

# Installation Instructions



## "HUSKEY" ELECTRICAL CONNECTORS

**QWLD Series**  
**QWLD HK-P Series**

**Scintilla Division**  
SIDNEY, NEW YORK 13838



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SECTION I

INTRODUCTION

1-1. Description.

1-2. Bendix QWLD (Huskey) series connectors are designed and manufactured for use in power and control circuits where waterproofing and exceptional resistance to vibration, shock, corrosion, and abrasion are required. Connectors ordered under MS number will conform to MIL-C-22992B. When properly installed, these connectors are explosion proof as defined in specification MIL-E-5272A, procedures 1 and 2.

1-3. QWLD series connectors have resilient inserts and machined aluminum bar-stock shells. Stainless steel slip rings are used between sliding surfaces in shell size 32 and larger where required. Sealing gas-

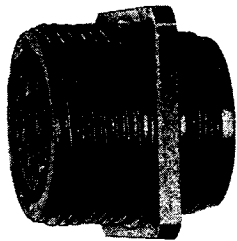
kets for waterproofing are provided at threaded joints. Cable accessories have left hand threads in order to prevent accidental loosening when the connector is being uncoupled.

1-4. QWLD assemblies utilize 5 key polarization, and an "L" shaped main joint sealing gasket.

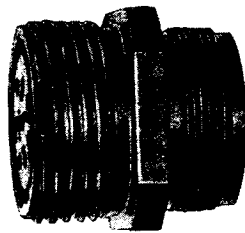
1-5. Typical QWLD connector assemblies are shown in Figures 1 through 8. QWLD HK-P are shown in Figures 9 through 12.

1-6. A wide range of accessories is available for QWLD connectors to meet various service and mounting conditions. QWLD HK-P connectors incorporate a potting adapter and end bell.

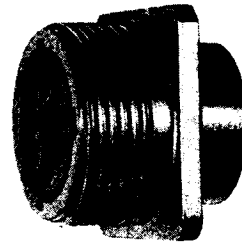
TYPICAL QWLD SERIES ELECTRICAL CONNECTORS



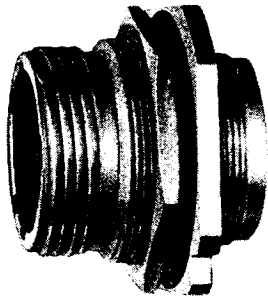
Wall Mounting Receptacle  
Figure 1



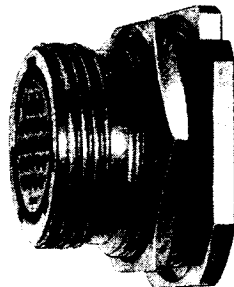
Cable Connecting Plug  
Figure 2



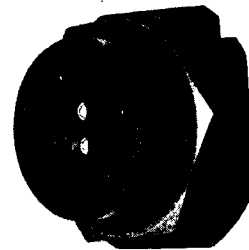
Box Mounting Receptacle  
Figure 3



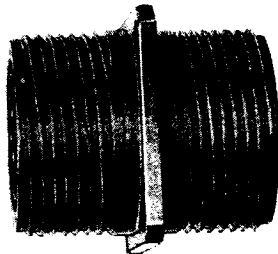
Jam Nut Wall Mounting  
Receptacle  
Figure 4



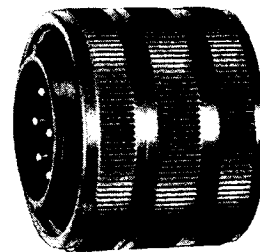
Jam Nut Receptacle  
Box Mounting  
Figure 5



Jam Nut Receptacle  
Box Mounting  
Figure 6

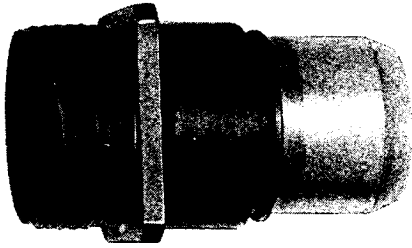


Thru Bulk-Head Receptacle  
Figure 7

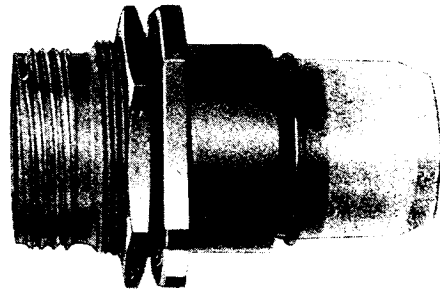


Straight Plug  
Figure 8

## TYPICAL QWLD HK-P SERIES ELECTRICAL CONNECTORS



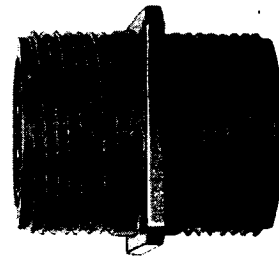
Wall Mounting Receptacle  
Figure 9



Jam Nut Receptacle  
Wall Mounting  
Figure 10



Straight Plug  
Figure 11



Thru Bulkhead Receptacle  
Figure 12

### SECTION II

#### QWLD — CRIMP TYPE CONTACTS

##### 2-1. INSTALLATION.

###### CAUTION

Removal of inserts from QWLD connectors is not recommended as it breaks the pressure and waterproofing seal incorporated at the time of factory assembly.

##### 2-2. Preparing for Installation.

2-3. Visually check the connector and accessory to be sure contacts and other parts have not accidentally become damaged in any way.

##### 2-4. Cleaning.

##### 2-5. Inserts, contacts, and inside sur-

faces of shells must be kept free of oil, grease, and dirt throughout the installation procedure. Use a clean cloth moistened with Neosol\* or equivalent (Federal Specification O-E-760 Grade IV) for any necessary cleaning.

##### 2-6. Cable and Wire Preparation.

2-7. Provide sufficient cable slack to allow easy installation of the connector.

2-8. Strip cable sheath (to "A" dimension, Figure 13) according to type of accessory and accessory dash number (See TABLE II). Cut jacket nearly through and then tear off. Avoid cutting or nicking individual conductor jackets.

\*Shell Chemical Co., 380 Madison Avenue, New York, 17, New York.

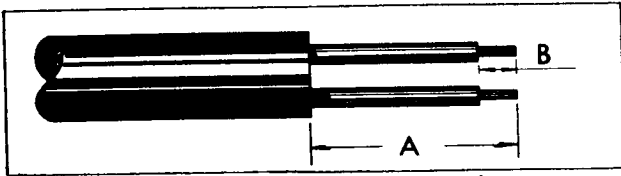


Figure 13. Stripping Dimensions.

2-9. Install accessory components onto cable. Typical accessories used with connectors are shown in the exploded views, Figures 14 through 17. Others not shown

are installed similarly to those illustrated. Slide the parts of the accessory to be used on the cable or wire bundle in the sequence indicated. If a Kellems or similar type of cable grip is to be used, compress the two ends toward each other to expand its diameter so it can be slipped on the cable. If assembling HKC-P series connectors, slide the nylon end bell and adapter over the cable.

2-10. Strip individual conductor insulation to "B" dimension, Figure 13, and TABLE I

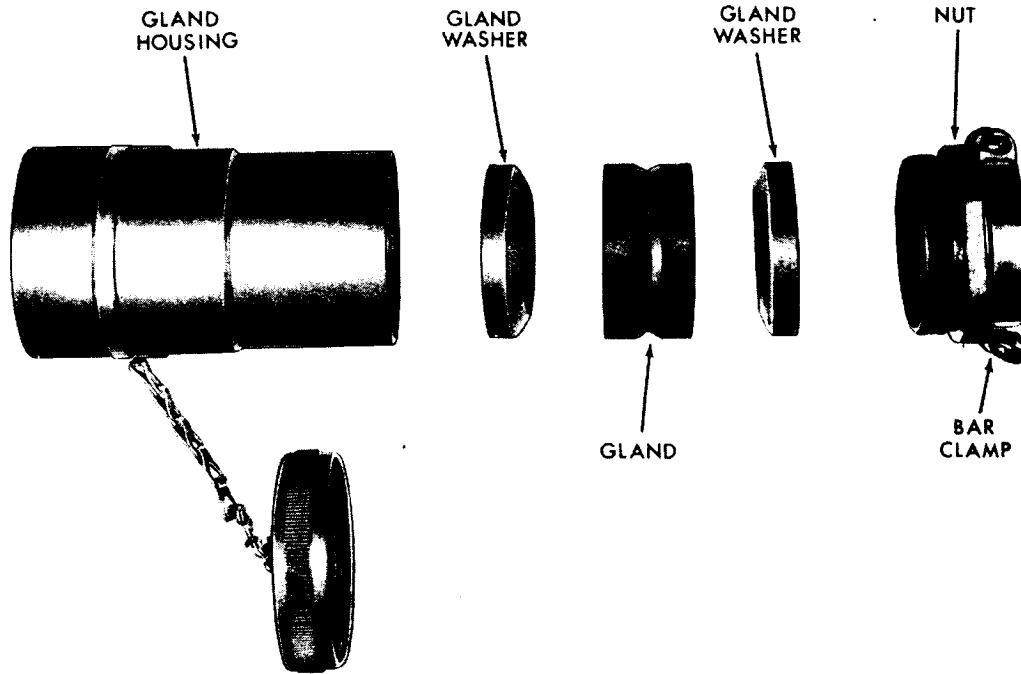


Figure 14. Cable accessory assembly with protection cap. Waterproofing for sheathed cables provided by compression of gland. Strain relief provided by clamping bars. Left hand thread at each end, long or short housings.

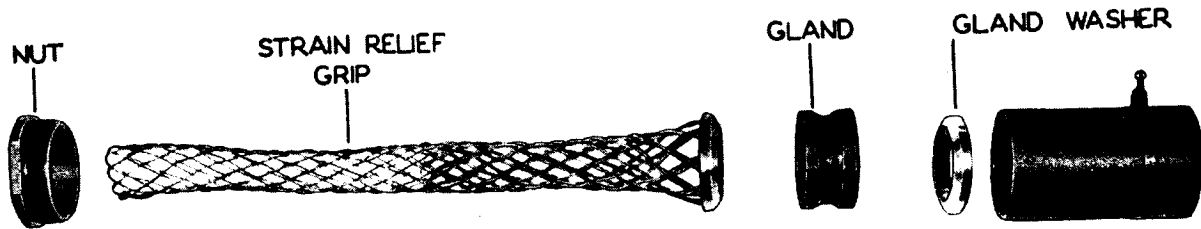


Figure 15. Similar to figure 14, but has 18-8 stainless steel Kellems cable strain relief grip. Left hand thread at each end, long or short housings.

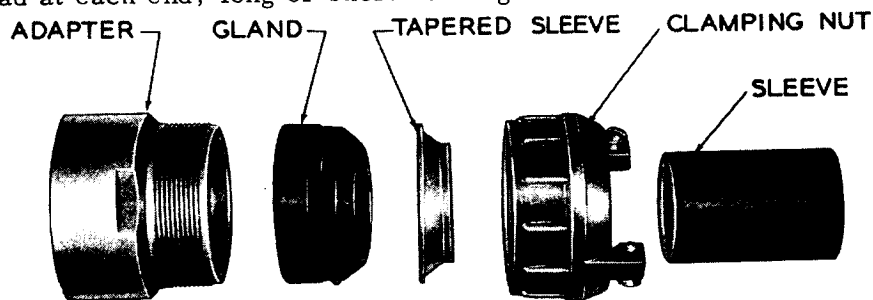


Figure 16. Adapter and MS 3057B cable clamp. Left hand thread at connector end of adapter and right hand thread at cable end.

according to type and size of contact. Hot wire stripping methods are recommended. If other methods are employed, use extreme care to avoid nicking or cutting wire strands.

2-11. Check to insure that the wire strands are not separated. If necessary, preform by lightly twisting the strands together.

TABLE I

| Contact Size | "B" Stripping Dimension |
|--------------|-------------------------|
| 16L, 16, 12  | 11/32                   |
| 8            | 11/16                   |
| 4            | 29/32                   |
| 0            | 19/32                   |

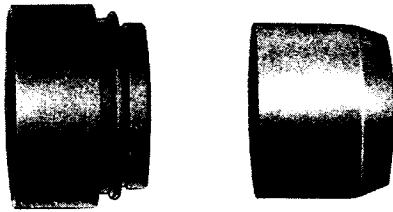


Figure 17. Adapter and potting end bell. Left hand thread at connector end of adapter.

2-12. Crimping Contacts.

2-13. Insert stripped end of wire into contact wire well and apply a slight pressure on the wire until it is positively bottomed. Make certain that wire strands are visible in the inspection hole provided at wire well.

2-14. Select crimping tool and positioner (s) according to TABLE III or IV.

2-15. With wire in place, insert contact into crimping tool. Make sure contact and wire are inserted into crimping tool as far as possible. Close tool handles. Refer to applicable publication which further outlines the use and maintenance of the tool being used (See TABLE III and IV for publication number).

2-16. Make final visual check to be sure contacts are properly crimped and ends of wires are visible in inspection hole of contact wire well.

2-17. Installing Crimped Contacts.

2-18. Determine appropriate tool for contact insertion according to TABLE III or IV.

2-19. Use Neosol\* or equivalent (Federal Specification O-E-760 Grade IV) as a lubricant to aid in the insertion of contacts.

2-20. Grip the shoulder nearest the mating end of the contact so that it is positioned against the shoulder undercut in the tips of the appropriate insertion tool (See Figure 18.)

2-21. Push the contact into the applicable contact hole in the rear face of the insert until the tips of the insertion tool come into contact with the rear face of the insert.

2-22. Position the tips of the insertion tool against the rear of the wire well. (See Figure 19.)

2-23. Push the contact until it is properly seated in the insert.

2-24. Two stage insertion of size 16 contacts is done to prevent contact bending. Make certain to follow this procedure.



Figure 18. First Stage of Insertion.



Figure 19. Second Stage of Insertion.

2-25. If arbor press (11-7365) method of insertion is used, contacts and attached wire should be placed in predetermined insertion tip and inserted into their applicable insert hole. Positive stop setting of arbor press will control contact insertion depth.

2-26. Continue in like manner (depending on method of insertion) to seat remainder

\*Shell Chemical Co., 380 Madison Avenue, New York 17, New York.

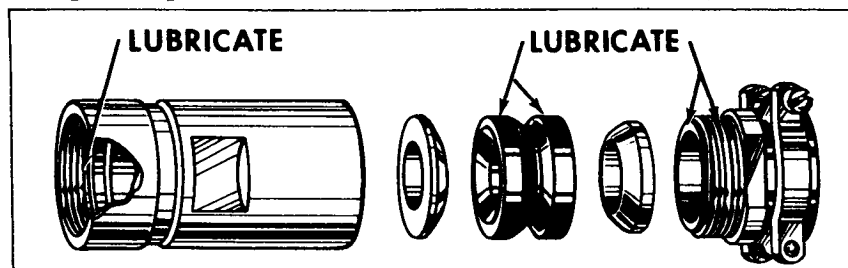


Figure 20. Surfaces to be Lubricated.

of contacts.

2-27. Personnel inserting contacts will normally "feel" contact reach its fully seated position. Visually check mating ends of connector to be sure all contacts are properly inserted to same depth.

2-28. Assembling Accessories.

2-29. Select the illustration from Figures 14 through 17 which applies to the accessory being installed. Check lubrication of gasket in housing or adapter. Starting with parts nearest the connector, assemble in the order shown. Gland housings have left hand threads at each end. Adapters (Figure 16) have left hand threads at the connector end and right hand threads at cable end. Plugs should be mated to corresponding receptacles to facilitate tightening of threaded accessory being installed.

2-30. With types shown in Figures 14 and 15 lubricate the surfaces indicated in Figure 20 with a thin film of Uni-Temp Grease EP\*. Be sure not to get lubricant on the cable or on the inside surfaces of the parts as it will reduce the effective grip of the gland on the cable. Attach the gland housing to the connector shell, then slide the first gland washer and gland into the housing making sure they are seated properly. Slide the remaining gland washer or Kellems type grip, whichever is used, into place against the gland and install the gland nut. If a Kellems or similar grip is used, compress the ends toward each other to increase the diameter and permit it to slide along the cable. Pre-load Kellems grip by stretching it back along the cable so that tightening of the rear nut will cause grip to bite into the cable outer sheath. Banding clamps should be installed as shown in Figure 21.

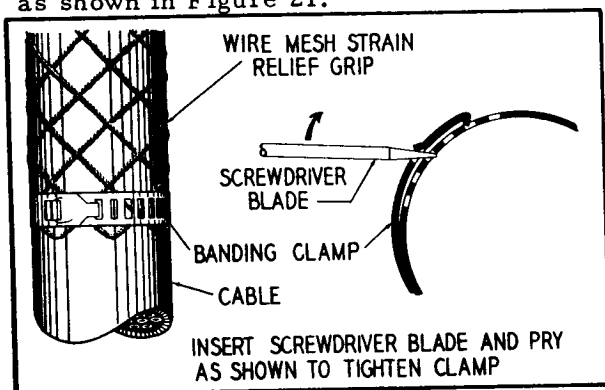


Figure 21. Installing Banding Clamp.

2-31. To assemble the MS3057B cable clamp (Figure 16), attach the adapter to the connector shell and lubricate the surfaces indicated in Figure 22. Do not allow lubricant to get on the inside diameter or on the serrated face of the gland. Assemble the tapered sleeve and gland in clamping nut,



LUBRICATE AREAS AS INDICATED

Figure 22. Lubrication - MS3057B Cable Clamp.

then slide to adapter. Use a smooth jaw wrench or equivalent to hold adapter from turning while tightening clamping nut.

2-32. Bendix HKC-P connectors for potting are factory primed on the rear face of the resilient insert to assure good adhesion of Thiokol potting compound, type MIL-S-8516B. Using a stiff camel's hair brush, clean the area to be potted (including two inches of wire) using proprietary ethyl alcohol or equivalent. Air dry for thirty minutes. Mixing and application of the potting compound should be done in accordance with the manufacturer's instructions.

#### CAUTION

Do not remove the factory applied potting primer.

2-33. REPAIR OR REPLACEMENT.

#### CAUTION

Contacts should be removed only as required. Repeated removal tends to reduce contact retention.

2-34. Removing Contacts for Replacement.

2-35. Loosen all rear accessories and unscrew them from connector shell. Slide all parts along wires to a position out of the way.

2-36. Determine the appropriate removal tool from TABLE III or IV.

2-37. Select and install the correct removal tip.

2-38. Position the tip of the removal tool on/in the contact at the front face of the connector.

2-39. Push the contact back through the insert and remove the contact.

#### NOTE

Make certain to push the contact in a straight line, parallel to the insert hole, and thus avoid possible damage.

2-40. To replace contacts, follow procedures outlined in paragraphs 2-1 through 2-27 of this section.

TABLE II

"A" Dimension for Type "F" Contacts (82- and 83- Series Connector ) Used With

| Accessory Dash Number | Short Housings<br>10-313002<br>10-313004<br>10-248599<br>10-341295<br>10-341374<br>10-248587 | Long Housings<br>10-313003<br>10-313005<br>10-248998 | Long Housings<br>10-329953<br>10-329954 | Potting Adapter<br>10-242067 | Adapter<br>10-350695 |
|-----------------------|--|--|---|------------------------------|----------------------|
| 171                   | 1.406  | 4.481  |   |                              |                      |
| 172                   | 1.656  | 4.281  |   |                              |                      |
| 173                   | 1.656  | 4.281  |   |                              |                      |
| 174                   | 1.656  |  |   |                              |                      |
| 181                   | 1.406  | 4.281  | 5.281                                   |                              |                      |
| 182                   | 1.656  | 5.281  |   |                              |                      |
| 183                   | 1.656  | 4.594  |   |                              |                      |
| 184                   | 1.656  | 4.594  |   |                              |                      |
| 201                   | 1.656  | 4.594  | 3.750                                   |                              |                      |
| 202                   | 1.656  | 3.781  |   |                              |                      |
| 203                   | 1.531  | 4.281  |   |                              |                      |
| 204                   | 1.656  | 4.594  |   |                              |                      |
| 221                   | 1.656  | 4.594  | 5.281                                   |                              |                      |
| 222                   | 1.656  | 4.594  | 5.281                                   |                              |                      |
| 223                   | 1.625  | 5.281  |   |                              |                      |
| 224                   | 1.656  | 4.594  |   |                              |                      |
| 225                   | 1.656  | 5.281  |   |                              |                      |
| 226                   | 1.656  | 5.281  |   |                              |                      |
| 227                   | 1.656  | 4.594  |   |                              |                      |
| 241                   | 1.687  | 5.343  |   |                              |                      |
| 242                   | 1.656  | 4.343  |   |                              |                      |
| 281                   | 1.719  | 5.343  |   |                              |                      |
| 282                   | 1.719  | 5.343  |   |                              |                      |
| 283                   | 1.719  | 5.343  |   |                              |                      |
| 284                   | 1.719  | 5.343  |   |                              |                      |
| 285                   | 1.719  | 5.343  |   |                              |                      |
| 286                   | 1.719  | 5.343  |   |                              |                      |
| 287                   |  | 5.343  |   |                              |                      |
| 288                   | 1.656  | 5.281  |   |                              |                      |
| 321                   | 1.843  | 5.468  | 4.343                                   |                              |                      |
| 322                   | 1.656  | 5.281  | 4.343                                   |                              |                      |
| 323                   | 1.719  |  | 4.343                                   |                              |                      |
| 324                   | 1.719  |  | 4.343                                   |                              |                      |
| 361                   | 1.812  | 6.468  |   |                              |                      |
| 362                   | 1.812  | 6.468  | 5.343                                   |                              |                      |
| 363                   | 1.719  | 6.343  |   |                              |                      |
| 401                   | 2.687  | 6.531  |   |                              |                      |
| 402                   | 1.968  | 6.531  |   |                              |                      |
| 403                   | 2.562  |  |   |                              |                      |
| 404                   | 2.562  | 6.343  |   |                              |                      |
| 405                   | 2.562  |  |   |                              |                      |
| 10                    |  |  |   |                              | 1.125                |
| 12                    |  |  |   |                              | 1.125                |
| 13                    |  |  |   | .875                         | 1.156                |
| 14                    |  |  |   |                              | 1.125                |
| 15                    |  |  |   | 0.906                        | 1.156                |
| 16                    |  |  |   |                              | 1.125                |
| 17                    |  |  |   | 0.938                        | 1.156                |
| 18                    |  |  |   | 1.219                        | 1.156                |
| 20                    |  |  |   | 1.219                        | 1.156                |
| 22                    |  |  |   | 1.219                        | 1.156                |
| 24                    |  |  |   | 1.062                        | 1.218                |
| 28                    |  |  |   | 1.062                        | 1.406                |



TABLE II (Continued)

"A" Dimension for Type "F" Contacts (82- and 83- Series Connector) Used With

| Accessory Dash Number | Short Housings   | Long Housings                       | Long Housings          | Potting Adapter | Adapter   |
|-----------------------|--|-------------------------------------|------------------------|-----------------|-----------|
|                       | 10-313002<br>10-313004<br>10-248599<br>10-341295<br>10-341374<br>10-248587 | 10-313003<br>10-313005<br>10-248998 | 10-329953<br>10-329954 | 10-242067       | 10-350695 |
| 32                    |  |                                     |                        | 1.000           | 1.406     |
| 36                    |  |                                     |                        | 1.062           | 1.406     |
| 40                    |  |                                     |                        | 0.812           | 1.500     |

NOTE

Additional application data for determining the correct "A" stripping dimension when the basic assembly (82- and 83-Series) is altered.

- a. Basic assembly with AN/MS Crimp Type contacts (75- and 81- Series Connector) - Add 0.125 inch to "A" dimension.
- b. Basic assembly with size 0 and 4 solder type contacts used with AN/MS Crimp Type (75- and 81- Series Connector) - Refer to Section III for "A" and "B" stripping dimensions and recommended soldering procedures.

TABLE III

Recommended Tooling for AN/MS Crimp Type Contacts Used in 75- and 81- Series QWLD Connectors with MIL-W-5086 Wire.

| Publication No.               | Contact |            | Insertion Tool | Removal   |           | Crimping  |                       | Setting** |
|-------------------------------|---------|------------|----------------|-----------|-----------|-----------|-----------------------|-----------|
|                               |         |            |                | Tool      | Tip       | Tool***   | Positioner or Locator |           |
|                               | Size    | Type       |                |           |           |           |                       |           |
| MG-1026<br>MG-1263<br>MG-1075 | 16      | S          | 11-7345        | 11-8250   | 11-3698   | 11-6941-1 | 11-6932-27            | .050-.053 |
|                               |         |            | 11-7736        | *11-7368  | 11-3698   | 11-8581-3 | 11-7181-21            | .040-.050 |
|                               | 16      | P          | *11-7365-1     |           |           | 11-7295   | 11-7771-2             |           |
|                               |         |            | 11-7345        | 11-8250   | 11-3697   | 11-6941-1 | 11-6932-2             | .050-.053 |
| MG-1082                       | 12      | S          | 11-7736        | *11-7368  | 11-3697   | 11-8581-3 | 11-7181-2             | .040-.050 |
|                               |         |            | *11-7365-1     |           |           | 11-7295   | 11-7771-3             |           |
|                               | 12      | S          | 11-7082        | 11-8250   | 11-3698   | 11-6941-1 | 11-6932-3             | .070-.075 |
|                               |         |            | 11-7763        | *11-7368  | 11-3698   | 11-8581-3 | 11-7181-3             |           |
| MG-1082                       | 8       | S          | *11-7365-2     |           |           | 11-7295   | 11-7771-4             |           |
|                               |         |            | 11-7082        | 11-8250   | 11-3696   | 11-6941-1 | 11-6932-3             | .070-.075 |
|                               | 8       | P          | 11-7763        | *11-7368  | 11-3696   | 11-8581-3 | 11-7181-3             | .070-.075 |
|                               |         |            | *11-7365-2     |           |           | 11-7295   | 11-7771-4             |           |
| 8                             | S       | 11-8220    | 11-8250        | 11-8251   | 11-8447-9 |           | .125-.140             |           |
|                               |         | *11-7365-3 | *11-7368       | 11-7674-1 |           |           |                       |           |
| 8                             | P       | 11-8220    | 11-8250        | 11-8252   | 11-8447-9 |           | .125-.140             |           |
|                               |         | *11-7365-3 | *11-7368       | 11-7370-3 |           |           |                       |           |

\*Used with 11-7364 Arbor Press or equivalent.

\*\*Crimp settings determined for MIL-W-5086 wire.

\*\*\*For equivalent Bench Mount Tool use 11-8582 Series.

NOTE

The special long AN/MS contacts used in shell sizes 44 and 48 employ the 11-6941 Series Crimping Tool with the 11-6932-31 Locator for size 16 sockets, 11-6932-28 Locator for size 16 pins and 11-6932-32 Locator for size 12 pins and sockets.

TABLE IV

Recommended Tooling for Type "F" Crimp Contacts Used in 82- and 83- Series QWLD Connectors with MIL-C-13777.

| Publication No. | Contact |      | Insertion Tool        | Removal             |                      | Crimping  |            | Setting** |
|-----------------|---------|------|-----------------------|---------------------|----------------------|-----------|------------|-----------|
|                 | Size    | Type |                       | Tool                | Tip                  | Tool      | Locator    |           |
| MG-1026         | 16      | P    | 11-7345<br>*11-7365-1 | 11-8250<br>*11-7368 | 11-3697<br>11-3697   | 11-6941-2 | 11-6932-12 | .042-.045 |
|                 |         | S    | 11-7345<br>*11-7365-1 | 11-8250<br>*11-7368 | 11-3698<br>11-3698   | 11-6941-2 | 11-6932-11 | .042-.045 |
|                 | 12      | P    | 11-7082<br>*11-7365-2 | 11-8250<br>*11-7368 | 11-3696<br>11-3696   | 11-6941-2 | 11-6932-6  | .065-.068 |
|                 |         | S    | 11-7082<br>*11-7365-2 | 11-8250<br>*11-7368 | 11-3698<br>11-3698   | 11-6941-2 | 11-6932-13 | .065-.068 |
| MG-1082         | 8       | P    | 11-8220<br>*11-7365-3 | 11-8250<br>*11-7368 | 11-8252<br>11-7370-3 | 11-8447-6 |            | .125-.140 |
|                 |         | S    | 11-8220<br>*11-7365-3 | 11-8250<br>*11-7368 | 11-8251<br>11-7674-1 | 11-8447-6 |            | .125-.140 |
|                 | 4       | P    | *11-7365-4            | *11-7368            | 11-7370-4            | 11-8447-5 |            | .125-.140 |
|                 |         | S    | *11-7365-4            | *11-7368            | 11-7674-2            | 11-8447-5 |            | .125-.140 |
|                 | 0       | P    | *11-7365-5            | *11-7368            | 11-7370-5            | 11-8447-4 |            | .165-.180 |
|                 | 0       | S    | *11-7365-5            | *11-7368            | 11-7674-3            | 11-8447-4 |            | .165-.180 |

\*Used with 11-7364 Arbor Press or equivalent.

\*\*The optimum setting may deviate from the recommended due to conductor diameter variation in MIL-C-13777 Wire.

SECTION III

QWLD - SOLDER TYPE CONTACTS

3-1. INSTALLATION.

3-2. Preparation for Installation.

NOTE

The 10-Series & HK-P QWLD Connectors incorporate factory installed solder type contacts. The accessory assembly sequence is the same as outlined in Section II. Utilize TABLES V and VI to determine the "B" and "A" stripping dimensions, respectively.

TABLE V

|                | 16    | 12    | 8,4,0 |
|----------------|-------|-------|-------|
| Strip Dim. "B" | 0.250 | 0.312 | 0.625 |

3-3. Make certain that the bare conductors are clean, straight and that strands are tight together.

3-4. Apply a good grade of rosin-alcohol flux to the stripped ends. This can best be done by dipping the bare ends in flux about

halfway to the insulation. Shake off excess flux. Avoid using excess flux because both flux and solder tend to creep up the conductor during the tinning operation.

3-5. Immediately after fluxing, pre-tin approximately 50% of the length of each exposed conductor end. Use of a solder pot and good grade of 60/40 tin-lead solder at a temperature between 500° and 550°F is recommended (Figure 23). Dip the bare conductor ends into the solder about halfway to the insulation. Hold in bath long enough for the conductors to heat through and tinning of all strands to take place. Avoid overheating which may cause melting, burning or scorching of the insulation. Shake off excess solder when conductors are removed from the bath.

### 3-6. Soldering Contacts.

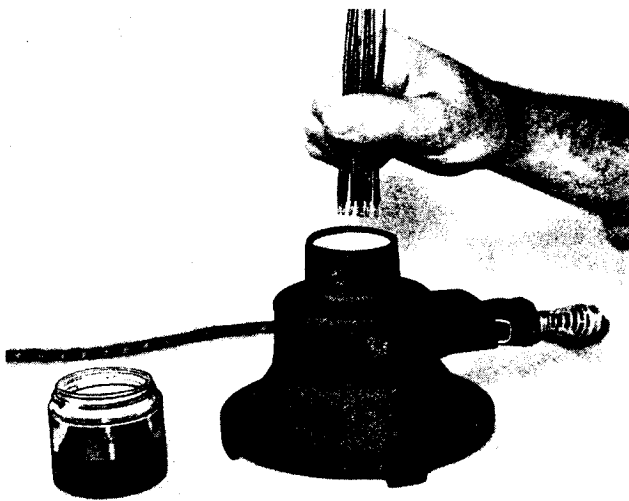


Figure 23. Tinning Wires by Dipping.

3-7. Either probe type resistance soldering equipment or a soldering iron is suitable for soldering conductors to contacts installed in connectors. When using an iron, it may be necessary to re-shape the tip to provide for access to contacts in some insert arrangements. The tip should be left as large as practicable in order to obtain the greatest amount of heat transfer in the shortest length of time. Recommended iron sizes are 500 watt for size 0 and 4 contacts, 300 watt for size 8, and 100 to 150 watt for size 12 and 16. The tip should be kept clean, free of pits, and well tinned. Support connectors to be soldered in a convenient manner which will leave both hands free for the soldering operation. Jaws of any clamping device should be well covered with some soft material which will prevent damage to the connector shell.

### 3-8. Soldering Contacts Installed in Inserts.

3-9. The connector should be positioned with the cutaway sides of solderwells as

shown in Figure 24. If necessary, the cable being attached should be supported in some convenient manner to avoid any side strain on the connector shell and insert.

3-10. Select the first wire to be soldered and dip in rosin-alcohol flux. It is recommended that soldering start with the bottom row, working across and up.

3-11. Start the wire end into the proper wire well and apply the soldering iron tip or tips of resistance probes at the side or opposite the cutaway. To avoid a "cold joint", maintain heat until solder both in solder well and on the conductor is completely liquid. Be sure the conductor is pushed to the bottom of the well. Add more solder if needed. Be sure any added solder melts completely.

3-12. While holding the wire steady and properly aligned, remove the heat source and allow solder to cool until completely solid. Permitting the wire to move while the solder is in a plastic state results in crystallization and a weak joint.

3-13. Check to be sure excess solder has not collected on the surfaces of the solderwell. By working quickly, excess may be wiped from the contacts before it solidifies. If necessary to use heat to remove excess, hold the wire in correct alignment as before until certain the solder in the well is completely solid.

3-14. Proceed in like manner to attach the wires and contacts.

3-15. After soldering is complete, remove all excess flux using a stiff brush dipped in Neosol\* or equivalent. Allow areas to dry thoroughly.

\*Shell Chemical Co., 380 Madison Avenue, New York 17, New York.

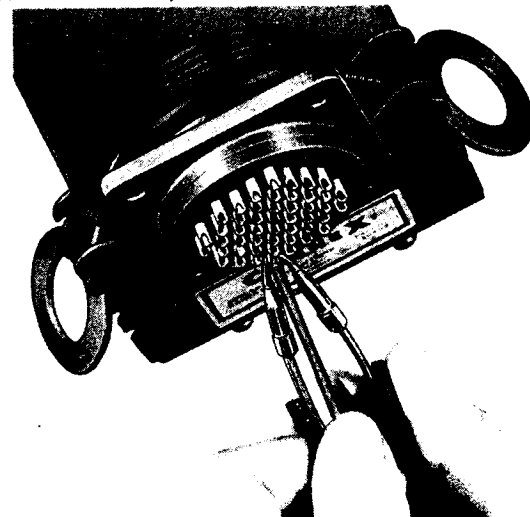


Figure 24. Soldering with Resistance Probes.

**3-16. Soldering Contacts Removed from Inserts.**

3-17. Size 0, 4, and 8 contacts may be removed from inserts in QWLD Series Connectors for soldering if desired. Special pressurized QWLD Connectors do exist in which the contacts are bonded into the insert and should not be removed for soldering. These connectors are identified by part numbers other than the standard connector series 10-194XXX, 10-297XXX(HK-P) and 10-323XXX.

3-18. Remove size 8 or larger contacts from inserts by applying pressure on the solder well end. Use a non-metallic rod slightly smaller in diameter than the contact wire well and a support block with a hole drilled large enough for the contact to pass through (See Figure 25).

**NOTE**

If crimp type QWLD connectors are being used, the appropriate insertion and removal tools from TABLE III and IV may be utilized. Contact will be removed in opposite directions.

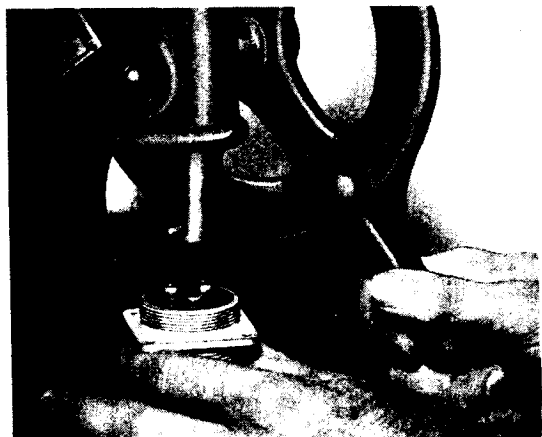


Figure 25. Removing Contacts.

3-19. Support the contact to be soldered in a block having a hole slightly larger than the contact diameter (Figure 26). Apply rosin-alcohol flux to the pre-tinned conductor end or the solder well. Heat the contact with a soldering iron or small torch until solder begins to melt. Continue heating and push the conductor into the well. Maintain heat long enough to be certain solder on the conductor becomes completely liquid but avoid melting or scorching insulation. Add more solder if needed. While holding the wire steady and in line with the contact, remove the heat source and allow the solder to become completely solid. Check to be sure excess solder has not collected outside the solderwell. Remove excess flux with alcohol.

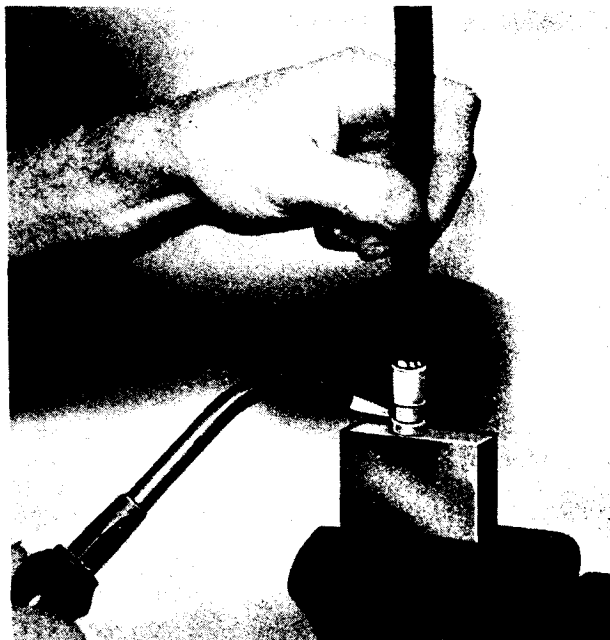


Figure 26. Soldering Wire to Contact.

3-20. After soldering is complete, push contacts back into position in the solderwell end of the insert. Contacts may be moistened with methanol or Neosol\* to aid in reassembly. Do not use any other lubricant.

3-21. Assembly of Accessories.

3-22. Proceed with accessory assembly as outlined in paragraphs 2-28 thru 2-32, Section II.

3-23. Potting of the HK-P series connectors is the same as outlined in paragraph 2-33 (Section II).

3-24. REPAIR OR REPLACEMENT.

3-25. To remove and replace one or more conductors or a complete connector, access to the wire well is necessary. If a cable accessory is installed, refer to figures 14 through 17 for parts identification and to determine their relative positions in the assembly.

3-26. For all accessories except those with a Kellems or similar type grip, loosen the bar clamp, if used, and unscrew the gland nut or clamping nut. Gland nuts have left hand threads, clamping nuts (figures 14, 16, and 17) have right hand threads. Unscrew the gland housing or adapter from the connector shell and move it back along the cable. Cables should be held to prevent twisting when unscrewing gland housing.

\*Shell Chemical Co., 380 Madison Avenue, New York 17, N. Y.

3-27. If a Kellems type grip is installed, unscrew the gland nut. Hold the cable from twisting and unscrew the gland housing from the connector. Loosen the wire mesh grip by pushing the housing a couple of inches away from the connector. Grasp the grip at each end and push the ends toward each other. This increases the diameter of the grip so it

and the housing can be moved along the cable away from the connector.

3-28. Unsolder conductors from contacts.

3-29. Refer to paragraphs 3-1 through 3-20, Section III, for recommended preparation and soldering procedures.

TABLE VI

PART I

"A" Stripping Dimension for 10- Series QWLD Connectors with AN/MS Solder Type Contacts

| Dash No. | Accessory or Adapter Part No. 10-248599, 10-313002, 10-313004, 10-248587, 10-329953, 10-329954 |       |       |       | Accessory or Adapter Part No. 10-248988, 10-313003, 10-313005 |       |       |       | Accessory or Adapter Part No. 10-341295, 10-341374 |       |       |       |
|----------|--|-------|-------|-------|---|-------|-------|-------|--|-------|-------|-------|
|          | Contact Size   |       |       |       | Contact Size  |       |       |       | Contact Size                                       |       |       |       |
|          | 16   | 12    | 8,4   | 0     | 16  | 12    | 8,4   | 0     | 16   | 12    | 8,4   | 0     |
| 171      | 1.468  | 1.531 | 1.781 |       | 4.343   | 4.406 | 4.656 |       |  |       |       |       |
| 172      | 1.718  | 1.781 | 1.031 |       | 4.343   | 4.406 | 4.656 |       |  |       |       |       |
| 173      | 1.718  | 1.781 | 2.031 |       | 4.343   | 4.406 | 4.656 |       |  |       |       |       |
| 174      | 1.468  | 1.781 | 2.031 |       |   |       |       |       |  |       |       |       |
| 181      | 1.468  | 1.531 | 1.781 |       | 4.343   | 4.406 | 4.656 |       | 1.719  | 1.781 | 2.031 |       |
| 182      | 1.718  | 1.781 | 2.031 |       | 5.343   | 5.406 | 5.656 |       | 1.719  | 1.781 | 2.031 |       |
| 183      | 1.718  | 1.781 | 2.031 |       | 4.656   | 4.719 | 4.969 |       |  |       |       |       |
| 184      | 1.718  | 1.781 | 2.031 |       | 4.656   | 4.719 | 4.969 |       |  |       |       |       |
| 201      | 1.718  | 1.781 | 2.031 |       | 4.656   | 4.719 | 4.969 |       | 1.719  | 1.781 | 2.031 |       |
| 202      | 1.718  | 1.781 | 2.031 |       | 3.843   | 3.906 | 4.156 |       |  |       |       |       |
| 203      | 1.593  | 1.656 | 1.906 |       | 4.343   | 4.406 | 4.656 |       |  |       |       |       |
| 204      | 1.718  | 1.781 | 2.031 |       | 4.656   | 4.719 | 4.969 |       |  |       |       |       |
| 221      | 1.718  | 1.781 | 2.031 | 1.843 | 4.656   | 4.719 | 4.969 | 4.781 | 1.719  | 1.781 | 2.031 | 1.843 |
| 222      | 1.718  | 1.781 | 2.031 | 1.843 | 4.656   | 4.719 | 4.969 | 4.781 | 1.593  | 1.656 | 1.906 | 1.719 |
| 223      | 1.687  | 1.750 | 2.000 | 1.812 | 5.343   | 5.406 | 5.656 | 5.469 |  |       |       |       |
| 224      | 1.718  | 1.781 | 2.031 | 1.843 | 4.656   | 4.719 | 4.969 | 4.781 |  |       |       |       |
| 225      | 1.718  | 1.781 | 2.031 | 1.843 | 5.343   | 5.406 | 5.656 | 5.469 |  |       |       |       |
| 226      | 1.718  | 1.781 | 2.031 | 1.843 | 5.343   | 5.406 | 5.656 | 5.469 |  |       |       |       |
| 227      | 1.718  | 1.781 | 2.031 | 1.843 | 4.656   | 4.719 | 4.969 | 4.781 |  |       |       |       |
| 241      | 1.750  | 1.812 | 2.062 | 1.875 | 5.406   | 5.469 | 5.719 | 5.531 |  |       |       |       |
| 242      | 1.718  | 1.781 | 2.031 | 1.843 | 4.405   | 4.468 | 4.718 | 4.531 |  |       |       |       |
| 281      | 1.781  | 1.843 | 1.093 | 1.906 | 5.406   | 5.469 | 5.719 | 5.531 |  |       |       |       |
| 282      | 1.781  | 1.843 | 1.093 | 1.906 | 5.406   | 5.469 | 5.719 | 5.531 |  |       |       |       |
| 283      | 1.781  | 1.843 | 1.093 | 1.906 | 5.406   | 5.469 | 5.719 | 5.531 |  |       |       |       |
| 284      | 1.781  | 1.843 | 1.093 | 1.906 | 5.406   | 5.469 | 5.719 | 5.531 |  |       |       |       |
| 285      | 1.781  | 1.843 | 1.093 | 1.906 | 5.406   | 5.469 | 5.719 | 5.531 |  |       |       |       |
| 286      | 1.781  | 1.843 | 1.093 | 1.906 | 5.406   | 5.469 | 5.719 | 5.531 |  |       |       |       |
| 287      |  |       |       |       | 5.406   | 5.469 | 5.719 | 5.531 |  |       |       |       |
| 288      | 1.718  | 1.781 | 2.031 | 1.843 | 5.343   | 5.406 | 5.656 | 5.469 |  |       |       |       |
| 321      | 1.906  | 1.969 | 1.219 | 2.031 | 5.531   | 5.593 | 5.843 | 6.656 | 1.781  | 1.843 | 2.093 | 1.906 |
| 322      | 1.718  | 1.781 | 2.031 | 1.843 | 5.343   | 5.406 | 5.656 | 5.469 | 1.781  | 1.843 | 2.093 | 1.906 |
| 323      | 4.406  | 4.469 | 4.719 | 4.531 |   |       |       |       | 1.781  | 1.843 | 2.093 | 1.906 |
| 324      | 4.406  | 4.469 | 4.719 | 4.531 |   |       |       |       | 1.781  | 1.843 | 2.093 | 1.906 |
| 361      | 1.875  | 1.938 | 1.188 | 2.000 | 6.531   | 6.593 | 6.843 | 6.656 | 1.781  | 1.843 | 2.093 | 1.906 |
| 362      | 1.875  | 1.938 | 1.188 | 2.000 | 6.531   | 6.593 | 6.843 | 6.656 | 1.781  | 1.843 | 2.093 | 1.906 |
| 363      | 1.781  | 1.843 | 2.093 | 1.906 | 6.406   | 6.469 | 6.719 | 6.531 |  |       |       |       |
| 401      | 2.750  | 2.812 | 3.062 | 2.875 | 6.593   | 6.656 | 6.906 | 6.719 |  |       |       |       |
| 402      | 2.031  | 2.093 | 2.343 | 2.156 | 6.593   | 6.656 | 6.906 | 6.719 |  |       |       |       |
| 403      | 2.625  | 2.688 | 2.938 | 2.750 |   |       |       |       |  |       |       |       |
| 404      | 2.625  | 2.688 | 2.938 | 2.750 | 6.406   | 6.469 | 6.719 | 6.531 |  |       |       |       |
| 405      | 2.625  | 2.688 | 2.938 | 2.750 |   |       |       |       |  |       |       |       |

TABLE VI (Continued)

## PART II

| Dash<br>No. | Adapter Part No.<br>10-350695 |       |       |       | Adapter Part No.<br>10-242067 |       |       |       |
|-------------|-------------------------------|-------|-------|-------|-------------------------------|-------|-------|-------|
|             | Contact Size                  |       |       |       | Contact Size                  |       |       |       |
|             | 16                            | 12    | 8,4   | 0     | 16                            | 12    | 8,4   | 0     |
| 10          | 1.188                         |       |       |       |                               |       |       |       |
| 12          | 1.188                         |       |       |       |                               |       |       |       |
| 13          | 1.219                         |       |       |       | 0.937                         |       |       |       |
| 14          | 1.188                         | 1.250 | 1.500 |       |                               |       |       |       |
| 15          | 1.219                         | 1.281 | 1.531 |       | 0.969                         | 1.031 | 1.281 |       |
| 16          | 1.188                         | 1.250 | 1.500 |       |                               |       |       |       |
| 17          | 1.219                         | 1.281 | 1.531 |       | 1.000                         | 1.062 | 1.312 |       |
| 18          | 1.219                         | 1.281 | 1.531 |       | 1.281                         | 1.343 | 1.593 |       |
| 20          | 1.219                         | 1.281 | 1.531 |       | 1.281                         | 1.343 | 1.593 |       |
| 22          | 1.219                         | 1.281 | 1.531 | 1.343 | 1.281                         | 1.343 | 1.593 | 1.406 |
| 24          | 1.281                         | 1.343 | 1.593 | 1.406 | 1.125                         | 1.188 | 1.438 | 1.250 |
| 28          | 1.469                         | 1.531 | 1.781 | 1.593 | 1.125                         | 1.188 | 1.438 | 1.250 |
| 32          | 1.469                         | 1.531 | 1.781 | 1.593 | 1.062                         | 1.125 | 1.375 | 1.188 |
| 36          | 1.469                         | 1.531 | 1.781 | 1.593 | 1.125                         | 1.188 | 1.438 | 1.250 |
| 40          | 1.562                         | 1.625 | 1.875 | 1.688 | 0.875                         | 0.937 | 1.188 | 1.000 |