

PYLE-STAR-LINE

Electrical Connectors with Mod I Inserts

ASSEMBLY and TERMINATING INSTRUCTIONS

The following table gives the wire sizes and cord/cable types to be used with the Star-line plugs, receptacles and cable connectors. The plugs and cable connectors are intended for connection to 3, 4, or 5 conductor cord/cable depending on the contact insert configuration.

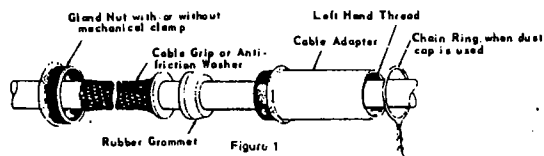
| Ampere rating of device | Conductor Size AWG | Type cord/cable |
|-------------------------|--------------------|-----------------|
| 20 | #14, #4/0 | S, So |
| 30 | #12, #10 | S, So |
| 60 | #6, #4 | W |
| 100 | #0, #1, #2 | W |
| 200 | #3/0, #4/0 | W |

The cord sealing grip range of plugs and cord connectors is 1/8". For instance, if inside dia. of grommet is 3/4" it will seal and grip a cord dia. in the range of .750 dia. max. to .625 dia. min. Inside dia. of grommet can be determined from catalog number as follows: Cat no. ZPXX-ΔXX-XXX Δ is inside dia. of grommet in sixteenths of an inch.

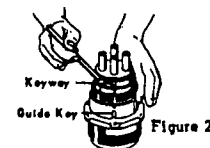
Two types of inserts are available in MOD 1 construction—pressure and solder terminations of contacts. For pressure termination torque terminal screws as follows:

| | 20 amp #12 Contact | 30 amp #10 Contact | 40 amp #8 Contact | 60 amp #4 Contact | 100 amp #1/0 Contact | 200 amp #4/0 Contact |
|-------|--------------------|--------------------|-------------------|-------------------|----------------------|----------------------|
| Lb-in | N/A | 15 | 25 | 20 | 50 | 100 |
| N·m | | 1.7 | 2.8 | 2.3 | 5.7 | 11.3 |

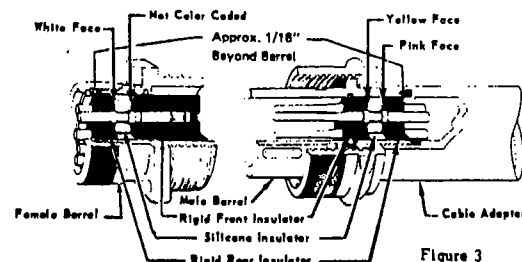
- A. Prepare end of cable by stripping jacket and insulation per tables shown on page 3. Remove any rigids or grooves by scarfing the edges to provide a smooth surface on the cable to insure good grommet sealing. Tin conductors to be soldered to within 1/16" of insulation. Use only resin flux for all soldering.
- B. Slide the gland nut, cable grip or anti-friction washer, grommet and cable adapter over the cable in the order named. Be sure the right size grommet has been selected to obtain a good grommet seal. If a dust cover with ring and chain is used, ring must be placed on cable barrel before terminating. See Fig. 1.



- C. Place contact-insert complete with contacts in barrel, lining up keyway in insert and key in barrel. See Fig. 2. Use a thin, blunt wood or plastic object to assist in seating silicone insulation. Push entire insert assembly into barrel shell until fully seated. When properly seated, back face of back cap insulation shoulder should protrude from back end of barrel 1/16" maximum. See Fig. 3. If the insert assembly becomes separated, re-assemble the insulation members so when correctly assembled no color coding will be exposed to view, as shown in Fig. 3.



- D. Solder conductors in contacts, if solder type. ALL CONTACTS MUST REMAIN IN PLACE EVEN IF EVERY ONE IS NOT BEING USED IN ORDER TO INSURE ENVIRONMENTAL SEALING. The silicone insulation is heat resistant, but reasonable care must be exercised to prevent unnecessary heating.
- E. Support the barrel assembly in a vise having smooth-faced jaws; shells with female skirt have flange for holding. Shells with male skirt but without flange should be held with dust cover or female shell as a holding fixture. The shell keys are designed to withstand the assembly torque.
- F. Apply cable adapter or insulation clamp nut by hand, turning counter-clockwise (left hand thread) until hand-tight. APPLY WRENCH TO CABLE ADAPTER OR INSULATION CLAMP AND TIGHTEN UNTIL IT SHOULDERS FULLY ON BARREL. See Fig. 3.

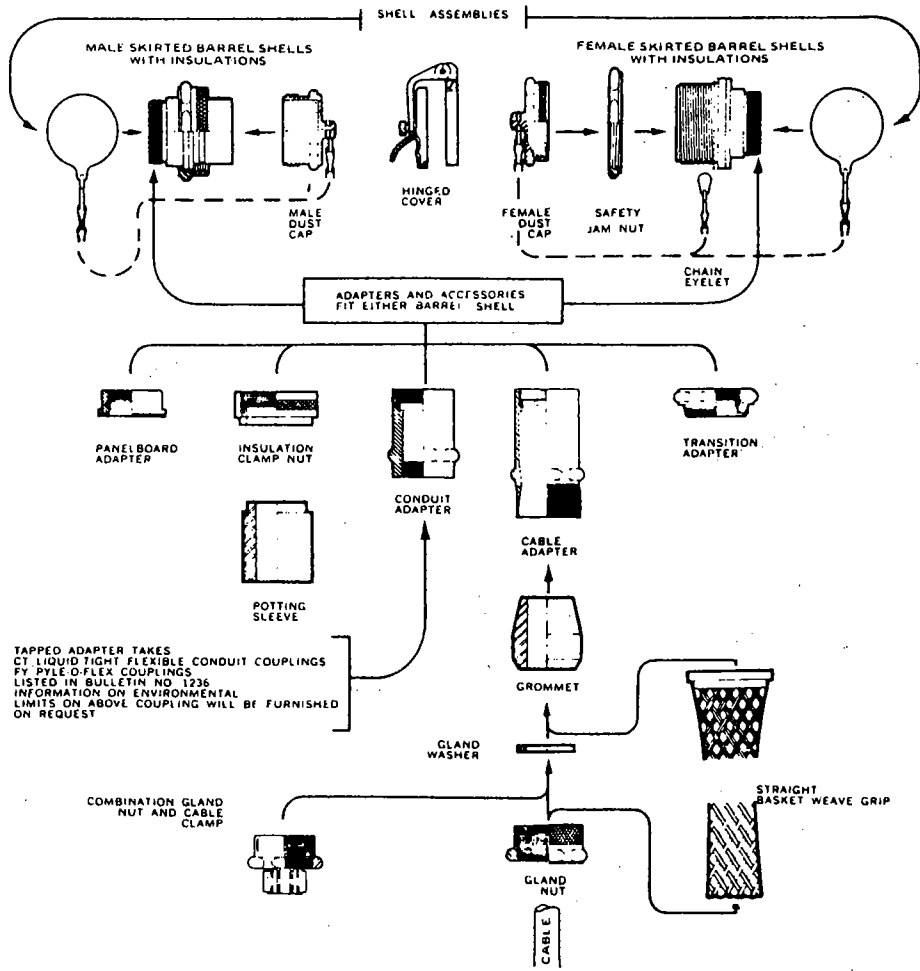


Slip grommet into cable adapter and engage either cable grip or gland washer in gland nut. DRAW UP TIGHT WITH WRENCH. If split clamp nut is used, tighten clamp screws.

PREPARING CABLE FOR TERMINATING

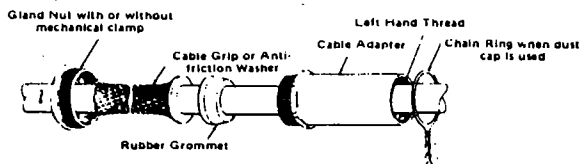
Use suitable tool and strippers to remove cable sheath and conductor insulation. Be sure cable end is cut square. Refer to the following tables for wire cutting and stripping dimensions. Use applicable dimensions for whichever method of termination is used.

STEP 1 - IDENTIFICATION OF PRINCIPAL PARTS - SEQUENCE OF ASSEMBLY



STEP 2 - INITIAL ASSEMBLY

Slide the gland nut, cable grip or anti-friction washer, grommet and cable adapter over the cable in the order named. Be sure the right size grommet has been selected to obtain a good grommet seal. If a dust cover with ring and chain is used, ring must be placed on cable barrel before terminating. See Fig. below.



STEP 3 - CABLE JACKET & WIRE STRIPPING

PREPARING CABLE FOR TERMINATING

Use suitable tools and strippers to remove cable sheath and conductor insulation. Be sure cable is cut square.

Refer to Tables below for conductor cutting and stripping dimensions.

Remove any ridges or grooves by scarfing the edges to provide a smooth surface on the cable to insure good grommet sealing.

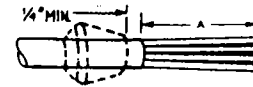
CABLE AND CONDUCTOR CUTTING AND STRIPPING DIMENSIONS

Dimension "A" is the cable jacket length recommended for maintaining effective grommet cable sealing.

Dimension "B" is slightly longer than the depth of the contact terminal well.

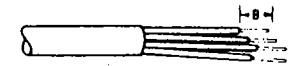
DIMENSION A

INDIVIDUAL CONDUCTOR CUTTING LENGTHS/varies with Shell Size, and Contact Size and must be measured after conductors are straightened and formed parallel. Additional length required if conductors must be crossed over.



DIMENSION "B"

INDIVIDUAL CONDUCTOR STRIPPING LENGTHS/varies with Contact Size.



Dimension "B" Table

| CONTACT SIZE | CRIMP CONTACTS |
|--------------|----------------|
| 18 | 29/64 |
| 16 | 37/64 |
| 12 | 39/64 |
| 10 | 43/64 |
| 8 | 53/64 |
| 4 | 29/32 |
| 1/0 | 1-13/64 |

DIMENSION "A" TABLE

MOD II

MOD III

| SHELL SIZE | CONTACT SIZE | MINIMUM FOR CRIMP CONTACTS | | | MINIMUM FOR CRIMP CONTACTS | | |
|------------|--------------|----------------------------|---------|---------|----------------------------|---------|---------|
| | | ADAPTER TYPE | | | ADAPTER TYPE | | |
| | | 2000 | 2400 | 2900 | 2000 | 2400 | 2900 |
| 12 | 18 | 1-37/64 | 3-53/64 | 5-5/64 | * | 3-9/16 | 4-13/16 |
| | 16 | 1-45/64 | 3-61/64 | 5-13/64 | * | 3-9/16 | 4-13/16 |
| | 12 | 1-43/64 | 3-59/64 | 5-11/64 | * | 3-9/16 | 4-13/16 |
| | 10 | 1-39/64 | 3-55/64 | 5-7/64 | * | 3-5/8 | 4-7/8 |
| | 8 | 1-5/8 | 3-7/8 | 5-1/8 | * | 3-5/8 | 4-7/8 |
| 4 | 1-45/64 | 3-61/64 | 5-13/64 | * | 3-3/4 | 5 | |
| 16 | 18 | 1-53/64 | 4-5/64 | 5-21/64 | * | 3-13/16 | 5-1/16 |
| | 16 | 1-61/64 | 4-13/64 | 5-29/64 | * | 3-13/16 | 5-1/16 |
| | 12 | 1-59/64 | 4-11/64 | 5-27/64 | * | 3-13/16 | 5-1/16 |
| | 10 | 1-55/64 | 4-7/64 | 5-23/64 | * | 3-7/8 | 5-1/8 |
| | 8 | 1-7/8 | 4-1/8 | 5-3/8 | * | 3-7/8 | 5-1/8 |
| 4 | 1-61/64 | 4-13/64 | 5-29/64 | * | 4 | 5-1/4 | |
| 20 | 18 | 2-21/64 | 4-37/64 | 5-53/64 | * | 4-5/16 | 5-9/16 |
| | 16 | 2-29/64 | 4-45/64 | 5-61/64 | * | 4-5/16 | 5-9/16 |
| | 12 | 2-27/64 | 4-43/64 | 5-59/64 | * | 4-5/16 | 5-9/16 |
| | 10 | 2-23/64 | 4-39/64 | 5-55/64 | * | 4-3/8 | 5-5/8 |
| | 8 | 2-3/8 | 4-5/8 | 5-7/8 | * | 4-3/8 | 5-5/8 |
| | 4 | 2-23/64 | 4-45/64 | 5-61/64 | * | 4-1/2 | 5-3/4 |
| | 1/0 | * | 4-17/64 | 5-33/64 | * | * | 5-9/16 |
| 4/0 | - | - | - | * | * | 5-1/4 | |
| 24 & C24 | 18 | 2-59/64 | 5-5/64 | 6-21/64 | 2-9/16 | 4-13/16 | 6-1/16 |
| | 16 | 2-61/64 | 5-13/64 | 6-29/64 | 2-9/16 | 4-13/16 | 6-1/16 |
| | 12 | 2-59/64 | 5-11/64 | 6-27/64 | 2-9/16 | 4-13/16 | 6-1/16 |
| | 10 | 2-55/64 | 5-7/64 | 6-23/64 | 2-5/8 | 4-7/8 | 6-1/8 |
| | 8 | 2-7/8 | 5-1/8 | 6-3/8 | 2-5/8 | 4-7/8 | 6-1/8 |
| | 4 | 2-61/64 | 5-13/64 | 6-29/64 | * | 4-7/8 | 6-1/8 |
| 1/0 | * | 4-49/64 | 5-33/64 | 6 | * | 4-7/8 | 6-1/8 |
| 4/0 | - | - | - | * | 4-1/2 | 5-3/4 | |
| 28 & C28 | 18 | 3-21/64 | 5-21/64 | 6-37/64 | 3-1/16 | 5-1/16 | 6-5/16 |
| | 16 | 3-29/64 | 5-29/64 | 6-45/64 | 3-1/16 | 5-1/16 | 6-5/16 |
| | 12 | 3-27/64 | 5-27/64 | 6-43/64 | 3-1/16 | 5-1/16 | 6-5/16 |
| | 10 | 3-23/64 | 5-23/64 | 6-39/64 | 3-1/8 | 5-1/8 | 6-3/8 |
| | 8 | 3-3/8 | 5-3/8 | 6-5/8 | 3-1/8 | 5-1/8 | 6-3/8 |
| | 4 | 3-29/64 | 5-29/64 | 6-45/64 | 3-1/4 | 5-1/4 | 6-1/2 |
| | 1/0 | * | 5 | 6-17/64 | * | 5 | 6-1/4 |
| | 4/0 | - | - | - | * | 4-7/8 | 6-1/8 |

*Use longer adapter

STEP 4 - TERMINATING CONDUCTORS

All connectors are shipped with the insulations factory assembled in the barrel shell and in the specified key position with exception of MOD II with contacts of size 8 and larger, which are shipped unassembled.

All the contacts are packaged separately.

DO NOT ATTEMPT TO REMOVE insulations from shells.

CRIMPING CONTACTS. Contacts are crimped to the wires outside of the connector with the proper tool (see page 7). Check through the inspection hole in contact to make certain wires are fully bottomed in well before crimping.

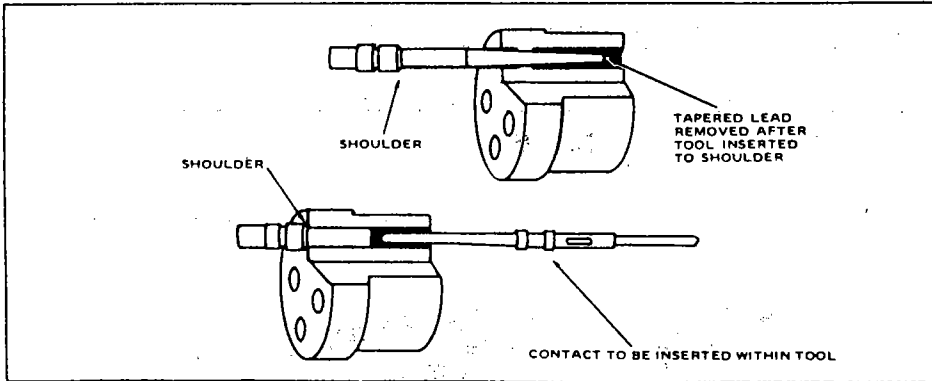
PRECAUTIONS: Exercise cleanliness throughout termination procedure to avoid contamination of insert insulation. Any contamination will reduce the dielectric properties of the insulation.

RECOMMENDED CLEANING PROCEDURE: Air clean away all residual materials. DO NOT USE ANY SOLVENTS. Clean with CRC CHEMICALS Div. C. J. WEBB Inc. of Dresher Pa. "LECTRA-CLEAN" No. 2017 cleaner, available in spray cans.

MOD II CONTACT INSERTION

Before inserting Contacts into insert shell assembly loosen clamp nut as loose as possible to release pressure on the resilient insulator. Contacts should be inserted into contact cavities with a contact insertion tool (see page 8). Male contacts should be inserted into red resilient insulation and fully seated; female contacts should be inserted into the green resilient insulation and fully seated. Contacts are inserted from the back side. If a contact is inserted into a wrong cavity, loosen insulation clamp nut, if present, to relieve pressure on insulator, then push contact out with removal tool (see page 8).

MOD II CONTACT SIZES 8, 4 & 1/0 INSERTIONS



Expander tool is inserted at front of resilient insert, and pushed in completely to shoulder. After tool is inserted to shoulder the tapered lead is removed. The contact is then inserted from the back of the resilient and into the remaining tool which is subsequently withdrawn, leaving contact in place. With contacts in place, the insulation should be inserted into the shells and fully seated, taking care to align the insulation keyway with the shell keys.

MOD III CONTACT INSERTION

Before inserting contacts into shell assembly containing an insulation clamp nut, make sure the clamp nut is as loose as possible to release pressure on resilient insulator. A slight application of silicone oil over the outer contact surface will facilitate contact assembly. If a contact is inserted into a wrong cavity, loosen insulation clamp nut, if present, to relieve pressure on the insulator, then pull contact out with removal tool (see page 8).

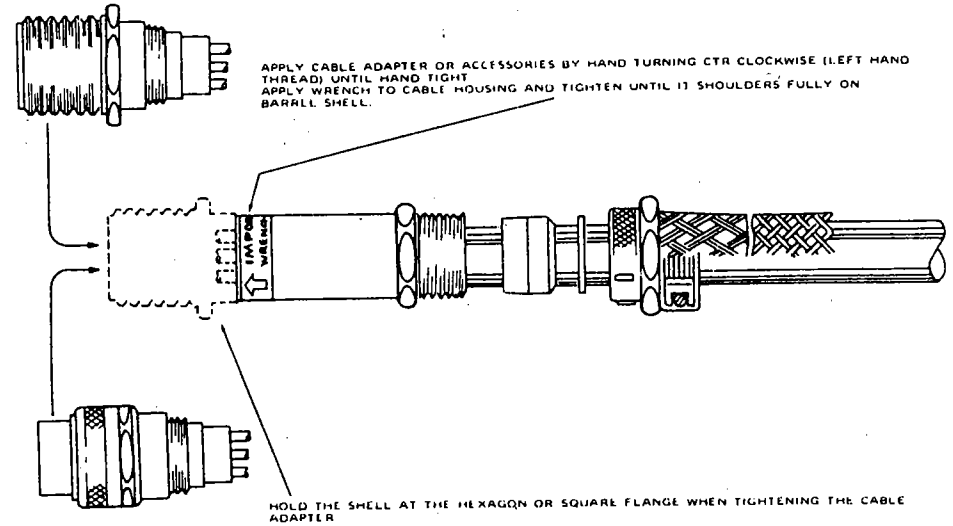
The silicone oil film applied to the resilient contact seal laminant (green color) sometimes after the prolonged storage dries out and causes a difficulty to insert the contacts.

Apply slightly the silicone oil over the outer surface of the resilient laminant, avoid the silicone oil application on the contact mating areas, as the silicone oil is insulator.

Dipping the contact into the alcohol prior to the contact insertion also facilitates to assemble.

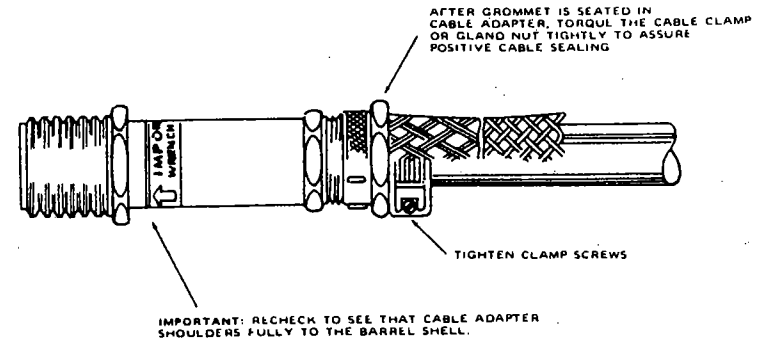
IMPORTANT: MOD II OR III IF ALL CONTACTS IN AN INSERT CONFIGURATION ARE NOT BEING USED, PLUG UP ANY OPEN CAVITIES TO ASSURE ENVIRONMENTAL SEALING.

STEP 5 - CABLE ADAPTER & PLUG SHELL ASSEMBLY



Shells with male skirt but without flange should be held with dust cover or female shell as a holding fixture. The shell keys are designed to withstand the assembly torque. If dust cover with ring and chain is used, ring must be placed on barrel before applying contacts to the insulation.

STEP 6 - FINAL ASSEMBLY



IMPORTANT: RECHECK TO SEE THAT CABLE ADAPTER SHOULDERS FULLY TO THE BARREL SHELL.

CABLE AND WIRE CUTTING AND STRIPPING DIMENSIONS

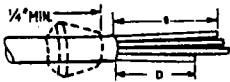
Dimension "B" is the correct length of straightened conductors to provide proper solder termination. Dimension "C" is slightly longer than the depth of the contact solder well.

The grounding contacts use pressure wire terminals and should be stripped to the dimension "E".

Conductors for all contacts with pressure wire terminals should be cut and stripped to dimensions "D" & "E".

Dimension "B" & "D"

INDIVIDUAL CONDUCTOR CUTTING LENGTHS/varies with Shell Size, Contact Size and method of termination, and must be measured after wires are straightened and formed parallel.



Dimension "C" & "E"

INDIVIDUAL CONDUCTOR STRIPPING LENGTHS/varies with method of terminating and Contact Size.



Dimension "C" & "E" Table

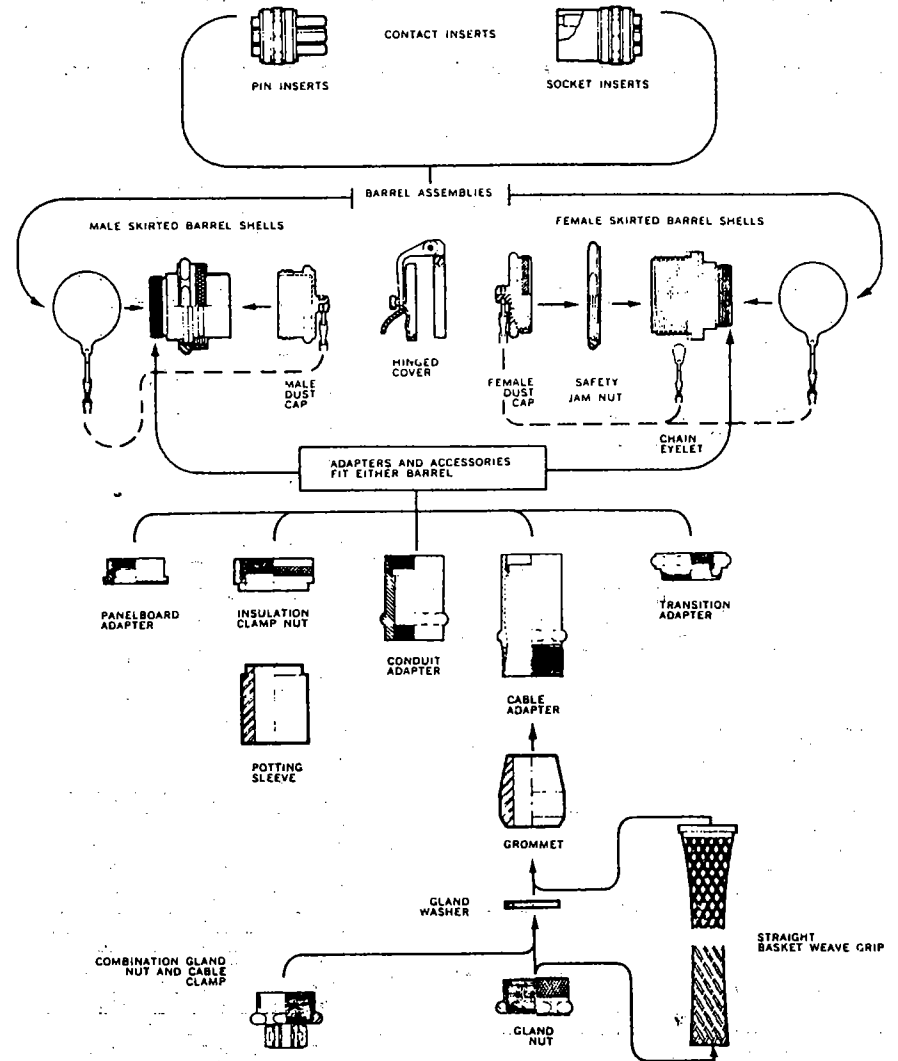
| CONTACT SIZE | SOLDER CONTACTS "C" | PRESSURE CONTACTS "E" |
|--------------|---------------------|-----------------------|
| 18 | 9/32 | - |
| 16 | 9/32 | - |
| 12 | 11/32 | 11/16 |
| 10 | 15/32 | 9/16 |
| 8 | 19/32 | 11/16 |
| 4 | 21/32 | 11/16 |
| 1/0 | 23/32 | 3/4 |
| 4/0 | 25/32 | 3/4 |

Dimension "B" & "D" Table

| SHELL SIZE | CONTACT SIZE | FOR SOLDER CONTACTS ("B") | | | FOR PRESSURE CONTACTS ("D") | | |
|------------|--------------|---------------------------|---------|---------|-----------------------------|---------|---------|
| | | ADAPTER TYPE | | | ADAPTER TYPE | | |
| | | 2000 | 2400 | 2900 | 2000 | 2400 | 2900 |
| 12 | 18 thru 12 | 1-21/32 | 3-29/32 | 5-5/32 | 1-5/16 | 3-9/16 | 4-13/16 |
| | 10 | | | | 1-1/16 | 3-5/16 | 4-9/16 |
| | 8 | | | | 1 | 3-1/4 | 4-1/2 |
| | 4 | | | | 15/16 | 3-3/16 | 4-7/16 |
| 16 | 18 thru 12 | 1-29/32 | 4-5/32 | 5-13/32 | 1-9/16 | 3-13/16 | 5-1/16 |
| | 10 | | | | 1-5/16 | 3-9/16 | 4-13/16 |
| | 8 | | | | 1-1/4 | 3-1/2 | 4-3/4 |
| | 4 | | | | 1-3/16 | 3-7/16 | 4-11/16 |
| 20 | 18 thru 12 | 2-13/32 | 4-21/32 | 5-29/32 | 2-1/16 | 4-5/16 | 5-9/16 |
| | 10 | | | | 1-13/16 | 4-1/16 | 5-5/16 |
| | 8 | | | | 1-3/4 | 4 | 5-1/2 |
| | 4 | | | | 1-11/16 | 3-15/16 | 5-3/16 |
| 24 & C24 | 18 thru 12 | 2-29/32 | 5-5/32 | 6-13/32 | 1-5/8 | 3-7/8 | 5-1/8 |
| | 10 | | | | 2-9/16 | 4-13/16 | 6-1/16 |
| | 8 | | | | 2-5/16 | 4-9/16 | 5-13/16 |
| | 4 | | | | 2-1/4 | 4-1/2 | 6 |
| 28 & C28 | 18 thru 12 | 3-13/32 | 5-13/32 | 6-21/32 | 2-3/16 | 3-15/16 | 5-11/16 |
| | 10 | | | | 2-1/8 | 4-5/8 | 5-5/8 |
| | 8 | | | | 2-3/4 | 5 | 6-1/4 |
| | 4 | | | | 2-1/16 | 5-1/16 | 6-5/16 |
| | 1/0 | | | | 2-13/16 | 4-13/16 | 6-1/16 |
| | 4/0 | | | | 2-3/4 | 4-3/4 | 6-1/4 |
| | | | | | 2-11/16 | 4-3/16 | |
| | | | | | 2-5/8 | 4-7/8 | 5-7/8 |
| | 4/0 | | | | 3-1/4 | 5-1/4 | 6-1/2 |

MOD. 1 PYLE STAR-LINE CONNECTOR

SEQUENCE OF ASSEMBLY



PN PYLE-NATIONAL
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Chicago, IL 60651-1697