 14        | 75        |
| GENERAL            | C1156         | COAX       | -5           | -003        | 100         | 19        | 50        |
| GENERAL            | T-43          | TWINAX     | -10          | _           | 420         | 40        | _         |
| GENERAL            | T-43M         | TWINAX     | -25          | _           | 265         | 19        | _         |
| GENERAL            | V1-AL         | TWINAX     | -12          | _           | 460         | 51        | _         |
| GENERAL            | V1-DSAL       | QUADRAX    | 28           | _           | 530         | 50        | _         |
| GENERAL CABLE      | 1891Q-222-32  | COAX       | *            | *           | 194         | 32        | _         |
| GENERAL CABLE      | C3500         | COAX       | *            | *           | 200         | 23        | 75        |
| GENERAL CABLE      | C3519         | COAX       | -21          | *           | 161         | 36        | 50        |
| GENERAL CABLE      | C3521         | COAX       | *            | *           | 235         | 40        | 75        |
| GENERAL CABLE      | C5844         | COAX       | _            | -014        | 242         | 32        | 75        |
| GENERAL CABLE      | E86009        | COAX       | *            | *           | 200         | 32        | 75        |
| GENERAL CABLE      | LL79301       | COAX       | *            | *           | 200         | 32        | 75        |
| GENERAL DYNAMICS   | C10989-1      | TWINAX     | _            | _           | _           | _         | 120       |
| GENERAL DYNAMICS   | C8898         | TRIAX      | -24A         | -309        | 153         | 13        | 95        |
| GENERAL WIRE       | 82K03878/9A   | COAX       | -21          | -011        | 173         | 38        | 50        |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER    | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|-----------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| GENERAL WIRE          | C5025        | COAX       | -6A          | -053        | 405         | 64        | 75        |
| GENERAL WIRE PRODUCTS | 001-16416    | TWINAX     | -12          | TOO LARGE   | 444         | 35        | —         |
| GENERAL WIRE PRODUCTS | 001-21287    | TWINAX     | *            | TOO LARGE   | 256         | 24        | —         |
| GENERAL CABLE         | 4162A        | TWINAX     | *            | —           | 210         | 25        | —         |
| GEPCO                 | 7174         | COAX       | -5           | -003        | 101         | 19        | 50        |
| GEPCO                 | 7537         | COAX       | -4           | -009        | 160         | 23        | 75        |
| GEPCO                 | 7538         | COAX       | -37          | -009        | 159         | 23        | 75        |
| GEPCO                 | 7826         | TRIAx      | *            | TOO LARGE   | 512         | 68        | —         |
| GEPCO                 | 7913         | COAX       | —            | —           | 405         | 64        | 75        |
| GEPCO                 | 7915         | COAX       | —            | —           | 405         | 64        | 75        |
| GEPCO                 | 2279K        | COAX       | *            | *           | 237         | 40        | 75        |
| GEPCO                 | 2279V        | COAX       | *            | *           | 237         | 40        | 75        |
| GEPCO                 | 2297V        | COAX       | *            | *           | 237         | 40        | 75        |
| GEPCO                 | LVT61811     | TRIAx      | -15          | TOO LARGE   | 516         | 68        | 75        |
| GEPCO                 | LVT61859     | TRIAx      | *            | TOO LARGE   | 357         | 31        | 75        |
| GEPCO                 | RGB6000      | COAX       | -6           | -016        | 304         | 32        | 75        |
| GEPCO                 | RGB809       | COAX       | -22          | -009        | 150         | 21        | 75        |
| GEPCO                 | RGBS809      | COAX       | -22          | -009        | 150         | 21        | 75        |
| GEPCO                 | RGBSC809     | COAX       | -22          | -009        | 150         | 21        | 75        |
| GEPCO                 | V61859M      | COAX       | -2           | —           | 242         | 30        | 75        |
| GEPCO                 | V618J59      | COAX       | -2           | -013        | 242         | 23        | 75        |
| GEPCO                 | V618M59      | COAX       | -2           | -013        | 242         | 23        | 75        |
| GEPCO                 | V618M59TK    | COAX       | *            | *           | 200         | 23        | 75        |
| GEPCO                 | VDFM809      | COAX       | -22          | -009        | 150         | 21        | 75        |
| GEPCO                 | VE61859      | COAX       | -2           | -013A       | 242         | 30        | 75        |
| GEPCO                 | VE61859M     | COAX       | -2           | -013A       | 242         | 30        | 75        |
| GEPCO                 | VFM809       | COAX       | -22          | -009        | 150         | 22        | 75        |
| GEPCO                 | VP6000       | COAX       | -6           | -016        | 304         | 32        | 75        |
| GEPCO                 | VP618PE/AP   | COAX       | -6           | -016        | 304         | 32        | 75        |
| GEPCO                 | VP618PE01    | COAX       | -6           | -016        | 304         | 31        | 75        |
| GEPCO                 | VP618PVC     | COAX       | -6           | -016        | 304         | 32        | 75        |
| GEPCO                 | VP618TK      | COAX       | -41          | *           | 276         | 32        | 75        |
| GEPCO                 | VPM1000      | COAX       | -2           | -013        | 242         | 23        | 75        |
| GEPCO                 | VPM2000      | COAX       | -2           | -014        | 242         | 32        | 75        |
| GEPCO                 | VPM2000TK    | COAX       | *            | *           | 200         | 32        | 75        |
| GEPCO                 | VPM2000TS    | COAX       | *            | *           | 199         | 32        | 75        |
| GEPCO                 | VPM618       | COAX       | -2A          | -022        | 220         | 27        | 75        |
| GEPCO                 | VS102000     | COAX       | -2           | -014        | 243         | 32        | 75        |
| GEPCO                 | VSD20001TS   | COAX       | —            | —           | 237         | 45        | 75        |
| GEPCO                 | VSD2001      | COAX       | -41          | -020        | 273         | 40        | 75        |
| GEPCO                 | VSM618       | COAX       | -22          | -009        | 150         | 17        | 75        |
| GEPCO                 | VT61811      | TRIAx      | -14          | TOO LARGE   | 474         | 65        | 75        |
| GEPCO                 | VT61859      | TRIAx      | *            | TOO LARGE   | 360         | 34        | 75        |
| GORE                  | 03352/CX     | TRIAx      | —            | -303        | 150         | 12        | —         |

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## CABLE GROUP TABLE

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|--------------------|-------------------|------------|--------------|-------------|-------------|-----------|-----------|
| GORE               | C06C032           | COAX       | -5A          | -001        | 75          | 19        | _         |
| GORE               | CXA-8220          | TRIAX      | -60          | -305        | 187         | 25        | _         |
| GORE               | CXN-1267C         | COAX       | *            | _           | 135         | 24        | 75        |
| GORE               | CXN-1352B         | COAX       | -44          | *           | 78          | 16        | _         |
| GORE               | CXN-1362          | COAX       | -36          | _           | 101         | 31        | _         |
| GORE               | CXN-1384          | COAX       | *            | _           | _           | _         | _         |
| GORE               | CXN-1388          | COAX       | -5           | -003        | 110         | 20        | _         |
| GORE               | CXN-1417A         | COAX       | *            | *           | 107         | 20        | _         |
| GORE               | CXN-1456          | COAX       | -44          | _           | 74          | 19        | _         |
| GORE               | CXN-1722          | COAX       | -86          | *           | 86          | 12        | _         |
| GORE               | CXN-1839          | COAX       | *            | TOO LARGE   | 280         | 88        | _         |
| GORE               | CXN-1939          | COAX       | -44          | *           | 78          | 10        | 93        |
| GORE               | CXN-2223          | TWINAX     | -24          | _           | 141         | 25        | _         |
| GORE               | CXN-2268          | TWINAX     | _            | -204        | 135         | 25        | _         |
| GORE               | CXN-2363          | TWINAX     | _            | -221        | 166         | 25        | _         |
| GORE               | CXN-2702          | TWINAX     | _            | -221        | 166         | 25        | 100       |
| GORE               | CXN-3101          | COAX       | -5           | -004        | 93          | 12        | 75        |
| GORE               | CXN-3162          | TWINAX     | *            | -223        | 112         | 21        | 100       |
| GORE               | CXN-3194          | TWINAX     | _            | -204        | 138         | 24        | 80        |
| GORE               | CXN3268           | TRIAX      | -27 (150)    | _           | 100         | 12        | 50        |
| GORE               | CXP 3716          | COAX       | *            | _           | _           | _         | _         |
| GORE               | DXN1830           | TWINAX     | _            | *           | 130         | 19        | _         |
| GORE               | DXSN1482          | TWINAX     | *            | _           | 103         | 18        | _         |
| GORE               | DXSN-1735         | COAX       | *            | *           | 81          | 18        | _         |
| GORE               | DXSN-1747         | COAX       | -44          | -001        | 80          | 11        | _         |
| GORE               | DXSN-1878         | TWINAX     | *            | _           | 113         | 19        | _         |
| GORE               | DXSN-1888         | TWINAX     | _            | -203        | 148         | 15        | 150       |
| GORE               | DXSN1892          | COAX       | -36          | *           | 103         | 18        | _         |
| GORE               | DXSN-1896         | COAX       | _            | *           | 82          | 14        | _         |
| GORE               | GBL-075-024       | TWINAX     | -29          | -204        | 132         | 25        | _         |
| GORE               | GCX-075-26-REV A  | COAX       | -36          | *           | 99          | 19        | _         |
| GORE               | GSC 03-2236-00    | COAX       | _            | -004        | 92          | 12        | 75        |
| GORE               | GSC-01-40583-01   | COAX       | _            | *           | 63          | 10        | 75        |
| GORE               | GSC-01-81457-00   | TWINAX     | -27          | -209        | 118         | 16        | 120       |
| GORE               | GSC-03-1276-00    | TRIAX      | *            | _           | 103         | 20        | 50        |
| GORE               | GSC-03-40389-00   | COAX       | *            | _           | 62          | 10        | 75        |
| GORE               | GSC-05-80583-00   | TWINAX     | _            | -202        | 145         | 21        | _         |
| GORE               | GSC-12-1381-01    | TWINAX     | -45          | _           | 160         | 24        | _         |
| GORE               | GSC-12-1381-01-93 | TWINAX     | *            | _           | 143         | 23        | _         |
| GORE               | GWN2388           | TWINAX     | *            | _           | 95          | 15        | _         |
| GREAT LAKES        | 70014             | COAX       |              | *           | 107         | 19        | 75        |
| GREENWOOD          | RA523PVC          | COAX       | *            | _           | 320         | 75        | _         |
| GRUMMAN            | GC875ACH1         | TWINAX     | *            | -224        | 190         | 24        | 98        |
| GRUMMAN            | GC875GBI          | TRIAX      | -57          | -302        | 164         | 33        | _         |

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|--------------------|------------------|------------|--------------|-------------|-------------|-----------|-----------|
| GRUMMAN            | GC875GC1         | TRIAX      | -56          | -301        | 164         | 12        | —         |
| GRUMMAN            | GC875GP1         | COAX       | -31          | -006        | 128         | 20        | —         |
| GRUMMAN            | GC875LNI         | TWINAX     | 59           | —           | 167         | 20        | —         |
| GRUMMAN            | GC875PD1         | COAX       | -5A          | —           | 63          | 12        | —         |
| GRUMMAN            | GC875RM1         | TWINAX     | -45          | -204        | 144         | 25        | —         |
| GRUMMAN            | GC875RR1         | QUADRAX    | -33          | -220        | 179         | 25        | —         |
| GRUMMAN            | GC875TM24H       | TRIAX      | -58          | -221        | 160         | 25        | —         |
| GRUMMAN            | GC875TMH         | TWINAX     | -45          | -204        | 146         | 25        | —         |
| H.P.               | TXA114-P         | TRIAX      | *            | *           | 217         | 21        | —         |
| HABIA              | 1652             | TRIAX      | *            | —           | 115         | 12        | 50        |
| HABIA              | 1852             | TRIAX      | *            | —           | 110         | 12        | 50        |
| HABIA              | 4570             | TRIAX      | -23          | -303        | 145         | 12        | 75        |
| HABIA              | 4570             | TRIAX      | -23          | -303        | 142         | 12        | 75        |
| HABIA              | 103-06208-010    | TWINAX     | —            | -204        | 141         | 24        | 78        |
| HABIA              | 31482-009-02     | TWINAX     | -47          | -201        | 134         | 24        | 77        |
| HABIA              | 31789-003-01     | COAX       | -21          | -021        | 176         | 32        | —         |
| HABIA              | HPD 6UK4577TK-03 | TWINAX     | *            | *           | 169         | 24        | 83        |
| HABIA              | HPD 6UK4674LT-01 | TRIAX      | *            | -303        | 138         | 12        | 50        |
| HABIA              | RG 223           | TRIAX      | -7           | -306        | 248         | 35        | 50        |
| HABIA              | RGS-T-302(HFJ)   | TRIAX      | *            | TOO LARGE   | 335         | 25        | —         |
| HABIA              | RGT 178          | TRIAX      | -23          | -303        | 142         | 12        | 50        |
| HABIA              | RGT 180          | TRIAX      | -60          | -305        | 197         | 12        | 95        |
| HABIA              | RGT 316          | TRIAX      | -23          | —           | 142         | 21        | 50        |
| HABIA              | RGX180           | TRIAX      | -60          | —           | 186         | 12        | —         |
| HABIA              | Y-HRGT-213       | TRIAX      | *            | TOO LARGE   | 531         | 88        | 50        |
| HABIA              | Y-HRGT-58        | TRIAX      | *            | —           | 291         | 35        | 50        |
| HABIA              | Y-HRGT-59        | TRIAX      | -13          | —           | 335         | 24        | 75        |
| HAN WEI            | 1928 001A        | COAX       | —            | -026        | 132         | 18        | 75        |
| HAN WEI            | 1928-008A        | COAX       | *            | -026        | 139         | 16        | 75        |
| HAN WEI            | 735A             | COAX       | —            | -026        | 139         | 18        | 75        |
| HAN WEI            | RG 179           | COAX       | —            | -004        | 102         | 12        | 75        |
| HAN WEI            | RG 213           | COAX       | -6B          | TOO LARGE   | 417         | 87        | 50        |
| HAN WEI            | RG 59            | COAX       | -2           | -013        | 242         | 24        | 75        |
| HAN WEI            | RG 62A           | COAX       | -2B          | -013B       | 242         | 26        | 93        |
| HARBOUR            | 12-557           | TRIAX      | -64          | -303        | 147         | 12        | 75        |
| HARBOUR            | H7000            | COAX       | *            | —           | 200         | 52        | 50        |
| HARBOUR            | HPF195           | COAX       | —            | -011        | 195         | 37        | 75        |
| HARBOUR            | IEEE 802.3       | COAX       | -21          | *           | 167         | 38        | —         |
| HARBOUR            | LL142            | COAX       | *            | —           | 195         | 51        | 50        |
| HARBOUR            | SB142            | COAX       | -1           | -021        | 195         | 37        | 50        |
| HARBOUR            | SS405            | COAX       | -5           | -003        | 104         | 20        | 50        |
| HARBOUR            | TRX179           | TRIAX      | -23          | —           | 141         | 12        | —         |
| HARBOUR            | TRX180           | TRIAX      | -60          | -305        | 180         | 12        | 95        |
| HARBOUR            | TRX400           | TRIAX      | *            | -306        | 215         | 39        | —         |

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| CABLE MANUFACTURER   | CABLE NUMBER   | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|----------------------|----------------|------------|--------------|-------------|-------------|-----------|-----------|
| HARBOUR IND          | ST5M1212-002   | TWINAX     | -47          | -201        | 124         | 23        | 68        |
| HARRIS               | 2000566        | TWINAX     | -            | -205        | 95          | 15        | -         |
| HAVEG INDUSTRIES     | 51-04416       | TWINAX     | -            | -223        | 104         | 19        | -         |
| HEADEND              | 2240V          | COAX       | *            | *           | 269         | 32        | -         |
| HELIX                | CF18C0011030   | COAX       | *            | *           | 231         | 40        | -         |
| HELIX                | CF30P001XXXX   | TWINAX     | *            | -           | 139         | 13        | 124       |
| HELIX/HITEMP         | 8340101        | COAX       | -            | *           | 223         | 32        | 75        |
| HELIX/Hi-TEMP        | 735201         | COAX       | -            | -026        | 135         | 16        | 75        |
| HELIX/Hi-TEMP        | 7340101        | COAX       | -            | -025        | 241         | 32        | 75        |
| HEWLETT PACKARD      | 03053-61672    | TRIAx      | *            | -           | 200         | 21        | -         |
| HEWLETT PACKARD      | 8120-0049      | COAX       | -4           | -008        | 155         | 10        | -         |
| HEWLETT PACKARD      | 8120-0552-1    | COAX       | -5B          | *           | 110         | 15        | 50        |
| HEWLETT PACKARD      | 8120-0789      | COAX       | -5B          | -           | 110         | 15        | -         |
| HEWLETT PACKARD      | 8120-1105      | COAX       | -5B          | -002        | 110         | 15        | -         |
| HEWLETT PACKARD      | 8120-1289      | COAX       | -2B          | -015        | 255         | 25        | -         |
| HEWLETT PACKARD      | 8120-4461      | COAX       | -5           | -003        | 93          | 18        | 50        |
| HEWLETT PACKARD      | 8120-9026      | COAX       | -5B          | -           | 110         | 15        | -         |
| HEWLETT PACKARD      | A-8120-9077-1  | COAX       | -5           | *           | 110         | 15        | -         |
| HITACHI              | HCM-39441/1    | COAX       | *            | -027        | 128         | 16        | 75        |
| HITACHI              | HCM-9441/12    | COAX       | *            | -026        | 133         | 16        | 75        |
| HITEMP               | 117P80660      | COAX       | -50          | -           | 375         | 86        | -         |
| HITEMP               | RD1152         | COAX       | *            | -026        | 132         | 16        | 75        |
| HITEMP               | RD1152-1       | COAX       | *            | *           | 159         | 16        | 75        |
| HITEMP               | RD1152-2       | COAX       | -22          | *           | 143         | 16        | 75        |
| HITEMP               | SP50-738CWSSTJ | COAX       | *            | -           | 85          | 12        | -         |
| HOMESTAR             | 1501           | COAX       | -            | -           | 288         | 40        | 75        |
| HONEYWELL            | P7500577       | TRIAx      | -25A         | -306        | 250         | 38        | 50        |
| HUBER-SUHNER         | G04233D        | COAX       | -            | -013        | 240         | 24        | 75        |
| HUGHES               | 710855-35      | TRIAx      | *            | -           | 460         | 47        | -         |
| HUGHES               | 720304-1       | COAX       | -5           | *           | 80          | 12        | -         |
| HUGHES               | HMS 2-1149/76  | TRIAx      | *            | *           | 215         | 20        | 95        |
| HUGHES               | HMS-1480/2     | TWINAX     | -45          | -           | -           | -         | -         |
| HUGHES               | HMS2-1149/77   | TWINAX     | -47          | -           | 122         | 25        | -         |
| HUGHES               | HMS2-1149/78   | TWINAX     | -27          | -223        | 110         | 20        | 68        |
| HUGHES               | STFM1398       | COAX       | -41          | -           | 280         | 59        | 50        |
| IBM                  | 4885584        | COAX       | -            | -022        | 222         | 25        | -         |
| IBM                  | 7362211        | TWINAX     | -8           | -           | 330         | 39        | -         |
| IBM                  | 07F9635        | COAX       | *            | *           | 112         | 19        | 75        |
| INDUSTRIA BRASILEIRA | "RF75-0,8/4,8" | COAX       | *            | -016        | 304         | 32        | 75        |
| IN-LINE              | 7000           | COAX       | -36          | -007        | 115         | 15        | 75        |
| IN-LINE              | 7100           | COAX       | -21          | *           | 170         | 23        | 75        |
| IN-LINE              | 7400           | COAX       | -36          | -007        | 115         | 15        | 75        |
| IN-LINE              | 7600           | COAX       | -21          | *           | 175         | 23        | 75        |
| INTERCOMP            | 12402          | TWINAX     | *            | -           | 444         | 50        | -         |

Note: \* = Special contact factory

## CABLE GROUP TABLE

| CABLE MANUFACTURER         | CABLE NUMBER        | CABLE TYPE | WRENCH STYLE | GRIMP STYLE    | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|----------------------------|---------------------|------------|--------------|----------------|-------------|-----------|-----------|
| INTERFACE CABLE            | SM-A-939852         | COAX       | *            | -010           | 159         | 30        | —         |
| INTERNATIONAL WIRE & CABLE | 9091                | COAX       | *            | *              | 239         | 52        | 50        |
| JOURNEY                    | 7001740             | COAX       | -5           | -003           | 100         | 18        | —         |
| JPL                        | ST12008-24          | TWINAX     | —            | -206           | 110         | 26        | 75        |
| JPL                        | ST12008-26          | TWINAX     | *            | -223           | 100         | 20        | 75        |
| JUDD                       | 740                 | COAX       | —            | -004           | 80          | 10        | 75        |
| JUDD                       | 735S01              | COAX       | *            | -026           | 134         | 18        | 75        |
| JUDD                       | C1401053            | COAX       | -63          | -025           | 232         | 31        | 75        |
| JUDD                       | C1401064            | COAX       | *            | -026           | 132         | 16        | 75        |
| JUDD                       | C1401741            | COAX       | —            | -004           | 99          | 10        | 75        |
| JUDD WIRE INC              | SS502401            | COAX       | -5           | -003           | —           | —         | —         |
| KAMERAKABEL                | 11MM                | TRIAx      | *            | —              | —           | —         | —         |
| KAMERAKABEL                | 8.5MM               | TRIAx      | *            | —              | —           | —         | —         |
| KEITHLEY                   | SC-22               | TRIAx      | -23          | *              | 145         | 24        | 40        |
| KEITHLEY                   | SC-9                | COAX       | -1           | -021           | 195         | 35        | 50        |
| KOVID CACTUS               | 8900-0007-0000      | COAX       | -36          | 105-1820 (220) | 104         | 19        | 75        |
| LAMNCASA                   | CECBV-75-2          | COAX       | -37          | *              | 162         | 12        | —         |
| LINK                       | CVS LKRX75S2D4      | COAX       | -22          | -009           | 157         | 20        | 75        |
| LOCKHEED MARTIN            | 6815176             | TWINAX     | *            | TOO LARGE      | 375         | 41        | 120       |
| LOCKHEED MARTIN            | ABA                 | TWINAX     | -29          | -206           | 120         | 25        | —         |
| LOCKHEED MARTIN            | STM01-600 TYPE I    | TWINAX     | *            | *              | 162         | 30        | —         |
| LOCKHEED MARTIN            | STM01-600 TYPE II   | TWINAX     | *            | -204           | 130         | 25        | —         |
| LOCKHEED MARTIN            | 5PTM1T04-5          | TWINAX     | -60          | —              | 177         | 24        | 100       |
| LOCKHEED MARTIN            | 6121176-1           | TRIAx      | *            | —              | 121         | 12        | —         |
| LOCKHEED MARTIN            | ST5M1284-003        | TWINAX     | -45          | —              | 146         | 20        | —         |
| LUCENT                     | 407529262           | COAX       | -5           | -004           | 106         | 10        | 75        |
| LUCENT                     | 848068607           | COAX       | -37          | *              | 166         | 16        | 75        |
| LUCENT                     | 106 309 206 (2734A) | COAX       | —            | -025           | 225         | 31        | 75        |
| LUCENT                     | 106 309 214 (2734A) | COAX       | —            | *              | 225         | 38        | 75        |
| LUCENT                     | 1928 001A 1C/36     | COAX       | *            | -026           | 133         | 15        | 75        |
| LUCENT                     | 2734A R1000         | COAX       | —            | *              | 225         | 31        | 75        |
| LUCENT                     | 2734A RVAR          | COAX       | —            | *              | 225         | 31        | 75        |
| LUCENT                     | 2735B               | COAX       | —            | *              | 145         | 17        | 75        |
| LUCENT                     | 735C                | COAX       | *            | -026           | 139         | 16        | 75        |
| LUCENT                     | KS23918 L2          | COAX       | —            | -004           | 89          | 13        | 75        |
| LUCENT                     | WP91681 L2          | COAX       | —            | -004           | 89          | 13        | 75        |
| M/A COM                    | FLC78-50J           | COAX       | —            | —              | —           | —         | 50        |
| M/A-COM                    | 2250-E82832         | COAX       | -53          | -022           | —           | —         | —         |
| MADISON                    | 022H22BZID          | TWINAX     | -9           | —              | 250         | 38        | 100       |
| MADISON                    | 0722W00001          | COAX       | *            | —              | 114         | 19        | 75        |
| MADISON                    | 12CFE00002          | COAX       | —            | -009           | 158         | 20        | 75        |
| MADISON                    | 12EEK00001          | COAX       | —            | -026           | 132         | 16        | 75        |
| MADISON CABLE CORP         | 6096                | COAX       | -21          | *              | 158         | 37        | —         |
| MALCO                      | 250-4070-0000       | TRIAx      | -57          | -302           | 175         | 30        | —         |

Note: \* = Special contact factory

## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER       | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------------|------------|--------------|-------------|-------------|-----------|-----------|
| MALCO              | 250-4818-0009      | TRIAX      | *            | *           | 131         | 11        | 50        |
| MALCO              | 250-4820-0009      | TRIAX      | *            | -           | 128         | 11        | 95        |
| MALCO              | 295-3804-0000      | TRIAX      | -            | -305        | 184         | 10        | 95        |
| MANHATTAN          | M32011             | TWINAX     | -47          | -203        | 140         | 13        | 124       |
| MANHATTAN          | M4207              | COAX       | -6A          | -           | 405         | 48        | -         |
| MANHATTAN          | M4216              | COAX       | *            | -018        | 260         | 25        | -         |
| MANHATTAN          | M4227              | TWINAX     | -9           | -213        | -           | -         | -         |
| MANHATTAN          | M4243              | COAX       | -5           | -004        | 94          | 12        | 75        |
| MANHATTAN          | M4244              | COAX       | *            | *           | 158         | 17        | 75        |
| MANHATTAN          | M4276              | COAX       | -2           | -013        | 242         | 25        | 93        |
| MANHATTAN          | M44209             | COAX       | *            | *           | 158         | 32        | -         |
| MANHATTAN          | M64227             | TWINAX     | *            | -           | 227         | 37        | -         |
| MANHATTAN CDT      | M4237              | COAX       | -2           | -013A       | 242         | 30        | 75        |
| MANHATTAN/CDT      | M14462             | TWINAX     | *            | -212        | 187         | 27        | -         |
| MARTIN MARIETTA    | STME637-2          | TWINAX     | -            | -206        | -           | -         | -         |
| MCDONNELL DOUGLAS  | STD0101-01         | TWINAX     | *            | *           | 147         | 30        | -         |
| MCDONNELL DOUGLAS  | HS5965             | COAX       | -            | -           | 185         | 48        | 50        |
| MCDONNELL DOUGLAS  | HS4863             | TRIAX      | -23          | -303        | 146         | 15        | -         |
| MCDONNELL DOUGLAS  | HS4885             | TWINAX     | *            | -204        | 133         | 25        | -         |
| MCDONNELL DOUGLAS  | SSQ21655           | TWINAX     | -45          | -218        | 158         | 29        | -         |
| MCDONNELL DOUGLAS  | NDBC-TFE-24S2SJ-75 | TWINAX     | *            | -201        | 130         | 23        | 75        |
| MCDONNELL DOUGLAS  | NRFC-50-COAX-3     | COAX       | *            | -           | 185         | 54        | 50        |
| MCDONNELL DOUGLAS  | NRFC-75-SHCO-7     | COAX       | -2A          | -023        | 220         | 35        | 75        |
| MCDONNELL DOUGLAS  | ST5M1298F26M2S6    | TWINAX     | -27          | -           | 114         | 19        | -         |
| MCDONNELL DOUGLAS  | 5M2022-001         | TWINAX     | -27          | -206        | 114         | 20        | -         |
| MCDONNELL DOUGLAS  | 5M2022-003         | TWINAX     | *            | -204        | 130         | 24        | -         |
| MCDONNELL DOUGLAS  | 5M2022-008         | TWINAX     | -27          | -206        | 114         | 20        | -         |
| MCDONNELL DOUGLAS  | 5M2142-001         | TRIAX      | *            | -           | -           | -         | -         |
| MCDONNELL DOUGLAS  | 5M2397-001         | TRIAX      | -23          | -303        | 140         | 12        | -         |
| MCDONNELL DOUGLAS  | 5M2397-002         | TRIAX      | -23          | -303        | -           | -         | -         |
| MCDONNELL DOUGLAS  | HS5930-1           | TWINAX     | -64          | -217        | 144         | 24        | 77        |
| MCDONNELL DOUGLAS  | ST5M1212-001       | TWINAX     | -24          | -           | 154         | 31        | 68        |
| MCDONNELL DOUGLAS  | ST5M1212-003       | TWINAX     | *            | -           | 98          | 20        | 68        |
| MCDONNELL DOUGLAS  | ST5M1323           | TRIAX      | *            | *           | 210         | 19        | -         |
| MCDONNELL DOUGLAS  | STDO102-113        | TWINAX     | -56          | *           | 170         | 37        | 78        |
| MERCURY            | DOD/DNA RF21       | TWINAX     | -            | -214        | -           | -         | -         |
| MERITEC            | 700152             | COAX       | -44          | *           | 73          | 12        | -         |
| MERITEC            | 700279             | COAX       | *            | -026        | 135         | 16        | 75        |
| METRO OPTIX        | 160-00003-001      | COAX       | -            | *           | 90          | 11        | 75        |
| MICRO COAX         | UFB197C            | COAX       | -            | -           | 200         | 55        | -         |
| MICRODOT           | 202-3927-0000      | TWINAX     | -27          | -208        | 110         | 11        | 117       |
| MICRODOT           | 202-3934-0000      | TWINAX     | -24          | -211        | 168         | 12        | 160       |
| MICRODOT           | 202-3942-0000      | TWINAX     | -27          | -209        | 120         | 12        | 110       |
| MICRODOT           | 202-4547           | TWINAX     | -24          | -211        | 168         | 12        | 160       |

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| CABLE MANUFACTURER | CABLE NUMBER  | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|---------------|------------|--------------|-------------|-------------|-----------|-----------|
| MICRODOT           | 250-3833-0000 | TRIAX      | *            | -303        | 130         | 11        | —         |
| MICRODOT           | 250-3834-0000 | COAX       | -5A          | -001        | 75          | 12        | 50        |
| MICRODOT           | 250-3836-0000 | TRIAX      | *            | —           | 128         | 12        | 50        |
| MICRODOT           | 250-3902-0000 | COAX       | -5A          | -001        | 67          | 11        | 50        |
| MICRODOT           | 250-3908-0000 | COAX       | -5A          | -001        | 68          | 12        | 50        |
| MICRODOT           | 250-3909-0000 | COAX       | -44          | *           | 71          | 10        | 50        |
| MICRODOT           | 250-3920-0000 | COAX       | -5A          | -001        | 80          | 12        | 50        |
| MICRODOT           | 250-3967-0000 | COAX       | -5           | -003        | 110         | 20        | 50        |
| MICRODOT           | 250-4021-0000 | COAX       | -31          | *           | 116         | 20        | 50        |
| MICRODOT           | 250-4044-0000 | TRIAX      | -43          | —           | 175         | 32        | 50        |
| MICRODOT           | 250-4045-0000 | TRIAX      | -43          | -302        | 169         | 32        | 50        |
| MICRODOT           | 250-4070-0000 | TRIAX      | -56          | -302        | 175         | 30        | 50        |
| MICRODOT           | 250-4172-0000 | COAX       | *            | —           | 300         | 89        | 50        |
| MICRODOT           | 250-4180-0000 | COAX       | -5           | -003        | 110         | 19        | 50        |
| MICRODOT           | 250-4208-0000 | COAX       | —            | —           | 325         | 89        | 50        |
| MICRODOT           | 250-4804-0000 | TRIAX      | -32          | -203        | 150         | 11        | 50        |
| MICRODOT           | 250-4816-0009 | TRIAX      | -27          | —           | 140         | 12        | 50        |
| MICRODOT           | 275-3930-000  | TRIAX      | —            | —           | 155         | 12        | 75        |
| MICRODOT           | 275-3933-0000 | COAX       | -4           | -009        | 150         | 23        | 75        |
| MICRODOT           | 275-3991      | COAX       | -36          | *           | 110         | 15        | 75        |
| MICRODOT           | 293-3902      | COAX       | *            | -026        | 130         | 11        | 93        |
| MICRODOT           | 293-3922-0000 | TRIAX      | -60          | -305        | 184         | 12        | 93        |
| MICRODOT           | 293-3930-0000 | TRIAX      | -43          | —           | 175         | 11        | 100       |
| MICRODOT           | 293-3968-0000 | COAX       | -22          | -008        | 155         | 11        | 93        |
| MICRODOT           | 295-3801-0000 | COAX       | -22          | -008        | 155         | 10        | 95        |
| MICRODOT           | 295-3802-0000 | COAX       | -22          | *           | 144         | 11        | 95        |
| MICRODOT           | 295-3950-0000 | TRIAX      | -43          | —           | 175         | 12        | 95        |
| MICRODOT           | 295-3952-0000 | TRIAX      | -43          | —           | 175         | 12        | 95        |
| MICRODOT           | 295-3966-0000 | TRIAX      | *            | —           | 210         | 19        | 95        |
| MICRODOT           | 295-3992-000  | COAX       | -36          | -007        | 114         | 12        | 95        |
| MICRODOT           | 295-3993-0000 | TRIAX      | -64          | -303        | 150         | 12        | 95        |
| MICROGNOSIS        | MICROGNOSIS   | COAX       | *            | -004        | 107         | 14        | —         |
| MICROPORE          | 190           | COAX       | *            | —           | 190         | 51        | 50        |
| MICROSTOCK         | UT85-75       | COAX       | -86          | —           | 84          | 12        | 75        |
| MIDISCO            | MDC8084       | COAX       | -86          | —           | 90          | 12        | 75        |
| MIL-SPEC           | M17/203-00001 | TWINAX     | *            | —           | 161         | 25        | 77        |
| MILESTEK           | 30-01010      | COAX       | -2           | -013        | 242         | 25        | 75        |
| MIL-SPEC           | 2C2219EXJ     | TWINAX     | -47          | -206        | 120         | 23        | —         |
| MIL-SPEC           | LS2SJ-22      | TWINAX     | *            | TOO LARGE   | 275         | 31        | —         |
| MIL-SPEC           | M17/015-RG022 | TWINAX     | -10          | —           | 430         | 47        | 95        |
| MIL-SPEC           | M17/015-RG111 | TWINAX     | *            | —           | 490         | 47        | 95        |
| MIL-SPEC           | M17/094-RG179 | COAX       | -5           | -004        | 105         | 13        | 75        |
| MIL-SPEC           | M17/095-RG180 | COAX       | -22          | -008        | 145         | 13        | 95        |
| MIL-SPEC           | M17/110-RG302 | COAX       | *            | *           | 207         | 25        | 75        |

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| CABLE MANUFACTURER | CABLE NUMBER  | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|---------------|------------|--------------|-------------|-------------|-----------|-----------|
| MIL-SPEC           | M17/113-RG316 | COAX       | -5           | -003        | 98          | 20        | 50        |
| MIL-SPEC           | M17/116-RG307 | TRIAX      | *            | —           | 270         | 30        | 75        |
| MIL-SPEC           | M17/127-RG393 | COAX       | *            | TOO LARGE   | 400         | 95        | 50        |
| MIL-SPEC           | M17/128-RG400 | COAX       | —            | —           | —           | —         | 50        |
| MIL-SPEC           | M17/130-RG402 | COAX       | -141         | —           | 141         | 36        | 50        |
| MIL-SPEC           | M17/131-RG403 | TRIAX      | *            | *           | 128         | 12        | 50        |
| MIL-SPEC           | M17/133-00001 | COAX       | -86          | *           | 87          | 21        | 50        |
| MIL-SPEC           | M17/133-00002 | COAX       | -86          | *           | 87          | 21        | 50        |
| MIL-SPEC           | M17/133-RG405 | COAX       | -86          | *           | 87          | 21        | 50        |
| MIL-SPEC           | M17/134-00001 | TRIAX      | -7           | -306        | 245         | 35        | 50        |
| MIL-SPEC           | M17/134-00002 | TRIAX      | -7           | -306        | 245         | 33        | 50        |
| MIL-SPEC           | M17/135-00001 | TRIAX      | -14A         | TOO LARGE   | 500         | 89        | 50        |
| MIL-SPEC           | M17/135-00003 | TRIAX      | -14A         | —           | 500         | 81        | 50        |
| MIL-SPEC           | M17/135-00004 | TRIAX      | -14A         | TOO LARGE   | 500         | 89        | 50        |
| MIL-SPEC           | M17/135-00005 | TRIAX      | -14A         | TOO LARGE   | 500         | 81        | 50        |
| MIL-SPEC           | M17/135-00006 | TRIAX      | -14A         | TOO LARGE   | 500         | 81        | 50        |
| MIL-SPEC           | M17/136-00001 | COAX       | -5           | -004        | 105         | 12        | 75        |
| MIL-SPEC           | M17/137-00001 | COAX       | -22          | -008        | 145         | 13        | 95        |
| MIL-SPEC           | M17/138-00001 | COAX       | -5           | -003        | 102         | 21        | 50        |
| MIL-SPEC           | M17/152-00001 | COAX       | -5           | -006        | 120         | 21        | 50        |
| MIL-SPEC           | M17/155-00001 | COAX       | -1           | -011        | 200         | 38        | 50        |
| MIL-SPEC           | M17/157-00001 | COAX       | -4           | -010        | 160         | 31        | 50        |
| MIL-SPEC           | M17/158-00001 | COAX       | -1           | -012        | 200         | 39        | 50        |
| MIL-SPEC           | M17/162-00001 | COAX       | -6E          | —           | 336         | 57        | 50        |
| MIL-SPEC           | M17/163-00001 | COAX       | -6A          | —           | 412         | 90        | 50        |
| MIL-SPEC           | M17/164-00001 | COAX       | -6B          | —           | 432         | 90        | 50        |
| MIL-SPEC           | M17/164-00002 | COAX       | -6B          | —           | 432         | 90        | 50        |
| MIL-SPEC           | M17/167-00001 | COAX       | -3           | -012        | 216         | 36        | 50        |
| MIL-SPEC           | M17/169-00001 | COAX       | -5A          | -001        | 75          | 13        | 50        |
| MIL-SPEC           | M17/170-00001 | COAX       | -21          | -011        | 175         | 38        | 50        |
| MIL-SPEC           | M17/171-00001 | COAX       | -41          | —           | 288         | 60        | 50        |
| MIL-SPEC           | M17/172-00001 | COAX       | -5           | -003        | 102         | 21        | 50        |
| MIL-SPEC           | M17/173-00001 | COAX       | -5           | -003        | 100         | 19        | 50        |
| MIL-SPEC           | M17/174-00001 | COAX       | -6A          | —           | 400         | 90        | 50        |
| MIL-SPEC           | M17/175-00001 | COAX       | -1           | -012        | 200         | 39        | 50        |
| MIL-SPEC           | M17/176-00002 | TWINAX     | -47          | -201        | 134         | 24        | 77        |
| MIL-SPEC           | M17/177-00001 | TRIAX      | -60          | -305        | 189         | 13        | 95        |
| MIL-SPEC           | M17/179-00001 | TRIAX      | *            | -305        | 195         | 13        | 75        |
| MIL-SPEC           | M17/180-00001 | COAX       | -6E          | -017        | 336         | 29        | 75        |
| MIL-SPEC           | M17/181-00001 | COAX       | -6A          | —           | 412         | 50        | 75.E      |
| MIL-SPEC           | M17/181-00002 | COAX       | *            | TOO LARGE   | 475         | 48        | 50        |
| MIL-SPEC           | M17/184-00001 | COAX       | -2           | -013        | 246         | 24        | 75        |
| MIL-SPEC           | M17/186-00001 | TWINAX     | -9 ***       | -213        | 245         | 40        | 78        |
| MIL-SPEC           | M17/187-00001 | COAX       | -4           | *           | 160         | 31        | 50        |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER    | CABLE TYPE | WRENCH STYLE                          | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |     |
|--------------------|-----------------|------------|---------------------------------------|-------------|-------------|-----------|-----------|-----|
| MIL-SPEC           | M17/189-00001   | COAX       | -6A                                   | _           | 412         | 90        | 50        |     |
| MIL-SPEC           | M17/190-00001   | COAX       | -6B                                   | TOO LARGE   | 432         | 89        | 50        |     |
| MIL-SPEC           | M17/196-00001   | COAX       | -5                                    | *           | 115         | 19        | 50        |     |
| MIL-SPEC           | M17/200-00001   | COAX       | -3                                    | -012        | 216         | 36        | 50        |     |
| MIL-SPEC           | M17/29-RG59     | COAX       | -2                                    | -013        | 245         | 23        | 75        |     |
| MIL-SPEC           | M17/2-RG6       | COAX       | -6E                                   | -017        | 336         | 29        | 75        |     |
| MIL-SPEC           | M17/30-RG062    | COAX       | -2B                                   | -013        | 250         | 25        | 93        |     |
| MIL-SPEC           | M17/31-RG63     | COAX       | -6A                                   | _           | 415         | 26        | 125       |     |
| MIL-SPEC           | M17/45-RG108    | TWINAX     | -9                                    | -213        | 235         | 38        | 78        |     |
| MIL-SPEC           | M17/47-RG114    | COAX       | -6A                                   | _           | 415         | 8         | 185       |     |
| MIL-SPEC           | M17/60-RG142    | COAX       | -1                                    | -012        | 200         | 40        | 50        |     |
| MIL-SPEC           | M17/62-RG144    | COAX       | -6B                                   | TOO LARGE   | 412         | 525       | 75        |     |
| MIL-SPEC           | M17/6-RG11      | COAX       | -6A                                   | -053        | 412         | 50        | 75        |     |
| MIL-SPEC           | M17/77-RG216    | COAX       | -6B                                   | _           | 432         | 50        | 75        |     |
| MIL-SPEC           | M17/84-RG223    | COAX       | -3                                    | -012        | 216         | 35        | 50        |     |
| MIL-SPEC           | M17/86-00001    | COAX       | -6B                                   | _           | 440         | 94        | 50        |     |
| MIL-SPEC           | M17/90-RG71     | COAX       | -2B                                   | -015A       | 250         | 25        | 93        |     |
| MIL-SPEC           | M17/97-RG210    | COAX       | -2B                                   | -013B       | 250         | 26        | 93        |     |
| MIL-SPEC           | M24643/33-01UN  | TWINAX     | *                                     | _           | 255         | 50        | 75        |     |
| MIL-SPEC           | M27500-22ML2T00 | TWINAX     | _                                     | *           | 117         | 31        | _         |     |
| MIL-SPEC           | M27500-22TE2T14 | TWINAX     | -45                                   | -210        | 137         | 32        | _         |     |
| MIL-SPEC           | M27500-22TN2N06 | TWINAX     | -29                                   | -201        | 134         | 29        | _         |     |
| MIL-SPEC           | M27500-24S82T23 | TWINAX     | _                                     | -208        | 101         | 21        | 78        |     |
| MIL-SPEC           | MC24643/33-01UN | TWINAX     | *                                     | _           | 255         | 50        | 75        |     |
| MIL-SPEC           | RG108/U         | TWINAX     | SEE MIL-SPEC M17/ CABLE # FOR ALL RG# |             |             |           |           | 78  |
| MIL-SPEC           | RG11/U          | COAX       |                                       |             |             |           |           | 75  |
| MIL-SPEC           | RG111/U         | TWINAX     |                                       |             |             |           |           | 95  |
| MIL-SPEC           | RG114/U         | COAX       |                                       |             |             |           |           | 185 |
| MIL-SPEC           | RG122           | COAX       |                                       |             |             |           |           | 50  |
| MIL-SPEC           | RG13/U          | COAX       |                                       |             |             |           |           | 75  |
| MIL-SPEC           | RG141/U         | COAX       |                                       |             |             |           |           | 50  |
| MIL-SPEC           | RG142/U         | COAX       |                                       |             |             |           |           | 50  |
| MIL-SPEC           | RG144/U         | COAX       |                                       |             |             |           |           | 75  |
| MIL-SPEC           | RG174/U         | COAX       |                                       |             |             |           |           | 50  |
| MIL-SPEC           | RG178B/U        | COAX       |                                       |             |             |           |           | 50  |
| MIL-SPEC           | RG179/U         | COAX       |                                       |             |             |           |           | 75  |
| MIL-SPEC           | RG180B/U        | COAX       |                                       |             |             |           |           | 95  |
| MIL-SPEC           | RG187A/U        | COAX       |                                       |             |             |           |           | 75  |
| MIL-SPEC           | RG188/U         | COAX       |                                       |             |             |           |           | 50  |
| MIL-SPEC           | RG195A/U        | COAX       |                                       |             |             |           |           | 95  |
| MIL-SPEC           | RG196A/U        | COAX       |                                       |             |             |           |           | 50  |
| MIL-SPEC           | RG210/U         | COAX       |                                       |             |             |           |           | 93  |
| MIL-SPEC           | RG212/U         | COAX       |                                       |             |             |           |           | 50  |
| MIL-SPEC           | RG213/U         | COAX       |                                       |             |             |           |           | 50  |

Note: \* = Special contact factory



## CABLE GROUP TABLE

| CABLE MANUFACTURER  | CABLE NUMBER   | CABLE TYPE | WRENCH STYLE                          | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|---------------------|----------------|------------|---------------------------------------|-------------|-------------|-----------|-----------|
| MIL-SPEC            | RG214/U        | COAX       | SEE MIL-SPEC M17/ CABLE # FOR ALL RG# |             |             |           | 50        |
| MIL-SPEC            | RG216/U        | COAX       |                                       |             |             |           | 75        |
| MIL-SPEC            | RG223/U        | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG225/U        | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG22B/U        | TWINAX     |                                       |             |             |           | 95        |
| MIL-SPEC            | RG302          | COAX       |                                       |             |             |           | 75        |
| MIL-SPEC            | RG303/U        | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG304/U        | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG307          | TRIAX      |                                       |             |             |           | 75        |
| MIL-SPEC            | RG316          | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG393          | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG400/U        | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG402/U        | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG403          | TRIAX      |                                       |             |             |           | 50        |
| MIL-SPEC            | RG405/U        | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG55B/U        | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG58/U         | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG59B/U        | COAX       |                                       |             |             |           | 75        |
| MIL-SPEC            | RG5B/U         | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG62A/U        | COAX       |                                       |             |             |           | 93        |
| MIL-SPEC            | RG62B/U        | COAX       |                                       |             |             |           | 93        |
| MIL-SPEC            | RG63/U         | COAX       |                                       |             |             |           | 125       |
| MIL-SPEC            | RG6A/U         | COAX       |                                       |             |             |           | 75        |
| MIL-SPEC            | RG71/U         | COAX       |                                       |             |             |           | 93        |
| MIL-SPEC            | RG87A/U        | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG8A/U         | COAX       |                                       |             |             |           | 50        |
| MIL-SPEC            | RG9B/U         | COAX       | 50                                    |             |             |           |           |
| MOGAMI              | 2947           | COAX       |                                       | *           | 121         | 20        | 75        |
| MOGAMI              | 2964           | COAX       | *                                     | *           | 189         | 24        | 75        |
| MOGAMI              | 3145           | COAX       | _                                     | *           | 117         | 21        | 75        |
| MOHAWK              | 5305-8         | TWINAX     | _                                     | _           | 420         | 40        | _         |
| MOHAWK              | HT10431 TWINAX | TWINAX     | -9                                    | -214        | 245         | 22        | 124       |
| MOHAWK              | HTAA328-5      | COAX       | *                                     | TOO LARGE   | 347         | 64        | _         |
| MOHAWK              | M52001-HT10431 | TWINAX     | -9                                    | _           | _           | _         | _         |
| MOHAWK              | M52210         | COAX       | _                                     | -016        | 300         | 32        | 75        |
| MOHAWK              | M54426         | COAX       | *                                     | -009        | 153         | 20        | 75        |
| MOHAWK              | M80248         | TRIAX      | *                                     | TOO LARGE   | 360         | 31        | 75        |
| MOHAWK              | MS2001         | TWINAX     | *                                     | -214        | 245         | 22        | _         |
| MOHAWK              | PNHT10431      | TWINAX     | _                                     | -214        | 245         | 22        | 124       |
| MOHAWK WIRE & CABLE | M52057         | COAX       | _                                     | -024        | 260         | 40        | _         |
| MOLEX               | 711530009      | COAX       | -5A                                   | _           | 60          | 10        | 75        |
| MOLEX               | 71153-3019     | COAX       | _                                     | *           | 70          | 17        | 50        |
| MONSTER CABLE       | SU-RG6 CL      | COAX       | -41                                   | -020        | 278         | 42        | 75        |
| MONTROSE            | 6248           | COAX       | *                                     | *           | 189         | 21        | _         |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER        | CABLE NUMBER         | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|---------------------------|----------------------|------------|--------------|-------------|-------------|-----------|-----------|
| MONTROSE                  | 9835-735             | COAX       | *            | -026        | 135         | 15        | 75        |
| MONTROSE                  | CDT 735A             | COAX       | _            | -026        | 129         | 16        | 75        |
| MONTROSE                  | IFX4385              | COAX       | _            | -004        | 100         | 13        | 75        |
| MONTROSE/CDT              | CBL 1225             | TWINAX     | _            | -225        | 200         | 22        | 124       |
| MONTROSE/CDT              | CBL 1233             | COAX       | -2A          | -025        | 225         | 33        | 75        |
| MONTROSE/CDT              | CBL 1235             | COAX       | -2A          | -025        | 235         | 31        | 75        |
| MONTROSE/CDT              | CBL 1288-()          | COAX       | _            | -026        | 129         | 16        | 75        |
| MONTROSE/CDT              | CBL 2108             | COAX       | -2A          | -025        | 235         | 31        | 75        |
| MONTROSE/CDT              | CBL 2109             | COAX       | -2A          | -025        | 241         | 34        | 75        |
| MONTROSE/CDT              | CBL 2721             | TRIAX      | -7           | -306        | 250         | 37        | 50        |
| MONTROSE/CDT              | CBL 2726             | COAX       | *            | -026        | 133         | 16        | 75        |
| MONTROSE/CDT              | CBL 7382             | COAX       | _            | *           | 215         | 58        | 50        |
| MONTROSE/CDT              | CBL 7820             | COAX       | -21          | *           | 165         | 35        | _         |
| MONTROSE/CDT              | CBL 8411             | TRIAX      | *            | TOO LARGE   | 356         | 41        | _         |
| MONTROSE/CDT              | CBL 8415             | TRIAX      | *            | TOO LARGE   | 438         | 57        | _         |
| MONTROSE/CDT              | CBL 9835-735         | COAX       | *            | -026        | 136         | 14        | 75        |
| MONTROSE/CDT              | CBL 9956             | TWINAX     | -56          | *           | 170         | 37        | 78        |
| MONTROSE/CDT              | CBL3340              | COAX       | _            | -004        | 77          | 11        | 75        |
| NATIONAL WIRE & CABLE     | S10-9723             | TWINAX     | -55          | -214        | 226         | 21        | _         |
| NAVAIR                    | 67A37A130            | COAX       | -4           | *           | 140         | 31        | _         |
| NAVAIR                    | 67A37A130            | COAX       | *            | _           | 135         | 31        | 50        |
| NAVSEA                    | 6322369              | TRIAX      | -60          | _           | 188         | 29        | 50        |
| NAVSEA                    | 6322493              | TRIAX      | *            | TOO LARGE   | 480         | 50        | 75        |
| NAVSEA                    | 6323054              | COAX       | *            | _           | 430         | 47        | 75        |
| NAVSEA                    | 6323055              | TWINAX     | *            | _           | 281         | 40        | _         |
| NAVSEA                    | 6323056              | TRIAX      | *            | _           | 291         | 38        | _         |
| NAVSEA                    | 6323059              | TRIAX      | *            | TOO LARGE   | 325         | 25        | _         |
| NAVSEA                    | 6262065-1            | TRIAX      | *            | TOO LARGE   | 437         | 89        | _         |
| NEK                       | 51021                | TRIAX      | *            | TOO LARGE   | 334         | 45        | 75        |
| NEK                       | PSF 1/3M             | COAX       | *            | -018        | 256         | 24        | 75        |
| NEK CABLE                 | 156503               | COAX       | -2A          | -022        | 220         | 25        | _         |
| NEK CABLE                 | IEEE 802.3 10 BASE 2 | COAX       | -21          | *           | 165         | 36        | _         |
| NEK CABLE                 | NEK 23795            | COAX       | -21          | *           | 170         | 24        | 75        |
| NEK/CDT                   | 51041                | TRIAX      | *            | TOO LARGE   | 325         | 46        | 75        |
| NEK/CDT                   | HF75 0.6/3.7 HV DS   | COAX       | -2           | -015        | 257         | 23        | 75        |
| NEK/CDT                   | VTF8.5               | TRIAX      | *            | _           | 335         | 41        | 75        |
| NEMAL                     | 1835F                | TRIAX      | *            | *           | 360         | 32        | 75        |
| NEW ENGLAND               | N13-44B-480          | TWINAX     | *            | _           | _           | _         | _         |
| NEW ENGLAND ELECTRIC WIRE | TR70748              | COAX       | *            | *           | 262         | 30        | 75        |
| NIKKAI                    | 2.5C-FXW             | COAX       | *            | *           | 185         | 20        | _         |
| NK NETWORKS               | 320784               | TRIAX      | *            | _           | 341         | 38        | 75        |
| NK NETWORKS               | 0.51/2.4             | COAX       | -4           | -009        | 162         | 21        | 75        |
| NK NETWORKS               | 0.58/2.6             | COAX       | -21          | _           | 161         | 24        | 75        |
| NK NETWORKS               | 0.5L/2.4             | COAX       | -4           | *           | 153         | 20        | 75        |

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| CABLE MANUFACTURER | CABLE NUMBER        | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|---------------------|------------|--------------|-------------|-------------|-----------|-----------|
| NK NETWORKS        | 0.6/2.8             | COAX       | *            | *           | 180         | 26        | 75        |
| NK NETWORKS        | 0.6/3.7             | COAX       | -2B          | -015        | 250         | 26        | 75        |
| NK NETWORKS        | 0.6/3.7 DZ          | COAX       | -2B          | -015        | 256         | 25        | 75        |
| NK NETWORKS        | 0.6L/3.7            | COAX       | -2           | -013        | 244         | 25        | 75        |
| NK NETWORKS        | 0.8/3.7             | COAX       | -            | *           | 244         | 32        | 75        |
| NK NETWORKS        | 0.8/4.9             | COAX       | -51          | -016        | 303         | 33        | 75        |
| NK NETWORKS        | 1.0/4.8             | COAX       | -            | *           | 289         | 40        | 75        |
| NORCOM             | 28215742            | COAX       | -            | -027        | 13          | 16        | 75        |
| NORCOM             | 735M                | COAX       | -            | -007        | -           | -         | 75        |
| NORCOM/CDT         | 735                 | COAX       | -            | -026        | 139         | 18        | 75        |
| NORCOM/CDT         | 28216802            | 735AT      | -            | -026        | 129         | 16        | 75        |
| NORCOM/CDT         | 734A                | COAX       | -            | -025        | 235         | 31        | 75        |
| NORCOM/CDT         | 734D                | COAX       | -            | -025        | 235         | 31        | 75        |
| NORCOM/CDT         | 734T                | COAX       | -            | *           | 241         | 34        | 75        |
| NORCOM/CDT         | 735A                | COAX       | *            | -026        | 131         | 18        | 75        |
| NORDEN             | 154-085-0002        | TRIAX      | -64          | -           | 145         | 12        | -         |
| NORTHERN TELECOM   | NT-734              | COAX       | -            | -025        | -           | -         | -         |
| NORTHERN TELECOM   | NT-735              | COAX       | *            | -026        | 130         | 16        | 75        |
| NORTHROP           | 05A077-1            | TWINAX     | *            | -           | 155         | 25        | -         |
| NORTHROP           | 05A078-1            | TWINAX     | *            | -204        | 127         | 23        | -         |
| NORTHROP           | O5A077-1            | TWINAX     | -24          | -221        | 161         | 24        | -         |
| OLFLEX             | 3649FD              | TWINAX     | -            | -213        | 259         | 38        | 78        |
| OLYMPIC            | 6254T               | COAX       | *            | TOO LARGE   | 354         | 105       | 50        |
| OLYMPIC AVIATION   | NHU-EFTXF 6.07/2.26 | TRIAX      | -62          | -           | 449         | 91        | 50        |
| OLYMPIC CABLE CORP | 6273T               | COAX       | *            | -021        | 188         | 36        | -         |
| ORION              | TEF2202             | TWINAX     | -            | *           | 196         | 29        | -         |
| PANAVIA            | 6421                | TWINAX     | -45          | -204        | 135         | 25        | -         |
| PANAVIA            | 6595                | TRIAX      | -23          | -303        | 141         | 12        | 75        |
| PANAVIA            | 6425 ZA 002         | TWINAX     | -45          | -218        | 151         | 24        | -         |
| PANAVIA            | 6595XM              | TRIAX      | -23          | -303        | 137         | 12        | -         |
| PENN WIRE          | 25Q821              | COAX       | -6A          | -           | 378         | 64        | 75        |
| PERCON             | VK6                 | COAX       | -2           | -014        | 240         | 32        | 75        |
| PERENA             | KX6                 | COAX       | -2           | -013        | 243         | 23        | -         |
| PIC WIRE           | L8620TX             | TRIAX      | -60          | -           | 178         | 35        | -         |
| PIC WIRE           | V75268              | COAX       | *            | *           | 127         | 20        | 75        |
| PIC WIRE & CABLE   | L2201TX             | TRIAX      | -25A         | -306        | 250         | 38        | 50        |
| PIC WIRE & CABLE   | S33141              | COAX       | -41          | -           | 272         | 67        | -         |
| PKI                | "0,6/2,8"           | COAX       | *            | *           | 180         | 25        | 75        |
| PKI                | "0,6/3,7"           | COAX       | -2           | -019        | 237         | 23        | -         |
| PKI                | "1,0/6,6"           | COAX       | *            | TOO LARGE   | 352         | 40        | -         |
| PKI                | "1,6/73 AF"         | COAX       | *            | TOO LARGE   | 429         | 61        | -         |
| PKI KAMERAKABEL    | 1-Nov               | TRIAX      | -14          | TOO LARGE   | 481         | 56        | -         |
| PRIME STOCK        | M32011P             | TWINAX     | *            | -203        | 151         | 10        | -         |
| PRIME STOCK        | PS665PL             | TWINAX     | *            | -           | 190         | 21        | -         |

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| CABLE MANUFACTURER    | CABLE NUMBER       | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|-----------------------|--------------------|------------|--------------|-------------|-------------|-----------|-----------|
| PRIME STOCK           | PS666PL            | TWINAX     | -47          | _           | 131         | 10        | _         |
| PRIME STOCK           | M32012L            | TWINAX     | _            | *           | 225         | 26        | 124       |
| RADIALL               | C291982060         | TRIAx      | -42          | _           | 285         | 35        | _         |
| RADIO CORP OF AMERICA | 852493-5           | TWINAX     | -29          | *           | 132         | 30        | _         |
| RAYCHEM               | EPD49311Q          | COAX       | -1           | -021        | 197         | 35        | 50        |
| RAYCHEM               | 10584              | TRIAx      | -24A         | _           | 148         | 12        | _         |
| RAYCHEM               | 10586              | TRIAx      | -24A         | _           | 148         | 12        | _         |
| RAYCHEM               | 10595              | TWINAX     | *            | -204        | 133         | 25        | _         |
| RAYCHEM               | 10599              | TWINAX     | -24          | -210        | 145         | 31        | _         |
| RAYCHEM               | 10600              | TWINAX     | *            | -213        | 216         | 32        | _         |
| RAYCHEM               | 10602              | TWINAX     | -45          | -204        | 144         | 25        | _         |
| RAYCHEM               | 10605              | TWINAX     | *            | *           | 173         | 32        | _         |
| RAYCHEM               | 10606              | TWINAX     | *            | -223        | 117         | 21        | 75        |
| RAYCHEM               | 10612              | TWINAX     | *            | -204        | 128         | 25        | 77        |
| RAYCHEM               | 10613              | TWINAX     | *            | -222        | 154         | 25        | 77        |
| RAYCHEM               | 10614              | TWINAX     | -24          | -221        | 161         | 25        | 77        |
| RAYCHEM               | 0024A0024          | TWINAX     | -24          | -217        | 152         | 25        | 100       |
| RAYCHEM               | 0026A0024          | TWINAX     | *            | _           | _           | 19        | 100       |
| RAYCHEM               | 0528A0424          | TWINAX     | -47          | _           | 116         | 15        | 105       |
| RAYCHEM               | 10598-30-9X        | TRIAx      | *            | -303        | 148         | 12        | _         |
| RAYCHEM               | 10612-24-9         | TWINAX     | *            | -204        | 132         | 27        | 77        |
| RAYCHEM               | 1301-TZD 101 06 UX | TWINAX     | -55          | -204        | 217         | 24        | _         |
| RAYCHEM               | 13317 12515        | TWINAX     | *            | _           | 91          | 19        | _         |
| RAYCHEM               | 2012M3612          | COAX       | *            | TOO LARGE   | 310         | 89        | 50        |
| RAYCHEM               | 2024D0014          | TWINAX     | *            | _           | 210         | 25        | 120       |
| RAYCHEM               | 2524A0424          | TWINAX     | *            | -212        | 172         | 25        | 125       |
| RAYCHEM               | 2524A1311          | COAX       | *            | TOO LARGE   | 404         | 24        | 125       |
| RAYCHEM               | 2.52E+117          | TWINAX     | _            | *           | 190         | 25        | 125       |
| RAYCHEM               | 2524E0311-9        | TWINAX     | *            | -224        | 201         | 25        | 125       |
| RAYCHEM               | 2524F0524          | TWINAX     | *            | -218        | 148         | 25        | 125       |
| RAYCHEM               | 2524K0524          | TWINAX     | -55          | -224        | 194         | 25        | 125       |
| RAYCHEM               | 2526D1114          | TWINAX     | *            | -219        | 144         | 19        | 125       |
| RAYCHEM               | 2526E1114          | TWINAX     | -24          | -219        | 147         | 19        | 125       |
| RAYCHEM               | 2530A0314          | TWINAX     | -27          | -208        | 105         | 12        | 125       |
| RAYCHEM               | 2530A1317          | COAX       | -63          | _           | 203         | 13        | 125       |
| RAYCHEM               | 26433/30147K       | TWINAX     | *            | *           | 91          | 19        | _         |
| RAYCHEM               | 30-03101           | TWINAX     | *            | _           | 110         | 29        | _         |
| RAYCHEM               | 44M9996-20-2/6-0   | TWINAX     | -24          | *           | 157         | 39        | _         |
| RAYCHEM               | 5012A3311          | COAX       | -50          | _           | 350         | 88        | 50        |
| RAYCHEM               | 5012M3612          | COAX       | *            | TOO LARGE   | 301         | 89        | 50        |
| RAYCHEM               | 5012W5812          | TRIAx      | -61          | *           | 437         | 89        | 50        |
| RAYCHEM               | 5020A1311          | COAX       | -4           | *           | 155         | 40        | 50        |
| RAYCHEM               | 5020A1811          | COAX       | -21          | *           | 165         | 39        | 50        |
| RAYCHEM               | 5020A3422          | COAX       | *            | *           | 169         | 39        | 50        |

Note: \* = Special contact factory

## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| RAYCHEM            | 5020A3612    | COAX       | *            | *           | 153         | 40        | 50        |
| RAYCHEM            | 5021D1331    | COAX       | *            | -021        | 188         | 35        | 50        |
| RAYCHEM            | 5021H5331    | TRIAx      | -25A         | _           | 258         | 35        | 50        |
| RAYCHEM            | 5022D5112    | TRIAx      | -43          | _           | 175         | 32        | 50        |
| RAYCHEM            | 5022D5311    | TRIAx      | -43          | _           | 175         | 32        | 50        |
| RAYCHEM            | 5022E5111    | TRIAx      | -57          | -302        | 164         | 33        | 50        |
| RAYCHEM            | 5024A1311    | COAX       | -36          | *           | 104         | 25        | 50        |
| RAYCHEM            | 5024A1661    | TWINAX     | -27          | *           | 108         | 25        | 50        |
| RAYCHEM            | 5024A3111    | COAX       | -5           | -003        | 113         | 19        | 50        |
| RAYCHEM            | 5024A3314    | COAX       | *            | *           | 127         | 25        | 50        |
| RAYCHEM            | 5026A1111    | COAX       | -44          | _           | 80          | 19        | 50        |
| RAYCHEM            | 5026A1614    | COAX       | -44          | _           | 80          | 19        | 50        |
| RAYCHEM            | 5026A1664    | TWINAX     | -49          | *           | 85          | 19        | 50        |
| RAYCHEM            | 5026A5624    | TRIAx      | *            | *           | 130         | 19        | 50        |
| RAYCHEM            | 5026D5314    | TRIAx      | -23          | _           | 132         | 19        | 50        |
| RAYCHEM            | 5026N5611    | TRIAx      | *            | _           | 124         | 19        | 50        |
| RAYCHEM            | 5028A2211-9  | COAX       | -44          | _           | _           | 13        | 50        |
| RAYCHEM            | 5028A3318    | COAX       | -5B          | -004        | 90          | 14        | 50        |
| RAYCHEM            | 5028D5312    | TRIAx      | *            | _           | 110         | 13        | 50        |
| RAYCHEM            | 5030A1114    | COAX       | -5A          | -001        | 61          | 12        | 50        |
| RAYCHEM            | 5030A1214    | COAX       | -5A          | _           | 61          | 12        | 50        |
| RAYCHEM            | 5030A1314    | COAX       | -5A          | _           | 63          | 12        | 50        |
| RAYCHEM            | 5030A1318    | COAX       | -5A          | _           | 63          | 12        | _         |
| RAYCHEM            | 5030A1411    | COAX       | -5A          | _           | 66          | 12        | 50        |
| RAYCHEM            | 5030A1511    | COAX       | -5A          | _           | 66          | 12        | 50        |
| RAYCHEM            | 55A1121-24   | TWINAX     | -27          | -223        | 107         | 25        | _         |
| RAYCHEM            | 55A1122-26   | TWINAX     | *            | -223        | 102         | 21        | _         |
| RAYCHEM            | 7028A5518    | TRIAx      | -26          | _           | 143         | 15        | 70        |
| RAYCHEM            | 7518A0811    | TRIAx      | *            | TOO LARGE   | 480         | 50        | 75        |
| RAYCHEM            | 7518A5611    | TRIAx      | *            | TOO LARGE   | 324         | 54        | 75        |
| RAYCHEM            | 7518A5811    | TRIAx      | *            | TOO LARGE   | 417         | 52        | _         |
| RAYCHEM            | 7520A1311    | COAX       | -52          | -024        | 241         | 40        | 75        |
| RAYCHEM            | 7522A1311    | COAX       | _            | -023        | _           | _         | 75        |
| RAYCHEM            | 7522A1312    | COAX       | _            | *           | 194         | 32        | 75        |
| RAYCHEM            | 7522A1811    | COAX       | *            | *           | 210         | 32        | 75        |
| RAYCHEM            | 7522A5811    | TRIAx      | *            | _           | 258         | 30        | 75        |
| RAYCHEM            | 7522D5311    | TRIAx      | -25A         | _           | 269         | 31        | 75        |
| RAYCHEM            | 7523D1331    | COAX       | -2           | -013        | 246         | 23        | 75        |
| RAYCHEM            | 7524A1311    | COAX       | -21          | _           | 160         | 25        | 75        |
| RAYCHEM            | 7524A1312    | COAX       | -22          | _           | 152         | 25        | 75        |
| RAYCHEM            | 7524A1811    | COAX       | -37          | _           | 152         | 25        | 75        |
| RAYCHEM            | 7524D5011    | TRIAx      | *            | *           | 200         | 25        | 75        |
| RAYCHEM            | 7524D5111    | TRIAx      | *            | *           | 195         | 25        | 75        |
| RAYCHEM            | 7524D5811    | TRIAx      | _            | -306        | 243         | 25        | _         |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| RAYCHEM            | 7526A5311    | TRIAX      | -60          | _           | 215         | 19        | 75        |
| RAYCHEM            | 7526D5318    | TWINAX     | -59          | _           | 167         | 20        | 75        |
| RAYCHEM            | 7526J1660    | TWINAX     | -47          | _           | 115         | 19        | 75        |
| RAYCHEM            | 7528A1114    | COAX       | -36          | -004        | 100         | 15        | 75        |
| RAYCHEM            | 7528A1317    | COAX       | -5           | -004        | 102         | 15        | 75        |
| RAYCHEM            | 7528A5314    | TRIAX      | -64          | -303        | 148         | 15        | 75        |
| RAYCHEM            | 7528F5614    | TRIAX      | *            | -303        | 141         | 15        | 75        |
| RAYCHEM            | 7528G1312-7  | COAX       | -36          | *           | 110         | 15        | _         |
| RAYCHEM            | 7530A5218    | TRIAX      | *            | *           | 117         | 13        | 75        |
| RAYCHEM            | 7530A5314    | TRIAX      | *            | _           | 129         | 12        | 75        |
| RAYCHEM            | 7530A5524    | TRIAX      | *            | *           | 130         | 12        | 75        |
| RAYCHEM            | 7720C8662    | TWINAX     |              | -213        | _           | 20        | 77        |
| RAYCHEM            | 7722C2664    | TWINAX     | -24          | -210        | 143         | 32        | 77        |
| RAYCHEM            | 7722C3661    | TWINAX     | -24          | *           | 178         | 32        | 77        |
| RAYCHEM            | 7722C3861    | TWINAX     | *            | -215        | 232         | 31        | 77        |
| RAYCHEM            | 7722D1161    | TWINAX     | *            | *           | 75          | 32        | 77        |
| RAYCHEM            | 7724C1664-9  | TWINAX     | *            | -204        | 127         | 23        | 77        |
| RAYCHEM            | 7724C3864    | TWINAX     | *            | -212        | 200         | 24        | 77        |
| RAYCHEM            | 7724C8664    | TWINAX     | *            | -221        | 155         | 25        | _         |
| RAYCHEM            | 7724G3664    | TWINAX     | -45          | -222        | 154         | 25        | 77        |
| RAYCHEM            | 7724N0664    | TWINAX     | -45          | -204        | 144         | 25        | 78        |
| RAYCHEM            | 7726D066A    | TWINAX     | -27          | -223        | 112         | 20        | 77        |
| RAYCHEM            | 7820D0111    | TWINAX     | *            | _           | 182         | 40        | 78        |
| RAYCHEM            | 7824D0130    | TWINAX     | *            | _           | 172         | 25        | 78        |
| RAYCHEM            | 7824E0422    | TWINAX     | -29          | -204        | 135         | 25        | 78        |
| RAYCHEM            | 7826D0130    | TWINAX     | -29          | -206        | 120         | 25        | 78        |
| RAYCHEM            | 9324D0130    | TWINAX     | *            | 212         | 167         | 25        | 93        |
| RAYCHEM            | 9528A1317    | COAX       | *            | -026        | 137         | 15        | 95        |
| RAYCHEM            | 9528A1417    | COAX       | *            | -026        | 137         | 15        | 95        |
| RAYCHEM            | 9528A1517    | COAX       | *            | -026        | 137         | 15        | 95        |
| RAYCHEM            | 9528D5114    | TRIAX      | -60          | -305        | 177         | 15        | 95        |
| RAYCHEM            | 9530A5117    | TRIAX      | -24A         | _           | 149         | 12        | _         |
| RAYCHEM            | 9530D5117    | TRIAX      | -56          | -301        | 164         | 13        | 95        |
| RAYCHEM            | 9530D5317    | TRIAX      | -59          | _           | 170         | 12        | 95        |
| RAYCHEM            | 9530H1118    | COAX       | -36          | _           | 108         | 13        | 95        |
| RAYCHEM            | 9532A5114    | TRIAX      | -23          | _           | 140         | 8         | 95        |
| RAYCHEM            | 9532A5314    | TRIAX      | -23          | _           | 130         | 8         | 95        |
| RAYCHEM            | EPC29116C    | TRIAX      | -32          | -309        | 152         | 17        | _         |
| RAYCHEM            | EPD 30881A   | TWINAX     | *            | *           | 201         | 24        | 77        |
| RAYCHEM            | EPD 60441    | TRIAX      | -25A         | TOO LARGE   | 256         | 35        | 50        |
| RAYCHEM            | EPD22030E    | TWINAX     | *            | -224        | 209         | 26        | _         |
| RAYCHEM            | EPD22030F    | TWINAX     | _            | -215        | 251         | 25        | _         |
| RAYCHEM            | EPD22188B    | TWINAX     | _            | -218        | 150         | 25        | _         |
| RAYCHEM            | EPD26467Q    | TRIAX      | -23          | -303        | 136         | 12        | _         |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER       | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------------|------------|--------------|-------------|-------------|-----------|-----------|
| RAYCHEM            | EPD27364A          | TWINAX     | -11          | TOO LARGE   | 311         | 38        | 77        |
| RAYCHEM            | EPD29102A          | COAX       | -2           | -013        | 243         | 23        | 75        |
| RAYCHEM            | EPD29697A          | TWINAX     | *            | _           | 165         | 25        | _         |
| RAYCHEM            | EPD30653Q          | TWINAX     | *            | -217        | 150         | 25        | _         |
| RAYCHEM            | EPD33017Q          | COAX       | -5           | -003        | 106         | 20        | _         |
| RAYCHEM            | EPD33698Q          | TRIAX      | -32          | _           | 142         | 15        | _         |
| RAYCHEM            | EPD33727Q          | TRIAX      | -33          | _           | 185         | 12        | _         |
| RAYCHEM            | EPD38474Q          | TRIAX      | -13          | TOO LARGE   | 330         | 22        | _         |
| RAYCHEM            | EPD43297           | TWINAX     | *            | _           | 465         | 40        | _         |
| RAYCHEM            | EPD44692           | TWINAX     | -29          | -217        | 146         | 25        | 77        |
| RAYCHEM            | EPD45673           | TRIAX      | *            | _           | 254         | 23        | 75        |
| RAYCHEM            | EPD46145Q          | TRIAX      | *            | TOO LARGE   | 323         | 23        | _         |
| RAYCHEM            | EPD46270Q          | TRIAX      | -9           | -306        | 260         | 37        | _         |
| RAYCHEM            | EPD49317Q          | COAX       | -63          | _           | 228         | 25        | 75        |
| RAYCHEM            | EPD49334Q          | TRIAX      | -8           | TOO LARGE   | 322         | 23        | 75        |
| RAYCHEM            | EPD49336Q          | TRIAX      | -13A         | TOO LARGE   | 322         | 23        | _         |
| RAYCHEM            | EPD49338Q          | TWINAX     | -9           | _           | _           | _         | _         |
| RAYCHEM            | EPD60947Q          | TRIAX      | -7           | _           | 260         | 42        | _         |
| RAYCHEM            | EPD6314            | TWINAX     | -29          | -201        | 136         | 25        | 77        |
| RAYCHEM            | EPD6344-22-9CS1833 | TWINAX     | _            | *           | 195         | 30        | _         |
| RAYCHEM            | EPD647100-01       | COAX       | -6B          | TOO LARGE   | 433         | 88        | 50        |
| RAYCHEM            | EPD67364Q          | TRIAX      | *            | TOO LARGE   | 268         | 32        | 75        |
| RAYCHEM            | EPD71818A          | TWINAX     | *            | *           | 264         | 25        | _         |
| RAYCHEM            | EPD7246Q           | COAX       | -6A          | TOO LARGE   | 406         | 48        | 75        |
| RAYCHEM            | EPD76761           | TWINAX     | _            | -212        | 177         | 24        | 77        |
| RAYCHEM            | EPD78310           | TRIAX      | *            | *           | 208         | 35        | 50        |
| RAYCHEM            | EPD8274-1          | TRIAX      | -13          | TOO LARGE   | 314         | _         | _         |
| RAYCHEM            | EPD84067           | TRIAX      | *            | _           | 301         | 35        | 50        |
| RAYCHEM            | M27500-22ML2TO8    | TWINAX     | -45          | -204        | 134         | 28        | _         |
| RAYCHEM            | M27500-22RC2S06    | TWINAX     | *            | -217        | 145         | 25        | _         |
| RAYCHEM            | M27500-26RC2S06    | TWINAX     | -47          | -223        | 110         | 19        | _         |
| RAYCHEM            | M27500-26RC2S09    | TWINAX     | -27          | _           | 110         | 18        | _         |
| RAYCHEM            | URM54              | TRIAX      | -13          | _           | 327         | 23        | _         |
| RAYDEX/CDT         | RLF7               | COAX       | *            | *           | 295         | 73        | 50        |
| RAYDEX/CDT         | RA7000             | COAX       | -21          | *           | 177         | 26        | 75        |
| RAYDEX/CDT         | RA750-8CORE        | COAX       | _            | -026        | 139         | 12        | _         |
| RAYTHEON           | 979268             | TRIAX      | -24A         | -307        | 189         | 12        | 75        |
| RAYTHEON           | 10271188           | TRIAX      | -23          | _           | 131         | 9         | _         |
| RAYTHEON           | 11464169           | TWINAX     | -55          | *           | 214         | 38        | 78        |
| REMEE              | 1575               | COAX       | _            | *           | 295         | 41        | 75        |
| ROCKBESTOS         | RSS-6-104          | COAX       | -2           | _           | 242         | 32        | _         |
| ROCKBESTOS         | RSS-6-154          | COAX       | -2           | -014        | 242         | 32        | 75        |
| ROCKWELL           | LE572-0003-0008    | TWINAX     | *            | -204        | 132         | 26        | 77        |
| ROCKWELL           | LE572-0035         | TRIAX      | -23          | _           | 135         | 15        | 75        |

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## CABLE GROUP TABLE

| CABLE MANUFACTURER      | CABLE NUMBER           | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|-------------------------|------------------------|------------|--------------|-------------|-------------|-----------|-----------|
| ROCKWELL                | MP572-0279-0002        | TWINAX     | -29          | -201        | 125         | 25        | —         |
| ROCKWELL                | MP572-0328-0002        | TWINAX     | -29          | -204        | 130         | 25        | —         |
| SABRITEC                | 540-1050-000           | TRIAx      | -23          | TOO SMALL   | 127         | 14        | —         |
| SAXTON                  | 8405                   | COAX       | -2B          | -013A       | 249         | 30        | 93        |
| SAXTON                  | 8421F                  | COAX       | -6B          | TOO LARGE   | 425         | 91        | 50        |
| SCC                     | 3901/018/52            | TWINAX     | *            | -201        | 125         | 27        | 90        |
| SCI                     | 41                     | COAX       | -44          | *           | 74          | 12        | 75        |
| SEIMENS                 | 2YCYCY 0.63/3.7-75     | TRIAx      | -13A         | TOO LARGE   | 307         | 25        | 75        |
| SEMFLEX                 | BPE400                 | CAOX       | *            | -050 (90)   | 409         | 110       | —         |
| SEMFLEX                 | FSCM 60637             | COAX       | *            | *           | 123         | 26        | 50        |
| SEMFLEX                 | SW110                  | COAX       | *            | *           | 123         | 26        | 50        |
| SENSORMATIC             | K0100-0106-006         | COAX       | *            | *           | 193         | 32        | —         |
| SEQUOIA                 | 1000NS1V               | COAX       | -31          | —           | 120         | 40        | —         |
| SIECOR                  | 8712812                | TWINAX     | -47          | -201        | —           | —         | —         |
| SIEMANS-GERMANY         | 02YCYCY-1.2/5.7-75LIGR | TRIAx      | *            | —           | 430         | 47        | —         |
| SONIC WIRE              | 28/736TFCXECXE         | TRIAx      | -32          | —           | 142         | 14        | —         |
| SOUTH BAY CABLE (SBC)   | SB-39602 REV C         | COAX       | *            | TOO LARGE   | 423         | 54        | —         |
| SPF                     | KX8                    | COAX       | -6A          | TOO LARGE   | 400         | 50        | —         |
| STANDARD WIRE/CABL      | 1100-66F               | TWINAX     | -45          | -210        | 145         | 32        | —         |
| STORM                   | 34-001                 | TRIAx      | -59          | —           | 175         | 19        | 50        |
| STORM                   | 34-003                 | TRIAx      | *            | —           | 113         | 12        | 50        |
| SUHNER                  | G 04233 D-10           | COAX       | -2B          | *           | 256         | 23        | 75        |
| SUHNER                  | G01330HT               | TRIAx      | -56          | —           | 177         | 16        | —         |
| SUHNER                  | G02262                 | COAX       | -5           | -003        | 110         | 19        | —         |
| SUHNER                  | G02330HT               | TRIAx      | *            | —           | 210         | 20        | —         |
| SUHNER                  | G02332                 | TRIAx      | -26          | —           | 167         | 35        | —         |
| SUHNER                  | G02333                 | TRIAx      | -59          | —           | 169         | 10        | —         |
| SUHNER                  | G03233D                | COAX       | -3           | —           | 212         | 17        | —         |
| SUHNER                  | G04233D                | COAX       | *            | —           | 260         | 23        | —         |
| SUHNER                  | GX03272D-06            | COAX       | -3           | -012        | 213         | 35        | —         |
| SUHNER                  | S02223                 | COAX       | —            | -004        | 100         | 4         | 75        |
| SUHNER                  | S04233                 | COAX       | -2B          | -014        | 243         | 34        | 75        |
| SUMIRE                  | 4C-HEB-NL              | COAX       | —            | -25         | 236         | 35        | 75        |
| SUMITOMO                | 2.5C                   | COAX       | -22          | -008        | 154         | 15        | —         |
| SUMITOMO                | 2C                     | COAX       | *            | -008        | 147         | 12        | —         |
| SUPERIOR                | FVP224                 | TWINAX     | -9           | -214        | 242         | 21        | —         |
| SUPERIOR ESSEX          | SERIES 11              | COAX       | -6A          | -052        | 400         | 60        | 75        |
| SURPRENANT              | M16878/4-BDE-2ST       | TWINAX     | -27          | —           | 111         | 20        | —         |
| SURPRENANT              | 4236                   | COAX       | *            | —           | 160         | 17        | —         |
| SURPRENANT              | 9872                   | COAX       | -22          | -009        | 145         | 17        | —         |
| SURPRENANT WIRE & CABLE | C-01-1317/1A           | TWINAX     | *            | -212        | 169         | 25        | 78        |
| SYLVANIA (GTE)          | 19-805709-1            | COAX       | *            | *           | 85          | 12        | —         |
| SYLVANIA (GTE)          | 73-1317911-1           | TWINAX     | -27          | -208        | 110         | 11        | —         |
| SYNERGISTIC RESEARCH    | E102194                | COAX       | -2A          | -023        | 235         | 32        | 75        |

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| CABLE MANUFACTURER  | CABLE NUMBER         | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|---------------------|----------------------|------------|--------------|-------------|-------------|-----------|-----------|
| SYNERGY             | VIDEO 1000           | COAX       | -            | -013        | -           | -         | 75        |
| TELEDYNE            | 14796/1              | TWINAX     | -10          | TOO LARGE   | 420         | 36        | -         |
| TELEDYNE            | 5M2022-002           | TWINAX     | *            | -           | 161         | 30        | -         |
| TELEDYNE            | ST5M1322-001         | TRIAx      | -24A         | -           | 165         | 24        | -         |
| TELEDYNE THERMATICS | 5M2559-001           | TRIAx      | *            | -309        | 150         | 15        | -         |
| TELEFONICA          | 3623G01              | COAX       | -22          | -026        | 138         | 15        | 75        |
| TENSOLITE           | 92607                | TRIAx      | *            | *           | 215         | 19        | -         |
| TENSOLITE           | 8712812              | TWINAX     | -47          | -201        | -           | -         | -         |
| TENSOLITE           | 10047-9219-01        | TRIAx      | -32          | -302        | 166         | 31        | -         |
| TENSOLITE           | 1936-TX-10C2SW       | TWINAX     | -47          | -201        | 129         | 24        | -         |
| TENSOLITE           | 24453/42810 Q-2      | QUADRAX    | -58          | -217        | 145         | 25        | -         |
| TENSOLITE           | 24499/898X2          | TWINAX     | -24          | -204        | 125         | 25        | -         |
| TENSOLITE           | 26433/9P175T-2       | TWINAX     | -27          | -205        | 90          | 19        | -         |
| TENSOLITE           | 26840/9D099LV-2      | TWINAX     | *            | -223        | 110         | 19        | -         |
| TENSOLITE           | 28883/31169Q-1       | TRIAx      | -23          | -           | 135         | 15        | 75        |
| TENSOLITE           | 28883/T290TX-1       | TRIAx      | -23          | -           | 135         | 15        | 75        |
| TENSOLITE           | 30852/9B2581V-1 28GA | COAX       | -5A          | -001        | 79          | 10        | -         |
| TENSOLITE           | 30880/4119X-1        | COAX       | -44          | *           | 73          | 11        | -         |
| TENSOLITE           | 30895/25L-1          | TRIAx      | 60           | -           | -           | -         | -         |
| TENSOLITE           | 5M2142-001           | TRIAx      | *            | -           | -           | -         | -         |
| TENSOLITE           | 5M2397-002           | TRIAx      | -23          | -303        | 136         | 14        | -         |
| TENSOLITE           | 5M2559-001           | TRIAx      | *            | -           | 160         | 15        | -         |
| TENSOLITE           | 5M2870-22C2J         | TWINAX     | *            | *           | 100         | 29        | -         |
| TENSOLITE           | E6372429             | TWINAX     | *            | -           | -           | -         | -         |
| TENSOLITE           | S280W502             | TWINAX     | -24          | -218        | 154         | 23        | -         |
| TENSOLITE           | ST5M1284-001         | TWINAX     | *            | -212        | 180         | 24        | 96        |
| TENSOLITE           | STME637-2            | TWINAX     | -            | -206        | -           | -         | -         |
| TEXAS INSTRUMENTS   | 417889-2             | TRIAx      | *            | -307        | 185         | 12        | 93        |
| TEXAS INSTRUMENTS   | 802857-1             | TWINAX     | -24          | *           | 162         | 31        | 70        |
| THERMATICS          | 11079                | TWINAX     | -29          | -204        | 130         | 25        | -         |
| THERMATICS          | 11421                | TWINAX     | -            | -223        | 104         | 19        | -         |
| THERMATICS          | 11421                | TWINAX     | -            | -223        | -           | -         | -         |
| THERMATICS          | 425-1680-030VW-1     | COAX       | -            | -013        | -           | -         | -         |
| THERMATICS          | 5M2022-003           | TWINAX     | *            | -204        | 130         | 24        | -         |
| THERMATICS          | 8712812 (A/F DWG)    | TWINAX     | -47          | -201        | 125         | 23        | -         |
| THERMATICS          | NEC725-2(G)          | COAX       | 53           | -           | -           | -         | -         |
| THERMAX             | 68-1938TF(2)SXE      | TWINAX     | -            | -223        | 104         | 19        | -         |
| THERMAX             | 77-1936TF(2)TFPA     | TWINAX     | -47          | -201        | 125         | 24        | 77        |
| THERMAX             | 947-494              | COAX       | *            | *           | 159         | 40        | -         |
| THERMAX             | 983-495              | COAX       | -4           | *           | 144         | 24        | 75        |
| THERMAX             | 985-495              | COAX       | -4           | *           | 144         | 24        | 75        |
| THERMAX             | M27500-22TG2T14      | TWINAX     | -29          | -           | 132         | 31        | -         |
| THERMAX             | MCD-THI              | TWINAX     | *            | -           | -           | -         | 125       |
| THERMAX             | RG58/BLACK           | COAX       | -1           | -011        | -           | -         | 50        |

Note: \* = Special contact factory



## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|--------------|------------|--------------|-------------|-------------|-----------|-----------|
| THERMAX            | RGS-316      | COAX       | -5           | -003        | 102         | 20        | 50        |
| THERMAX            | RGS-316      | COAX       | -5           | -003        | 102         | 20        | 50        |
| TIMES              | 2382         | COAX       | -6A          | _           | 400         | 64        | 75        |
| TIMES              | 2391         | COAX       | -41          | -020        | 273         | 41        | 75        |
| TIMES              | 2560         | COAX       | -41          | _           | 271         | 40        | _         |
| TIMES              | 68999        | TRIAX      | *            | _           | 335         | 26        | _         |
| TIMES              | 8712812      | TWINAX     | -47          | -201        | _           | _         | _         |
| TIMES              | 100A         | COAX       | -5           | -003        | 105         | 18        | 50        |
| TIMES              | 2240V        | COAX       | *            | *           | 262         | 32        | 75        |
| TIMES              | 2260V        | COAX       | -6           | *           | 296         | 40        | 75        |
| TIMES              | 2360V        | COAX       | -41          | -020        | 273         | 40        | 75        |
| TIMES              | 25B3M        | COAX       | -2           | -014        | 242         | 31        | _         |
| TIMES              | 65555-RD316  | COAX       | -5           | -003        | 113         | 21        | _         |
| TIMES              | AA-2317      | TRIAX      | -24A         | *           | 169         | 25        | 50        |
| TIMES              | AA-2325      | TRIAX      | *            | -308        | 215         | 20        | 95        |
| TIMES              | AA-2511      | COAX       | -2A          | _           | 220         | 20        | _         |
| TIMES              | AA-3096      | COAX       | -34          | _           | 242         | 50        | _         |
| TIMES              | AA-3369      | TWINAX     | _            | _           | _           | _         | 78        |
| TIMES              | AA-4668.2    | COAX       | -2           | *           | 236         | 51        | _         |
| TIMES              | AA-4888      | TRIAX      | -64          | -303        | 145         | 13        | 75        |
| TIMES              | AA-5885      | COAX       | *            | _           | 480         | 134       | _         |
| TIMES              | AA-5886      | COAX       | *            | _           | 390         | 105       | _         |
| TIMES              | AA-5887      | COAX       | *            | *           | 270         | 67        | 50        |
| TIMES              | AA-6045      | TWINAX     | _            | _           | _           | _         | 78        |
| TIMES              | AA-6151      | TRIAX      | -64          | _           | 143         | 12        | 75        |
| TIMES              | AA-6343      | COAX       | -1           | -011        | 193         | 37        | _         |
| TIMES              | AA-6894      | TRIAX      | *            | TOO LARGE   | 480         | 50        | 75        |
| TIMES              | AA-6895      | TRIAX      | *            | TOO LARGE   | 450         | 89        | _         |
| TIMES              | AA-6899      | COAX       | -6B          | _           | 434         | 64        | 75        |
| TIMES              | AA-7028      | TWINAX     | -9           | -215        | 240         | 28        | _         |
| TIMES              | AA-7032      | COAX       | -6E          | -017        | 332         | 29        | _         |
| TIMES              | AA-7038      | COAX       | -2           | -013        | 242         | 23        | _         |
| TIMES              | AA-7279      | TWINAX     | -10          | TOO LARGE   | 425         | 46        | _         |
| TIMES              | AA-7618      | COAX       | *            | _           | 430         | 47        | 75        |
| TIMES              | AA-7621      | TRIAX      | *            | TOO LARGE   | 325         | 25        | _         |
| TIMES              | AA-7740      | COAX       | _            | *           | 160         | 36        | 50        |
| TIMES              | AA-7740      | COAX       | _            | *           | 160         | 36        | 50        |
| TIMES              | AA-7741      | COAX       | -5           | -003        | 100         | 20        | 50        |
| TIMES              | AA-7909      | TWINAX     | *            | _           | 155         | 19        | _         |
| TIMES              | AA-8314      | TWINAX     | *            | *           | 115         | 12        | _         |
| TIMES              | AA-8469      | COAX       | _            | -004        | 242         | 59        | 50        |
| TIMES              | AA-8624      | COAX       | -31          | -005        | 121         | 12        | 75        |
| TIMES              | AA-8699      | TRIAX      | *            | _           | 110         | 12        | _         |
| TIMES              | BL1242       | TWINAX     | -9           | -216        | 245         | 22        | _         |

Note: \* = Special contact factory

## CABLE GROUP TABLE

| CABLE MANUFACTURER     | CABLE NUMBER        | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|------------------------|---------------------|------------|--------------|-------------|-------------|-----------|-----------|
| TIMES                  | BL782               | TWINAX     | -9           | -213        | 245         | 39        | 78        |
| TIMES                  | BL784               | TWINAX     | -10          | TOO LARGE   | 420         | 67        | 78        |
| TIMES                  | BL982               | TWINAX     | -9           | -215        | 245         | 32        | _         |
| TIMES                  | LMR-100A            | COAX       | -36          | -026        | 124         | 19        | 50        |
| TIMES                  | LMR195              | COAX       | -3           | -011        | 197         | 38        | 50        |
| TIMES                  | LMR-200             | COAX       | -1           | _           | 190         | 45        | 50        |
| TIMES                  | LMR240              | COAX       | *            | *           | 240         | 59        | 50        |
| TIMES                  | LMR-240-LLPL        | COAX       | _            | _           | 240         | 51        | 50        |
| TIMES                  | LMR-300             | COAX       | -6           | *           | 300         | 70        | 50        |
| TIMES                  | LMR400              | COAX       | *            | -050 (90)   | 409         | 110       | _         |
| TIMES                  | LMR-500             | COAX       | *            | TOO LARGE   | _           | _         | 50        |
| TIMES                  | LMR-600             | COAX       | *            | _           | 590         | 176       | 50        |
| TIMES                  | M17/182-00001       | TWINAX     | -10          | TOO LARGE   | 425         | 46        | _         |
| TIMES                  | MI2240V             | COAX       | *            | *           | 272         | 32        | _         |
| TIMES                  | MI4007              | COAX       | *            | -026        | 138         | 17        | _         |
| TIMES                  | MI-655555           | COAX       | -5           | *           | 115         | 21        | _         |
| TIMES                  | RD-316              | COAX       | -31          | -006        | 118         | 20        | 50        |
| TIMES                  | RDT-302             | TRIAx      | -25A         | _           | 260         | 25        | _         |
| TIMES                  | RDT-316             | TRIAx      | -26          | _           | 155         | 20        | 50        |
| TIMES                  | RT-142              | TRIAx      | *            | _           | 215         | 39        | _         |
| TIMES                  | RT-179              | TRIAx      | -64          | -303        | 145         | 12        | 75        |
| TIMES                  | RT-180              | TRIAx      | *            | _           | 191         | 25        | _         |
| TIMES                  | RT-302              | TRIAx      | -25          | *           | 242         | 26        | 75        |
| TIMES                  | RT-316              | TRIAx      | *            | _           | 154         | 20        | 50        |
| TIMES                  | RT-400              | TRIAx      | *            | *           | 215         | 20        | _         |
| TIMES                  | SF-142B             | COAX       | -1           | -011        | 195         | 37        | 50        |
| TIMES                  | SF-214              | COAX       | -6B          | _           | 425         | 89        | _         |
| TIMES                  | SF-304              | COAX       | *            | _           | 290         | 59        | 50        |
| TIMES                  | TRF-58              | TRIAx      | -7           | -306        | 250         | 39        | 50        |
| TIMES                  | TRF-59              | TRIAx      | -13          | TOO LARGE   | 325         | 23        | _         |
| TIMES                  | TRF-8               | TRIAx      | -14A         | _           | 500         | 86        | 50        |
| TIMES FIBER            | 2644                | COAX       | -6A          | TOO LARGE   | 400         | 64        | 75        |
| TIMES FIBER CABLE      | 173                 | COAX       | -51          | -016        | 308         | 33        | 75        |
| TIMES FIBER COMM (TFC) | 23T2                | COAX       | -6A          | _           | 400         | 64        | 75        |
| TIMES MICROWAVE        | 405                 | COAX       | -36          | -003        | 104         | 20        | 50        |
| TIMES MICROWAVE        | AA-8371             | TRIAx      | *            | *           | 210         | 36        | 50        |
| TIMES MICROWAVE        | AA-8746             | COAX       | *            | *           | 131         | 28        | 50        |
| TIMES MICROWAVE        | LMR200LLPL          | COAX       | -1           | -011        | 195         | 40        | 50        |
| TOSHIBA                | NHU-EFTXF 6.07/2.26 | TRIAx      | *            | TOO LARGE   | 457         | 90        | 50        |
| TROMPETER              | M17/176-00002       | TWINAX     | -47          | -201        | 134         | 24        | 77        |
| TROMPETER              | QRC- 78-1           | QUADRAX    | 39           | _           | TBD         | 22        | 78        |
| TROMPETER              | QRC- 78-2           | QUADRAX    | 17           | _           | 286         | 40        | 78        |
| TROMPETER              | QRC- 78-3           | QUADRAX    | 38           | _           | 325         | 39        | 78        |
| TROMPETER              | QRC-124-1           | QUADRAX    | 40           | _           | TBD         | 12        | 124       |

Note: \* = Special contact factory



## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER  | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|---------------|------------|--------------|-------------|-------------|-----------|-----------|
| TROMPETER          | QRC-124-3     | QUADRAX    | 38           | _           | 335         | 22        | 124       |
| TROMPETER          | TCC-50-2      | COAX       | -1           | -011        | 199         | 38        | 50        |
| TROMPETER          | TCC-75-2      | COAX       | -2           | -013A       | 246         | 31        | 75        |
| TROMPETER          | TCC-75-3D     | COAX       | _            | *           | 185         | 24        | 75        |
| TROMPETER          | TCC-75-3S     | COAX       | _            | *           | 185         | 24        | 75        |
| TROMPETER          | TCC-75-4D     | COAX       | _            | *           | 145         | 19        | 75        |
| TROMPETER          | TCC-75-4S     | COAX       | _            | *           | 145         | 19        | 75        |
| TROMPETER          | TRC-50-1      | TRIAx      | -32          | -309        | 161         | 15        | 50        |
| TROMPETER          | TRC-50-2      | TRIAx      | -7           | -306        | 250         | 38        | 50        |
| TROMPETER          | TRC-75-1      | TRIAx      | -33          | -307        | 194         | 12        | 75        |
| TROMPETER          | TRC-75-2      | TRIAx      | -7           | -308        | 250         | 19        | 75        |
| TROMPETER          | TRCH-50-2     | TRIAx      | -7           | -306        | 250         | 38        | 50        |
| TROMPETER          | TRCH-75-1     | TRIAx      | _            | _           | 250         | 12        | 75        |
| TROMPETER          | TWAC-78-1F1   | TWINAX     | _            | _           | _           | _         | _         |
| TROMPETER          | TWAC-78-1F2   | TWINAX     | -49          | -205        | 100         | 15        | 78        |
| TROMPETER          | TWC-124-1A    | TWINAX     | -29          | -203        | 155         | 12        | 124       |
| TROMPETER          | TWC-124-2     | TWINAX     | -9           | -214        | 250         | 22        | 124       |
| TROMPETER          | TWC-78-1      | TWINAX     | -29          | -202        | 155         | 22        | 78        |
| TROMPETER          | TWC-78-2      | TWINAX     | -9           | -213        | 247         | 37        | 78        |
| TROMPETER          | TWCF-78-1     | TWINAX     | -29          | -202        | 155         | 22        | 78        |
| TROMPETER          | TWCH-78-1     | TWINAX     | -29          | -202        | 155         | 22        | 78        |
| TROMPETER          | TWCH-78-2     | TWINAX     | -9           | -213        | 247         | 37        | 78        |
| TROMPETER          | TWCN-124-1A   | TWINAX     | -29          | -203        | _           | _         | _         |
| TROMPETER          | TWCP-124-2    | TWINAX     | -9           | -214        | 250         | 24        | 124       |
| TROMPETER          | TWCP-124-3    | TWINAX     | -55          | -224        | 215         | 24        | 124       |
| TROMPETER          | TWCP-124-5    | TWINAX     | *            | -226 (70MC) | 335         | 48        | 124       |
| TROMPETER          | TWCP-78-1     | TWINAX     | -29          | -202        | 155         | 21        | 78        |
| TROMPETER          | TWCP-78-1     | TWINAX     | -47          | _           | 155         | 19        | 78        |
| TROMPETER          | TWCP-78-2     | TWINAX     | -9           | -213        | 247         | 37        | 78        |
| TVA                | F660BVV       | COAX       | -41          | -020        | 267         | 42        | 75        |
| TVE                | 92            | TRIAx      | *            | TOO LARGE   | 433         | 54        | _         |
| UK                 | BICC T3304    | COAX       | -2B          | -015        | 252         | 24        | _         |
| UK                 | BICCT(M)3205  | COAX       | _            | -016        | _           | _         | _         |
| ULRICH HEER        | VIM222-318/97 | TRIAx      | -23          | _           | 138         | 12        | 75        |
| UNICABLE           | ICN417-2052P  | COAX       | *            | *           | 162         | 36        | _         |
| UNICABLE           | IEEE 802.3A   | COAX       | -21          | *           | 171         | 39        | _         |
| UNK                | PCC-FTS       | COAX       | *            | *           | 213         | 34        | 75        |
| UNK                | TR17901       | TRIAx      | -23          | -303        | 140         | 11        | _         |
| UNK                | VCB 100       | COAX       | *            | *           | 279         | 49        | _         |
| UNK                | VCB 75        | COAX       | -2           | -023        | 238         | 34        | 75        |
| URM 102            | RAYCHEM       | COAX       | *            | TOO LARGE   | 382         | 99        | 50        |
| USAF               | 8712812       | TWINAX     | -47          | -201        | _           | _         | _         |
| VCS                | PSF1/3        | COAX       | *            | -018        | 260         | 20        | 75        |
| VDO                | 711-PAN 6421  | TWINAX     | -45          | _           | _           | _         | _         |

Note: \* = Special contact factory

## CABLE GROUP TABLE

| CABLE MANUFACTURER | CABLE NUMBER    | CABLE TYPE | WRENCH STYLE | CRIMP STYLE | JACKET SIZE | CONDUCTOR | IMPEDANCE |
|--------------------|-----------------|------------|--------------|-------------|-------------|-----------|-----------|
| VIDEO TIME S.P.A.  | RX75/56         | TRIAX      | *            | TOO LARGE   | 437         | 54        | _         |
| VIDEOKABEL         | 0.6/3.7         | COAX       | -2           | -022        | 237         | 25        | 75        |
| VOLEX              | DXSN 1530       | COAX       | _            | *           | 87          | 16        | 75        |
| VOUGHT AERONAUTICS | 202-2964-222    | TRIAX      | -57          | _           | _           | _         | _         |
| WEICO              | 55222           | TWINAX     | *            | -217        | 145         | 25        | _         |
| WEST PENN          | 812             | COAX       | -1           | -011        | 195         | 37        | 52        |
| WEST PENN          | 814             | COAX       | -53          | -019        | 232         | 25        | 75        |
| WEST PENN          | 815             | COAX       | -2A          | -023        | 232         | 32        | 75        |
| WEST PENN          | 816             | COAX       | -2           | -023        | 239         | 30        | 75        |
| WEST PENN          | 819             | COAX       | -2A          | -023        | 232         | 32        | 75        |
| WEST PENN          | 825             | COAX       | -22          | -009        | 146         | 18        | 75        |
| WEST PENN          | 841             | COAX       | _            | -024        | 254         | 41        | 75        |
| WEST PENN          | 843             | COAX       | -2           | -014        | 242         | 32        | 75        |
| WEST PENN          | 3815            | TRIAX      | -13          | TOO LARGE   | 330         | 32        | 75        |
| WEST PENN          | 25806           | COAX       | *            | *           | 236         | 40        | 75        |
| WEST PENN          | 25806           | COAX       | *            | *           | 236         | 41        | 75        |
| WEST PENN          | 25815           | COAX       | *            | _           | _           | 32        | 75        |
| WEST PENN          | 25819           | COAX       | *            | *           | 207         | 32        | 75        |
| WEST PENN          | 25825           | COAX       | _            | *           | 146         | 18        | 75        |
| WEST PENN          | 25841           | COAX       | _            | -024        | 254         | 40        | _         |
| WEST PENN          | 28515           | COAX       | *            | *           | 207         | 32        | _         |
| WEST PENN          | CL2Q843         | COAX       | -34          | *           | 248         | 32        | _         |
| WEST PENN          | HD825           | COAX       | _            | -009        | 150         | 19        | 75        |
| WEST PENN          | P806            | COAX       | -6           | -016        | 305         | 32        | 75        |
| WEST PENN          | Q841            | COAX       | *            | *           | 283         | 41        | 75        |
| WEST PENN CABLE    | 818             | COAX       | -2A          | -014        | 242         | 31        | 75        |
| WEST PENN WIRE     | 6350            | COAX       | _            | -020        | 275         | 40        | 75        |
| WESTINGHOUSE       | 128C147H01      | TRIAX      | -26          | _           | 165         | 12        | _         |
| WEST PENN          | 25821           | COAX       | *            | _           | 352         | 64        | 75        |
| WEST PENN          | 25Q841          | COAX       | -41          | -020        | 273         | 40        | 75        |
| WHITMORE           | 24002001        | TRIAX      | -23          | -303        | 142         | 12        | 75        |
| WOVEN ELEC         | T19TPSJ2619EN   | TWINAX     | -27          | -208        | 105         | 12        | _         |
| YAMADA             | AMB/A-C2-11-2-9 | TWINAX     | _            | -201        | 135         | 25        | _         |
| Z MICROSYSTEMS     | CTL3VGAMM       | COAX       | -36          | -004        | 100         | 15        | 75        |
|                    |                 |            |              |             |             |           |           |
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Note: \* = Special contact factory

## DIGITAL SIGNAL INTEGRITY, PRINTED CIRCUIT BOARD DESIGN AND THE INTERCONNECT INTERFACE AT MICROWAVE FREQUENCIES

Article written by Dale Reed (VP Sales & Marketing, Trompeter/Semflex)

In the world of electronics hardware, one perspective is to categorize the various pieces of the mix as (1) components and (2) connecting elements that hook components together. From this vantage, components include integrated circuits, resistors, capacitors, and other devices that “do something to” or “because of” the electronic signal. The connection element is the set of transmission lines that enable the functionality of these components. (While wireless transmission lines do exist, for the purposes of this article our focus is with wired or “wire line” transmission lines). Interconnects are the junction between the device and the transmission line. Some are separable (involving connectors) and some are not (solder joints). All are potentially degrading to the success of the transmission line.

There are two fundamental types of wired transmission lines used in digital signal transport, whether they are from component to component or from device to device. Differentiated by the physics involved, they are (1) light pulsed on or off (fiber) and (2) an electrical sine wave, shaped by using the harmonics of the wave form to look like a square wave (copper). Fiber has proven to be a wonderful high capacity solution for long haul transport of digital data signals because it offers dramatically higher distance without requiring costly amplification or signal regeneration. The application of wave division multiplexing utilizes frequency stacking technology, a trick from the copper world, to give fiber bandwidth an additional boost. The downside of fiber is that, since the digital signal exists in “on/off” conditions of the source laser, the binary code requires conversion to its electrical counterpart before it is useful for logic devices like programmed integrated circuits. This is referred to as the OEO conversion (OEO=electrical/optical/electrical). We understand now that the hype and promise of the pure photonics end-to-end optical network is likely a decade off, largely because logic and switching/routing functions remain best solved in copper technology for both technical and economic reasons. Copper technology, while mature, provides virtually all of the component-to-component and the lions’ share of the device-to-device transmission line assignment.

To be sure, as line rates rise in frequency and in data rate (interrelated), new problems have surfaced. The signal limits of copper are now better understood than ever before, and this article explores some of those limitations, how they are overcome, and suggests that progress will continue in this field.

When engineers talk about higher frequency signal lines, they often characterize their needs in terms of “S” parameters. Ever wonder what the “S” in “S parameters” stands for? Some of us think it is “scatter”. One way to view the signal line performance at a transition is to think of the transition as being in a box. Then picture the effects of a less-than-perfect transition as scattered signals - referred to as attenuation, return loss, ingress (EMI from outside) and cross talk -from an adjacent signal line.

- \* Attenuation is another name for signal loss, usually over distance. Obviously, without adequate signal strength, the ability to distinguish signal from noise may be compromised. Losses show up as radiation in signal or heat. At higher frequencies, the electromagnetic field that surrounds the signal movement becomes important, as does the dielectric material that this field moves through. Selecting materials with a low dielectric constant and resulting high propagation velocity becomes desirable.
- \* Return loss has mostly to do with impedance mismatch, typically at the interconnection points. Return loss is a signal reflected back on itself and may be a source of data errors as ones and zeros in the digital data stream are confused.
- \* Ingress involves outside interference. Without proper designed-in shielding, any transmission line runs the risk of becoming an antenna and picking up spurious noise.
- \* Cross-talk is the effect that one signal line’s electromagnetic field has on an adjacent signal line (an inducted signal).

In managing a high frequency signal with copper wire line technology, the best signal line is symmetrical with regard to spacing from the active trace to the ground, with a known low loss material in between. This is coax. In a perfect world, the material in coaxial transmission lines would be air, but as it is difficult to keep spacing accurate without a “solid” material, use of structural materials such as polyethylene, polytetrafluoroethylene, and other

## DIGITAL SIGNAL INTEGRITY, PRINTED CIRCUIT BOARD DESIGN AND THE INTERCONNECT INTERFACE AT MICROWAVE FREQUENCIES

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dielectric materials provides structure with managed signal performance degradation. The material selected depends on the frequency involved, the best solid material is polytetrafluoroethylene or PTFE.

Most point-to-point interconnection of electronic elements is accomplished on printed circuit boards (PCBs). The PCB supports the components and provides the transmission lines between them, using etched traces of copper "on" the PCB in lieu of discrete wires.

With the increasing use of high frequency board-level packaging for wireless telecommunications applications, it is important to remember that "wireless" phenomena occurs on the PCB itself. For example, two closely spaced adjacent traces might be designed to produce electromagnetic fields to function as a coupler. In another case, a series of cascading patches will function as a band pass filter component at microwave frequencies. (Twisted pair is a very cost effective solution to low-end high frequency RF transmission line problems. Without the twist, the cross talk problems between the pairs would be huge, particularly since they are so closely spaced. This is pretty hard to do on a PCB, however.)

High frequency electronics is one situation where size matters. At 100 MHz (i.e., the clock rate on the "standard" Pentium( chip of 1996) the wavelength is several meters long. Even the harmonics, those odd multiples of the fundamental wave that allow it to become "square" and exhibit a far faster rise time for that crisp on/off condition, are low frequency. Low enough, in fact, that the full sinusoidal wave is usually larger than the PCB carrying the wave. At 1 GHz, the wave is only 10 inches long and the harmonics of the waveform are only 2 inches if the 5th harmonic is considered.

At the board level, digital signal integrity is currently being accomplished with the use of exotic laminate materials, a change

from the low cost workhorse FR4 that has been the standard choice for the last 4 decades. High performance laminate suppliers have introduced improved products that address many of the inherent difficulties like co-efficient of thermal expansion issues in the z-direction, dimensional stability, and cost that dogged previous product offerings.

It is useful to remember that, until recently, the market was dominated by the military industry's emphasis on electrical/electromagnetic performance over low cost assembly technology or low cost materials. Currently, the need for multi-layer high frequency materials and high reliability plated thru hole (pth) applications is met with a series (is series the correct description?) of new, highly engineered polytetrafluorethylene-based-but-heavily-filled laminate products. These materials solve z-axis pth co-efficient of thermal expansion (CTE) mismatches with copper plated into the via plated thru holes. A recent development in this area is the affordability of the new laminates, approximately \$2/sq foot for FR4, compared to the older class of high performance PTFE-based exotic microwave laminates that were in the range of \$100/sq foot. New laminate products, including some that are not PTFE-based, have tackled the cost agenda and several good candidates are emerging in the \$8/sq foot range.

At higher frequencies, new complex board-level engineering issues arise. For example, the tidy 90 degree turns that digital designers use to conserve routing space on the board are destructive to high frequency performance, causing VSWR problems. One high frequency effect of this conventional pcb board layout practice is return loss reflection that cancels the incoming signal due to being 180 degrees out of phase. This can be solved by using mitered corners or by using a radius to the transition.

In addition, the length of traces relative to each other becomes important as designers try to match phase on the board. Etch precision becomes critical for lateral perfection, and in-trace-pinholes are not allowed. Even the cross-sectional geometry (trapezoid or hourglass) of the trace becomes important as conductor "skin effects" become dominate with rising frequency.

## DIGITAL SIGNAL INTEGRITY, PRINTED CIRCUIT BOARD DESIGN AND THE INTERCONNECT INTERFACE AT MICROWAVE FREQUENCIES

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At elevated frequencies, feature size and the precision of that feature matter. Since the three key variables to a given transmission line are conductor-to-ground spacing, dielectric constant, and conductor characteristics - the simultaneous precision of these three things is paramount to achieving the demanding "budgets" for variation. On PCB etched flat conductors, for example, it is not uncommon to have fairly "fat" trace widths of 20 mils but with +/-0.0006 tolerance overall as measured at the trace flair. And tolerances for dielectric constant of the laminate itself is usually held to 2 decimal places!

Coax is best replicated by stripline design on a PCB. Stripline, however, has major drawbacks in the level of difficulty with fabrication of the PCB itself and the corresponding cost. Over the years, designers have learned to make use of a related approach known as copper-backed co-planar micro strip PCB design, also referred to as "micro strip".

Micro strip rides on the surface of the board and can be thought of as 70% or so of a stripline. While the top electromagnetic fields are open to radiation ingress and egress, the signal impact is largely predictable and can be managed. For example, the use of solder mask for coverage of surface traces is a workhorse approach in surface mount technology (SMT) assembly. In an RF design, the broad use of solder mask has a degrading impact on micro strip transmission lines, since the solder mask itself has uncertain dielectric constant attributes and uncertain thickness. How is this solved? One answer is solder dams that minimize the use of the mask yet still provide the assembly function of "damming" the trace to prevent solder from wicking down during reflow. These dams need only have a 20 mil footprint to do their job, and the micro strip function is nearly untouched by their presence in this size configuration.

At elevated frequencies, transitions are very important to minimize return loss. One of the most challenging transition is getting the high frequency signal on and off of the PCB itself. Connectors are a necessary evil and almost always a source of signal degradation as the frequency increases. Separable connectors are greater culprits than solder joints or similar permanent connections.

At this point, our discussion of signal limits gets specific. It may be that there are no known signal limits in frequency, other than cost. But cost is a big one. As frequency rises, the wave size shrinks and the physical geometries needed to support the wave shrink. Remember that on our PCB, etched traces become narrow, vias become even smaller, dielectrics become tight-toleranced, and lumped element features become so tight that fabrication cost is impacted.

While the issues are difficult regarding high frequency signal line management using wired transmission lines and, more importantly, where they transition from one platform to another (i.e., PCB to coaxial cable), the talent of our collective engineering personnel and the things they think of continues to amaze. ■



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