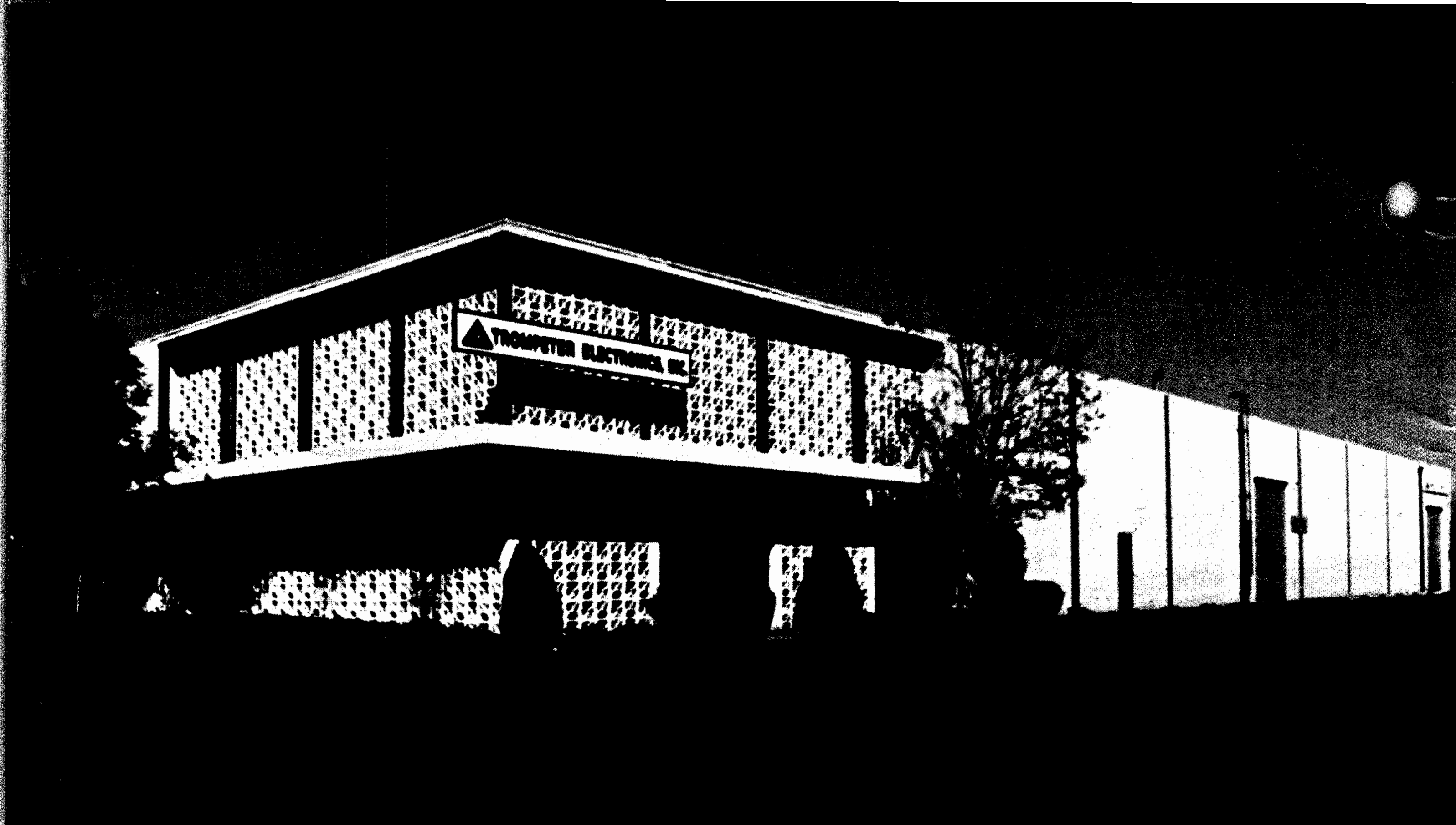
REVISED

TROMPETER ELECTRONICS

PATCHING • CABLE ASSEMBLIES • CONNECTORS



INTRODUCTION

The equipment and components displayed in this catalog are based on a need to provide standard system interface patching so that the many end equipments available from other manufacturers could be interconnected and programmed with a minimum of engineering, space and cost. The available items consist of Patch Panels, Patch Cords, Cable Assemblies, Jacks, Looping Plugs, Power Dividers, RF Connectors, and A-B Data Switches.

All items are manufactured to meet the highest standards of industry and government and carry a one year guarantee. All of our components meet or exceed the appropriate military specifications, MIL-C-39012, and in one case, the specification MIL-C-49142 was developed from our commercial parts.

Military items are supplied under the ADCP (Acquisition and Distribution of Commercial Products) program, DOD Directive No. 5000-37 dated September, 1978, rather than by QPL. Those using military requisitions and desiring only Trompeter parts can initiate a "no substitution" restriction by simply inserting the numeral "2" under Item 65 and the letter "B" under Item 66.

Consideration is also given to avoiding unwanted noise and interference via equipment interconnecting cables, with provision to isolate signal return lines from ground. This is accomplished by using isolated coax, twinax, triax or quadrax cable and components for system shielding and common mode isolation and rejection.

APPLICATIONS

Computers - TV Broadcast - CATV - CCTV - ETV - Communications - Telephone - Missile and Space Telemetry - Aircraft - Nuclear and Industrial Instrumentation - Process Controls - Security Equipment - High Rise Fire Prevention - Automatic Testing - Information Retrieval - Microwave and Digital Data Transmission.

SYSTEM DESIGN TECHNICAL PAPER - Page 2
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NOTE: Most items shown 1:1 scale.

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ELECTRONIC SYSTEMS WIRING AND CABLING

After buying the most expensive "end" equipments, many systems engineers have difficulty in determining the best methods of cabling, interconnection and routing of signals from place to place, with the minimum of loss, degradation and noise pickup. Often, simple solutions such as selecting the correct cable, eliminating common mode grounds or space separating long runs of parallel cables will make the difference between a good or bad system. It must be emphasized that these and other good practices must be implemented at the time of initial design and are almost impossible to install after the system is built. This "interface" engineering will be discussed in two subsequent sections (1) Signal Degradation; (2) Noise.

As an introduction, the systems engineer should study his system parameters and noise environment before selecting his interface components. Consideration must be given to (a) signal frequencies, whether audio, video, I.F. or R.F. (b) voltage and power levels (c) tolerable losses or degradation, including the possibility of reflected signals due to discontinuities (d) pickup of noise from direct contact common mode and ground loop returns, or radiated stray magnetic and capacitive fields.

Due to the susceptibility of circuit wiring and cabling to the pickup of noise, all **low** voltage level wiring should be shielded irrespective of frequency to be transmitted. Coax cable, although primarily designed to carry R.F., is excellent to use as low frequency shielded wire since it is relatively inexpensive (RG-58, RG-122, etc.) and many complete series of coax connectors are readily available.

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. At this point it might be enlightening to some readers to explain the various impedance standards of 50, 75 and 93 Ω coax cables. The most efficient impedance to use when transmitting any signal considering the voltages, currents and powers to be transmitted is 75 Ω, and would be the only standard if these were the sole considerations. The telephone industry, followed by the TV industry, use 75 Ω almost exclusively for the transmission of video, baseband and I.F. frequencies. The military services during the period 1920 through 1940, were faced with a differing need for low radiation angle omnidirectional antennas for broadcasting ship to ship, airport tower to low flying aircraft and base station to ground troops. The only antenna that would give this performance was the **vertical ground plane** in its many forms, which turned out to be 50 Ω. The military standardized on 50 Ω impedance and spent vast sums of money developing cables and connectors for all of their coax systems. At one time a military agency, Armed Services Electro Standard Agency (ASESA) designed all military coax components and assigned the connector UG and cable RG designations. This has since been replaced with the latest government/industry committees cooperating and producing the current general connector standard MIL-C-39012 primarily for 50 Ω usage. 93 Ω cable came about due to the need for low capacitance instrumentation coax cable. By simply removing **some** of the coax dielectric and substituting air in RG-59, the distributed capacitance was lowered, thereby creating a lower loss **voltage** transmission medium RG-62.

More sophisticated cables and connectors of twinax, triax and quadrax are now available to improve external noise rejection, or to contain classified signals and keep them from becoming a security compromise as will be described later.

To successfully complete any signal transmission system, the engineer must move the various signals from place to place with (1) minimum signal degradation and loss, (2) reduce unwanted external noise to an acceptable level or a mix of 1 and 2. The discussion that follows applies generally to all frequencies of data, video, I.F., and R.F.; however, each case must be studied and considered by itself with the proper remedies applied.

1. 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. Since the interconnecting cable is the longest transmission path in most systems, its selection, manufacture, testing and installation should be carefully considered and not randomly selected and installed as is the usual practice. 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, and the easy 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 choose a bigger cable! Incomplete copper coverage in the outer braid over the dielectric will also cause transmission line losses as well as cable susceptibility to signal leakage or noise pickup. Unseen manufacturing faults produce signal path impedance changes or discontinuities 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 detectable only by swept frequency testing techniques. Many cable defects are not readily visible and may not show up without proper testing. In buying coax cable, the reputation of the manufacturer, type, quantity and quality of material used is more important than the few pennies saved buying the cheapest unknown brand. In system design, be careful that the cable does not support equipment or is subject to prolonged exposure to heat. Do not tightly "bundle" cables so as to cause cross talk, and do not bend beyond the manufacturers recommended radius of bend which could produce cable discontinuities. When routing cables try to space separate high signal level or power circuits from low signal level cables.

Signal cables are usually manufactured using polyethylene which is adequate for normal use. Where high heat or chemical action will attack poly cables, teflon (DuPont) dielectric and sheathed cables should be used, 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. Fire insurance rates could be greatly reduced in computer, nuclear accelerator and other large installations if TFE or FEP cables were used.

Coax Cable Connectors — Any connector must be able to interconnect with very low d.c. series resistance, something less than 10 milliohms. The impedence of a connector is usually of no consequence below approximately 300 MHz since the connector does not contribute to circuit performance until its length approaches 1/20th of a wavelength. For this reason, 50 Ω connectors can be attached to 75 Ω **video** cables with no detrimental effect. Above 300 MHz, coax connectors should be impedance matched to the system impedance.

There are many types and series of coax connectors presently available, and the multiplicity is probably very confusing to most users. Many of the lesser known series were designed for specific problem solutions or were developed by commercial companies for their own proprietary product line. Through the years, the connector series listed below have gained universal acceptance due to their simplicity and outstanding performance. They are produced and stocked by a majority of coax connector manufacturers.

Nominal Cable Size O.D.	Connector Size	Quick Disconnect	Threaded
.3 to .425″	Standard	C	N
.10 to .300″	Miniature	BNC	TNC
.10 to .242″	Subminiature	TPS	TCM

Much can be written to discuss the advantages of one series of connectors over another and usually the choice is either economic or performance depending upon the required system parameters. This discussion is outside the intended purpose of this paper; however, a mention should be made of the cable to connector attachment philosophy concerning crimping or soldering.

Crimping is normally used where speed of attachment is important or where it is virtually impossible to solder due to lack of available soldering iron power as on the top of a telephone pole or in a cable vault. Crimping requires an expensive crimp tool that can be improperly used or out of adjustment to give a poor connection. Additionally, crimped contacts over a period of time usually corrode, making for a bad contact particularly in chemical or salt atmosphere. Soldering on the other hand does not require any expensive tools not normally found in any tool box. The soldered connection will not corrode provided adequate heat is applied and correctly done to avoid a "cold solder joint." One of the advantages of the solder approach is that many coax connectors are now made to be used over and over again with no special tools and no replacement parts required. This is particularly advantageous in shipboard or field locations where special parts or tools are not always available.

2. Noise

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

Present day communication and data systems are continually becoming larger and more numerous, using higher information rates and frequencies, in an atmosphere of expanded electrical and electronic equipment usage. The net result is ever increasing interference and noise creating an electronic traffic jam of major proportions. This applies equally whether low level analog or digital pulse systems are used. 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. Obviously, noise reduction is best accomplished by simply stopping the noise **before** it enters the system. This discussion 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, while applying good equipment isolation and grounding techniques.

Most electronic equipments do not produce random noise unto themselves and usually perform the singular task they were designed to do. When assembled and connected to other equipments to form a system, 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, and could be produced by local circuits within the system or from equipment completely removed and external to the system. Conversely, these same cables will **radiate** or **cross talk** the signal they are carrying into adjacent circuits becoming themselves a **generator** of interference to other data systems, or the cause of security compromises in classified military communications. This action is further compounded by poor cable to equipment **impedance matching** which produces signal reflections and high standing wave ratios. In other words, **poorly selected and installed** cabling can act as both noise transmitting and receiving antenna or as undesired primary and secondary windings of coupling transformers, placing interference where it should not be.

Systems are often designed, fabricated, and installed using the simplest multiwire 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 noisemakers. The lower the system signal voltage level, the greater is the susceptibility to this outside interference.

A newly designed system might work fine on paper or when first assembled for checkout, but when installed at its final crowded location on ship or shore, just will not perform as anticipated. Only then is it realized that the complete system has picked up much noise and hum, or is itself radiating so heavily, that the equipment is unusuable.

Costly additional effort, parts, and time must be expended to locate and attempt to eliminate the causes of the noise pickup, sometimes with little success. To avoid this unnecessary waste, cable to equipment interface engineering should be applied at the **start** of system planning and design. This applies to all systems irrespective of whether the signal is low or high frequency, or used in TV, telemetry, timing, ordnance, environmental testing, computer, telephone, test instrumentation, or just plain communications. Each system must be considered individually, since the signal frequencies and amplitudes **within the system** as well as the anticipated external interference will dictate what type of cabling and installation techniques are to be used.

Following are typical examples where good cable engineering is being applied. Low-level **environmental** systems predominantly now 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" or twinax, instead of coax, in high noise areas to obtain the low frequency magnetic field cross talk and hum cancellation provided by the "twist". Digital engineers in the **computer** and **instrumentation** fields must use good high-frequency design engineering to transmit nanosecond rise time pulses. A 10-nanosecond rise time pulse is equivalent to 100 megahertz RF and must be transmitted using the best coax cable techniques to avoid pulse reflection, false noise triggering or data inaccuracy. Special care will be required to keep noise from entering information systems, particularly aircraft. Low level communication circuits and 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 megawat pulsed radar will introduce both its carrier and PRF into nearby sensitive low-level unprotected cable runs acting 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 in turn play havoc with local cable connected instrumentation and electronic equipment.

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

In today's economy, the lack of money, time and qualified personnel will not permit the very complicated and costly post-completion interference cleanup of poorly engineered systems. Expensive electronic equipment handling low-level signals cannot be interconnected with cables and connectors and still be expected to work properly in a system. The use of coax, twinax, triax, or double shielded balanced line, "quadrax," in isolated or guarded circuitry, will do much to suppress outgoing EMI and RFI while reducing incoming unwanted noise pickup.

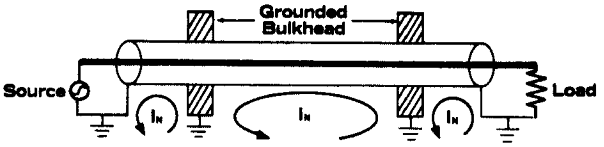
This protects both your system and the adjacent system from mutual interference. Obviously, careful cable to equipment interface planning must be exercised in the future to produce workable compatible systems, and design engineers will not be free to treat cable installation casually as in the past.

COAX CABLE

In all cases of potential interference, low or high frequency, shielded cable should be used to protect against magnetic and capacitive stray fields. Grounded coax cable installations are excellent and can be used 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. Then, more sophisticated cable and equipment isolation techniques must be used dependent upon the frequency of the interfering noise and how it enters the cable system. What additional measures are taken to reduce noise will conversely reduce outgoing radiation and cross talk.

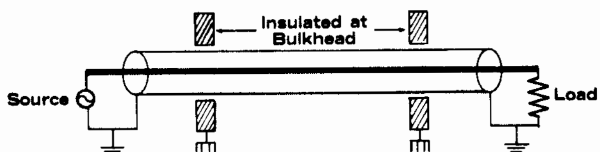
GROUND LOOPS AND COMMON MODE RETURNS

Coax cable consists of an inner and an outer conductor insulated from each other, with both conductors carrying the desired signal currents (source to load and return). Inasmuch as 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 carried on the outer conductor.



Non-Insulated Feed Thru
Multiple Noise Currents (In)

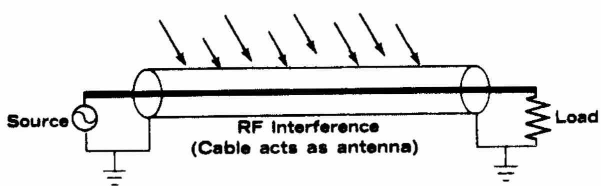
Since the desired signal and the undesired noise are both carried on the same outer conductor simultaneously, noise will be introduced into the system, greatly reducing the "signal-to-noise ratio." Low frequency signals (20 KHz to 6 MHz) are particularly susceptible to both ground loop and common mode interference. In this case, coax cable is recommended 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. This demands that major equipment, relays, switches, connectors, patch panels, etc., be **isolated from ground** with the ultimate being one system ground connection at the source.

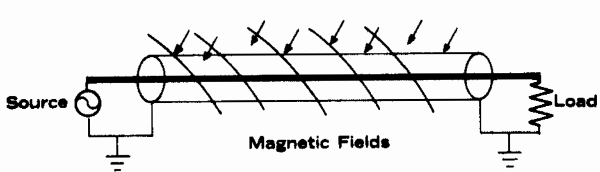


Insulated Feed Thru
No Noise Currents (I_N) in
Signal Return

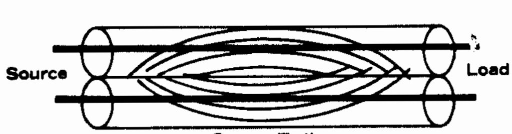
RADIATED FIELDS

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 pickup the external noise sources.





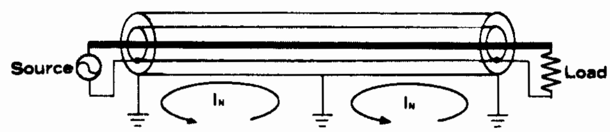
A particularly bad source of noise pickup is the "cross talk" or induced currents encountered in large multiple cable installations.



Cross Talk

To protect against these radiated noise sources, two types of improved cable are used:

(1) TRIAX CABLE — Triax 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 bypasses both ground **loop** and **capacitive field** noise currents away from the signal carrying coax, thereby greatly improving the "signal to noise" ratio over the standard coax cable usage.



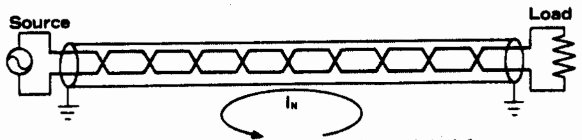
Triax Cable Provides Additional
Shield, Insulated from Signal Carrying Coax

Triax cable is also used in "Driven Shield" applications where the inner conductor and first braid are driven in parallel at the transmitting end and work against the outer braid which is insulated above ground. At the receiving end, the inner braid is left floating, providing a "Faraday" shield between the inner conductor and outer braid. In this way the cable **distributed capacitance** is greatly reduced, thereby reducing cable losses and loading. This application is most effective in hi frequency transducer data systems where the distributed capacity in coax cable limits the data accuracy. (Page 129, Reference No. 1). Still another use for triax is to use only the two outer braids as a low impedance transmission line (approximately 12 ohms) which can be used 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.

Triax Driven Shield

(2) TWINAX CABLE — Twinax cable is a two-conductor twisted balanced wire line having a **specific impedance** with a shielding braid around both wires. Twisting the two balanced signal carrying wires provides cancellation of any random induced noise voltage pickup, thereby giving protection against **magnetic** noise field of the low-frequency variety that passes through the copper braid. **Trompeter twinax cable increases this protection many fold by simply inserting (2) plastic fillers under the braid. The braid is thus pushed away from the signal pair thereby lowering the leakage capacitance to ground with an attendant lowering of cable losses. Additionally, by using more copper wire in the braid and weaving it tighter, the coverage is improved to 90%.** This cable also provides protection against ground loops and capacitive fields, as did triax cable. Twinax cable

usefulness, however, is limited to approximately 15 MHz since it has rather high transmission losses above this frequency. 124 ohm twinax is extensively used by the Bell Telephone System for TV video transmission. Twinax cable and concentric connectors are available for low frequency, digital and video distribution systems. (Pages 5-47 Reference No. 1).

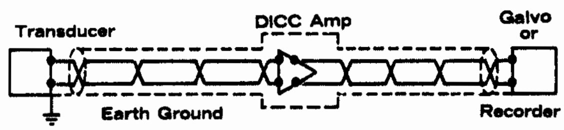


Twinax Cable Provides A Shield, Insulated from The Twisted Pair Signal Carrying Conductors

GUARDED TWINAX CABLE HOOKUP

(Chapter 4 and 6 Reference No. 4)

Additional **common mode rejection** of noise can be obtained in instrumentation systems, where thermocouple and other transducer information must be remotely recorded, by using twinax with only one ground contact located at the transducer. **Insulated** concentric twinax connectors are available.

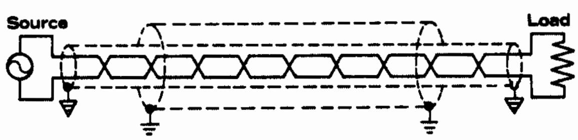


Guarded Twinax Cable System (one ground)

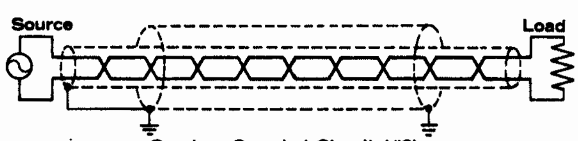
QUADRAX GUARDED CIRCUIT

(Page 77, Paragraph 6.11 Reference No. 4)

For the ultimate in flexible cable protected and guarded circuits, twinax cable with **two** separate and insulated braids (quadrax) can be used wherein the two braids are connected to "system" ground and "earth" ground, respectively



Quadrax Guarded Circuit (#1)



Quadrax Guarded Circuit (#2)

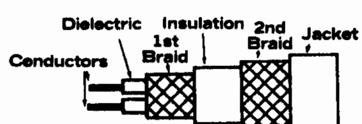
Quadrax cable can also be used to provide additional noise and EMI suppression by connecting both shielding braids earth ground at one place if a separate equipment ground is not available. The inner braid is left floating above ground at all other locations to act as a Faraday shield and provide additional circuit isolation. Coax cable with **two** extra and insulated braids can be used in similar engineering concepts for unbalanced systems.

BONDING AND GROUNDING

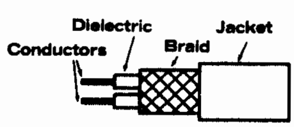
Good bonding and grounding are absolutely essential also if noise pickup reduction is to be accomplished. Much has been written to define the correct methods to accomplish both with some suggested reading material being listed in the bibliography. It is desired to point out here that equipment isolation cabling, bonding, and grounding are all part of the noise pickup and EMI/RFI problem.

Following are common conditions that require detailed consideration:

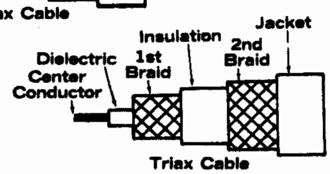
1. "Earth" grounds require extensive grids, ground rods, and chemical preparation to obtain an extremely low resistance and impedance system ground return.
2. Where equipments comprising a low frequency data system are widely separated, equipment ground "planes" in many instances should be isolated from earth grounds to avoid "noisy" ground loops caused by power and other equipment in the immediate area.
3. If parallel cabling is necessary, space isolate cabling of similar functions, i.e., R.F. from R.F., video from video, and cables carrying vastly different voltage levels so that they do not have mutual capacitive or inductive coupling.
4. 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.
5. Select the proper cable for the job. The higher the frequency, the faster the pulse rise time, or the longer the cable run, the bigger the cable must be to reduce dielectric losses and lessen the distortion of pulse shapes.
6. 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. On the other hand, R.F. and high frequency bonding should be made quite frequently to provide the shortest R.F. path to ground and prevent the ground return from acting as an addtional length of antenna. **To repeat, the method of equipment interconnecting and grounding is a function of the signal frequency (L.F., video or R.F.), and no one simple answer can be provided.**



Quadrax Cable



Twinax Cable



Triax Cable

SYSTEMS USAGE

Most engineers are quite familiar with the long time use of 75 ohm coax cable used in I.F. and baseband telephone transmission installations and the universal use of the same cable for broadcast and cable TV. More recently, with the rapid growth of commercial computer data distribution, coax and twinax cables are being used for local dedicated installations. Even newer are the non-dedicated commercial coax **data bus** systems, such as Ethernet and Z Net, where many terminals are tied to one high bit-rate trunk cable. Military aircraft systems are now being designed calling for 78 ohm twinax data bus distribution for main functions of guidance and control, navigation, communications, etc. per MIL-STD-1553B using the TRS and TRB series connectors. (See table). MIL-STD-1397 specifies 75 ohm triax in naval ship digital data bus applications which use the TRB and TRC series connectors listed in MIL-C-49142.

As previously discussed, high bit-rate signals require high-frequency transmission cables (coax, twinax, triax and even quadrax) to minimize amplitude and frequency distortion and to prevent pick-up of noise from external interference. It is incumbent upon the design engineer to select the optimum cable and connectors for maximum reduction of interference due to radiated R.F. and magnetically coupled or direct contact ground loop noise in his application. This can result in reducing the number of noise suppression filters and amplifiers required. A repeated word of caution is offered here 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 multi function 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 the second consideration.

The choice of cable type and its installation is defined generally as follows:

1. Grounded Coax: Can pass the high information rates but is subject to ground loops as well as magnetic and radiated noise pickup.

2. Ungrounded Coax: Same as (1) but substantially lowers the ground loop interference.

3. Triax Cable: Same as (2) and additionally removes the radiated noise, but does not reduce magnetic interference.

4. Twinax Cable: Passes only medium information rates, but additionally hinders the pickup of magnetic interference due to the "twist" of the signal pair. (Equipment usually operated with balanced inputs and outputs.).

5. Quadrax Cable: Same as (4) but gives double radiated noise protection and allows the inner braid to be used for d.c. control voltages in some applications.

6. Ungrounded versions (3) and (4) 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, National Electrical Code, Underwriters Lab and local ordinance requirements must be complied with. Fire wicking cables routed horizontally thru 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, 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 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 be able to additionally withstand exposure to fuel and cleaning solvents. Connectors are available for these special cables.

An interesting point might be discussed here concerning RG59, RG62 and other coax cables using copperweld 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 when pulled thru ducts. This steel wire will increase the cable attenuation on a long length run particularly at the lower frequencies due to the high resistance of the copper cladded steel. RG59 and RG62 have approximately 44 ohms per 1000 loop feet, as against 17 ohms when using pure copper for the same size center conductor. It is also difficult to effectively crimp the center contact pin on the hard steel copperweld wire.

Concerning the outer conductor or coax cables, a copper braid coverage of 80% should be minimum with 90% or over being preferred. Many manufacturers skimp on the quantity of copper wire braid used thereby affecting its loop resistance, line and transfer impedance. A good "rule of thumb" is — if the dielectric is visible through the braid (without bending the cable) the cable should not be used.

Where greater **mechanical** protection is required against vandalism, sabotage, rough handling, rodents, fire or other high risk conditions, armor covering can, and should be applied over the delicate cables. The coax cable VSWR quickly deteriorates if repeatedly stepped on or bent beyond its tolerable radius of bend. Mines, prisons, open field use, sewers and engine compartments are just a few areas where armoring should be considered.

Trompeter Electronics offers many connectors, cable assemblies, patch panels, and some passive switching equipment to complete the installations (1) thru (6) described previously. The connectors are available in various sizes with bayonet or threaded coupling, solder or crimp cable affixment as options. Listed below are the letter and numerical series designations for each cable and connector combination. Each connector series offers plugs, bulkhead jacks, cable jacks, tee's, attenuators, etc. Complete cable assemblies can be fabricated to customer's order by designating type and length of cable, and connectors on each end.

CONNECTOR TYPE	LETTER DESIGNATION		NUMERICAL SERIES DESIGNATION (PL, BJ, CJ, ETC.)
	BAYONET	THREADED	
SUBMINIATURE COAX	TPS [1]	TCM [2]	50 350
SUBMINIATURE TWINAX/TRIAX [3]	TRS [2,4]	TTM [2]	150 3150
MINIATURE COAX	BNC [1]	TNC [1]	20 40
MINIATURE TWINAX/TRIAX	TRB [1,4,5]	TRT [2]	70 370
STANDARD COAX	C [1]	N [1]	90 95
STANDARD TWINAX/TRIAX	TRC [1,5]	TRN [5]	80 380
QUADRAX	QRC [2]		100

The older, but not recommended for new systems, 2 pin twinax connectors meeting MIL-C-3655 are also supplied by TEI as follows:

MINIATURE TWINAX, PIN AND SOCKET ADJACENT, STEPPED DIELECTRIC	TWBNC [1]	TWTNC [1]	30 330

NOTES:
[1] EXISTING GOVERNMENT DESIGNATION
[2] TEI DESIGNATION
[3] Available in 3 and 4 lug configuration for separation of redundant circuits.
[4] MIL-STD-1553B Usage
[5] MIL-STD-1397 Usage (MIL-C-49142)

COMPONENTS AND EQUIPMENT AVAILABLE

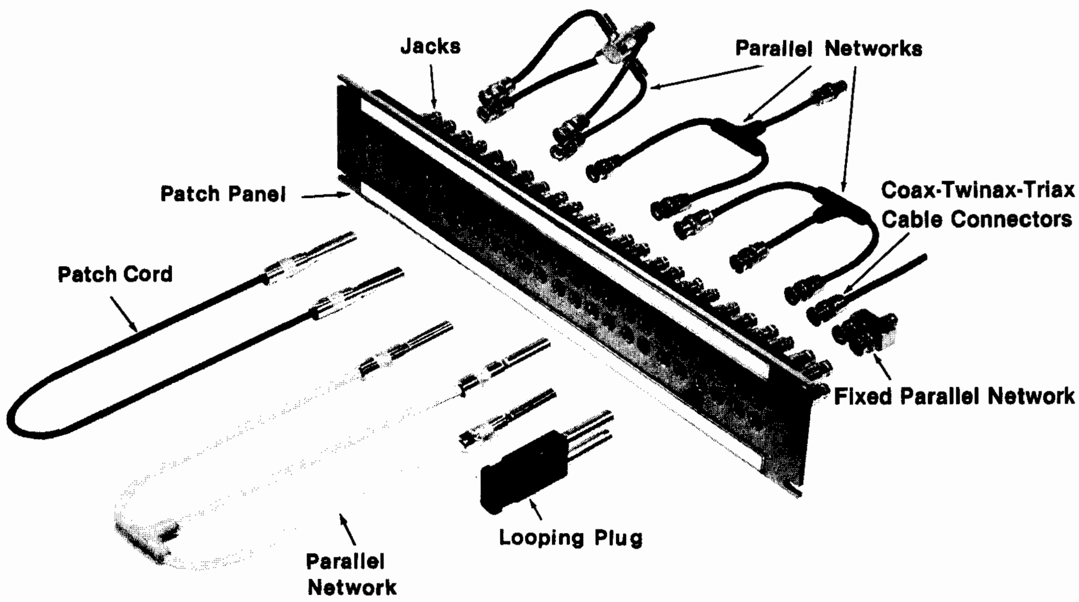
Trompeter Electronics is primarily concerned with supplying cable and connectors necessary to provide protection for low or high frequency systems. This includes coax, triax, twinax and quadrax cables, connectors and patch panels. The catalog lists standard system hardware available to accomplish specific tasks. Our technical staff is available to assist in selection of these components and to help in providing any components not shown.

This discussion was not intended to be a full text, but to give some insight into what must be done to produce noise free systems without extensive rework and debugging. Many comprehensive and enlightening articles and books have been written, a few being listed below. They in turn list other references that should be studied for more detailed information. Reference (1), (2) and (4) are readily available from the publishers.

Ed Trompeter

BIBLIOGRAPHY

1. Handbook of Wiring, Cabling and Interconnecting for Electronics, Charles A. Harper, McGraw-Hill 1972.
2. Electrical Interference, R. F. Ficchi, Hayden Book Co., New York.
3. Electromagnetic Compatibility Manual, Volumes AD-754 411 and AD-754 412 National Technical Information Service, U.S. Dept. of Commerce, May 1972.
4. Grounding and Shielding Techniques in Instrumentation, Ralph Morrison, Wiley & Sons, New York.
5. Multipath Transmission in Cable TV Systems, Dr. Jacob Shekel, Telephony, March 1967.
6. Grounding, Bonding and Shielding Practices and Procedures. Report No. FAA-RD-75-215, I, Volumes 1,2 & 3. National Technical Information Service.
7. Brush Instruments Article in Measurements & Data, May/June 1968 — Author, D. H. Naile.
8. Electronic Interference and Compatibility. Vol. 1 thru 5. Donald R. J. White. White Consultants, Inc. Germantown, Md.
9. Interference Coupling — Attack It Early, Richard J. Mohr, Cutler-Hammer, Inc., EDN Magazine, July 1, 1969, Vol. 14, No. 13.
10. Analysis of Cable-Coupled Inteference, by L. J. Greenstein and H. J. Tobin, IEEE Trans. Radio Frequency Interference, Vol. RFI-15, March 1963, pp. 43-55.
11. Crosstalk Between Coaxial Transmission Lines, by S. A. Schelkunoff and Odarenko, Bell Systems Technical Journal, Vol. 26, April 1937, pp. 144-164.
12. Cabling Fast Pulses? Don't Trip on the Steps! Thad Dreher — Electronic Engineer/August 1969.
13. EMP Protection for Emergency Operating Centers, TR-61A, May 1971 — Govt. Printing Office 1971-C-421-597.
14. Controlling Inteference in Microwave Design. R. J. Mohr, Microwaves Magazine, November 1971.
15. Techniques to Analyze and Optimize noise rejection ratio of low level differential data systems, Charles E. Engle Staff Engineer Dana Laboratories Inc., Irvine, California Technical paper number 521, December 1965.
16. Electronic Cable Handbook. The Belden Corporation. Howard W. Sams & Co., Inc.
17. ITT Reference Data for Radio Engineers 5th Addition, 1972 Chapter 22.
18. MIL-STD-461A.



INTRODUCTION

The panels shown on pages 10, 11, 20, 21 are standard size. However, special panels of any size and jack configuration can be furnished on special order. The panels shown will accept all jacks shown on pages 12, 13, 15 and 33, except as noted. Panels containing 'D' and 'DD' holes for standard bulkhead jacks are shown on pages 20 and 21. For high density panels with 50 ohm subminiature jacks, refer to page 16. Western Electric panels with 75 ohm subminiature jacks are shown on page 18.

ORDERING INFORMATION

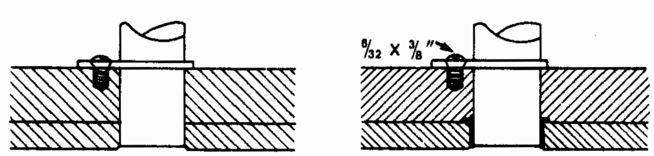
Panels and jacks are selected separately and combined for one part number. Ordering information for 'D' and 'DD' panels is contained in the tables pages 20 and 21.

JS - 12 / J3

Select panel type (JS) — Select jack type (pages 12, 13, 33) (J3)

JS = Aluminum panel (open notch)
JSI = Insulated panel (open notch)

PANEL CROSS SECTION



Noninsulated — Insulated

\\\\ Aluminum //// Phenolic ┏ Nylon Bushing

PANEL SPECIFICATIONS

SIZES: All panels are 19" wide by 1¾" or 3½" high by 9/16" thick. Standard construction consists of 3/16" aluminum panel and a 3/8" aluminum or phenolic (if insulated) back bar. Vertical hole spacing is .625" unless otherwise noted, and horizontal hole spacing is as shown on each panel. All double row 3½" panels can be supplied in W configuration, i.e. 1" vertical hole spacing.

NOTCHING: In accordance with MIL-STD-189. Closed notching is available on special order.

FINISH: Standard color is FED-STD-595-26307 (light gray). Special paint finishes and colors are also available on special order. Customer must furnish FED-STD-595 number or a paint chip.

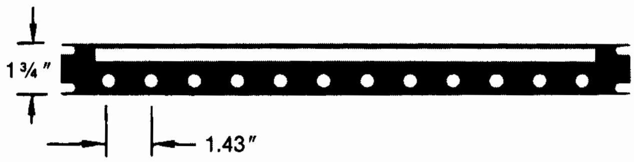
MATERIAL: JS Series — Common ground panels. Panel and backbar are both aluminum grade 6061-T6. JSI Series — Insulated panels. Panel is aluminum grade 6061-T6 and backbar is XXX non-hydroscopic phenolic. Nylon sleeves insulate the jacks from the panel. Insulated panels are recommended where ground loops are to be avoided.

IDENTIFICATION: Each panel is normally equipped with one or more ½" x 16½" (card size) stainless designation strips (DS1) with card and plastic window. High density panels are normally supplied with one or more ¼" x 16½" (card size) stainless designation strips (DS4). Panels normally supplied with ½" designation strips can be supplied with ¾" x 16½" (card size) stainless designation strips (DS2).

MARKING: Panels may be engraved or silk screened in lieu of or in addition to designation strips, thus permitting customizing of the panel. Patch jack locations can also be marked in the rear of the panel for easy location of jacks from the back of the rack. These markings are usually stenciled.

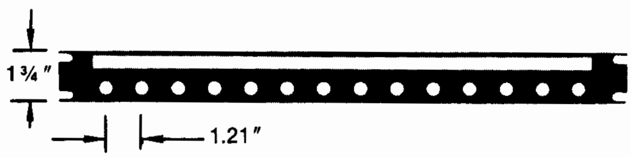
Standard Patch Panels

Coax, Twinax, Triax, Audio



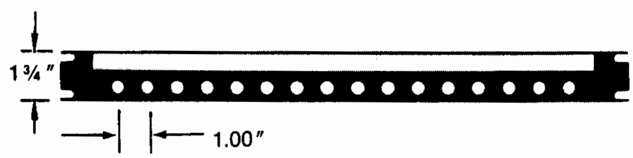
JS-12
JSI-12

Accepts all jacks except J14 and J15 series.



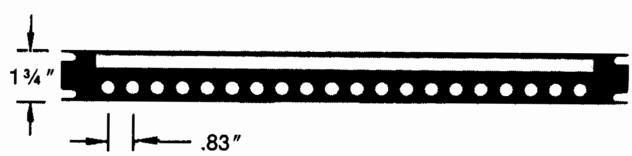
JS-14
JSI-14

Accepts all jacks except J14 and J15 series.



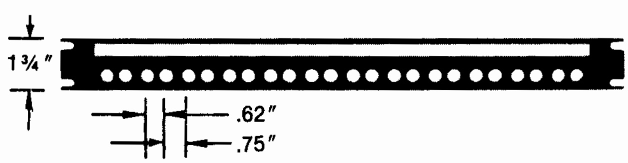
JS-16
JSI-16

Accepts all jacks except J14 and J15 series.



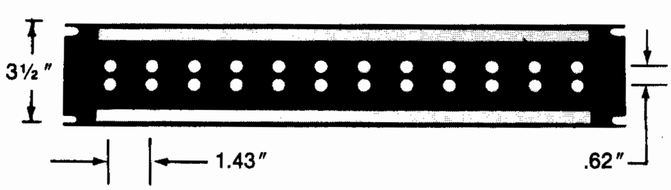
JS-20
JSI-20

Accepts all jacks except J14 and J15 series.



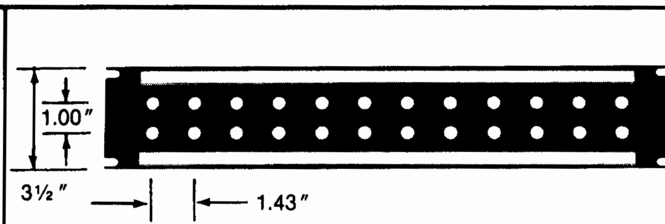
JS-24S
JSI-24S

Accepts all jacks except J4, J9, J14, J15 series.



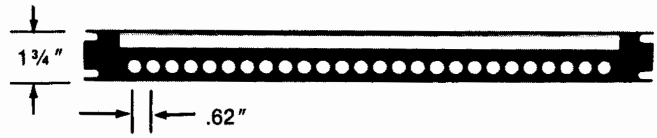
JS-24L
JSI-24L

Accepts all jacks except J4 and J9 series.



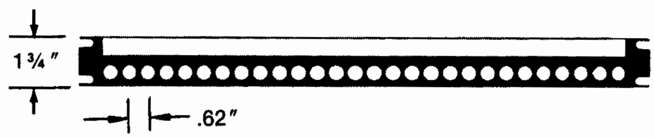
JS-24W
JSI-24W

Accepts all jacks except J14 and J15 series.



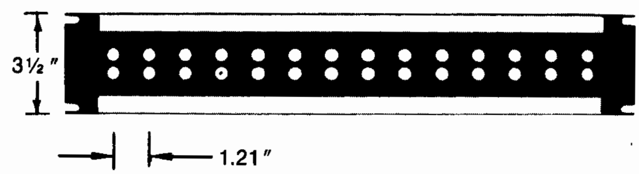
JS-26
JSI-26

Accepts all jacks except J4, J9, J14 and J15 series.



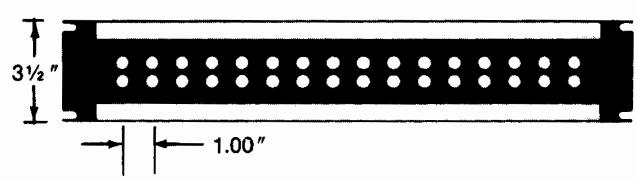
JS-28
JSI-28

Accepts all jacks except J4, J9, J14 and J15 series.



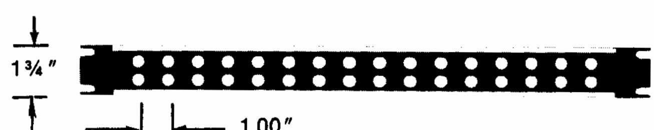
JS-28A
JSI-28A

Accepts all jacks except J4 and J9 series.



JS-32A
JSI-32A

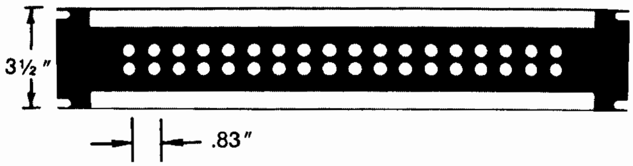
Accepts all jacks except J4 and J9 series.



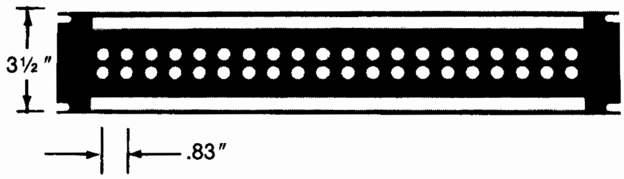
JS-32S
JSI-32S

Accepts all jacks except J4 and J9. ¼″ designation strips.

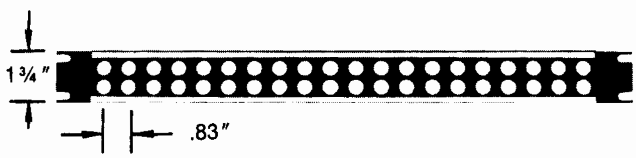
See Pages 12, 13, 15 and 33 for appropriate jacks. Note exceptions.



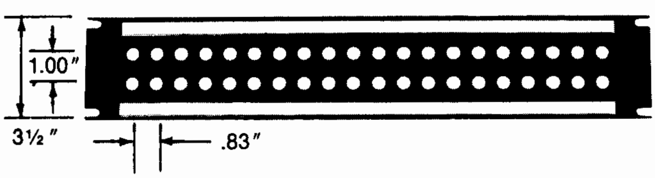
JS-36A
JSI-36A
Accepts all jacks except J4 and J9 series.



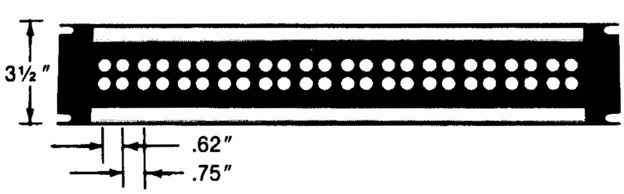
JS-40
JSI-40
Accepts all jacks except J4 and J9 series.



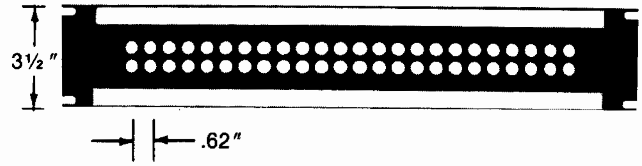
JS-40S
JSI-40S
Accepts all jacks except J4 and J9. ¼" designation strips.



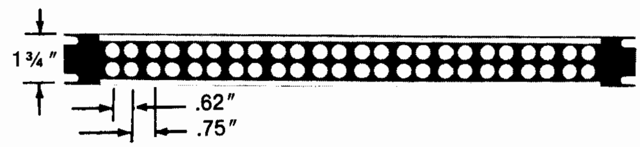
JS-40W
JSI-40W
Accepts all jacks except J14 and J15 series.



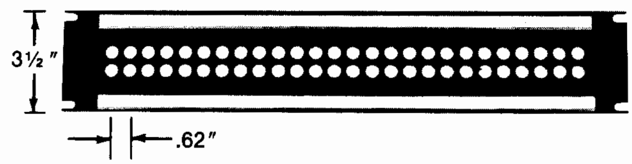
JS-48
JSI-48
Accepts all jacks except J4 and J9 series.



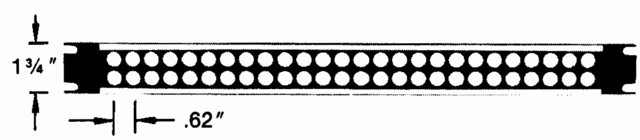
JS-48A
JSI-48A
Accepts all jacks except J4 and J9 series.



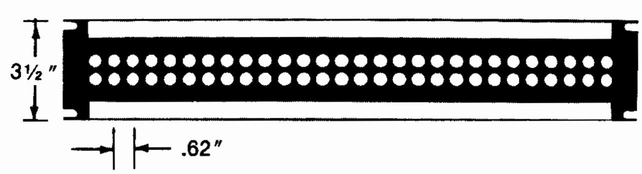
JS-48S
JSI-48S
Accepts all jacks except J4 and J9. ¼" designation strips.



JS-52
JSI-52
Accepts all jacks except J4 and J9 series.



JS-52S
JSI-52S
Accepts all jacks except J4 and J9. ¼" designation strips.



JS-56
JSI-56
Accepts all jacks except J4 and J9 series.

See Pages 12, 13, 15 and 33 for appropriate jacks. Note exceptions.

Standard Patch Jacks

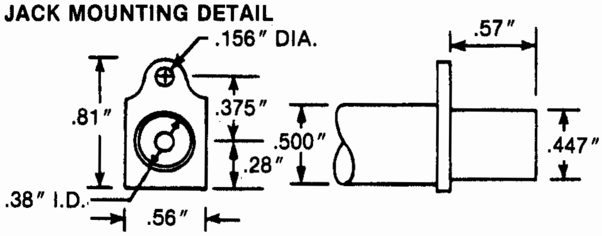
Coax

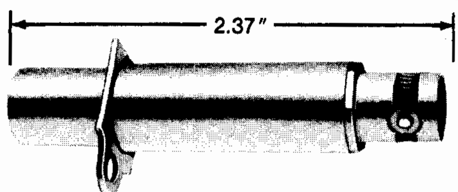
INTRODUCTION

The pictured jacks provide the maximum flexibility to route signals from one place to another. They are used in shielded wire, video, and R.F. applications, and will mount on patch panels illustrated on pages 10 and 11. The jacks can be intermixed on the same panels providing mechanical limitations are recognized.

Also, coax jacks shown are available in two standards differing in the size of the center contact pin — Western Electric is .090″ (75 ohm); RCA is .070″ (50 ohm). It should be noted that Western Electric type jacks must be used only with Western Electric type patch cords and conversely, RCA type jacks must be used only with RCA type patch cords.

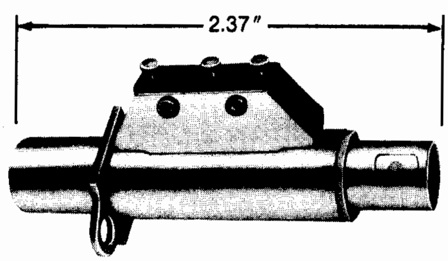
JACK MOUNTING DETAIL





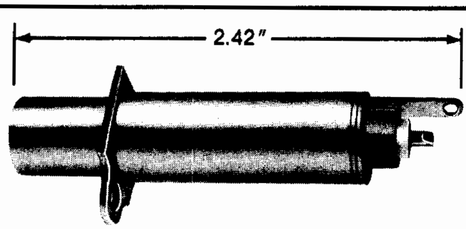
PATCH JACK (BNC) — **J3** .070 pin (RCA); **J3W** .090 pin (WE)

Rear mates with Trompeter PL20-N series or any standard BNC plug.

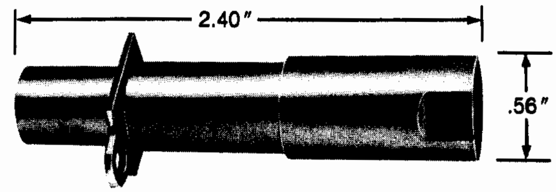


PATCH JACK (BNC) (Microswitch) — **J3A** .070 pin (RCA); **J3WA** .090 pin (WE)

J3 with external SPDT microswitch activated by insertion of patch plug. Microswitch may be added to all coax jacks. To designate add the letter A to the part number.

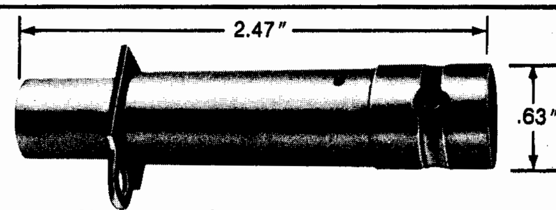


PATCH JACK (Solderpot) — **J3D** .070 pin (RCA); **J3WD** .090 pin (WE)



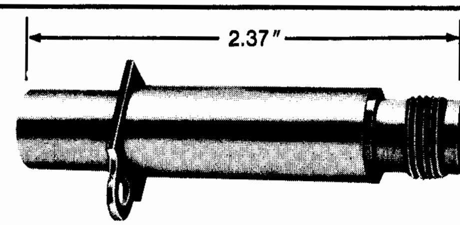
PATCH JACK (Cable entry) — **J3E-N *** .070 pin (RCA); **J3WE-N *** .090 pin (WE)

Usable whenever cable entry is desired in place of standard connectors.



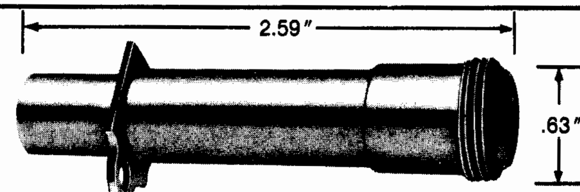
PATCH JACK (C) — **J4** .070 pin (RCA); **J4W** .090 pin (WE)

Rear mates with any type "C" plug. Usable on JS/JSI 12, 14, 16, 20, 24W and 40W panels only.



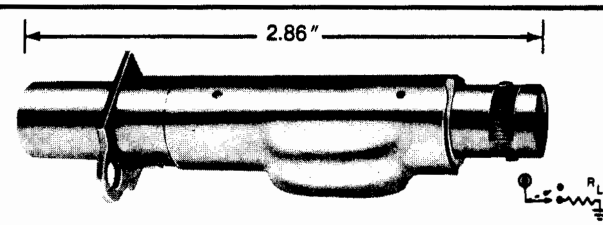
PATCH JACK (TNC) — **J5** .070 pin (RCA); **J5W** .090 pin (WE)

Rear mates with Trompeter TNC plug, PL40-N series or any standard TNC plug. Usable on all panels when using PL40-N series or other reduced O.D. TNC.



PATCH JACK (N) — **J9** .070 pin (RCA); **J9W** .090 pin (WE)

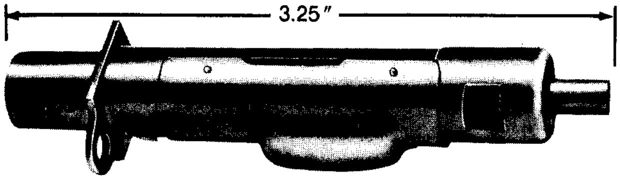
Rear mates with any type "N" plug. Usable on JS/JSI 12, 14, 16, 20, 24W and 40W panels only.



PATCH JACK (BNC) (Self-terminating) — **J13-R *** .070 pin (RCA); **J13W-R *** .090 pin (WE)

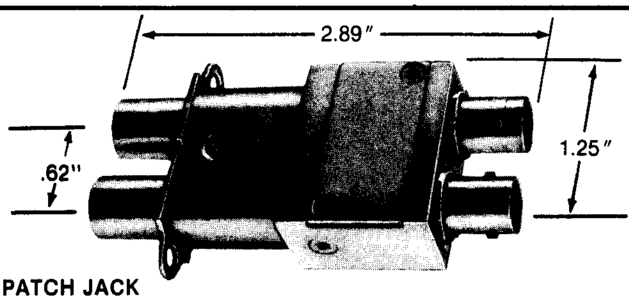
Rear mates with any BNC plug. Circuit is terminated when patch plug is removed. Signal degradation increases when used above 100 MHz.

* Substitute cable group number for N - Page 30. Substitute resistance for R (½ W 5%).



PATCH JACK (Crimp) **J13C-N-R** * .070 pin (RCA)
(Self-terminating) **J13WC-N-R** * .090 pin (WE)

Same as J13-R except that crimp type cable entry is used. Use cable table on Page 27.



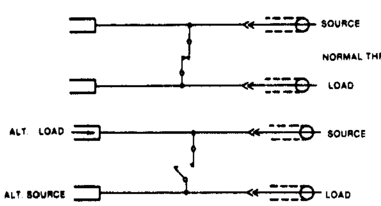
PATCH JACK
(Normal Thru) **J14 Series**

The J14 series is a dual coax jack which automatically provides a "normal thru" signal path without the use of looping plugs or patch cords. The normalling switch contacts utilize a unique self-wiping action for positive contact.

Standard, terminated and monitor types, with schematics, are shown below. M is monitor, T is terminated. Jacks are normally furnished with BNC (UG1094 type) connectors. Signal degradation occurs when used at frequencies above 100 MHz.

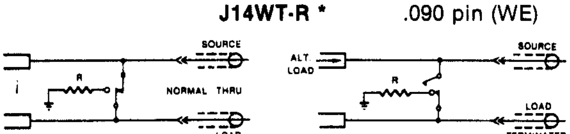
Tabs are normally back to back (as shown). However, they can be supplied side by side for horizontal mounting on special order. Add L to part number for left hand tabs and R for right hand tabs. (Example: J14WL).

STANDARD	**J14**	.070 pin (RCA)
	J14W	.090 pin (WE)



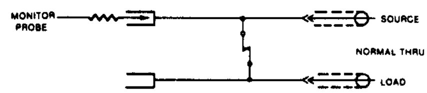
The standard J14 or J14W is used to provide a pair of jacks with a normal through circuit without the use of looping plugs or patch cords. A plug inserted into either jack breaks the normal through. Each jack provides a wiping action for positive contact.

TERMINATED	**J14T-R** *	.070 pin (RCA)
	J14WT-R *	.090 pin (WE)



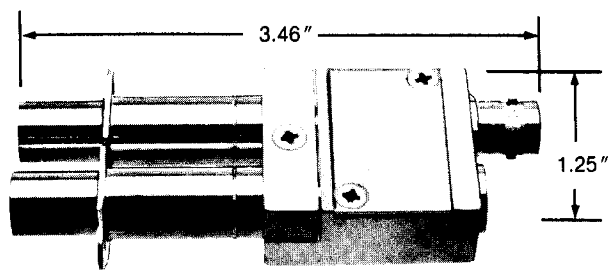
The terminated version is used to provide a resistive load to the unused side. A plug inserted into the source side automatically terminates the load side. Conversely, a plug inserted into the load side automatically terminates the source side.

MONITOR	**J14M**	.070 pin (RCA)
	J14WM	.090 pin (WE)



The monitor version provides for monitoring the signal without breaking the normal through by inserting a plug on the monitor side. A terminated version is also available. When a plug is inserted in the load side the source is automatically terminated. This version is a J14MT-R or J14WMT-R. Again substitute resistance value for R.

A single pole double throw switch can be added to the J14 or J14W only. The designation for this type of jack is J14A or J14WA.

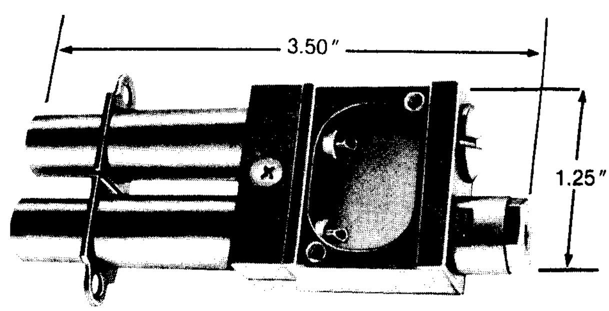


PATCH JACK (Dual) — Wired

J15B (BNC)	**J15H (TNC)**	.070 pin (RCA)
J15WB (BNC)	**J15WH (TNC)**	.090 pin (WE)

PATCH JACK (Dual) — No Wiring

J15BA (BNC)	**J15HA (TNC)**	.070 pin (RCA)
J15WBA (BNC)	**J15WHA (TNC)**	.090 pin (WE)



PATCH JACK	**J15-N** *	.070 pin (RCA)
(Dual)	**J15W-N** *	.090 pin (WE)

Substitute cable group number for N. See page 30. Dual coax jack with provision for one or two cable entries. Normally supplied with one standard cable entry connection.

These dual jacks may be mounted vertically or horizontally on ⅝" centers. Tabs are normally back to back (as shown). However, they can be supplied side by side for horizontal mounting by adding L to part number for left hand tabs and R for right hand tabs. (Example: J15B-L).

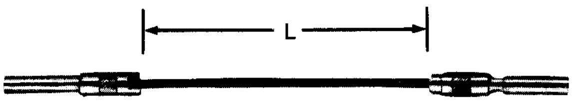
* Substitute cable group number for N - Page 30. Substitute resistance for R (½ W 5%).

Standard Patch Cords and Plugs

Coax

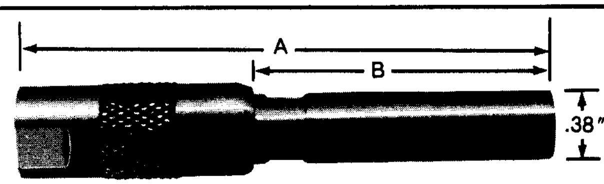
Trompeter has established facilities and techniques to manufacture coax patch cord and cable assemblies rapidly and efficiently thus providing the customer with definite quality and cost advantages. Standard lengths 6″, 12″, 18″, 24″ and 36″.

It should be noted that RCA .070 patch cords ARE NOT interchangeable with Western Electric .090 patch cords. Standard patch cords are made from RG58/U (50 ohm), RG59/U (75 ohm) and RG62/U (93 ohm) coax cable. Modifications of most items to provide special capabilities may be supplied on special order.



PATCH CORD

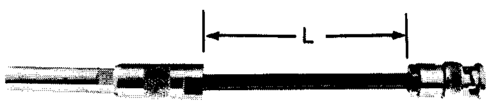
PC-L-Z * (50, 75, 93 ohm) .070 pin (RCA)
PCW-L-Z * (50, 75, 93 ohm) .090 pin (WE)



PATCH PLUGS (Crimp)

PL1C-N * .070 pin (RCA) A = 2.80″ B = 1.57″
PL1WC-N * .090 pin (WE) A = 2.52″ B = 1.29″

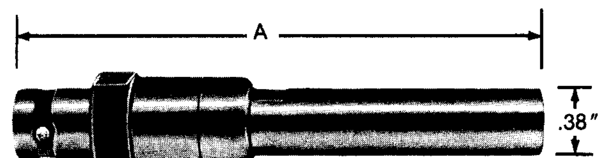
See Page 27 for Crimp Tools and Dies.



CABLE ASSEMBLY

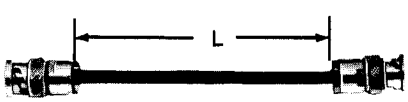
PCX-L-Z * (50, 75, 93 ohm) .070 pin (RCA)
PCWX-L-Z * (50, 75, 93 ohm) .090 pin (WE)

Designate 75 ohm BNC by prefix U.



ADAPTER PLUG

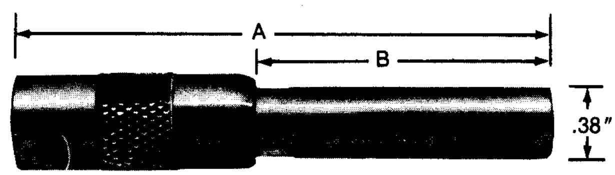
AD1 .070 pin (RCA) A = 2.77″ **(Shown)**
AD1W .090 pin (WE) A = 2.83″



CABLE ASSEMBLY

PCY-L-Z * (50, 75, 93 ohm)

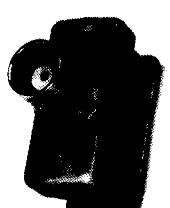
Designate 75 ohm BNC by prefix U.



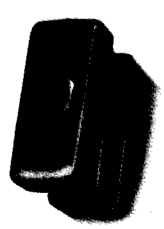
TERMINATED PLUG

TP-R * .070 pin (RCA) A = 2.73″ B = 1.50″
TPW-R * .090 pin (WE) A = 2.50″ B = 1.23″

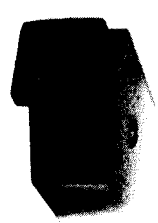
LOOPING PLUGS



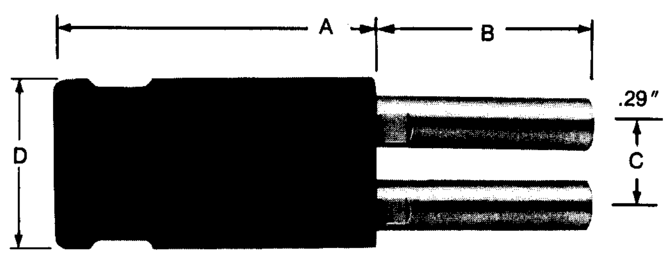
BNC Monitor



Test Point Monitor



Pinch Handle



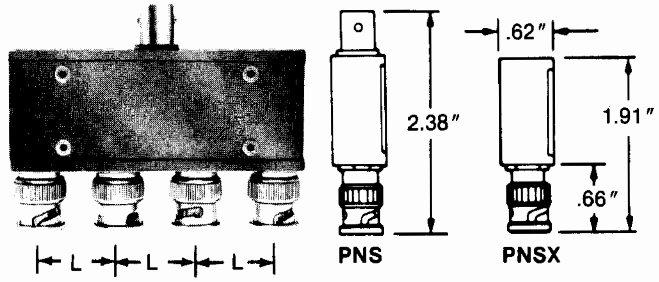
Plain Handle

HANDLE	RCA .070″ Pin (A = 2.25″; B = 1.51″)		Western Electric .090″ Pin (A = 2.25″; B = 1.25″)	
	C = .625″ D = 1.20″	C = 1.00″ D = 1.57″	C = .625″ D = 1.20″	C = 1.00″ D = 1.57″
Plain	LP-Z †	LPL-Z †	LPW-Z †	LPLW-Z †
Pinch	LPP-Z †		LPPW-Z †	
Test Point Monitor	LPTP-Z †	LPLTP-Z †	LPWTP-Z †	LPLWTP-Z †
BNC Monitor	LPA-Z †	LPLA-Z †	LPWA-Z †	LPLWA-Z †

† Substitute Impedence for Z.
Handles Color Coded: Green - Z = 50 ohm; Violet - Z = 75 ohm; White - Z = 93 ohm.

* Substitute cable group number for N - Page 27. Substitute length in inches for L. Substitute impedance for Z. Substitute resistance for R (½ W 5%).

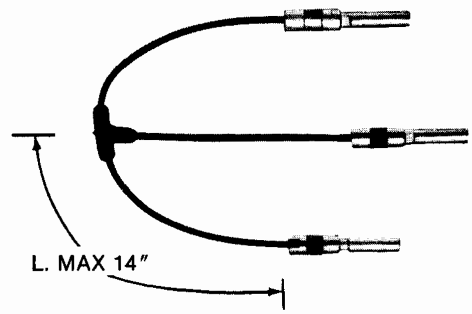
Coax



PNS-B4
- No. of Connectors
- Spacing code letter
- Part Number **PNS** or **PNSX**

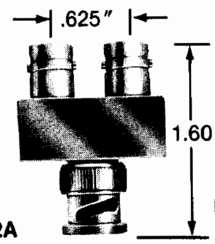
Code Letter	L Dim.	Code Letter	L Dim.
B	.625″	G	1.125″
C	.750″	H	1.210″
D	.830″	J	1.250″
E	.875″	K	1.430″
F	1.000″		

FIXED PARALLELING — ONE INPUT **PNS**
FIXED PARALLELING — NO INPUT **PNSX**

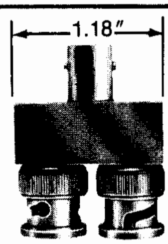


TRIPLE PARALLEL PATCH CORD

PCS-L-Z *	(50, 75, 93 ohm)	.070 pin (RCA)
PCWS-L-Z *	(50, 75, 93 ohm)	.090 pin (WE)

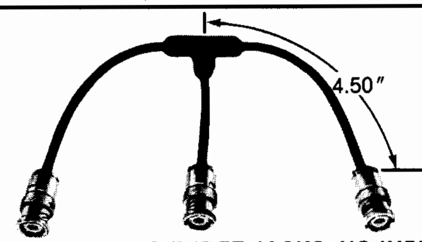


FIXED PARALLELING

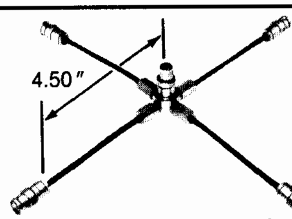


PN2A
TWO INPUTS, ONE JACK

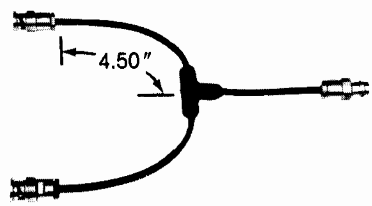
PN2
ONE INPUT, TWO JACKS



RANDOM PARALLELING THREE JACKS, NO INPUT
PN3-Z * (50, 75, 93 ohm)

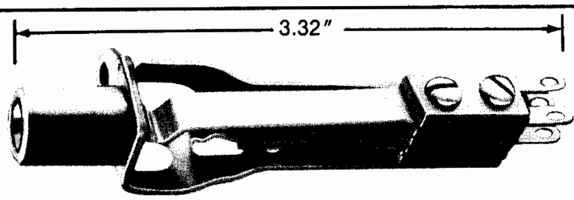


RANDOM PARALLELING FOUR JACKS, ONE INPUT
PN4-Z * (50, 75, 93 ohm)

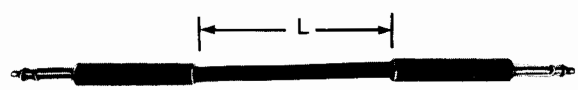


RANDOM PARALLELING TWO JACKS, ONE INPUT
PN2B-Z * (50, 75, 93 ohm)

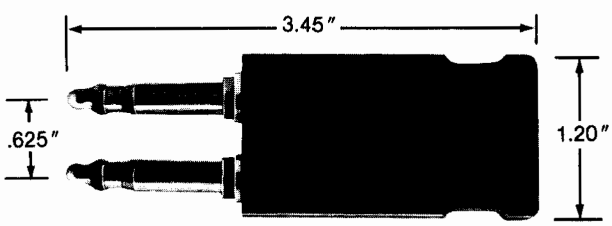
Audio



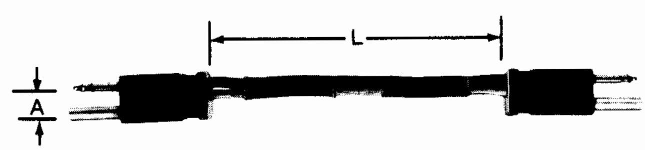
AUDIO JACK 3 CIRCUIT NORMALING
M641/3-2 (JJ042)
Also available in twin jack configurations. Specify part number MT389 (WE482A).



AUDIO PATCH CORD, 3 CIRCUIT
APC3-L *



LOOPING PLUG, 3 CIRCUIT
ALP3



AUDIO VIDEO PATCH CORD

A = .625″		A = 1.00″
AVPC-L-Z *	.070 pin (RCA)	**AVPCL-L-Z** *
AVPCW-L-Z *	.090 pin (WE)	**AVPCLW-L-Z** *

Handles color coded: green 50 ohm; violet 75 ohm.

* Substitute length in inches for L. Substitute impedance for Z.

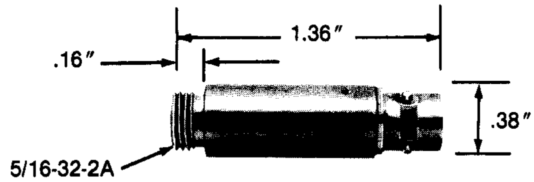
Miniature Patching 50 Ohm

Coax

INTRODUCTION

Trompeter patch panels that accept J8 and J8D miniature jacks are for use in high density 50 ohm patching. These panels are 19″ long and have vertical and horizontal hole spacing ½″ center to center unless otherwise indicated. Panel holes are tapped 5/16-32-2B. Noninsulated panels are aluminum grade 6061-T6, insulated panels are phenolic. Both have stiffener bars.

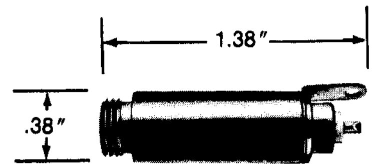
Western Electric type miniature 75 ohm patching, shown on pages 18 and 19, is not interchangeable with this series.



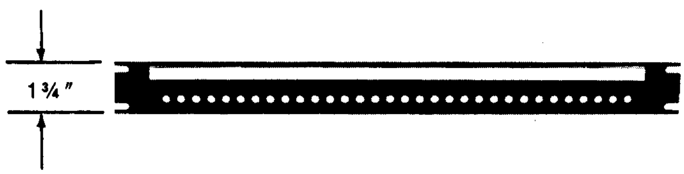
MINIATURE JACK (TPS Female)
J8

HOW TO ORDER — **JSI · 64 / J8**

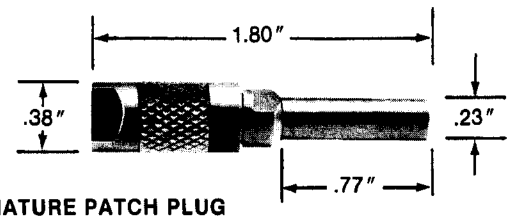
Select panel type
Select jack type
JS = Aluminum panel (open notch)
JSI = Insulated panel (closed notch)



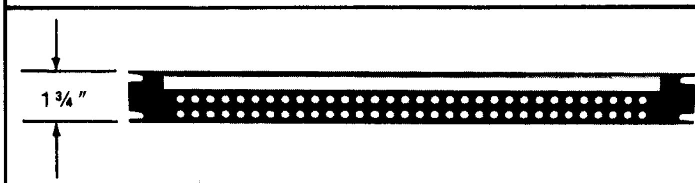
MINIATURE JACK (Solder Lugs)
J8D



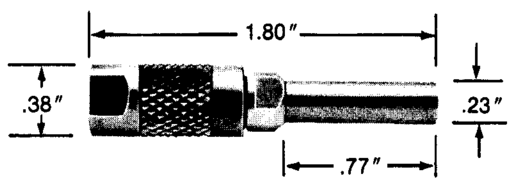
MINIATURE PATCH PANELS
JS-32　　JSI-32



MINIATURE PATCH PLUG
PL3
For RG 122, 8218 and 293-3968 cables only.

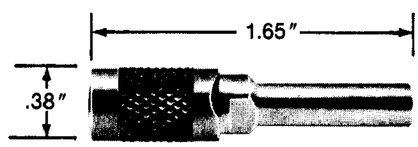


MINIATURE PATCH PANELS
JS-64S　　JSI-64S

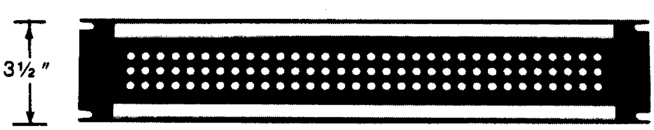


MINIATURE TERMINATION PLUG
TPM-R*

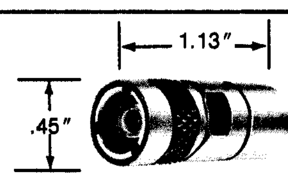
MINIATURE PATCH PANELS
JS-64L　　JSI-64L



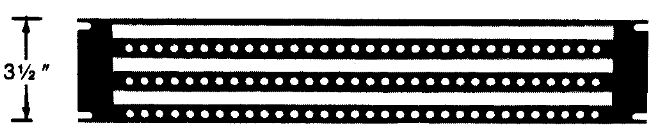
MINIATURE DUMMY PLUG
RFI 50



MINIATURE PATCH PANELS
JS-96A　　JSI-96A

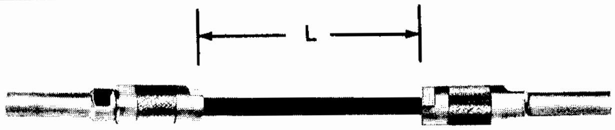


MINIATURE TERMINATION TPS
TNB1-1-R *
Available with chain. See Page 29.

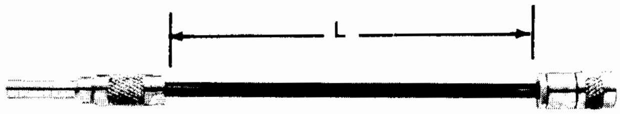


MINIATURE PATCH PANELS
JS-96B　　JSI-96B

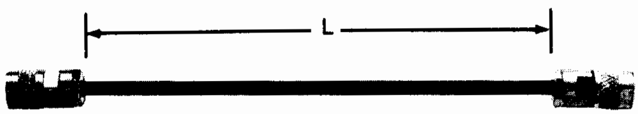
* Substitute resistance for R (¼ W 5%.)



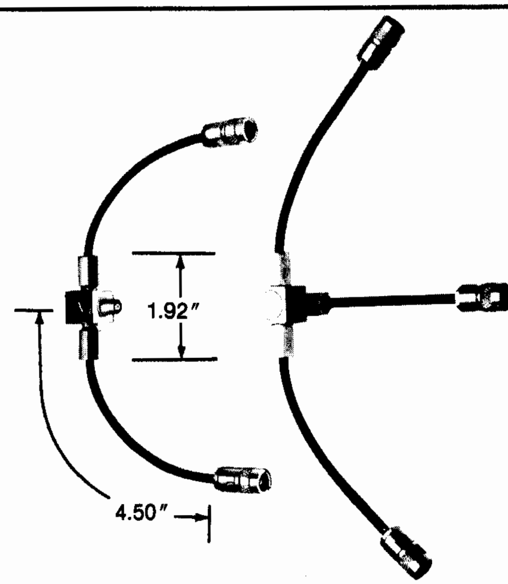
MINIATURE PATCH CORD
PCM-L-Z * (50, 75, 93 ohm)



MINIATURE CABLE ASSEMBLY (TPS)
PCMX-L-Z * (50, 75, 93 ohm)

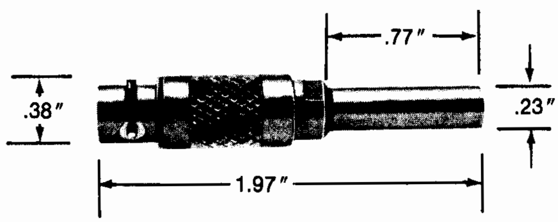


MINIATURE CABLE ASSEMBLY (TPS)
PCMY-L-Z * (50, 75, 93 ohm)

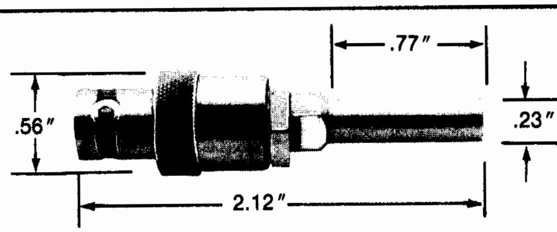


RANDOM PARALLELING	(50, 75, 93 ohm)
TWO JACKS ONE INPUT	**PNM2B-Z * (Shown)**
THREE JACKS NO INPUT	**PNM3-Z * (Shown)**
FOUR JACKS ONE INPUT	**PNM4-Z ***

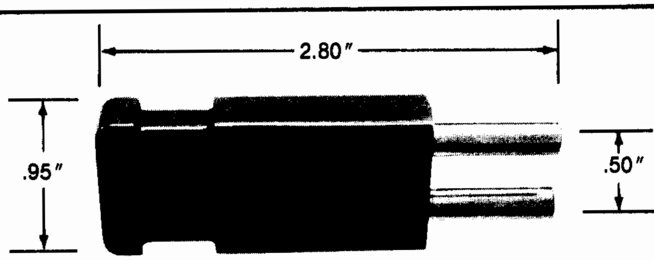
Miniature Accessories



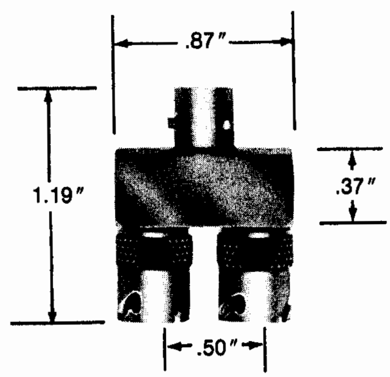
MINIATURE PATCH PLUG TO TPS ADAPTER
ADM1



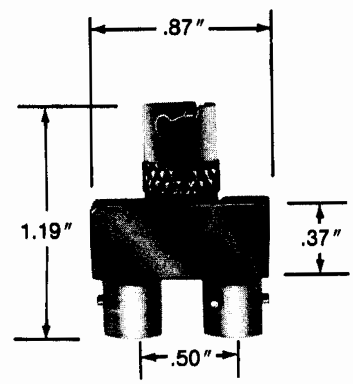
MINIATURE PATCH PLUG TO BNC ADAPTER
ADM2



MINIATURE LOOPING PLUG
LPM-Z * (50, 75, 93 ohm)
Color coded handles: green 50 ohm violet 75 ohm, white 93 ohm.



FIXED PARALLELING ONE INPUT, TWO JACKS
PNM2



FIXED PARALLELING TWO INPUTS, ONE JACK
PNM2A
Panel use limited to JS/JSI-32 and 96 B panels.

* Substitute length in inches for L. Substitute impedance for Z.

Western Electric Patching

Miniature 75 Ohm Coax

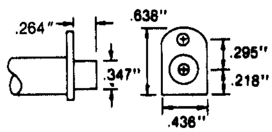
INTRODUCTION

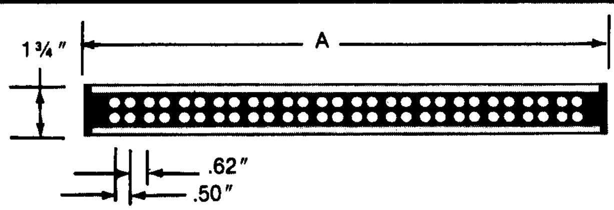
A complete family of Western Electric type miniature panels, jacks, connectors, plugs, patch cords and looping plugs have been designed for high density low VSWR 75 ohm coaxial applications such as microwave, sub-carrier telephone or similar systems. The Trompeter designed J12 jack and PL11C plug combination have a VSWR of 1.04:1 when used in the 60-80 MHz range. The J12 is interchangeable with W.E. 560 jacks. Panels are supplied in insulated versions only for either rack or flush mount and are painted black. Other finishes are available. These items are NOT interchangeable with those shown on pages 16 & 17.

HOW TO ORDER JSIX-64S/ J12

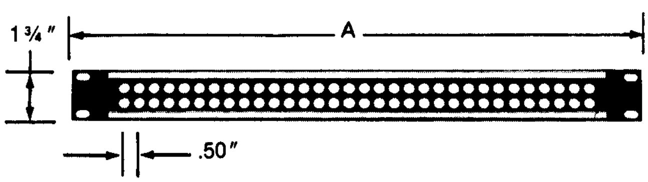
Select panel type

Select jack type

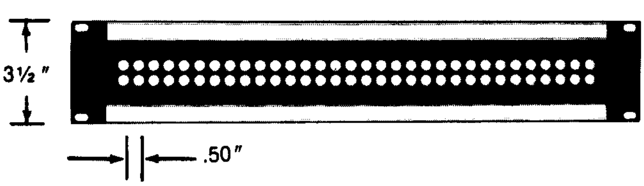




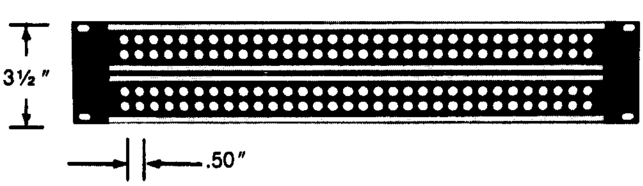
JSIX-56S Rack mount A = 19.00"
JSIX-56SF Flush mount A = 17.15" (Shown)



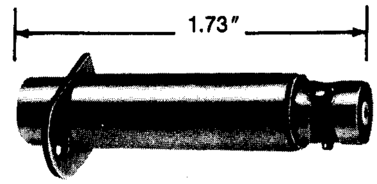
JSIX-64S Rack mount A = 19.00" (Shown)
JSIX-64SF Flush mount A = 17.15"



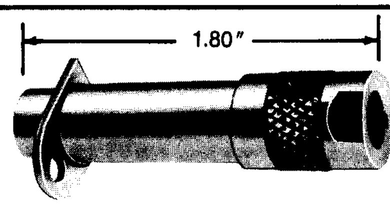
JSIX-64L Rack mount only



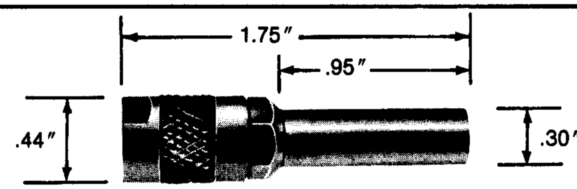
JSIX-128 Closed slots (phenolic)



W.E. TYPE JACK (TPS)
J11

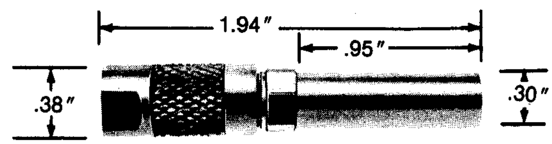


W.E. TYPE CABLE INPUT JACK
J12-N *
Similar to and replacement for W.E. 560A miniature jack.

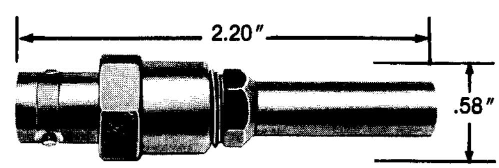


W.E TYPE PATCH PLUG (Crimp)
PL11C-N **
Similar to W.E. 440 plug.

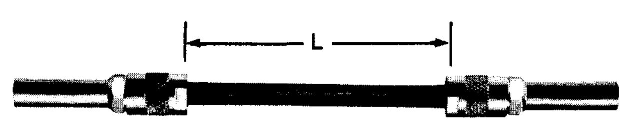
** Substitue cable group number for N - Page 27. See Page 26 for Crimp Tool and Dies.



W.E. TYPE TERMINATION PLUG
TPMW-R *



W.E TYPE ADAPTER
ADMW12
BNC to W.E. type patch plug.



W.E. TYPE PATCH CORD
PCMW-L-75 *

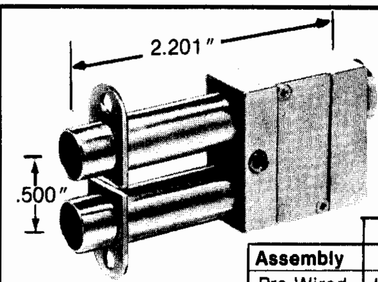
* Substitute cable group number for N - Page 30. Substitute resistance for R (¼ W 5%).

Miniature 75 Ohm Coax

DUAL PATCH JACKS

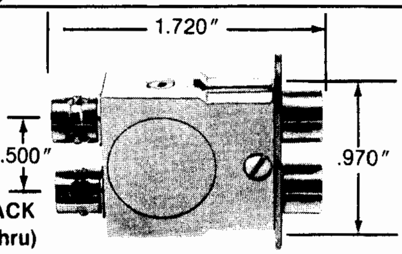
TEI's recently developed J18 dual patch jack operates in the same manner as the J14 in the Standard patch series (page 13). Load and source circuits can be reconfigured from "normal thru" interconnections to any cross patching desired. Additionally, in the J18T-R* jacks, patched out sources and loads are automatically switched "break before make" and terminated into a specified resistance.

Tabs for both the J15MW and the J18 group of dual patch jacks are normally back to back. However, they can be supplied side by side for horizontal mounting by adding an "L" to part numbers for left hand tabs (orientation is from rear of patch jack) and "R" for right tabs (example: J15MWL-N).

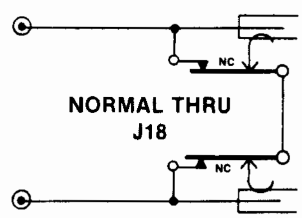


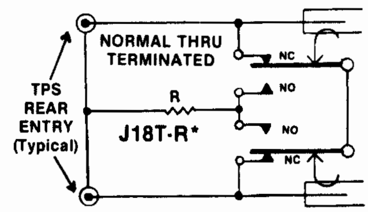
PATCH JACK (Dual)
J15MW

		Rear Entry	
Assembly	**Cable***	**BNC**	**TPS**
Pre Wired	J15MW-N	J15MWB	J15MWTPS
Not Wired	—	J15MWBA	J15MWTPSA



PATCH JACK
(Normal Thru)

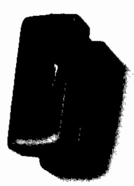


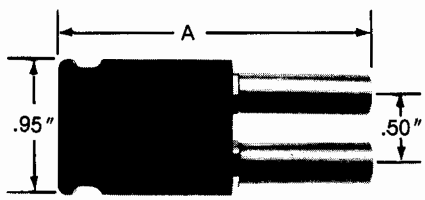


New **J18 / J18T-R TERMINATED**

LOOPING PLUGS


TPS Monitor


Test Point Monitor



Plain Handle

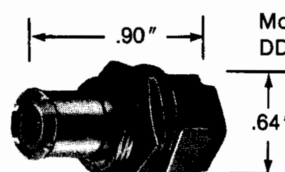
Handle	A = 2.95″	A = 2.21″
Plain	LPMW-Z	LPMWS-Z
Test Point Monitor	LPMWTP-Z **	
TPS Monitor	LPMWA-Z	

** Substitute impedance for Z (50, 75 or 93 ohm).

BNC/TNC Push-On Coax

INTRODUCTION

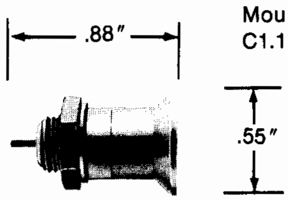
This series of connectors was designed primarily for push-on rack and panel applications. They are supplied in both 50 ohm and 75 ohm versions. The male plugs PL121, PL122, PL123 mate with any BNC/TNC jack for quick push-on application.



Mounting Hole
DD5.187

PANEL PLUG
PL122-N *

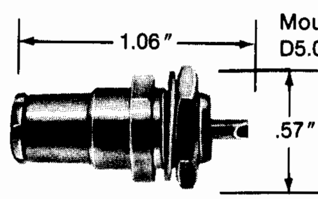
Designate 75 ohm version by prefix U.



Mounting Hole
C1.120

BULKHEAD JACK
BJ120

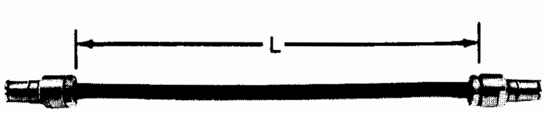
Designate 75 ohm version by prefix U.



Mounting Hole
D5.093

PANEL PLUG
PL121

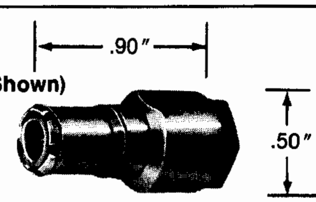
Designate 75 ohm version by prefix U.



PATCH CORD
PCP-L-Z *

Designate 75 ohm version by prefix U.

PLUGS
PL123-N * (Wrench Crimp - Shown)



New **PL223-N * (Tool Crimp)**

Designate 75 ohm versions by prefix U.

* Substitute cable group number for N - Wrench Crimp, Page 30, Tool Crimp, Page 27. Substitute length in inches for L. Substitute resistance for R (¼ W 5%).

Coax, Concentric Twinax, Triax, Quadrax

INTRODUCTION:

The panels shown on this page and page 21 are designed to accommodate appropriate TEI Bulkhead Jacks. (See page 21 for panel construction.)

ORDERING INFORMATION:

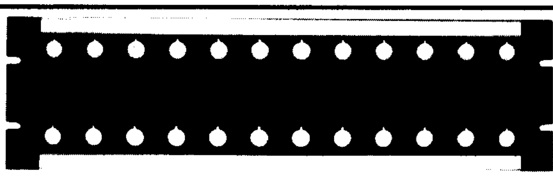
Panels and jacks are selected separately and then combined to make up part number.

JS-12D2SF8 / BJ72

Select panel type (JS-12D2SF8)
Select jack types (BJ72)
JS = Aluminum panel (open notch)
JSI = Insulated panel (closed notch)

MODEL NUMBER	JACKS ACCOMMODATED
JSH-12	J94
JSIH-12	

Note: Horizontal Hole Spacing 1.43″.



MODEL NUMBER	JACKS ACCOMMODATED
JSH-24	J94
JSIH-24	

Note: Horizontal Hole Spacing 1.43″, Vertical Hole Spacing 3.00″.

Standard Panel for LPH50. (See page 25.)

MODEL NUMBER	JACKS ACCOMMODATED
JS-12D2	BJ26-N [1] BJ46-N [1]* BJ29-6 [1]
JSI-12D2	BJ29-6E [1] BJ49-6 [1] BJ49-6E [1]
JS-12D2SF8	BJ72 BJ73 BJ74
JSI-12D2SF8	BJ101 BJ102
JS-12D3	BJ29-N [1]* BJ39-N*
JSI-12D3	BJ49-N [1]*
JS-12D3SF7	BJ27 [1] BJ28 [1] BJ47 [1] BJ48 [1]
JS -12D3SF13	BJ78
JSI-12D3SF13	
JS-12D3SF15	BJ79-N*
JSI-12D3SF15	
JS-12D5	BJ58
JSI-12D5	BJ158
JS-12D5SF4	BJ20 [1] BJ30
JSI-12D5SF4	BJ40 [1]

Note: Horizontal Hole Spacing 1.43″.

MODEL NUMBER	JACKS ACCOMMODATED
JS-12DD4	BJ95-N [1]* BJ96-N [1]*
JSI-12DD4	BJ98-2 [1]

Note: Horizontal Hole Spacing 1.43″.

MODEL NUMBER	JACKS ACCOMMODATED
JS-14D2	BJ26-N [1]* BJ46-N [1]* BJ29-6 [1]
JSI-14D2	BJ29-6E [1] BJ49-6 [1] BJ49-6E [1]
JS-14D2SF8	BJ72 BJ73 BJ74
JSI-14D2SF8	BJ101 BJ102
JS-14D3	BJ29-N [1]* BJ39-N*
JSI-14D3	BJ49-N [1]*
JS-14D3SF7	BJ27 [1] BJ28 [1] BJ47 [1] BJ48 [1]
JS-14D3SF13	BJ78
JSI-14D3SF13	
JS-14D3SF15	BJ79-N*
JSI-14D3SF15	
JS-14D5	BJ58 BJ158 BJ20 [1]
JSI-14D5	BJ30 BJ40 [1]

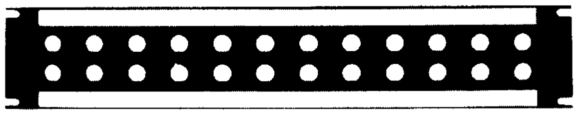
Note: Horizontal Hole Spacing 1.21″

MODEL NUMBER	JACKS ACCOMMODATED
JS-20D2	BJ26-N [1]* BJ46-N [1]* BJ29-6 [1]
JSI-20D2	BJ29-6E [1] BJ49-6 [1] BJ49-6E [1]
JS-20D2SF8	BJ72 BJ73 BJ74
JSI-20D2SF8	BJ102 BJ101
JS-20D3	BJ29-N [1]* BJ39-N*
JSI-20D3	BJ49-N [1]*
JS-20D3SF7	BJ27 [1] BJ28 [1] BJ47 [1] BJ48 [1]
JS-20D3SF13	BJ78
JSI-20D3SF13	
JS-20D3SF15	BJ79-N*
JSI-20D3SF15	
JS-20D5	BJ58
JSI-20D5	BJ158
JS-20D5SF4	BJ20 [1] BJ30
JSI-20D5SF4	BJ40 [1]

Note: Horizontal Hole Spacing .83″

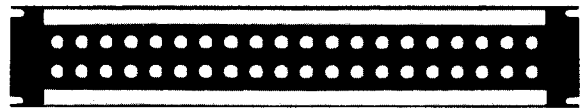
[1] Designate 75 ohm version by prefix U.   * Substitute cable group number for N - Page 30.   Mounting Hole Table - Page 40.

Coax, Concentric Twinax, Triax, Quadrax



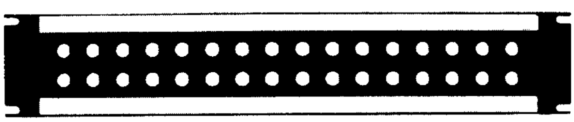
MODEL NUMBER	JACKS ACCOMMODATED
JS-24WD2 JSI-24WD2	BJ26-N [1]* BJ46-N [1]* BJ29-6 [1] BJ29-6E [1] BJ49-6 [1] BJ49-6E [1]
JS-24WD2SF8 JSI-24WD2SF8	BJ72 BJ73 BJ74 BJ101 BJ102
JS-24WD3 JSI-24WD3	BJ29-N [1]* BJ39-N* BJ49-N [1]*
JS-24WD3SF7	BJ27 [1] BJ28 [1] BJ47 [1] BJ48 [1]
JS-24WD3SF14 JSI-24WD3SF14	BJ78
JS-24WD3SF16 JSI-24WD3SF16	BJ79-N*
JS-24WD5 JSI-24WD5	BJ58 BJ158
JS-24WD5SF4 JSI-24WD5SF4	BJ20 [1] BJ30 BJ40 [1]

Note: Horizontal Hole Spacing 1.43". Vertical Hole Spacing 1.00".



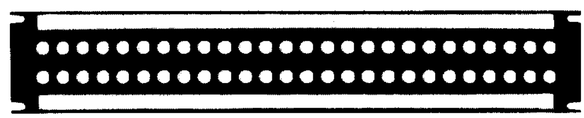
MODEL NUMBER	JACKS ACCOMMODATED
JS-40WD2 JSI-40WD2	BJ26-N [1]* BJ46-N [1]* BJ29-6 [1] BJ29-6E [1] BJ49-6 [1] BJ49-6E [1]
JS-40WD2SF8 JSI-40WD2SF8	BJ72 BJ73 BJ74 BJ101 BJ102
JS-40WD3 JSI-40WD3	BJ29-N [1]* BJ39-N* BJ49-N [1]*
JS-40WD3SF7	BJ27 [1] BJ28 [1] BJ47 [1] BJ48 [1]
JS-40WD3SF13 JSI-40WD3SF13	BJ78
JS-40WD3SF15 JSI-40WD3SF15	BJ79-N*
JS-40WD5 JSI-40WD5	BJ58 BJ158
JS-40WD5SF4 JSI-40WD5SF4	BJ20 [1] BJ30 BJ40 [1]

Note: Horizontal Hole Spacing .83". Vertical Hole Spacing 1.00".



MODEL NUMBER	JACKS ACCOMMODATED
JS-32D2 JSI-32D2	BJ26-N [1]* BJ46-N [1]* BJ29-6 [1] BJ29-6E [1] BJ49-6E [1] BJ49-6 [1]
JS-32D2SF8 JSI-32D2SF8	BJ72 BJ73 BJ74 BJ101 BJ102
JS-32D3 JSI-32D3	BJ29-N [1]* BJ39-N* BJ49-N [1]*
JS-32D3SF7	BJ27 [1] BJ28 [1] BJ47 [1] BJ48 [1]
JS-32D3SF14 JSI-32D3SF14	BJ78
JS-32D3SF16 JSI-32D3SF16	BJ79-N*
JS-32D5 JSI-32D5	BJ58 BJ158
JS-32D5SF4 JSI-32D5SF4	BJ20 [1] BJ30 BJ40 [1]

Note: Horizontal Hole Spacing 1.00". Vertical Hole Spacing 1.00".



MODEL NUMBER	JACKS ACCOMMODATED
JS-52D3SF7	BJ27 [1] BJ28 [1] BJ47 [1] BJ48 [1]
JS-52D5 JSI-52D5	BJ58 BJ158
JS-52D5SF4 JSI-52DSF4	BJ20 [1] BJ30 BJ40 [1]

Note: Horizontal Hole Spacing .67". Vertical Hole Spacing 1.00".

PANEL SPECIFICATIONS:

SIZES: 19" wide, 3/16" thick, 1 3/4" multiples in height.

NOTCHING: In accordance with MIL-STD-189.

FINISH: FED-STD-595-26307 light gray. Other finishes and colors available on special order.

MATERIAL: JS Series — Common ground type are aluminum grade 6061-T6.
JSI Series — Insulated panels - xxx non-hydroscopic phenolic.

[1] Designate 75 ohm version by prefix U. * Substitute cable group number for N - Page 30. Mounting Hole Table - Page 40.

COAXIAL CONNECTORS • WRENCH CRIMP

WITH FAST 3-PIECE ASSEMBLY — EXCEEDS REQUIREMENTS OF MIL-C-39012, CATEGORY "A" (FIELD SERVICEABLE AND REUSABLE WITH ORDINARY TOOLS).

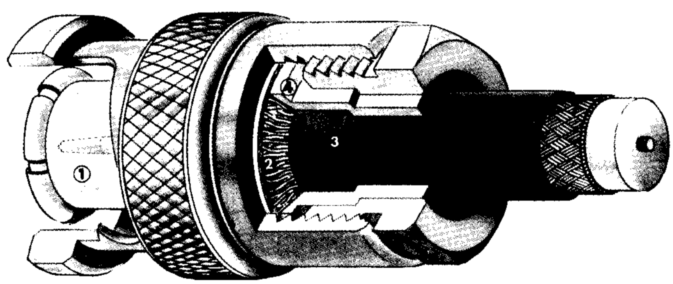
The old "UG" coax connectors required several cutting and stripping assembly operations, demanding precise and time-consuming steps to attach to the cable.

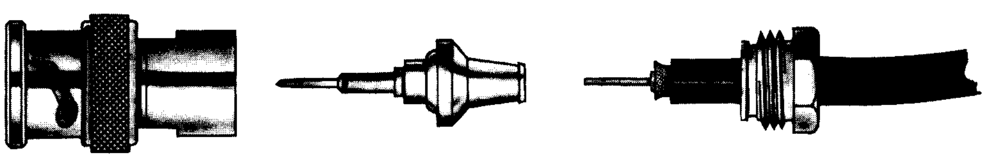
Most "crimp type" connectors require expensive tools for assembly and are not field repairable. The new WRENCH CRIMP provides an all new coax cable attachment method that crimps the outer braid (as well as retaining the jacket) using ordinary wrenching. A floating sleeve (4) permits clamping of braid without rotary movement. This method of clamping the braid is equally effective when using double braided cable such as RG223. It should be noted that there is no insulating material between the braid and the clamping surfaces (2). The connector features a (patented) heat treated beryllium copper outer conductor spring for positive electrical contact which is enclosed for improved EMI suppression (1). Other connectors use an open split spring usually made of brass. The connector additionally has a captive center contact that does not rely on the cable for positioning. Connectors are assembled and disassembled using ordinary tools and are usable over and over again.

The WRENCH CRIMP connector series uniquely holds TFE or similarly jacketed cable without the use of additional hardware. The connector-to-cable pull-to-destruct approaches the tear strength of the cable itself (3).

As an added feature, the center conductor pin for some Trompeter coax connector sizes can be crimped using Buchanan adjustable crimp tool No. 613439.

Certain connectors are standard in both 50 and 75 ohm. Specify the 75 ohm type by the prefix U.





INSTRUCTIONS FOR ASSEMBLY

Assembly instructions furnished by Trompeter are to be considered as a guide. Customers may wish to establish their own methods and techniques to suit their particular requirements.

1. Place "wrench crimp" nut onto cable.
2. Make a clean perpendicular cut through cable jacket, braid and dielectric, exposing $\frac{5}{16}$" of center conductor.
3. Cut jacket back an additional $\frac{5}{32}$" and bend braid outward to allow free entry of cone. This will prevent cone from forcing braid up under jacket.
4. Lightly tin center conductor.
5. Insert center conductor and dielectric into pin/cone assembly. Push edge of cone between dielectric and braid. Tapered cone will flare out braid and jacket. Continue to push cable into cone until cable dielectric seats against cone dielectric. The center conductor should be visible in pin solder hole. (Braid may be combed out over cone and excess strands trimmed to cone edge if preferred.)
6. Solder center conductor to pin.
7. Bring "wrench crimp" nut up onto tapered portion of cable.
8. Assemble connector body over pin/cone assembly and engage with clamp nut.
9. Wrench tighten to 30-40 in. lbs. torque.

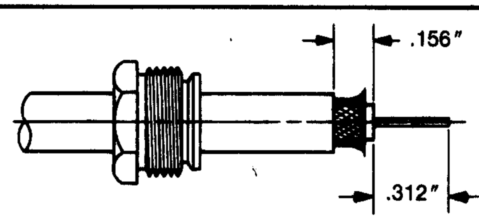


FIG. 1

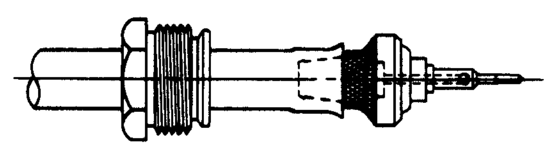


FIG. 2

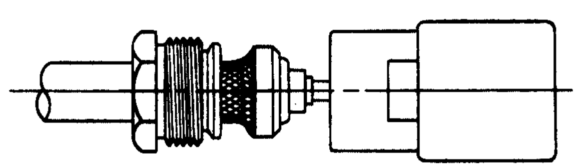
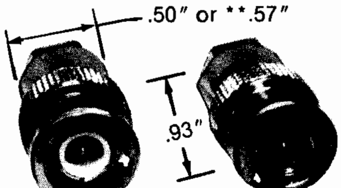


FIG. 3

BNC Series Miniature Coax

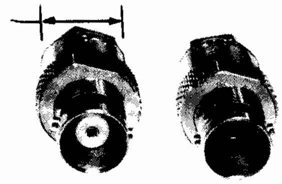


** Cable groups 6 & 6E only.

50 ohm PL20-N

75 ohm UPL20-N

CABLE PLUG
PL20-N * (Wrench Crimp - Shown)
PL220-N * (Tool Crimp)
Designate 75 ohm versions by prefix U.



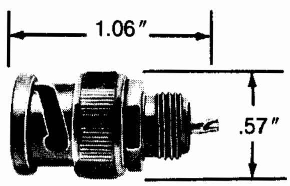
**Cable groups 6 & 6E only.

50 ohm CJ20-N

75 ohm UCJ20-N

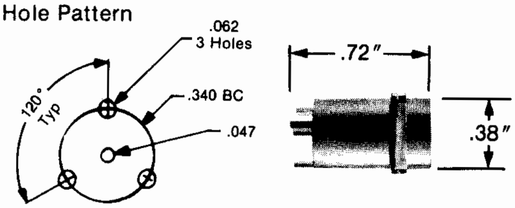
CABLE JACK
CJ20-N * (Wrench Crimp - Shown)
New **CJ220-N * Tool Crimp**
Designate 75 ohm versions by prefix U.

Mounting Hole
C2.078



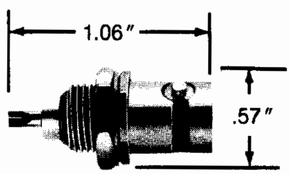
BULKHEAD PLUG, FRONT MOUNT (Solderpot)
PL21
Not available in 75 ohm version.

Recommended Mounting
Hole Pattern



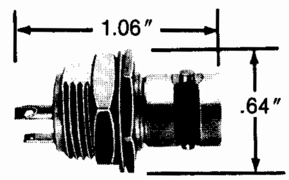
RECEPTACLE (Circuit Board)
CBJ20
Designate 75 ohm version by prefix U.

Mounting Hole
D5.130



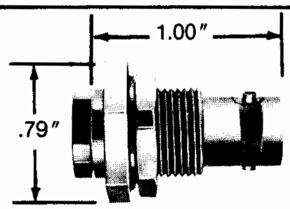
BULKHEAD JACK, FRONT MOUNT (Solderpot)
BJ20
Designate 75 ohm version by prefix U.

Mounting Holes
D3.171



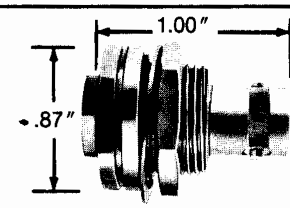
INSULATED BULKHEAD JACK (Solderpot)
BJ27 (Front Mount - Shown)
New **BJ21 (Rear Mount)**
Designate 75 ohm versions by prefix U.

Mounting Holes
D3.218
D2.218 GP6 & 6E

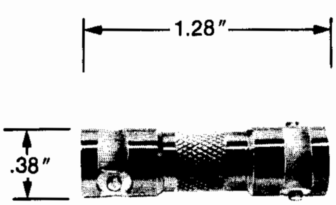


BULKHEAD CABLE JACK, REAR MOUNT
BJ29-N * (Wrench Crimp - Shown)
New **BJ229-N * (Tool Crimp)**
Designate 75 ohm versions by prefix U.

Mounting Holes
D2.187

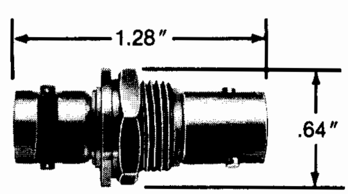


INSULATED BULKHEAD CABLE JACK, REAR MOUNT
BJ26-N * (Wrench Crimp - Shown)
New **BJ226-N * (Tool Crimp)**
Designate 75 ohm versions by prefix U.



FEEDTHRU ADAPTER
AD28
Designate 75 ohm version by prefix U.

Mounting Hole
D3.156

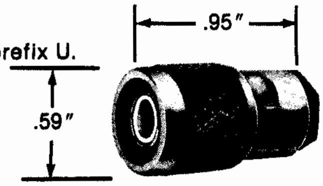


INSULATED BULKHEAD FEEDTHRU JACK
BJ28
Designate 75 ohm version by prefix U.

* Substitute cable group number for N - Wrench Crimp, Page 30; Tool Crimp - Page 27. Mounting Hole Table - Page 40.
Trompeter's 50 ohm and 75 ohm versions will mate mechanically but connectors must be matched to maintain impedance.

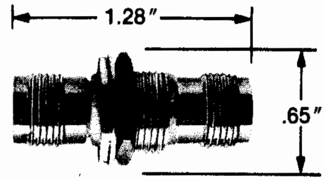
TNC Series Miniature Coax

TNC PLUG
PL40-N *
Designate 75 ohm version by prefix U.
Available with safety
wire holes on special order.
Available for cable
groups 6 & 6E.



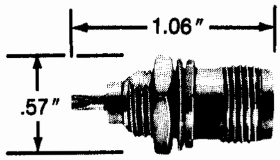
Mounting Hole
D3.156

TNC INSULATED BULKHEAD FEEDTHRU
BJ48
Designate 75 ohm version by prefix U.



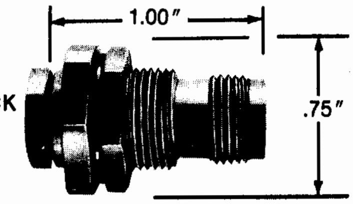
Mounting Hole
D5.130

TNC BULKHEAD JACK (Solderpot)
BJ40
Designate 75 ohm version by prefix U.



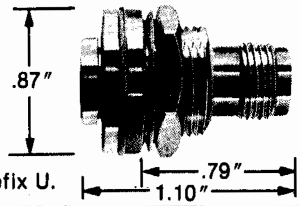
Mounting Hole**
D3.218

TNC BULKHEAD CABLE JACK
BJ49-N *
Designate 75 ohm
version by prefix U.

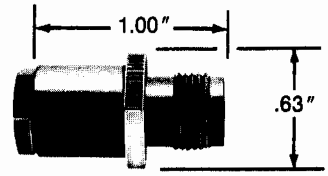


Mounting Hole
D2.187

TNC INSULATED
BULKHEAD JACK
BJ46-N *
Designate 75 ohm version by prefix U.

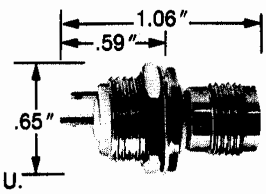


TNC CABLE JACK
CJ40-N *
Designate 75 ohm version by
prefix U.
Available for cable
groups 6 & 6E.

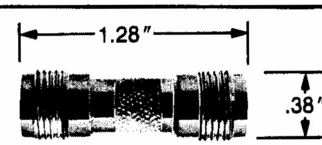


Mounting Hole
D3.171

TNC INSULATED
BULKHEAD JACK (Solderpot)
BJ47
Designate 75 ohm version by prefix U.



TNC FEEDTHRU ADAPTER
AD48
Designate 75 ohm version by prefix U.



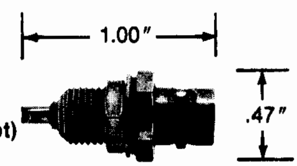
TPS & TCM Series Sub-Miniature Coax

INTRODUCTION

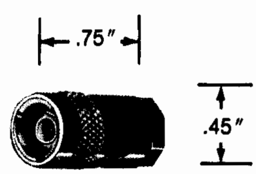
The TPS connectors are subminiature connectors that were designed for lightweight, high-density applications. This design incorporates a three-lug bayonet coupling for quick mating and the elimination of the rocking effect.
The TCM Series threaded version is also available.

Mounting Hole
D6.218

TPS BULKHEAD JACK (Solderpot)
BJ50
BJ350 (Threaded version)

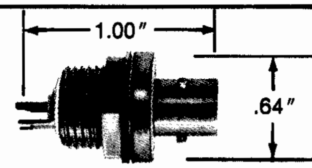


TPS PLUG
PL50-N *
PL350-N* (Threaded version)

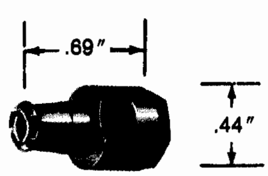


Mounting Hole
D4.187

TPS INSULATED
BULKHEAD JACK (Solderpot)
BJ57
BJ357 (Threaded version)

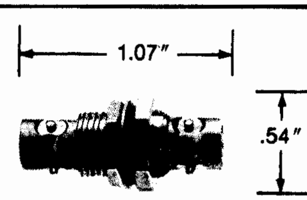


TPS/TCM PUSH-ON PLUG
PL53-N *

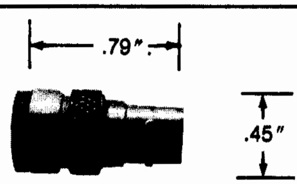


Mounting Hole
D5.190
†D4.190

TPS FEEDTHRU JACK
BJ58
†BJ358 (Threaded version)

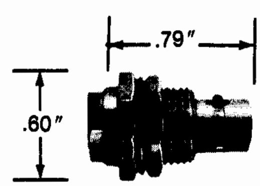


TPS CABLE JACK
CJ50-N *
CJ350-N * (Threaded version)



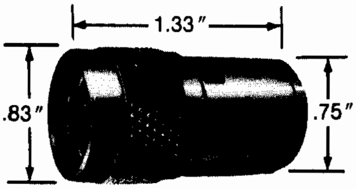
Mounting Hole
D4.175

TPS BULKHEAD JACK
BJ59-N *
BJ359-N * (Threaded version)



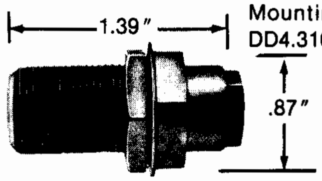
* Substitute cable group number for N - Page 30. Mounting Hole Table - Page 40. **Mounting Hole D2.218 for group -6 and -6E.

N Series Standard Coax



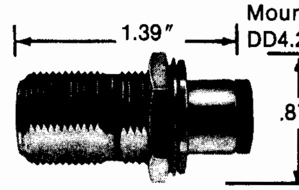
PLUG
PL95-N *
Designate 75 ohm version by prefix U.

Mounting Hole**
DD4.310 & DD1.310

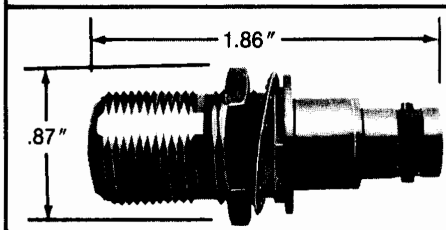


BULKHEAD CABLE JACK
BJ95-N *
Designate 75 ohm version by prefix U.

Mounting Hole
DD4.203

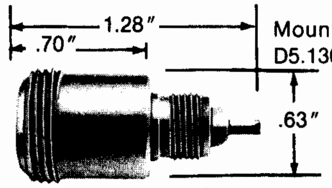


BULKHEAD CABLE JACK, INSULATED
BJ96-N *
Designate 75 ohm version by prefix U.



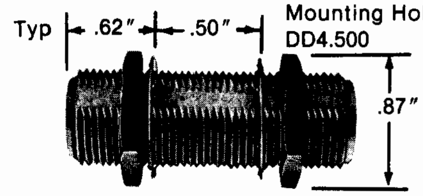
BNC ADAPTER INSULATED Mounting Hole
ADI 95 DD4.203

Mounting Hole
D5.130



BULKHEAD JACK (Solderpot)
J95
Designate 75 ohm version by prefix U.
Furnished with hex nut and washer.

Mounting Hole
DD4.500



FEED THRU JACK **BJ98-2 (Shown)**
Available for other panel thicknesses up to 2.25″. (.25″ Increments).

Low VSWR Precision Patching 50 Ohm

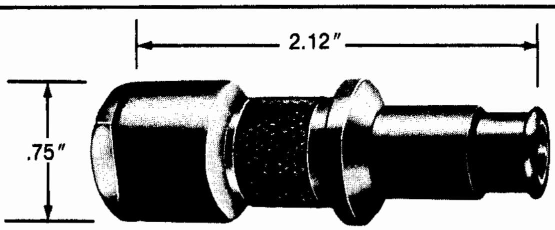
INTRODUCTION

The increasing operating frequencies of modern communications and telemetry systems have created a growing need for precision patching equipment. Trompeter's 50 ohm low VSWR (1.11:1.0) patching system has been developed for these applications. This equipment is designed for use at frequencies up to 3 Ghz and at power levels up to 500 watts.

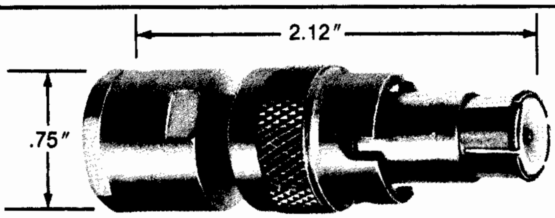
The J94 jack accepts an "N-series" male connector in back of the panel and the PL93-N and PL94-N patch plug at the front of the panel. J94 jacks may be panel mounted in Trompeter panels JSH-12, JSIH-12, JSH-24, and JSIH-24 as shown on page 20, or in a custom panel of your design.

The plugs incorporate a push-fit design that snaps into position in the jack and are available with or without a bayonet locking feature.

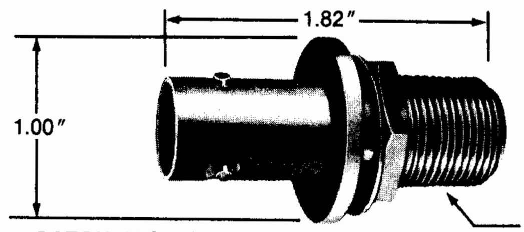
Normal jack spacing is 3 inches center to center. When patching adjacent jacks, the minimum bend radius of the cable must be considered. Trompeter standard patch cords made with Stancor 1000 will meet this requirement with a minimum length of 14 inches. In using any other cable, the minimum length must be 18 inches.



PATCH PLUG
PL93-N * (without locking sleeve).

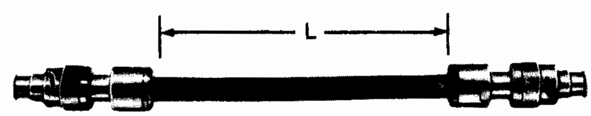


PATCH PLUG
PL94-N * (with locking sleeve).

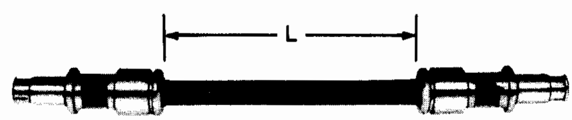


MTG. HOLE
CC1.312

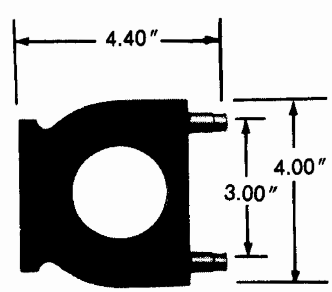
PATCH JACK (N) *
J94



PATCH CORD
PCHY-L-50 * (with PL94).



PATCH CORD
PCH-L-50 * (with PL93).



LOOPING PLUG
LPH50
Color Green Handle only.

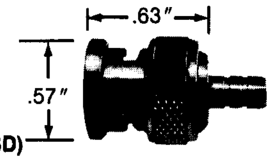
* Substitute cable group number for N - Page 30. Substitute length in inches for L. Mounting Hole Table - Page 40. ** Mounting Hole DD1.310 for Cable Group -6, -6A, -6B, -6E.

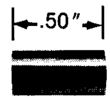
Full Die Crimp

BNC and TNC Series Miniature Coax

INTRODUCTION

Trompeter has designed a series of full die crimp plugs and jacks both BNC and TNC that are equivalent to MIL-C-39012B category D. A complete table for cable and tool data is provided. These connectors also come with a (patented) heat treated beryllium copper outer conductor spring for positive electrical contact for improved EMI/RFI suppression.

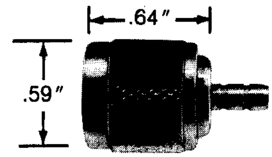


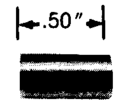


PLUG BNC
PL220-N (MIL-C-39012/16D)

Cable Jack CJ220-N * available.
For other tool crimped connectors, see Page 23.

* Substitute cable group number for N — see table below.





PLUG TNC
PL240-N (MIL-C-39012/26D)

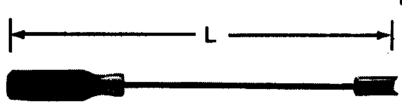
Cable Jack CJ240-N * available.

* Substitute cable group number for N — see table below.

DIE CRIMP. CABLE GROUP NO.	EQUIV. MIL-C-39012 DASH NO.	CABLES ACCOMMODATED (REF.)	TROMPETER CRIMPING TOOL NO. CT2 W/DIE NO.	TROMPETER STRIPPING TOOL NO. ST1 W/CASSETTE NO.	CONTACT I.D.	FILLER SLEEVE I.D.	FERRULE I.D.	FERRULE O.D.	CRIMP FERRULE I.D.	CENTER CONTACT **		CRIMP FERRULE **	
										TOOL SELECTOR SETTING	CRIMP TENSILE MIN.	TOOL DIE DASH NO.	DIE CLOSURE
001	—	RG178, RG196			.0170	.0380	.1060	.1310	.1750	3	8 LBS.	.05	B
003	—	RG174, RG188, RG316			.0250	.0670	.1060	.1310	.1750	4	10 LBS.	.05	B
004	—	RG179, RG187			.0170	.0670	.1060	.1310	.1750	3	8 LBS.	.05	B
007	—	VIDGAR RG188, 275-3991 M'DOT			.0170	.0760	.1060	.1310	.1750	3	8 LBS.	.05	B
008	.0502	RG195, RG180, 295-3801 M'DOT 293-3968 M'DOT 421-098 ESSEX 421-111 ESSEX	CD2—1	STC—F	.0170	—	.1080	.1310	.1750	3	8 LBS.	.05	B
009	—	8218 BELDEN 21-597 ESSEX 9872 SURPR'N'T			.0250	—	.1060	.1310	.1750	4	10 LBS.	.05	B
010	.0501	RG122			.0330	—	.1060	.1310	.1750	6	10 LBS.	.05	B
011	.0504	RG303, RG141, RG58, 5021D1331 RAYCHEM 21-537 ESSEX	CD2—2		.0430	—	.1230	.1710	.2060	5	20 LBS.	.05	A
012	.0503	RG142, RG400, RG55, RG223			.0430	—	.1230	.1710	.2200	5	20 LBS.	.05	A
013	—	RG59, RG62, 8279 8221, 8241 BELDEN, 21-541 ESSEX, CEO5900 HITEMP	CD2—3		.0330	—	.1540	.2160	.2610	6	10 LBS.	.07	A
014	—	8212, 9243 BELDEN			.0430	—	.1540	.2060	.2610	5	20 LBS.	.07	A
016	—	8281, 9231, 9141, BELDEN, 724 WECO	USE THOMAS & BETTS		.0430	—	.2100	.2580	.3480	5	20 LBS.	55	A
017	—	RG6			.0330	—	.1940	.2580	.3480	6	10 LBS.	55	A
018	—	9268 BELDEN	CD2—3	STC—F	.0330	—	.1540	.2200	.2750	6	10 LBS.	.07	A

**Mil Spec Crimp Tools (Not Shown):
Center Contact: M22520/1-01 W/M22520/1-12 Turret
Crimp Ferrule: M22520/5-01 W/M22520/5 Die

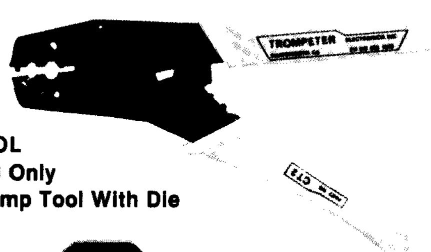
Tool Accessories



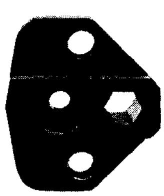
REMOVAL TOOL

DESIGNATION	USE	LENGTH
RT1L	BNC-TNC	12″
RT1S	BNC-TNC	6″
RT1SS	BNC-TNC	3″
RT3L	N	12″
RT3S	N	6″
RT4L	TPS	12″
RT4S	TPS	6″
RT5L	C	12″
RT5S	C	6″

ASSEMBLY TOOL
AT1 (for BNC, TNC, N, Twinax, Triax)
AT2 (for TPS, SMA, PL1C)
Wrenches are thin to accommodate connector wrench flats.



DIE CRIMP TOOL
CT2 Crimp Tool Only
CT2/Die No. Crimp Tool With Die

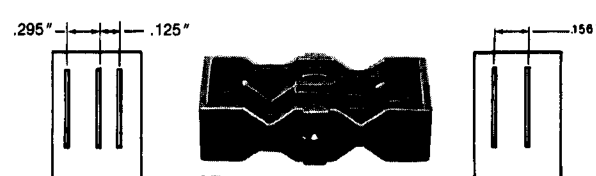


Closure A

Closure B

CRIMP DIE
CD2-No. *
* See Table.

STRIPPING TOOL
ST1 Stripping Tool Only
ST1/Cassette No. Stripping Tool With Cassette



STRIPPING CASSETTE

STC-F (Full Crimp)

STC-W (Wrench Crimp)

TEI DIE NO.◄	DIE CRIMP CABLE GROUP	DIAMETER JACKET	DIAMETER DIEL	DIAMETER COND	DESIGNATION	IMPD IN OHMS	MANUFACTURER
CD2-1	001	.075 .080	.034 .034	.012 .012	RG178 RG196	50 50	
CD2-5	002	.110	.046	.015	8120-1107	50	HEWLETT-PACKARD
CD2-1	003	.100 .110 .102	.060 .060 .060	.019 .021 .020	RG174 RG188 RG316	50 50 50	
CD2-1	004	.100 .110	.063 .060	.012 .012	RG179 RG187	75 75	
CD2-5	005	.120	.060	.011	RG187DS*	75	NORTHERN ELEC
CD2-1	006	.128	.060	.020	GC875GP1 (RG188DS*)	50	GRUMMAN
CD2-1	007	.110 .125	.073 .068	.015 .012	275-3991 RG187DS*	75 75	MICRODOT VIDAR
CD2-1	008	.155 .145 .145 .155 .155 .155	.102 .102 .102 .102 .103 .103	.012 .012 .012 .012 .010 .011	RG195 RG180 421-098 421-111 295-3801 293-3968	95 95 95 95 95 93	 ESSEX ESSEX MICRODOT MICRODOT
CD2-1	009	.150 .150 .145	.103 .100 .098	.017 .017 .017	8218 21-597 9872	75 75 75	BELDEN ESSEX SURPRENANT
CD2-1	010	.160	.096	.030	RG122	50	
CD2-2	011	.195 .190 .170 .195 .164	.116 .116 .116 .116 .116	.0355 .039 .039 .036 .036	RG58 RG141 RG303 21-537 5021D1331	50 50 50 50 50	 ESSEX RAYCHEM
CD2-2	012	.216 .195 .216 .195	.116 .116 .116 .116	.035 .039 .035 .0385	RG55 RG142 RG223 RG400	50 50 50 50	
CD2-3	013	.242 .242 .242 .220 .242 .242	.146 .146 .146 .146 .146 .146	.023 .0253 .0254 .025 .0254 .025	RG59 ** RG62 ** 8221 ** 8279 8241 ** 21-541	75 93 80 75 73 73	 BELDEN BELDEN BELDEN ESSEX
CD2-3	014	.242 .242	.146 .146	.032 .032	8212 ** 9243 **	75 75	BELDEN BELDEN
CD2-6	015	.250 .255 .250 .260 .250	.146 .146 .146 .146 .146	.0253 .025 .023 .023 .0253	RG71 ** 730A ** 731 ** 8120-1289 MI-2040 **	93 75 75 75 75	 WECO WECO HEWLETT-PACKARD TIMES
USE THOMAS & BETTS WT440 TOOL W/4417 DIE	016	.304 .304 .304 .304 .312 .304	.201 .200 .201 .198 .199 .200	.033 .032 .032 .031 .031 .031	724 ** 8281 ** 728 ** 9231 ** T378 ** 9141 **	75 75 75 75 75 75	WECO BELDEN WECO BELDEN BRAND-REX BELDEN
CD2-4	017	.332	.185	.029	RG6 **	75	
CD2-3	018	.260	.146	.0254	9268 **	93	BELDEN

* DS = Double Shield ** Solid Center Conductor ◄ Used with Crimp Tool CT2, Page 26.

Tool Crimp Coax Connector Table

INTRODUCTION

Locate cable group number in top of columns. An x in any row-column intersection indicates a connector type is available for this cable group.

Cable Group	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018
BJ226/BJ246	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BJ229/BJ249	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CJ220	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CJ240	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
J3C/J3WC			X	X					X	X	X	X	X			X		
J13C/J13WC			X	X					X	X	X	X	X			X		
J14C/J14WC			X	X					X	X	X	X	X			X		
PL1C/PL1WC			X	X				X	X	X	X	X	X	X	X	X	X	
PL11C			X	X				X	X	X	X	X	X	X				
PL220/PL240	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PL223	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

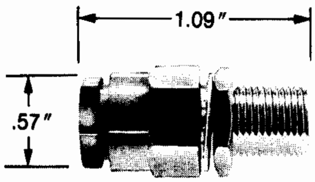
Wrench crimp and tool crimp cable groups are numbered separately due to the difference in fit requirements for the pin's wire cavity.

F Series, Miniature Coax

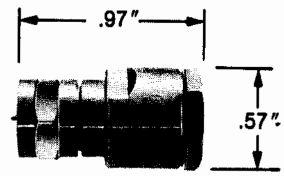
INTRODUCTION

Traditionally the F connector has been a low cost plier-crimp device utilizing the cable center conductor for a center contact. For those applications which require a more reliable termination, Trompeter has developed a line of F connectors incorporating the quality features previously described for the BNC line. These connectors are manufactured in the simple 3 piece *wrench* crimp configuration with gold plated **captive center contacts,** Teflon dielectrics and beryllium Copper female contacts. Cable connectors, shown here, will also accommodate the recently developed non-flammable FEP plenum coax cables manufactured by Hitemp, Phalo, Belden, ITT Suprenant, Times, etc.

Mounting Hole
DD2.125

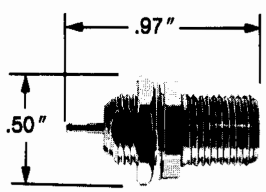


BULKHEAD CABLE JACK
BJ139-N *

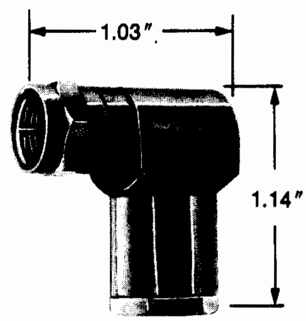


MALE CABLE PLUG
PL130-N *

Mounting Hole
DD2.125

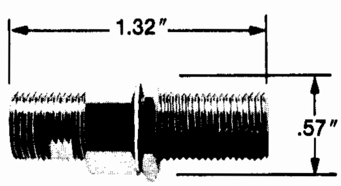


BULKHEAD JACK (Solder)
BJ130

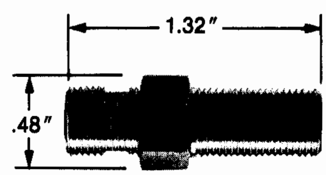


MALE PLUG, RIGHT ANGLE
PL131-N *

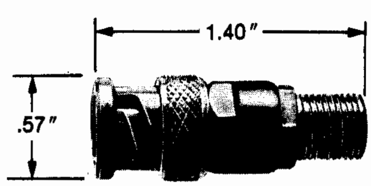
Mounting Hole
DD2.125



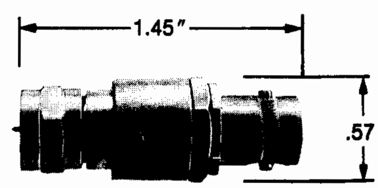
F BULKHEAD FEED THRU
BJ138



F INLINE ADAPTER
AD131



F JACK TO BNC PLUG ADAPTER
AD133

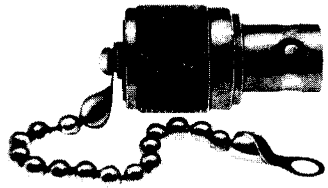


F PLUG TO BNC JACK ADAPTER
AD130

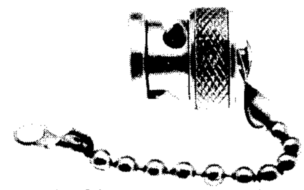
* Substitute cable group number for N - Page 30. Mounting Hole Table - Page 40.

Custom Components

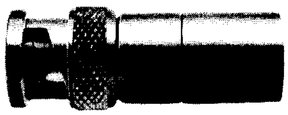
RFI OR DUMMY PLUG
FOR STANDARD PATCHING
RFI 20-1 (See Table)

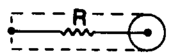


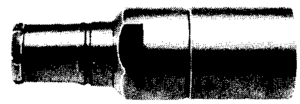
RFI OR DUMMY JACK
RFI 21 (See Table)



RFI OR DUMMY PLUG
RFI 25 (See Table)



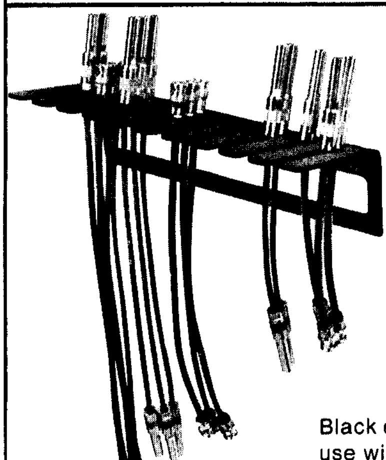




BNC TERMINATION
TNA1 (See Table)
Max 10 MHz

BNC/TNC TERMINATION (Push On)
TNAP1 (See Table)
Max 10 MHz

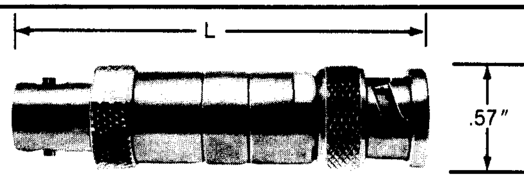
DESCRIPTION	RFI 20	RFI 21	RFI 25	TNA1	TNAP1
NO CHAIN	RFI 20-1	RFI 21-1	RFI 25-1	TNA1-1-R *	TNAP1-1-R *
2.5 in. BRASS CHAIN	RFI 20-2	RFI 21-2	RFI 25-2	TNA1-2-R *	TNAP1-2-R *
2.5 in. NYLON CHAIN	RFI 20-3	RFI 21-3	RFI 25-3	TNA1-3-R *	TNAP1-3-R *
3.0 in. BRASS CHAIN	RFI 20-4	RFI 21-4	RFI 25-4	TNA1-4-R *	TNAP1-4-R *
3.0 in. NYLON CHAIN	RFI 20-5	RFI 21-5	RFI 25-5	TNA1-5-R *	TNAP1-5-R *
6.0 in. BRASS CHAIN	RFI 20-6	RFI 21-6	RFI 25-6	TNA1-6-R *	TNAP1-6-R *
6.0 in. NYLON CHAIN	RFI 20-7	RFI 21-7	RFI 25-7	TNA1-7-R *	TNAP1-7-R *



PATCH CORD HOLDER
CH50

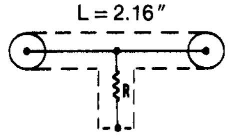
10.75″ wide x 4.50″ deep

Black epoxy over steel wall mount for use with ¼″ dia. and smaller cables. Holds up to 50 cable assemblies.



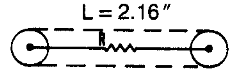
BNC PADS
PART NO. (See Schematic)
Max 10 MHz

L = 2.16″



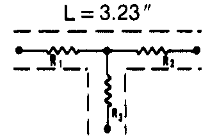
TNA2-R *

L = 2.16″

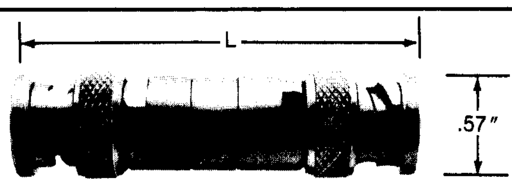


TNA3-R *

L = 3.23″



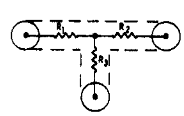
TNA4-R's *

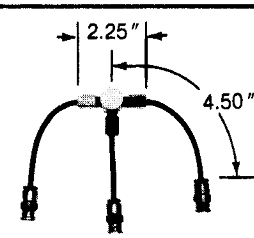


BNC ATTENUATOR (Video Frequency, Max 10 MHz)

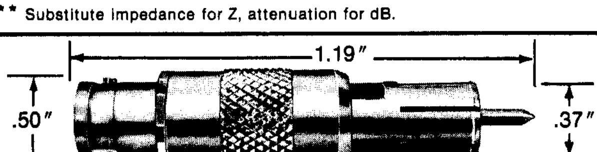
TNA-Z-dB-BNC **	Male & Female	L = 3.24″
TNA-Z-dB-BNC/M **	Male Only (Shown)	L = 3.17″
TNA-Z-dB-BNC/F **	Female Only	L = 3.30″

** Substitute impedance for Z, attenuation for dB.

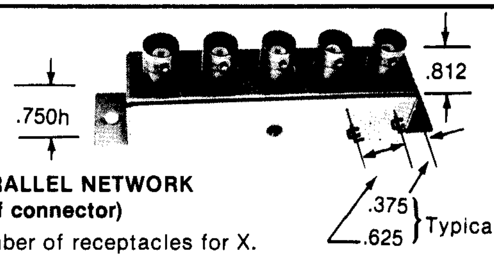




POWER DIVIDER (Min. Loss Pad)
PD3-Z
Z = 50, 75, 93 ohm impedance. Max. 10 MHz.



PROBE PLUG FOR STANDARD PATCHING
MP4 .070″ pin (RCA) **MP4W** .090″ pin (WE)
Used to monitor J14 (Page 13) without interrupting normal thru signal.



MULTIPLE PARALLEL NETWORK
MPN-X (Type of connector)
Substitute number of receptacles for X.

* Substitute resistance value for R (½ W 5% standard, ¼ W & 1 W optional.)

Coax Cable Table

TABLE 1: COAX CABLE SPECIFICATIONS, WRENCH CRIMP

WRENCH CRIMP CABLE GROUP (N)	DIAMETER JACKET	DIAMETER DIELECTRIC	DIAMETER CONDUCTOR	DESIGNATION	IMPD IN OHMS	MANUFACTURER
1	.195	.116	.0355	RG58	50	
	.190	.116	.036	YM15338	52	BELDEN
	.195	.116	.039	RG142	50	
	.190	.116	.039	RG141	50	
	.195	.116	.0385	RG400	50	
	.195	.116	.025	621-715	75	ESSEX
	.195	.116	.036	21-537	50	ESSEX
	.195	.116	.036	5021D1331	50	RAYCHEM
	.195	.116	.032	8240	53	BELDEN
	.195	.116	.039	421-176	50	ESSEX
	.195	.119	.036	[1] SF-142B	50	TIMES
	(GREEN) .195	.116	.0375	TCC-50-2 (58 TYPE)	50	TROMPETER
	.195	.116	.036	8259	50	BELDEN
2	.242	.146	.023	RG59	75	
	.242	.146	.0253	RG62	93	
	.250	.146	.0253	RG71	93	
	.242	.146	.032	RSS-6-104	62	ROCKBESTOS
	.242	.146	.032	8212	75	BELDEN
	.242	.146	.032	9243 (RG59DS)	75	BELDEN
	.242	.146	.031	9259	75	BELDEN
	.242	.146	.0254	9269	93	BELDEN
	.242	.146	.0254	8241	73	BELDEN
	.242	.146	.0254	8221	80	BELDEN
	.242	.150	.032	[2] 9592	75	BELDEN
	.246	.146	.023	731	75	WECO
	.242	.146	.025	21-541	73	ESSEX
	.242	.140	.0254	9242	80	BELDEN
	.242	.146	.025	21-025	73	ESSEX
	.242	.145	.023	21-795	75	ESSEX
	(VIOLET) .242	.146	.031	TCC-75-2 (59 TYPE)	75	TROMPETER
	.242	.146	.032	9301	75	BELDEN
	.244	.146	.032	9112	75	BELDEN
2A	.220	.146	.025	8279	75	BELDEN
	.220	.138	.020	AA2511	75	TIMES
	.225	.146	.032	9234	75	BELDEN
	.242	.146	.032	[2] 9589	75	BELDEN
	.220	.146	.025	9209	75	BELDEN
	.210	.145	.025	[1] CEO5900 (PLENUM)	75	HITEMP
2B	.255	.146	.025	730A	75	WECO
	.255	.146	.025	8120-1289	75	HEWLETT-PACKARD
	.260	.146	.023	GO4233d	75	SUHNER
	.260	.146	.0254	9268	93	BELDEN
	.260	.150	.025	M4216	93	MAHATTAN
3	.216	.116	.035	RG55A	50	
	.216	.116	.035	RG223	50	
	.212	.116	.017	GO3233d	75	SUHNER
3A	.206	.116	.032	RG55/RG55B	53	
4	.160	.096	.030	RG122	50	
	.155	.102	.012	RG195	95	
	.150	.103	.017	8218	75	BELDEN
	.150	.100	.017	21-597	75	ESSEX
	.155	.102	.012	421-111	95	ESSEX
	.155	.103	.011	293-3968	93	MICRODOT
	.155	.103	.010	295-3801	95	MICRODOT
	.155	.103	.010	8120-0049		HEWLETT-PACKARD
	.150	.100	.017	9872	75	SURPRENANT
	.155	.103	.010	G243630-1		BELL LABS
	.137	.098	.015	9528A1317	95	RAYCHEM
	.137	.098	.015	9528A1417	95	RAYCHEM
	.137	.098	.015	9528A1517	95	RAYCHEM
	.155	.103	.010	G243630-2		BELL LABS
	.160	.096	.030	9252	50	BELDEN
5	.100	.060	.019	8216 (RG174)	50	BELDEN
	.100	.060	.019	RG174	50	
	.100	.063	.012	RG179	75	
	.110	.060	.012	RG187	75	
	.110	.060	.021	RG188	50	
	.102	.060	.020	RG316	50	
	.125	.062	.012	RG187-DBL. SHLD.	75	VIDAR
	.120	.060	.011	RG187-DBL. SHLD.	75	NORTHERN ELEC
	.128	.060	.020	GC875GP1	50	GRUMMAN
	.110	.054	.019	250-4180	50	MICRODOT
	.110	.054	.020	250-3967	50	MICRODOT
	.090	.055	.010	A-779	75	BRAND-REX
	.128	.060	.020	11-0007	50	HARBOUR
5A	.061	.031	.012	5030A1114	50	RAYCHEM
	.061	.031	.012	5030A1214	50	RAYCHEM
	.063	.031	.012	875PDI	50	GRUMMAN
	.075	.034	.012	RG178	50	
	.080	.034	.012	RG196	50	
	.075	.034	.012	250-3834	50	MICRODOT
	.075	.034	.012	215-900-000	100	AMDAHL
	.063	.031	.012	5030A1314	50	RAYCHEM
	.063	.031	.012	5030A1318	50	RAYCHEM
	.066	.031	.012	5030A1411	50	RAYCHEM
	.066	.031	.012	5030A1511	50	RAYCHEM
	.085	.034	.012	250-4063	50	MICRODOT
	.085	.034	.012	SP50-738CWSSTJ	50	HITEMP WIRES CO.
	.085	.034	.012	19-805709-1	50	GTE SYLVANIA
5B	.110	.046	.015	8120-1107	50	HEWLETT-PACKARD
	.110	.046	.015	8120-9026	50	HEWLETT-PACKARD
	.110	.046	.015	8120-0789	50	HEWLETT-PACKARD
6	.304	.201	.033	724	75	WECO
	.304	.201	.033	728	75	WECO
	.304	.200	.032	8281	75	BELDEN
	.304	.198	.032	9231	75	BELDEN
	.312	.198	.030	T378	75	BRAND-REX
	.304	.201	.033	9141 (724)	75	BELDEN
6A	.405	.285	.085	RG8	50	
	.405	.285	.047	RG11	75	
	.405	.285	.025	RG63	125	
	.405	.285	.007	RG114	185	
	.405	.285	.049	RG149	75	
	.405	.285	.085	RG213	50	
	.405	.285	.085	1000	50	ESSEX STANCOR
	.405	.285	.085	21-004	50	ESSEX STANCOR
	.405	.285	.064	[4] 9292	75	BELDEN
	.405	.285	.064	[4] 8213	75	BELDEN
	.405	.285	.064	[4] 621-100	75	ESSEX
6B	.390	.285	.094	RG393	50	
	.390	.285	.094	[5] RG87A	50	
	.390	.285	.094	[5] RG225	50	
	.420	.280	.085	RG9	51	
	.420	.280	.048	RG13	74	
	.425	.280	.087	RG214	50	
	.425	.280	.048	RG216	75	
	.420	.280	.087	21-780	50	ESSEX

(Continued on Page 31)

[1] Jacket Slits Required; [2] Flooded Burial Type; [3] Semirigid; [4] 75 Ohm N Connector Available On Special Order Only; [5] W/O Jacket

TABLE 1: COAX CABLE SPECIFICATIONS, WRENCH CRIMP (Cont.)

CABLE GROUP (N)	DIAMETER JACKET	DIAMETER DIELECTRIC	DIAMETER CONDUCTOR	DESIGNATION	IMPD IN OHMS	MANUFACTURER
6E	.328 .332 .332	.181 .185 .185	.050 .029 .057	RG5B RG6A RG212	50 75 50	
21	.170 .155	.116 .122	.040 .050	RG303 CXN1363A	50 50	 GORE
22	.145 .145	.102 .102	.012 .012	RG180B 421-098	95 95	 ESSEX
31	.128 .120	.060 .060	.021 .011	GC875GPI RG187-DBL. SHLD.	50 75	GRUMMAN NORTHERN ELEC.
34	.242 .242	.180 .180	.040 .040	8228 AA3096	75	BELDEN TIMES
36	.110 .110 .108 .120 .101	.073 .073 .074 .073 .071	.015 .015 .013 .040 .031	275-3991 616-569 9530H1118 1000NS1V CXN1362	75 75 95 50 50	MICRODOT AMPEX RAYCHEM SEQUOIA GORE
37	.160 .160 .160	.098 .098 .098	.020 .020 .017	003-R003 810 4236	75 75	FARINON RAYCHEM SURPRENANT
41	.270 .275 .275 .275 .280 .270	.180 .180 .180 .180 .185 .180	.036 .040 .040 .040 .059 .040	9248 9283 9284 9386 RG304 621-243/621-284	75 75 75 75 50 75	BELDEN BELDEN BELDEN BELDEN ESSEX
44	.080 .075	.046 .047	.012 .019	B749 CO6C032	75 75	BRAND-REX GORE
86	.086	.066	.0201	[3] RG405	50	
141	.141	.118	.036	[3] RG402	50	

Wrench Crimp Connector/Cable Reference Table

TABLE 2: WRENCH CRIMP CONNECTOR - COAX CABLE

INTRODUCTION

Locate group number in top of columns. An X in any row-column intersection indicates a connector type available for this cable group. Substitute cable group number for N in appropriate part number. Example: Coax male connector for RG59 would be PL20-2. No X indicates a standard connector is not available, or available on special order only.

N = Cable Group	1	2	2A	2B	3	3A	4	5	5A	5B	6	6A	6B	6E	21	22	31	34	36	37	41	44	.086	.141
J3E-N	x	x	x	x	x		x	x			x			x		x							x	x
J3WE-N	x	x	x	x	x		x	x			x			x		x							x	x
J12-N	x	x		x	x		x	x			x												x	x
J15MW-N, J16MW-N	x	x	x	x	x	x	x	x	x	x					x	x		x						
J15-N, J15W-N	x	x	x	x	x	x	x	x	x	x	x			x	x	x		x	x	x				
BJ26-N	x	x	x	x	x	x	x	x	x	x					x	x	x	x	x	x	x	x	x	x
BJ29-N	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x
BJ46-N	x	x	x	x	x	x	x	x							x	x	x	x	x		x	x	x	x
BJ49-N	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x
BJ59-N, BJ359-N	x	x		x	x		x	x	x							x	x							
BJ95-N	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BJ96-N	x	x	x	x	x	x	x	x	x	x					x	x	x	x	x	x	x	x	x	x
BJ120C-N							x																	
BJ120D-C																							x	x
BJ139-N	x	x	x	x	x	x	x	x	x	x					x	x	x	x	x	x	x		x	x
CJ20-N	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x
CJ40-N	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x
CJ50-N, CJ350-N	x	x		x	x		x	x	x							x	x							
PL3							x																	
PL20-N	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x
PL40-N	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x
PL50-N, PL350-N	x	x		x	x		x	x	x							x	x							
PL53-N	x	x		x	x		x	x	x							x	x							
PL93-N	x	x	x	x	x	x						x	x		x			x						
PL94-N	x	x	x	x	x	x						x	x		x			x						
PL95-N	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PL122-N	x	x	x	x	x	x	x	x	x	x					x	x		x	x	x	x	x	x	x
PL123-N	x	x	x	x	x	x	x	x	x	x					x	x		x	x	x	x	x	x	x
PL130-N	x	x		x	x		x	x			x			x							x			
PL131-N	x	x		x	x		x	x			x			x							x			

[3] Semirigid;

TWINAX-TRIAX-QUADRAX

Twinax-Triax-Quadrax Cables

INTRODUCTION

Twinax and triax concentric patching was designed to provide easy and quick connect and disconnect capability when using twinax and triax cables. These components are specifically for use where "Noise Free Guarded Systems" are required by MIL-C-49142. (See pages 2 thru 8).

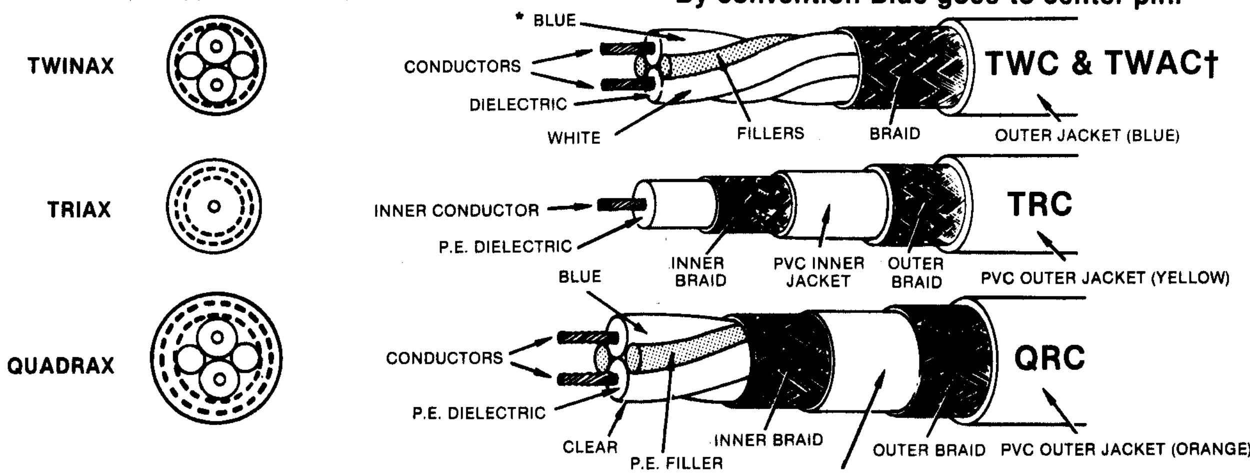
The Trompeter twinax and triax components illustrated do not require mechanical alignment for mating and are available for use with cables of various sizes manufactured by Trompeter and other companies. All twinax/triax patch jacks will fit the patch panels shown on pages 10 and 11.

Twinax cable is a two-conductor twisted balanced line having a specific impedance, with a shielding braid around both conductors. The balanced twisted signal carrying wires provide cancellation of any random induced noise, voltage pickup or magnetic noise fields that pass through the copper braid. Twinax cable is used extensively in environmental laboratories, analog and digital signal transmission, T.V. video transmission, telephone applications and wherever signal frequencies below 10 MHz are distributed.

Coax cables in low-level signal applications are subject to pickup of noise through ground loop, magnetic fields and capacitive effects. Reduction of noise pickup and improvement of the signal-to-noise ratio can be attained by using "Triax" cable. Briefly, triax cable is coax cable with an additional outer copper braid insulated from signal carrying conductors. This additional braid or shield is grounded and bypasses both ground loop and capacitive field noise currents. The result is a better signal-to-noise ratio. Triax cable is used where very low-level and high-level R.F. signals are transmitted simultaneously through adjacent cables that are bunched together or in high energy fields from transmitters, radar and other noise generating devices.

Quadrax cables are similar to twinax cables with the exception that the quadrax contains one additional shield component. The balanced twisted signal pair with the two (2) separate insulated braided shields is used for the limitation of noise pickup or whenever the ultimate EMI suppression is required.

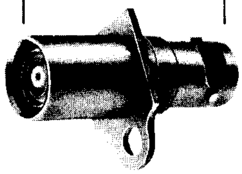
***By convention Blue goes to center pin.**



CONSTRUCTION	TWINAX					TRIAX				QUAD
DESIGNATION	TWC-78-1	TWC-78-2	†TWAC-78-1F1	TWC-124-1A	TWC-124-2	TRC-50-1	TRC-50-2	TRC-75-1	TRC-75-2	QRC-78-2
IMPEDANCE	78 ± 3	78 ± 3	78 ± 5	124 ± 5	124 ± 4	50 ± 2	50 ± 2	75 ± 5	75 ± 2	78 ± 3
NOMINAL O.D.	.150	.242	.145	.150	.245	.156	.245	.189	.245	.285
OUTER BRAID O.D.	.108	.195	.118	.105	.195	.121	.210	.150	.205	.240
CORE O.D.	.088	.154	.100	.085	.162					.156
DIELECTRIC O.D.	.044	.077	.050	.043	.080	.047	.116	.073	.116	.079
INNER BRAID O.D.						.101	.175	.130	.175	.230
INNER JACKET O.D.						.069	.146	.093	.146	.170
CONDUCTOR O.D.	.022	.037	.024	.012	.022	.015	.037	.012	.0185	.040
MIN BEND RAD	1.50	1.25	1.50	1.50	1.25	.75	1.25	1.00	1.25	1.25
MAX OPR VDC						2KV	6KV	2KV	6KV	
MAX OPR VAC (RMS)	0.3KV	1KV	1KV	0.3KV	1KV	1KV	2KV	1KV	2KV	2.5KV
CAPACITANCE pf/FT (MAX.)	19.70	19.70	22.00	12.40	12.40	30.80	32.00	20.00	20.50	24.50
COND LOOP RES OHMS/M FT	65.00	19.00	48.00	192.0	60.00					17.90
ATTEN db/100FT:										
1MHz	2.0	.40	1.40	.86	.54		.88		1.50	1.00
3MHz	3.0	.80	2.10	1.40	.92					1.60
4MHz			2.40				1.60		2.60	
5MHz	4.0	1.10	2.80	1.80	1.18		1.70		2.90	2.00
7MHz	4.5	1.30	3.50	2.10	1.40		2.00		3.30	2.30
10MHz	5.3	1.60	4.50	2.50	1.65	5.60	2.30	5.90	3.80	2.80
20MHz		3.10			2.30					3.10
30MHz		4.00								4.00
40MHz		4.60								4.60
50MHz		5.20			3.60	11.00	4.50	11.60	7.50	5.20
100MHz						14.80	6.00	14.70	9.50	
200MHz						19.20	7.80	20.10	13.00	
500MHz						28.00	11.40		19.00	
700MHz						32.00	13.00	34.00	22.10	
1GHz						37.00	15.00	39.00	25.30	
SHIELD COVERAGE	93%	93%	90%	93%	93%	93%	93%	93%	93%	93%
TWIST PER FT.	8.0	4.0	9.6	8.0	4.0					4.1

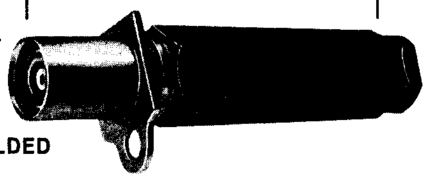
† TWAC-78-1F1 200°C Hi Temp cable for MIL-STD-1553B Data Bus applications.

Standard Size Series Jacks, Plugs, Assemblies



PATCH JACK
TRB REAR ENTRY
J72
See pages 10 and 11 for panels.

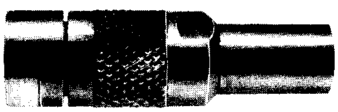
PATCH CORD **
PTW-L-Z * (Twinax)
PTR-L-Z * (Triax)



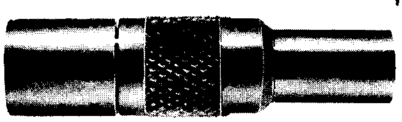
PATCH JACK SHIELDED
J72S-N *
J72D
J72D is shown in phantom. Hood provides for RFI shielding and the nylon bushing provides for strain relief. See pages 10 and 11 for panels.

CABLE ASSEMBLY **
PTWX-L-Z * (Twinax)
PTRX-L-Z * (Triax)

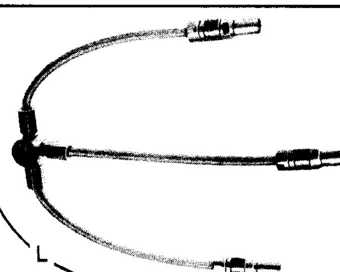
CABLE ASSEMBLY **
PTWY-L-Z * (Twinax)
PTRY-L-Z * (Triax)



PATCH PLUG
PL71-N *

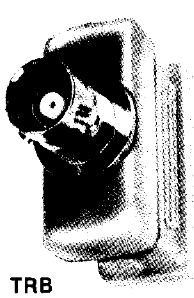


TERMINATED PLUG
TPT-R *

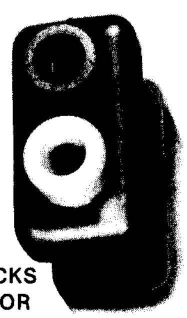


TRIPLE PARALLEL PATCH CORD **
PTWS-L-Z * (Twinax)
PTRS-L-Z * (Triax)

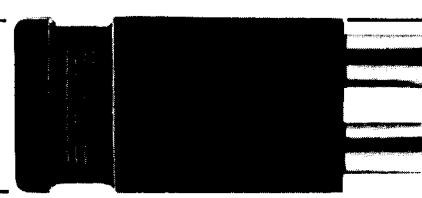
LOOPING PLUGS:



TRB MONITOR



PIN JACKS MONITOR



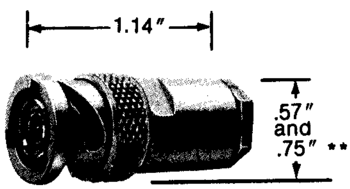
PLAIN HANDLE

	IMPEDANCE (A = .625″, B = 1.20″)				IMPEDANCE (A = 1.00″, B = 1.57″)			
	TRIAX (Yellow Handle)		TWINAX (Blue Handle)		TRIAX (Yellow Handle)		TWINAX (Blue Handle)	
HANDLE	50 Ohms	75 Ohms	78 Ohms	124 Ohms	50 Ohms	75 Ohms	78 Ohms	124 Ohms
Plain	LPTR-50	LPTR-75	LPTW-78	LPTW-124	LPLTR-50	LPLTR-75	LPLTW-78	LPLTW-124
Pin Jack Monitor			LPTW2TP-78	LPTW2TP-124			LPLTW2TP-78	LPLTW2TP-124
TRB Monitor	LPTRA-50	LPTRA-75	LPTWA-78	LPTWA-124	LPLTRA-50	LPLTRA-75	LPLTWA-78	LPLTWA-124

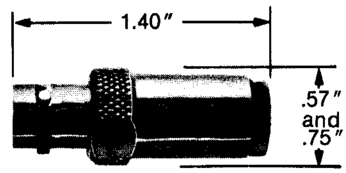
* Substitute cable group number for N - Page 38. Substitute length in inches for L. Substitute impedance for Z. Substitute resistance for R (½ W 5%).
** Standard patch cord lengths are 6″, 12″, 18″, 24″, 36″.

Concentric Twinax-Triax Connectors

TRB & TRT Miniature Series

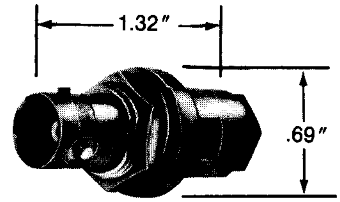


CABLE PLUG
PL75-N *
For 2 lug version order PL74-N *.
For threaded version order PL375-N *.
** .75 for -10 Cable GP and Larger.



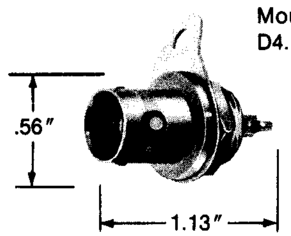
CABLE JACK
CJ70-N *
For threaded version order CJ370-N *.
.75 for -10 Cable GP and Larger.

Mounting Hole
D3.109



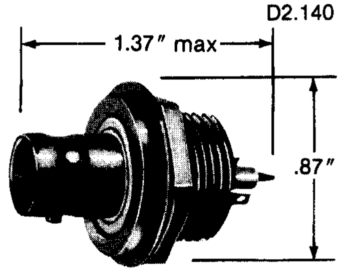
BULKHEAD CABLE JACK
BJ79-N *
For threaded version order BJ379-N*.

Mounting Hole
D4.143



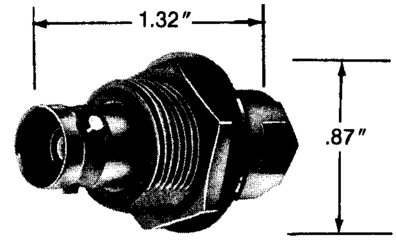
BULKHEAD JACK (Solder)
BJ77 FRONT MOUNT (Shown)
NEW **BJ71 REAR MOUNT**
For threaded versions, order BJ377 or BJ371.

Mounting Hole
D2.140

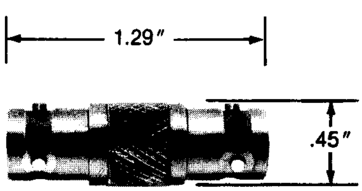


BULKHEAD JACK INSULATED (Solder)
BJ72
For threaded version order BJ372.

Mounting Hole
D2.140

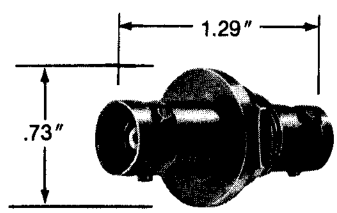


BULKHEAD CABLE JACK INSULATED
BJ74-N *
For threaded version order BJ374-N *.



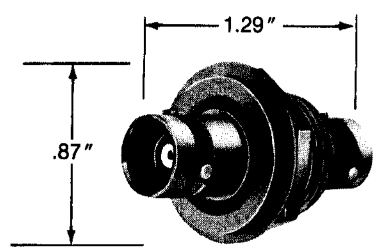
ADAPTER
AD78
For threaded version order AD378.

Mounting Hole
D3.156

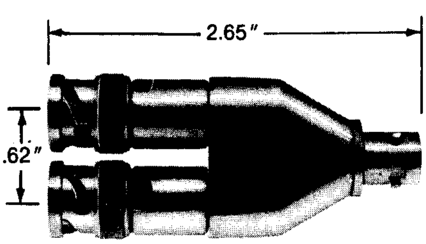


BULKHEAD FEEDTHRU
BJ78
For threaded version order BJ378.

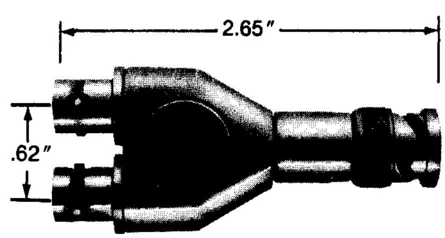
Mounting Hole
D2.250



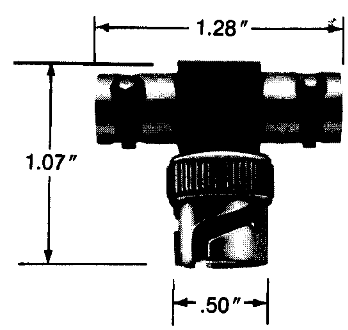
BULKHEAD FEEDTHRU INSULATED
BJ73
For threaded version order BJ373.



FIXED PARALLELING TWO PLUGS, ONE JACK
TN2
(Picture not actual size)



FIXED PARALLELING TWO JACKS, ONE PLUG
TN2A
(Picture not actual size)



TEE (Twinax - Triax)
BN73

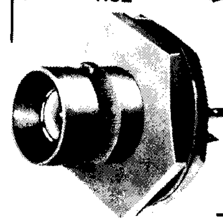
* Substitute cable group for N - Page 38. Mounting Hole Table - Page 40. This series meets the requirements of MIL-C-49142.

TRC Standard Twinax-Triax Series

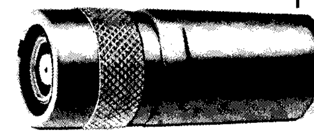
INTRODUCTION

Trompeter designed "C" type concentric connectors are for use with the larger twinax or triax cables from .25″ to .615″ O.D. Each cable jack (CJ) will mate with each plug (PL) regardless of cable group. The "C" type triax/twinax connectors function the same as the 70 series illustrated on page 34 and feature a type of assembly requiring no special tools. This series meets the requirements of MIL-C-49142.

Mounting Hole D1.156



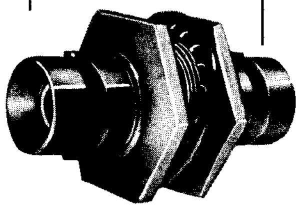
C BULKHEAD JACK (Solder)
BJ80



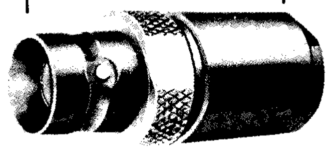
C PLUG
PL80-N *

NEW **TEE (Not Shown)**
BN83
2 Jacks, 1 Plug Similar to BN73, Page 34.

Mounting Hole D1.343

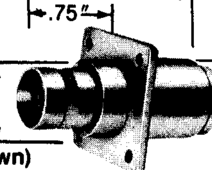


C BULKHEAD FEED THRU
BJ81



C CABLE JACK
CJ80-N *

C BULKHEAD CABLE JACKS



BJ89F-N * (Shown)
BJ89-N * (D-Hole Mtg. Type)

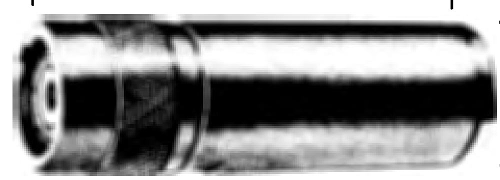
Cable Group	BJ89F A	BJ89F B	BJ89 D Hole Type
7 thru 14	.681″	.844″	DD6.250
14A thru 16	.941″	.920″	D11.250

QRC Standard Concentric Quadrax Series

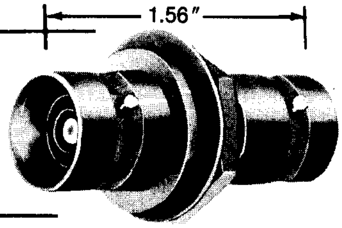
INTRODUCTION

Quadrax connectors were designed for the ultimate in protected and guarded circuit applications. Quadrax cable is a signal cable that has a balanced twisted pair of signal wires with two separate and insulated braids (refer to Noise in Cable Systems, pages 2 through 8). The connectors shown are concentric in design and do not require mechanical alignment for mating. They accept Trompeter Quadrax Cable Type QRC-78-2.

QUADRAX PLUG
PL101-N *

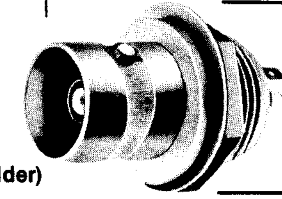


Mounting Hole D2.250



QUADRAX BULKHEAD FEEDTHRU
BJ102

Mounting Hole D2.203



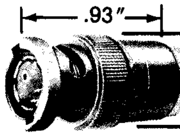
QUADRAX JACK (Solder)
BJ101

TWBNC Series Twinax Two-Pin Polarized

INTRODUCTION

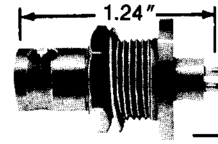
The two-pin series of twinax connectors shown below are not recommended for new systems and should be considered for replacement purposes only. The concentric design is preferred since it does not require mechanical alignment for mating. MIL-STD-1553B permits designer discretion in selection of concentric design in lieu of two pin series. (Not to scale).

CABLE PLUG
PL30-N *
(Old number PL36 and 37)



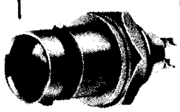
Mounting Hole D3.280

BULKHEAD JACK
BJ31



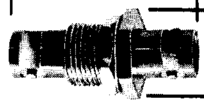
Mounting Hole D5.125

BULKHEAD JACK
BJ30



Mounting Hole C5.250

BULKHEAD FEEDTHRU
BJ38



Mounting Hole D3.218

BULKHEAD JACK
BJ39-N *

* Substitute cable group number for N - Page 38. Mounting Hole Table - Page 40.

TRS Bayonet / TTM Threaded Subminiature Series

INTRODUCTION

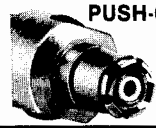
Trompeter Electronics has developed a family of subminiature concentric twinax and triax connectors, jacks, plugs, and receptacles for high density installations which allows for an increase in packing density of up to 246%. They were specifically designed for Digital, Video Pair, Baseband circuits and where Noise Free Guarded circuits are required. These connectors are available in three lug, four lug and threaded versions for improved mechanical stability while providing error free redundant data bus capability.

TRS BAYONET 3 LUG

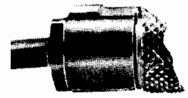
TRS BAYONET 4 LUG

TTM THREADED

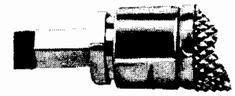
TRS/TTM PUSH-ON



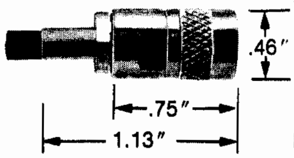
WRENCH CRIMP*



TOOL CRIMP*

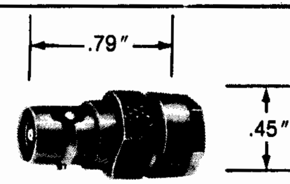


CABLE PLUG



	3 LUG	4 LUG	THREADED	PUSH-ON
WRENCH CRIMP*	PL155-N	PL155FL-N	PL3155-N	PL153-N
TOOL CRIMP*	PL155C-N (Shown)	PL155CFL-N	PL3155C-N	PL153C-N

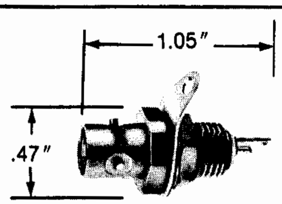
CABLE JACK



	3 LUG	4 LUG	THREADED
WRENCH CRIMP*	CJ150-N (Shown)	CJ150FL-N	CJ3150-N
TOOL CRIMP*	CJ150C-N	CJ150CFL-N	CJ3150C-N

BULKHEAD JACK (Solder Pot)

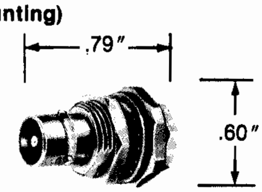
Mounting Hole
[1] D6.187
[2] D9.148
[3] D4.250



		3 LUG	4 LUG	THREADED
FRONT MOUNTING	NON INSULATED [1]	BJ157 • (Shown)	BJ157FL •	BJ3157 •
	INSULATED [2]	BJ152 •	BJ152FL •	BJ3152 •
REAR MOUNTING	NON INSULATED [3]	BJ150 •	BJ150FL •	BJ3150 •

BULKHEAD CABLE JACK (Rear Mounting)

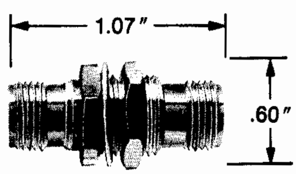
Mounting Hole
[1] D4.156
[2] D9.116



		3 LUG	4 LUG	THREADED
WRENCH CRIMP*	NON INSULATED [1]	BJ159-N (Shown)	BJ159FL-N	BJ3159-N
	INSULATED [2]	BJ154-N •	BJ154FL-N •	BJ3154-N •
TOOL CRIMP*	NON INSULATED [1]	BJ159C-N	BJ159CFL-N	BJ3159C-N
	INSULATED [2]	BJ154C-N •	BJ154CFL-N •	BJ3154C-N •

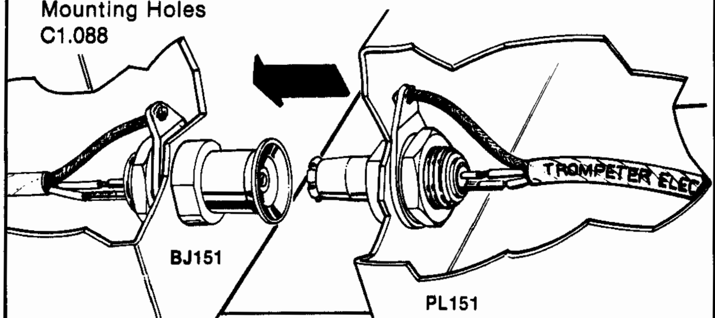
ADAPTER JACK

Mounting Holes
[1] D5.190
[2] D4.190
[3] D9.156



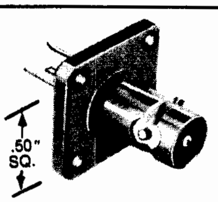
		3 LUG	4 LUG	THREADED
BULKHEAD FEEDTHRU	NON INSULATED	BJ158 [1]	BJ158FL [1]	BJ3158 [2] (Shown)
	INSULATED	BJ153 [3] •	BJ153FL [3] •	BJ3153 [3] •
IN-LINE		AD158 •	—	—

Mounting Holes
C1.088



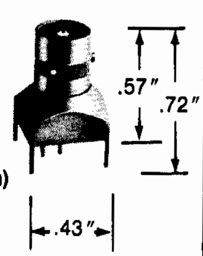
MATING BULKHEAD PUSH-ON PLUG & JACK (Solder Pot)

BULKHEAD JACK (Solder Pot) SQUARE FLANGE



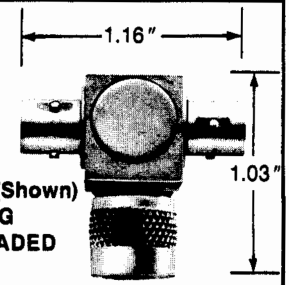
BJ157F — 3 LUG •
BJ157FFL — 4 LUG •
BJ3157F — THREADED •

CIRCUIT BOARD JACK (Gold Plated)



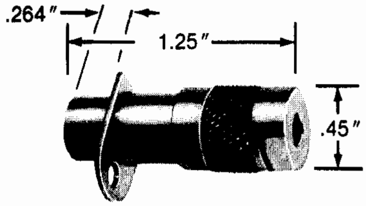
CBJ157 — 3 LUG (Shown)
CBJ157FL — 4 LUG
CBJ3157 — THREADED

TEE

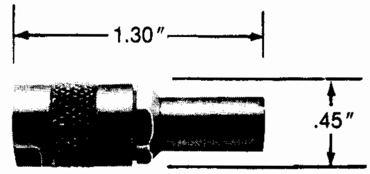


BN153 — 3 LUG (Shown)
BN153FL — 4 LUG
BN3153 — THREADED

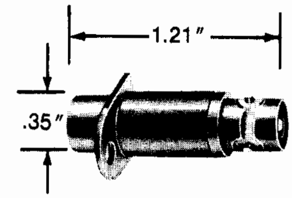
* Substitute appropriate wrench or tool crimp cable group number for N - Page 38. Mounting Hole Table - Page 40. • New Item.



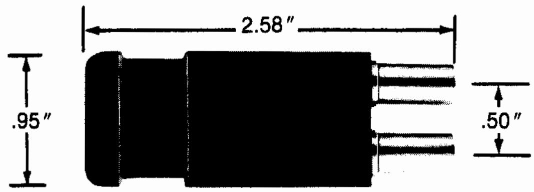
PATCH JACK
J150-N *
See JSIX Series, Page 18, for panels.



PATCH PLUG
PL150-N *

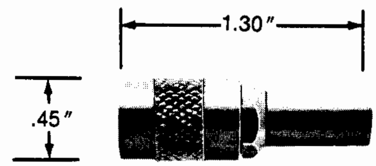


PATCH JACK (With TRS Series rear entry)
J152
See JSIX Series, Page 18, for panels.

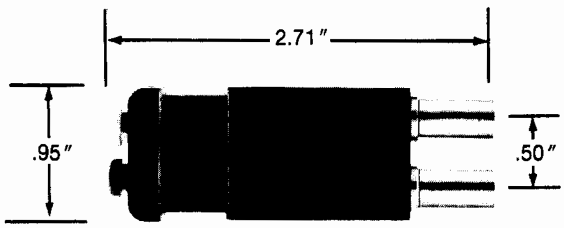


LOOPING PLUG

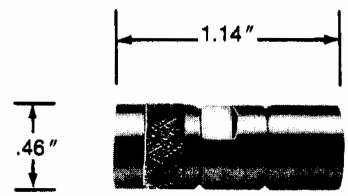
LPTRM-Z *	Triax (50, 75 ohm) Yellow Handle
LPTWM-Z *	Twinax (78, 124, 160 ohm) Blue Handle



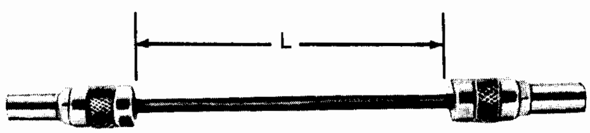
TERMINATED PATCH PLUG
TPTWM-R *



LOOPING PLUG WITH TEST POINTS
LPTWM2TP-78 Blue Handle

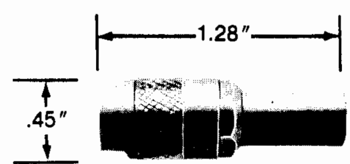


TRS SERIES TERMINATION
TNGM1-1-R *
Available with chain. See Page 29.

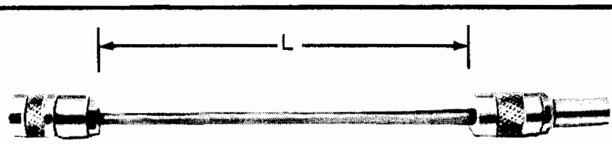


PATCH CORD

PTRM-L-Z *	Triax (50, 75 ohm)
PTWM-L-Z *	Twinax (78, 124, 160 ohm)

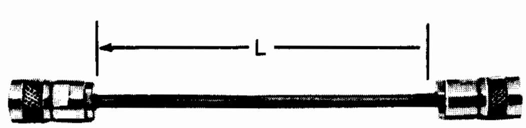


DUMMY PATCH PLUG
RFI 150



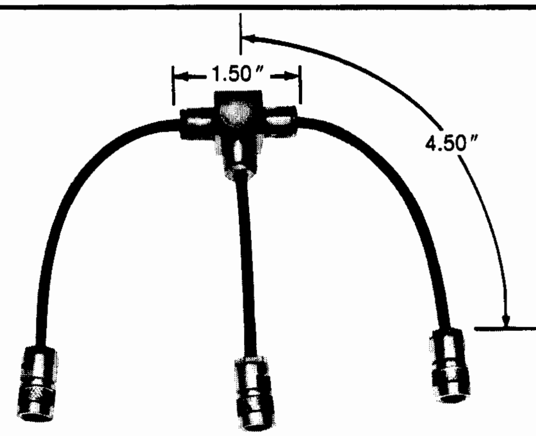
CABLE ASSEMBLY

PTRMX-L-Z *	Triax (50, 75 ohm)
PTWMX-L-Z *	Twinax (78, 124, 160 ohm)



CABLE ASSEMBLY (TRS)

PTRMY-L-Z *	Triax (50, 75 ohm)
PTWMY-L-Z *	Twinax (78, 124, 160 ohm)



RANDOM PARALLELING THREE (TRS Series) JACKS
TNM3-Z * Triax (50, 75 ohm) Twinax 78, 124 ohm)

* Substitute cable group number for N - Page 38. Substitute length in inches for L. Substitute impedance for Z. Substitute resistance for R (¼ W 5%).

Twinax/Triax/Quadrax

Wrench Crimp Cable Table

TABLE 3: TWINAX/TRIAX/QUADRAX SPECIFICATIONS

WRENCH CRIMP CABLE GROUP	NOMINAL DIAMETER JACKET	* DIELECTRIC	CONDUCTOR	DESIGNATION	IMPD IN OHMS	MANUFACTURER
7	.245	.175	.037	TRC-50-2 ■	50	TROMPETER
	.245	.175	.019	TRC-75-2 ■	75	TROMPETER
	.242	.170	.0254	621-106 ■	72	ESSEX
	.245	.175	.038	TRF58 ■	50	TIMES
	.242	.021	.021	A/B-7/70	124	SYSTEMS
	.242	.175	.039	9222 ■	50	BELDEN
	.245	.175	.035	MI7/134-00001 ■	50	
	.240	.170	.0254	2001	75	STANCOR
8	.330	.240	.039	82-5588	100	AMPHENOL
	.330	.240	.039	8227	100	BELDEN
	.330	.240	.039	9207 (VR15662)	100	BELDEN
	.330	.240	.039	7362211	100	IBM
9	.242	.154	.037	TWC-78-2	78	TROMPETER
	.246	.162	.022	TWC-124-2	124	TROMPETER
	.235	.158	.0378	RG108	78	
	.242	.162	.021	FVP224	124	SUPERIOR
	.245	.162	.039	BL782	78	TIMES
	.245	.162	.0318	BL982	98	TIMES
	.245	.162	.0219	BL1242	124	TIMES
	.242	.162	.037	9272	78	BELDEN
10	.405	.285	.046	RG22	95	
	.420	.285	.046	RG22A&B	95	
	.420	.280	.040	754E	124	WECO
	.420	.280	.040	T43	124	GENERAL
	.420	.280	.040	5305-8	124	MOHAWK
	.420	.280	.040	FVP219	124	SUPERIOR
	.420	.284	.053	BL984	98	TIMES
	.420	.284	.038	BL1244	124	TIMES
	.420	.284	.067	BL784	78	TIMES
	.420	.285	.046	[2] RG111	95	
11	.308	.201	.025	760A	124	WECO
12	.460	.340	.051	16PEVL	124	WECO
	.460	.340	.051	V1-AL	124	GENERAL
	.460	.300	.051	VP1	125	SUPERIOR
13	.315	.230	.032	8232 ■	75	BELDEN
	.325	.225	.023	TRF59 ■	75	TIMES
14	.475	.360	.0641	8233 ■	75	BELDEN
	.460	.370	.049	21-529 ■	75	ESSEX
14A	.500	.365	.086	TRF8 ■	50	TIMES
	.500	.365	.049	TRF11 ■	75	TIMES
	.480	.370	.108	9888 ■	50	BELDEN
	.500	.365	.088	M17/135-00001 ■	50	
15	.490	.405	.085	21-583 ■	52	ESSEX
16	.615	.475	.051	21-950	124	ESSEX
17	.286	.230	.040	QRC-78-2 ●	78	TROMPETER
23	.131	.095	.009	10271188 ■	93	RAYTHEON
	.140	.100	.012	275-3930 ■	75	MICRODOT
	.140	.105	.012	250-3884 ■	50	MICRODOT
	.140	.105	.008	9532A5114 ■	95	RAYCHEM
	.130	.095	.008	9532A5314 ■	95	RAYCHEM
	.135	.096	.012	275-3960 ■	75	MICRODOT
	.140	.100	.020	1102	40	COAXCO
	.140	.100	.020	SC22	40	KEITHLEY
	.140	.094	.031	8451		BELDEN
24	.168	.125	.012	202-3934	160	MICRODOT
	.168	.125	.012	4141	160	CALMONT
24A	.149	.116	.012	9530A5117 ■	95	RAYCHEM
	.148	.113	.012	10586 ■	95	RAYCHEM
	.148	.113	.012	10584 ■	95	RAYCHEM
25	.265	.194	.019	T43M	124	GENERAL
	.265	.194	.019	D43M	124	DABURN
	.265	.194	.019	GEEIA	124	GERMANY
25A	.258	.187	.035	5021H5331 ■	50	RAYCHEM
26	.165	.106	.012	275-3962 ■	75	MICRODOT
	.165	.106	.012	T2948 ■	75	BRAND-REX
	.143	.100	.015	7028A5518 ■	50	RAYCHEM
	.165	.106	.012	128C147H01 ■	75	WESTINGHOUSE
27	.110	.070	.011	202-3927	125	MICRODOT
	.105	.072	.012	T19TPSJ2619EN		WOVEN ELEC
	.120	.070	.012	202-3942	125	MICRODOT
	.110	.070	.011	73-1317911-1	125	SYLVANIA
28	.530	.445	.050	V1-DSAL ●	124	GENERAL
29	.150	.088	.022	TWC-78-1	78	TROMPETER
	.150	.085	.012	TWC-124-1A	124	TROMPETER
	.125	.098	.025	[1] MP572-0279-0002	75	ROCKWELL INTL.
	.130	.098	.025	[1] MP572-0328-0002	75	ROCKWELL INTL.
	.125	.098	.025	[1] 11040	75	THERMATICS
	.130	.098	.025	[1] 11079	75	THERMATICS
	.125	.098	.025	[1] 24499/898X2		TENSOLITE
	.120	.090	.031	[1] 2827/2		ALPHA
	.135	.098	.031	[1] 83310		BELDEN
	.132	.090	.025	[1] 83318		BELDEN
	.120	.082	.025	[1] 7826D0130		RAYCHEM
	.120	.082	.025	[1] ABA		LOCKHEED
30	.215	.120	.021	761A		WECO
	.210	.120	.025	8441 (300V)	ELEC	BELDEN
32	.156	.101	.015	TRC-50-1 ■	50	TROMPETER
33	.189	.130	.012	TRC-75-1 ■	75	TROMPETER
35	.185	.106	.0142	TWC-124-1	124	TROMPETER
38	.325	.245	.039	QRC-78-3 ●	78	TROMPETER
	.335	.245	.022	QRC-124-3 ●	124	TROMPETER
42	.285	.195	.036	21-204 (58TRI)	50	ESSEX
	.285	.195	.036	4463 (58TRI)	50	CONSOLIDATED
43	.175	.132	.032	250-4044	50	MICRODOT
	.175	.132	.032	250-4045	50	MICRODOT
	.175	.130	.011	293-3930	100	MICRODOT
45	.145	.102	.032	1100-66F	ELEC	STD WIRE/CABLE
	.137	.102	.032	M27500-22TE2T14	ELEC	
47	.150	.104	.024	TWAC-78-1F1	78	TROMPETER

*Sum of Paired Dielectric Diameters ■ TRIAX ● QUADRAX [1] JACKET SLITS REQUIRED [2] W/O JACKET

TABLE 4: WRENCH CRIMP CONNECTOR - TWINAX/TRIAX/QUADRAX INTRODUCTION

Locate part number in left hand column or cable group number across top, (obtain cable group number from table 3, page 38.) An x in any row-column intersection indicates a connector type available for this cable group. Substitute cable group number for N for appropriate part number. Example: male twinax connector for TWC-124-2 cable would be PL75-9. No x indicates a standard connector is not available or available only on special order.

Cable Group No.	7	8	9	10	11	12	13	14	14A	15	16	17	23	24	24A	25	26	27	28	29	30	32	33	35	38	42	43	45	47
BJ39-N			x													x		x		x				x					x
BJ74-N	x		x										x	x	x	x	x	x		x		x	x	x				x	x
BJ79-N	x		x										x	x	x	x	x	x		x		x	x	x		x	x	x	x
BJ89-N	x	x	x	x	x	x	x	x	x	x	x								x							x			
BJ89F-N	x	x	x	x	x	x	x	x	x	x	x								x							x			
BJ154-N														x	x					x		x	x	x					x
BJ159-N														x	x					x	x	x	x	x					x
CJ30-N			x													x		x		x				x					x
CJ80-N	x	x	x	x	x	x	x	x	x	x	x								x							x			
CJ150-N														x	x					x	x	x	x	x					x
J15-N,J15W-N			x	x		x								x		x		x		x				x					x
J15MW-N			x	x		x								x		x	x	x		x				x					x
J16-N,J16W-N			x	x		x								x		x		x		x				x					x
J16MW-N			x	x		x								x		x	x	x		x				x					x
J72S-N	x		x																	x		x	x	x					x
J150-N														x						x			x	x					x
J150A-N														x						x			x	x					x
PL30-N			x													x		x		x				x					x
PL71-N	x		x																							x			
PL74-N	x	x	x	x	x	x	x	x					x	x	x	x	x	x		x		x	x	x		x	x	x	x
PL75-N	x	x†	x.	x†	x†	x†	x†	x†					x	x	x	x	x	x		x		x	x	x		x	x	x	x
PL80-N	x	x	x	x	x	x	x	x	x	x	x								x							x			
PL101-N												x													x				
PL150-N														x						x			x	x					x
PL153-N														x	x					x	x	x	x	x					x
PL155-N														x	x					x	x	x	x	x					x
PL15-N,PL15W-N			x	x		x								x		x		x		x				x					x

†Large body (.75″ Dia.) version of connector.

Tool Crimp Tables

FULL TOOL CRIMP TWINAXIAL CABLE TABLE

CABLE GROUP	DIAMETER			DESIGNATION	IMPD IN OHMS	MANUFACTURER
	JACKET	DIEL.	COND.			
201	.135 MAX.	.100 MAX.	.024	TWAC-78-1F1	78 ± 5	TROMPETER
202	.155 MAX.	.091 MAX.	.022	TWC-78-1	78 ± 3	TROMPETER
203	.155 MAX.	.088 MAX.	.012	TWC-124-1A	124 ± 5	TROMPETER

Cable Group No.	201	202	203
BJ154C	x	x	x
BJ154CFL	x	x	x
BJ3154C	x	x	x
BJ159C	x	x	x
BJ159CFL	x	x	x
BJ3159C	x	x	x
CJ150C	x	x	x
CJ150CFL	x	x	x
CJ3150C	x	x	x
PL153C	x	x	x
PL155C	x	x	x
PL155CFL	x	x	x
PL3155C	x	x	x

CABLE GROUP NO.	CABLES ACCOMODATED (REF.)	TROMPETER CRIMPING TOOL NO. CT2			BUCHANAN ADJUSTABLE CRIMPING TOOL NO. 613439			
		DIE NO.	INNERSHIELD	OUTER BRAID	TOOL ADJ.	LOCATOR #	SOCKETS	PINS
201	TWAC-78-1F1	CD2-7	CLOSURE A	CLOSURE B	.025 DIA.	0100-0034	SIDE "F"	SIDE "M"
202	TWC-78-1	CD2-7	CLOSURE A	CLOSURE B	.025 DIA.	0100-0034	SIDE "F"	SIDE "M"
203	TWC-124-1A	CD2-7	CLOSURE A	CLOSURE B	.025 DIA.	0100-0034	SIDE "F"	SIDE "M"

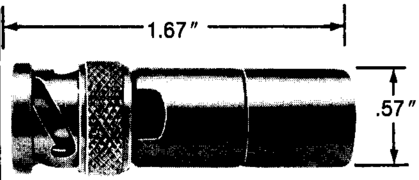
The CD2-7 crimp die is similar to the die pictured on Page 26 and fits the CT2 crimp tool pictured on the same page. The Buchanan adjustable crimp tool, not shown, is additionally required for crimping the center plug pin and jack socket.

Wrench crimp and tool crimp cable groups are numbered separately due to the difference in fit requirements for the pin's wire cavity.

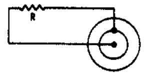
TWINAX–TRIAX ACCESSORIES

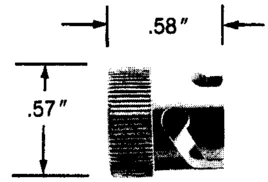
Custom Components

MODEL	DESCRIPTION	
	BRASS	NYLON
TNG1-1-R*	NO CHAIN	
TNG1-2-R	2.5″	
TNG1-3-R		2.5″
TNG1-4-R	3.0″	
TNG1-5-R		3.0″
TNG1-6-R	6.0″	
TNG1-7-R		6.0″



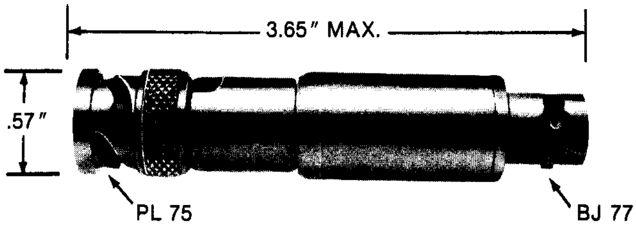
TRB SERIES TERMINATION
TNG1 — SEE TABLE





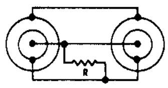
TRB SERIES RFI CAP
RFI75 — SEE TABLE

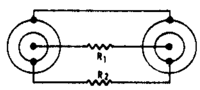
MODEL	DESCRIPTION	
	BRASS	NYLON
RFI 75-1	NO CHAIN	
RFI 75-2	2.5″	
RFI 75-3		2.5″
RFI 75-4	3.0″	
RFI 75-5		3.0″
RFI 75-6	6.0″	
RFI 75-7		6.0″



TRB SERIES PAD
PART NO. — SEE BELOW

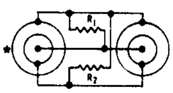
TNG2-R *

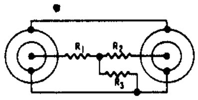




TNG3A-R *

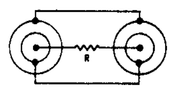
TNG2A-R *

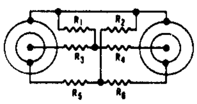




TNG4-R *

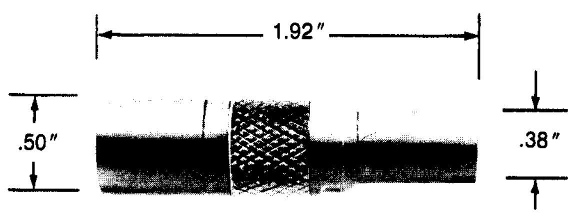
TNG3-R *



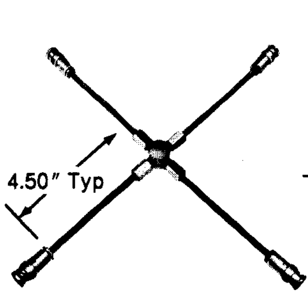


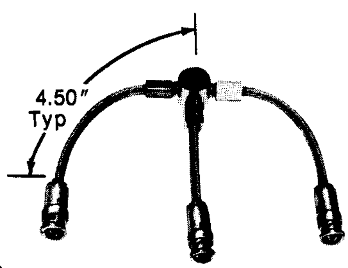
TNG4A-R *

Substitue resistance value for **each** R.



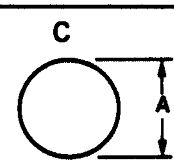
STANDARD SERIES DUMMY PATCH PLUG
RFI 70

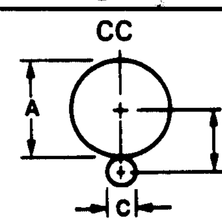




TRB SERIES RANDOM PARALLELING
TN4-Z *
TN4A-Z *
TN3-Z *
TN3A-Z *
These devices with inputs are designated by the letter A.
Triax (50, 75 ohm), Twinax (78, 124 ohm)

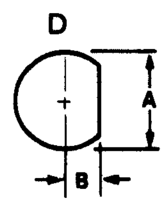
Mounting Hole Tables

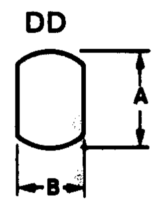




C	A
1	.317
2	.375
3	.437
4	.468
5	.505

CC	A	B	C
1	.640	.370	.136





D	A	B
1	.755	.343
2	.630	.281
3	.505	.218
4	.439	.187
5	.380	.156
6	.317	.128
7	.281	.125
9	.567	.257
10	.192	.079
11	1.005	.470

DD	A	B
1	.630	.532
2	.380	.312
3	.505	.443
4	.630	.562
5	.475	.436
6	.760	.690
7	1.140	1.060

Example — D2 .140
Mounting Hole D2.140
Type and Nominal Hole Size — D2
Maximum Panel Thickness — .140

* Substitute resistance for R (¼ W 5%). Substitute impedance for Z.

GENERAL SPECIFICATIONS

PANEL SPECIFICATIONS:

SIZES: 19″ wide, 3/16″ thick, 1 3/4″ (single row) or 3 1/2″ (double row) in height. Back bar 16 5/8″ wide, 3/8″ thick.

NOTCHING. In accordance with Mil-Std-189.

IDENTIFICATION: Each panel normally furnished with one or more 1/2″ x 16 1/2″ stainless steel designation strips (DS-1) with card and plastic window.

MARKING: Panels may be engraved or silk screened.

PLATING SPECIFICATIONS: TFS-1 (Letter)

A. .0001 Bright Nickel per QQ-N-290, Class 1 (over)
.000080 Bright Copper per Mil-C-14550, Class 5 (over)
.0005 max Electroless Nickel per Mil-C-26074A, Class 1 (3)

B. Except as specified in note (1):
.00002 Bright Gold per Mil-G-45204, Type II, Grade C, Class 00 (over)
.000050 Bright Nickel per QQ-N-290, Class 2 (2) (over)
.000080 Bright Copper per Mil-C-14550 (2)

D. .0001 Electroless Nickel per Mil-C-26074A, Class 1

E. .0002 Bright Electro Tin per Mil-T-10727, Type 1 and solder test per Para. 4531.

F. .00002 Bright Gold per Mil-G-45204, Type II, Grade C, Class 00 (4) (over)
.000080 Bright Copper per Mil-C-14550 (2) (over)
.000050 Nickel Strike per QQ-N-290, Class 2 (2)

K. .0003 thick maximum Molybdenum Disulfide in an Alkyd-Epoxy Resin (Drilube Product NO. 90 or equivalent).

NOTES:

(1) Bright Gold Plate on all connector center contacts/pins, male and female, shall be .00005, Class 1.
(2) Thickness is in accordance with Mil-G-45204B, Para 6.3 "Strikes and Underplating".
(3) On aluminum only.
(4) On C'res steel only.

MATERIALS AND SPECIFICATIONS:

Material	Alloy or Type	Fed. or Mil. Specification	Usage
Brass	360	QQ-B-626	Connector Bodies, Coupling Sleeves, Clampnuts, Hex Mtg. Nuts, Center Contact Pins, Cases
Aluminum	6061-T6 2024-T351 6061-T6511 6061-T6	QQ-A-250/1 QQ-A-225/6 QQ-A-200/8 QQ-A-200/8	Patch Panels Backbars, Cases Backbars, Cases Stiffener Bars
Steel	C1010-1018	QQ-S-636	MPN Cases
C'res Steel	303	QQ-S-763	Connector Bodies, Coupling Sleeves, Clampnuts, Hex Mounting Nuts
	302	QQ-S-766	Designation Mtg. Strips
Berylium Copper	3325	QQ-C-530	Contact Sockets, Fingersprings
	25	QQ-C-533	Contact springs, Crescent Springs
Phosphor Bronze	544	QQ-B-750	Contact Spring
Solder	SN60	QQ-S-571	
Rubber, Silicone		ZZ-R-765	Gaskets, O'Rings, Sealing Members
Polytetra-fluoro-ethylene		L-P-403	Dielectrics, Insulators
Acetal	Dupont Delrin	L-P-392	Insulators, Cases
Thermo-plastic Polyester	Glass Filled	Mil-M-24519	Molded Insulators, Heat Resistant
Vinyl	Clear Rigid, Self Ext.,	L-P-535	Designation Strip Windows
	Opaque Rigid, Self Ext.	L-P-535	Designation Strip Marking Strip
ABS	Type 2 (Moldings)	L-P-1183B * (Mil-Std-8103)	Looping Plug Handles
Phenolic	XXX	MIL-P-3115 PBE	Patch Panels, Backbars
Nylon	6/6	L-P-410A	Insulating Bushings

* Mil-Spec Type on Special Order Only.

ADAPTERS

Coax, Concentric Twinax, Triax, Quadrax

INTRODUCTION

Pages 42, 43 and 44 contain various adapter tables and a table of adapter circuits. In the tables on pages 42 and 43 an X in any column-row intersection indicates that an adapter is available using the connectors listed in the respective row or column. Any adapter represented by an X requires an appropriate circuit designation from the table on page 44. If a number is present in any row-column intersection the adapter can be ordered by the model number, shown after the table. These adapters do not require a circuit designation since the circuit is fixed, i.e. pin to pin and shield to shield.

Adapters not having either an X or a number in the row-column intersection may be available on special order.

ORDERING INFORMATION

Select a connector from the left hand column and one from the top row. If an X appears in the intersection the part number will be constructed as shown in the following example. If a number appears in the intersection, order by model number shown after the table.

AD-BJ26-K2-BJ50

- Adapter — AD
- Connector from column (lowest alpha/numeric) — BJ26
- Circuit letter and number (page 44) — K2
- Connector from top row — BJ50

ADDITIONAL EXAMPLE
AD-BJ50-K2-PL20

Adapters Coax to Coax

	BJ20	BJ26 •	BJ29 •	BJ40	BJ46 •	BJ49 •	BJ50	BJ59 •	BJ95 •	BJ96 •	BJ120	BJ130	CJ20	CJ40	CJ50	J95	PL20	PL40	PL50	PL94	PL95	PL121	PL122	PL123	PL130
BJ20	1	12	x	10	16	x		x	3	11			1	10			x	x	x	x	x		4	x	5
BJ26 •	12	12	12	16	16	16	x				x	x	12			x	x	x				x			
BJ29 •	x	12		x	16		x				x	x				x	x	x				x			
BJ40	10	17	x	2	13	x		x	x	x			10	2	x		x	x	x	x	x		8	x	x
BJ46 •	17	17	17	13	13	13	x				x	x		13		x	x	x				x			
BJ49 •	x	17		x	13		x				x	x				x	x	x				x			
BJ50 ▲		x	x		x	x		14					x	x	x		x	x	x	x	x		x	x	x
BJ59 • ▲	x			x			14	14			x	x			14	x			x			x			
BJ95 •	3			x					15		x	x				x	x	x				x			
BJ96 •	11			x							x	x				x	x	x				x			
BJ120		x	x		x	x		x	x	x			x	x	x		x	x	x	x	x		x	x	x
BJ130		x	x		x	x		x	x	x		6	x	x	x		7	x	x	x	x		x	x	x
CJ20	1	12		10			x				x	x	1	10		x						x			
CJ40	10			2	13		x				x	x	10	2		x						x			
CJ50 ▲				x			x	14			x	x													
J95		x	x		x	x		x	x	x			x	x			x	x		x	x		9	x	x
PL20	x	x	x	x	x	x	x		x	x	x	7				x	x	x	x						
PL40	x	x	x	x	x	x	x		x	x	x	x				x	x	x	x						
PL50	x			x			x	x			x	x					x	x	x						
PL94	x			x			x				x	x				x									
PL95	x			x			x				x	x				x						x			
PL121		x	x		x	x		x	x	x			x	x							x		x	x	x
PL122	4			8			x				x	x				9						x			
PL123	x			x			x				x	x				x						x			
PL130	5			x			x				x	x				x						x			

▲ Threaded version of connector is available.

MODEL NUMBERS

1 — AD28
2 — AD48
3 — AD95
4 — AD122
5 — AD130
6 — AD131
7 — AD133
8 — AD142
9 — AD92
10 — AD2848
11 — ADI95
12 — BJ28
13 — BJ48
14 — BJ58
15 — BJ98
16 — BJ2848
17 — BJ4828

• Can be Bulkhead Mounted for signal feedthru use.

Coax, Concentric Twinax, Triax, Quadrax

Adapters — Coax To Twinax/Triax/Quadrax

	BJ30	BJ39	BJ74 ▲	BJ77 ▲	BJ79 • ▲	BJ80	BJ89 •	BJ101		BJ157	BJ159 •	CJ30	CJ70 ▲	CJ80	CJ150	PL30	PL74	PL75 ▲	PL80	PL101	PL155 ▲
BJ20			x		x									x			x	x	x	x	
BJ26 •				x	x									x			x	x			
BJ29 •				x	x									x			x	x			
BJ40			x		x									x			x	x	x	x	
BJ46 •				x	x									x			x	x			
BJ49 •				x	x									x			x	x			
BJ50 ▲							x										x	x			
BJ59 •																					
BJ95 •				x													x	x			
BJ96 •				x													x	x			
BJ120																					
BJ130																					
CJ20				x				x									x	x		x	x
CJ40				x																	
CJ50																					
J95														x			x	x	x	x	
PL20	x			x				x				x		x		x	x	x		x	
PL40	x			x													x	x			
PL50																					
PL95				x				x						x			x	x	x		
PL121																					
PL122																					
PL123	x			x				x				x		x		x	x	x		x	
PL130																					

Adapters — Twinax/Triax/Quadrax

	BJ30	BJ39 •	BJ74 •	BJ77	BJ79 •	BJ80	BJ89 •	BJ101		BJ157	BJ159 •	CJ30	CJ70	CJ80	CJ150	PL30	PL74	PL75	PL80	PL101	PL155
BJ30	x	2		x												x		x			
BJ39 •	2																				
BJ74 •			3	3	4																
BJ77 ▲	x		3	1	4								1			x	x	x			
BJ79 • ▲			4	4	4															x	
BJ80							5														
BJ89 •						5															
BJ101								6								x		x			
BJ150																					
BJ157											7										
BJ159 •										7											
CJ30																x					
CJ70				1									1								
CJ80																					
CJ150																					
PL30	x			x				x				x				x					
PL74				x																	
PL75 ▲	x			x				x										x			
PL80																					
PL101					x																
PL155																					

▲ Threaded version of connector is available.

MODEL NUMBERS

1 — AD78
2 — BJ38
3 — BJ73
4 — BJ78
5 — BJ81
6 — BJ102
7 — BJ158

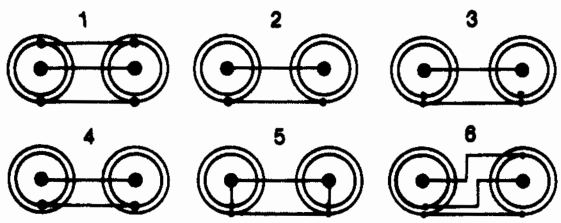
• Can be Bulkhead Mounted for signal feedthru use.

Adapter Circuitry

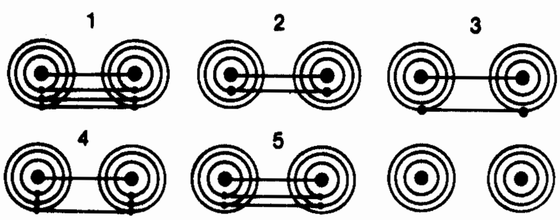
Coax, Concentric Twinax, Triax, Quadrax

INTRODUCTION

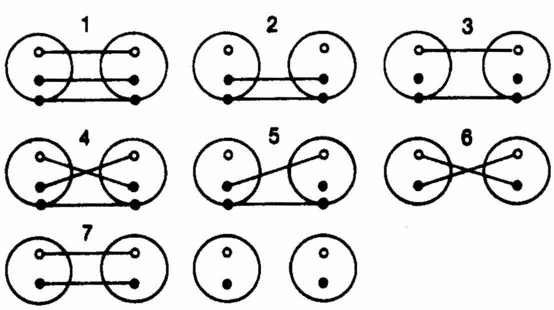
From the schematics below select the proper series and appropriate circuit. Insert series letter and circuit number in the part number. See Pages 42 and 43.



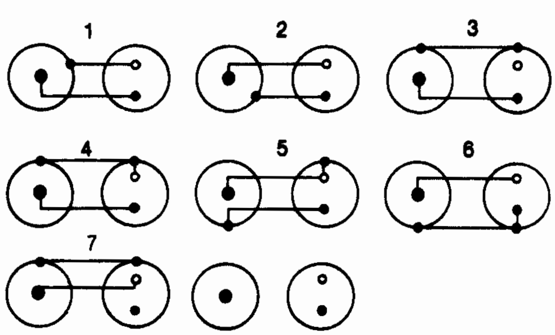
CONCENTRIC TWINAX/TRIAX TO CONCENTRIC TWINAX/TRIAX — A



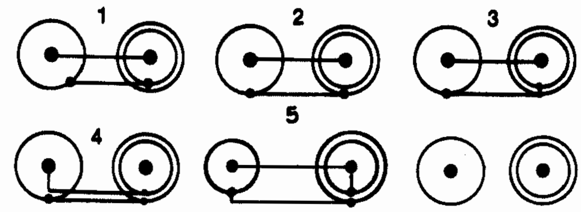
QUADRAX TO QUADRAX — B



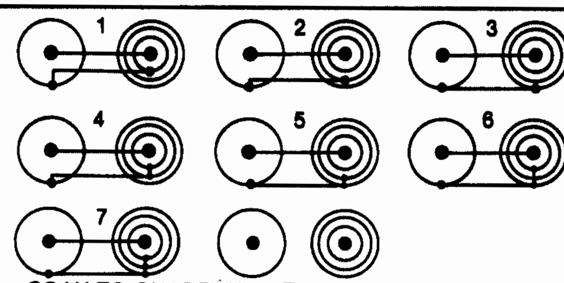
TWO-PIN TWINAX TO TWO-PIN TWINAX — C



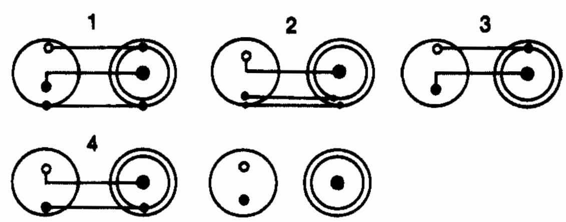
COAX TO TWO-PIN TWINAX — D



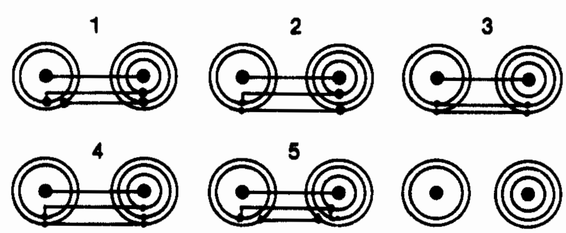
COAX TO CONCENTRIC TWINAX/TRIAX — E



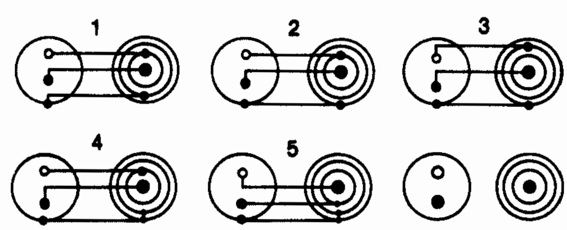
COAX TO QUADRAX — F



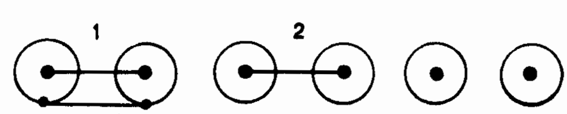
TWO-PIN TWINAX TO CONCENTRIC TWINAX/TRIAX — G



CONCENTRIC TWINAX/TRIAX TO QUADRAX — H



TWO-PIN TWINAX TO QUADRAX — J



COAX TO COAX — K

AIRBORNE DIGITAL DATA BUS – MIL-STD-1553B

Application Notes and New Product Release

NEW

• REQUIREMENT

MIL-STD-1553B governs a computerized and multiplexed data distribution system designed for the many functions of command, control, communications and intelligence (C³I) in military aircraft. By using a single transmission cable instead of the complicated, heavy and dedicated cabling now used, great advantages of additional information, automation and weight saving, necessary for the complex demands of aircraft operations, can be realized. Twinax cable (78 ohm) was selected to provide the transmitted digital information with the needed protection from magnetic and electro static interference including nuclear electro-magnetic pulse (NEMP). Complete shielding of the pair must be maintained along the transmission path including the electrical contacts within multi pin connectors. How TWINAX accomplishes the noise reduction is described in the disertation starting on page 2. For these same reasons, MIL-STD-1553B techniques are also being considered for use in ships, battle tanks, helicopters, missiles and space vehicles in U.S. and other NATO forces as well as the many ground applications such as data networks and perimeter security for airports, armories and other government installations.

TROMPETER ELECTRONICS has been supplying matching components of twinax cable and connectors for 20 years with the intent of improving the transmission capabilities and interference rejection of data transmission systems. New and currently available TWINAX CABLE, CONNECTORS, PATCHING and SWITCHING items, compatible with MIL-STD-1553B requirements for both airborne and ground checkout applications, are listed as follows:

• NEW TWINAX CABLE

A new airborne 200°C, 78 ohm, twinax cable (MIL-C-17/176) has been developed for use with our connectors and contacts. This cable has TFE primary dielectric and PFA outer jacket, 90% minimum shielding coverage and approximately 10 twists per foot of AWG #24 silver plated high strength copper alloy conductors. Also, it has an O.D. of approximately 0.135 inches (3.429 mm) and weighs less than 20 pounds/1000 feet. Attenuation is 1.4 dB/100 feet @ 1 Mhz, less than 4.5 dB/100 feet @ 10 Mhz. and is useable to 30 Mhz. TFE rod fillers are used to lessen the ground shunt capacitive losses, facilitate connector installation and physically round out the cable for more positive environmental sealing. The individual wire dielectrics are color coded blue and white for MIL-STD-1553B or other electrical polarization identification. Standard military and commercial practice utilizes the blue wire for data bus "positive" (HI) polarity connected to the center contact of the concentric twinax connector and the white conductor for "negative" (LO) polarity connected to the intermediate contact. This cable is available as Part #TWAC-78-1F1. It's construction is similar to our TWC-78-1 standard 85°C twinax cable. Specifications for these and other Twinax cable are shown on page 32. Cable samples are available upon request.

• TEI's TWINAX INTERCONNECT SYSTEMS

Catalog listings of TEI's available TWINAX matching connectors, ground cables and related patching/switching equipment are:

1) **Sub-miniature** concentric connectors in the TRS 3 & 4 lug bayonet series and the TTM threaded series, page 36. (½ BNC size). These families of subminiature stand alone connectors **were specifically developed for MIL-STD-1553B requirements** to provide polarized primary and redundant bus needs. They are supplied in both tool crimp and solder/wrench crimp versions to terminate our new airborne 78 ohm twinax cable described above. It should be noted that these families of sub-miniature stand alone connectors are the present mode of bus installation in the A10 aircraft.
2) **Miniature** concentric in the TRB 3 & 4 lug bayonet series and the TRT threaded series, page 34. (BNC size)
3) **Miniature** polarized 2 pin TWBNC 2 lug bayonet series, page 35. (BNC size)
4) **Standard** concentric in the TRC 2 lug bayonet series, page 35. (C size)
5) Sub-miniature concentric **patching,** page 37.
6) Standard concentric **patching,** page 33.
7) Twinax cable and connector cross reference lists, pages 38 & 39.
8) TEI ground installations (PVC) twinax cable specifications, page 32.
9) Twinax accessories, pages 40 & 43.

Contact factory for the latest TWINAX connector and cable developments which are designed as demand warrants.

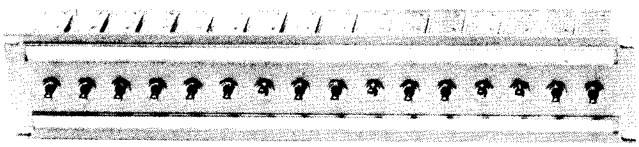
SWITCHING

A-B Data Switch

INTRODUCTION

Trompeter Electronics has developed modular low-frequency manual switches for coax and twinax digital communication and data applications. Available in both A-B and 1 x 4 configurations, these non-constant impedance switches are designed for use at frequencies up to 15 Mhz, depending upon the application. Each circuit is electrically isolated above ground with the shield and center conductors switched (except as noted). All unused ports are terminated in a resistive load. Switch action is "break before make" with a neutral position provided in the 1 x 4 configuration. Panels are available, as illustrated, for standard 19 inch rack mounting.

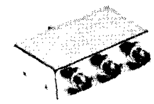
A-B DATA SWITCH PANEL



DSWP1-16/DSWAA — Shown

A-B DATA SWITCH (Coax or Twinax)

Front



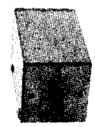
Rear

ORDERING INFORMATION

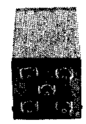
DSWP 1-16 / DSWAA

- Data Switch Panel — DSWP
- 1-Grey / 2-Iridite — 1
- Number of Switches — 16
- Switch Model Number (See Table) — DSWAA

4-WAY DATA SWITCH (Coax or Twinax)



Front



Rear

DSW — See Table Below

TYPE	SWITCH SERIES	ACCESS JACK	TERMINATION (Ohms) NONE	50	75	78	93	124
COAX	A-B	BNC (Page 23)		DSWAA	DSWAB		DSWAC	
COAX	A-B	TNC (Page 24)		DSWBA	DSWBB		DSWBC	
COAX	1 x 4	BNC		DSW4AA	DSW4AB		DSW4AC	
COAX	1 x 4	TNC		DSW4BA	DSW4BB		DSW4BC	
TWINAX	A-B	TRB (Page 34)	DSWTWO	DSWTWA	DSWTWB	DSWTWD		DSWTWE
TWINAX	1 x 4	TRB	DSWTW40	DSWTW4A*	DSWTW4B*	DSWTW4D*		DSWTW4E*

* Models available with commoned shields only.

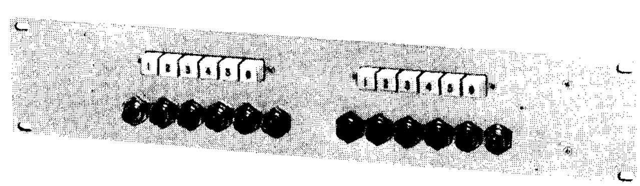
Cross Connect Panel

INTRODUCTION

The DSX-3 panel fills the requirement in signal telephone distribution systems for visually indicating, through lighted pushbutton switches, those circuits that have been interconnected. A total of 12 circuits are incorporated in a standard 3½" x 19" rack panel as shown. That number can be increased to 18 circuits if required.

The tracer circuit is carried through the outer most conductor of the triax interconnect cable to panel ground through the illuminated push button switch.

Voltage limiting is provided to accomodate installation in positive ground systems of either 24 or 48 VDC.

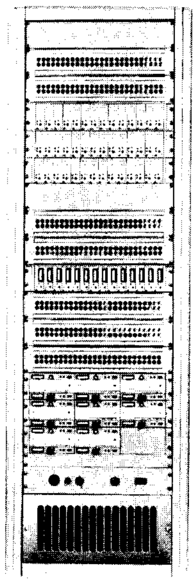


CROSS CONNECT PANEL
DSX-3

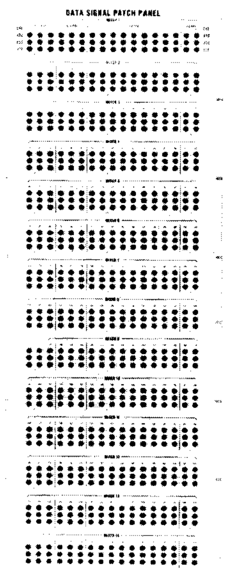
CUSTOM PANELS

INTRODUCTION

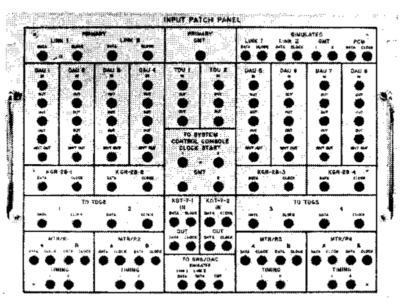
Trompeter Electronics for years has been unique in the field of custom panel manufacturing. Panels can be configured to meet customer specifications including wiring. Panels may be painted any Fed-Std-595 color and can be either engraved or silk screened. Examples of custom panels are shown below.



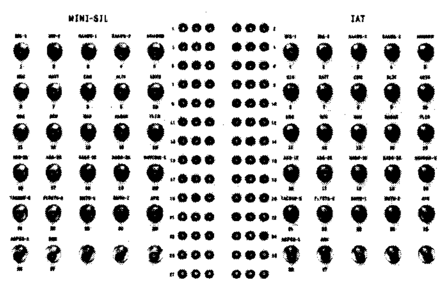
TELEMETRY PANEL



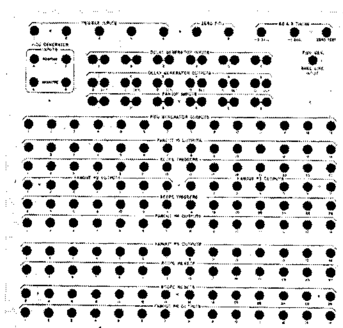
DATA SIGNAL PATCH PANEL



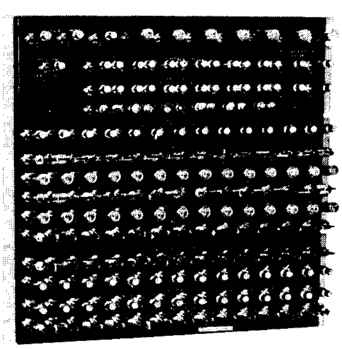
INPUT PATCH PANEL



DISTRIBUTION PANEL



DATA PATCH (FRONT)



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