

# Amphenol® QWL Series Cylindrical Connectors

12-053-4



# Amphenol

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Amphenol Aerospace operates Quality Systems that are Certified to ISO-9001 and AS-9100 by third party Registrars.

For additional information concerning the Amphenol® QWL Series Cylindrical Connector, or if there are special application requirements, contact your local sales office or

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(Most Amphenol catalogs can be viewed, printed and down-loaded from the website)

# Amphenol® Heavy Duty Cylindrical Connectors

## QWL Series



wall mount receptacle



thru bulkhead receptacle



cable connecting plug



straight plug



box mount receptacle



flange mount plug



jam nut receptacle  
(wall mount)



jam nut receptacle  
(box mount)

**Amphenol® QWL Series Connectors** are tailor made for compact, heavy duty industrial use.

The outstanding performance of this series makes it well suited for ship-board installations and ground support power distribution applications where physical strength and dependability are key requirements.

**The QWL Series are a versatile, economical alternative to military qualified designs.**

Equivalent MS shell sizes and insert arrangements offer compatibility with all standard cable types. MIL-C-22992 environmental connector requirements (see page 1) are used as a performance criteria base for this series to assure reliability under the most severe conditions.

**The design features of this connector series provide:**

- **Exceptional Service** - high strength aluminum shells with Alumi-lite 225\* hard anodic finish and shock resistant resilient inserts.
- **Foolproof Operation** - rugged double stub coupling threads, left hand accessory threads and simple single keyway mating.
- **Versatility** - both MS and custom insert patterns available for a wide variety of multiconductor cables.

A complete line of accessories is available for use with QWL Series connectors, including cable sealing and clamp adapters, protective covers, flange gaskets and banding clamps.

\* Registered trademark of Aluminum Company of America

# QWL

## the environmental connector

- **HIGH CURRENT CAPACITY** for power distribution network and inputs to large equipment
- **RUGGED CONSTRUCTION** dictated by the working environment, high strength aluminum shells with Alumilite 225\* hard anodic finish, shock resistant resilient inserts, gaskets or “O” rings at appropriate surfaces for perfect weather tight connections.
- **SERVICEABILITY AND FOOL-PROOF OPERATION** with fast coupling, easily maintained double stub threads, left hand accessory threads and single keyway mating.
- **VERSATILITY** - both MS and custom insert patterns available to accommodate a wide variety of multi conductor cables.

| CONDITION                                         | CONFIGURATION | DESCRIPTION                                                                                                     | REFERENCE                                     |
|---------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| THERMAL SHOCK                                     | UNMATED       | Five complete one hour temperature cycles of -55°C to +125°C                                                    | MIL-STD-1344<br>method 1003<br>test condition |
| MOISTURE RESISTANCE<br>(Cable mounted connectors) | MATED         | Ten complete 24 hour cycles of +25°C to +65°C temperature at 90% to 98% humidity                                | MIL-STD-202<br>method 106                     |
| DURABILITY                                        | MATED         | 500 complete mating/unmating cycles                                                                             | MIL-C-22992                                   |
| SALT SPRAY<br>(Corrosion)                         | UNMATED       | 48 hour exposure to atomized 5% saline solution at +35°C                                                        | MIL-STD-1344<br>method 1001                   |
| VIBRATION                                         | MATED         | 10 to 55 Hz, .06 inch total excursion in 1 minute cycles for 6 hours<br>55 to 2000 Hz, 10G peak amplitude sweep | MIL-STD-1344<br>method 2005                   |
| HIGH IMPACT                                       | MATED         | Nine hammer blows from 1, 3 and 5 feet, three each in three axes on mounting panel                              | MIL-STD-202<br>method 207                     |
| FLUID IMMERSION                                   | UNMATED       | 20 hours immersion in hydraulic fluid and lubricating oil                                                       | MIL-C-22992                                   |
| WATER IMMERSION                                   | MATED         | 4 hours immersion at 1 atmosphere pressure differential                                                         | MIL-C-22992                                   |

\* Registered trademark of Aluminum Company of America

# QWL

## how to order

QWL heavy duty cylindrical connectors are ordered by Amphenol® part number only. To illustrate the ordering procedure, part number 10-107628-5P is shown as follows:

PART NUMBER  
 $\frac{10}{1} - \frac{107}{2} \frac{6}{3} \frac{28-5}{4} \frac{P}{5}$

See code below:

1. **Base Number Prefix** - used to define contact type and finish.

- 10- Solder type contacts, silver plated (Standard)
- 75- Crimp type contacts, silver plated
- 81- Crimp type contacts, plated .0001 gold over silver
- 82- Crimp type contacts for MIL-C-13777 cable, silver plated
- 83- Crimp type contacts for MIL-C-13777 cable, plated .0001 gold over silver
- 85- Crimp type contacts plated .00005 gold over silver

2. **Base Number** - QWL Series Heavy Duty Cylindrical Connector.

3. **Shell Style** -

- 0 designates wall mount receptacle
- 1 designates cable connecting plug
- 2 designates box mount receptacle
- 3 designates jam nut receptacle with rear accessory threads (wall mount)
- 4 designates thru bulkhead receptacle
- 6 designates straight plug
- 7 designates flange mount plug
- 9 designates jam nut receptacle (box mount)

4. **Shell Size/Insert Arrangement** - Amphenol® QWL connectors are available in equivalent MS shell sizes with all current MS insert arrangements as well as a large selection of special arrangements for power and signal circuits. Select the required insert arrangement number from those shown on pages 18-40.

5. **Contact Type/Alternate Insert Rotations** - P for pin, S for socket. When an alternate position of the connector insert is required to prevent cross mating of connectors, a different letter (other than P or S) is used. Select from the table below the Amphenol® letter which indicates both type of contact, and insert rotation desired. Refer to page 17 for alternate insert rotations.

| PIN CONTACTS |                  | SOCKET CONTACTS |                  |
|--------------|------------------|-----------------|------------------|
| MS LETTERS   | AMPHENOL® LETTER | MS LETTERS      | AMPHENOL® LETTER |
| P            | P (normal)       | S               | S (normal)       |
| PW           | G                | SW              | H                |
| PX           | I                | SX              | J                |
| PY           | K                | SY              | L                |
| PZ           | M                | SZ              | N                |

# QWL

## how to order, cont.

### ACCESSORIES

**Cable Sealing Adapters** - these are the basic connector accessories which provide moisture proofing and cable strain relief. Selection is made on the basis of accessory style, shell size and cable dimensions. To illustrate the ordering procedure, part number 10-101335-361 is shown as follows:

| PART NUMBER |   |     |
|-------------|---|-----|
| 10 - 101335 | - | 361 |
| 1           |   | 2   |

See code below:

- 1. Accessory Base Number** - refer to pages 41 through 52 for descriptions and dimensional data. 10-101332 designates short barrel length with woven strain relief grip
- 10-101333 designates short barrel length without strain relief
- 10-101334 designates short barrel length with woven strain relief grip and attaching ring for protection cap with bead chain
- 10-101335 designates short barrel length with attaching ring for protection cap with bead chain
- 10-101380 designates short barrel length with attaching ring for protection cap with bead chain and clamp type strain relief bars
- 10-113637 designates long barrel length with woven strain relief and attaching ring for protection cap with bead chain

**2. Part Number** – represents connector shell size and range of cable diameters accommodated by the sealing adapter. Refer to the page listed below to determine the part number required for the accessory style being used:

| Accessory Series | Page    |
|------------------|---------|
| 10-10133X        | 46 - 48 |
| 10-130380        | 44      |
| 10-113637        | 50 - 52 |

#### **Cable Clamp 10-749XX-( ) and Adapter 10-113196-XX**

Connectors which require weatherproofing on open wire cables are provided with a moisture seal by this cable clamp, a modification of the MS3057B design. A rubber grommet with holes for individual wires is used in place of the sleeve. As the assembly is tightened, the grommet is compressed around each wire, sealing out moisture.

Order this clamp by the part number listed on page 53 to accommodate the connector being used. Suffix the part number with the connector insert arrangement number.

To attach the cable clamp to the left hand accessory threads of QWL connectors, Adapter 10-113196-XX is needed. Finish is non-conductive Alumilite. Order by adapter part number listed on page 53 to accommodate the connector shell size being used. For a moisture proof seal, unused grommet holes must be filled with the appropriate size sealing plug or sealing rod selected from the table on page 53. Sealing plug or sealing rods must be ordered separately.

**M85049/1 Cable Clamp and Adapter 10-113138-XX** - order this clamp by the M85049( )C part number listed on page 55 to accommodate the cable type being used. To attach the cable clamp to the left hand accessory threads of QWL connectors, Adapter 10-113138-XX is needed. Order by adapter part number listed on page 55 to accommodate the connector shell size being used. Standard finish on the clamp is olive drab, cadmium plate. Adapter finish is non-conductive Alumilite. MS3420-( )A sleeve, to facilitate sealing on smaller diameter cables, must be ordered separately. MS3420-( )A sleeves may be nested to accommodate smaller cable diameters.

#### **Plug Protection Caps -**

- 10-101046-( ) designates plug cover with chain, Alumilite 225 finish
- 10-101531-( ) designates plug cover with chain and eyelet end, Alumilite 225 finish
- Order these plug covers by the part number listed on page 57 for the appropriate connector shell size.

#### **Receptacle Protection Caps -**

- 10-101063-( ) designates receptacle cover with chain, Alumilite 225 finish
- 10-101048-( ) designates receptacle cover with chain and eyelet, Alumilite 225 finish
- Order these receptacle covers by the part number listed on page 57 for the appropriate connector shell size.

#### **Flange Gasket -**

- 10-36675-( ) for operating temperature range -67° to +275°F
- 10-40450-( ) for operating temperature range 0° to +257°F
- Order by part number listed on page 59 for appropriate connector shell size.

**10-183249 Grip Banding Clamp** - order this stainless steel clamp by part number listed on page 59 to accommodate cable diameter being used.

# QWL

## 10-1070XX

### wall mount receptacle



All dimensions for reference only.

| Part Number* | Shell Size | A Thread Class 2A   | B Min Full Thread | K $\pm.015$ | M $+.016$<br>$-.000$ | R $\pm.005$ | S $\pm.020$ | T Dia $+.004$<br>$-.003$ | V Thread Class 2A-LH | W $\pm.010$ | Z Max |
|--------------|------------|---------------------|-------------------|-------------|----------------------|-------------|-------------|--------------------------|----------------------|-------------|-------|
| 10-107010    | 10S        | .6250-0.05P-0.1L-DS | .391              | .704        | .562                 | .719        | 1.000       | .150                     | .500-28UNEF          | .400        | .450  |
| 10-107012    | 12S        | .7500-0.1P-0.2L-DS  | .391              | .704        | .562                 | .812        | 1.094       | .150                     | .625-24UNEF          | .400        | .450  |
| 10-107013    | 12         | .7500-0.1P-0.2L-DS  | .625              | .891        | .750                 | .812        | 1.094       | .150                     | .625-24UNEF          | .588        | .700  |
| 10-107014    | 14S        | .8750-0.1P-0.2L-DS  | .391              | .704        | .562                 | .906        | 1.188       | .150                     | .750-20UNEF          | .400        | .450  |
| 10-107015    | 14         | .8750-0.1P-0.2L-DS  | .625              | .891        | .750                 | .906        | 1.188       | .150                     | .750-20UNEF          | .588        | .700  |
| 10-107016    | 16S        | 1.0000-0.1P-0.2L-DS | .391              | .704        | .562                 | .969        | 1.281       | .150                     | .875-20UNEF          | .400        | .450  |
| 10-107017    | 16         | 1.0000-0.1P-0.2L-DS | .625              | .891        | .750                 | .969        | 1.281       | .150                     | .875-20UNEF          | .588        | .700  |
| 10-107018    | 18         | 1.1250-0.1P-0.2L-DS | .625              | .906        | .750                 | 1.062       | 1.375       | .177                     | 1.000-20UNEF         | .573        | .686  |
| 10-107020    | 20         | 1.2500-0.1P-0.2L-DS | .625              | .906        | .750                 | 1.156       | 1.500       | .177                     | 1.125-18NEF          | .573        | .686  |
| 10-107022    | 22         | 1.3750-0.1P-0.2L-DS | .625              | .906        | .750                 | 1.250       | 1.625       | .177                     | 1.250-18NEF          | .573        | .686  |
| 10-107024    | 24         | 1.5000-0.1P-0.2L-DS | .625              | .968        | .812                 | 1.375       | 1.750       | .177                     | 1.375-18NEF          | .573        | .624  |
| 10-107028    | 28         | 1.7500-0.1P-0.2L-DS | .625              | .968        | .812                 | 1.562       | 2.000       | .177                     | 1.625-18NEF          | .573        | .624  |
| 10-107032    | 32         | 2.0000-0.1P-0.2L-DS | .625              | 1.031       | .875                 | 1.750       | 2.250       | .209                     | 1.875-16N            | .573        | .561  |
| 10-107036    | 36         | 2.2500-0.1P-0.2L-DS | .625              | 1.031       | .875                 | 1.938       | 2.500       | .209                     | 2.0625-16N           | .573        | .561  |
| 10-107040    | 40         | 2.5000-0.1P-0.2L-DS | .625              | 1.031       | .875                 | 2.188       | 2.750       | .209                     | 2.3125-16N           | .573        | .561  |
| 10-107044    | 44         | 2.7500-0.1P-0.2L-DS | .625              | 1.031       | .875                 | 2.375       | 3.000       | .209                     | 2.625-16UN           | .698        | .801  |

\*For complete order number see page 4

# QWL

## 10-1071XX

### cable connecting plug



All dimensions for reference only.

| Part Number* | Shell Size | A Thread (plated) Class 2A | K ±.015 | M +.016 - .000 | S ±.020 | V Thread Class 2A-LH | W ±.010 | Z Max |
|--------------|------------|----------------------------|---------|----------------|---------|----------------------|---------|-------|
| 10-107110    | 10S        | .6250-0.05P-0.1L-DS        | .704    | .453           | .750    | .500-28UNEF          | .400    | .450  |
| 10-107112    | 12S        | .7500-0.1P-0.2L-DS         | .704    | .453           | .875    | .625-24UNEF          | .400    | .450  |
| 10-107113    | 12         | .7500-0.1P-0.2L-DS         | .891    | .641           | .875    | .625-24UNEF          | .588    | .701  |
| 10-107114    | 14S        | .8750-0.1P-0.2L-DS         | .704    | .453           | 1.000   | .750-20UNEF          | .400    | .450  |
| 10-107115    | 14         | .8750-0.1P-0.2L-DS         | .891    | .641           | 1.000   | .750-20UNEF          | .588    | .701  |
| 10-107116    | 16S        | 1.0000-0.1P-0.2L-DS        | .704    | .453           | 1.094   | .875-20UNEF          | .400    | .450  |
| 10-107117    | 16         | 1.0000-0.1P-0.2L-DS        | .891    | .641           | 1.094   | .875-20UNEF          | .588    | .701  |
| 10-107118    | 18         | 1.1250-0.1P-0.2L-DS        | .906    | .656           | 1.281   | 1.000-20UNEF         | .573    | .686  |
| 10-107120    | 20         | 1.2500-0.1P-0.2L-DS        | .906    | .656           | 1.375   | 1.125-18UNEF         | .573    | .686  |
| 10-107122    | 22         | 1.3750-0.1P-0.2L-DS        | .906    | .656           | 1.500   | 1.250-18UNEF         | .573    | .686  |
| 10-107124    | 24         | 1.5000-0.1P-0.2L-DS        | .968    | .719           | 1.625   | 1.375-18UNEF         | .573    | .624  |
| 10-107128    | 28         | 1.7500-0.1P-0.2L-DS        | .968    | .719           | 1.875   | 1.625-18UNEF         | .573    | .624  |
| 10-107132    | 32         | 2.0000-0.1P-0.2L-DS        | 1.031   | .656           | 2.125   | 1.875-16UN           | .573    | .561  |
| 10-107136    | 36         | 2.2500-0.1P-0.2L-DS        | 1.031   | .656           | 2.375   | 2.0625-16UNS         | .573    | .561  |
| 10-107140    | 40         | 2.5000-0.1P-0.2L-DS        | 1.031   | .656           | 2.625   | 2.3125-16UNS         | .573    | .561  |
| 10-107144    | 44         | 2.7500-0.1P-0.2L-DS        | 1.031   | .656           | 3.000   | 2.625-16UN           | .698    | .800  |
| 10-107148    | 48         | 3.0000-0.1P-0.2L-DS        | 1.031   | .656           | 3.125   | 2.875-16UN           | .698    | .800  |

\*For complete order number see page 4

# QWL

## 10-1072XX

### box mount receptacle



All dimensions for reference only.

| Part Number* | Shell Size | A Thread (Plated) Class 2A | B Min Full Thread | K $+0.026$ $-0.010$ | M $+0.016$ $-0.000$ | R $\pm 0.005$ | S $\pm 0.020$ | T Dia $+0.004$ $-0.003$ | W $+0.020$ $-0.036$ | Y Dia $\pm 0.010$ | Z Max |
|--------------|------------|----------------------------|-------------------|---------------------|---------------------|---------------|---------------|-------------------------|---------------------|-------------------|-------|
| 10-107210    | 10S        | .6250-0.05P-0.1L-DS        | .391              | .703                | .562                | .719          | 1.000         | .150                    | .281                | .469              | .451  |
| 10-107212    | 12S        | .7500-0.1P-0.2L-DS         | .391              | .703                | .562                | .812          | 1.094         | .150                    | .281                | .594              | .451  |
| 10-107213    | 12         | .7500-0.1P-0.2L-DS         | .625              | .891                | .750                | .812          | 1.094         | .150                    | .469                | .594              | .700  |
| 10-107214    | 14S        | .8750-0.1P-0.2L-DS         | .391              | .703                | .562                | .906          | 1.188         | .150                    | .281                | .719              | .451  |
| 10-107215    | 14         | .8750-0.1P-0.2L-DS         | .625              | .891                | .750                | .906          | 1.188         | .150                    | .469                | .719              | .700  |
| 10-107216    | 16S        | 1.0000-0.1P-0.2L-DS        | .391              | .703                | .562                | .969          | 1.281         | .150                    | .281                | .844              | .451  |
| 10-107217    | 16         | 1.0000-0.1P-0.2L-DS        | .625              | .891                | .750                | .969          | 1.281         | .150                    | .469                | .844              | .700  |
| 10-107218    | 18         | 1.1250-0.1P-0.2L-DS        | .625              | .906                | .750                | 1.062         | 1.375         | .177                    | .453                | .969              | .686  |
| 10-107220    | 20         | 1.2500-0.1P-0.2L-DS        | .625              | .906                | .750                | 1.156         | 1.500         | .177                    | .453                | 1.125             | .686  |
| 10-107222    | 22         | 1.3750-0.1P-0.2L-DS        | .625              | .906                | .750                | 1.250         | 1.625         | .177                    | .453                | 1.250             | .686  |
| 10-107224    | 24         | 1.5000-0.1P-0.2L-DS        | .625              | 1.000               | .812                | 1.375         | 1.750         | .177                    | .359                | 1.375             | .585  |
| 10-107228    | 28         | 1.7500-0.1P-0.2L-DS        | .625              | 1.000               | .812                | 1.562         | 2.000         | .177                    | .359                | 1.594             | .591  |
| 10-107232    | 32         | 2.0000-0.1P-0.2L-DS        | .625              | 1.063               | .875                | 1.750         | 2.250         | .209                    | .296                | 1.844             | .528  |
| 10-107236    | 36         | 2.2500-0.1P-0.2L-DS        | .625              | 1.063               | .875                | 1.938         | 2.500         | .209                    | .296                | 2.031             | .528  |
| 10-107240    | 40         | 2.5000-0.1P-0.2L-DS        | .625              | 1.063               | .875                | 2.188         | 2.750         | .209                    | .296                | 2.281             | .528  |
| 10-107244    | 44         | 2.7500-0.1P-0.2L-DS        | .625              | 1.063               | .875                | 2.375         | 3.000         | .209                    | .546                | 2.562             | .769  |
| 10-107248    | 48         | 3.0000-0.1P-0.2L-DS        | .625              | 1.063               | .875                | 2.625         | 3.250         | .209                    | .546                | 2.812             | .769  |

\*For complete order number see page 4

# QWL

## 10-1073XX

### jam nut receptacle (wall mount)



| Shell Size | K Dia<br>+.005<br>-.000 | G<br>±.003 | U<br>±.005 |
|------------|-------------------------|------------|------------|
| 10         | .880                    | .518       | .625       |
| 12, 13     | 1.005                   | .562       | .688       |
| 14, 15     | 1.130                   | .606       | .750       |
| 16, 17     | 1.255                   | .699       | .875       |
| 18         | 1.380                   | .739       | .938       |
| 20         | 1.505                   | .783       | 1.000      |
| 22         | 1.630                   | .830       | 1.062      |
| 24         | 1.880                   | .919       | 1.188      |
| 28         | 2.130                   | 1.007      | 1.312      |
| 32         | 2.380                   | 1.096      | 1.438      |
| 36         | 2.630                   | 1.183      | 1.562      |
| 40         | 2.880                   | 1.292      | 1.703      |

mounting dimensions



All dimensions for reference only.

| Part Number* | Shell Size | A Thread Class 2A   | B ±.010 | E Thread Class 2A | F Hex ±.010 | H Panel Thickness |      | M ±.010 | N ±.015 | P ±.010 | S ±.010 | V Thread Class 2A-LH | W ±.010 | Z Max |
|--------------|------------|---------------------|---------|-------------------|-------------|-------------------|------|---------|---------|---------|---------|----------------------|---------|-------|
|              |            |                     |         |                   |             | Min               | Max  |         |         |         |         |                      |         |       |
| 10-107310    | 10S        | .6250-0.5-0.1L-DS   | .385    | .6875-24UNEF      | .875        | .094              | .227 | .844    | .469    | .375    | 1.062   | .500-28UNEF          | .344    | .295  |
| 10-107312    | 12S        | .7500-0.1P-0.2L-DS  | .385    | .875-20UNEF       | 1.062       | .094              | .200 | .906    | .469    | .442    | 1.250   | .625-24UNEF          | .344    | .232  |
| 10-107313    | 12         | .7500-0.1P-0.2L-DS  | .585    | .875-20UNEF       | 1.062       | .094              | .188 | 1.094   | .641    | .442    | 1.250   | .625-24UNEF          | .516    | .483  |
| 10-107314    | 14S        | .8750-0.1P-0.2L-DS  | .385    | 1.000-20UNEF      | 1.250       | .094              | .200 | .906    | .469    | .486    | 1.376   | .750-20UNEF          | .344    | .232  |
| 10-107315    | 14         | .8750-0.1P-0.2L-DS  | .585    | 1.000-20UNEF      | 1.250       | .094              | .188 | 1.094   | .641    | .486    | 1.376   | .750-20UNEF          | .516    | .483  |
| 10-107316    | 16S        | 1.0000-0.1P-0.2L-DS | .385    | 1.125-18UNEF      | 1.312       | .094              | .200 | .906    | .469    | .530    | 1.500   | .875-20UNEF          | .344    | .232  |
| 10-107317    | 16         | 1.0000-0.1P-0.2L-DS | .585    | 1.125-18UNEF      | 1.312       | .094              | .188 | 1.094   | .641    | .530    | 1.500   | .875-20UNEF          | .516    | .483  |
| 10-107318    | 18         | 1.1250-0.1P-0.2L-DS | .585    | 1.250-18UNEF      | 1.500       | .094              | .203 | 1.109   | .704    | .623    | 1.750   | 1.000-20UNEF         | .516    | .467  |
| 10-107320    | 20         | 1.2500-0.1P-0.2L-DS | .585    | 1.375-18UNEF      | 1.562       | .094              | .203 | 1.109   | .704    | .663    | 1.875   | 1.125-18UNEF         | .516    | .467  |
| 10-107322    | 22         | 1.3750-0.1P-0.2L-DS | .585    | 1.500-18UNEF      | 1.750       | .094              | .203 | 1.109   | .704    | .707    | 2.000   | 1.250-18UNEF         | .516    | .467  |
| 10-107324    | 24         | 1.5000-0.1P-0.2L-DS | .585    | 1.625-18UNEF      | 1.875       | .094              | .265 | 1.172   | .704    | .751    | 2.125   | 1.375-18UNEF         | .516    | .404  |
| 10-107328    | 28         | 1.7500-0.1P-0.2L-DS | .585    | 1.875-16UNEF      | 2.125       | .094              | .265 | 1.172   | .704    | .840    | 2.375   | 1.625-18UNEF         | .516    | .404  |
| 10-107332    | 32         | 2.0000-0.1P-0.2L-DS | .585    | 2.125-16UNEF      | 2.375       | .094              | .203 | 1.172   | .735    | .928    | 2.625   | 1.875-16UN           | .516    | .404  |
| 10-107336    | 36         | 2.2500-0.1P-0.2L-DS | .585    | 2.375-16UN        | 2.625       | .094              | .203 | 1.172   | .735    | 1.017   | 2.875   | 2.0625-16UN          | .516    | .404  |
| 10-107340    | 40         | 2.5000-0.1P-0.2L-DS | .585    | 2.625-16UN        | 2.875       | .094              | .203 | 1.172   | .735    | 1.104   | 3.125   | 2.3125-16UN          | .516    | .404  |
| 10-107344    | 44         | 2.7500-0.1P-0.2L-DS | .585    | 2.875-16UN        | 3.125       | .094              | .265 | 1.234   | .922    | 1.213   | 3.406   | 2.625-16UN           | .703    | .593  |
| 10-107348    | 48         | 3.0000-0.1P-0.2L-DS | .585    | 3.125-16UN        | 3.375       | .094              | .265 | 1.234   | .922    | 1.299   | 3.656   | 2.875-16UN           | .703    | .593  |

\*For complete order number see page 4.

# QWL

## 10-1074XX

### thru bulkhead receptacle



All dimensions for reference only.

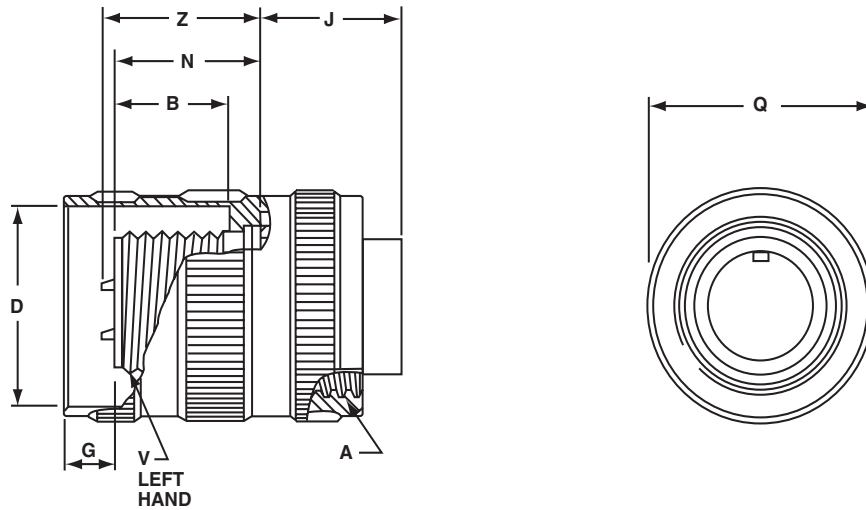
| Part Number* | Shell Size | A<br>Thread<br>Class 2A | B<br>Min<br>Full<br>Thread | C<br>Ref | G<br>Max<br>Bulkhead<br>Thickness | L<br>±.015 | M<br>+.000<br>-.010 | R<br>±.005 | S<br>±.020 | T<br>Dia<br>+.004<br>-.003 |
|--------------|------------|-------------------------|----------------------------|----------|-----------------------------------|------------|---------------------|------------|------------|----------------------------|
| 10-107410    | 10S        | .6250-0.05P-0.1L-DS     | .406                       | .141     | .266                              | 1.563      | .711                | .719       | 1.000      | .120                       |
| 10-107412    | 12S        | .7500-0.1P-0.2L-DS      | .406                       | .141     | .266                              | 1.563      | .711                | .812       | 1.094      | .120                       |
| 10-107413    | 12         | .7500-0.1P-0.2L-DS      | .625                       | .155     | .312                              | 2.125      | .985                | .812       | 1.094      | .120                       |
| 10-107414    | 14S        | .8750-0.1P-0.2L-DS      | .406                       | .141     | .266                              | 1.563      | .711                | .906       | 1.188      | .120                       |
| 10-107415    | 14         | .8750-0.1P-0.2L-DS      | .625                       | .155     | .312                              | 2.125      | .985                | .906       | 1.188      | .120                       |
| 10-107416    | 16S        | 1.0000-0.1P-0.2L-DS     | .406                       | .141     | .266                              | 1.563      | .711                | .969       | 1.281      | .120                       |
| 10-107417    | 16         | 1.0000-0.1P-0.2L-DS     | .625                       | .155     | .312                              | 2.125      | .985                | .969       | 1.281      | .120                       |
| 10-107418    | 18         | 1.1250-0.1P-0.2L-DS     | .625                       | .155     | .312                              | 2.125      | .985                | 1.062      | 1.375      | .120                       |
| 10-107420    | 20         | 1.2500-0.1P-0.2L-DS     | .625                       | .155     | .312                              | 2.125      | .985                | 1.156      | 1.500      | .120                       |
| 10-107422    | 22         | 1.3750-0.1P-0.2L-DS     | .625                       | .155     | .312                              | 2.125      | .985                | 1.250      | 1.625      | .120                       |
| 10-107424    | 24         | 1.5000-0.1P-0.2L-DS     | .625                       | .155     | .312                              | 2.125      | .985                | 1.375      | 1.750      | .147                       |
| 10-107428    | 28         | 1.7500-0.1P-0.2L-DS     | .625                       | .155     | .312                              | 2.125      | .985                | 1.562      | 2.000      | .147                       |
| 10-107432    | 32         | 2.0000-0.1P-0.2L-DS     | .625                       | .155     | .312                              | 2.125      | .985                | 1.750      | 2.250      | .173                       |
| 10-107436    | 36         | 2.2500-0.1P-0.2L-DS     | .625                       | .155     | .312                              | 2.125      | .985                | 1.938      | 2.500      | .173                       |
| 10-107440    | 40         | 2.5000-0.1P-0.2L-DS     | .625                       | .155     | .312                              | 2.125      | .985                | 2.188      | 2.750      | .173                       |
| 10-107444    | 44         | 2.7500-0.1P-0.2L-DS     | .625                       | .155     | .438                              | 2.375      | 1.110               | 2.375      | 3.000      | .209                       |

\*For complete order number see page 4

# QWL

## 10-1076XX

### straight plug



All dimensions for reference only.

| Part Number* | Shell Size | A Thread Class 2B   | B $\pm .020$ | D Dia $+.010$<br>$-.000$ | G $\pm .030$ | J $\pm .005$ | N $\pm .010$ | Q Dia Max | V Thread (Plated) Class 2A-LH | Z Max |
|--------------|------------|---------------------|--------------|--------------------------|--------------|--------------|--------------|-----------|-------------------------------|-------|
| 10-107610    | 10S        | .6250-0.05P-0.1L-DS | .406         | .735                     | .053         | .531         | .563         | .882      | .500-28UNEF                   | .603  |
| 10-107612    | 12S        | .7500-0.1P-0.2L-DS  | .406         | .859                     | .109         | .531         | .563         | 1.010     | .625-24UNEF                   | .603  |
| 10-107613    | 12         | .7500-0.1P-0.2L-DS  | .578         | .859                     | .077         | .719         | .750         | 1.010     | .625-24UNEF                   | .852  |
| 10-107614    | 14S        | .8750-0.1P-0.2L-DS  | .406         | .985                     | .234         | .531         | .563         | 1.137     | .750-20UNEF                   | .603  |
| 10-107615    | 14         | .8750-0.1P-0.2L-DS  | .578         | .985                     | .077         | .719         | .750         | 1.137     | .750-20UNEF                   | .852  |
| 10-107616    | 16S        | 1.0000-0.1P-0.2L-DS | .406         | 1.109                    | .234         | .531         | .563         | 1.264     | .875-20UNEF                   | .603  |
| 10-107617    | 16         | 1.0000-0.1P-0.2L-DS | .578         | 1.109                    | .141         | .719         | .750         | 1.264     | .875-20UNEF                   | .852  |
| 10-107618    | 18         | 1.1250-0.1P-0.2L-DS | .578         | 1.235                    | .266         | .719         | .750         | 1.455     | 1.000-20UNEF                  | .852  |
| 10-107620    | 20         | 1.2500-0.1P-0.2L-DS | .578         | 1.359                    | .266         | .719         | .750         | 1.551     | 1.1250-18UNEF                 | .852  |
| 10-107622    | 22         | 1.3750-0.1P-0.2L-DS | .578         | 1.485                    | .266         | .719         | .750         | 1.678     | 1.2500-18UNEF                 | .852  |
| 10-107624    | 24         | 1.5000-0.1P-0.2L-DS | .594         | 1.609                    | .266         | .719         | .812         | 1.806     | 1.375-18UNEF                  | .852  |
| 10-107628    | 28         | 1.7500-0.1P-0.2L-DS | .594         | 1.859                    | .266         | .719         | .812         | 2.060     | 1.625-18UNEF                  | .852  |
| 10-107632    | 32         | 2.0000-0.1P-0.2L-DS | .594         | 2.109                    | .266         | .719         | .875         | 2.315     | 1.875-16UN                    | .852  |
| 10-107636    | 36         | 2.2500-0.1P-0.2L-DS | .556†        | 2.359                    | .285**       | .719         | .875         | 2.569     | 2.0625-16UNS                  | .852  |
| 10-107640    | 40         | 2.5000-0.1P-0.2L-DS | .556†        | 2.609                    | .285**       | .719         | .875         | 2.824     | 2.3125-16UNS                  | .852  |
| 10-107644    | 44         | 2.7500-0.1P-0.2L-DS | .700††       | 2.922                    | .141***      | .719         | 1.000        | 3.142     | 2.625-16UN                    | 1.103 |
| 10-107648    | 48         | 3.0000-0.1P-0.2L-DS | .719         | 3.172                    | .141         | .719         | 1.000        | 3.381     | 2.875-16UN                    | 1.093 |

\*For complete order number see page 4

\*\*Applicable Tolerance is  $\pm .033$

\*\*\*Applicable Tolerance is  $+.030$

$-.020$

†Applicable Tolerance is  $\pm .026$

††Applicable Tolerance is  $+.013$

$-.023$

# QWL

## 10-1077XX

### flange mount plug



All dimensions for reference only.

| Part Number* | Shell Size | A Thread Class 2B   | C $\pm.005$ | J $\pm.005$ | N $\pm.020$ | R $\pm.005$ | S $\pm.020$ | T Thread | Z Max |
|--------------|------------|---------------------|-------------|-------------|-------------|-------------|-------------|----------|-------|
| 10-107710    | 10S        | .6250-0.05P-0.1L-DS | .125        | .531        | .438        | .562        | .781        | 4-40 NC  | .602  |
| 10-107712    | 12S        | .7500-0.1P-0.2L-DS  | .156        | .531        | .438        | .812        | 1.062       | 4-40 NC  | .602  |
| 10-107713    | 12         | .7500-0.1P-0.2L-DS  | .156        | .719        | .688        | .812        | 1.062       | 4-40 NC  | .852  |
| 10-107714    | 14S        | .8750-0.1P-0.2L-DS  | .156        | .531        | .438        | .812        | 1.062       | 4-40 NC  | .602  |
| 10-107715    | 14         | .8750-0.1P-0.2L-DS  | .156        | .719        | .688        | .812        | 1.062       | 4-40 NC  | .852  |
| 10-107716    | 16S        | 1.0000-0.1P-0.2L-DS | .156        | .531        | .438        | 1.000       | 1.312       | 6-32 NC  | .602  |
| 10-107717    | 16         | 1.0000-0.1P-0.2L-DS | .156        | .719        | .688        | 1.000       | 1.312       | 6-32 NC  | .852  |
| 10-107718    | 18         | 1.1250-0.1P-0.2L-DS | .156        | .719        | .688        | 1.000       | 1.312       | 6-32 NC  | .852  |
| 10-107720    | 20         | 1.2500-0.1P-0.2L-DS | .188        | .719        | .688        | 1.250       | 1.625       | 10-32 NF | .852  |
| 10-107722    | 22         | 1.3750-0.1P-0.2L-DS | .188        | .719        | .688        | 1.250       | 1.625       | 10-32 NF | .852  |
| 10-107724    | 24         | 1.5000-0.1P-0.2L-DS | .188        | .719        | .688        | 1.562       | 2.000       | 10-32 NF | .852  |
| 10-107728    | 28         | 1.7500-0.1P-0.2L-DS | .188        | .719        | .688        | 1.562       | 2.000       | 10-32 NF | .852  |
| 10-107732    | 32         | 2.0000-0.1P-0.2L-DS | .250        | .719        | .781        | 1.812       | 2.500       | 10-32 NF | .852  |
| 10-107736    | 36         | 2.2500-0.1P-0.2L-DS | .250        | .719        | .781        | 1.812       | 2.500       | 10-32 NF | .852  |
| 10-107740    | 40         | 2.5000-0.1P-0.2L-DS | .250        | .719        | .781        | 2.250       | 3.031       | 10-32 NF | .852  |
| 10-107744    | 44         | 2.7500-0.1P-0.2L-DS | .250        | .719        | 1.000       | 2.375       | 3.031       | 10-32 NF | .852  |
| 10-107748    | 48         | 3.0000-0.1P-0.2L-DS | .250        | .719        | 1.000       | 2.562       | 3.250       | 10-32 NF | .852  |

\*For complete order number see page 4

# QWL

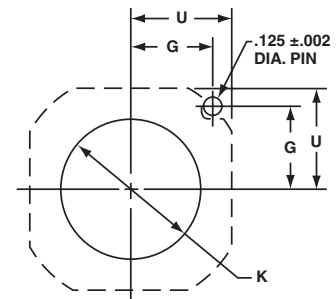
## 10-1079XX

### jam nut receptacle (box mount)



| Shell Size | K Dia<br>+.005<br>-.000 | G<br>±.003 | U<br>±.005 |
|------------|-------------------------|------------|------------|
| 10         | .693                    | .451       | .531       |
| 12, 13     | .880                    | .518       | .625       |
| 14, 15     | 1.005                   | .562       | .688       |
| 16, 17     | 1.130                   | .606       | .750       |
| 18         | 1.255                   | .699       | .875       |
| 20         | 1.380                   | .739       | .938       |
| 22         | 1.505                   | .783       | 1.000      |
| 24         | 1.630                   | .830       | 1.062      |
| 28         | 1.880                   | .919       | 1.188      |
| 32         | 2.130                   | 1.007      | 1.312      |
| 36         | 2.380                   | 1.096      | 1.438      |
| 40         | 2.630                   | 1.183      | 1.562      |
| 44         | 2.880                   | 1.292      | 1.703      |
| 48         | 3.130                   | 1.378      | 1.828      |

mounting dimensions



All dimensions for reference only.

| Part Number* | Shell Size | A Thread Class 2A   | B ±.010 | C ±.005 | E Thread Class 2A (Plated) | F Hex ±.016 | H Panel Thickness |      | M ±.010 | P ±.010 | S ±.010 | Z Max |
|--------------|------------|---------------------|---------|---------|----------------------------|-------------|-------------------|------|---------|---------|---------|-------|
|              |            |                     |         |         |                            |             | Min               | Max  |         |         |         |       |
| 10-107910    | 10S        | .6250-0.05P-0.1L-DS | .385    | .125    | .6875-24NEF                | .875        | .094              | .227 | .844    | .375    | 1.062   | .295  |
| 10-107912    | 12S        | .7500-0.1P-0.2L-DS  | .385    | .125    | .875-20UNEF                | 1.062       | .094              | .200 | .906    | .442    | 1.250   | .232  |
| 10-107913    | 12         | .7500-0.1P-0.2L-DS  | .585    | .125    | .875-20UNEF                | 1.062       | .094              | .282 | 1.188   | .442    | 1.250   | .389  |
| 10-107914    | 14S        | .8750-0.1P-0.2L-DS  | .385    | .125    | 1.000-20UNEF               | 1.250       | .094              | .200 | .906    | .486    | 1.376   | .232  |
| 10-107915    | 14         | .8750-0.1P-0.2L-DS  | .585    | .125    | 1.000-20UNEF               | 1.250       | .094              | .282 | 1.188   | .486    | 1.376   | .389  |
| 10-107916    | 16S        | 1.0000-0.1P-0.2L-DS | .385    | .125    | 1.125-18NEF                | 1.312       | .094              | .200 | .906    | .530    | 1.500   | .232  |
| 10-107917    | 16         | 1.0000-0.1P-0.2L-DS | .585    | .125    | 1.125-18NEF                | 1.312       | .094              | .282 | 1.188   | .530    | 1.500   | .389  |
| 10-107918    | 18         | 1.1250-0.1P-0.2L-DS | .585    | .188    | 1.250-18NEF                | 1.500       | .094              | .250 | 1.156   | .623    | 1.750   | .420  |
| 10-107920    | 20         | 1.2500-0.1P-0.2L-DS | .585    | .188    | 1.375-18NEF                | 1.562       | .094              | .250 | 1.156   | .663    | 1.875   | .420  |
| 10-107922    | 22         | 1.3750-0.1P-0.2L-DS | .585    | .188    | 1.500-18NEF                | 1.750       | .094              | .250 | 1.156   | .707    | 2.000   | .420  |
| 10-107924    | 24         | 1.5000-0.1P-0.2L-DS | .585    | .188    | 1.625-18NEF                | 1.875       | .094              | .312 | 1.219   | .751    | 2.125   | .357  |
| 10-107928    | 28         | 1.7500-0.1P-0.2L-DS | .585    | .188    | 1.875-16UN                 | 2.125       | .094              | .312 | 1.219   | .840    | 2.375   | .357  |
| 10-107932    | 32         | 2.0000-0.1P-0.2L-DS | .585    | .219    | 2.125-16UN                 | 2.375       | .094              | .282 | 1.250   | .928    | 2.625   | .326  |
| 10-107936    | 36         | 2.2500-0.1P-0.2L-DS | .585    | .219    | 2.375-16UN                 | 2.625       | .094              | .282 | 1.250   | 1.017   | 2.875   | .326  |
| 10-107940    | 40         | 2.5000-0.1P-0.2L-DS | .585    | .219    | 2.625-16UN                 | 2.875       | .094              | .282 | 1.250   | 1.104   | 3.125   | .326  |
| 10-107944    | 44         | 2.7500-0.1P-0.2L-DS | .585    | .219    | 2.875-16UN                 | 3.125       | .094              | .422 | 1.390   | 1.213   | 3.406   | .436  |
| 10-107948    | 48         | 3.0000-0.1P-0.2L-DS | .585    | .219    | 3.125-16UN                 | 3.375       | .094              | .422 | 1.390   | 1.299   | 3.656   | .436  |

\*For complete order number see page 4.

# QWL

## insert arrangements - selection guide

| Insert Arrangement | Service Rating | Total Contacts | Contact Size |   |   |    |    |
|--------------------|----------------|----------------|--------------|---|---|----|----|
|                    |                |                | 0            | 4 | 8 | 12 | 16 |
| 10S-2              | A              | 1              |              |   |   |    | 1  |
| 12S-3              | A              | 2              |              |   |   |    | 2  |
| 12S-4              | D              | 1              |              |   |   |    | 1  |
| 12-5               | D              | 1              |              |   |   | 1  |    |
| 14S-1              | A              | 3              |              |   |   |    | 3  |
| 14S-2              | Inst.          | 4              |              |   |   |    | 4  |
| 14S-4              | D              | 1              |              |   |   |    | 1  |
| 14S-5              | Inst.          | 5              |              |   |   |    | 5  |
| 14S-6              | Inst.          | 6              |              |   |   |    | 6  |
| 14S-7              | A              | 3              |              |   |   |    | 3  |
| 14S-9              | A              | 2              |              |   |   |    | 2  |
| 14S-10             | Inst.          | 4              |              |   |   |    | 4  |
| 14S-12             | A              | 3              |              |   |   |    | 3  |
| 14-3               | A              | 1              |              |   | 1 |    |    |
| 16S-1              | A              | 7              |              |   |   |    | 7  |
| 16S-3              | B              | 1              |              |   |   |    | 1  |
| 16S-4              | D              | 2              |              |   |   |    | 2  |
| 16S-5              | A              | 3              |              |   |   |    | 3  |
| 16S-6              | A              | 3              |              |   |   |    | 3  |
| 16S-8              | A              | 5              |              |   |   |    | 5  |
| 16-2               | E              | 1              |              |   |   | 1  |    |
| 16-7               | A              | 3              |              |   | 1 |    | 2  |
| 16-9               | A              | 4              |              |   |   | 2  | 2  |
| 16-10              | A              | 3              |              |   |   | 3  |    |
| 16-11              | A              | 2              |              |   |   | 2  |    |
| 16-12              | A              | 1              |              | 1 |   |    |    |
| 16-13              | A              | 2              |              |   |   | 2  |    |
| 18-1               | A/Inst.        | 10             |              |   |   |    | 10 |
| 18-3               | D              | 2              |              |   |   | 2  |    |
| 18-4               | D              | 4              |              |   |   |    | 4  |
| 18-5               | D              | 3              |              |   |   | 2  | 1  |
| 18-6               | D              | 1              |              | 1 |   |    |    |
| 18-7               | B              | 1              |              |   | 1 |    |    |
| 18-8               | A              | 8              |              |   |   | 1  | 7  |
| 18-9               | Inst.          | 7              |              |   |   | 2  | 5  |
| 18-10              | A              | 4              |              |   |   | 4  |    |
| 18-11              | A              | 5              |              |   |   | 5  |    |
| 18-12              | A              | 6              |              |   |   |    | 6  |
| 18-13              | A              | 4              |              |   | 1 | 3  |    |
| 18-14              | A              | 2              |              | 1 |   |    | 1  |
| 18-15              | A              | 4              |              |   |   | 4  |    |
| 18-16              | C              | 1              |              |   |   | 1  |    |
| 18-17              | Inst.          | 7              |              |   |   | 2  | 5  |
| 18-19              | A              | 10             |              |   |   |    | 10 |
| 18-20              | A              | 5              |              |   |   |    | 5  |
| 18-22              | D              | 3              |              |   |   |    | 3  |
| 18-24              | A/Inst.        | 10             |              |   |   |    | 10 |
| 18-29              | A              | 5              |              |   |   |    | 5  |
| 18-30              | A              | 5              |              |   |   |    | 5  |
| 18-31              | A              | 5              |              |   |   |    | 5  |

| Insert Arrangement | Service Rating | Total Contacts | Contact Size |   |   |    |    |
|--------------------|----------------|----------------|--------------|---|---|----|----|
|                    |                |                | 0            | 4 | 8 | 12 | 16 |
| 20-2               | D              | 1              | 1            |   |   |    |    |
| 20-3               | D              | 3              |              |   |   | 3  |    |
| 20-4               | D              | 4              |              |   |   | 4  |    |
| 20-6               | D              | 3              |              |   |   |    | 3  |
| 20-7               | D/A            | 8              |              |   |   |    | 8  |
| 20-8               | Inst.          | 6              |              |   | 2 |    | 4  |
| 20-9               | D/A            | 8              |              |   |   | 1  | 7  |
| 20-11              | Inst.          | 13             |              |   |   |    | 13 |
| 20-12              | A              | 2              |              | 1 |   |    | 1  |
| 20-14              | A              | 5              |              |   | 2 | 3  |    |
| 20-15              | A              | 7              |              |   |   | 7  |    |
| 20-16              | A              | 9              |              |   |   | 2  | 7  |
| 20-17              | A              | 6              |              |   |   | 5  | 1  |
| 20-18              | A              | 9              |              |   |   | 3  | 6  |
| 20-19              | A              | 3              |              |   | 3 |    |    |
| 20-20              | A              | 4              |              | 1 |   | 3  |    |
| 20-21              | A              | 9              |              |   |   | 1  | 8  |
| 20-22              | A              | 6              |              |   | 3 |    | 3  |
| 20-23              | A              | 2              |              |   | 2 |    |    |
| 20-24              | A              | 4              |              |   | 2 |    | 2  |
| 20-25              | Inst.          | 13             |              |   |   |    | 13 |
| 20-27              | A              | 14             |              |   |   |    | 14 |
| 20-29              | A              | 17             |              |   |   |    | 17 |
| 20-30              | Inst.          | 13             |              |   |   |    | 13 |
| 20-33              | A              | 11             |              |   |   |    | 11 |
| 22-1               | D              | 2              |              |   | 2 |    |    |
| 22-2               | D              | 3              |              |   | 3 |    |    |
| 22-4               | A              | 4              |              |   | 2 | 2  |    |
| 22-5               | D              | 6              |              |   |   | 2  | 4  |
| 22-6               | D              | 3              |              |   | 2 |    | 1  |
| 22-7               | E              | 1              | 1            |   |   |    |    |
| 22-8               | E              | 2              |              |   |   | 2  |    |
| 22-9               | E              | 3              |              |   |   | 3  |    |
| 22-10              | E              | 4              |              |   |   |    | 4  |
| 22-11              | B              | 2              |              |   |   |    | 2  |
| 22-12              | D              | 5              |              |   | 2 |    | 3  |
| 22-13              | D/A            | 5              |              |   |   | 4  | 1  |
| 22-14              | A              | 19             |              |   |   |    | 19 |
| 22-15              | E/A            | 6              |              |   |   | 5  | 1  |
| 22-16              | A              | 9              |              |   |   | 3  | 6  |
| 22-17              | D/A            | 9              |              |   |   | 1  | 8  |
| 22-18              | D/A            | 8              |              |   |   |    | 8  |
| 22-19              | A              | 14             |              |   |   |    | 14 |
| 22-20              | A              | 9              |              |   |   |    | 9  |
| 22-21              | A              | 3              | 1            |   |   |    | 2  |
| 22-22              | A              | 4              |              |   | 4 |    |    |
| 22-23              | D/A            | 8              |              |   |   | 8  |    |
| 22-24              | D/A            | 6              |              |   |   | 2  | 4  |
| 22-27              | D/A            | 9              |              |   | 1 |    | 8  |
| 22-28              | A              | 7              |              |   |   | 7  |    |

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## insert arrangements, cont.

| Insert Arrangement | Service Rating | Total Contacts | Contact Size |   |   |    |    |
|--------------------|----------------|----------------|--------------|---|---|----|----|
|                    |                |                | 0            | 4 | 8 | 12 | 16 |
| 22-33              | D/A            | 7              |              |   |   |    | 7  |
| 22-34              | D              | 5              |              |   |   | 3  | 2  |
| 22-36              | D/A            | 8              |              |   |   | 8  |    |
| 24-2               | D              | 7              |              |   |   | 7  |    |
| 24-3               | D              | 7              |              |   |   | 2  | 5  |
| 24-5               | A              | 16             |              |   |   |    | 16 |
| 24-6               | D/A            | 8              |              |   |   | 8  |    |
| 24-7               | A              | 16             |              |   |   | 2  | 14 |
| 24-9               | A              | 2              |              | 2 |   |    |    |
| 24-10              | A              | 7              |              |   | 7 |    |    |
| 24-11              | A              | 9              |              |   | 3 | 6  |    |
| 24-12              | A              | 5              |              | 2 |   | 3  |    |
| 24-16              | D/A            | 7              |              |   | 1 | 3  | 3  |
| 24-17              | D              | 5              |              |   |   | 2  | 3  |
| 24-20              | D              | 11             |              |   |   | 2  | 9  |
| 24-21              | D              | 10             |              |   | 1 |    | 9  |
| 24-22              | D              | 4              |              |   | 4 |    |    |
| 24-27              | E              | 7              |              |   |   |    | 7  |
| 24-28              | Inst.          | 24             |              |   |   |    | 24 |
| 28-1               | D/A            | 9              |              |   | 3 | 6  |    |
| 28-2               | D              | 14             |              |   |   | 2  | 12 |
| 28-3               | E              | 3              |              |   | 3 |    |    |
| 28-4               | E/D            | 9              |              |   |   | 2  | 7  |
| 28-5               | D              | 5              |              | 2 |   | 1  | 2  |
| 28-6               | D              | 3              |              | 3 |   |    |    |
| 28-7               | D              | 2              |              | 2 |   |    |    |
| 28-8               | E/D/A          | 12             |              |   |   | 2  | 10 |
| 28-9               | D              | 12             |              |   |   | 6  | 6  |
| 28-10              | D/A            | 7              |              | 2 | 2 | 3  |    |
| 28-11              | A              | 22             |              |   |   | 4  | 18 |
| 28-12              | A              | 26             |              |   |   |    | 26 |
| 28-13              | A              | 26             |              |   |   |    | 26 |
| 28-15              | A              | 35             |              |   |   |    | 35 |
| 28-16              | A              | 20             |              |   |   |    | 20 |
| 28-17              | B/D/A          | 15             |              |   |   |    | 15 |
| 28-18              | C/D/A/Inst.    | 12             |              |   |   |    | 12 |
| 28-19              | B/D/A          | 10             |              |   |   | 4  | 6  |
| 28-20              | A              | 14             |              |   |   | 10 | 4  |
| 28-21              | A              | 37             |              |   |   |    | 37 |
| 28-22              | D              | 6              |              | 3 |   |    | 3  |

| Insert Arrangement | Service Rating | Total Contacts | Contact Size |   |   |    |    |
|--------------------|----------------|----------------|--------------|---|---|----|----|
|                    |                |                | 0            | 4 | 8 | 12 | 16 |
| 32-1               | E/D            | 5              | 2            |   |   | 3  |    |
| 32-2               | E              | 5              |              | 3 |   |    | 2  |
| 32-3               | D              | 9              | 1            | 2 |   | 2  | 4  |
| 32-4               | A/D            | 14             |              |   |   | 2  | 12 |
| 32-5               | D              | 2              | 2            |   |   |    |    |
| 32-6               | A              | 23             |              | 2 | 3 | 2  | 16 |
| 32-7               | Inst./A        | 35             |              |   |   | 7  | 28 |
| 32-8               | A              | 30             |              |   |   | 6  | 24 |
| 32-9               | D              | 14             |              | 2 |   |    | 12 |
| 32-10              | E/B/D/A        | 7              |              | 2 | 2 |    | 3  |
| 32-12              | A/D            | 15             |              |   |   | 5  | 10 |
| 32-13              | D              | 23             |              |   |   | 5  | 18 |
| 32-15              | D              | 8              | 2            |   |   | 6  |    |
| 32-16              | A              | 23             |              | 2 | 3 | 2  | 16 |
| 32-17              | D              | 4              |              | 4 |   |    |    |
| 32-22              | A              | 54             |              |   |   |    | 54 |
| 36-1               | D              | 22             |              |   |   | 4  | 18 |
| 36-3               | D              | 6              | 3            |   |   | 3  |    |
| 36-4               | D/A            | 3              | 3            |   |   |    |    |
| 36-5               | A              | 4              | 4            |   |   |    |    |
| 36-6               | A              | 6              | 2            | 4 |   |    |    |
| 36-7               | A              | 47             |              |   |   | 7  | 40 |
| 36-8               | A              | 47             |              |   |   | 1  | 46 |
| 36-9               | A              | 31             |              | 1 | 2 | 14 | 14 |
| 36-10              | A              | 48             |              |   |   |    | 48 |
| 36-11              | A              | 48             |              |   |   |    | 48 |
| 36-12              | A              | 48             |              |   |   |    | 48 |
| 36-13              | E/A            | 17             |              |   |   | 2  | 15 |
| 36-14              | D              | 16             |              |   | 5 | 5  | 6  |
| 36-15              | D/A            | 35             |              |   |   |    | 35 |
| 36-16              | A              | 47             |              |   |   | 7  | 40 |
| 36-17              | A              | 47             |              |   |   | 7  | 40 |
| 36-18              | A              | 31             |              | 1 | 2 | 14 | 14 |
| 36-20              | A              | 34             |              |   | 2 | 2  | 30 |
| 36-52              | A              | 52             |              |   |   |    | 52 |
| 40-1               | D              | 30             |              |   |   | 6  | 24 |
| 40-9               | A              | 47             |              |   | 1 | 22 | 24 |
| 40-56              | A              | 85             |              |   |   |    | 85 |
| 48-62              | D              | 85             |              |   |   |    | 85 |

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## special insert arrangements

| Insert<br>Arrange-<br>ment | Service<br>Rating | Total<br>Con-<br>tacts | Contact Size |     |   |   |    |    |    |        |   |   |    |  |
|----------------------------|-------------------|------------------------|--------------|-----|---|---|----|----|----|--------|---|---|----|--|
|                            |                   |                        | 4/0          | 2/0 | 0 | 4 | 8  | 12 | 16 | Coax** |   |   |    |  |
|                            |                   |                        |              |     |   |   |    |    |    | 0      | 4 | 8 | 12 |  |
| 14S-A7                     | A                 | 7                      |              |     |   |   |    |    | 7  |        |   |   |    |  |
| 16-59                      | A                 | 4                      |              |     |   |   |    | 4  |    |        |   |   |    |  |
| 20-26                      | A                 | 19                     |              |     |   |   |    |    | 19 |        |   |   |    |  |
| 20-51                      | A                 | 3                      |              |     |   |   | 3  |    |    |        |   |   |    |  |
| 20-57                      | A                 | 7                      |              |     |   |   |    | 7* |    |        |   |   |    |  |
| 20-58                      | A                 | 10                     |              |     |   |   |    | 5  | 5  |        |   |   |    |  |
| 20-59                      | A                 | 3                      |              |     |   |   | 3* |    |    |        |   |   |    |  |
| 20-66                      | A                 | 6                      |              |     |   |   |    | 5* | 1  |        |   |   |    |  |
| 20-79                      | A/D               | 8                      |              |     |   |   |    | 1  | 7  |        |   |   |    |  |
| 22-63                      | A                 | 12                     |              |     |   |   |    | 4  | 8  |        |   |   |    |  |
| 22-65                      | A/D               | 8                      |              |     |   |   |    | 8* |    |        |   |   |    |  |
| 22-70                      | A                 | 13                     |              |     |   |   |    | 8  | 5  |        |   |   |    |  |
| 22-80                      | A                 | 3                      |              |     |   |   | 3* |    |    |        |   |   |    |  |
| 24-19                      | A                 | 12                     |              |     |   |   |    |    | 12 |        |   |   |    |  |
| 24-51                      | A                 | 5                      |              |     |   |   | 5  |    |    |        |   |   |    |  |
| 24-52                      | Hi Volt.          | 1                      |              |     |   |   |    | 1  |    |        |   |   |    |  |
| 24-53                      | A                 | 5                      |              |     |   |   | 5  |    |    |        |   |   |    |  |
| 24-58                      | A                 | 13                     |              |     |   |   | 3  | 3  | 7  |        |   |   |    |  |
| 24-59                      | A                 | 14                     |              |     |   |   |    | 7  | 7  |        |   |   |    |  |
| 24-60                      | A                 | 7                      |              |     |   |   | 7* |    |    |        |   |   |    |  |
| 24-65                      | A                 | 15                     |              |     |   |   |    | 11 | 4  |        |   |   |    |  |
| 24-66                      | D                 | 7                      |              |     |   |   |    | 7  |    |        |   |   |    |  |
| 24-67                      | Inst.             | 19                     |              |     |   |   |    | 19 |    |        |   |   |    |  |
| 24-71                      | A                 | 7                      |              |     |   |   | 7* |    |    |        |   |   |    |  |
| 24-75                      | A                 | 7                      |              |     |   |   | 7* |    |    |        |   |   |    |  |
| 24-79                      | A                 | 5                      |              |     |   |   | 5  |    |    |        |   |   |    |  |
| 24-80                      | Inst.             | 23                     |              |     |   |   |    |    | 23 |        |   |   |    |  |
| 24-84                      | A                 | 19                     |              |     |   |   |    | 1  |    |        |   |   | 18 |  |
| 24-96                      | Inst.             | 28                     |              |     |   |   |    |    | 28 |        |   |   |    |  |
| 24-AJ                      | A                 | 25                     |              |     |   |   |    |    | 25 |        |   |   |    |  |
| 28-51                      | A                 | 12                     |              |     |   |   |    | 12 |    |        |   |   |    |  |
| 28-59                      | A                 | 17                     |              |     |   |   |    | 7  | 10 |        |   |   |    |  |
| 28-66                      | A                 | 16                     |              |     |   |   | 2  | 14 |    |        |   |   |    |  |
| 28-72                      | Coax              | 3                      |              |     |   |   |    |    |    |        | 3 |   |    |  |
| 28-74                      | A                 | 16                     |              |     |   |   | 7* |    | 9  |        |   |   |    |  |
| 28-75                      | A                 | 16                     |              |     |   |   | 7* |    | 9  |        |   |   |    |  |
| 28-79                      | A                 | 16                     |              |     |   |   | 7  |    | 9  |        |   |   |    |  |
| 28-82                      | D                 | 6                      |              |     |   |   | 2  | 4  |    |        |   |   |    |  |
| 28-84                      | A                 | 9                      |              |     |   |   | 9  |    |    |        |   |   |    |  |
| 28-AY                      | A                 | 9                      |              |     |   | 4 |    |    | 5  |        |   |   |    |  |
| 32-25                      | A                 | 25                     |              |     |   |   |    | 25 |    |        |   |   |    |  |
| 32-31                      | A                 | 31                     |              |     |   |   |    |    | 31 |        |   |   |    |  |
| 32-48                      | Inst.             | 48                     |              |     |   |   |    |    | 48 |        |   |   |    |  |
| 32-52                      | D                 | 8                      |              |     | 2 |   |    | 6  |    |        |   |   |    |  |
| 32-53                      | Inst./E           | 42                     |              |     |   |   |    | 5  | 37 |        |   |   |    |  |
| 32-56                      | A                 | 30                     |              |     |   |   |    | 6* | 24 |        |   |   |    |  |
| 32-57                      | Coax              | 8                      |              |     |   |   |    | 6  |    | 2      |   |   |    |  |
| 32-58                      | Coax              | 4                      |              |     |   |   |    |    |    |        | 4 |   |    |  |
| 32-60                      | A                 | 23                     |              |     |   |   |    |    | 15 |        |   | 8 |    |  |
| 32-62                      | Coax              | 23                     |              |     |   | 2 | 1  | 2  | 16 |        |   | 2 |    |  |
| 32-64                      | Inst.             | 54                     |              |     |   |   |    |    | 54 |        |   |   |    |  |
| 32-68                      | A                 | 16                     |              |     |   |   |    |    | 12 |        | 4 |   |    |  |
| 32-73                      | A                 | 46                     |              |     |   |   |    |    | 46 |        |   |   |    |  |
| 32-75                      | Coax              | 9                      |              |     |   |   |    | 2  |    |        |   | 7 |    |  |
| 32-76                      | A                 | 19                     |              |     |   |   |    | 19 |    |        |   |   |    |  |
| 32-79                      | D                 | 5                      |              |     |   | 4 | 1  |    |    |        |   |   |    |  |
| 32-82                      | A                 | 16                     |              |     |   | 4 |    |    | 12 |        |   |   |    |  |

\* Crimp contacts accommodate wire the same size as the contact as well as wire of the next smaller, even size. Arrangements identified with an asterisk (\*) are exceptions. See insert arrangement drawings on pages 18-40 for application wire size.

\*\* Coaxial cable data can be found on insert arrangement drawings, pages 38-48. For further information on coaxial contacts and cable see catalog 12-130. Consult Sidney, NY for alternate rotations not covered on page 17.

| Insert<br>Arrange-<br>ment | Service<br>Rating | Total<br>Con-<br>tacts | Contact Size |     |   |    |    |     |     |        |    |    |    |  |
|----------------------------|-------------------|------------------------|--------------|-----|---|----|----|-----|-----|--------|----|----|----|--|
|                            |                   |                        | 4/0          | 2/0 | 0 | 4  | 8  | 12  | 16  | Coax** |    |    |    |  |
|                            |                   |                        |              |     |   |    |    |     |     | 0      | 4  | 8  | 12 |  |
| 32-AF                      | A                 | 55                     |              |     |   |    |    |     | 55  |        |    |    |    |  |
| 36-51                      | D                 | 4                      |              |     | 2 | 2  |    |     |     |        |    |    |    |  |
| 36-54                      | A                 | 39                     |              |     |   |    | 8  |     | 31  |        |    |    |    |  |
| 36-55                      | A                 | 39                     |              |     |   |    | 8* |     | 31  |        |    |    |    |  |
| 36-59                      | A                 | 53                     |              |     |   |    |    | 3*  | 50  |        |    |    |    |  |
| 36-60                      | A                 | 47                     |              |     |   |    |    | 7*  | 40  |        |    |    |    |  |
| 36-64                      | Coax              | 4                      |              |     |   |    |    |     |     | 4      |    |    |    |  |
| 36-65                      | Coax              | 4                      |              |     |   |    |    |     |     | 4      |    |    |    |  |
| 36-71                      | A                 | 53                     |              |     |   |    |    | 3   | 50  |        |    |    |    |  |
| 36-73                      | Coax              | 7                      |              |     |   |    |    |     |     |        | 7  |    |    |  |
| 36-74                      | A                 | 44                     |              |     |   |    |    |     | 43  |        |    | 1  |    |  |
| 36-75                      | A                 | 48                     |              |     |   |    |    |     | 48* |        |    |    |    |  |
| 36-76                      | A                 | 47                     |              |     |   |    |    |     | 47  |        |    |    |    |  |
| 36-77                      | D                 | 7                      |              |     |   | 7  |    |     |     |        |    |    |    |  |
| 36-78                      | A                 | 14                     |              |     |   |    | 12 |     | 2   |        |    |    |    |  |
| 36-79                      | A                 | 20                     |              |     |   |    |    | 20  |     |        |    |    |    |  |
| 36-80                      | A                 | 20                     |              |     |   |    |    | 20* |     |        |    |    |    |  |
| 36-83                      | Coax              | 7                      |              |     |   |    |    |     |     |        | 7  |    |    |  |
| 36-85                      | A/D               | 35                     |              |     |   |    |    |     | 35* |        |    |    |    |  |
| 36-97                      | C                 | 1                      | 1            |     |   |    |    |     |     |        |    |    |    |  |
| 36-AF                      | A                 | 48                     |              |     |   |    |    |     | 48  |        |    |    |    |  |
| 40-5                       | A                 | 5                      |              |     | 5 |    |    |     |     |        |    |    |    |  |
| 40-10                      | A                 | 29                     |              |     |   | 4  | 9  |     | 16  |        |    |    |    |  |
| 40-35                      | D                 | 35                     |              |     |   |    |    | 35  |     |        |    |    |    |  |
| 40-53                      | A                 | 60                     |              |     |   |    |    |     | 60  |        |    |    |    |  |
| 40-57                      | E                 | 4                      |              |     | 4 |    |    |     |     |        |    |    |    |  |
| 40-61                      | A                 | 59                     |              |     |   |    | 1  | 3   | 55  |        |    |    |    |  |
| 40-62                      | A                 | 60                     |              |     |   |    |    |     | 60  |        |    |    |    |  |
| 40-63                      | A                 | 61                     |              |     |   |    |    |     | 61* |        |    |    |    |  |
| 40-64                      | Coax              | 36                     |              |     |   |    |    | 3   | 20  |        |    | 13 |    |  |
| 40-66                      | Coax              | 4                      |              |     |   |    |    |     |     | 4      |    |    |    |  |
| 40-67                      | A                 | 11                     |              |     |   |    |    |     | 1   |        | 10 |    |    |  |
| 40-68                      | A                 | 21                     |              |     |   |    | 21 |     |     |        |    |    |    |  |
| 40-70                      | A                 | 61                     |              |     |   |    |    |     | 61  |        |    |    |    |  |
| 40-72                      | A                 | 11                     |              |     |   |    |    |     | 1   |        | 10 |    |    |  |
| 40-73                      | A                 | 61                     |              |     |   |    |    |     | 61  |        |    |    |    |  |
| 40-74                      | A                 | 6                      |              |     |   |    |    | 1   |     | 4      | 1  |    |    |  |
| 40-75                      | E                 | 5                      |              |     | 4 |    |    | 1   |     |        |    |    |    |  |
| 40-80                      | A                 | 11                     |              |     |   | 10 |    |     | 1   |        |    |    |    |  |
| 40-81                      | A                 | 62                     |              |     |   |    |    |     | 62* |        |    |    |    |  |
| 40-82                      | A                 | 62                     |              |     |   |    |    |     | 62  |        |    |    |    |  |
| 40-85                      | A                 | 60                     |              |     |   |    |    |     | 60* |        |    |    |    |  |
| 40-86                      | E                 | 4                      |              |     |   |    |    |     |     | 4      |    |    |    |  |
| 40-87                      | D                 | 7                      |              |     |   | 7  |    |     |     |        |    |    |    |  |
| 40-AD                      | A                 | 8                      |              |     | 4 |    | 4  |     |     |        |    |    |    |  |
| 40-AG                      | A                 | 38                     |              |     |   |    |    | 38  |     |        |    |    |    |  |
| 40-AP                      | E                 | 2                      | 2            |     |   |    |    |     |     |        |    |    |    |  |
| 40-AR                      | Inst.             | 13                     |              |     | 3 | 3  |    | 7   |     |        |    |    |    |  |
| 40-AS                      | A                 | 40                     |              |     |   |    |    | 25  | 15  |        |    |    |    |  |
| 40-AT                      | A                 | 43                     |              |     |   |    | 1  | 24  | 18  |        |    |    |    |  |
| 40-AU                      | A                 | 14                     |              |     |   | 3  | 10 |     | 1   |        |    |    |    |  |
| 40-AV                      | D                 | 3                      |              | 3   |   |    |    |     |     |        |    |    |    |  |
| 44-52                      | A                 | 104                    |              |     |   |    |    |     | 104 |        |    |    |    |  |
| 44-53                      | A                 | 36                     |              |     |   |    |    |     | 18  |        |    | 18 |    |  |
| 48-51                      | A                 | 56                     |              |     |   |    | 10 |     | 42  | 4      |    |    |    |  |
| 48-52                      | A                 | 61                     |              |     |   |    |    |     | 56  | 5      |    |    |    |  |
| 48-53                      | D                 | 37                     |              |     |   |    |    | 37  |     |        |    |    |    |  |
| 48-54                      | A                 | 56                     |              |     |   |    | 10 |     | 42  | 4      |    |    |    |  |
| 48-55                      | A                 | 78                     |              |     |   | 6  | 2  | 2   | 68  |        |    |    |    |  |
| 48-57                      | A                 | 56                     |              |     | 4 |    | 10 |     | 42  |        |    |    |    |  |
| 48-60                      | A                 | 56                     |              |     |   |    | 10 |     | 42  | 4      |    |    |    |  |

# QWL

## alternate positioning

To avoid cross-plugging problems in applications requiring the use of more than one connector of the same size and arrangement, alternate rotations are available as indicated in the accompanying charts.

As shown in the diagram below, the front face of the pin insert is rotated within the shell in a clockwise direction from the normal shell key. The socket insert would be rotated counter-clockwise the same number of degrees in respect to the normal shell key.



The following insert arrangements have the same alternate insert rotations for W, X, Y and Z, which are:

| Degrees |     |     |     |
|---------|-----|-----|-----|
| W       | X   | Y   | Z   |
| 80      | 110 | 250 | 280 |

|       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 16-7  | 20-22 | 22-29 | 24-17 | 28-16 | 32-13 |
| 18-5  | 22-6  | 22-33 | 24-20 | 28-17 | 32-22 |
| 18-9  | 22-12 | 22-34 | 24-21 | 28-19 | 32-AF |
| 18-13 | 22-14 | 24-1  | 24-28 | 28-20 | 36-1  |
| 18-14 | 22-15 | 24-3  | 28-1  | 28-21 | 36-7  |
| 20-7  | 22-16 | 24-4  | 28-4  | 32-1  | 36-8  |
| 20-8  | 22-17 | 24-5  | 28-8  | 32-3  | 36-13 |
| 20-9  | 22-18 | 24-6  | 28-9  | 32-4  | 40-AR |
| 20-12 | 22-19 | 24-7  | 28-10 | 32-6  | 40-AS |
| 20-14 | 22-21 | 24-12 | 28-11 | 32-9  | 40-AT |
| 20-16 | 22-24 | 24-14 | 28-14 | 32-10 | 40-AU |
| 20-20 | 22-25 | 24-16 | 28-15 | 32-12 |       |

| Insert Arrangement | Degrees |     |     |     |
|--------------------|---------|-----|-----|-----|
|                    | W       | X   | Y   | Z   |
| 10SL-4             | 63      | —   | —   | —   |
| 12S-3              | 70      | 145 | 215 | 290 |
| 14S-2              | —       | 120 | 240 | —   |
| 14S-5              | —       | 110 | —   | —   |
| 14S-7              | 90      | 180 | 270 | —   |
| 14S-9              | 70      | 145 | 215 | 290 |
| 16-9               | 35      | 110 | 250 | 325 |
| 16-10              | 90      | 180 | 270 | —   |
| 16-11              | 35      | 110 | 250 | 325 |
| 16-13              | 35      | 110 | 250 | 325 |
| 16S-1              | 80      | —   | —   | 280 |
| 16S-4              | 35      | 110 | 250 | 325 |
| 16S-5              | 70      | 145 | 215 | 290 |
| 16S-6              | 90      | 180 | 270 | —   |
| 16S-8              | —       | 170 | 265 | —   |
| 18-1               | 70      | 145 | 215 | 290 |
| 18-3               | 35      | 110 | 250 | 325 |
| 18-4               | 35      | 110 | 250 | 325 |
| 18-8               | 70      | —   | —   | 290 |
| 18-10              | —       | 120 | 240 | —   |
| 18-11              | —       | 170 | 265 | —   |
| 18-12              | 80      | —   | —   | 280 |
| 18-15              | —       | 120 | 240 | —   |
| 18-20              | 90      | 180 | 270 | —   |
| 18-22              | 70      | 145 | 215 | 290 |
| 18-29              | 90      | 180 | 270 | —   |
| 20-3               | 70      | 145 | 215 | 290 |
| 20-4               | 45      | 110 | 250 | —   |
| 20-5               | 35      | 110 | 250 | 325 |
| 20-6               | 70      | 145 | 215 | 290 |
| 20-15              | 80      | —   | —   | 280 |
| 20-17              | 90      | 180 | 270 | —   |

| Insert Arrangement | Degrees |     |     |     |
|--------------------|---------|-----|-----|-----|
|                    | W       | X   | Y   | Z   |
| 20-18              | 35      | 110 | 250 | 325 |
| 20-19              | 90      | 180 | 270 | —   |
| 20-21              | 35      | 110 | 250 | 325 |
| 20-23              | 35      | 110 | 250 | 325 |
| 20-24              | 35      | 110 | 250 | 325 |
| 20-27              | 35      | 110 | 250 | 325 |
| 20-29              | 80      | —   | —   | 280 |
| 22-1               | 35      | 110 | 250 | 325 |
| 22-2               | 70      | 145 | 215 | 290 |
| 22-4               | 35      | 110 | 250 | 325 |
| 22-5               | 35      | 110 | 250 | 325 |
| 22-8               | 35      | 110 | 250 | 325 |
| 22-9               | 70      | 145 | 215 | 290 |
| 22-10              | 35      | 110 | 250 | 325 |
| 22-11              | 35      | 110 | 250 | 325 |
| 22-13              | 35      | 110 | 250 | 325 |
| 22-20              | 35      | 110 | 250 | 325 |
| 22-22              | —       | 110 | 250 | —   |
| 22-23              | 35      | —   | 250 | —   |
| 22-27              | 80      | —   | 250 | 280 |
| 22-28              | 80      | —   | —   | 280 |
| 22-63              | 20      | —   | —   | —   |
| 24-2               | 80      | —   | —   | 280 |
| 24-9               | 35      | 110 | 250 | 325 |
| 24-10              | 80      | —   | —   | 280 |
| 24-11              | 35      | 110 | 250 | 325 |
| 24-22              | 45      | 110 | 250 | —   |
| 24-27              | 80      | —   | —   | 280 |
| 28-2               | 35      | 110 | 250 | 325 |
| 28-3               | 70      | 145 | 215 | 290 |
| 28-5               | 35      | 110 | 250 | 325 |
| 28-6               | 70      | 145 | 215 | 290 |

| Insert Arrangement | Degrees |     |     |     |
|--------------------|---------|-----|-----|-----|
|                    | W       | X   | Y   | Z   |
| 28-7               | 35      | 110 | 250 | 325 |
| 28-12              | 90      | 180 | 270 | —   |
| 28-18              | 70      | 145 | 215 | 290 |
| 28-22              | 70      | 145 | 215 | 290 |
| 28-AY              | 45      | 110 | 250 | —   |
| 32-2               | 70      | 145 | 215 | 290 |
| 32-5               | 35      | 110 | 250 | 325 |
| 32-7               | 80      | 125 | 235 | 280 |
| 32-8               | 80      | 125 | 235 | 280 |
| 32-15              | 35      | 110 | 250 | 280 |
| 32-17              | 45      | 110 | 250 | —   |
| 32-25              | 60      | 120 | —   | —   |
| 32-48              | 80      | —   | —   | —   |
| 32-64              | 80      | 100 | 110 | 250 |
| 32-68              | 30      | —   | —   | —   |
| 32-82              | 30      | —   | —   | —   |
| 36-3               | 70      | 145 | 215 | 290 |
| 36-4               | 70      | 145 | 215 | 290 |
| 36-5               | —       | 120 | 240 | —   |
| 36-6               | 35      | 110 | 250 | 325 |
| 36-9               | 80      | 125 | 235 | 280 |
| 36-10              | 80      | 125 | 235 | 280 |
| 36-14              | 90      | 180 | 270 | —   |
| 36-15              | 60      | 125 | 245 | 305 |
| 36-AF              | 65      | —   | —   | —   |
| 40-1               | 65      | 130 | 235 | 300 |
| 40-5               | 33      | —   | —   | 270 |
| 40-9               | 65      | 125 | 225 | 310 |
| 40-10              | 65      | 125 | 225 | 310 |
| 40-35              | 70      | 130 | 230 | 290 |
| 40-AD              | 45      | —   | —   | —   |
| 40-AG              | 37      | 74  | 285 | 322 |
| 40-AP              | 35      | 110 | 250 | 325 |
| 40-AV              | 90      | 180 | 270 | —   |

# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |       |       |       |      |       |       |
|--------------------|-------|-------|-------|------|-------|-------|
|                    |       |       |       |      |       |       |
| Insert Arrangement | 10S-2 | 12S-3 | 12S-4 | 12-5 | 14S-1 | 14S-2 |
| Service Rating     | A     | A     | A     | D    | A     | Inst. |
| Number of Contacts | 1     | 2     | 1     | 1    | 3     | 4     |
| Contact Size       | 16    | 16    | 16    | 12   | 16    | 16    |

|                    |       |       |       |       |       |        |
|--------------------|-------|-------|-------|-------|-------|--------|
|                    |       |       |       |       |       |        |
| Insert Arrangement | 14S-4 | 14S-5 | 14S-6 | 14S-7 | 14S-9 | 14S-10 |
| Service Rating     | D     | Inst. | Inst. | A     | A     | Inst.  |
| Number of Contacts | 1     | 5     | 6     | 3     | 2     | 4      |
| Contact Size       | 16    | 16    | 16    | 16    | 16    | 16     |

|                    |        |      |       |       |       |       |
|--------------------|--------|------|-------|-------|-------|-------|
|                    |        |      |       |       |       |       |
| Insert Arrangement | 14S-12 | 14-3 | 16S-1 | 16S-3 | 16S-4 | 16S-5 |
| Service Rating     | A      | A    | A     | B     | D     | A     |
| Number of Contacts | 3      | 1    | 7     | 1     | 2     | 3     |
| Contact Size       | 16     | 8    | 16    | 16    | 16    | 16    |

|                    |       |       |      |      |       |
|--------------------|-------|-------|------|------|-------|
|                    |       |       |      |      |       |
| Insert Arrangement | 16S-6 | 16S-8 | 16-2 | 16-7 | 16-9  |
| Service Rating     | A     | A     | E    | A    | A     |
| Number of Contacts | 3     | 5     | 1    | 1 2  | 2 2   |
| Contact Size       | 16    | 16    | 12   | 8 16 | 12 16 |

CONTACT LEGEND

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# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |    |    |   |    |                              |    |
|--------------------|----|----|---|----|------------------------------|----|
| Insert Arrangement |    |    |   |    |                              |    |
| Service Rating     | A  | A  | A | A  | B, C, F, G = A; Bal. = Inst. | D  |
| Number of Contacts | 3  | 2  | 1 | 2* | 10                           | 2  |
| Contact Size       | 12 | 12 | 4 | 12 | 16                           | 12 |

|                    |    |       |   |   |       |       |
|--------------------|----|-------|---|---|-------|-------|
| Insert Arrangement |    |       |   |   |       |       |
| Service Rating     | D  | D     | D | B | A     | Inst. |
| Number of Contacts | 4  | 2 1   | 1 | 1 | 1 7   | 2 5   |
| Contact Size       | 16 | 12 16 | 4 | 8 | 12 16 | 12 16 |

|                    |    |    |    |      |      |     |
|--------------------|----|----|----|------|------|-----|
| Insert Arrangement |    |    |    |      |      |     |
| Service Rating     | A  | A  | A  | A    | A    | A   |
| Number of Contacts | 4  | 5  | 6  | 1 3  | 1 1  | 4** |
| Contact Size       | 12 | 12 | 16 | 8 12 | 4 16 | 12  |

|                    |    |       |    |    |    |                              |
|--------------------|----|-------|----|----|----|------------------------------|
| Insert Arrangement |    |       |    |    |    |                              |
| Service Rating     | C  | Inst. | A  | A  | D  | B, C, F, G = A; Bal. = Inst. |
| Number of Contacts | 1  | 2 5   | 10 | 5  | 3  | 10                           |
| Contact Size       | 12 | 12 16 | 16 | 16 | 16 | 16                           |

100° Rotation of 18-9

250° Rotation of 18-1

\* A = Iron; B = Constantan  
 \*\* A, C = Iron; B, D = Constantan

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# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 18-29                                                                             | 18-30                                                                             | 18-31                                                                             | 20-2                                                                               | 20-3                                                                                | 20-4                                                                                |
| Service Rating     | A                                                                                 | A                                                                                 | A                                                                                 | D                                                                                  | D                                                                                   | D                                                                                   |
| Number of Contacts | 5                                                                                 | 5                                                                                 | 5                                                                                 | 1                                                                                  | 3                                                                                   | 4                                                                                   |
| Contact Size       | 16                                                                                | 16                                                                                | 16                                                                                | 0                                                                                  | 12                                                                                  | 12                                                                                  |

|                    |                                                                                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 20-6                                                                               | 20-7                                                                               | 20-8                                                                               | 20-9                                                                                | 20-11                                                                                | 20-12                                                                                |
| Service Rating     | D                                                                                  | A, B, H, G = D; C, D, E, F = A                                                     | Inst.                                                                              | H = D; Bal. = A                                                                     | Inst.                                                                                | A                                                                                    |
| Number of Contacts | 3                                                                                  | 8                                                                                  | 2 4                                                                                | 1 7                                                                                 | 13                                                                                   | 1 1                                                                                  |
| Contact Size       | 16                                                                                 | 16                                                                                 | 8 16                                                                               | 12 16                                                                               | 16                                                                                   | 4 16                                                                                 |

|                    |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 20-14                                                                               | 20-15                                                                               | 20-16                                                                               | 20-17                                                                                | 20-18                                                                                 | 20-19                                                                                 |
| Service Rating     | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                    | A                                                                                     | A                                                                                     |
| Number of Contacts | 2 3                                                                                 | 7                                                                                   | 2 7                                                                                 | 5 1                                                                                  | 3 6                                                                                   | 3                                                                                     |
| Contact Size       | 8 12                                                                                | 12                                                                                  | 12 16                                                                               | 12 16                                                                                | 12 16                                                                                 | 8                                                                                     |

CONTACT LEGEND

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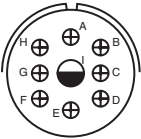
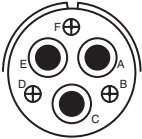
4

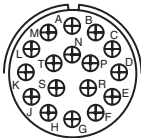
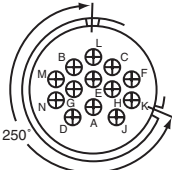
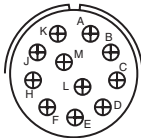
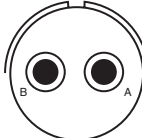
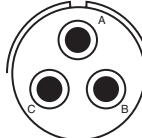
0

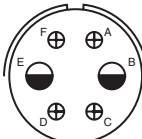
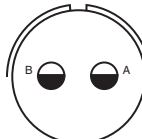
# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 20-20                                                                             | 20-21                                                                             | 20-22                                                                             | 20-23                                                                              | 20-24                                                                               | 100° Rotation of 20-11<br>20-25                                                     |
| Service Rating     | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                  | A                                                                                   | Inst.                                                                               |
| Number of Contacts | 1 3                                                                               | 1 8                                                                               | 3 3                                                                               | 2                                                                                  | 2 2                                                                                 | 13                                                                                  |
| Contact Size       | 4 12                                                                              | 12 16                                                                             | 8 16                                                                              | 8                                                                                  | 8 16                                                                                | 16                                                                                  |

|                    |                                                                                   |                                                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
|                    |                                                                                   |                                                                                   | 250° Rotation of 20-11                                                             |                                                                                    |                                                                                     |                                                                                     |
| Insert Arrangement | 20-27                                                                             | 20-29                                                                             | 20-30                                                                              | 20-33                                                                              | 22-1                                                                                | 22-2                                                                                |
| Service Rating     | A                                                                                 | A                                                                                 | Inst.                                                                              | A                                                                                  | D                                                                                   | D                                                                                   |
| Number of Contacts | 14                                                                                | 17                                                                                | 13                                                                                 | 11                                                                                 | 2                                                                                   | 3                                                                                   |
| Contact Size       | 16                                                                                | 16                                                                                | 16                                                                                 | 16                                                                                 | 8                                                                                   | 8                                                                                   |

|                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 22-4                                                                                | 22-5                                                                                | 22-6                                                                                 | 22-7                                                                                  | 22-8                                                                                  |
| Service Rating     | A                                                                                   | D                                                                                   | D                                                                                    | E                                                                                     | E                                                                                     |
| Number of Contacts | 2 2                                                                                 | 2 4                                                                                 | 2 1                                                                                  | 1                                                                                     | 2                                                                                     |
| Contact Size       | 8 12                                                                                | 12 16                                                                               | 8 16                                                                                 | 0                                                                                     | 12                                                                                    |

CONTACT LEGEND

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# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 22-9                                                                              | 22-10                                                                             | 22-11                                                                             | 22-12                                                                               | 22-13                                                                               |
| Service Rating     | E                                                                                 | E                                                                                 | B                                                                                 | D                                                                                   | E = D; A, B, C, D = A                                                               |
| Number of Contacts | 3                                                                                 | 4                                                                                 | 2                                                                                 | 2 3                                                                                 | 4 1                                                                                 |
| Contact Size       | 12                                                                                | 16                                                                                | 16                                                                                | 8 16                                                                                | 12 16                                                                               |

|                    |                                                                                    |                                                                                    |                                                                                    |                                                                                      |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 22-14                                                                              | 22-15                                                                              | 22-16                                                                              | 22-17                                                                                | 22-18                                                                                |
| Service Rating     | A                                                                                  | D = E; A, B, C, E, F = A                                                           | A                                                                                  | A = D; Bal. = A                                                                      | A, B, F, G, H = D; C, D, E = A                                                       |
| Number of Contacts | 19                                                                                 | 5 1                                                                                | 3 6                                                                                | 1 8                                                                                  | 8                                                                                    |
| Contact Size       | 16                                                                                 | 12 16                                                                              | 12 16                                                                              | 12 16                                                                                | 16                                                                                   |

|                    |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 22-19                                                                               | 22-20                                                                               | 22-21                                                                               | 22-22                                                                                 | 22-23                                                                                 |
| Service Rating     | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                     | H = D; Bal. = A                                                                       |
| Number of Contacts | 14                                                                                  | 9                                                                                   | 1 2                                                                                 | 4                                                                                     | 8                                                                                     |
| Contact Size       | 16                                                                                  | 16                                                                                  | 0 16                                                                                | 8                                                                                     | 12                                                                                    |

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CONTACT LEGEND

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# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                           |                          |                 |              |                             |                  |
|---------------------------|--------------------------|-----------------|--------------|-----------------------------|------------------|
|                           |                          |                 |              |                             |                  |
| <b>Insert Arrangement</b> | <b>22-24</b>             | <b>22-27</b>    | <b>22-28</b> | <b>22-33</b>                | <b>22-36</b>     |
| <b>Service Rating</b>     | C, D, E = D; A, B, F = A | J = D; Bal. = A | A            | A, B, C, D = D; E, F, G = A | H = D; Bal. = A* |
| <b>Number of Contacts</b> | 2 4                      | 1 8             | 7            | 7                           | 8                |
| <b>Contact Size</b>       | 12 16                    | 8 16            | 12           | 16                          | 12               |

|                           |              |             |             |             |                       |
|---------------------------|--------------|-------------|-------------|-------------|-----------------------|
|                           |              |             |             |             |                       |
| <b>Insert Arrangement</b> | <b>22-34</b> | <b>24-2</b> | <b>24-3</b> | <b>24-5</b> | <b>24-6</b>           |
| <b>Service Rating</b>     | D            | D           | D           | A           | A, G, H = D; Bal. = A |
| <b>Number of Contacts</b> | 3 2          | 7           | 2 5         | 16          | 8                     |
| <b>Contact Size</b>       | 12 16        | 12          | 12 16       | 16          | 12                    |

|                           |             |             |              |              |              |
|---------------------------|-------------|-------------|--------------|--------------|--------------|
|                           |             |             |              |              |              |
| <b>Insert Arrangement</b> | <b>24-7</b> | <b>24-9</b> | <b>24-10</b> | <b>24-11</b> | <b>24-12</b> |
| <b>Service Rating</b>     | A           | A           | A            | A            | A            |
| <b>Number of Contacts</b> | 2 14        | 2           | 7            | 3 6          | 2 3          |
| <b>Contact Size</b>       | 12 16       | 4           | 8            | 8 12         | 4 12         |

\* A, C, E, G = Iron  
B, D, F, H = Constantan

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# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                              |       |       |       |       |
|--------------------|------------------------------|-------|-------|-------|-------|
|                    |                              |       |       |       |       |
| Insert Arrangement | 24-16                        | 24-17 | 24-20 | 24-21 | 24-22 |
| Service Rating     | A, B, F, G = D; C, D, E, = A | D     | D     | D     | D     |
| Number of Contacts | 1 3 3                        | 2 3   | 2 9   | 1 9   | 4     |
| Contact Size       | 8 12 16                      | 12 16 | 12 16 | 8 16  | 8     |

|                    |       |       |                       |       |      |
|--------------------|-------|-------|-----------------------|-------|------|
|                    |       |       |                       |       |      |
| Insert Arrangement | 24-27 | 24-28 | 28-1                  | 28-2  | 28-3 |
| Service Rating     | E     | Inst. | A, J, E = D; Bal. = A | D     | E    |
| Number of Contacts | 7     | 24    | 3 6                   | 2 12  | 3    |
| Contact Size       | 16    | 16    | 8 12                  | 12 16 | 8    |

|                    |                       |         |      |      |
|--------------------|-----------------------|---------|------|------|
|                    |                       |         |      |      |
| Insert Arrangement | 28-4                  | 28-5    | 28-6 | 28-7 |
| Service Rating     | G, P, S = E; Bal. = D | D       | D    | D    |
| Number of Contacts | 2 7                   | 2 1 2   | 3    | 2    |
| Contact Size       | 12 16                 | 4 12 16 | 4    | 4    |

CONTACT LEGEND

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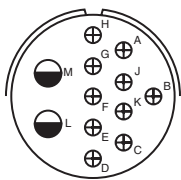
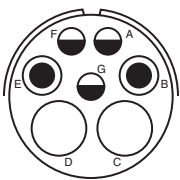
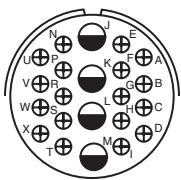
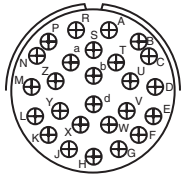
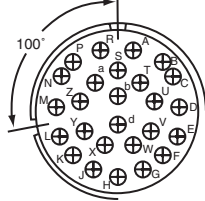
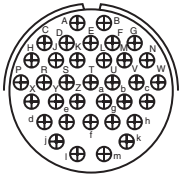
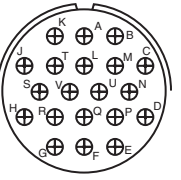
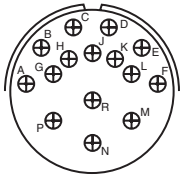
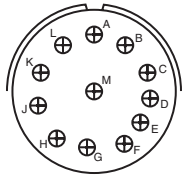
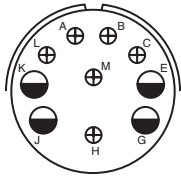
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# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                     |                                                                                      |                                                                                       |                                                                                      |
|--------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |    |     |    |   |
| Insert Arrangement | 28-8                                                                                | 28-9                                                                                 | 28-10                                                                                 | 28-11                                                                                |
| Service Rating     | L, M = E; B = D; Bal. = A                                                           | D                                                                                    | G = D; Bal. = A                                                                       | A                                                                                    |
| Number of Contacts | 2 10                                                                                | 6 6                                                                                  | 2 2 3                                                                                 | 4 18                                                                                 |
| Contact Size       | 12 16                                                                               | 12 16                                                                                | 4 8 12                                                                                | 12 16                                                                                |
|                    |   |    |   |  |
| Insert Arrangement | 28-12                                                                               | 28-13                                                                                | 28-15                                                                                 | 28-16                                                                                |
| Service Rating     | A                                                                                   | A                                                                                    | A                                                                                     | A                                                                                    |
| Number of Contacts | 26                                                                                  | 26                                                                                   | 35                                                                                    | 20                                                                                   |
| Contact Size       | 16                                                                                  | 16                                                                                   | 16                                                                                    | 16                                                                                   |
|                    |  |  |  |                                                                                      |
| Insert Arrangement | 28-17                                                                               | 28-18                                                                                | 28-19                                                                                 |                                                                                      |
| Service Rating     | R = B; M, N, P = D; A to L = A                                                      | M = C; G, H, J, K, L = D; A, B = A; Bal. = Inst.                                     | H, M = B; A, B = D; Bal. = A                                                          |                                                                                      |
| Number of Contacts | 15                                                                                  | 12                                                                                   | 4 6                                                                                   |                                                                                      |
| Contact Size       | 16                                                                                  | 16                                                                                   | 12 16                                                                                 |                                                                                      |

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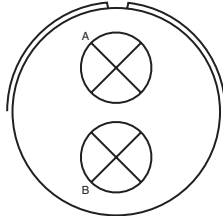
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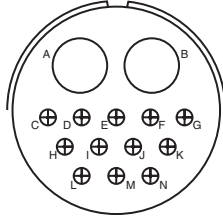
# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 28-20                                                                             | 28-21                                                                             | 28-22                                                                               | 32-1                                                                                |
| Service Rating     | A                                                                                 | A                                                                                 | D                                                                                   | A = E; B, C, D, E = D                                                               |
| Number of Contacts | 10 4                                                                              | 37                                                                                | 3 3                                                                                 | 2 3                                                                                 |
| Contact Size       | 12 16                                                                             | 16                                                                                | 4 16                                                                                | 0 12                                                                                |

|                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 32-2                                                                               | 32-3                                                                               | 32-4                                                                                | 32-5                                                                                 |
| Service Rating     | E                                                                                  | D                                                                                  | F, J, K, N = A; Bal. = D                                                            | D                                                                                    |
| Number of Contacts | 3 2                                                                                | 1 2 2 4                                                                            | 2 12                                                                                | 2                                                                                    |
| Contact Size       | 4 16                                                                               | 0 4 12 16                                                                          | 12 16                                                                               | 0                                                                                    |

|                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 32-6                                                                                | 32-7                                                                                | 32-8                                                                                 | 32-9                                                                                  |
| Service Rating     | A                                                                                   | A, B, h, j = Inst.; Bal. = A                                                        | A                                                                                    | D                                                                                     |
| Number of Contacts | 2 3 2 16                                                                            | 7 28                                                                                | 6 24                                                                                 | 2 12                                                                                  |
| Contact Size       | 4 8 12 16                                                                           | 12 16                                                                               | 12 16                                                                                | 4 16                                                                                  |







CONTACT LEGEND
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# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                     |                             |       |       |
|--------------------|-------------------------------------|-----------------------------|-------|-------|
|                    |                                     |                             |       |       |
| Insert Arrangement | 32-10                               | 32-12                       | 32-13 | 32-15 |
| Service Rating     | A, F = E; G = B; B, E = D; C, D = A | C, D, E, F, G = A; Bal. = D | D     | D     |
| Number of Contacts | 2 2 3                               | 5 10                        | 5 18  | 2 6   |
| Contact Size       | 4 8 16                              | 12 16                       | 12 16 | 0 12  |

|                    |                          |       |       |       |
|--------------------|--------------------------|-------|-------|-------|
|                    |                          |       |       |       |
|                    | 100° Rotation<br>of 32-6 |       |       |       |
| Insert Arrangement | 32-16                    | 32-17 | 32-22 | 36-1  |
| Service Rating     | A                        | D     | A     | D     |
| Number of Contacts | 2 3 2 16                 | 4     | 54    | 4 18  |
| Contact Size       | 4 8 12 16                | 4     | 16    | 12 16 |

|                    |      |                 |      |      |
|--------------------|------|-----------------|------|------|
|                    |      |                 |      |      |
| Insert Arrangement | 36-3 | 36-4            | 36-5 | 36-6 |
| Service Rating     | D    | A = D; B, C = A | A    | A    |
| Number of Contacts | 3 3  | 3               | 4    | 2 4  |
| Contact Size       | 0 12 | 0               | 0    | 0 4  |

CONTACT LEGEND

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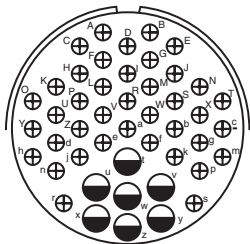
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# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

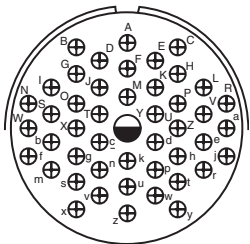


36-7

A

7 40

12 16

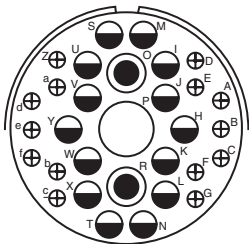


36-8

A

1 46

12 16

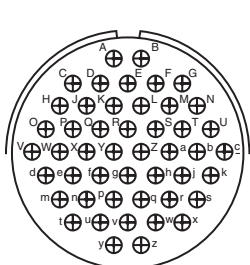


36-9

A

1 2 14 14

4 8 12 16

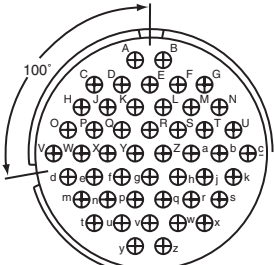


36-10

A

48

16



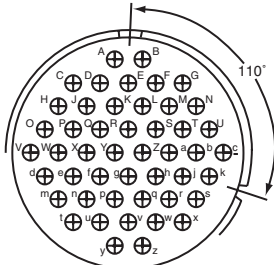
100° Rotation of 36-10

36-11

A

48

16



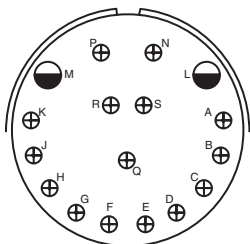
110° Rotation of 36-10

36-12

A

48

16

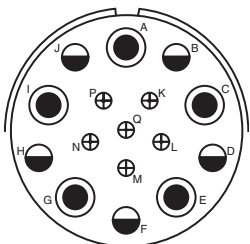


36-13

N, P, Q = E; Bal. = A

2 15

12 16

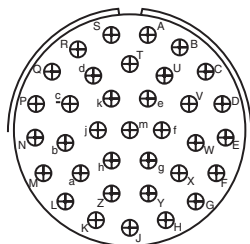


36-14

D

5 5 6

8 12 16



36-15

M = D; Bal. = A

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CONTACT LEGEND

16 12 8 4 0

# QWL

## contact arrangements

front face of pin insert or rear face of socket insert illustrated

100° Rotation  
of 36-7

**36-16**

**A**

|                    |    |    |
|--------------------|----|----|
| Service Rating     | 7  | 40 |
| Number of Contacts | 12 | 16 |

110° Rotation  
of 36-7

**36-17**

**A**

|                    |    |    |
|--------------------|----|----|
| Service Rating     | 7  | 40 |
| Number of Contacts | 12 | 16 |

100° Rotation  
of 36-9

**36-18**

**A**

|                    |   |   |    |    |
|--------------------|---|---|----|----|
| Service Rating     | 1 | 2 | 14 | 14 |
| Number of Contacts | 4 | 8 | 12 | 16 |

**36-20**

**A**

|                    |   |    |    |
|--------------------|---|----|----|
| Service Rating     | 2 | 2  | 30 |
| Number of Contacts | 8 | 12 | 16 |

**36-52**

**A**

|                    |    |
|--------------------|----|
| Service Rating     | 52 |
| Number of Contacts | 16 |

**40-1**

**D**

|                    |    |    |
|--------------------|----|----|
| Service Rating     | 6  | 24 |
| Number of Contacts | 12 | 16 |

**40-9**

**A**

|                    |   |    |    |
|--------------------|---|----|----|
| Service Rating     | 1 | 22 | 24 |
| Number of Contacts | 8 | 12 | 16 |

**40-56**

**A**

|                    |    |
|--------------------|----|
| Service Rating     | 85 |
| Number of Contacts | 16 |

**48-62**

**D**

|                    |    |
|--------------------|----|
| Service Rating     | 85 |
| Number of Contacts | 16 |

**CONTACT LEGEND**

|    |    |   |   |   |
|----|----|---|---|---|
| 16 | 12 | 8 | 4 | 0 |
|----|----|---|---|---|

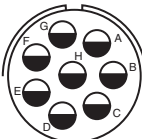
# Special contact arrangements

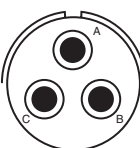
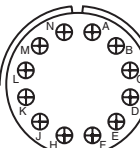
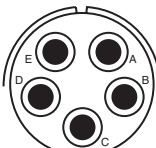
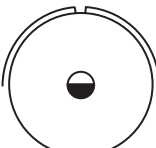
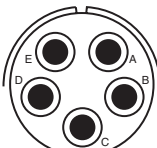
Requirements for more complex circuits prompted Amphenol to provide inserts not covered by the MS drawings. Illustrated here and on the following pages are insert layouts which have from one contact (high tension) to the 104 contact insert in shell size 44.

Many of these special inserts are also available in alternate keyway arrangements. Please contact Amphenol, Sidney, NY for additional information on special circuit application requirements.

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 14S-A7                                                                            | 16-59                                                                             | 20-26                                                                             | 20-51                                                                              | 20-57                                                                               | 20-58                                                                               |
| Service Rating     | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                  | A                                                                                   | A                                                                                   |
| Number of Contacts | 7                                                                                 | 4                                                                                 | 19                                                                                | 3*                                                                                 | 7*                                                                                  | 5 5                                                                                 |
| Contact Size       | 16                                                                                | 12                                                                                | 16                                                                                | 8                                                                                  | 12 for #14 or 16 wire                                                               | 12 16                                                                               |

|                    |                                                                                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 20-59                                                                              | 20-66                                                                              | 20-79                                                                              | 22-63                                                                               | 22-65                                                                                | 22-70                                                                                |
| Service Rating     | A                                                                                  | A                                                                                  | H = D; Bal. = A                                                                    | A                                                                                   | H = D; Bal. = A                                                                      | A                                                                                    |
| Number of Contacts | 3*                                                                                 | 1 5                                                                                | 7* 1*                                                                              | 4 8                                                                                 | 8*                                                                                   | 8 5                                                                                  |
| Contact Size       | 8 for #10 or 12 wire                                                               | 16 12 for #10 wire                                                                 | 16 12 for #16 wire                                                                 | 12 16                                                                               | 12 for #14 or 16 wire                                                                | 12 16                                                                                |

|                    |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |  |
| Insert Arrangement | 22-80                                                                               | 24-19                                                                               | 24-51                                                                               | 24-52                                                                                | 24-53                                                                                 | 24-58                                                                                 |
| Service Rating     | A                                                                                   | A                                                                                   | A                                                                                   | Hi-Volt                                                                              | A                                                                                     | A                                                                                     |
| Number of Contacts | 3*                                                                                  | 12                                                                                  | 5*                                                                                  | 1                                                                                    | 5*                                                                                    | 3 3 7                                                                                 |
| Contact Size       | 8 for #10 or 12 wire                                                                | 16                                                                                  | B, E for AN #10 or 12 wire<br>A, C, D for AN #8 wire                                | 12                                                                                   | 8                                                                                     | 8 12 16                                                                               |

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CONTACT LEGEND

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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 24-59                                                                             | 24-60                                                                             | 24-65                                                                              | 24-66                                                                               | 24-67                                                                               |
| Service Rating     | A                                                                                 | A                                                                                 | A                                                                                  | D                                                                                   | Inst.                                                                               |
| Number of Contacts | 7 7                                                                               | 7*                                                                                | 11 4                                                                               | 7                                                                                   | 19                                                                                  |
| Contact Size       | 12 16                                                                             | 8 for #10 or 12 wire                                                              | 12 16                                                                              | 12                                                                                  | 12                                                                                  |

|                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |                                                                                      |
|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                    |  |  |  |  |  |
| Insert Arrangement | 24-71                                                                              | 24-75                                                                              | 24-79                                                                               | 24-80                                                                                | 24-84                                                                                |
| Service Rating     | A                                                                                  | A                                                                                  | A                                                                                   | Inst.                                                                                | A                                                                                    |
| Number of Contacts | 2* 5*                                                                              | 5 2                                                                                | 5                                                                                   | 23                                                                                   | 1 18                                                                                 |
| Contact Size       | 8 8 for #10 or 12 wire                                                             | 8 8 for #16 wire                                                                   | 8                                                                                   | 16                                                                                   | 12 12 (Coax) RG-188/U or RG-174/U                                                    |

|                    |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                    |  |  |  |  |
| Insert Arrangement | 24-96                                                                               | 24-AJ                                                                               | 28-51                                                                                 | 28-59                                                                                 |
| Service Rating     | Inst.                                                                               | A                                                                                   | A                                                                                     | A                                                                                     |
| Number of Contacts | 28                                                                                  | 25                                                                                  | 12                                                                                    | 7 10                                                                                  |
| Contact Size       | 16                                                                                  | 16                                                                                  | 12                                                                                    | 12 16                                                                                 |

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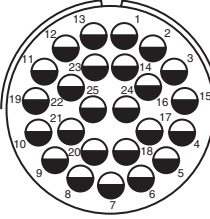
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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |       |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------|
|  |  |  |  |  |       |
| Insert Arrangement                                                                | 28-66                                                                             | 28-72                                                                              | 28-74                                                                               | 28-75                                                                               | 28-79 |
| Service Rating                                                                    | A                                                                                 | —                                                                                  | A                                                                                   | A                                                                                   | A     |
| Number of Contacts                                                                | 2 14                                                                              | 3                                                                                  | 9* 4* 3*                                                                            | 9* 7*                                                                               | 7 9   |
| Contact Size                                                                      | 8 12                                                                              | 4 (Coax) RG-59A/U<br>or RG-62A/U                                                   | 16 8 8 for #10 wire<br>(S, T, R)                                                    | 16 8 for #10 wire                                                                   | 8 16  |

|                                                                                    |                                                                                    |                                                                                      |                                                                                      |       |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------|
|  |  |  |  |       |
| Insert Arrangement                                                                 | 28-82                                                                              | 28-84                                                                                | 28-AY                                                                                | 32-25 |
| Service Rating                                                                     | D                                                                                  | A                                                                                    | A                                                                                    | A     |
| Number of Contacts                                                                 | 2 4                                                                                | 9                                                                                    | 4 5                                                                                  | 25    |
| Contact Size                                                                       | 8 12                                                                               | 8                                                                                    | 4 16                                                                                 | 12    |

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |                        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------|
|  |  |  |  |                        |
| Insert Arrangement                                                                  | 32-31                                                                               | 32-48                                                                                | 32-52                                                                                 | 32-53                  |
| Service Rating                                                                      | A                                                                                   | Inst.                                                                                | D                                                                                     | t, u = E; Bal. = Inst. |
| Number of Contacts                                                                  | 31                                                                                  | 48                                                                                   | 6 2                                                                                   | 5 37                   |
| Contact Size                                                                        | 16                                                                                  | 16                                                                                   | 12 0                                                                                  | 12 16                  |

\* Solderless

CONTACT LEGEND

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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                    |                     |                               |                      |
|--------------------|--------------------|---------------------|-------------------------------|----------------------|
|                    |                    |                     |                               |                      |
| Insert Arrangement | 32-56              | 32-57               | 32-58                         | 32-60                |
| Service Rating     | A                  | **                  | —                             | A                    |
| Number of Contacts | 24 6               | 6 2                 | 4                             | 15 8                 |
| Contact Size       | 16 12 for #10 wire | 12 0 (Coax) RG-71/U | 4 (Coax) RG-161/U or RG-179/U | 16 8 (Coax) RG-124/U |

|                    |                             |       |                      |
|--------------------|-----------------------------|-------|----------------------|
|                    |                             |       |                      |
| Insert Arrangement | 32-62                       | 32-64 | 32-68                |
| Service Rating     | **                          | Inst. | A                    |
| Number of Contacts | 2 1 2 16 2                  | 54    | 12 4                 |
| Contact Size       | 4 8 12 16 8 (Coax) RG-124/U | 16    | 16 4 (Coax) RG-58C/U |

|                    |       |                       |       |       |
|--------------------|-------|-----------------------|-------|-------|
|                    |       |                       |       |       |
| Insert Arrangement | 32-73 | 32-75                 | 32-76 | 32-79 |
| Service Rating     | A     | 8, 9 = D              | A     | D     |
| Number of Contacts | 46    | 2 7                   | 19    | 4 1   |
| Contact Size       | 16    | 12 8 (Coax) RG-180B/U | 12    | 4 8   |

\*\* Consult Amphenol, Sidney, NY for service rating of power contacts.

CONTACT LEGEND

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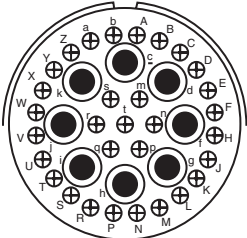
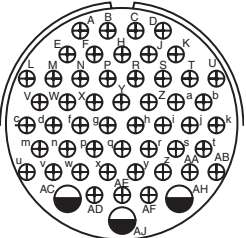
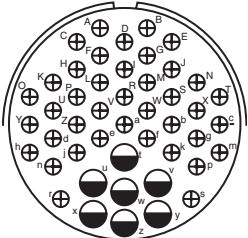
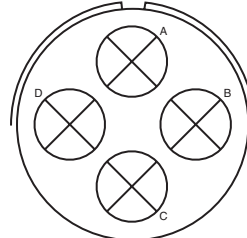
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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                                                                                   |                                                                                   |                                                                                    |                                                                                     |       |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------|
|  |  |  |  |       |
| Insert Arrangement                                                                | 32-82                                                                             | 32-AF                                                                              | 36-51                                                                               | 36-54 |
| Service Rating                                                                    | A                                                                                 | A                                                                                  | D                                                                                   | A     |
| Number of Contacts                                                                | 4 12                                                                              | 55                                                                                 | 2 2                                                                                 | 8 31  |
| Contact Size                                                                      | 4 16                                                                              | 16                                                                                 | 0 4                                                                                 | 8 16  |

|                                                                                    |                                                                                    |                                                                                     |                                                                                      |                                         |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------|
|  |  |  |  |                                         |
| Insert Arrangement                                                                 | 36-55                                                                              | 36-59                                                                               | 36-60                                                                                | 36-64                                   |
| Service Rating                                                                     | A                                                                                  | A                                                                                   | **                                                                                   | —                                       |
| Number of Contacts                                                                 | 31 8                                                                               | 50 3                                                                                | 40 7                                                                                 | 4                                       |
| Contact Size                                                                       | 16 8 for #6 wire                                                                   | 16 12 for #10 wire                                                                  | 16 12 for #10 wire                                                                   | 0 (Coax) RG-11/U,<br>RG-12/U or RG-13/U |

|                    |                                      |       |                   |                      |
|--------------------|--------------------------------------|-------|-------------------|----------------------|
|                    |                                      |       |                   |                      |
| Insert Arrangement | 36-65                                | 36-71 | 36-73             | 36-74                |
| Service Rating     | —                                    | A     | —                 | A                    |
| Number of Contacts | 4                                    | 3 50  | 7                 | 43 1                 |
| Contact Size       | 0 (Coax) RG-59/U, RG-62/U or RG-71/U | 12 16 | 4 (Coax) RG-62B/U | 16 8 (Coax) RG-187/U |

\*\* Consult Amphenol, Sidney, NY for service rating of power contacts.

CONTACT LEGEND

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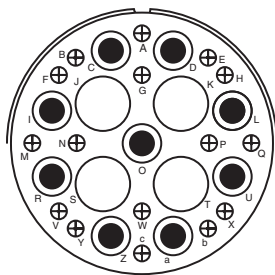
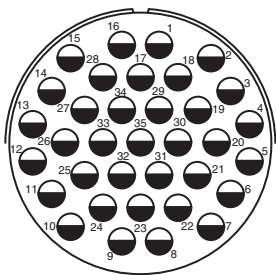
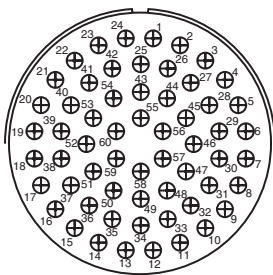
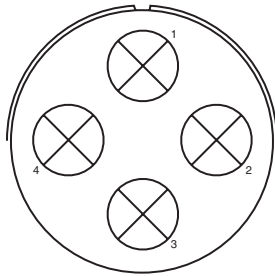
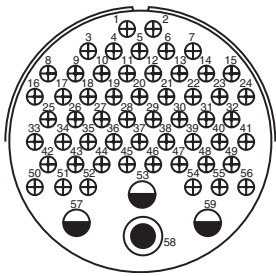
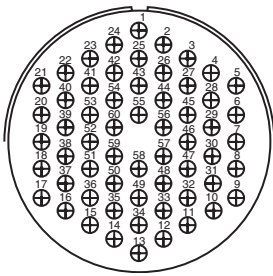
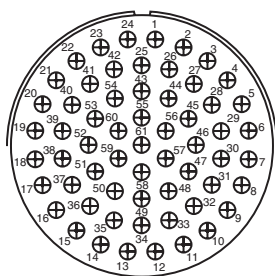
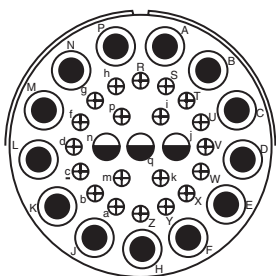
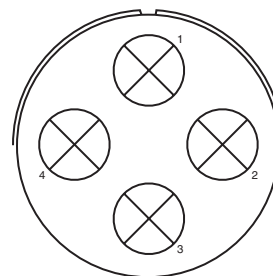
# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                 |                 |                  |                                |
|--------------------|-----------------|-----------------|------------------|--------------------------------|
|                    |                 |                 |                  |                                |
| Insert Arrangement | 36-75           | 36-76           | 36-77            | 36-78                          |
| Service Rating     | A               | A               | D                | A                              |
| Number of Contacts | 48              | 47              | 7                | 2 12                           |
| Contact Size       | 16 for #14 wire | 16              | 4                | 16 8                           |
|                    |                 |                 |                  |                                |
| Insert Arrangement | 36-79           | 36-80           | 36-83            | 36-85                          |
| Service Rating     | A               | A               | —                | M = D; Bal. = A                |
| Number of Contacts | 20              | 20              | 7                | 35                             |
| Contact Size       | 12              | 12 for #10 wire | 4 (Coax) RG-58/U | 16 for #12 wire                |
|                    |                 |                 |                  |                                |
| Insert Arrangement | 36-97           | 36-AF           | 40-5             |                                |
| Service Rating     | C               | A               | A                |                                |
| Number of Contacts | 1               | 48              | 5                |                                |
| Contact Size       | 4/0             | 16              | 0                |                                |
|                    |                 |                 |                  |                                |
|                    |                 |                 |                  | CONTACT LEGEND 16 12 8 4 0 4/0 |

# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                                                                                     |                                                                                      |                                                                                       |                          |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------|
|    |    |    |                          |
| <b>Insert Arrangement</b>                                                           | <b>40-10</b>                                                                         | <b>40-35</b>                                                                          | <b>40-53</b>             |
| <b>Service Rating</b>                                                               | <b>A</b>                                                                             | <b>D</b>                                                                              | <b>A</b>                 |
| <b>Number of Contacts</b>                                                           | <b>4 9 16</b>                                                                        | <b>35</b>                                                                             | <b>60</b>                |
| <b>Contact Size</b>                                                                 | <b>4 8 16</b>                                                                        | <b>12</b>                                                                             | <b>16</b>                |
|   |   |   |                          |
| <b>Insert Arrangement</b>                                                           | <b>40-57</b>                                                                         | <b>40-61</b>                                                                          | <b>40-62</b>             |
| <b>Service Rating</b>                                                               | <b>E</b>                                                                             | <b>A</b>                                                                              | <b>A</b>                 |
| <b>Number of Contacts</b>                                                           | <b>4</b>                                                                             | <b>1 3 55</b>                                                                         | <b>60</b>                |
| <b>Contact Size</b>                                                                 | <b>0</b>                                                                             | <b>8 12 16</b>                                                                        | <b>16</b>                |
|  |  |  |                          |
| <b>Insert Arrangement</b>                                                           | <b>40-63</b>                                                                         | <b>40-64</b>                                                                          | <b>40-66</b>             |
| <b>Service Rating</b>                                                               | <b>A</b>                                                                             | <b>—</b>                                                                              | <b>—</b>                 |
| <b>Number of Contacts</b>                                                           | <b>61</b>                                                                            | <b>3 20 13</b>                                                                        | <b>4</b>                 |
| <b>Contact Size</b>                                                                 | <b>16 for #14 wire</b>                                                               | <b>12 16 8 (Coax) RG-124/U</b>                                                        | <b>0 (Coax) RG-63B/U</b> |

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CONTACT LEGEND

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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |                     |
|--------------------|---------------------|
| Insert Arrangement | 40-67               |
| Service Rating     | A                   |
| Number of Contacts | 1 10                |
| Contact Size       | 16 4 (Coax) RG-59/U |



|                    |       |
|--------------------|-------|
| Insert Arrangement | 40-68 |
| Service Rating     | A     |
| Number of Contacts | 21    |
| Contact Size       | 8     |



|                    |       |
|--------------------|-------|
| Insert Arrangement | 40-70 |
| Service Rating     | A     |
| Number of Contacts | 61    |
| Contact Size       | 16    |



|                    |                     |
|--------------------|---------------------|
| Insert Arrangement | 40-72               |
| Service Rating     | A                   |
| Number of Contacts | 1 10                |
| Contact Size       | 16 4 (Coax) RG-9B/U |



|                    |       |
|--------------------|-------|
| Insert Arrangement | 40-73 |
| Service Rating     | A     |
| Number of Contacts | 61    |
| Contact Size       | 16    |



|                    |                                                  |
|--------------------|--------------------------------------------------|
| Insert Arrangement | 40-74                                            |
| Service Rating     | A                                                |
| Number of Contacts | 1 1 4                                            |
| Contact Size       | 12 4 (Coax) RG-62/U 0 (Coax) RG-9B/U or RG-214/U |



|                    |       |
|--------------------|-------|
| Insert Arrangement | 40-75 |
| Service Rating     | E     |
| Number of Contacts | 1 4   |
| Contact Size       | 12 0  |



|                    |       |
|--------------------|-------|
| Insert Arrangement | 40-80 |
| Service Rating     | A     |
| Number of Contacts | 1 10  |
| Contact Size       | 16 4  |



|                    |                 |
|--------------------|-----------------|
| Insert Arrangement | 40-81           |
| Service Rating     | A               |
| Number of Contacts | 62              |
| Contact Size       | 16 for #14 wire |



CONTACT LEGEND

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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

|                    |       |                 |                    |       |
|--------------------|-------|-----------------|--------------------|-------|
|                    |       |                 |                    |       |
| Insert Arrangement | 40-82 | 40-85           | 40-86              | 40-87 |
| Service Rating     | A     | A               | —                  | D     |
| Number of Contacts | 62    | 60              | 4                  | 7     |
| Contact Size       | 16    | 16 for #14 wire | 0 (Coax) RG-115A/U | 4     |

|                    |       |       |       |        |
|--------------------|-------|-------|-------|--------|
|                    |       |       |       |        |
| Insert Arrangement | 40-AD | 40-AG | 40-AP | 40-AR  |
| Service Rating     | A     | A     | E     | Inst.  |
| Number of Contacts | 4 4   | 38    | 2     | 7 3 3  |
| Contact Size       | 8 0   | 12    | 4/0   | 12 4 0 |

|                    |       |         |        |       |
|--------------------|-------|---------|--------|-------|
|                    |       |         |        |       |
| Insert Arrangement | 40-AS | 40-AT   | 40-AU  | 40-AV |
| Service Rating     | A     | A       | A      | D     |
| Number of Contacts | 15 25 | 24 18 1 | 3 10 1 | 3     |
| Contact Size       | 16 12 | 12 16 8 | 4 8 16 | 2/0   |

|                |    |    |   |   |   |         |
|----------------|----|----|---|---|---|---------|
|                |    |    |   |   |   |         |
| CONTACT LEGEND | 16 | 12 | 8 | 4 | 0 | 2/0 4/0 |

# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated



|                    |       |
|--------------------|-------|
| Insert Arrangement | 44-52 |
| Service Rating     | A     |
| Number of Contacts | 104   |
| Contact Size       | 16    |



|                    |                      |
|--------------------|----------------------|
| Insert Arrangement | 44-53                |
| Service Rating     | A                    |
| Number of Contacts | 18 18                |
| Contact Size       | 16 8 (Coax) RG-124/U |



|                    |                       |
|--------------------|-----------------------|
| Insert Arrangement | 48-51                 |
| Service Rating     | A                     |
| Number of Contacts | 42 10 4               |
| Contact Size       | 16 8 0 (Coax) RG-41/U |



|                    |                     |
|--------------------|---------------------|
| Insert Arrangement | 48-52               |
| Service Rating     | A                   |
| Number of Contacts | 56 5                |
| Contact Size       | 16 0 (Coax) RG-41/U |



|                    |       |
|--------------------|-------|
| Insert Arrangement | 48-53 |
| Service Rating     | D     |
| Number of Contacts | 37    |
| Contact Size       | 12    |

CONTACT LEGEND

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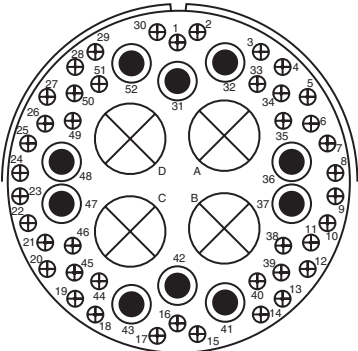
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# Special contact arrangements

front face of pin insert or rear face of socket insert illustrated

Insert Arrangement  
Service Rating  
Number of Contacts  
Contact Size

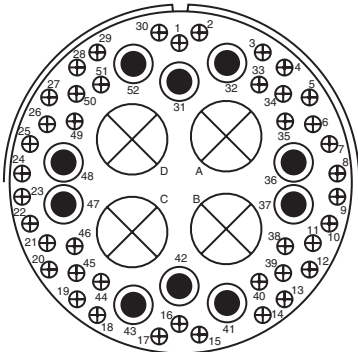


**48-54**  
**A**  
**42 10 4**  
**16 8 0 (Coax) RG-59/U**



**48-55**  
**A**  
**68 2 2 6**  
**16 12 8 4**

Insert Arrangement  
Service Rating  
Number of Contacts  
Contact Size



**48-57**  
**A**  
**42 10 4**  
**16 8 0**



**48-60**  
**A**  
**42 10 4**  
**16 8 0 (Coax) RG-214/U**



# QWL – accessories cabling information

The Amphenol® QWL series of electrical connectors has been designed with the problems of multi-conductor cable users in mind. Two of these problems, namely water proofing and strain relief, are solved by the radial inward compression of an internal neoprene gland in the various cable accessories shown on the following pages. For additional strain relief beyond that provided by the gland, both cable grips and bar clamps are available. Since the glands close down from .094" to .145" (depending on shell size), the optimum condition for cable users is to select a gland with an I.D. only slightly larger than the maximum O.D. of the cable. The inside diameter of the accessory housing determines the maximum diameter of the cable as shown in the tabulation below. Smaller sizes than those shown in each shell size can be accommodated by smaller compression glands.

Different cable manufacturers use different constructions and cable lays in manufacturing multi-conductor cable. The specific cabling manufacturing specification should be known by the customer in detail in order to properly figure each QWL application. This knowledge can save many individual wire crossovers in any given run of cable. Crossovers add materially to the cable diameter without a cable accessory. In those cases where diameter buildup is impossible to avoid, special cable accessories with longer barrels are available.

How to order information is covered in detail on pages 4 and 5. In selecting the base number below, care should be used, as some of the cable accessories are provided with protection cap attachment rings, while others are provided with the Kellems strain relief grip as shown. If a type or cable accommodation size is not found herein that fulfills your application, please contact Amphenol, Sidney, NY.

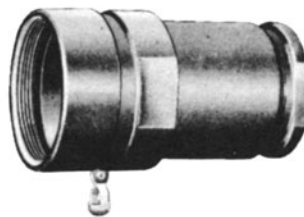
All dimensions for reference only.

| Shell Size | QWL Connector Accessory Thd. | Approx. Work Length (Internal) |       | Minimum Housing Inner Diameter | Maximum Cable Outer Diameter |
|------------|------------------------------|--------------------------------|-------|--------------------------------|------------------------------|
|            |                              | Short                          | Long  |                                |                              |
| 10         | .500-28                      | .250                           |       | .359                           | .359                         |
| 12         | .625-24                      | .375                           |       | .484                           | .484                         |
| 14         | .750-20                      | .401                           |       | .609                           | .609                         |
| 16         | .875-20                      | .500                           |       | .734                           | .734                         |
| 18         | 1.000-20                     | 1.120                          |       | .859                           | .859                         |
| 20         | 1.125-18                     | 1.370                          |       | .984                           | .984                         |
| 22         | 1.250-18                     | 1.370                          |       | 1.109                          | 1.109                        |
| 24         | 1.375-18                     | 1.370                          |       | 1.234                          | 1.234                        |
| 28         | 1.625-18                     | 1.370                          | 5.000 | 1.427                          | 1.427                        |
| 32         | 1.875-16                     | 1.370                          | 6.000 | 1.708                          | 1.708                        |
| 36         | 2.062-16                     | 1.370                          | 5.000 | 1.895                          | 1.895                        |
| 40         | 2.312-16                     | 1.370                          | 6.000 | 2.130                          | 2.130                        |
| 44         | 2.625-16                     |                                |       | 2.375                          | 2.375                        |
| 48         | 2.875-16                     | 2.218                          | 6.000 | 2.630                          | 2.630                        |

# QWL – cable accessories



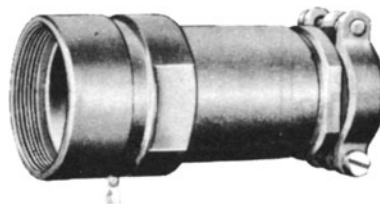
**10-101332**  
Short barrel with grip



**10-101335**  
Short barrel with attachment ring



**10-101333**  
Short barrel without grip



**10-130380**  
Short barrel length with attachment ring & strain relief bars

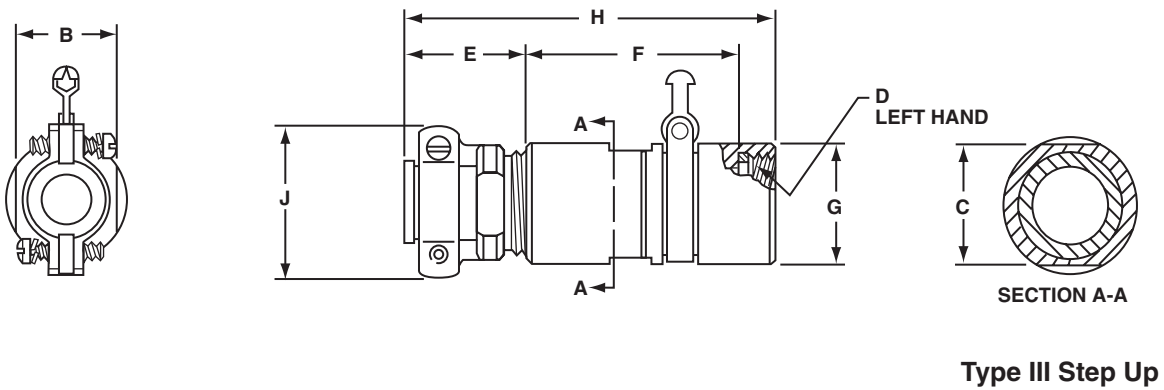
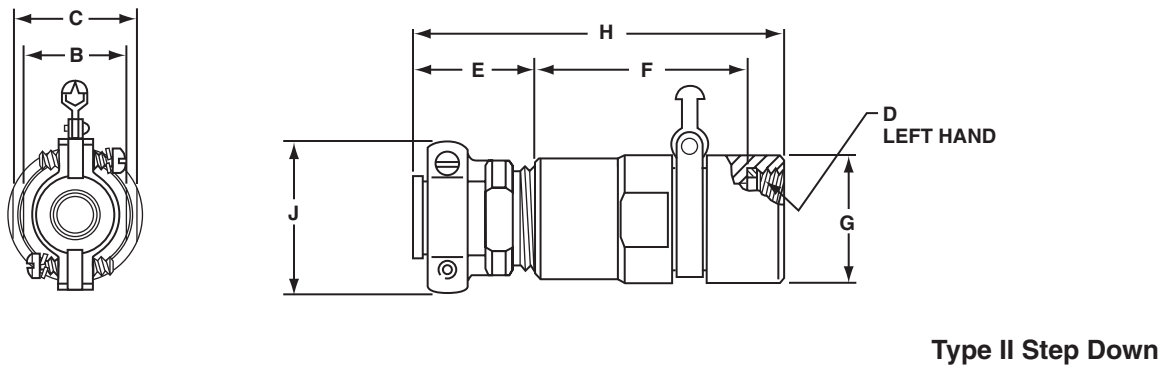
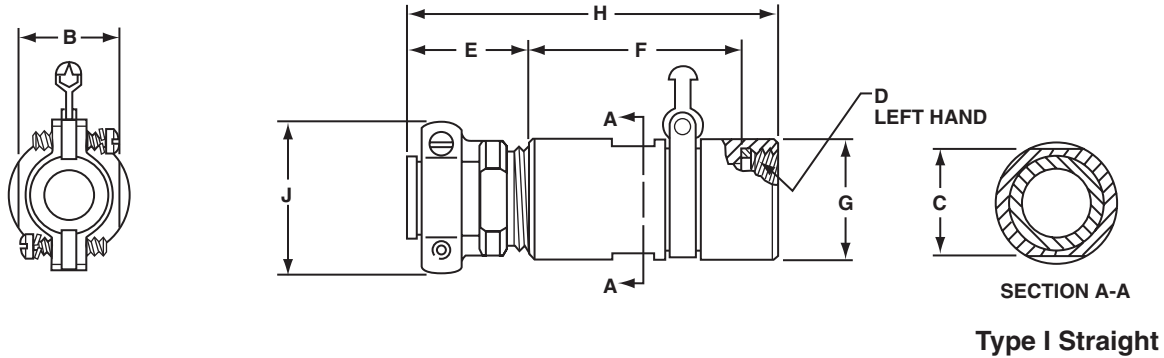


**10-101334**  
Short barrel with grip & attachment ring



**10-113637**  
Long barrel with attachment ring and grip

**QWL – accessories**  
**10-130380**  
cable sealing adapter (with clamp bars)



# QWL – accessories

## 10-130380

### cable sealing adapter (with clamp bars)

All dimensions are for reference only.

| Part Number*  | Used With Shell Size | Cable Range  |              | B<br>+.000<br>–.010 | C<br>+.010<br>–.000 | D Thread<br>Class 2B-LH | E<br>Free<br>Max | F<br>+.010<br>–.020 | G<br>Dia.<br>+.010<br>–.020 | H<br>Max. | J<br>Max. | Type |
|---------------|----------------------|--------------|--------------|---------------------|---------------------|-------------------------|------------------|---------------------|-----------------------------|-----------|-----------|------|
|               |                      | Max.<br>Dia. | Min.<br>Dia. |                     |                     |                         |                  |                     |                             |           |           |      |
| 10-130380-141 | 14S                  | .460         | .366         | .750                | .812                | .750-20UNEF             | 1.125            | 1.782               | .938                        | 3.229     | 1.062     | I    |
| 10-130380-142 | 14S                  | .438         | .344         | .875                | .938                | .750-20UNEF             | 1.125            | 2.126               | .938                        | 3.573     | 1.125     | III  |
| 10-130380-143 | 14S                  | .375         | .306         | .875                | .938                | .750-20UNEF             | 1.125            | 2.126               | .938                        | 3.573     | 1.125     | III  |
| 10-130380-161 | 16S                  | .530         | .436         | 1.000               | 1.062               | .875-20UNEF             | 1.250            | 2.282               | 1.062                       | 3.854     | 1.375     | III  |
| 10-130380-162 | 16S                  | .605         | .511         | 1.000               | 1.062               | .875-20UNEF             | 1.250            | 2.282               | 1.062                       | 3.854     | 1.375     | III  |
| 10-130380-171 | 16                   | .500         | .406         | .875                | .938                | .875-20UNEF             | 1.125            | 2.215               | 1.062                       | 3.834     | 1.125     | I    |
| 10-130380-181 | 18                   | .828         | .715         | 1.188               | 1.250               | 1.000-20UNEF            | 1.250            | 3.032               | 1.188                       | 4.776     | 1.688     | III  |
| 10-130380-182 | 18                   | .699         | .605         | 1.062               | 1.125               | 1.000-20UNEF            | 1.250            | 2.933               | 1.188                       | 4.677     | 1.562     | III  |
| 10-130380-183 | 18                   | .500         | .406         | .875                | 1.094               | 1.000-20UNEF            | 1.125            | 2.485               | 1.188                       | 4.104     | 1.125     | II   |
| 10-130380-184 | 18                   | .562         | .449         | 1.188               | 1.250               | 1.000-20UNEF            | 1.250            | 3.032               | 1.188                       | 4.776     | 1.688     | III  |
| 10-130380-185 | 18                   | .750         | .637         | 1.312               | 1.000               | 1.000-20UNEF            | 1.250            | 3.063               | 1.188                       | 4.607     | 1.812     | III  |
| 10-130380-186 | 18                   | .530         | .436         | 1.000               | 1.062               | 1.000-20UNEF            | 1.250            | 2.621               | 1.188                       | 4.365     | 1.375     | I    |
| 10-130380-201 | 20                   | .625         | .531         | 1.062               | 1.125               | 1.125-18UNEF            | 1.250            | 2.933               | 1.312                       | 4.677     | 1.562     | I    |
| 10-130380-202 | 20                   | .605         | .511         | 1.000               | 1.125               | 1.125-18UNEF            | 1.250            | 2.631               | 1.312                       | 4.365     | 1.375     | II   |
| 10-130380-203 | 20                   | .628         | .715         | 1.188               | 1.125               | 1.125-18UNEF            | 1.250            | 2.996               | 1.312                       | 4.740     | 1.688     | III  |
| 10-130380-204 | 20                   | .720         | .626         | 1.062               | 1.125               | 1.125-18UNEF            | 1.250            | 2.933               | 1.312                       | 4.677     | 1.562     | I    |
| 10-130380-205 | 20                   | .900         | .787         | 1.312               | 1.250               | 1.125-18UNEF            | 1.250            | 3.062               | 1.312                       | 4.807     | 1.812     | III  |
| 10-130380-206 | 20                   | .625         | .531         | 1.062               | 1.125               | 1.125-18UNEF            | 1.250            | 2.933               | 1.312                       | 4.677     | 1.562     | I    |
| 10-130380-207 | 20                   | .750         | .637         | 1.312               | 1.250               | 1.125-18UNEF            | 1.250            | 3.063               | 1.312                       | 4.807     | 1.812     | III  |
| 10-130380-221 | 22                   | .790         | .696         | 1.062               | 1.250               | 1.250-18UNEF            | 1.250            | 2.933               | 1.438                       | 4.677     | 1.562     | II   |
| 10-130380-222 | 22                   | .720         | .626         | 1.062               | 1.250               | 1.250-18UNEF            | 1.250            | 2.933               | 1.438                       | 4.677     | 1.562     | II   |
| 10-130380-223 | 22                   | 1.130        | 1.005        | 1.780               | 1.375               | 1.250-18UNEF            | 1.500            | 3.266               | 1.438                       | 5.250     | 2.469     | III  |
| 10-130380-224 | 22                   | .680         | .567         | 1.312               | 1.375               | 1.250-18UNEF            | 1.250            | 3.059               | 1.438                       | 4.803     | 1.812     | III  |
| 10-130380-242 | 24                   | .900         | .787         | 1.312               | 1.375               | 1.375-18UNEF            | 1.250            | 3.059               | 1.562                       | 4.803     | 1.812     | I    |
| 10-130380-243 | 24                   | 1.180        | 1.055        | 1.780               | 1.812               | 1.375-18UNEF            | 1.500            | 3.204               | 1.562                       | 5.198     | 2.469     | III  |
| 10-130380-244 | 24                   | .680         | .567         | 1.312               | 1.375               | 1.375-18UNEF            | 1.250            | 3.059               | 1.562                       | 4.803     | 1.812     | I    |
| 10-130380-245 | 24                   | .630         | .517         | 1.312               | 1.375               | 1.375-18UNEF            | 1.250            | 3.059               | 1.562                       | 4.803     | 1.812     | I    |
| 10-130380-246 | 24                   | 1.000        | .875         | 1.546               | 1.625               | 1.375-18UNEF            | 1.500            | 3.121               | 1.562                       | 5.115     | 2.125     | III  |
| 10-130380-247 | 24                   | .805         | .692         | 1.312               | 1.375               | 1.375-18UNEF            | 1.250            | 3.059               | 1.562                       | 4.803     | 1.812     | I    |
| 10-130380-281 | 28                   | 1.310        | 1.185        | 1.780               | 1.875               | 1.625-18UNEF            | 1.500            | 3.184               | 1.812                       | 5.178     | 2.469     | III  |
| 10-130380-282 | 28                   | .970         | .857         | 1.312               | 1.625               | 1.625-18UNEF            | 1.250            | 3.059               | 1.812                       | 4.803     | 1.812     | II   |
| 10-130380-283 | 28                   | .880         | .755         | 1.546               | 1.625               | 1.625-18UNEF            | 1.500            | 3.121               | 1.812                       | 5.115     | 2.125     | I    |
| 10-130380-284 | 28                   | 1.427        | 1.320        | 2.000               | 1.875               | 1.625-18UNEF            | 1.500            | 3.184               | 1.812                       | 5.178     | 2.625     | III  |
| 10-130380-321 | 32                   | .970         | .875         | 1.312               | 1.875               | 1.875-16UN              | 1.250            | 3.059               | 2.062                       | 4.803     | 1.812     | II   |
| 10-130380-322 | 32                   | 1.230        | 1.105        | 1.780               | 1.875               | 1.875-16UN              | 1.500            | 3.184               | 2.062                       | 5.178     | 2.469     | I    |
| 10-130380-323 | 32                   | 1.328        | 1.240        | 1.780               | 1.875               | 1.875-16UN              | 1.500            | 3.184               | 2.062                       | 5.178     | 2.469     | I    |
| 10-130380-324 | 32                   | .750         | .637         | 1.312               | 1.875               | 1.875-16UN              | 1.250            | 3.059               | 2.062                       | 4.803     | 1.812     | II   |
| 10-130380-325 | 32                   | 1.055        | .958         | 1.546               | 1.875               | 1.875-16UN              | 1.500            | 3.121               | 2.062                       | 5.115     | 2.125     | II   |
| 10-130380-326 | 32                   | 1.375        | 1.250        | 2.000               | 2.062               | 1.875-16UN              | 1.500            | 3.246               | 2.062                       | 5.240     | 2.625     | III  |
| 10-130380-361 | 36                   | 1.310        | 1.185        | 1.780               | 2.062               | 2.0625-16UN             | 1.500            | 3.184               | 2.312                       | 5.178     | 2.469     | II   |
| 10-130380-362 | 36                   | 1.900        | 1.775        | 2.438               | 2.312               | 2.0625-16UN             | 1.625            | 3.500               | 2.312                       | 5.619     | 3.171     | III  |
| 10-130380-363 | 36                   | 1.530        | 1.406        | 2.000               | 2.062               | 2.0625-16UN             | 1.500            | 3.246               | 2.312                       | 5.240     | 2.625     | I    |
| 10-130380-364 | 36                   | 1.445        | 1.320        | 2.000               | 2.062               | 2.0625-16UN             | 1.500            | 3.246               | 2.312                       | 5.240     | 2.625     | I    |
| 10-130380-365 | 36                   | .805         | .692         | 1.312               | 2.062               | 2.0625-16UN             | 1.250            | 3.059               | 2.312                       | 4.803     | 1.812     | II   |
| 10-130380-366 | 36                   | .603         | .511         | 1.000               | 2.000               | 2.0625-16UN             | 1.250            | 2.875               | 2.312                       | 4.619     | 1.375     | II   |
| 10-130380-367 | 36                   | 1.000        | .875         | 1.546               | 2.062               | 2.0625-16UN             | 1.500            | 3.121               | 2.312                       | 5.115     | 2.125     | II   |
| 10-130380-401 | 40                   | 1.730        | 1.605        | 2.438               | 2.500               | 2.3125-16UN             | 1.625            | 3.469               | 2.562                       | 5.588     | 3.171     | III  |
| 10-130380-402 | 40                   | 1.310        | 1.185        | 1.780               | 2.312               | 2.3125-16UN             | 1.500            | 3.184               | 2.562                       | 5.178     | 2.469     | II   |
| 10-130380-403 | 40                   | 1.180        | 1.055        | 1.780               | 2.312               | 2.3125-16UN             | 1.500            | 3.184               | 2.562                       | 5.178     | 2.469     | II   |
| 10-130380-404 | 40                   | 1.109        | .984         | 1.546               | 2.312               | 2.3125-16UN             | 1.500            | 3.121               | 2.562                       | 5.115     | 2.125     | II   |
| 10-130380-441 | 44                   | 1.900        | 1.775        | 2.438               | 2.750               | 2.625-16UN              | 1.625            | 4.281               | 2.875                       | 6.588     | 3.171     | II   |

\*For complete order number see pages 4 and 5.

**QWL – accessories**  
**10-10133X**  
cable sealing adapter



**Type I Straight**



**Type II Step Down**



**Type III Step Up**

\*Wire grip dimensions (K) apply to 10-101332 and 10-101334 assemblies only.

# QWL – accessories

## 10-10133X

### cable sealing adapter

All dimensions are for reference only.

| Part Number*  | Used With Shell Size | Cable Range  |              | B<br>+.000<br>–.010 | C<br>+.010<br>–.000 | D Thread<br>Class 2B-LH | E<br>Free<br>Max. | F<br>+.010<br>–.020 | G<br>Dia.<br>+.010<br>–.020 | H<br>±.045 | K<br>Free<br>Approx. | Type |
|---------------|----------------------|--------------|--------------|---------------------|---------------------|-------------------------|-------------------|---------------------|-----------------------------|------------|----------------------|------|
|               |                      | Max.<br>Dia. | Min.<br>Dia. |                     |                     |                         |                   |                     |                             |            |                      |      |
| 10-10133X-121 | 12S                  | .281         | .219         | .750                | .812                | .6250-24NEF             | .500              | 1.938               | .812                        | 2.750      | 2.844                | III  |
| 10-10133X-122 | 12S                  | .500         | .406         | 1.062               | 1.000               | .6250-24NEF             | .562              | 2.875               | .812                        | 3.750      | 4.688                | III  |
| 10-10133X-123 | 12S                  | .405         | .316         | 1.000               | .812                | .6250-24NEF             | .562              | 2.548               | .812                        | 3.422      | 3.688                | III  |
| 10-10133X-141 | 14S                  | .337         | .281         | .750                | .812                | .7500-20UNEF            | .500              | 1.782               | .938                        | 2.594      | 3.344                | I    |
| 10-10133X-142 | 14S                  | .222         | .160         | .625                | .812                | .7500-20UNEF            | .562              | 1.782               | .938                        | 2.532      | 2.406                | II   |
| 10-10133X-143 | 14S                  | .281         | .219         | .750                | .812                | .7500-20UNEF            | .500              | 1.782               | .938                        | 2.594      | 2.844                | I    |
| 10-10133X-144 | 14S                  | .530         | .441         | 1.000               | .812                | .7500-20UNEF            | .562              | 2.719               | .938                        | 3.594      | 4.688                | III  |
| 10-10133X-145 | 14S                  | .463         | .406         | .875                | .938                | .7500-20UNEF            | .500              | 2.126               | .938                        | 2.938      | 4.344                | III  |
| 10-10133X-146 | 14S                  | .405         | .316         | 1.000               | .812                | .7500-20UNEF            | .562              | 2.719               | .938                        | 3.594      | 3.688                | III  |
| 10-10133X-151 | 14                   | .405         | .316         | 1.000               | .812                | .7500-20UNEF            | .562              | 2.719               | .938                        | 3.765      | 3.688                | III  |
| 10-10133X-161 | 16S                  | .463         | .406         | .875                | .938                | .8750-20UNEF            | .500              | 1.844               | 1.062                       | 2.656      | 4.344                | I    |
| 10-10133X-162 | 16S                  | .589         | .511         | 1.000               | 1.062               | .8750-20UNEF            | .562              | 2.282               | 1.062                       | 3.156      | 5.188                | III  |
| 10-10133X-163 | 16S                  | .625         | .580         | 1.062               | 1.125               | .8750-20UNEF            | .562              | 2.933               | 1.062                       | 3.807      | 6.188                | III  |
| 10-10133X-164 | 16S                  | .405         | .316         | 1.000               | 1.062               | .8750-20UNEF            | .562              | 2.282               | 1.062                       | 3.156      | 3.688                | III  |
| 10-10133X-165 | 16S                  | .530         | .441         | 1.000               | 1.062               | .8750-20UNEF            | .562              | 2.282               | 1.062                       | 3.156      | 4.688                | III  |
| 10-10133X-166 | 16S                  | .699         | .605         | 1.062               | 1.125               | .8750-20UNEF            | .562              | 2.933               | 1.062                       | 3.807      | 6.188                | III  |
| 10-10133X-167 | 16S                  | .281         | .219         | .750                | .938                | .8750-20UNEF            | .500              | 1.844               | 1.062                       | 2.656      | 2.844                | II   |
| 10-10133X-171 | 16                   | .589         | .511         | 1.000               | 1.062               | .8750-20UNEF            | .562              | 2.621               | 1.062                       | 3.667      | 5.188                | III  |
| 10-10133X-172 | 16                   | .438         | .400         | .875                | .938                | .8750-20UNEF            | .500              | 2.215               | 1.062                       | 3.199      | 4.344                | I    |
| 10-10133X-173 | 16                   | .625         | .580         | 1.062               | 1.125               | .8750-20UNEF            | .562              | 2.933               | 1.062                       | 3.979      | 6.188                | III  |
| 10-10133X-174 | 16                   | .530         | .441         | 1.000               | 1.062               | .8750-20UNEF            | .562              | 2.621               | 1.062                       | 3.667      | 4.688                | III  |
| 10-10133X-175 | 16                   | .405         | .316         | 1.000               | 1.062               | .8750-20UNEF            | .562              | 2.621               | 1.062                       | 3.667      | 3.688                | III  |
| 10-10133X-181 | 18                   | .589         | .511         | 1.000               | 1.062               | 1.0000-20UNEF           | .562              | 2.621               | 1.188                       | 3.667      | 5.188                | I    |
| 10-10133X-182 | 18                   | .625         | .580         | 1.062               | 1.125               | 1.0000-20UNEF           | .562              | 2.933               | 1.188                       | 3.979      | 6.188                | III  |
| 10-10133X-183 | 18                   | .530         | .441         | 1.000               | 1.062               | 1.0000-20UNEF           | .562              | 2.621               | 1.188                       | 3.667      | 4.688                | I    |
| 10-10133X-184 | 18                   | .699         | .605         | 1.062               | 1.125               | 1.0000-20UNEF           | .562              | 2.933               | 1.188                       | 3.979      | 6.188                | III  |
| 10-10133X-185 | 18                   | .405         | .316         | 1.000               | 1.062               | 1.0000-20UNEF           | .562              | 2.621               | 1.188                       | 3.667      | 3.688                | I    |
| 10-10133X-186 | 18                   | .455         | .361         | 1.062               | 1.125               | 1.0000-20UNEF           | .562              | 2.933               | 1.188                       | 3.979      | 4.188                | III  |
| 10-10133X-187 | 18                   | .750         | .637         | 1.250               | 1.000               | 1.0000-20UNEF           | .562              | 3.063               | 1.188                       | 4.109      | 6.688                | III  |
| 10-10133X-188 | 18                   | .172         | .078         | .750                | .938                | 1.0000-20UNEF           | .500              | 2.407               | 1.188                       | 3.391      | 2.844                | II   |
| 10-10133X-190 | 18                   | .805         | .692         | 1.250               | 1.000               | 1.0000-20UNEF           | .562              | 3.063               | 1.188                       | 4.109      | 6.688                | III  |
| 10-10133X-201 | 20                   | .625         | .580         | 1.062               | 1.125               | 1.1250-18NEF            | .562              | 2.933               | 1.312                       | 3.979      | 6.188                | I    |
| 10-10133X-202 | 20                   | .699         | .605         | 1.062               | 1.125               | 1.1250-18NEF            | .562              | 2.933               | 1.312                       | 3.979      | 6.188                | I    |
| 10-10133X-203 | 20                   | .500         | .406         | 1.062               | 1.125               | 1.1250-18NEF            | .562              | 2.933               | 1.312                       | 3.979      | 4.688                | I    |
| 10-10133X-204 | 20                   | .337         | .281         | .750                | 1.125               | 1.1250-18NEF            | .500              | 2.438               | 1.312                       | 3.422      | 3.344                | II   |
| 10-10133X-205 | 20                   | .828         | .715         | 1.125               | 1.250               | 1.1250-18NEF            | .547              | 2.996               | 1.312                       | 4.042      | 6.688                | III  |
| 10-10133X-206 | 20                   | .375         | .312         | .875                | 1.125               | 1.1250-18NEF            | .500              | 2.469               | 1.312                       | 3.453      | 3.844                | II   |
| 10-10133X-207 | 20                   | .281         | .219         | .750                | 1.125               | 1.1250-18NEF            | .500              | 2.438               | 1.312                       | 3.422      | 2.844                | II   |
| 10-10133X-208 | 20                   | .455         | .361         | 1.062               | 1.125               | 1.1250-18NEF            | .562              | 2.933               | 1.312                       | 3.979      | 4.188                | I    |
| 10-10133X-209 | 20                   | .589         | .511         | 1.000               | 1.125               | 1.1250-18NEF            | .562              | 2.621               | 1.312                       | 3.667      | 5.188                | II   |
| 10-10133X-210 | 20                   | .530         | .441         | 1.000               | 1.125               | 1.1250-18NEF            | .562              | 2.621               | 1.312                       | 3.667      | 4.688                | II   |
| 10-10133X-211 | 20                   | .900         | .791         | 1.250               | 1.250               | 1.1250-18NEF            | .562              | 3.063               | 1.312                       | 4.109      | 7.188                | III  |

\*For complete order number see pages 4 and 5.

# QWL – accessories

## 10-10133X

### cable sealing adapter

All dimensions are for reference only.

| Part Number*  | Used With Shell Size | Cable Range    |              | B<br>+.000<br>–.010 | C<br>+.000<br>–.010 | D Thread<br>Class 2B-LH | E<br>Free<br>±.010 | F<br>+.010<br>–.020 | G<br>Dia.<br>+.010<br>–.020 | H<br>±.045 | K<br>Free<br>Approx. | Type |
|---------------|----------------------|----------------|--------------|---------------------|---------------------|-------------------------|--------------------|---------------------|-----------------------------|------------|----------------------|------|
|               |                      | Max.<br>Dia.   | Min.<br>Dia. |                     |                     |                         |                    |                     |                             |            |                      |      |
| 10-10133X-221 | 22                   | .699           | .605         | 1.062               | 1.250               | 1.2500-18NEF            | .562               | 2.933               | 1.438                       | 3.979      | 6.188                | II   |
| 10-10133X-222 | 22                   | .750           | .637         | 1.250               | 1.375               | 1.2500-18NEF            | .562               | 3.059               | 1.438                       | 4.105      | 6.688                | III  |
| 10-10133X-223 | 22                   | .445           | .367         | 1.062               | 1.250               | 1.2500-18NEF            | .562               | 2.933               | 1.438                       | 3.979      | 4.188                | II   |
| 10-10133X-224 | 22                   | 1.000          | .875         | 1.500               | 1.375               | 1.2500-18NEF            | .562               | 3.121               | 1.438                       | 4.167      | 7.188                | III  |
| 10-10133X-225 | 22                   | .828           | .715         | 1.125               | 1.250               | 1.2500-18NEF            | .594               | 2.996               | 1.438                       | 4.072      | 6.688                | I    |
| 10-10133X-226 | 22                   | .900           | .791         | 1.250               | 1.375               | 1.2500-18NEF            | .562               | 3.059               | 1.438                       | 4.105      | 7.188                | III  |
| 10-10133X-227 | 22                   | .562           | .453         | 1.125               | 1.250               | 1.2500-18NEF            | .594               | 2.996               | 1.438                       | 4.074      | 5.188                | I    |
| 10-10133X-228 | 22                   | 1.101          | .984         | 1.500               | 1.375               | 1.2500-18NEF            | .562               | 3.121               | 1.438                       | 4.167      | 7.688                | III  |
| 10-10133X-229 | 22                   | .589           | .511         | 1.000               | 1.250               | 1.2500-18NEF            | .562               | 2.750               | 1.438                       | 3.796      | 5.188                | II   |
| 10-10133X-231 | 22                   | 1.055          | .958         | 1.500               | 1.375               | 1.2500-18NEF            | .562               | 3.121               | 1.438                       | 4.167      | 7.688                | III  |
| 10-10133X-241 | 24                   | 1.000          | .875         | 1.500               | 1.625               | 1.3750-18NEF            | .562               | 3.121               | 1.562                       | 4.167      | 7.188                | III  |
| 10-10133X-242 | 24                   | .562           | .453         | 1.125               | 1.406               | 1.3750-18NEF            | .562               | 2.996               | 1.562                       | 4.042      | 5.188                | II   |
| 10-10133X-243 | 24                   | .750           | .637         | 1.250               | 1.375               | 1.3750-18NEF            | .562               | 3.059               | 1.562                       | 4.105      | 6.688                | I    |
| 10-10133X-244 | 24                   | .900           | .791         | 1.250               | 1.375               | 1.3750-18NEF            | .562               | 3.059               | 1.562                       | 4.105      | 7.188                | I    |
| 10-10133X-245 | 24                   | 1.101          | .984         | 1.500               | 1.625               | 1.3750-18NEF            | .562               | 3.121               | 1.562                       | 4.167      | 7.688                | III  |
| 10-10133X-246 | 24                   | .405           | .316         | 1.000               | 1.375               | 1.3750-18NEF            | .562               | 2.750               | 1.562                       | 3.796      | 3.688                | II   |
| 10-10133X-247 | 24                   | .828           | .715         | 1.125               | 1.406               | 1.3750-18NEF            | .562               | 2.996               | 1.562                       | 4.042      | 6.688                | II   |
| 10-10133X-248 | 24                   | .805           | .692         | 1.250               | 1.375               | 1.3750-18NEF            | .562               | 3.059               | 1.562                       | 4.105      | 6.688                | I    |
| 10-10133X-249 | 24                   | 1.130          | 1.005        | 1.750               | 1.812               | 1.3750-18NEF            | .562               | 3.204               | 1.562                       | 4.250      | 7.188                | III  |
| 10-10133X-281 | 28                   | 1.055          | .958         | 1.500               | 1.625               | 1.6250-18NEF            | .562               | 3.121               | 1.812                       | 4.167      | 7.688                | I    |
| 10-10133X-282 | 28                   | .900           | .791         | 1.250               | 1.625               | 1.6250-18NEF            | .562               | 3.059               | 1.812                       | 4.105      | 7.188                | II   |
| 10-10133X-283 | 28                   | 1.000          | .875         | 1.500               | 1.625               | 1.6250-18NEF            | .562               | 3.121               | 1.812                       | 4.167      | 7.188                | I    |
| 10-10133X-284 | 28                   | .630           | .535         | 1.250               | 1.625               | 1.6250-18NEF            | .562               | 3.059               | 1.812                       | 4.105      | 5.688                | II   |
| 10-10133X-285 | 28                   | .750           | .637         | 1.250               | 1.625               | 1.6250-18NEF            | .562               | 3.059               | 1.812                       | 4.105      | 6.688                | II   |
| 10-10133X-286 | 28                   | 1.180          | 1.099        | 1.750               | 1.875               | 1.6250-18NEF            | .562               | 3.184               | 1.812                       | 4.230      | 8.188                | III  |
| 10-10133X-287 | 28                   | 1.101          | .984         | 1.500               | 1.625               | 1.6250-18NEF            | .562               | 3.121               | 1.812                       | 4.167      | 7.688                | I    |
| 10-10133X-288 | 28                   | 1.310          | 1.200        | 1.750               | 1.875               | 1.6250-18NEF            | .562               | 3.184               | 1.812                       | 4.230      | 8.688                | III  |
| 10-10133X-289 | 28                   | 1.230          | 1.105        | 1.750               | 1.875               | 1.6250-18NEF            | .562               | 3.184               | 1.812                       | 4.230      | 8.188                | III  |
| 10-10133X-290 | 28                   | .880           | .755         | 1.500               | 1.625               | 1.6250-18NEF            | .562               | 3.121               | 1.812                       | 4.167      | 6.688                | I    |
| 10-10133X-291 | 28                   | .957           | .857         | 1.250               | 1.625               | 1.6250-18NEF            | .547               | 3.059               | 1.812                       | 4.090      | 7.188                | II   |
| 10-10133X-292 | 28                   | .828           | .715         | 1.125               | 1.625               | 1.6250-18NEF            | .562               | 2.954               | 1.812                       | 4.000      | 6.688                | II   |
| 10-10133X-293 | 28                   | 1.375          | 1.250        | 2.000               | 1.875               | 1.6250-18NEF            | .562               | 3.184               | 1.812                       | 4.230      | 9.688                | III  |
| 10-10133X-294 | 28                   | 1.445          | 1.320        | 2.000               | 1.875               | 1.6250-18NEF            | .562               | 3.184               | 1.812                       | 4.230      | 9.688                | III  |
| 10-10133X-295 | 28                   | .805           | .692         | 1.250               | 1.625               | 1.6250-18NEF            | .562               | 3.059               | 1.812                       | 4.105      | 6.688                | II   |
| 10-10133X-321 | 32                   | .880           | .755         | 1.500               | 1.875               | 1.8750-16N              | .562               | 3.121               | 2.062                       | 4.167      | 6.688                | II   |
| 10-10133X-322 | 32                   | 1.101          | .984         | 1.500               | 1.875               | 1.8750-16N              | .562               | 3.121               | 2.062                       | 4.167      | 7.688                | II   |
| 10-10133X-323 | 32                   | .750           | .637         | 1.250               | 1.875               | 1.8750-16N              | .562               | 3.059               | 2.062                       | 4.105      | 6.688                | II   |
| 10-10133X-324 | 32                   | 1.445          | 1.320        | 2.000               | 2.062               | 1.8750-16N              | .672               | 3.246               | 2.062                       | 4.292      | 9.688                | III  |
| 10-10133X-325 | 32                   | 1.180          | 1.099        | 1.750               | 1.875               | 1.8750-16N              | .562               | 3.184               | 2.062                       | 4.230      | 8.188                | I    |
| 10-10133X-326 | 32                   | .375           | .312         | .875                | 1.875               | 1.8750-16N              | .500               | 2.766               | 2.062                       | 3.750      | 3.844                | II   |
| 10-10133X-327 | 32                   | .957           | .857         | 1.250               | 1.875               | 1.8750-16N              | .562               | 3.059               | 2.062                       | 4.105      | 7.188                | II   |
| 10-10133X-328 | 32                   | 1.230          | 1.105        | 1.750               | 1.875               | 1.8750-16N              | .562               | 3.184               | 2.062                       | 4.230      | 8.188                | I    |
| 10-10133X-329 | 32                   | 1.530          | 1.406        | 2.000               | 2.062               | 1.8750-16N              | .562               | 3.246               | 2.062                       | 4.292      | 10.688               | III  |
| 10-10133X-330 | 32                   | 1.000          | .875         | 1.500               | 1.875               | 1.8750-16N              | .562               | 3.121               | 2.062                       | 4.167      | 7.188                | II   |
| 10-10133X-331 | 32                   | 1.375          | 1.250        | 2.000               | 2.062               | 1.8750-16N              | .562               | 3.246               | 2.062                       | 4.292      | 9.688                | III  |
| 10-10133X-332 | 32                   | 1.310          | 1.200        | 1.750               | 1.875               | 1.8750-16N              | .562               | 3.184               | 2.062                       | 4.230      | 8.688                | I    |
| 10-10133X-333 | 32                   | .580 x<br>.825 | (Oval)       | 1.500               | 1.875               | 1.8750-16N              | .562               | 3.121               | 2.062                       | 4.167      | 6.688                | II   |
| 10-10133X-334 | 32                   | .500 x<br>.705 | (Oval)       | 1.500               | 1.875               | 1.8750-16N              | .562               | 3.121               | 2.062                       | 4.167      | 6.688                | II   |

\*For complete order number see pages 4 and 5.

# QWL – accessories

## 10-10133X

### cable sealing adapter

All dimensions are for reference only.

| Part Number*  | Used With Shell Size | Cable Range  |              | B<br>+.000<br>–.010 | C<br>+.000<br>–.010 | D Thread<br>Class 2B-LH | E<br>Free<br>±.035 | F<br>+.010<br>–.020 | G<br>Dia.<br>+.010<br>–.020 | H<br>±.045 | K<br>Free<br>Approx. | Type |
|---------------|----------------------|--------------|--------------|---------------------|---------------------|-------------------------|--------------------|---------------------|-----------------------------|------------|----------------------|------|
|               |                      | Max.<br>Dia. | Min.<br>Dia. |                     |                     |                         |                    |                     |                             |            |                      |      |
| 10-10133X-335 | 32                   | .530         | .441         | 1.000               | 1.625               | 1.8750-16N              | .562               | 2.875               | 2.062                       | 3.921      | 4.688                | II   |
| 10-10133X-336 | 32                   | .680         | .567         | 1.250               | 1.875               | 1.8750-16N              | .562               | 3.059               | 2.062                       | 4.105      | 6.688                | II   |
| 10-10133X-337 | 32                   | .463         | .406         | .875                | 1.875               | 1.8750-16N              | .500               | 2.766               | 2.062                       | 3.750      | 4.344                | II   |
| 10-10133X-361 | 36                   | 1.055        | .958         | 1.500               | 2.062               | 2.0625-16N              | .562               | 3.121               | 2.312                       | 4.167      | 7.688                | II   |
| 10-10133X-362 | 36                   | 1.445        | 1.320        | 2.000               | 2.062               | 2.0625-16N              | .562               | 3.246               | 2.312                       | 4.292      | 9.688                | I    |
| 10-10133X-363 | 36                   | 1.530        | 1.406        | 2.000               | 2.062               | 2.0625-16N              | .562               | 3.246               | 2.312                       | 4.292      | 10.688               | I    |
| 10-10133X-364 | 36                   | 1.230        | 1.105        | 1.750               | 2.062               | 2.0625-16N              | .562               | 3.184               | 2.312                       | 4.230      | 8.188                | II   |
| 10-10133X-365 | 36                   | .750         | .637         | 1.250               | 2.062               | 2.0625-16N              | .562               | 3.059               | 2.312                       | 4.105      | 6.688                | II   |
| 10-10133X-366 | 36                   | .880         | .755         | 1.500               | 2.062               | 2.0625-16N              | .562               | 3.121               | 2.312                       | 4.167      | 6.688                | II   |
| 10-10133X-367 | 36                   | 1.656        | 1.531        | 2.250               | 2.312               | 2.0625-16N              | .562               | 3.308               | 2.312                       | 4.354      | 12.688               | III  |
| 10-10133X-368 | 36                   | 1.101        | .984         | 1.500               | 2.062               | 2.0625-16N              | .562               | 3.121               | 2.312                       | 4.167      | 7.688                | II   |
| 10-10133X-369 | 36                   | .957         | .857         | 1.250               | 2.062               | 2.0625-16N              | .672               | 3.059               | 2.312                       | 4.090      | 7.188                | II   |
| 10-10133X-370 | 36                   | 1.900        | 1.775        | 2.438               | 2.312               | 2.0625-16N              | .500               | 3.500               | 2.312                       | 4.656      | 13.688               | III  |
| 10-10133X-371 | 36                   | .375         | .312         | .875                | 2.062               | 2.0625-16N              | .500               | 2.813               | 2.312                       | 3.797      | 3.844                | II   |
| 10-10133X-372 | 36                   | 1.825        | 1.700        | 2.438               | 2.312               | 2.0625-16N              | .672               | 3.500               | 2.312                       | 4.656      | 13.688               | III  |
| 10-10133X-373 | 36                   | 1.375        | 1.250        | 2.000               | 2.062               | 2.0625-16N              | .562               | 3.246               | 2.312                       | 4.292      | 9.688                | I    |
| 10-10133X-374 | 36                   | 1.562        | 1.437        | 2.250               | 2.312               | 2.0625-16N              | .562               | 3.308               | 2.312                       | 4.354      | 11.188               | III  |
| 10-10133X-375 | 36                   | 1.730        | 1.605        | 2.438               | 2.312               | 2.0625-16N              | .672               | 3.500               | 2.312                       | 4.656      | 13.688               | III  |
| 10-10133X-376 | 36                   | .530         | .441         | 1.000               | 1.875               | 2.0625-16N              | .562               | 2.875               | 2.312                       | 3.921      | 4.688                | II   |
| 10-10133X-377 | 36                   | 1.130        | 1.005        | 1.750               | 2.062               | 2.0625-16N              | .562               | 3.184               | 2.312                       | 4.230      | 7.188                | II   |
| 10-10133X-378 | 36                   | 1.180        | 1.055        | 1.750               | 2.062               | 2.0625-16N              | .562               | 3.184               | 2.312                       | 4.230      | 8.188                | II   |
| 10-10133X-379 | 36                   | 1.595        | 1.470        | 2.250               | 2.312               | 2.0625-16N              | .562               | 3.308               | 2.312                       | 4.354      | 11.688               | III  |
| 10-10133X-401 | 40                   | 1.310        | 1.200        | 1.750               | 2.312               | 2.3125-16N              | .562               | 3.184               | 2.562                       | 4.230      | 8.688                | II   |
| 10-10133X-402 | 40                   | 1.656        | 1.531        | 2.250               | 2.312               | 2.3125-16N              | .562               | 3.308               | 2.562                       | 4.354      | 12.688               | I    |
| 10-10133X-403 | 40                   | 1.101        | .984         | 1.500               | 2.312               | 2.3125-16N              | .438               | 3.121               | 2.562                       | 4.167      | 7.688                | II   |
| 10-10133X-404 | 40                   | 1.562        | 1.437        | 2.250               | 2.312               | 2.3125-16N              | .562               | 3.308               | 2.562                       | 4.354      | 11.188               | I    |
| 10-10133X-405 | 40                   | 1.375        | 1.250        | 2.000               | 2.312               | 2.3125-16N              | .562               | 3.246               | 2.562                       | 4.292      | 9.688                | II   |
| 10-10133X-406 | 40                   | 1.180        | 1.099        | 1.750               | 2.312               | 2.3125-16N              | .562               | 3.184               | 2.562                       | 4.230      | 8.188                | II   |
| 10-10133X-407 | 40                   | 1.900        | 1.775        | 2.438               | 2.500               | 2.3125-16N              | .672               | 3.469               | 2.562                       | 4.625      | 13.688               | III  |
| 10-10133X-408 | 40                   | 1.730        | 1.605        | 2.438               | 2.500               | 2.3125-16N              | .672               | 3.469               | 2.562                       | 4.625      | 13.688               | III  |
| 10-10133X-409 | 40                   | 1.825        | 1.700        | 2.438               | 2.500               | 2.3125-16N              | .672               | 3.469               | 2.562                       | 4.625      | 13.688               | III  |
| 10-10133X-410 | 40                   | 1.984        | 1.859        | 2.438               | 2.500               | 2.3125-16N              | .672               | 3.469               | 2.562                       | 4.625      | 13.688               | III  |
| 10-10133X-411 | 40                   | 1.445        | 1.320        | 2.000               | 2.312               | 2.3125-16N              | .562               | 3.246               | 2.562                       | 4.292      | 9.688                | II   |
| 10-10133X-412 | 40                   | 2.062        | 1.937        | 2.750               | 2.500               | 2.3125-16N              | .672               | 3.500               | 2.562                       | 4.656      | 14.188               | III  |
| 10-10133X-413 | 40                   | 2.100        | 1.955        | 2.750               | 2.500               | 2.3125-16N              | .672               | 3.500               | 2.562                       | 4.656      | 14.188               | III  |
| 10-10133X-414 | 40                   | 2.145        | 2.000        | 2.750               | 2.500               | 2.3125-16N              | .672               | 3.500               | 2.562                       | 4.656      | 14.188               | III  |
| 10-10133X-415 | 40                   | .957         | .857         | 1.250               | 2.125               | 2.3125-16N              | .562               | 3.063               | 2.562                       | 4.109      | 7.188                | II   |
| 10-10133X-416 | 40                   | 1.230        | 1.103        | 1.750               | 2.312               | 2.3125-16N              | .562               | 3.184               | 2.562                       | 4.230      | 8.188                | II   |
| 10-10133X-417 | 40                   | 1.055        | .958         | 1.500               | 2.312               | 2.3125-16N              | .562               | 3.121               | 2.562                       | 4.167      | 7.688                | II   |
| 10-10133X-418 | 40                   | .630         | .567         | 1.250               | 2.250               | 2.3125-16UN             | .562               | 3.063               | 2.562                       | 4.109      | 6.688                | II   |
| 10-10133X-441 | 44                   | 2.170        | 2.025        | 2.750               | 2.625               | 2.6250-16UN             | .672               | 3.609               | 2.875                       | 4.953      | 17.188               | III  |
| 10-10133X-442 | 44                   | 2.145        | 2.000        | 2.750               | 2.625               | 2.6250-16UN             | .672               | 3.547               | 2.875                       | 4.891      | 14.188               | III  |
| 10-10133X-443 | 44                   | 2.250        | 2.105        | 2.750               | 2.625               | 2.6250-16UN             | .672               | 3.609               | 2.875                       | 4.953      | 17.188               | III  |
| 10-10133X-445 | 44                   | 1.130        | 1.005        | 1.750               | 2.625               | 2.6250-16UN             | .562               | 3.969               | 2.875                       | 5.203      | 7.188                | II   |
| 10-10133X-446 | 44                   | 1.109        | .984         | 1.500               | 2.500               | 2.6250-16UN             | .562               | 3.905               | 2.875                       | 5.140      | 7.688                | II   |
| 10-10133X-449 | 44                   | 1.445        | 1.320        | 2.000               | 2.562               | 2.6250-16UN             | .562               | 4.031               | 2.875                       | 5.265      | 9.688                | II   |
| 10-10133X-481 | 48                   | 1.900        | 1.775        | 2.438               | 2.812               | 2.8750-16N              | .562               | 3.203               | 3.125                       | 4.547      | 13.688               | II   |
| 10-10133X-482 | 48                   | 2.000        | 1.867        | 2.750               | 2.969               | 2.8750-16N              | .672               | 4.281               | 3.125                       | 5.625      | 14.188               | II   |
| 10-10133X-483 | 48                   | 2.250        | 2.105        | 2.750               | 2.750               | 2.8750-16N              | .672               | 4.406               | 3.125                       | 5.750      | 17.188               | I    |
| 10-10133X-484 | 48                   | 2.170        | 2.025        | 2.750               | 2.750               | 2.8750-16N              | .672               | 4.406               | 3.125                       | 5.750      | 17.188               | I    |

\*For complete order number see pages 4 and 5.

**QWL – accessories**

**10-113637**

**cable sealing adapter (with woven strain relief)**



**Type I Straight**



**Type II Step Down**



**Type III Step Up**

# QWL – accessories

## 10-113637

### cable sealing adapter (with woven strain relief)

All dimensions are for reference only.

| Part Number*  | Used With Shell Size | Cable Range  |              | B<br>+.000<br>-.010 | C<br>+.010<br>-.000 | D Thread<br>Class 2B-LH | E<br>Free<br>±.035 | F<br>+.010<br>-.020 | G<br>Dia.<br>+.010<br>-.020 | H<br>±.045 | K<br>Free<br>Approx. | Type |
|---------------|----------------------|--------------|--------------|---------------------|---------------------|-------------------------|--------------------|---------------------|-----------------------------|------------|----------------------|------|
|               |                      | Max.<br>Dia. | Min.<br>Dia. |                     |                     |                         |                    |                     |                             |            |                      |      |
| 10-113637-141 | 14S                  | .337         | .281         | .750                | .750                | .7500-20UNEF            | .500               | 5.282               | .938                        | 6.094      | 3.344                | I    |
| 10-113637-142 | 14S                  | .405         | .316         | 1.000               | 1.000               | .7500-20UNEF            | .562               | 5.500               | .938                        | 6.374      | 3.688                | III  |
| 10-113637-143 | 14S                  | .530         | .441         | 1.000               | 1.000               | .7500-20UNEF            | .562               | 5.500               | .938                        | 6.374      | 4.688                | III  |
| 10-113637-144 | 14S                  | .463         | .406         | .875                | .938                | .7500-20UNEF            | .500               | 5.344               | .938                        | 6.156      | 4.344                | III  |
| 10-113637-171 | 16                   | .699         | .605         | 1.062               | 1.125               | .8750-20UNEF            | .562               | 5.563               | 1.062                       | 6.609      | 6.188                | III  |
| 10-113637-172 | 16                   | .530         | .441         | 1.000               | 1.000               | .8750-20UNEF            | .562               | 5.500               | 1.062                       | 6.546      | 4.688                | III  |
| 10-113637-181 | 18                   | .828         | .715         | 1.125               | 1.250               | 1.0000-20UNEF           | .562               | 6.657               | 1.188                       | 7.703      | 6.688                | III  |
| 10-113637-201 | 20                   | .750         | .637         | 1.250               | 1.312               | 1.1250-18NEF            | .562               | 6.000               | 1.312                       | 7.046      | 6.688                | III  |
| 10-113637-202 | 20                   | .984         | .875         | 1.500               | 1.625               | 1.1250-18NEF            | .562               | 6.750               | 1.312                       | 7.796      | 7.188                | III  |
| 10-113637-203 | 20                   | .900         | .791         | 1.250               | 1.312               | 1.1250-18UNEF           | .562               | 6.000               | 1.312                       | 7.046      | 7.188                | III  |
| 10-113637-221 | 22                   | .750         | .637         | 1.250               | 1.312               | 1.2500-18NEF            | .562               | 6.000               | 1.438                       | 7.046      | 6.688                | III  |
| 10-113637-222 | 22                   | .699         | .605         | 1.062               | 1.312               | 1.2500-18NEF            | .562               | 5.063               | 1.438                       | 6.109      | 6.188                | II   |
| 10-113637-223 | 22                   | 1.055        | .958         | 1.500               | 1.625               | 1.2500-18NEF            | .562               | 6.750               | 1.438                       | 7.796      | 7.688                | III  |
| 10-113637-224 | 22                   | 1.828        | .715         | 1.125               | 1.250               | 1.2500-18NEF            | .562               | 5.625               | 1.438                       | 6.671      | 6.688                | I    |
| 10-113637-225 | 22                   | .589         | .511         | 1.000               | 1.250               | 1.2500-18NEF            | .562               | 5.500               | 1.438                       | 6.546      | 5.188                | II   |
| 10-113637-241 | 24                   | .957         | .857         | 1.250               | 1.375               | 1.3750-18NEF            | .562               | 6.000               | 1.562                       | 7.046      | 7.188                | I    |
| 10-113637-242 | 24                   | .750         | .637         | 1.250               | 1.375               | 1.3750-18NEF            | .562               | 6.000               | 1.562                       | 7.046      | 6.688                | I    |
| 10-113637-243 | 24                   | 1.101        | .984         | 1.500               | 1.625               | 1.3750-18NEF            | .562               | 6.750               | 1.562                       | 7.796      | 7.688                | III  |
| 10-113637-244 | 24                   | 1.000        | .875         | 1.500               | 1.625               | 1.3750-18NEF            | .562               | 6.750               | 1.562                       | 7.796      | 7.188                | III  |
| 10-113637-245 | 24                   | 1.180        | 1.055        | 1.750               | 1.812               | 1.3750-18NEF            | .562               | 6.813               | 1.562                       | 7.859      | 8.188                | III  |
| 10-113637-246 | 24                   | .805         | .692         | 1.250               | 1.375               | 1.3750-18NEF            | .562               | 6.000               | 1.562                       | 7.046      | 6.688                | I    |
| 10-113637-281 | 28                   | 1.000        | .875         | 1.500               | 1.562               | 1.6250-18NEF            | .562               | 6.750               | 1.812                       | 7.796      | 7.188                | I    |
| 10-113637-282 | 28                   | 1.900        | 1.775        | 2.438               | 2.438               | 1.6250-18NEF            | .672               | 8.125               | 1.812                       | 9.281      | 13.688               | III  |
| 10-113637-283 | 28                   | 1.375        | 1.250        | 2.000               | 2.000               | 1.6250-18NEF            | .562               | 6.875               | 1.812                       | 7.921      | 9.688                | III  |
| 10-113637-284 | 28                   | .750         | .637         | 1.250               | 1.562               | 1.6250-18NEF            | .562               | 5.750               | 1.812                       | 6.796      | 6.688                | II   |
| 10-113637-285 | 28                   | 1.101        | .984         | 1.500               | 1.562               | 1.6250-18NEF            | .562               | 6.750               | 1.812                       | 7.796      | 7.688                | I    |
| 10-113637-286 | 28                   | 1.130        | 1.005        | 1.750               | 1.875               | 1.6250-18NEF            | .562               | 6.813               | 1.812                       | 7.859      | 7.188                | III  |
| 10-113637-287 | 28                   | .900         | .791         | 1.250               | 1.562               | 1.6250-18NEF            | .562               | 5.750               | 1.812                       | 6.796      | 7.188                | II   |
| 10-113637-288 | 28                   | 1.427        | 1.320        | 2.000               | 2.000               | 1.6250-18NEF            | .562               | 6.875               | 1.812                       | 7.921      | 9.688                | III  |
| 10-113637-289 | 28                   | 1.180        | 1.099        | 1.750               | 1.875               | 1.6250-18NEF            | .562               | 6.812               | 1.812                       | 7.858      | 8.188                | III  |
| 10-113637-290 | 28                   | 1.055        | .958         | 1.500               | 1.562               | 1.6250-18NEF            | .562               | 6.750               | 1.812                       | 7.796      | 7.688                | I    |
| 10-113637-291 | 28                   | .957         | .857         | 1.250               | 1.562               | 1.6250-18NEF            | .562               | 5.750               | 1.812                       | 6.796      | 7.188                | II   |
| 10-113637-292 | 28                   | 1.310        | 1.200        | 1.750               | 1.875               | 1.6250-18NEF            | .562               | 6.813               | 1.812                       | 7.859      | 8.688                | III  |
| 10-113637-293 | 28                   | .530         | .441         | 1.000               | 1.625               | 1.6250-18NEF            | .562               | 6.500               | 1.812                       | 7.546      | 4.688                | II   |
| 10-113637-294 | 28                   | 1.230        | 1.105        | 1.750               | 1.875               | 1.6250-18NEF            | .562               | 6.813               | 1.812                       | 7.859      | 8.188                | III  |
| 10-113637-295 | 28                   | .630         | .535         | 1.250               | 1.562               | 1.6250-18NEF            | .562               | 5.750               | 1.812                       | 6.796      | 5.688                | II   |

\*For complete order number see pages 4 and 5.

# QWL – accessories

## 10-113637

### cable sealing adapter (with woven strain relief)

All dimensions are for reference only.

| Part Number*  | Used With Shell Size | Cable Range           |                       | B<br>+.000<br>-.010 | C<br>+.010<br>-.000 | D Thread<br>Class 2B-LH | E<br>Free<br>±.035 | F<br>+.010<br>-.020 | G<br>Dia.<br>+.010<br>-.020 | H<br>±.045 | K<br>Free<br>Approx. | Type |
|---------------|----------------------|-----------------------|-----------------------|---------------------|---------------------|-------------------------|--------------------|---------------------|-----------------------------|------------|----------------------|------|
|               |                      | Max.<br>Dia.          | Min.<br>Dia.          |                     |                     |                         |                    |                     |                             |            |                      |      |
| 10-113637-321 | 32                   | .828                  | .715                  | 1.125               | 1.844               | 1.8750-16N              | .594               | 7.625               | 2.062                       | 8.703      | 6.688                | II   |
| 10-113637-322 | 32                   | 1.310                 | 1.200                 | 1.750               | 1.812               | 1.8750-16UN             | .562               | 6.812               | 2.062                       | 7.858      | 8.688                | I    |
| 10-113637-323 | 32                   | 1.130                 | 1.005                 | 1.750               | 1.812               | 1.8750-16UN             | .562               | 6.812               | 2.062                       | 7.858      | 7.188                | I    |
| 10-113637-324 | 32                   | 1.375                 | 1.250                 | 2.000               | 2.000               | 1.8750-16UN             | .562               | 7.875               | 2.062                       | 8.921      | 9.688                | III  |
| 10-113637-325 | 32                   | 1.445                 | 1.320                 | 2.000               | 2.000               | 1.8750-16UN             | .562               | 7.875               | 2.062                       | 8.921      | 9.688                | III  |
| 10-113637-326 | 32                   | 1.180                 | 1.099                 | 1.750               | 1.812               | 1.8750-16UN             | .562               | 6.812               | 2.062                       | 7.858      | 8.188                | I    |
| 10-113637-327 | 32                   | 1.656                 | 1.531                 | 2.250               | 2.250               | 1.8750-16UN             | .562               | 7.141               | 2.062                       | 8.187      | 12.688               | III  |
| 10-113637-328 | 32                   | .970                  | .857                  | 1.250               | 1.844               | 1.8750-16UN             | .562               | 6.688               | 2.062                       | 7.734      | 7.188                | II   |
| 10-113637-361 | 36                   | 1.375                 | 1.250                 | 2.000               | 2.000               | 2.0625-16N              | .562               | 6.875               | 2.312                       | 7.921      | 9.688                | I    |
| 10-113637-362 | 36                   | 1.000                 | .875                  | 1.500               | 2.000               | 2.0625-16N              | .562               | 6.750               | 2.312                       | 7.796      | 7.188                | II   |
| 10-113637-363 | 36                   | 1.920 x<br>1.140 oval | 1.920 x<br>1.140 oval | 2.438               | 2.438               | 2.0625-16N              | .672               | 8.125               | 2.312                       | 9.281      | 13.688               | III  |
| 10-113637-364 | 36                   | 1.230                 | 1.105                 | 1.750               | 2.000               | 2.0625-16N              | .562               | 6.813               | 2.312                       | 7.859      | 8.188                | II   |
| 10-113637-365 | 36                   | 1.562                 | 1.437                 | 2.250               | 2.250               | 2.0625-16N              | .562               | 6.938               | 2.312                       | 7.984      | 11.188               | III  |
| 10-113637-366 | 36                   | 1.656                 | 1.531                 | 2.250               | 2.250               | 2.0625-16N              | .562               | 6.938               | 2.312                       | 7.984      | 11.188               | III  |
| 10-113637-367 | 36                   | 1.445                 | 1.320                 | 2.000               | 2.000               | 2.0625-16N              | .562               | 6.875               | 2.312                       | 7.921      | 9.688                | I    |
| 10-113637-368 | 36                   | 1.825                 | 1.700                 | 2.438               | 2.500               | 2.0625-16N              | .672               | 9.125               | 2.312                       | 9.281      | 13.688               | III  |
| 10-113637-369 | 36                   | 1.895                 | 1.775                 | 2.438               | 2.438               | 2.0625-16N              | .672               | 8.125               | 2.312                       | 9.281      | 13.688               | III  |
| 10-113637-370 | 36                   | 1.730                 | 1.605                 | 2.438               | 2.438               | 2.0625-16N              | .672               | 8.125               | 2.312                       | 9.281      | 13.688               | III  |
| 10-113637-371 | 36                   | 1.310                 | 1.200                 | 1.750               | 2.000               | 2.0625-16N              | .562               | 6.813               | 2.312                       | 7.859      | 8.688                | II   |
| 10-113637-401 | 40                   | 1.906                 | 1.761                 | 2.750               | 2.438               | 2.3125-16N              | .672               | 8.125               | 2.562                       | 9.281      | 14.188               | III  |
| 10-113637-402 | 40                   | 1.940                 | 1.815                 | 2.438               | 2.438               | 2.3125-16N              | .672               | 8.125               | 2.562                       | 9.281      | 13.688               | III  |
| 10-113637-403 | 40                   | 1.900                 | 1.775                 | 2.438               | 2.438               | 2.3125-16N              | .672               | 8.125               | 2.562                       | 9.281      | 13.688               | III  |
| 10-113637-404 | 40                   | 1.825                 | 1.700                 | 2.438               | 2.438               | 2.3125-16N              | .672               | 8.125               | 2.562                       | 9.281      | 13.688               | III  |
| 10-113637-405 | 40                   | 1.310                 | 1.200                 | 1.750               | 2.250               | 2.3125-16N              | .562               | 7.813               | 2.562                       | 8.859      | 8.688                | II   |
| 10-113637-406 | 40                   | 1.180                 | 1.099                 | 1.750               | 2.250               | 2.3125-16N              | .562               | 7.813               | 2.562                       | 8.859      | 8.188                | II   |
| 10-113637-407 | 40                   | 1.230                 | 1.105                 | 1.750               | 2.250               | 2.3125-16N              | .562               | 7.813               | 2.562                       | 8.859      | 8.188                | II   |
| 10-113637-408 | 40                   | 1.656                 | 1.531                 | 2.250               | 2.250               | 2.3125-16N              | .562               | 7.938               | 2.562                       | 8.984      | 11.188               | I    |
| 10-113637-410 | 40                   | 2.145                 | 2.000                 | 2.750               | 2.438               | 2.3125-16N              | .672               | 8.125               | 2.562                       | 9.281      | 14.188               | III  |
| 10-113637-411 | 40                   | 1.984                 | 1.859                 | 2.438               | 2.438               | 2.3125-16N              | .672               | 8.125               | 2.562                       | 9.281      | 13.688               | III  |
| 10-113637-412 | 40                   | 1.940                 | 1.815                 | 2.438               | 2.438               | 2.3125-16N              | .672               | 11.125              | 2.562                       | 12.281     | 13.688               | III  |
| 10-113637-413 | 40                   | 1.984                 | 1.859                 | 2.438               | 2.438               | 2.3125-16N              | .672               | 11.125              | 2.562                       | 12.281     | 13.688               | III  |
| 10-113637-414 | 40                   | 2.100                 | 1.955                 | 2.750               | 2.625               | 2.3125-16N              | .672               | 12.000              | 2.562                       | 13.156     | 14.188               | III  |
| 10-113637-415 | 40                   | 1.562                 | 1.437                 | 2.250               | 2.250               | 2.3125-16N              | .562               | 7.938               | 2.562                       | 8.984      | 11.188               | I    |
| 10-113637-416 | 40                   | 1.445                 | 1.320                 | 2.000               | 2.312               | 2.3125-16N              | .562               | 6.875               | 2.562                       | 7.921      | 9.688                | II   |
| 10-113637-417 | 40                   | 1.375                 | 1.250                 | 2.000               | 2.312               | 2.3125-16N              | .562               | 6.875               | 2.562                       | 7.921      | 9.688                | II   |

\*For complete order number see pages 4 and 5.

# QWL – accessories

## 10-113637

### cable sealing adapter (with woven strain relief)

All dimensions are for reference only.

| Part Number*  | Used With Shell Size | Cable Range |         | B<br>+.000<br>-.010 | C<br>+.010<br>-.000 | D Thread<br>Class 2B-LH | E<br>Free<br>±.035 | F<br>+.010<br>-.020 | G<br>Dia<br>+.010<br>-.020 | H<br>±.045 | K<br>Free†<br>Approx. | Type |
|---------------|----------------------|-------------|---------|---------------------|---------------------|-------------------------|--------------------|---------------------|----------------------------|------------|-----------------------|------|
|               |                      | Max Dia     | Min Dia |                     |                     |                         |                    |                     |                            |            |                       |      |
| 10-113637-441 | 44                   | 2.100       | 1.955   | 2.750               | 2.750               | 2.6250-16UN             | .672               | 8.125               | 2.875                      | 9.469      | 14.188                | III  |
| 10-113637-442 | 44                   | 2.250       | 2.105   | 2.750               | 2.875               | 2.6250-16UN             | .672               | 8.188               | 2.875                      | 9.531      | 17.188                | III  |
| 10-113637-443 | 44                   | 2.000       | 1.867   | 2.750               | 2.750               | 2.6250-16UN             | .672               | 8.125               | 2.875                      | 9.469      | 14.188                | III  |
| 10-113637-444 | 44                   | 1.500       | 1.375   | 2.250               | 2.500               | 2.6250-16UN             | .562               | 7.938               | 2.875                      | 9.171      | 11.188                | II   |
| 10-113637-445 | 44                   | 1.730       | 1.605   | 2.438               | 2.750               | 2.6250-16UN             | .672               | 8.125               | 2.875                      | 9.469      | 13.688                | II   |
| 10-113637-446 | 44                   | .750        | .637    | 1.250               | 2.625               | 2.6250-16UN             | .562               | 6.688               | 2.875                      | 7.921      | 6.688                 | II   |
| 10-113637-447 | 44                   | 1.825       | 1.700   | 2.438               | 2.750               | 2.6250-16UN             | .672               | 8.125               | 2.875                      | 9.469      | 13.688                | II   |
| 10-113637-448 | 44                   | 2.145       | 2.000   | 2.750               | 2.750               | 2.6250-16UN             | .672               | 8.125               | 2.875                      | 9.469      | 14.188                | III  |
| 10-113637-449 | 44                   | 2.170       | 2.025   | 2.750               | 2.875               | 2.6250-16UN             | .672               | 8.188               | 2.875                      | 9.532      | 17.188                | III  |
| 10-113637-450 | 44                   | 1.375       | 1.250   | 2.000               | 2.625               | 2.6250-16UN             | .562               | 7.875               | 2.875                      | 9.109      | 9.688                 | II   |
| 10-113637-481 | 48                   | 2.250       | 2.105   | 2.750               | 2.750               | 2.8750-16N              | .672               | 8.188               | 3.125                      | 9.532      | 14.688                | I    |
| 10-113637-482 | 48                   | 2.500       | 2.355   | 2.875               | 2.875               | 2.8750-16N              | .672               | 8.188               | 3.125                      | 9.532      | 18.188                | III  |
| 10-113637-483 | 48                   | 2.375       | 2.230   | 2.875               | 2.875               | 2.8750-16N              | .672               | 8.188               | 3.125                      | 9.532      | 18.188                | III  |
| 10-113637-484 | 48                   | 2.145       | 2.000   | 2.750               | 2.875               | 2.8750-16N              | .672               | 8.125               | 3.125                      | 9.469      | 14.188                | II   |
| 10-113637-485 | 48                   | 2.000       | 1.867   | 2.750               | 2.875               | 2.8750-16N              | .672               | 8.125               | 3.125                      | 9.469      | 14.188                | II   |
| 10-113637-486 | 48                   | 1.656       | 1.531   | 2.250               | 2.750               | 2.8750-16UN             | .562               | 7.937               | 3.125                      | 9.171      | 12.688                | II   |

\*For complete order number see pages 4 and 5.

# QWL – accessories

## adapter, cable clamp

10-113196-XX  
adapter



10-749XX-( )  
cable clamp



This cable clamp is designed to be used with specific QWL insert arrangements. The locations, quantity, and sizes of holes in the clamp grommet must correspond to those in the connector for an effective moisture seal without wire crossing. Contact Amphenol, Sidney, NY, for grommet availability. Example: 10-107618-4P must use 10-74918-4 clamp.

# QWL – accessories

## adapter, cable clamp, sealing plugs

All dimensions for reference only.

| Shell Size | Adapter Part Number* | Clamp Part Number* | A Thread Class 2A | C<br>+.010<br>-.000 | D Dia.<br>+.010<br>-.020 | E Dia.<br>+.010<br>-.020 | F<br>±.010 | L<br>±.010 | V Thread Class 2B-LH | W Min. Thd. Engage | Y Max. | Z Max. |
|------------|----------------------|--------------------|-------------------|---------------------|--------------------------|--------------------------|------------|------------|----------------------|--------------------|--------|--------|
| 10S        | 10-113196-10         | 10-74910-( )       | .500-28UNEF       | .203                | .922                     | .625                     | .562       | 1.234      | .500-28UNEF          | .519               | .807   | .529   |
| 12S        | 10-113196-12         | 10-74912-( )       | .625-24NEF        | .328                | .969                     | .750                     | .688       | 1.281      | .625-24NEF           | .519               | .901   | .524   |
| 12         | 10-113196-13         | 10-74913-( )       | .625-24NEF        | .328                | .954                     | .750                     | .688       | 1.438      | .625-24NEF           | .519               | .901   | .524   |
| 14S        | 10-113196-14         | 10-74914-( )       | .750-20UNEF       | .453                | 1.094                    | .875                     | .812       | 1.406      | .750-20UNEF          | .519               | 1.026  | .524   |
| 14         | 10-113196-15         | 10-74915-( )       | .750-20UNEF       | .453                | .954                     | .875                     | .812       | 1.438      | .750-20UNEF          | .519               | 1.026  | .524   |
| 16S        | 10-113196-16         | 10-74916-( )       | .875-20UNEF       | .578                | 1.094                    | 1.000                    | .938       | 1.406      | .875-20UNEF          | .519               | 1.119  | .524   |
| 16         | 10-113196-17         | 10-74917-( )       | .875-20UNEF       | .578                | 1.016                    | 1.000                    | .938       | 1.500      | .875-20UNEF          | .519               | 1.119  | .524   |
| 18         | 10-113196-18         | 10-74918-( )       | 1.000-20UNEF      | .676                | 1.141                    | 1.188                    | 1.062      | 1.625      | 1.000-20UNEF         | .519               | 1.229  | .556   |
| 20         | 10-113196-20         | 10-74920-( )       | 1.1875-18NEF      | .801                | 1.094                    | 1.312                    | 1.250      | 1.578      | 1.125-18NEF          | .505               | 1.479  | .666   |
| 22         | 10-113196-22         | 10-74922-( )       | 1.1875-18NEF      | .906                | 1.141                    | 1.438                    | 1.250      | 1.625      | 1.250-18NEF          | .519               | 1.479  | .666   |
| 24         | 10-113196-24         | 10-74924-( )       | 1.4375-18NEF      | 1.016               | 1.094                    | 1.562                    | 1.500      | 1.578      | 1.375-18NEF          | .519               | 1.666  | .666   |
| 28         | 10-113196-28         | 10-74928-( )       | 1.4375-18NEF      | 1.130               | 1.235                    | 1.812                    | 1.500      | 1.719      | 1.625-18NEF          | .519               | 1.666  | .666   |
| 32         | 10-113196-32         | 10-74932-( )       | 1.7500-18NS       | 1.438               | 1.204                    | 2.062                    | 1.875      | 1.688      | 1.875-16N            | .519               | 2.135  | .805   |
| 36         | 10-113196-36         | 10-74936-( )       | 2.000-18NS        | 1.678               | 1.266                    | 2.250                    | 2.125      | 1.750      | 2.0625-16N           | .738               | 2.260  | .805   |
| 40         | 10-113196-40         | 10-74940-( )       | 2.2500-16UN       | 1.914               | 1.266                    | 2.500                    | 2.375      | 1.750      | 2.3125-16N           | .738               | 2.510  | .805   |

\*For complete order number see page 5. Clamp 10-749XX-( ) has a bright cadmium finish. An olive drab cadmium plate finish is available by order number 71-749XX-( ). To complete clamp order number, add connector insert arrangement number.



### SEALING PLUG MS27488-XX 10-405996-XX

| Order No.    | Contact Size | MS Number | Wire Size | Color Code | B<br>±.005 | C<br>±.010 | A<br>Dia.<br>±.010 |
|--------------|--------------|-----------|-----------|------------|------------|------------|--------------------|
| 10-405996-16 | 16           | 27488-16  | 20-16     | Blue       | .133       | .564*      | .083               |
| 10-405996-12 | 12           | 27488-12  | 14-12     | Yellow     | .171       | .564*      | .121               |
| 10-405996-8  | 8            | 27488-8   | 10-8      | White      | .315       | .470       | .185               |
| 10-405996-4  | 4            | 27488-4   | 4-6       | Blue       | .415       | .470       | .310               |
| 10-405996-0  | 0            | 27488-0   | 0-2       | Yellow     | .605       | 1.000      | .440               |

\*±.020

Sealing plugs are used to fill unused holes in multi-holed grommet configurations

**QWL – accessories**  
adapter, cable clamp

**10-113138-XX**  
adapter



**M85049/2-( )C**  
cable clamp



# QWL – accessories

## adapter, cable clamp, sleeve

| Shell Size | Adapter Part Number* | Clamp MS Part Number* | A Thread Class 2A (Plated) | B Min Full Thd | C Dia +.000 –.010 | D ±.020 | E Dia +.010 –.020 | F ±.010 | K Dia Cable Range |        | L Max | M Max | V Thread Class 2B-LH | Y Max |
|------------|----------------------|-----------------------|----------------------------|----------------|-------------------|---------|-------------------|---------|-------------------|--------|-------|-------|----------------------|-------|
|            |                      |                       |                            |                |                   |         |                   |         | Free              | Closed |       |       |                      |       |
| 12         | 10-113138-12         | M85049/2-4C           | .625-24UNEF                | .422           | .386              | 1.078   | .750              | .688    | .302              | .094   | 1.390 | 1.375 | .625-24NEF           | .906  |
|            | 10-113138-13         | M85049/2-4C           | .625-24NEF                 | .422           | .386              | 1.125   | .750              | .688    |                   |        | 1.609 |       | .625-24NEF           |       |
| 14         | 10-113138-14         | M85049/2-6C           | .750-20UNEF                | .422           | .500              | 1.078   | .875              | .812    | .428              | .230   | 1.390 | 1.375 | .750-20UNEF          | 1.031 |
|            | 10-113138-15         | M85049/2-6C           | .750-20UNEF                | .422           | .500              | 1.125   | .875              | .812    |                   |        | 1.609 |       | .750-20UNEF          |       |
| 16         | 10-113138-16         | M85049/2-8C           | .875-20UNEF                | .422           | .625              | 1.078   | 1.000             | .938    | .515              | .316   | 1.390 | 1.375 | .875-20UNEF          | 1.125 |
|            | 10-113138-17         | M85049/2-8C           | .875-20UNEF                | .422           | .625              | 1.125   | 1.000             | .938    |                   |        | 1.609 |       | .875-20UNEF          |       |
| 18         | 10-113138-18         | M85049/2-10C          | 1.000-20UNEF               | .422           | .752              | 1.125   | 1.188             | 1.062   | .614              | .378   | 1.609 | 1.437 | 1.000-20UNEF         | 1.234 |
| 20         | 10-113138-20         | M85049/2-12C          | 1.1875-18UNEF              | .422           | .891              | 1.125   | 1.312             | 1.250   | .738              | .445   | 1.609 | 1.437 | 1.125-18NEF          | 1.484 |
| 22         | 10-113138-22         | M85049/2-12C          | 1.1875-18NEF               | .422           | .891              | 1.125   | 1.438             | 1.250   | .738              | .445   | 1.609 | 1.437 | 1.250-18NEF          | 1.484 |
| 24         | 10-113138-24         | M85049/2-16C          | 1.4375-18UNEF              | .422           | 1.111             | 1.125   | 1.562             | 1.500   | .926              | .611   | 1.609 | 1.562 | 1.375-18NEF          | 1.671 |
| 28         | 10-113138-28         | M85049/2-16C          | 1.4375-18NEF               | .422           | 1.111             | 1.297   | 1.812             | 1.500   | .926              | .611   | 1.781 | 1.562 | 1.625-18NEF          | 1.671 |
| 32         | 10-113138-32         | M85049/2-20C          | 1.750-18UNS                | .484           | 1.422             | 1.297   | 2.062             | 1.875   | 1.200             | .922   | 1.781 | 1.812 | 1.875-16UN           | 2.188 |
| 36         | 10-113138-36         | M85049/2-24C          | 2.000-18UNS                | .562           | 1.672             | 1.297   | 2.250             | 2.125   | 1.363             | .922   | 1.781 | 2.062 | 2.0625-16N           | 2.344 |
| 40         | 10-113138-40         | M85049/2-28C          | 2.250-16UN                 | .562           | 1.914             | 1.297   | 2.500             | 2.375   | 1.611             | 1.180  | 1.781 | 2.062 | 2.3125-16N           | 2.594 |
| 44         | 10-113138-44         | M85049/2-32C          | 2.500-16UN                 | .562           | 2.142             | 1.297   | 2.812             | 2.625   | 1.865             | 1.427  | 1.781 | 2.188 | 2.625-16UN           | 2.812 |

**MS3420-( )A sleeve**



| Shell Size | Sleeve MS Part Number | D Dia. ±.016 | Z Dia      |        |
|------------|-----------------------|--------------|------------|--------|
|            |                       |              | Free ±.016 | Closed |
| 12         | MS3420-4A             | .302         | .219       | .010   |
| 14         | MS3420-4A             | .302         | .219       | .020   |
|            | MS3420-6A             | .427         | .312       | .114   |
| 16         | MS3420-6A             | .427         | .312       | .085   |
|            | MS3420-8A             | .531         | .438       | .220   |
| 18         | MS3420-6A             | .427         | .312       | .085   |
|            | MS3420-10A            | .615         | .438       | .200   |
| 20         | MS3420-10A            | .615         | .438       | .177   |
|            | MS3420-12A            | .740         | .541       | .270   |
| 22         | MS3420-10A            | .615         | .438       | .177   |
|            | MS3420-12A            | .740         | .541       | .270   |
| 24         | MS3420-8A             | .531         | .438       | .186   |
|            | MS3420-12A            | .740         | .541       | .260   |
|            | MS3420-16A            | .927         | .750       | .433   |
| 26         | MS3420-8A             | .531         | .438       | .186   |
|            | MS3420-12A            | .740         | .541       | .260   |
|            | MS3420-16A            | .927         | .750       | .433   |
| 32         | MS3420-12A            | .740         | .541       | .273   |
|            | MS3420-16A            | .927         | .750       | .442   |
|            | MS3420-20A            | 1.240        | .938       | .620   |
| 36         | MS3420-16A            | .927         | .750       | .358   |
|            | MS3420-20A            | 1.240        | .938       | .504   |
|            | MS3420-24A            | 1.365        | 1.125      | .682   |
| 40         | MS3420-16A            | .927         | .750       | .368   |
|            | MS3420-20A            | 1.240        | .938       | .514   |
|            | MS3420-28A            | 1.614        | 1.250      | .816   |
| 44         | MS3420-20A            | 1.240        | .938       | .638   |
|            | MS3420-28A            | 1.614        | 1.250      | .897   |
|            | MS3420-32A            | 1.865        | 1.625      | 1.229  |

Sleeve not supplied as part of MS3057-( )C assembly.  
Order separately by part number shown.

**QWL – accessories**  
protection caps

**10-101046-( ), 10-101531-( )**  
plug protective covers



**10-101063-( ), 10-101048-( )**  
receptacle protective covers



# QWL – accessories

## protection caps

All dimensions for reference only.

| Shell Size | Without Eyelet End Part Number* | With Eyelet End Part Number* | A Thread Class 2A   | B Dia<br>+.010<br>-.000 | C Approx. | E Approx. | F Flat<br>±.010 | L Max. |
|------------|---------------------------------|------------------------------|---------------------|-------------------------|-----------|-----------|-----------------|--------|
| 10         | 10-101046-10                    | 10-101531-10                 | .6250-0.05P-0.1L-DS | .125                    | 3.000     | 3.375     | .500            | 1.250  |
| 12         | 10-101046-12                    | 10-101531-12                 | .7500-0.1P-0.2L-DS  | .125                    | 3.500     | 3.875     | .625            | 1.438  |
| 14         | 10-101046-14                    | 10-101531-14                 | .8750-0.1P-0.2L-DS  | .125                    | 3.500     | 3.875     | .750            | 1.438  |
| 16         | 10-101046-16                    | 10-101531-16                 | 1.0000-0.1P-0.2L-DS | .140                    | 3.500     | 3.875     | .875            | 1.438  |
| 18         | 10-101046-18                    | 10-101531-18                 | 1.1250-0.1P-0.2L-DS | .140                    | 3.500     | 4.000     | 1.000           | 1.438  |
| 20         | 10-101046-20                    | 10-101531-20                 | 1.2500-0.1P-0.2L-DS | .193                    | 4.000     | 4.500     | 1.062           | 1.438  |
| 22         | 10-101046-22                    | 10-101531-22                 | 1.3750-0.1P-0.2L-DS | .193                    | 4.000     | 4.500     | 1.125           | 1.438  |
| 24         | 10-101046-24                    | 10-101531-24                 | 1.5000-0.1P-0.2L-DS | .193                    | 4.500     | 5.000     | 1.250           | 1.438  |
| 28         | 10-101046-28                    | 10-101531-28                 | 1.7500-0.1P-0.2L-DS | .193                    | 4.500     | 5.000     | 1.500           | 1.438  |
| 32         | 10-101046-32                    | 10-101531-32                 | 2.0000-0.1P-0.2L-DS | .193                    | 5.000     | 5.500     | 1.750           | 1.438  |
| 36         | 10-101046-36                    | 10-101531-36                 | 2.2500-0.1P-0.2L-DS | .193                    | 5.000     | 5.500     | 2.000           | 1.438  |
| 40         | 10-101046-40                    | 10-101531-40                 | 2.5000-0.1P-0.2L-DS | .193                    | 5.000     | 5.500     | 2.250           | 1.438  |
| 44         | 10-101046-44                    | 10-101531-44                 | 2.7500-0.1P-0.2L-DS | .193                    | 6.000     | 6.000     | 2.500           | 1.438  |
| 48         | 10-101046-48                    | 10-101531-48                 | 3.0000-0.1P-0.2L-DS | .193                    | 6.000     | 6.000     | 2.750           | 1.438  |

\*For complete order number see page 5.

All dimensions for reference only.

| Shell Size | Without Eyelet End Part Number* | With Eyelet End Part Number* | A Thread Class 2B   | B Dia<br>+.010<br>-.000 | C Approx. | D Dia.<br>Max. | E Approx. | L Max. |
|------------|---------------------------------|------------------------------|---------------------|-------------------------|-----------|----------------|-----------|--------|
| 10         | 10-101063-10                    | 10-101048-10                 | .6250-0.05P-0.1L-DS | .140                    | 3.000     | .844           | 3.375     | .750   |
| 12         | 10-101063-12                    | 10-101048-12                 | .7500-0.1P-0.2L-DS  | .140                    | 3.500     | .969           | 3.875     | .750   |
| 14         | 10-101063-14                    | 10-101048-14                 | .8750-0.1P-0.2L-DS  | .140                    | 3.500     | 1.094          | 3.875     | .750   |
| 16         | 10-101063-16                    | 10-101048-16                 | 1.0000-0.1P-0.2L-DS | .140                    | 3.500     | 1.219          | 3.875     | .750   |
| 18         | 10-101063-18                    | 10-101048-18                 | 1.1250-0.1P-0.2L-DS | .193                    | 3.500     | 1.344          | 4.000     | .969   |
| 20         | 10-101063-20                    | 10-101048-20                 | 1.2500-0.1P-0.2L-DS | .193                    | 4.000     | 1.469          | 4.500     | .969   |
| 22         | 10-101063-22                    | 10-101048-22                 | 1.3750-0.1P-0.2L-DS | .193                    | 4.000     | 1.562          | 4.500     | .969   |
| 24         | 10-101063-24                    | 10-101048-24                 | 1.5000-0.1P-0.2L-DS | .193                    | 4.500     | 1.688          | 5.000     | .969   |
| 28         | 10-101063-28                    | 10-101048-28                 | 1.7500-0.1P-0.2L-DS | .193                    | 4.500     | 1.938          | 5.000     | .969   |
| 32         | 10-101063-32                    | 10-101048-32                 | 2.0000-0.1P-0.2L-DS | .193                    | 5.000     | 2.219          | 5.500     | .969   |
| 36         | 10-101063-36                    | 10-101048-36                 | 2.2500-0.1P-0.2L-DS | .193                    | 5.000     | 2.469          | 5.500     | .969   |
| 40         | 10-101063-40                    | 10-101048-40                 | 2.5000-0.1P-0.2L-DS | .193                    | 5.000     | 2.719          | 5.500     | .969   |
| 44         | 10-101063-44                    | 10-101048-44                 | 2.7500-0.1P-0.2L-DS | .193                    | 6.000     | 2.969          | 6.000     | .969   |
| 48         | 10-101063-48                    | 10-101048-48                 | 3.0000-0.1P-0.2L-DS | .193                    | 6.000     | 3.219          | 6.000     | .969   |

\*For complete order number see page 5.

# QWL – accessories

## flange gasket, grip banding clamp

10-36675-( )  
10-40450-( )  
flange gaskets



All dimensions for reference only.

| Part Number* | Part Number* | Shell Size | F Dia.<br>+.016<br>-.000 | R<br>±.010 | S<br>+.016<br>-.000 | T Dia.<br>±.010 |
|--------------|--------------|------------|--------------------------|------------|---------------------|-----------------|
| 10-36675-10  | 10-40450-10  | 10         | .625                     | .719       | 1.000               | .172            |
| 10-36675-12  | 10-40450-12  | 12         | .750                     | .813       | 1.094               | .172            |
| 10-36675-14  | 10-40450-14  | 14         | .875                     | .906       | 1.188               | .172            |
| 10-36675-16  | 10-40450-16  | 16         | 1.000                    | .969       | 1.281               | .172            |
| 10-36675-18  | 10-40450-18  | 18         | 1.125                    | 1.063      | 1.375               | .203            |
| 10-36675-20  | 10-40450-20  | 20         | 1.250                    | 1.156      | 1.500               | .203            |
| 10-36675-22  | 10-40450-22  | 22         | 1.375                    | 1.250      | 1.625               | .203            |
| 10-36675-24  | 10-40450-24  | 24         | 1.500                    | 1.375      | 1.750               | .203            |
| 10-36675-28  | 10-40450-28  | 28         | 1.750                    | 1.563      | 2.000               | .203            |
| 10-36675-32  | 10-40450-32  | 32         | 2.000                    | 1.750      | 2.250               | .219            |
| 10-36675-36  | 10-40450-36  | 36         | 2.188                    | 1.938      | 2.500               | .219            |
| 10-36675-40  | 10-40450-40  | 40         | 2.438                    | 2.188      | 2.750               | .219            |
| 10-36675-44  | 10-40450-44  | 44         | 2.688                    | 2.375      | 3.000               | .219            |
| 10-36675-48  | 10-40450-48  | 48         | 2.938                    | 2.625      | 3.250               | .219            |

\*For complete order number see page 5.

10-183249-( )  
grip banding clamp



All dimensions for reference only.

| Part Number* | A Dia. |       |
|--------------|--------|-------|
|              | Max.   | Min.  |
| 10-183249-10 | 1.125  | .812  |
| 10-183249-11 | 1.312  | .938  |
| 10-183249-12 | 1.500  | 1.125 |
| 10-183249-13 | 1.688  | 1.312 |
| 10-183249-14 | 1.875  | 1.500 |
| 10-183249-15 | 2.062  | 1.688 |
| 10-183249-16 | 2.250  | 1.875 |
| 10-183249-17 | 2.438  | 2.062 |
| 10-183249-18 | 2.625  | 2.250 |
| 10-183249-19 | 2.812  | 2.438 |
| 10-183249-20 | 3.000  | 2.625 |

\*For complete order number see page 5.

# QWL

## crimp contacts

Machined from copper alloy and silver-plated for maximum corrosion resistance, with a minimum millivolt drop and a maximum current carrying capacity, the size 16 and 12 socket contacts are of the closed entry design. Crimp contacts are available for all MS insert arrangements and are identified with an Amphenol® proprietary number.

**MS/STANDARD CRIMP CONTACTS**

| Part Number               | Pin/Socket | Mating End Size | Wire Barrel Size | Allowable Wire Size | Required Wire Adapter Sleeve | Test Current** Amps |
|---------------------------|------------|-----------------|------------------|---------------------|------------------------------|---------------------|
| 10-40553                  | Pin        | 16 Short†       | 16               | 16                  | 10-74696-6                   | 13                  |
| 10-40552 or 10-597109-161 | Socket     |                 |                  | 18                  |                              | 10                  |
|                           |            |                 |                  | 20                  |                              | 7.5                 |
|                           |            |                 |                  | 22*                 |                              | 5                   |
| 10-40557                  | Pin        | 16 Long         | 16               | 16                  | 10-74696-6                   | 13                  |
| 10-40556 or 10-597109-171 | Socket     |                 |                  | 18                  |                              | 10                  |
|                           |            |                 |                  | 20                  |                              | 7.5                 |
|                           |            |                 |                  | 22*                 |                              | 5                   |
| 10-40561                  | Pin        | 12              | 12               | 12                  |                              | 23                  |
| 10-40560 or 10-597109-131 | Socket     |                 |                  | 14                  |                              | 17                  |
|                           |            |                 |                  |                     |                              |                     |
| 10-40792                  | Pin        | 8               | 8                | 8                   | 10-74696-1                   | 46                  |
| 10-40793                  | Socket     |                 |                  | 10*                 |                              | 33                  |
| 10-40564                  | Pin        | 4               | 4                | 4                   | 10-74696-2                   | 80                  |
| 10-40565                  | Socket     |                 |                  | 6*                  |                              | 60                  |
| 10-40562 or 10-581806     | Pin        | 0               | 0                | 0                   | 10-74696-7                   | 150                 |
| 10-40563 or 10-581808     | Socket     |                 |                  | 2*                  |                              | 100                 |
|                           |            |                 |                  |                     |                              |                     |

\* When using wire adapter sleeve shown.

\*\* Contact ratings as stated are test ratings only. The connector could not withstand full rated current through all contacts continuously. Please note that the electrical data given is not an establishment of electrical safety factors. This is left entirely in the designer's hands as he can best determine which peak voltage, switching surges, transients, etc. can be expected in a particular circuit.

† The 12S, 14S and 16S connectors require short contacts.

**TABLE I**  
**CONTACT ARRANGEMENT SERVICE RATING**

| MS Service Rating | Recommended Operating Voltage* at Sea Level |          | Effective Creepage Distance Nom. | Mechanical Spacing Nom. |
|-------------------|---------------------------------------------|----------|----------------------------------|-------------------------|
|                   | DC                                          | AC (RMS) |                                  |                         |
| Inst.             | 250                                         | 200      | 1/16                             |                         |
| A                 | 700                                         | 500      | 1/8                              | 1/16                    |
| D                 | 1250                                        | 900      | 3/16                             | 1/8                     |
| E                 | 1750                                        | 1250     | 1/4                              | 3/16                    |
| B                 | 2450                                        | 1750     | 5/16                             | 1/4                     |
| C                 | 4200                                        | 3000     | 1                                | 5/16                    |

\* The values listed in Table I represent operating values which include a generous safety factor. It may be necessary for some applications to exceed the operating voltages listed here. If this is necessary, designers will find Table II useful for determining the degree to which the recommended values of Table I can be exceeded.

**TABLE II**  
**ALTITUDE VOLTAGE DERATING\*\* CHART**

| MS Service Rating | Nominal Distance |          | Standard Sea Level Conditions      |                       | Pressure Altitude† 50,000 Feet     |                       | Pressure Altitude† 70,000 Feet     |                       |
|-------------------|------------------|----------|------------------------------------|-----------------------|------------------------------------|-----------------------|------------------------------------|-----------------------|
|                   | Airspace         | Creepage | Minimum Flashover Voltage AC (RMS) | Test Voltage AC (RMS) | Minimum Flashover Voltage AC (RMS) | Test Voltage AC (RMS) | Minimum Flashover Voltage AC (RMS) | Test Voltage AC (RMS) |
| Inst.             | 1/32             | 1/16     | 1400                               | 1000                  | 500                                | 400                   | 325                                | 260                   |
| A                 | 1/16             | 1/8      | 2800                               | 2000                  | 800                                | 600                   | 450                                | 360                   |
| D                 | 1/8              | 3/16     | 3600                               | 2800                  | 900                                | 675                   | 500                                | 400                   |
| E                 | 3/16             | 1/4      | 4500                               | 3500                  | 1000                               | 750                   | 550                                | 440                   |
| B                 | 1/4              | 5/16     | 5700                               | 4500                  | 1100                               | 825                   | 600                                | 480                   |
| C                 | 5/16             | 1        | 8500                               | 7000                  | 1300                               | 975                   | 700                                | 560                   |

† Not corrected for changes in density due to variations in temperature.

\*\* No attempt has been made to recommend operating voltages. The designer must determine his own operating voltage by the application of a safety factor to the above derating chart to compensate for circuit transients, surges, etc.

# QWL

## solder contacts

Machined copper alloy contacts in a full range of sizes, with closed entry socket design in the size 12 and 16 contacts. A heavy silver-plated finish is deposited on all MS style solder contacts for maximum corrosion resistance, maximum current carrying capacity and low millivolt drop.

**MS/STANDARD SOLDER CONTACTS\***

| Part Number   | Pin/Socket | Mating End Size | Wire Barrel Size | Allowable Wire Size | Test Current** Amps |
|---------------|------------|-----------------|------------------|---------------------|---------------------|
| 10-40569      | Pin        | 16 Short†       | 16               | 16                  | 13                  |
| 10-597107-161 | Socket     |                 |                  | 18                  | 10                  |
|               |            |                 |                  | 20                  | 7.5                 |
|               |            |                 |                  | 22                  | 5                   |
| 10-40599      | Pin        | 16 Long         | 16               | 16                  | 13                  |
| 10-597107-171 | Socket     |                 |                  | 18                  | 10                  |
|               |            |                 |                  | 20                  | 7.5                 |
|               |            |                 |                  | 22                  | 5                   |
| 10-33646      | Pin        | 12              | 12               | 12                  | 23                  |
| 10-597107-131 | Socket     |                 |                  | 14                  | 17                  |
| 10-35531      | Pin        | 8               | 8                | 8                   | 46                  |
| 10-35532      | Socket     |                 |                  | 10                  | 33                  |
| 10-35529      | Pin        | 4               | 4                | 4                   | 80                  |
| 10-35530      | Socket     |                 |                  | 6                   | 60                  |
| 10-35527      | Pin        | 0               | 0                | 0                   | 150                 |
| 10-35528      | Socket     |                 |                  | 1                   | 125                 |
|               |            |                 |                  | 2                   | 100                 |

\* Solder Wells Filled

\*\* Contact ratings as stated are test ratings only. The connector could not withstand full rated current through all contacts continuously. Please note that the electrical data given is not an establishment of electrical safety factors. This is left entirely in the designer's hands as he can best determine which peak voltage, switching surges, transients, etc. can be expected in a particular circuit.

† The 12S, 14S and 16S connectors require short contacts.

**TABLE I**  
**CONTACT ARRANGEMENT SERVICE RATING**

| MS Service Rating | Recommended Operating Voltage* at Sea Level |          | Effective Creepage Distance Nom. | Mechanical Spacing Nom. |
|-------------------|---------------------------------------------|----------|----------------------------------|-------------------------|
|                   | DC                                          | AC (RMS) |                                  |                         |
| Inst.             | 250                                         | 200      | 1/16                             |                         |
| A                 | 700                                         | 500      | 1/8                              | 1/16                    |
| D                 | 1250                                        | 900      | 3/16                             | 1/8                     |
| E                 | 1750                                        | 1250     | 1/4                              | 3/16                    |
| B                 | 2450                                        | 1750     | 5/16                             | 1/4                     |
| C                 | 4200                                        | 3000     | 1                                | 5/16                    |

\* The values listed in Table I represent operating values which include a generous safety factor. It may be necessary for some applications to exceed the operating voltages listed here. If this is necessary, designers will find Table II useful for determining the degree to which the recommended values of Table I can be exceeded.

**TABLE II**  
**ALTITUDE VOLTAGE DERATING\*\* CHART**

| MS Service Rating | Nominal Distance |          | Standard Sea Level Conditions      |                       | Pressure Altitude† 50,000 Feet     |                       | Pressure Altitude† 70,000 Feet     |                       |
|-------------------|------------------|----------|------------------------------------|-----------------------|------------------------------------|-----------------------|------------------------------------|-----------------------|
|                   | Airspace         | Creepage | Minimum Flashover Voltage AC (RMS) | Test Voltage AC (RMS) | Minimum Flashover Voltage AC (RMS) | Test Voltage AC (RMS) | Minimum Flashover Voltage AC (RMS) | Test Voltage AC (RMS) |
| Inst.             | 1/32             | 1/16     | 1400                               | 1000                  | 500                                | 400                   | 325                                | 260                   |
| A                 | 1/16             | 1/8      | 2800                               | 2000                  | 800                                | 600                   | 450                                | 360                   |
| D                 | 1/8              | 3/16     | 3600                               | 2800                  | 900                                | 675                   | 500                                | 400                   |
| E                 | 3/16             | 1/4      | 4500                               | 3500                  | 1000                               | 750                   | 550                                | 440                   |
| B                 | 1/4              | 5/16     | 5700                               | 4500                  | 1100                               | 825                   | 600                                | 480                   |
| C                 | 5/16             | 1        | 8500                               | 7000                  | 1300                               | 975                   | 700                                | 560                   |

† Not corrected for changes in density due to variations in temperature.

\*\* No attempt has been made to recommend operating voltages. The designer must determine his own operating voltage by the application of a safety factor to the above derating chart to compensate for circuit transients, surges, etc.

# QWL

## application tools (crimp type)

Complete installation instructions (L-516) for Amphenol® QWL Series Connectors are available on request.

The following data includes information pertaining to the application tools which have been established for crimping, inserting and removing crimp contacts used in QWL Series Connectors.

**Contact Crimping, Insertion & Removal Tools**

| Crimping Tool | Positioner/<br>Turret | Contact Size | Contact Style | Insertion Tool | Removal Tool                        |
|---------------|-----------------------|--------------|---------------|----------------|-------------------------------------|
| M22520/1-01   | *                     | 16           | Pin & Socket  | 11-7345        | 11-8250 Kit                         |
| M22520/1-01   | *                     | 12           | Pin & Socket  | 11-7082        | 11-8250 Kit                         |
| *             | *                     | 8            | Pin & Socket  | 11-8220        | 11-8250 Kit                         |
| *             | *                     | 4            | Pin & Socket  | 11-7365-4†     | Pin 11-7370-4†<br>Socket 11-7674-2† |
| *             | *                     | 0            | Pin & Socket  | 11-7365-5†     | Pin 11-7370-5†<br>Socket 11-7674-3† |

\*Refer to tool manufacturers for appropriate crimp tools or positioner/turret.

†Tools used with Arbor press 11-7364.

# QWL

## thermocouple contacts

Available from Amphenol is a complete line of cylindrical connectors featuring thermocouple contact insert arrangements. The design of these contacts is such that standard shell components and resilient inserts are used in the assemblies. Thermocouple contacts are available in all arrangements which contain size 12 and 16 pins and sockets, and feature probe-proof, closed entry design for the socket contacts. MS-approved and other commercial arrangements may be ordered with thermocouple contacts substituted for the standard contacts. All thermocouple contact layouts may contain either iron, alumel, chromel, constantan, standard (copper) or brass (dummy) contacts. The resulting assembly will be identified with an Amphenol® part number.

### IDENTIFICATION

For the purpose of wiring identification, thermocouple contacts are marked in accordance with the following color code which agrees with the wire code.

|                   |           |               |
|-------------------|-----------|---------------|
| <b>Chromel.</b>   | . . . . . | <b>White</b>  |
| <b>Alumel</b>     | . . . . . | <b>Green</b>  |
| <b>Iron</b>       | . . . . . | <b>Black</b>  |
| <b>Constantan</b> | . . . . . | <b>Yellow</b> |

This identification is made by means of small dots of stain on solder well end of the contact and is in accordance with the listing shown above.

### WIRE WELL DATA

| Contact Size                        |                      | 12              | 16                      |
|-------------------------------------|----------------------|-----------------|-------------------------|
| Well Inside Diameter                | $+ .004$<br>$- .002$ | .125            | .094                    |
| Well Depth                          | $+ .031$<br>$- .000$ | .250            | .188                    |
| Solder Well Barrel Outside Diameter |                      | .166 $\pm$ .003 | .125 $^{+.002}_{-.004}$ |

### RECOMMENDED WIRE:

- I Chromel – Alumel: Use wire in accordance with AN-W-29
- II Iron – Constantan: Use wire in accordance with AN-W-8b

# QWL

## thermocouple arrangements

Military connector specifications do not provide for thermocouple contact usage in established MS inserts. Amphe-nol® has established a series of insert arrangements containing thermocouple contacts. Some inserts have been rotated into positions outside those covered by MS

drawings to prevent cross plugging. Available thermocouple arrangements are tabulated on the following pages. Please contact your local sales office or Sidney, NY for additional information regarding thermocouple arrangements particular to your application.

The following abbreviations are used in the contact material column:

| Abbreviation | Ir.  | Con.       | Cu.    | Ch.     | Al.    | Dummy |
|--------------|------|------------|--------|---------|--------|-------|
| Material     | Iron | Constantan | Copper | Chromel | Alumel | Brass |

| Shell Size and Arrg.† | Similar To MS Arrg. | Total Con-tacts | Contact Size |    | Pin Insert Rotation C/W | Contact Material                                |
|-----------------------|---------------------|-----------------|--------------|----|-------------------------|-------------------------------------------------|
|                       |                     |                 | 12           | 16 |                         |                                                 |
| 12S-51                | 12S-3               | 2               |              | 2  | 315°                    | A = Ch.; B = Al.                                |
| 12S-54                | 12S-3               | 2               |              | 2  | 315°                    | A = Ir.; B = Con.                               |
| 12S-55                | 12S-3               | 2               |              | 2  | 45°                     | A = Cu.; B = Con.                               |
| 12S-56                | 12S-3               | 2               |              | 2  | None                    | A = Al.; B = Ch.                                |
| 12S-57                | 12S-3               | 2               |              | 2  | 60°                     | A = Ch.; B = Al.                                |
| 12S-58                | 12S-3               | 2               |              | 2  | 120°                    | A = Ir.; B = Con.                               |
| 12S-59                | 12S-3               | 2               |              | 2  | None                    | A = Ir.; B = Con.                               |
| 12S-60                | 12S-3               | 2               |              | 2  | None                    | A = Cu.; B = Con.                               |
| 12S-61                | 12S-3               | 2               |              | 2  | None                    | A = Ch.; B = Con.                               |
| 12S-62                | 12S-3               | 2               |              | 2  | None                    | A = Ch.; B = Al.                                |
| 12S-64                | 12S-3               | 2               |              | 2  | 315°                    | A = Cu.; B = Con.                               |
| 12S-65                | 12S-3               | 2               |              | 2  | None                    | A = Con.; B = Ir.                               |
| 14S-51                | 14S-9               | 2               |              | 2  | 90°                     | A = Al.; B = Ch.                                |
| 14S-52                | 14S-2               | 4               |              | 4  | 45°                     | A, B = Cu.; C = Al.; D = Ch.                    |
| 14S-53                | 14S-9               | 2               |              | 2  | 90°                     | A = Ir.; B = Con.                               |
| 14S-54                | 14S-6               | 6               |              | 6  | 45°                     | A, C, E = Ir.; B, D, F = Con.                   |
| 14S-55                | 14S-2               | 4               |              | 4  | 45°                     | A, C = Ir.; B, D = Con.                         |
| 14S-56                | 14S-2               | 4               |              | 4  | 45°                     | A = Ir.; B = Con.; C, D = Cu.                   |
| 14S-57                | 14S-2               | 4               |              | 4  | 45°                     | A, C = Al.; B, D = Ch.                          |
| 14S-58                | 14S-7               | 3               |              | 3  | 45°                     | A = Al.; B = Ch.; C = Cu.                       |
| 14S-59                | 14S-9               | 2               |              | 2  | 90°                     | A = Cu.; B = Con.                               |
| 14S-60                | 14S-9               | 2               |              | 2  | *                       | A = Al.; B = Ch.                                |
| 14S-61                | 14S-6               | 6               |              | 6  | 45°                     | A = Al.; B = Ch.; C = Ir.; D = Con.; E, F = Cu. |
| 14S-63                | 14S-6               | 6               |              | 6  | *                       | A, C = Al.; B, D = Ch.; E = Ir.; F = Con.       |
| 14S-64                | 14S-2               | 4               |              | 4  | *                       | A, C = Con.; B, D = Cu.                         |
| 14S-65                | 14S-6               | 6               |              | 6  | *                       | A, C, E = Cu.; B, D, F = Con.                   |
| 14S-67                | 14S-6               | 6               |              | 6  | *                       | A = Al.; B = Ch.; Bal = Cu.                     |
| 14S-68                | 14S-2               | 4               |              | 4  | 45°                     | A = Ch.; B = Con.; C, D = Cu.                   |
| 14S-69                | 14S-7               | 3               |              | 3  | *                       | A = Con.; B = Ch.; C = Cu.                      |
| 14S-70                | 14S-2               | 4               |              | 4  | *                       | A, D = Ch.; B, C = Al.                          |
| 14S-71                | 14S-2               | 4               |              | 4  | *                       | A, B, D = Cu.; C = Con.                         |
| 14S-72                | 14S-9               | 2               |              | 2  | *                       | A = Con.; B = Cu.                               |
| 14S-73                | 14S-2               | 4               |              | 4  | *                       | A, B = Cu.; C = Al.; D = Ch.                    |

†Insert arrangements including the letter "S" are available in QWL Series Connectors only.\*No rotation required.

## thermocouple arrangements (Cont'd.)

| Shell Size and Arrg.† | Similar To MS Arrg. | Total Con-<br>tacts | Contact Size |    | Pin Insert Rotation C/W | Contact Material                                |
|-----------------------|---------------------|---------------------|--------------|----|-------------------------|-------------------------------------------------|
|                       |                     |                     | 12           | 16 |                         |                                                 |
| 14S-74                | 14S-2               | 4                   |              | 4  | *                       | A, B = Ch.; C, D = Al.                          |
| 14S-75                | 14S-2               | 4                   |              | 4  | *                       | A, B = Cu.; C, D = Con.                         |
| 14S-76                | 14S-2               | 4                   |              | 4  | *                       | A, C = Al.; B, D = Ch.                          |
| 14S-77                | 14S-2               | 4                   |              | 4  | *                       | A, D = Al.; B, C = Ch.                          |
| 14S-78                | 14S-9               | 2                   |              | 2  | *                       | A = Ch.; B = Al.                                |
| 14S-79                | 14S-5               | 5                   |              | 5  | *                       | A, B, E = Cu.; C = Al.; D = Ch.                 |
| 14S-80                | 14S-9               | 2                   |              | 2  | *                       | A = Cu.; B = Con.                               |
| 14S-81                | 14S-9               | 2                   |              | 2  | *                       | A = Al.; B = Cu.                                |
| 14S-82                | 14S-2               | 4                   |              | 4  | *                       | A = Ir.; B = Con.; C = Ch.; D = Al.             |
| 14S-83                | 14S-6               | 6                   |              | 6  | *                       | A, C = Ir.; B, D = Con.; E, F = Cu.             |
| 14S-84                | 14S-6               | 6                   |              | 6  | *                       | A, B = Al.; Bal = Cu.                           |
| 14S-85                | 14S-7               | 3                   |              | 3  | *                       | A = Ch.; B = Al.; C = Cu.                       |
| 14S-86                | 14S-6               | 6                   |              | 6  | *                       | A, F = Ir.; B, E = Con.; C, D = Cu.             |
| 14S-87                | 14S-6               | 6                   |              | 6  | *                       | A, B, C, D = Ir.; E, F = Con.                   |
| 14S-88                | 14S-9               | 2                   |              | 2  | 90°                     | A = Ch.; B = Con.                               |
| 14S-89                | 14S-7               | 3                   |              | 3  | *                       | A = Ir.; B = Cu., C = Con.                      |
| 14S-90                | 14S-6               | 6                   |              | 6  | *                       | A = Al.; C = Ch.; Bal. = Cu.                    |
| 14S-91                | 14S-2               | 4                   |              | 4  | *                       | A = Al.; B = Ch.; Bal. = Cu.                    |
| 14S-93                | 14S-6               | 6                   |              | 6  | *                       | A, B, F = Al.; D, C, E = Ch.                    |
| 14-59                 | 14-53               | 6                   |              | 6  | *                       | A = Al.; B = Ch.; C = Ir.; D = Con.; E, F = Cu. |
| 16S-52                | 16S-4               | 2                   |              | 2  | *                       | A = Ch.; B = Al.                                |
| 16S-54                | 16S-1               | 7                   |              | 7  | *                       | A = Al.; B = Ch.; Bal. = Cu.                    |
| 16S-55                | 16S-1               | 7                   |              | 7  | *                       | A = Con.; Bal. = Cu.                            |
| 16S-56                | 16S-1               | 7                   |              | 7  | *                       | A = Al.; D = Ch.; Bal. = Cu.                    |
| 16S-57                | 16S-1               | 7                   |              | 7  | *                       | A, B = Al.; C, D = Ch.; Bal. = Cu.              |
| 16S-58                | 16S-1               | 7                   |              | 7  | *                       | A, G = Al.; Bal. = Ch.                          |
| 16S-59                | 16S-1               | 7                   |              | 7  | *                       | A, C = Ir.; B, D = Con.; Bal. = Cu.             |
| 16S-60                | 16S-1               | 7                   |              | 7  | *                       | A = Ir.; B = Con.; Bal. = Cu.                   |
| 16S-61                | 16S-1               | 7                   |              | 7  | *                       | G = Al.; Bal. = Ch.                             |
| 16-52                 | 16-11               | 2                   | 2            |    | 90°                     | A = Al.; B = Ch.                                |
| 16-53                 | 16-9                | 4                   | 2            | 2  | 70°                     | A = Al.; C = Ch.; B, D = Cu.                    |
| 16-55                 | 16-10               | 3                   | 3            |    | 45°                     | A = Al.; B = Ch.; C = Cu.                       |
| 16-56                 | 16-13               | 2                   | 2            |    | 90°                     | A = Con.; B = Cu.                               |
| 16-57                 | 16-10               | 3                   | 3            |    | *                       | A = Al.; B = Cu.; C = Ch.                       |
| 16-58                 | 16-10               | 3                   | 3            |    | *                       | A = Con.; B, C = Cu.                            |
| 16-60                 | 16-13               | 2                   | 2            |    | *                       | A = Al.; B = Ch.                                |
| 16-62                 | 16-11               | 2                   | 2            |    | *                       | A = Con.; B = Cu.                               |
| 16-67                 | 16-11               | 2                   | 2            |    | *                       | A = Al.; B = Ch.;                               |
| 16-68                 | 16-9                | 4                   | 2            | 2  | *                       | A, B, C = Ch.; D = Al.                          |
| 18-51                 | 18-12               | 6                   |              | 6  | *                       | A = Ir.; B, E = Con.; D = Cu.; C, F = Dummy     |
| 18-52                 | 18-11               | 5                   | 5            |    | *                       | A = Ir.; B = Con.; C = Ch.; D = Al.; E = Dummy  |
| 18-53                 | 18-12               | 6                   |              | 6  | *                       | A, D = Ir.; B, E = Con.; C, F = Dummy           |
| 18-54                 | 18-15               | 4                   | 4            |    | *                       | A, C = Al.; B, D = Ch.                          |
| 18-56                 | 18-1                | 10                  |              | 10 | 45°                     | A, C, E, G, I = Ir.; B, D, F, H, J = Con.       |
| 18-57                 | 18-12               | 6                   |              | 6  | 45°                     | A, C, E = Al.; B, D, F = Ch.                    |
| 18-59                 | 18-12               | 6                   |              | 6  | 45°                     | A, C = Ir.; B, E, F = Con.; D = Cu.             |

†Insert arrangements including the letter "S" are available in QWL Series Connectors only.

\*No rotation required.

# QWL

## thermocouple arrangements (Cont'd.)

| Shell Size and Arrg.† | Similar To MS Arrg. | Total Con-<br>tacts | Contact Size |    | Pin Insert Rotation C/W | Contact Material                                                     |
|-----------------------|---------------------|---------------------|--------------|----|-------------------------|----------------------------------------------------------------------|
|                       |                     |                     | 12           | 16 |                         |                                                                      |
| 18-60                 | 18-11               | 5                   | 5            |    | 45°                     | A, D = Al.; B, C = Ch.; E = Al.                                      |
| 18-61                 | 18-12               | 6                   |              | 6  | *                       | A, C = Ir.; B, D = Con.; E = Ch.; F = Al.                            |
| 18-62                 | 18-12               | 6                   |              | 6  | *                       | A, B, C = Ir.; D, E, F = Con.                                        |
| 18-63                 | 18-15               | 4                   | 4            |    | *                       | A, C = Con.; B, D = Cu.                                              |
| 18-65                 | 18-12               | 6                   |              | 6  | *                       | A = Ir.; B = Con.; Bal. = Cu.                                        |
| 18-66                 | 18-1                | 10                  |              | 10 | *                       | A, C, E, G, I = Cu.; B, D, F, H, J = Con.                            |
| 18-67                 | 18-12               | 6                   |              | 6  | *                       | A, C, E = Cu.; B, D, F = Con.                                        |
| 18-68                 | 18-11               | 5                   | 5            |    | *                       | A, D = Al.; B, C = Ch.; E = Cu.                                      |
| 18-69                 | 18-1                | 10                  |              | 10 | *                       | A = Al.; B = Ch.; Bal. = Cu.                                         |
| 18-70                 | 18-11               | 5                   | 5            |    | *                       | A = Ir.; B = Con.; C = Ch.; D = Al.; E = Cu.                         |
| 18-71                 | 18-15               | 4                   | 4            |    | *                       | A = Con.; Bal. = Cu.                                                 |
| 18-72                 | 18-15               | 4                   | 4            |    | *                       | D = Con.; Bal. = Cu.                                                 |
| 18-73                 | 18-9                | 7                   | 2            | 5  | *                       | A = Al.; D = Ch.; Bal. = Cu.                                         |
| 18-74                 | 18-12               | 6                   |              | 6  | *                       | A = Ch.; B = Al., D = Ir.; E = Cu.; C, F = Con.                      |
| 18-76                 | 18-1                | 10                  |              | 10 | *                       | A, C, E, G, I = Al.; B, D, F, H, J = Ch.                             |
| 18-77                 | 18-1                | 10                  |              | 10 | *                       | A, C, E, G = Al.; B, D, F, H = Ch.; Bal. = Cu.                       |
| 18-78                 | 18-1                | 10                  |              | 10 | *                       | A = Al.; B = Ch.; D, F, H, J = Con.; Bal. = Cu.                      |
| 18-79                 | 18-12               | 6                   |              | 6  | *                       | A, F = Ir.; B, E = Con.; C, D = Cu.                                  |
| 18-80                 | 18-15               | 4                   | 4            |    | *                       | A, C = Cu.; B, D = Con.                                              |
| 18-81                 | 18-1                | 10                  |              | 10 | *                       | E, G = Con.; Bal. = Cu.                                              |
| 18-82                 | 18-1                | 10                  |              | 10 | *                       | E, G = Con.; F, H = Ir.; Bal. = Cu.                                  |
| 20-52                 | 20-4                | 4                   | 4            |    | 315°                    | A = Ir.; B = Con.; C = Ch.; D = Al.                                  |
| 20-56                 | 20-7                | 8                   |              | 8  | 45°                     | A, B, G, H = Ir.; C, D, E, F = Con.                                  |
| 20-60                 | 20-7                | 8                   |              | 8  | 45°                     | D = Ch.; E = Al.; Bal. = Cu.                                         |
| 20-61                 | 20-29               | 17                  |              | 17 | 45°                     | A, B, M = Cu.; Bal. = Con.                                           |
| 20-62                 | 20-15               | 7                   | 7            |    | 80°                     | A, C, E = Al.; B, D, F = Ch.; G = Cu.                                |
| 20-64                 | 20-27               | 14                  |              | 14 | *                       | A = Al.; C = Ch.; Bal. = Cu.                                         |
| 20-65                 | 20-27               | 14                  |              | 14 | *                       | A, B, C, D, E, F, G = Ir.; H, I, J, K, L, M, N = Con.                |
| 20-67                 | 20-16               | 9                   | 2            | 7  | *                       | H = Al.; I = Ch.; Bal. = Cu.                                         |
| 20-68                 | 20-7                | 8                   |              | 8  | *                       | A, B, G, H = Con.; C, D, E, F = Cu.                                  |
| 20-69                 | 20-27               | 14                  |              | 14 | *                       | A, B, C, D, E, F, G = Cu.; H, I, J, K, L, M, N = Con.                |
| 20-70                 | 20-29               | 17                  |              | 17 | *                       | A, C, E, G, J, L, N, R, T = Ir.; B, D, F, H, K, M, P, S = Con.       |
| 20-71                 | 20-29               | 17                  |              | 17 | *                       | S = Al.; R = Ch.; Bal. = Cu.                                         |
| 20-74                 | 20-29               | 17                  |              | 17 | *                       | A, C, E, G, J, L, N, R = Ir.; B, D, F, H, K, M, P, S = Con.; T = Cu. |
| 20-75                 | 20-15               | 7                   | 7            |    | *                       | G = Al.; Bal = Ch.                                                   |
| 20-77                 | 20-16               | 9                   | 2            | 7  | *                       | A = Con.; Bal. = Std.                                                |
| 20-80                 | 20-27               | 14                  |              | 14 | *                       | A, C, E, G, I, K, M = Cu.; B, D, F, H, J, L, N = Con.                |
| 20-81                 | 20-27               | 14                  |              | 14 | *                       | A, C, E, G, I, K, M = Ch.; B, D, F, H, J, L, N = Al.                 |
| 20-82                 | 20-29               | 17                  |              | 17 | *                       | A, C, E, G, J, L, N, R = Al.; B, D, F, H, K, M, P, S = Ch.; T = Cu.  |
| 20-85                 | 20-33               | 11                  |              | 11 | *                       | K, L = Al.; Bal. = Ch.                                               |
| 20-87                 | 20-29               | 17                  |              | 17 | *                       | A, C, E, G, J, L, N, R = Con.; Bal. = Cu.                            |
| 20-88                 | 20-27               | 14                  |              | 14 | *                       | A, C, E = Al.; B, D, F = Ch.; G, H, K, N = Con.; Bal. = Cu.          |
| 20-89                 | 20-27               | 14                  |              | 14 | *                       | B, D, F, H, J, L = Al.; A, C, E, G, I, K = Ch.; M, N = Cu.           |
| 20-90                 | 20-27               | 14                  |              | 14 | *                       | C, G, I = Ch.; K, L, M = Al.; Bal. = Cu.                             |
| 20-91                 | 20-27               | 14                  |              | 14 | *                       | I = Ch.; K = Al.; Bal. = Cu.                                         |

\*No rotation required.

## thermocouple arrangements (Cont'd.)

| Shell Size and Arrg. | Similar To MS Arrg. | Total Con-<br>tacts | Contact Size |    | Pin Insert Rotation C/W | Contact Material                                                                                            |
|----------------------|---------------------|---------------------|--------------|----|-------------------------|-------------------------------------------------------------------------------------------------------------|
|                      |                     |                     | 12           | 16 |                         |                                                                                                             |
| 20-92                | 20-7                | 8                   |              | 8  | *                       | A = Al.; H = Cu.; Bal. = Ch.                                                                                |
| 20-93                | 20-27               | 14                  |              | 14 | *                       | A = Ch.; B = Al.; Bal. = Cu.                                                                                |
| 20-94                | 20-15               | 7                   | 7            |    | *                       | A, C, E = Al.; B, D, F = Ch.; G = Cu.                                                                       |
| 20-99                | 20-33               | 11                  |              | 11 | *                       | A = Al.; Bal. = Ch.                                                                                         |
| 22-57                | 22-14               | 19                  |              | 19 | 45°                     | A, C, E, G, J, L, N, R = Ir.; B, D, F, H, K, M, P, S = Con.; T, U, V = Cu.                                  |
| 22-60                | 22-14               | 19                  |              | 19 | 45°                     | U = Al.; N = Ch.; Bal. = Cu.                                                                                |
| 22-62                | 22-23               | 8                   | 8            |    | 60°                     | A, B, F, G = Al.; C, D, E, H = Ch.                                                                          |
| 22-68                | 22-19               | 14                  |              | 14 | 45°                     | A, C, E, G, J, L, M = Ir.; B, D, F, H, K, P, N = Con.                                                       |
| 22-69                | 22-19               | 14                  |              | 14 | 45°                     | A, C, E, G, J, L, M = Cu.; B, D, F, H, K, P, N = Con.                                                       |
| 22-71                | 22-14               | 19                  |              | 19 | *                       | V = Al., U = Ch.; Bal. = Cu.                                                                                |
| 22-72                | 22-5                | 6                   | 2            | 4  | *                       | B = Al.; E = Ch.; Bal. = Cu.                                                                                |
| 22-73                | 22-5                | 6                   | 2            | 4  | *                       | E = Al.; B = Ch.; Bal. = Cu.                                                                                |
| 22-74                | 22-23               | 8                   | 8            |    | *                       | A, C, E, G = Ir.; B, D, F, H = Con.                                                                         |
| 22-75                | 22-23               | 8                   | 8            |    | *                       | A = Al.; B, D, G, H = Cu.; C = Ch.; E = Ir.; F = Con.                                                       |
| 22-76                |                     | 21                  |              | 21 | *                       | W = Con.; Bal. = Cu.                                                                                        |
| 22-77                | 22-19               | 14                  |              | 14 | *                       | B, D, F, H, J, K, M, P = Cu.; A, E, L = Ir.; C, G, N = Con.                                                 |
| 22-78                | 22-14               | 19                  |              | 19 | *                       | A, C, E, G, H, K, M, P, R, T = Con.; Bal. = Cu.                                                             |
| 22-79                | 22-10               | 4                   |              | 4  | *                       | A, C = Con.; B, D = Cu.                                                                                     |
| 22-82                | 22-14               | 19                  |              | 19 | *                       | A, C, E, G, J, L, N, R, T = Ir.; B, D, F, H, K, M, P, S, U = Con.; V = Cu.                                  |
| 22-83                | 22-18               | 8                   |              | 8  | *                       | A, C, E, G = Al.; B, D, F, H = Ch.                                                                          |
| 22-84                | 22-14               | 19                  |              | 19 | *                       | A, C, S = Ch.; B, D, T = Al.; Bal. = Cu.                                                                    |
| 22-85                | 22-19               | 14                  |              | 14 | *                       | A, C, E, G, J, L, N = Al.; B, D, F, H, K, M, P = Ch.                                                        |
| 22-89                | 22-28               | 7                   | 7            |    | *                       | A, C, E = Ir.; B, D, F = Con.; G = Cu.                                                                      |
| 24-56                | 24-20               | 11                  | 2            | 9  | 45°                     | E = Al.; F = Ch.; Bal. = Cu.                                                                                |
| 24-57                | 24-28               | 24                  |              | 24 | 45°                     | A, C, J, V, Y, W, K, E, H, U, S, M = Ch.; Bal. = Al.                                                        |
| 24-62                | 24-28               | 24                  |              | 24 | *                       | A, C, E, G = Ir.; B, D, F, H = Con.; R, T = Ch.; S, U = Al.; Bal. = Cu.                                     |
| 24-63                | 24-28               | 24                  |              | 24 | *                       | A, C, E, G, J, L, K, N, S, U, W, Y = Cu.; B, D, F, H, Q, R, M, P, T, V, X, Z = Con.                         |
| 24-64                | 24-5                | 16                  |              | 16 | *                       | A, B, C, D, E, F, G, H = Ir.; J, K, L, M, N, P, R, S = Con.                                                 |
| 24-68                | 24-28               | 24                  |              | 24 | *                       | D = Con.; Bal. = Cu.                                                                                        |
| 24-81                | 24-7                | 16                  | 2            | 14 | *                       | A, C, E, G, I, K, M, N, P = Cu.; B, D, F, H, J, L, O = Con.                                                 |
| 24-88                | 24-28               | 24                  |              | 24 | *                       | A, B, C, D, E, F, G, H, J, K, L, M = Con.; Bal. = Ir.                                                       |
| 24-91                | 24-5                | 16                  |              | 16 | *                       | A, B, C, D, E, F, G, H = Al.; J, K, L, M, N, P, R, S = Ch.                                                  |
| 28-53                | 28-11               | 22                  | 4            | 18 | 45°                     | J, L = Al.; K, M = Ch.; Bal. = Cu.                                                                          |
| 28-58                | 28-20               | 14                  | 10           | 4  | 45°                     | A, C, E, G, K, M = Al.; B, D, F, H, L, N = Ch.; J, P = Cu.                                                  |
| 28-61                | 28-21               | 37                  |              | 37 | 45°                     | A, C, J, Z, m, r, n, a, K, F, H, X, k, h, T, M, N, d = Ir.; Bal. = Con.                                     |
| 28-63                | 28-20               | 14                  | 10           | 4  | 45°                     | A, C, E, G, J = Al.; B, D, F, H, P = Ch.; Bal. = Cu.                                                        |
| 28-64                | 28-15               | 35                  |              | 35 | *                       | A, d = Al.; B, j = Ch.; C, D, E, F, G, N, P, R, S, H, J, K, L, M, W, X, Y, Z = Con.; Bal. = Cu.             |
| 28-65                | 28-12               | 26                  |              | 26 | *                       | A, C, E, G, J, L, N, R, T, V = Ir.; X, Z = Al.; B, D, F, H, K, M, P, S, U, W = Con.; Y, a = Ch.; b, d = Cu. |
| 28-67                | 28-16               | 20                  |              | 20 | *                       | U = Con.; Bal. = Cu.                                                                                        |
| 28-68                | 28-15               | 35                  |              | 35 | 45°                     | T = Al.; U = Ch.; Bal. = Cu.                                                                                |
| 28-69                | 28-11               | 22                  | 4            | 18 | *                       | G = Al.; R = Ch.; Bal. = Cu.                                                                                |
| 28-70                | 28-11               | 22                  | 4            | 18 | *                       | A = Al.; B = Ch.; Bal. = Cu.                                                                                |
| 28-77                | 28-11               | 22                  | 4            | 18 | *                       | J = Con.; Bal. = Cu.                                                                                        |

## thermocouple arrangements (Cont'd.)

| Shell Size and Arrg. | Similar To MS Arrg. | Total Con-tacts | Contact Size |     | Pin Insert Rotation C/W | Contact Material                                                                                                                                                                                                                                                                                                               |
|----------------------|---------------------|-----------------|--------------|-----|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |                     |                 | 12           | 16  |                         |                                                                                                                                                                                                                                                                                                                                |
| 28-81                | 28-21               | 37              |              | 37  | *                       | A, D, S, Z, n, s = Ir.; B, J, K, f, g, r, = Con.; G, L, P, b, e, j = Al.; F, H, T, X, h, k = Ch.; Bal. = Cu.                                                                                                                                                                                                                   |
| 28-85                | 28-11               | 22              | 4            | 18  | 45°                     | K, M = Al.; J, L = Ch.; Bal. = Cu.                                                                                                                                                                                                                                                                                             |
| 28-91                | 28-9                | 12              | 6            | 6   | *                       | M = Ir.; L = Con.; Bal. = Cu.                                                                                                                                                                                                                                                                                                  |
| 28-94                | 28-12               | 26              |              | 26  | *                       | B, D, F, H, K, M, P, S, U, W, Y, a, d = Al.; Bal. = Ch.                                                                                                                                                                                                                                                                        |
| 28-98                | 28-21               | 37              |              | 37  | *                       | M = Al.; F = Ch.; Bal. = Cu.                                                                                                                                                                                                                                                                                                   |
| 28-99                | 28-12               | 26              |              | 26  | *                       | B, D, F, H, K, M, P, S, U, W, Y, a = Con.; Bal. = Cu.                                                                                                                                                                                                                                                                          |
| 28-AC                | 28-16               | 20              |              | 20  | *                       | A, C, E, G, J, L = Ir.; B, D, F, N, K, M = Con.; Bal. = Cu.                                                                                                                                                                                                                                                                    |
| 28-AD                | 28-21               | 37              |              | 37  | 45°                     | A, C, F, H, J, K, M, N, T, X, Z, a, d, h, k, m, n, r = Cu.; Bal. = Con.                                                                                                                                                                                                                                                        |
| 28-AE                | 28-21               | 37              |              | 37  | *                       | A, C, E, G, J, L, N, R, T, V, X, a, c, e, g, j, m, p, s = Cu.; Bal. = Con.                                                                                                                                                                                                                                                     |
| 28-AF                | 28-18               | 12              |              | 12  | *                       | A, C, E, G, J, L = Ch.; Bal. = Al.                                                                                                                                                                                                                                                                                             |
| 28-AG                | 28-12               | 26              |              | 26  | *                       | A, C, E, G, J, L, N, R = Al.; B, D, F, H, K, M, P, S = Ch.; Bal. = Cu.                                                                                                                                                                                                                                                         |
| 28-AK                | 28-21               | 37              |              | 37  | *                       | A, B, C, D, J, K, L, M, N, P, X, a, b, c, d, e, m, p = Ch.; n = Cu.; Bal. = Al.                                                                                                                                                                                                                                                |
| 32-51                | 32-8                | 30              | 6            | 24  | 90°                     | M = Ch.; N = Al.; Bal. = Cu.                                                                                                                                                                                                                                                                                                   |
| 32-55                | 32-8                | 30              | 6            | 24  | 125°                    | M, N = Ch.; O, P = Al.; Bal. = Cu.                                                                                                                                                                                                                                                                                             |
| 32-91                | 32-64               | 54              |              | 54  | *                       | A, C, E, G, J, L, N, P, S, U, W, Y, a, c, e, g, j, m = Ir.; B, D, F, H, K, M, O, R, T, V, X, Z, b, d, f, h, k, n = Con.; Bal. = Cu.                                                                                                                                                                                            |
| 36-53                | 36-7                | 47              | 7            | 40  | 45°                     | u, v, w = Al.; x, y, z = Ch.; Bal. = Cu.                                                                                                                                                                                                                                                                                       |
| 36-56                | 36-10               | 48              |              | 48  | *                       | A, C, E, G, L, J, H, P, R, T, V, X, Z, b, d, f, h, k, q, n, m, u, w, y = Con.; Bal. = Cu.                                                                                                                                                                                                                                      |
| 36-57                | 36-8                | 47              | 1            | 46  | *                       | W = Al.; f = Ch.; Bal. = Cu.                                                                                                                                                                                                                                                                                                   |
| 36-58                | 36-15               | 35              |              | 35  | *                       | H = Al.; G = Ch.; Bal. = Cu.                                                                                                                                                                                                                                                                                                   |
| 36-61                | 36-15               | 35              |              | 35  | *                       | A, C, E, J, K, L, M, N, P, R, T, V, f, X, Y, h, j, c = Con.; Bal. = Cu.                                                                                                                                                                                                                                                        |
| 36-62                | 36-10               | 48              |              | 48  | *                       | A, C, E = Al.; B, D, F = Ch.; Bal. = Cu.                                                                                                                                                                                                                                                                                       |
| 36-82                | 36-52††             | 52              |              | 52  | *                       | v, g = Ir.; p, y, c = Con.; x = Ch.; Bal. = Cu.                                                                                                                                                                                                                                                                                |
| 36-86                | 36-10               | 48              |              | 48  | *                       | A, C, E, G, J, L, N, P, R, T, V, X = Al.; B, D, F, H, K, M, O, Q, S, U, W, Y = Ch.; z, b, d, f, h, k, n, q, s, u, w, y = Con.; a, c, e, g, j, m, p, r, t, v, x, z = Cu.                                                                                                                                                        |
| 36-88                | 36-52               | 52              |              | 52  | *                       | A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF = Cu.; Bal. = Con.                                                                                                                                                                                                                             |
| 40-58                | 40-56††             | 85              |              | 85  | *                       | A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF, AJ, AL, AN, AP, AS, AU, AW, AY, BA, BC, BE, BH, BK, BM, BP, BS, BU = Ir.; Bal. = Con.                                                                                                                                                         |
| 40-59                | 40-56††             | 85              |              | 85  | *                       | B = Ch.; C = Con.; Bal. = Cu.                                                                                                                                                                                                                                                                                                  |
| 40-77                | 40-53††             | 60              |              | 60  | *                       | 55, 60 = Ir.; 57, 58, 59 = Con.; 56 = Ch.; Bal. = Cu.                                                                                                                                                                                                                                                                          |
| 40-78                | 40-53††             | 60              |              | 60  | *                       | 50, 51 = Ir.; 27, 28, 29, 31, 32, 34, 36, 37, = Con.; 25, 39, 40, 41 = Al.; 43, 44, 45, 46, 47, 48, 49, 52, 53, 54 = Ch.; Bal. = Cu.                                                                                                                                                                                           |
| 40-88                | 40-53               | 60              |              | 60  | *                       | 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59 = Con.; Bal. = Cu.                                                                                                                                                                                           |
| 40-AA                | 40-56               | 85              |              | 85  | *                       | A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF, AJ, AL, AN, AR, AT = Cu.; B, D, F, J, L, N, R, T, V, X, Z, b, d, g, i, k, n, q, s, u, w, y, AA, AC, AE, AH, AK, AM, AP, AS = Con.; AU, AW, AY, BA, BC, BE, BH, BK, BM, BP, BS, BU = Ch.; AV, AX, AZ, BB, BD, BF, BJ, BL, BN, BR, BT, BV = Al. |
| 44-57                | 44-52               | 104             |              | 104 | *                       | A, C, E, G, J, L, etc. = Cu.; B, D, F, H, K, M, etc. = Con.                                                                                                                                                                                                                                                                    |
| 44-59                | 44-52               | 104             |              | 104 | *                       | 34 = Con.; 70 = Cu.                                                                                                                                                                                                                                                                                                            |
| 44-60                | 44-52               | 104             |              | 104 | *                       | A, C, E, etc. = Ch., (52); B, D, F, etc. = Al. (52)                                                                                                                                                                                                                                                                            |
| 44-62                | 44-52               | 104             |              | 104 | *                       | BY, BZ, CA, CB, CC, CD, CE, CR = Al.; CH, CJ, CK, CL, CM, CN, CP CS = Ch.; Bal. = Cu.                                                                                                                                                                                                                                          |

††Amphenol® arrangement\*No rotation required.

# Other Heavy Duty Cylindrical Connectors Offered by Amphenol

## Class “L” MIL-C-22992, QWLD and Star-Line

Amphenol meets the demands for heavy duty connectors by providing three additional cylindrical connector series, each with unique design characteristics for reliable operation in specific industrial environments.

**Class “L”, MIL-C-22992** – for the heaviest electrical loads; for military and industrial applications.

- MIL-C-22992 qualification.
- Current range from 40 to 200 amperes.
- Direct current or single/three phase, 60/400 Hertz alternating current.
- Rugged shells are resistant to vibration, high impact, shock and corrosion
- Double stub threads per MIL-STD-1373 for fast coupling and easy cleaning.
- Five key polarization system assures that circuits with incompatible power characteristics (voltage, phase and frequency) are not mated.
- Crimp termination. Contacts can be soldered.
- Automatic grounding for safety.
- Unique arc quenching capability provides a positive safety feature if connectors are inadvertently disconnected under load.
- 4 shell styles with 7 insert patterns that facilitate large conductors.
- Grommets and seals provide waterproofing.



**Heavy Duty Class “L”  
Connectors**

**QWLD** – for most power and control circuits

- Military (MIL-C-22992) qualified connectors and industrial equivalents available.
- Increased shell size for greater durability than similar standard connectors.
- Crimp or solder termination.
- Double stub threaded per MIL-STD-1373.
- 7 shell styles with over 300 insert patterns (MIL-C-5015 inserts plus specials)
- Class C is pressurized; Class R is environmental.



**QWLD Series**

**Star-line® Series** – heavy duty environmentally sealed plugs and receptacles that are used in all types of industrial and aerospace applications.

- Equals or exceeds MIL-C-5015 E and R specifications.
- UL listed and CSA listed circuit breaking capability.
- Up to high amperage of 1135 amps at 1000VAC or DC rating available.
- Solder, crimp and pressure terminals. Circuit breaking power and control types.
- Double lead Acme threads provide complete coupling in one turn of the coupling nut, and do not clog under adverse weather conditions.
- IP67 rating for environmental sealing.
- Hard anodic coating provides dielectric strength with heat and corrosion resistance.



**Star-Line Series**

**Star-line EX® Series** – Hybrid form of the Star-Line series with higher temperature ranges. Cenelec Certified for use in Zone 1-IIc hazardous environments. EX Certificate #03ATEX 1101X.