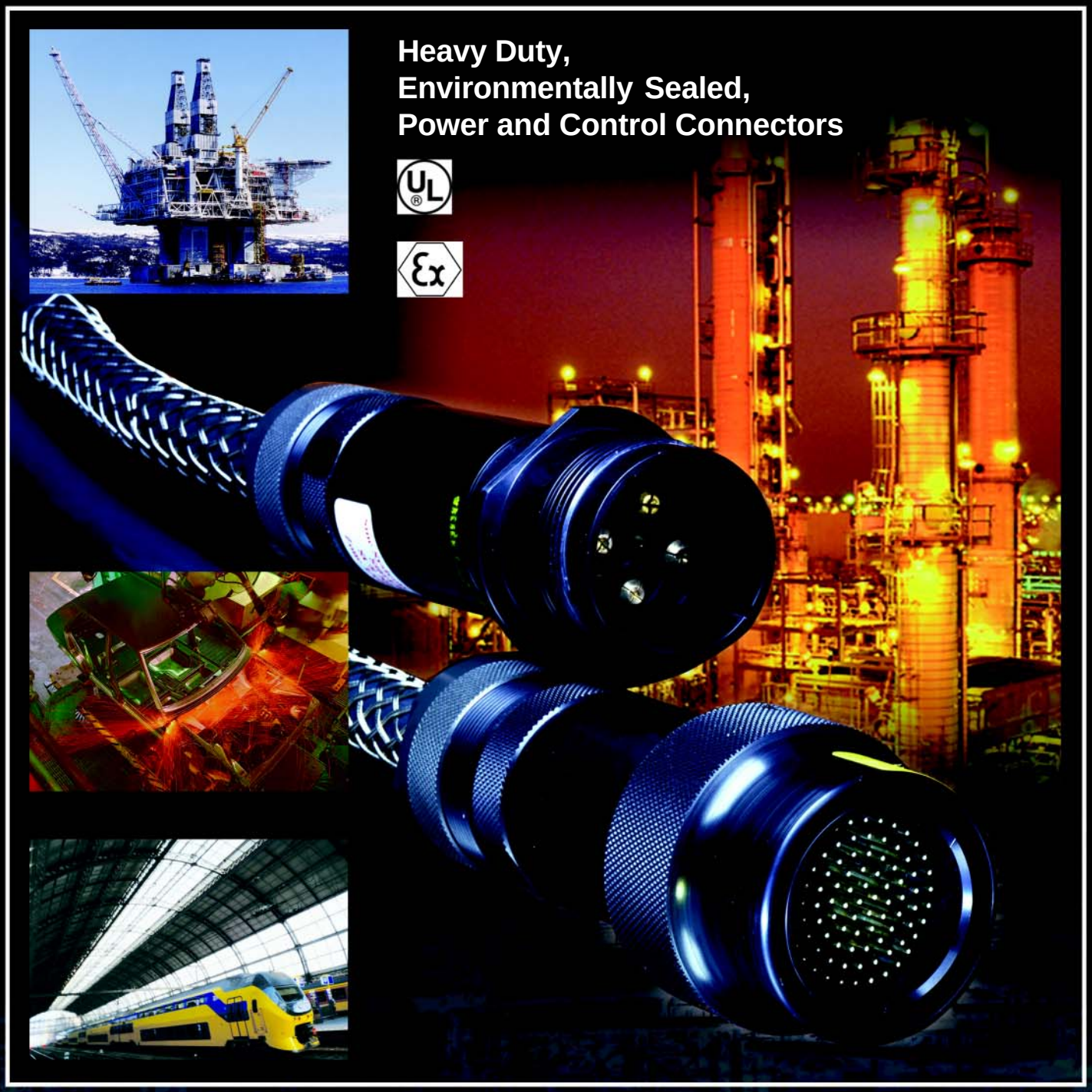
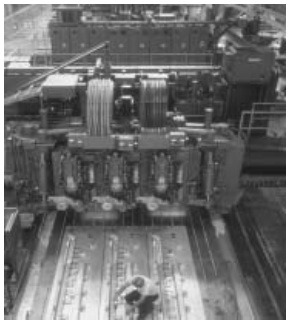
# Amphenol®/Pyle® Industrial Connectors
# Star-Line®, Star-Line EX®, Star-Lok®

**12-054-2**




# Amphenol



# Contents


Star-Line® Series Overview ..... 1

Star-Line EX® Series Overview ..... 2

Star-Lok™ Series Overview ..... 3

Environmental Highlights, Double Lead Acme Thread Features, Wire Limitation Guide ..... 4

Contact Insert Features-Mod I, Mod II, Mod III ..... 5 - 6

Connector Component Ordering Details ..... 7 - 11

Plug Hardware Assemblies ..... 12 - 15

Receptacle Hardware Assemblies ..... 16 - 23

EX Ordering Details, EEx d Cable Types ..... 24 - 25

EX Hardware ..... 26 - 28

Insert Configuration Listing, Electrical Ratings ..... 29 - 30

Spare Replacement Contacts for MOD II and MOD III Inserts ..... 31

Termination Data ..... 32

Thermocouple Contacts ..... 33

Insert Configuration Index ..... 34 - 36

Insert Configurations ..... 37 - 63

Connector Components, Spare Parts, Cable Adapters and Accessories ..... 64 - 71

Protection Covers and Caps Accessories ..... 72 - 73

Conduit System Accessories ..... 74 - 75

Crimping, Insertion and Removal Tools ..... 76 - 77

Single Pole Power Connectors ..... 78 - 79

Connector Assembly and Termination Instructions ..... 80

Connectors with RADSOK® High Amperage Contacts and Other Amphenol®/Pyle® Connectors ..... 81 - 83

Sales Offices and Distributors Listing ..... 84

Catalog information for reference only. For more assistance, contact your local Amphenol field sales office or:


Amphenol Industrial Operations
40-60 Delaware Avenue,
Sidney, NY 13838-1395
Phone: 607-563-5011 or 800-678-0141
Fax: 607-563-5157


This catalog and most all Amphenol catalogs are available for viewing, printing and downloading on websites:

**www.amphenol-industrial.com**
**www.amphenol-aerospace.com**

# STAR-LINE® Series

Star-Line Series “ZP/ZR” connectors are heavy duty environmentally sealed plugs and receptacles and have been successfully used in all types of Industrial and Aerospace applications. These compact environmental connectors have provided outstanding performance in complex ground support cable networks, automatic and process control systems and instrumentation systems.

This family of connectors has made a major contribution to the successful interconnection of peak power generating systems as well as offshore petroleum production for power distribution and data acquisition.

Ample margins of safety and reliability have been designed into the Star-Line connectors to maintain capability levels which make them ideally suited for the broad spectrum of demands placed on them by industry.

The specific materials and design features incorporated in Star-Line connectors were originally selected to satisfy the stringent requirements of the Aerospace industry for heavy-duty connectors. These connectors combine electrical and mechanical capabilities that equal or exceed the performance parameters established by the Military Specification MIL-5015.

- **UL & CSA** listed to new 1682 requirements
- **ENVIRONMENTAL RESISTANCE** – Design and materials withstand the most challenging operating conditions. Series has an IP 67 rating.
- **SOLDER, CRIMP AND PRESSURE TERMINALS AVAILABLE**
- **EASILY ACCESSIBLE WIRE TERMINALS** – Conductors are readily terminated to contacts. Cable housings are slipped over conductors or leads after terminating. Cumbersome handling and seating of inserts with conductors attached is eliminated.
- **LARGE WIRING SPACE** – Ample wiring space is provided in cable housings and conduit fitting bodies. Hub of body mounts in any of four positions (except FS & FD box assemblies).
- **REVERSIBLE INSERTS** – A full range of contact inserts and application adapters are available. All are interchangeable and reversible to suit special needs.

** Star-line Series Connectors are certified to UL 1682 specifications.*

- **DOUBLE-LEAD THREAD COUPLING** – Modified Acme Thread does not clog under adverse conditions of ice, snow, sand or mud and provides the quick coupling feature.
- **HARD ANODIC COATING** – All machine, aluminum parts finished with a hard, scratch-resistant coating per MIL-A-8625, Type III. Dielectric strength 1800 volts. Heat resistance of 750° F.
- **HIGH TENSILE STRENGTH *ALUMINUM** – Bar Stock Components precision machined. Points of impact designed for extra strength.
- **RADSOK® HIGH AMPERAGE CONTACTS** – Special arrangements are available with RADSOK high amperage contacts. Standard Star-line inserts are not interchangeable with new RADSOK contact insert arrangements.
- **RoHS COMPLIANT PRODUCT AVAILABLE** – Consult Amphenol Industrial Operations.

# STAR-LINE® EX Series

The Star-Line EX Series is a hybrid form of the parent Starline product line. The series is certified for use in a Zone 1-IIc hazardous environment. Classified facilities such as petrochemical refineries, land and offshore drilling systems are but a few of the applications for this broad product series.

*Star-Line EX Series connectors are certified for use in Zone 1-IIc hazardous environmentt*

*Star-Line EX Connector with EX gland (EX-13-3 style shown)*

- **ATEX CERTIFIED** – for Zone 1-IIc hazardous environment. Certificate number 03ATEX1101X.
- **CENELEC IP68-8 RATED** –
  Listed under EEx d IIc T6.
  Plugs and receptacles listed under EEx de IIc T6.
- **HARD ANODIC COATING** – All machined aluminum parts finished with a hard, scratch-resistant coating per MIL-A-8625, Type III. Dielectric strength 1800 volts. Heat resistance of 750° F.
- **SOLDER, CRIMP AND PRESSURE TERMINALS AVAILABLE**
- **REVERSIBLE INSERTS** – A full range of contact inserts for power, signal and mixed applications are available. All are interchangeable and reversible to suit specific needs.
- **EASILY ACCESSIBLE WIRE TERMINALS** – Conductors are readily terminated to contacts. Cable housings are slipped over conductors or leads after terminating. Cumbersome handling and seating of inserts with conductors attached is eliminated.
- **LARGE WIRING SPACE** – Ample wiring space is provided in cable housings and hardware.
- **HIGH TENSILE STRENGTH ALUMINUM** – Bar Stock Components precision machined. Points of impact designed for extra strength.
- **CABLE OPTIONS** – Starline EX Series can be terminated onto unarmored or armored and sheathed cables built to IEEE-45 / UL1309, IEC, BS, DIN and JIC standards. Flexible cables like SOOW-A, W, G-GC and DLO constructions can also be used with this Series.
- **EX CABLE GLANDS** – Wide variety of glands are available for Star-Line EX connectors. For more information ask for new Amphenol Cable Glands and Cord Grips catalog 12-055.
- **INSERT VARIETY** – A broad range of inserts are offered ranging from single-contact to 143 contacts.
  High amperage up to 1135 amps at 1000V / AC or DC. Contacts are high quality copper with silver plating. (Gold plating available as an option) Composite inserts for power, control and instrumentation service available.
- **RADSOK® HIGH AMPERAGE CONTACTS** – Special arrangements are available with RADSOK high amperage contacts. Standard Star-line EX inserts are not interchangeable with new RADSOK contact insert arrangements.
- **RoHS COMPLIANT PRODUCT AVAILABLE** – Consult Amphenol Industrial Operations

# STAR-LOK™ Series

The Star-Lok's unique swiftmate spring-loaded **reverse bayonet coupling mechanism**, creates a positive metal to metal lock-up between the plug and receptacle, with a simple push of the plug to mate and a simple eighth turn and pull to unmate.

** Star-Lok Series Connectors are certified to UL 1682 specifications.*

- **UL & CSA** listed to new 1682 requirements
- **ENVIRONMENTAL RESISTANCE** – Design and materials withstand the most challenging operating conditions. Series has an IP 67 rating.
- **HARD ANODIC COATING** – AII machine, aluminum parts finished with a hard, scratch-resistant coating per MIL-A-8625, Type III. Dielectric strength 1800 volts. Heat resistance of 750° F.
- **SOLDER, CRIMP AND PRESSURE TERMINALS AVAILABLE**
- **REVERSIBLE INSERTS** – A full range of contact inserts for power, signal and mixed applications are available. All are interchangeable and reversible to suit specific needs.
- **EASILY ACCESSIBLE WIRE TERMINALS** – Conductors are readily terminated to contacts. Cable housings are slipped over conductors or leads after terminating. Cumbersome handling and seating of inserts with conductors attached is eliminated.
- **LARGE WIRING SPACE** – Ample wiring space is provided in cable housings and hardware.
- **HIGH TENSILE STRENGTH ALUMINUM** – Bar Stock Components precision machined. Points of impact designed for extra strength.
- **RADSOK® HIGH AMPERAGE CONTACTS** – Special arrangements are available with RADSOK high amperage contacts. Standard Star-Lok inserts are not interchangeable with new RADSOK contact insert arrangements.

Star-Lok's new innovative design features a patented coupling mechanism – a one-handed swift engagement provides a positive connection and consistent mating.

Star-Lok's coupling mechanism also eliminates the problems associated with threaded coupling (dirt, thread damage, many turns to fully mate, etc.), ensuring positive mating every time. The mechanism requires only a slight turn and pull to unmate and is engineered to resist vibration.

Star-Lok's resistance to axial wear offers true metal-to-metal bottoming of mated components. Star-Lok is developed from the proven Pyle Star-Line connector platform and offers: a large family of inserts, contacts and hardware options and an array of signal, power and mixed arrangement designs.

**RoHS COMPLIANT PRODUCT AVAILABLE** – Consult Amphenol Industrial Operations.

# Environmental Highlights

| PROPERTY | MIL-5015 REQUIREMENTS CLASSES A, B, E J & R | STAR-LINE, STAR-LOK CONNECTORS |
|---|---|---|
| **TEMPERATURE** | -67° F to 225° F | Temperature Classes A, B, E, J and R can withstand 257° F continuously. For short duration high-temperature life, consult factory. |
| **PRESSURE** | No requirement | 300 PSI external (coupled connectors) 200 PSI internal (with pin and socket inserts) |
| **AIR LEAKAGE** | 1 cubic inch/ hour maximum | Exceeds Classes E and R specifications |
| **HUMIDITY AND MOISTURE RESISTANCE** | 1 1/2 times A.C. voltage rating after 14 days. Exposure to 95% relative humidity at 160° F. | Exceeds Classes E and R. MIL-5015 Meets MIL-STD-202B, Method 106A |
| **CORROSION RESISTANCE** | 48 Hours – Method 1001 MIL-STD-1344 No exposure of base metal. | Salt spray: 300 days – No exposure of base metal. |
| **CHEMICAL RESISTANCE** | No requirement | Oil, most acids and alkalis. |
| **DUST RESISTANCE** | No requirement | Meets MIL-STD-202B, Method 110, Condition B |
| **SHOCK RESISTANCE** | 50 G minimum | Exceeds 60 G's Certain inserts available to 200 G. |
| **VIBRATION** | Method 2006 Method II MIL-STD-1344 | Exceeds Method II & MIL-STD-167-1 (Ships). |
| **TEST PROBE ABUSE** | Contact size No. 16 and No. 18 | Exceeds MIL-5015 on all contacts No. 18 through 4/0. |

# Why the Double-Lead Acme Thread?

The double-lead Acme thread is a moderate torque quick-coupling thread which permits complete coupling in approximately one turn of the coupling nut. In addition, there are actually two parallel threads having starting points 180 degrees apart. All of this ensures that plugs and receptacles are being mated or unmated axially. The thread contour makes it self-cleaning.

*One parallel thread removed to show actual thread angle.*

*Standard double-lead Acme. Two parallel threads.*

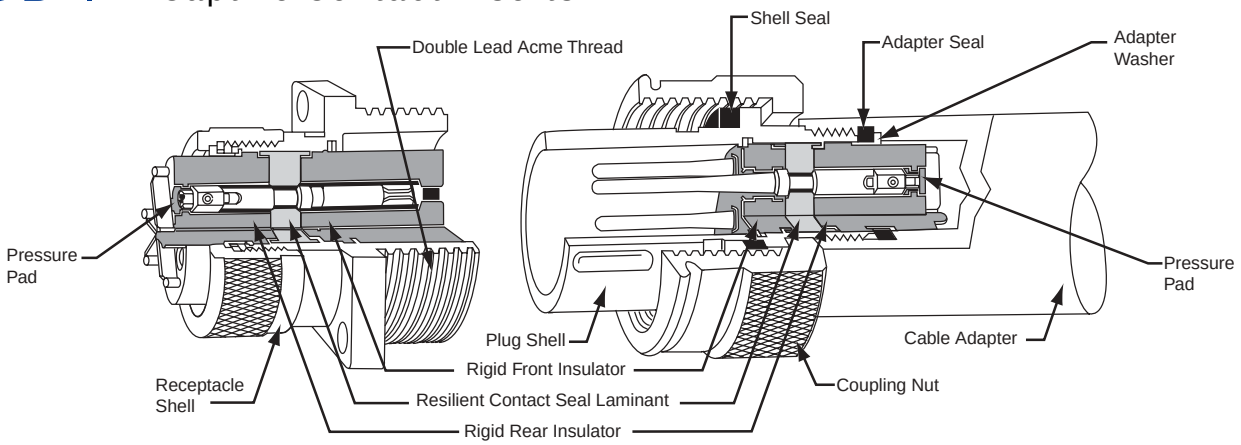
# Wire Limitation Guide

There are restrictions to the maximum diameter of wire as they relate to the rear or wire side of the connector insert as follows.

**Mod I.** When wires are passed through the rigid back insulation for ease of soldering:

| Wire size | Maximum diameter |
|---|---|
| #4/0 | .747" |
| #2/0 | .555" |
| #4 | .400" |
| #8 | .262" |
| #10 | .201" |
| #12 | .150" |
| #16 | .107" |
| #18 | .086" |
| **Mod II & III** | |
| #10 | .248" |
| #12 | .193" |
| #16 | .130" |
| #18 | .110" |

# MOD I Captive Contact Inserts



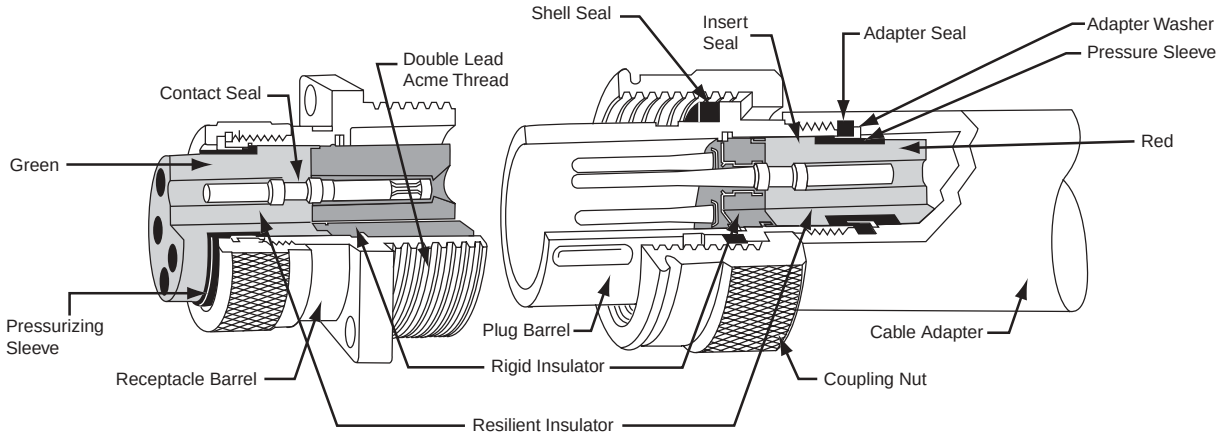

Self-sealing Construction: all MOD I captive contact inserts are capable of being terminated after assembly in the basic barrel and are completely self-sealing when pressurized by any selected adapter. Water, gas, vapor, moisture or dust positively cannot pass in either direction through or around the insulation.

The "sandwich" construction of MOD I inserts consists of a resilient silicone laminate between two rigid plastic insulators. The resilient laminate seals absorbs shock and vibration and allows the contacts to align themselves freely. The rigid faced plastic insulators impart just the right amount of restraint to retain the contacts in place.

The combined "sandwich" provides all the advantages of resilient mounting plus all the advantages of rigid mounting, with none of the shortcomings of either. Under pressure, between a shoulder and a thrust washer, the silicone reacts as a fluid and being non-compressible, flows against all surfaces to affect a reliable seal around the periphery of the insert and around all contacts where they penetrate the insulation.

Contact cavities are clearly numbered on the front and rear insert face to facilitate identification during assembly, inspection and maintenance. Socket insulator contact cavities are of a bellmouth guided entry design. These chamfered lead-ins insure easy and positive mating of male contacts.

# MOD II Insertable/Removable Crimp Contact Inserts




MOD II insulations have one less rigid disc than their MOD I counterparts.

Individual unmounted contacts are crimped to their respective wires outside of the connector where ample working space is available. The crimping operation can be by hand or power operated tool.

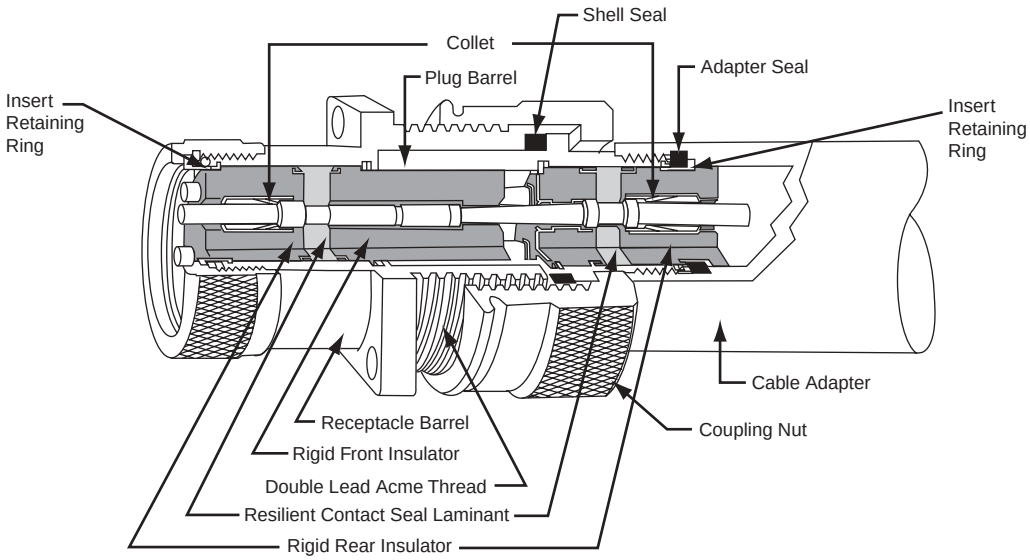
Contacts with crimped joint intact are inserted one by one, with a hand tool, into the insulation premounted within the connector barrel shell.

The resilient portion of the insert functions to seal around the contacts and prevent leakage through contact cavities, seal against leakage between the insert and shell, absorb shock and vibration, provide electrical insulation between contacts and retain the contacts in the connector.

Contacts may be inserted and removed without degradation of the retention or environmental capability. The front rigid portion of the insert functions to stabilize and ensure positive alignment of the contacts.

Contact cavities are clearly numbered on the front and rear insert face to facilitate identification during assembling, inspection and maintenance. Socket insulator contact cavities are of a bellmouth guided entry design. These chamfered lead-ins ensure easy and positive mating of male contacts.

# MOD III Insertable/Removeable Crimp Collet Retained Contact




Three element contact inserts are factory installed and locked into position with a non-removable retaining ring. This "sandwich" assembled insert, for rear-insertable and released contacts consist of a resilient laminant seal interposed between two rigid plastic insulators. This proven design concept eliminates the potential failure possibilities normally found in all resilient or all rigid inserts by combining all the advantages of both the resilient and rigid mounting systems.

The resilient laminant insulator absorbs shock or vibration and allows contacts to adjust themselves freely. The resilient insulator affects a full and reliable seal around each contact when compressed by seating of the accessory hardware. In addition, the laminant also provides a seal between the connector insert and the internal bore of the plug or receptacle shell.

The rigid rear insulator supports and locks the beryllium copper collets. The rigid front insulator positions the forward contact-locating shoulder and the collet tines lock the rear shoulder of the contacts. The contacts are positively restrained against forward and rear movement. The main advantages of collet retention are lower insertion forces, eliminating need for insertion tools, and higher retention forces. Collet locking tines permit the contacts to be released and removed from the rear of the insert for quick and easy circuit changes.

Contact cavities are clearly numbered on the front and rear insert face to facilitate identification during assembly, inspection and maintenance. Socket insulator contact cavities are of a bellmouth guided entry design. These chamfered lead-ins ensure easy and positive mating of male contacts.

## Summary

The foregoing is a brief explanation of the three basic insert designs offered within this catalog. It offers different and distinct advantages for the cable terminator, electrician and production worker.

When the connector is in use, as a functional device the insert MOD design has no effect on the intermateability of the connector. When a configuration you have selected gives you a choice of MOD design, ask yourself the following questions:

**1.** Do you have a large quantity of connectors to apply? If you do, then the crimp removable series would be appropriate with its inherent timesaving advantages during terminations.

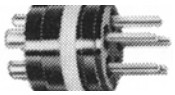
**2.** Are circuits likely to be changed often, i.e., would the connector function as a "patching device?" Here, too, the crimp versions with easily removed and installed contacts are advantageous.

If a contact configuration is desired but is not shown, consult the factory. Insert arrangements are constantly being added to the line.

# Custom Build Your Own Connectors

## Power Connectors – 20-30-60-100-200-325-700 Amperes, 1 thru 10 Contacts
## Control & Instrumentation Connectors – 3 thru 143 Contacts

The following pages present connector sub-assemblies which are available and can be used in conjunction with the inserts listed.



PIN INSERT CONFIGURATION

PLUG CONFIGURATION

RECEPTACLE CONFIGURATION

SOCKET INSERT CONFIGURATION

## Ordering Information

All plug and receptacle assemblies require two part numbers:

A. The catalog number of the desired insert.

B. The catalog number of the selected plug or receptacle hardware.

## To Order Complete Assemblies

**1.** Determine supply voltage, amperage and number of contacts desired.

**2.** Select insert configuration from pages 37-63. Write down Dash Number, Shell Size and MOD number of insert. Voltage and amperage information can be found on page 30. Example: 3#12 contacts – 27P (MALE) and 27S (FEMALE); MOD I; Shell Size 12 (page 37).

**3.** Select desired plug and receptacle hardware from pages 9-28. Make certain that the shell size of the hardware corresponds with the shell size of the desired insert. Determine outside diameter of cable. Example: Male Plug with Basket Weave. Cable is 3 conductor #12 (.635 outside diameter). ZPLK-1212-27P (page 15).

Female Receptacle mounted to Junction Box with 45° Angle Adapter and 1" Conduit Hub. ZRLBB-312-27S (page 23).

**4.** Order tools from pages 76-77.

## To Order Assemblies Without The Insert

(For large users stocking connector components in bulk)

**1.** If a MOD I insert will be used, order the hardware by the catalog number and eliminate the asterisk. Example: ZPLD-1212 (page 12).

**2.** If a MOD II insert will be used, order by the catalog number but substitute a 200 for the asterisk. Example: ZPLD-1212-200

**3.** MOD III inserts must be ordered assembled in their basic barrel (consult Amphenol Industrial Operations).

## Please Read Carefully:

1. Hardware with a longer cable housing should be used if the insert has:
   - A. Any pressure contact – line or ground.
   - B. More than 10 contacts-any size.
   - C. More than 4 #10 or larger contacts.
2. A jack coupling nut should be used if the insert has:
   - A. A configuration with shorter relay contacts.
   - B. A configuration of 37 or more contacts.

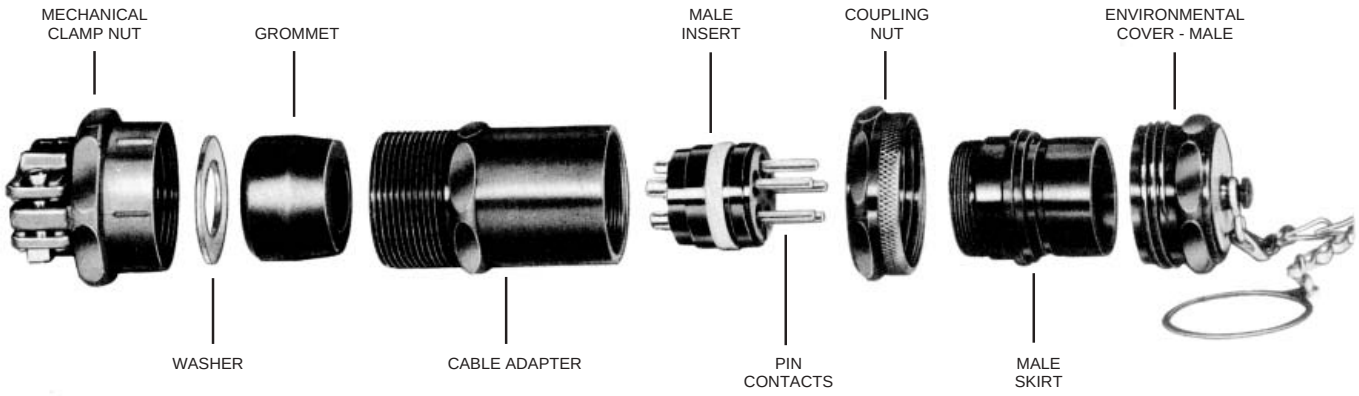
   A JACK COUPLING NUT SHOULD NOT BE USED ON ANY POWER INSERT CONNECTOR THAT IS TO BE DISCONNECTED UNDER LOAD
3. To insure proper coupling the following torque values should be used on the coupling nut:

| Shell Size | Torque Setting (lb. ft.) |
|---|---|
| 12 | 11,0 |
| 16 | 13.5 |
| 20 | 15.5 |
| C20 | 15.5 |
| 24 | 23.0 |
| C24 | 23.0 |
| 28 | 31.0 |
| C28 | 31.0 |

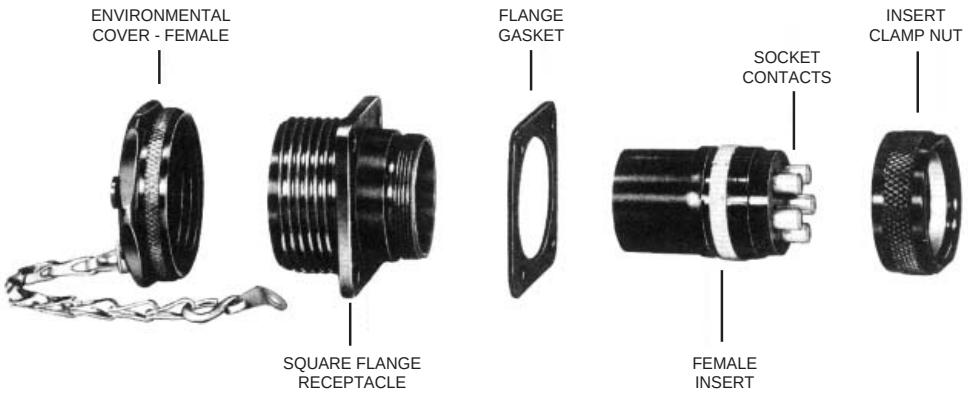
NOTE: The N.E.C. circuit breaking and non-circuit breaking ratings are based on test results of contacts and connectors. Consult the N.E.C. when selecting wire/cable for specific applications. Under certain conditions, a wire size may be rated higher or lower than our table indicates for a given contact size.

# Connector Assemblies

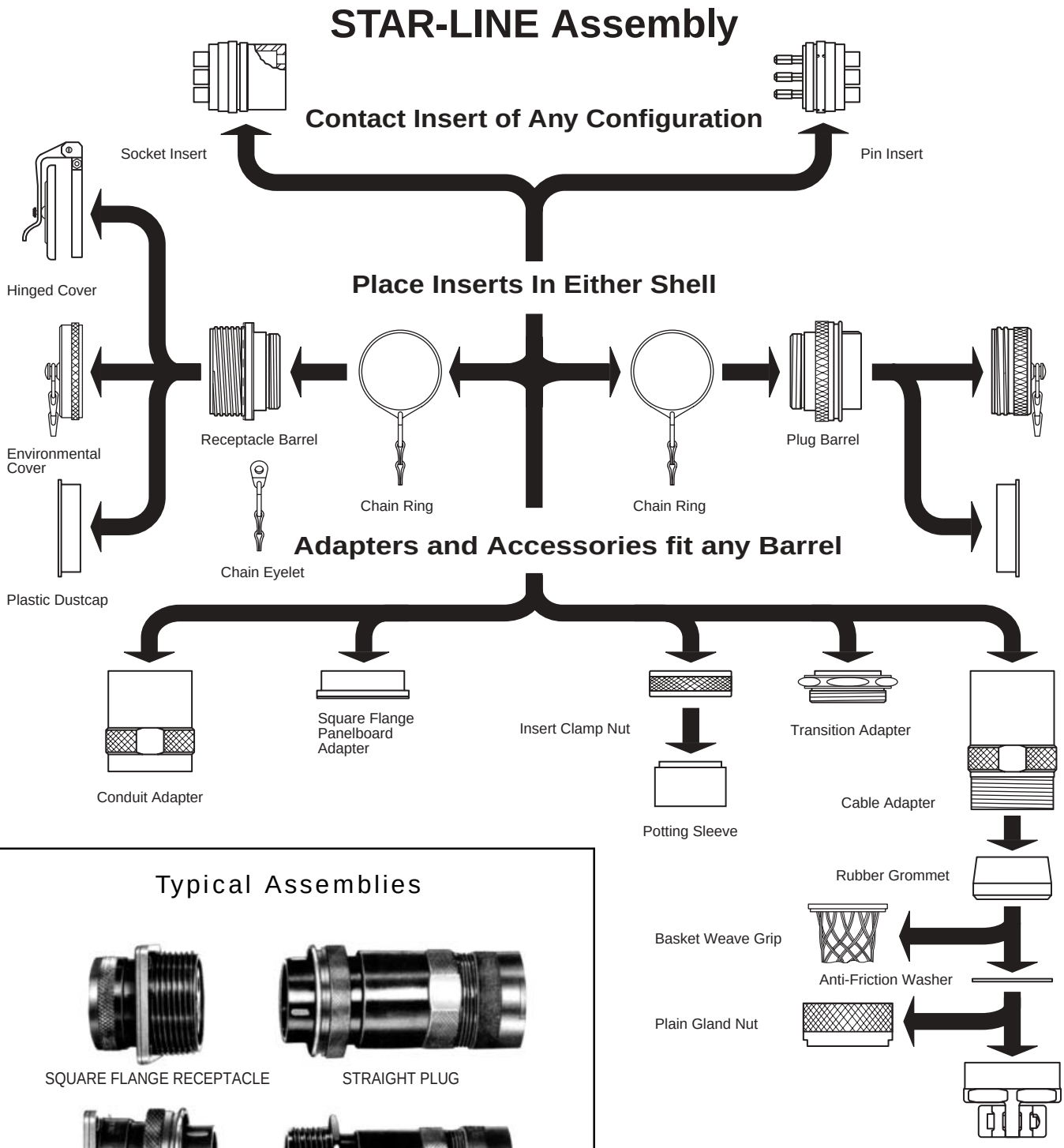
## Typical MOD I Plug Components



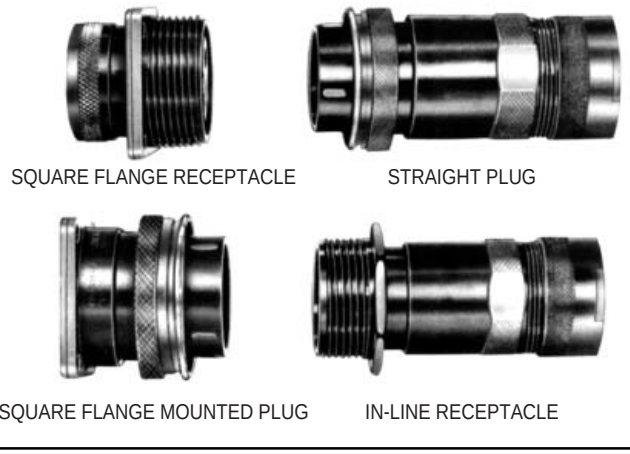

## Typical MOD I Receptacle Components



# Connector Basic Components




## Typical Assemblies



SQUARE FLANGE RECEPTACLE

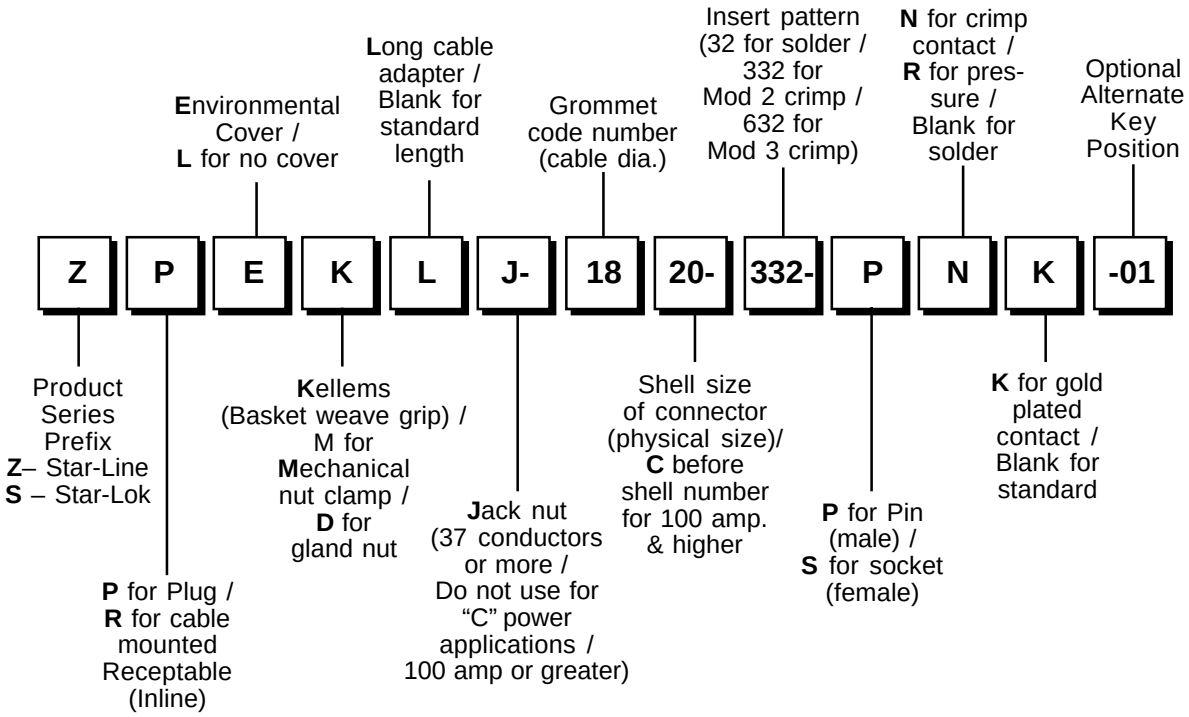
STRAIGHT PLUG

SQUARE FLANGE MOUNTED PLUG

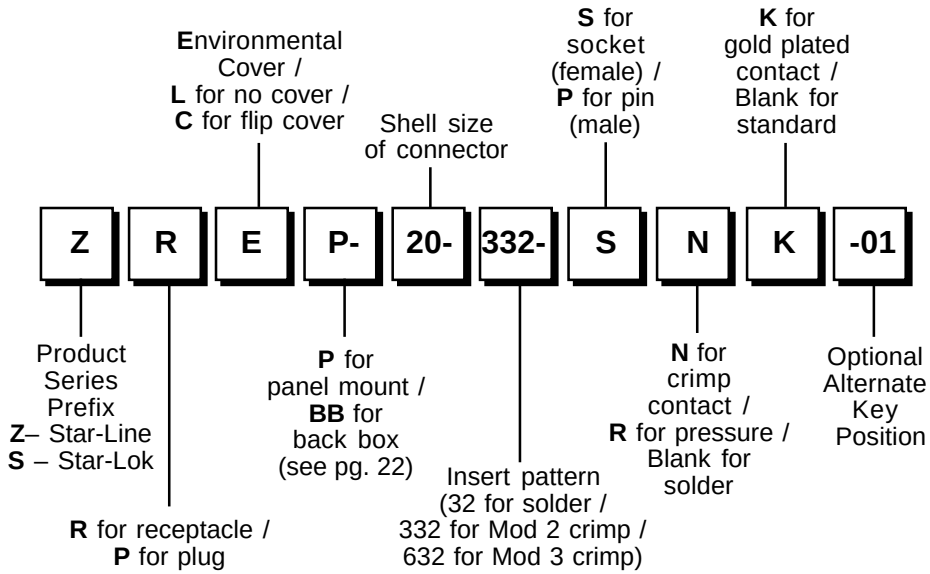
IN-LINE RECEPTACLE

# Code Logic
# Star-Line & Star-Lok Series

## Cable Mounted Connectors



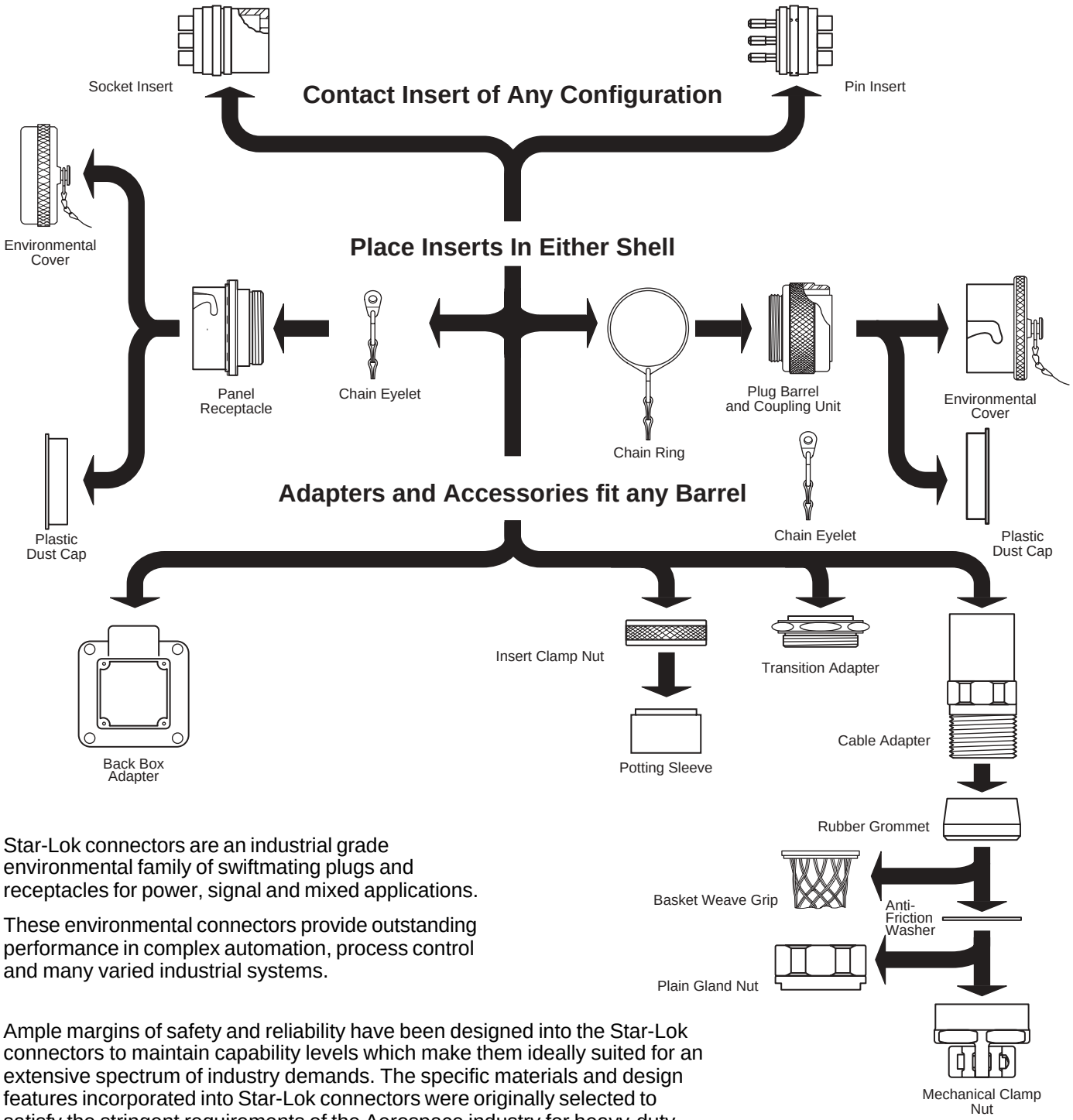

## Fixed Connectors




**RoHS COMPLIANT PRODUCT AVAILABLE** – Consult Amphenol Industrial Operations.

# Connector Basic Components

## STAR-LOK Assembly




Star-Lok connectors are an industrial grade environmental family of swiftmating plugs and receptacles for power, signal and mixed applications.

These environmental connectors provide outstanding performance in complex automation, process control and many varied industrial systems.

Ample margins of safety and reliability have been designed into the Star-Lok connectors to maintain capability levels which make them ideally suited for an extensive spectrum of industry demands. The specific materials and design features incorporated into Star-Lok connectors were originally selected to satisfy the stringent requirements of the Aerospace industry for heavy-duty connectors. These connectors combine electrical and mechanical capabilities that exceed the performance parameters established by the Military Specification MIL-5015.

# Straight Plug

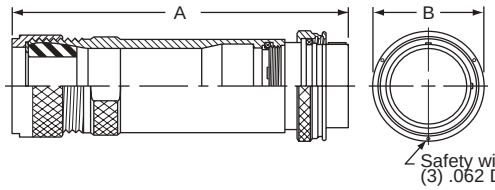
## With Standard Compression Nut

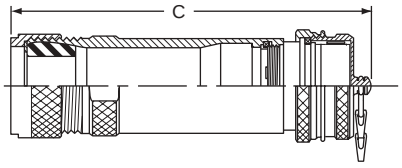
**Types**
**_PLD _PED**

To specify a complete plug, substitute the Dash No. of the contact insert selected, for the Asterisk (*) in the Catalog No. below .
NOTE: The jack nut should not be used with current rupture insert configurations.

For Star-Line series add a "**Z**" to the beginning of catalog no. (Ex. ZPLD).
For Star-Lok series add an "**S**" to the beginning of catalog no. (Ex. SPLD).

| Size Cable | Shell Size | Cat. No. With Standard Coupling Nut | DIMENSIONS WITH STANDARD CABLE ADAPTER A | B | C | Catalog No. With Jack Coupling Nut |
|---|---|---|---|---|---|---|
| | 12 | _PLD-▲-12-* | 5-3/8 | 1-13/16 | 5-31/32 | ZPLDJ-▲-12-* |
| | 16 | _PLD-▲-16-* | 5-5/8 | 2-5/16 | 5-7/32 | ZPLDJ-▲-16-* |
| | 20 | _PLD-▲-20-* | 6-1/8 | 2-13/16 | 6-23/32 | ZPLDJ-▲-20-* |
| | C20 | _PLD-▲-C20-* | 6-5/8 | 2-13/16 | 7-7/32 | ZPLDJ-▲-C20-* |
| | 24 | _PLD-▲-24-* | 6-5/8 | 3-5/16 | 7-7/32 | ZPLDJ-▲-24-* |
| Select | C24 | _PLD-▲-C24-* | 7-1/8 | 3-5/16 | 7-23/32 | ZPLDJ-▲-C24-* |
| from | 28 | ZPLD-▲-28-* | 7-1/8 | 3-13/16 | 7-23/32 | ZPLDJ-▲-28-* |
| Table Below | C28 | ZPLD-▲-C28-* | 7-5/8 | 3-13/16 | 8-7/32 | ZPLDJ-▲-C28-* |
| and | | **WITH LONG CABLE ADAPTER** | | | | |
| Substitute | 12 | _PLDL-▲-12-* | 7-5/8 | 1-13/16 | 8-7/32 | ZPLDLJ-▲-12-* |
| Symbol No. | 16 | _PLDL-▲-16-* | 7-7/8 | 2-5/16 | 8-15/32 | ZPLDLJ-▲-16-* |
| for Delta▲ | 20 | _PLDL-▲-20-* | 8-3/8 | 2-13/16 | 8-31/32 | ZPLDLJ-▲-20-* |
| | C20 | _PLDL-▲-C20-* | 8-7/8 | 2-13/16 | 9-15/32 | ZPLDLJ-▲-C20-* |
| | 24 | _PLDL-▲-24-* | 8-7/8 | 3-5/16 | 9-15/32 | ZPLDLJ-▲-24-* |
| | C24 | _PLDL-▲-C24-* | 9-3/8 | 3-5/16 | 9-31/32 | ZPLDLJ-▲-C24-* |
| | 28 | ZPLDL-▲-28-* | 9-1/8 | 3-13/16 | 9-23/32 | ZPLDLJ-▲-28-* |
| | C28 | ZPLDL-▲-C28-* | 9-5/8 | 3-13/16 | 10-7/32 | ZPLDLJ-▲-C28-* |



To specify plug with environmental cover, change third letter in Part No. "L' to "E'. Example: _PLD changes to _PED.

**OIL-RESISTANT RUBBER GROMMETS—SYMBOL NUMBERS OF SIZES AVAILABLE** Substitute the symbol number for the Delta ▲ in the catalog number of plug. Example: _PLD-▲ -12-* for .500 to .625 Dia. Cable changes to _PLD-10 12-*

| Cable Dia. | Shell 12 | Shell 16 | Shells 20 & C20 | Shells 24 & C24 | Shells 28 & C28 | Cable Dia. | Shell 12 | Shell 16 | Shell 20 & C20 | Shells 24 & C24 | Shells 28 & C28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .062 to .125 | 02 | – | – | – | – | 1.500 to 1.625 | – | – | 26 | 26 | 26 |
| .125 to .250 | 04 | – | – | – | – | 1.625 to 1.750 | – | – | 28 | 28 | 28 |
| .250 to .375 | 06 | 06 | – | – | – | 1.750 to 1.875 | – | – | 30 | 30 | 30 |
| .375 to .500 | 08 | 08 | – | – | – | 1.875 to 1.937 | – | – | 31 | – | – |
| .500 to .625 | 10 | 10 | 10 | – | – | 1.937 to 2.000 | – | – | – | 32 | 32 |
| .625 to .750 | 12 | 12 | 12 | – | – | 2.000 to 2.125 | – | – | – | 34 | 34 |
| .750 to .875 | 14 | 14 | 14 | – | – | 2.125 to 2.250 | – | – | – | 36 | 36 |
| .875 to .937 | 15 | – | – | – | – | 2.250 to 2.375 | – | – | – | 38 | 38 |
| .937 to 1.000 | – | 16 | 16 | 16 | – | 2.375 to 2.437 | – | – | – | 39 | – |
| 1.000 to 1.125 | – | 18 | 18 | 18 | – | 2.437 to 2.500 | – | – | – | – | 40 |
| 1.125 to 1.250 | – | 20 | 20 | 20 | – | 2.500 to 2.625 | – | – | – | – | 42 |
| 1.250 to 1.375 | – | 22 | 22 | 22 | – | 2.625 to 2.750 | – | – | – | – | 44 |
| 1.375 to 1.437 | – | 23 | – | – | – | 2.750 to 2.875 | – | – | – | – | 46 |
| 1.437 to 1.500 | – | – | 24 | 24 | 24 | | | | | | |

# Straight Plug

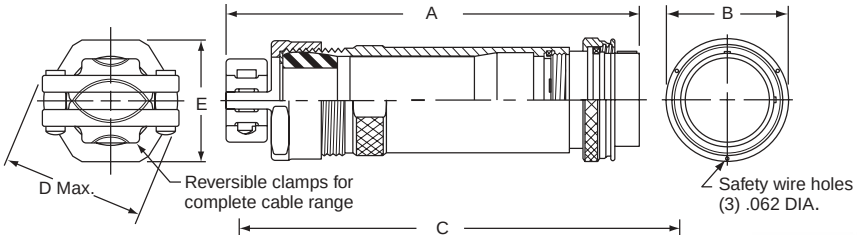
## With Mechanical Clamp Nut

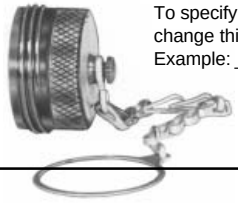
To specify a complete plug, substitute the Dash No. of the contact insert selected, for the Asterisk (*) in the Catalog No. below.
NOTE: The jack nut should not be used with current rupture insert configurations.

For Star-Line series add a "**Z**" to the beginning of catalog no. (Ex. ZPLD).
For Star-Lok series add an "**S**" to the beginning of catalog no. (Ex. SPLD).

**Types _PLM _PEM**

| Size Cable | Shell Size | Cat. No. With Standard Coupling Nut | DIMENSIONS WITH STANDARD CABLE ADAPTER A | B | C | D | E | Catalog No. With Jack Coupling Nut |
|---|---|---|---|---|---|---|---|---|
| | 12 | _PLM-▲-12-* | 6-1/8 | 1-13/16 | 6-23/32 | 2-3/8 | 1-3/4 | ZPLMJ-▲-12-* |
| | 16 | _PLM-▲-16-* | 6-7/16 | 2-5/16 | 7-1/32 | 3 | 2-1/4 | ZPLMJ-▲-16-* |
| | 20 | _PLM-▲-20-* | 7 | 2-13/16 | 7-19/32 | 3-3/4 | 2-3/4 | ZPLMJ-▲-20-* |
| | C20 | _PLM-▲-C20-* | 7-1/2 | 2-13/16 | 8-3/32 | 3-3/4 | 2-3/4 | ZPLMJ-▲-C20-* |
| | 24 | _PLM-▲-24-* | 7-9/16 | 3-5/16 | 8-5/32 | 4-1/2 | 3-1/4 | ZPLMJ-▲-24-* |
| Select | C24 | _PLM-▲-C24-* | 8-1/16 | 3-5/16 | 8-21/32 | 4-1/2 | 3-1/4 | ZPLMJ-▲-C24-* |
| from | 28 | ZPLM-▲-28-* | 8-1/8 | 3-13/16 | 8-23/32 | 5-1/8 | 3-3/4 | ZPLMJ-▲-28-* |
| Table Below | C28 | ZPLM-▲-C28-* | 8-5/8 | 3-13/16 | 9-7/32 | 5-1/8 | 3-3/4 | ZPLMJ-▲-C28-* |
| and | | WITH LONG CABLE ADAPTER | | | | | | |
| Substitute | 12 | _PLML-▲-12-* | 8-3/8 | 1-13/16 | 8-31/32 | 2-3/8 | 1-3/4 | ZPLMLJ-▲-12-* |
| Symbol No. | 16 | _PLML-▲-16-* | 8-11/16 | 2-5/16 | 9-9/32 | 3 | 2-1/4 | ZPLMLJ-▲-16-* |
| for Delta▲ | 20 | _PLML-▲-20-* | 9-1/4 | 2-13/16 | 9-27/32 | 3-3/4 | 2-3/4 | ZPLMLJ-▲-20-* |
| | C20 | _PLML-▲-C20-* | 9-3/4 | 2-13/16 | 10-11/32 | 3-3/4 | 2-3/4 | ZPLMLJ-▲-C20-* |
| | 24 | _PLML-▲-24-* | 9-13/16 | 3-5/16 | 10-13/32 | 4-1/2 | 3-1/4 | ZPLMLJ-▲-24-* |
| | C24 | _PLML-▲-C24-* | 10-5/16 | 3-5/16 | 10-29/32 | 4-1/2 | 3-1/4 | ZPLMLJ-▲-C24-* |
| | 28 | ZPLML-▲-28-* | 10-1/8 | 3-13/16 | 10-23/32 | 5-1/8 | 3-3/4 | ZPLMLJ-▲-28-* |
| | C28 | ZPLML-▲-C28-* | 10-5/8 | 3-13/16 | 11-7/32 | 5-1/8 | 3-3/4 | ZPLMLJ-▲-C28-* |



To specify plug with environmental cover, change third letter in Part No. "L' to "E'. Example: _PLM changes to _PEM.

**OIL-RESISTANT RUBBER GROMMETS—SYMBOL NUMBERS OF SIZES AVAILABLE** Substitute the symbol number for the Delta ▲ in the catalog number of plug. Example: _PLM-▲ -12-* for .500 to .625 Dia. Cable changes to _PLM-10 12-*

| Cable Dia. | Shell 12 | Shell 16 | Shells 20 & C20 | Shells 24 & C24 | Shells 28 & C28 | Cable Dia. | Shell 12 | Shell 16 | Shell 20 & C20 | Shells 24 & C24 | Shells 28 & C28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .062 to .125 | 02 | – | – | – | – | 1.500 to 1.625 | – | – | 26 | 26 | 26 |
| .125 to .250 | 04 | – | – | – | – | 1.625 to 1.750 | – | – | 28 | 28 | 28 |
| .250 to .375 | 06 | 06 | – | – | – | 1.750 to 1.875 | – | – | 30 | 30 | 30 |
| .375 to .500 | 08 | 08 | – | – | – | 1.875 to 1.937 | – | – | 31 | – | – |
| .500 to .625 | 10 | 10 | 10 | – | – | 1.875 to 2.000 | – | – | – | 32 | 32 |
| .625 to .750 | 12 | 12 | 12 | – | – | 2.000 to 2.125 | – | – | – | 34 | 34 |
| .750 to .875 | 14 | 14 | 14 | – | – | 2.125 to 2.250 | – | – | – | 36 | 36 |
| .875 to .937 | 15 | – | – | – | – | 2.250 to 2.375 | – | – | – | 38 | 38 |
| .875 to 1.000 | – | 16 | 16 | 16 | – | 2.375 to 2.437 | – | – | – | 39 | – |
| 1.000 to 1.125 | – | 18 | 18 | 18 | – | 2.375 to 2.500 | – | – | – | – | 40 |
| 1.125 to 1.250 | – | 20 | 20 | 20 | – | 2.500 to 2.625 | – | – | – | – | 42 |
| 1.250 to 1.375 | – | 22 | 22 | 22 | – | 2.625 to 2.750 | – | – | – | – | 44 |
| 1.375 to 1.437 | – | 23 | – | – | – | 2.750 to 2.875 | – | – | – | – | 46 |
| 1.375 to 1.500 | – | – | 24 | 24 | 24 | | | | | | |

# Straight Plug

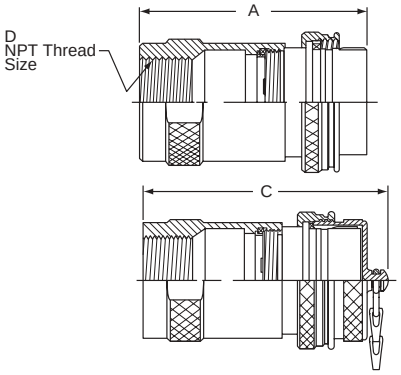
## With Conduit Adapter (for flexible conduit fittings)

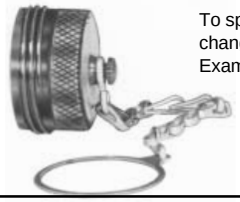
**Types**
**_PLT _PET**

To specify a complete plug, substitute the dash no. of the contact insert selected for the asterisk (*)
In the catalog no. below. NOTE: The jack nut should not be used with current rupture insert configurations.
**A PLUG WITH JACK COUPLING NUT SHOULD BE USED WITH INSERTS HAVING 37 OR MORE CONTACTS.**

For Star-Line series add a "**Z**" to the beginning of catalog no. (Ex. ZPLT).
For Star-Lok series add an "**S**" to the beginning of catalog no. (Ex. SPLT).

| Shell Size | Size Conduit | Catalog No. With Standard Coupling Nut | DIMENSIONS | | | | Catalog No. With Jack Coupling Nut |
|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | |
| 12 | 3/4 | _PLT-2 12-* | 4-1/4 | 1-13/16 | 4-27-32 | 3/4 | ZPLTJ-2 12-* |
| 16 | 1-1/4 | _PLT-4 16-* | 4-3/8 | 2-5/16 | 4-31/32 | 1-1/4 | ZPLTJ-4 16-* |
| 20 | 1-1/2 | _PLT-5 20-* | 4-1/2 | 2-13/16 | 5-3/32 | 1-1/2 | ZPLTJ-5 20-* |
| C20 | 1-1/2 | _PLT-5 C20-* | 5 | 2-13/16 | 5-19/32 | 1-1/2 | ZPLTJ-5 C20-* |
| 24 | 2 | _PLT-6 24-* | 4-5/8 | 3-5/16 | 5-7/32 | 2 | ZPLTJ-6 24-* |
| C24 | 2 | _PLT-6 C24-* | 5-1/8 | 3-5/16 | 5-23/32 | 2 | ZPLTJ-6 C24-* |
| 28 | 2-1/2 | ZPLT-7 28-* | 5-3/32 | 3-13/16 | 5-11/16 | 2-1/2 | ZPLTJ-7 28-* |
| C28 | 2-1/2 | ZPLT-7 C28-* | 5-19/32 | 3-13/16 | 6-3/16 | 2-1/2 | ZPLTJ-7 C28-* |



To specify plug with environmental cover, change third letter in Part No. "L" to "E". Example: _PLT changes to _PET.

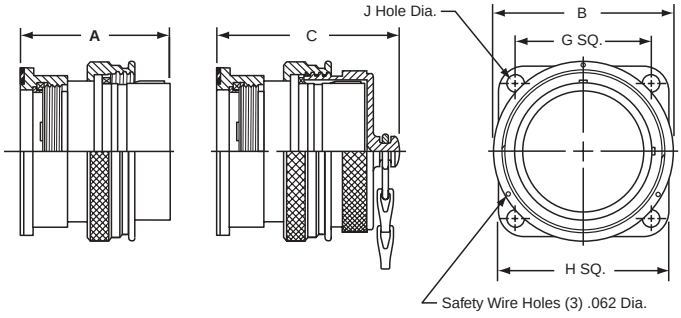
# Straight Male Plug

## Panel Mount (Not available in Star-Lok)

**Types**
**ZPLP ZPEP**

To specify a complete plug, substitute the dash no. of the contact insert selected for the asterisk (*) in the catalog no. below.
NOTE The jack nut should not be used with current rupture insert configurations
**A PLUG WITH JACK COUPLING NUT SHOULD BE USED WITH INSERTS HAVING 37 OR MORE CONTACTS.**

| Shell Size | Open Back | Catalog No. With Standard Coupling Nut | DIMENSIONS | | | | | | Catalog No. With Jack Coupling Nut |
|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | G | H | J | |
| 12 | Use with or without Potting Sleeve | ZPLP-12-* | 2-3/8 | 1-13/16 | 2-31/32 | 1-17/64 | 1-5/8 | 3/16 | ZPLPJ- 12-* |
| 16 | | ZPLP-16-* | 2-13/32 | 2-5/16 | 3 | 1-11/16 | 2-1/8 | 7/32 | ZPLPJ- 16-* |
| 20 | | ZPLP-20-* | 2-7/16 | 2-13/16 | 3-1/32 | 2-3/32 | 2-5/8 | 9/32 | ZPLPJ- 20-* |
| C20 | | ZPLP-C20-* | 2-15/16 | 2-13/16 | 3-17/32 | 2-3/32 | 2-5/8 | 9/32 | ZPLPJ- C20-* |
| 24 | | ZPLP-24-* | 2-15/32 | 3-5/16 | 3-1/16 | 2-17/32 | 3-1/8 | 11/32 | ZPLPJ- 24-* |
| C24 | | ZPLP-C24-* | 2-31/32 | 3-5/16 | 3-9/16 | 2-17/32 | 3-1/8 | 11/32 | ZPLPJ- C24-* |
| 28 | | ZPLP-28-* | 2-15/32 | 3-13/16 | 3-1/16 | 3-1/32 | 3-3/4 | 11/32 | ZPLPJ- 28-* |
| C28 | | ZPLP-C28-* | 2-31/32 | 3-13/16 | 3-9/16 | 3-1/32 | 3-3/4 | 11/32 | ZPLPJ- C28-* |




To specify plug with environmental cover, change third letter in Part No. "L" to "E". Example: ZPLP changes to ZPEP.

# Straight Plug

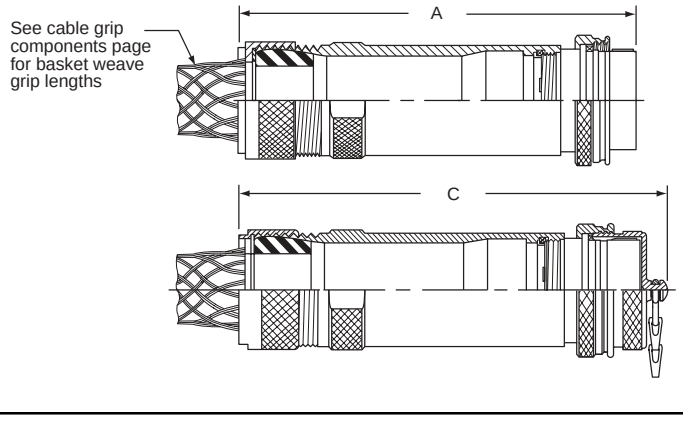
## With Basketweave Cable Grip

**Types _PLK _PEK**

To specify a complete plug, substitute the Dash No. of the contact insert selected for the asterisk (*) in the catalog no
NOTE: The jack nut should not be used with current rupture insert configurations.
**A PLUG WITH JACK COUPLING NUT SHOULD BE USED WITH INSERTS HAVING 37 OR MORE CONTACTS**

For Star-Line series add a "**Z**" to the beginning of catalog no. (Ex. ZPLK).
For Star-Lok series add an "**S**" to the beginning of catalog no. (Ex. SPLK).

| Size Cable | Shell Size | Catalog No. With Standard Coupling Nut | DIMENSIONS WITH STANDARD CABLE ADAPTER A | B | C | Catalog No. With Jack Coupling Nut |
|---|---|---|---|---|---|---|
| Select from Table Below and Substitute Symbol No. for Delta ▲ | 12 | _PLK-▲-12-* | 5-3/8 | 1-13/16 | 5-31/32 | ZPLKJ-▲-12-* |
| | 16 | _PLK-▲-16-* | 5-5/8 | 2-5/16 | 6-7/32 | ZPLKJ-▲-16-* |
| | 20 | _PLK-▲-20-* | 6-1/8 | 2-13/16 | 6-23/32 | ZPLKJ-▲-20-* |
| | C20 | _PLK-▲-C20-* | 6-5/8 | 2-13/16 | 7-7/32 | ZPLKJ-▲-C20-* |
| | 24 | _PLK-▲-24-* | 6-5/8 | 3-5/16 | 7-7/32 | ZPLKJ-▲-24-* |
| | C24 | _PLK-▲-C24-* | 7-1/8 | 3-5/16 | 7-23/32 | ZPLKJ-▲-C24-* |
| | 28 | ZPLK-▲-28-* | 7-1/8 | 3-13/16 | 7-23/32 | ZPLKJ-▲-28-* |
| | C28 | ZPLK-▲-C28-* | 7-5/8 | 3-13/16 | 8-7/32 | ZPLKJ-▲-C28-* |
| | | **WITH LONG CABLE ADAPTER** | | | | |
| | 12 | _PLKL-▲-12-* | 7-5/8 | 1-13/16 | 8-7/32 | ZPLKJ-▲-12-* |
| | 16 | _PLKL-▲-16-* | 7-7/8 | 2-5/16 | 8-15/32 | ZPLKJ-▲-16-* |
| | 20 | _PLKL-▲-20-* | 8-3/8 | 2-13/16 | 8-31/32 | ZPLKJ-▲-20-* |
| | C20 | _PLKL-▲-C20-* | 8-7/8 | 2-13/16 | 9-15/32 | ZPLKJ-▲-C20-* |
| | 24 | _PLKL-▲-24-* | 8-7/8 | 3-5/16 | 9-15/32 | ZPLKJ-▲-24-* |
| | C24 | _PLKL-▲-C24-* | 9-3/8 | 3-5/16 | 9-31/32 | ZPLKJ-▲-C24-* |
| | 28 | ZPLKL-▲-28-* | 9-1/8 | 3-13/16 | 9-23/32 | ZPLKJ-▲-28-* |
| | C28 | ZPLKL-▲-C28-* | 9-5/8 | 3-13/16 | 10-7/32 | ZPLKJ-▲-C28-* |




To specify plug with environmental cover, change third letter in Part No. "L" to "E". Example: _PLK changes to _PEK.

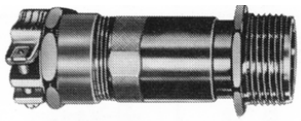
**OIL-RESISTANT RUBBER GROMMETS—SYMBOL NUMBERS OF SIZES AVAILABLE** Substitute the symbol number for the Delta ▲ in the catalog number of plug. Example: _PLK-▲ -12-* for .500 to .625 Dia. Cable changes to _PLK-10 12-*

| Cable Dia. | Shell 12 | Shell 16 | Shells 20 & C20 | Shells 24 & C24 | Shells 28 & C28 | Cable Dia. | Shell 12 | Shell 16 | Shell 20 & C20 | Shells 24 & C24 | Shells 28 & C28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .062 to .125 | 02 | – | – | – | – | 1.500 to 1.625 | – | – | 26 | 26 | 26 |
| .125 to .250 | 04 | – | – | – | – | 1.625 to 1.750 | – | – | 28 | 28 | 28 |
| .250 to .375 | 06 | 06 | – | – | – | 1.750 to 1.875 | – | – | 30 | 30 | 30 |
| .375 to .500 | 08 | 08 | – | – | – | 1.875 to 1.937 | – | – | 31 | – | – |
| .500 to .625 | 10 | 10 | 10 | – | – | 1.875 to 2.000 | – | – | – | 32 | 32 |
| .625 to .750 | 12 | 12 | 12 | – | – | 2.000 to 2.125 | – | – | – | 34 | 34 |
| .750 to .875 | 14 | 14 | 14 | – | – | 2.125 to 2.250 | – | – | – | 36 | 36 |
| .875 to .937 | 15 | – | – | – | – | 2.250 to 2.375 | – | – | – | 38 | 38 |
| .875 to 1.000 | – | 16 | 16 | 16 | – | 2.375 to 2.437 | – | – | – | 39 | – |
| 1.000 to 1.125 | – | 18 | 18 | 18 | – | 2.437 to 2.500 | – | – | – | – | 40 |
| 1.125 to 1.250 | – | 20 | 20 | 20 | – | 2.500 to 2.625 | – | – | – | – | 42 |
| 1.250 to 1.375 | – | 22 | 22 | 22 | – | 2.625 to 2.750 | – | – | – | – | 44 |
| 1.375 to 1.437 | – | 23 | – | – | – | 2.750 to 2.875 | – | – | – | – | 46 |
| 1.375 to 1.500 | – | – | 24 | 24 | 24 | | | | | | |

# In-Line Receptacle

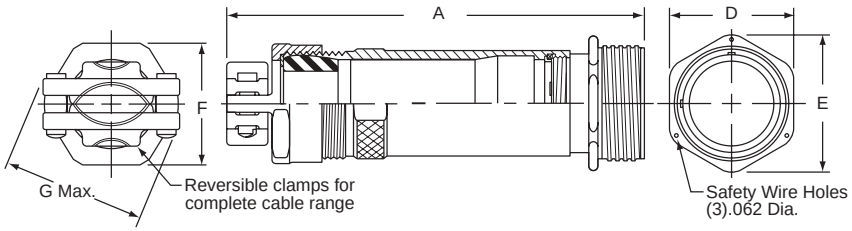
## With Mechanical Clamp Nut

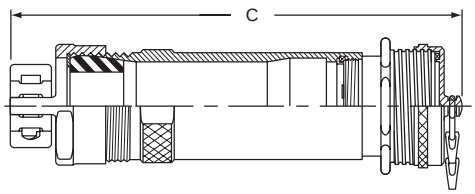
To specify a complete receptacle, substitute the dash no. of the contact insert selected for the asterisk (*) in the catalog no. below.



**Types**
**ZRLM ZREM**

| Size Cable | Shell Size | Cat. No. | DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | A | C | D | E | F | G |
| Select from Table Below and Substitute Symbol No. for Delta ▲ | 12 | ZRLM-▲-12-* | 6-1/8 | 6-3/4 | 1-3/4 | 1-61/64 | 1-3/4 | 2-3/8 |
| | 16 | ZRLM-▲-16-* | 6-7/16 | 7-1/16 | 2-1/4 | 2-31/64 | 2-1/4 | 3 |
| | 20 | ZRLM-▲-20-* | 7 | 7-5/8 | 2-3/4 | 3-1/32 | 2-3/4 | 3-3/4 |
| | C20 | ZRLM-▲-C20-* | 7-1/2 | 8-1/8 | 2-3/4 | 3-1/32 | 2-3/4 | 3-3/4 |
| | 24 | ZRLM-▲-24-* | 7-9/16 | 8-3/16 | 3-1/4 | 3-9/16 | 3-1/4 | 4-1/2 |
| | C24 | ZRLM-▲-C24-* | 8-1/16 | 8-11/16 | 3-1/4 | 3-9/16 | 3-1/4 | 4-1/2 |
| | 28 | ZRLM-▲-28-* | 8-1/8 | 8-3/4 | 3-3/4 | 4-1/16 | 3-3/4 | 5-1/8 |
| | C28 | ZRLM-▲-C28-* | 8-5/8 | 9-1/4 | 3-3/4 | 4-1/16 | 3-3/4 | 5-1/8 |
| | **WITH LONG CABLE ADAPTER** | | | | | | | |
| | 12 | ZRLML-▲-12-* | 8-3/8 | 9 | 1-3/4 | 1-61/64 | 1-3/4 | 2-3/8 |
| | 16 | ZRLML-▲-16-* | 8-11/16 | 9-5/16 | 2-1/4 | 2-31/64 | 2-1/4 | 3 |
| | 20 | ZRLML-▲-20-* | 9-1/4 | 9-7/8 | 2-3/4 | 3-1/32 | 2-3/4 | 3-3/4 |
| | C20 | ZRLML-▲-C20-* | 9-3/4 | 10-3/8 | 2-3/4 | 3-1/32 | 2-3/4 | 3-3/4 |
| | 24 | ZRLML-▲-24-* | 9-13/16 | 10-7/16 | 3-1/4 | 3-9/16 | 3-1/4 | 4-1/2 |
| | C24 | ZRLML-▲-C24-* | 10-5/16 | 10-15/16 | 3-1/4 | 3-9/16 | 3-1/4 | 4-1/2 |
| | 28 | ZRLML-▲-28-* | 10-1/8 | 10-3/4 | 3-3/4 | 4-1/16 | 3-3/4 | 5-1/8 |
| | C28 | ZRLML-▲-C28-* | 10-5/8 | 11-1/4 | 3-3/4 | 4-1/16 | 3-3/4 | 5-1/8 |



To specify receptacle with threaded environmental cover, change third letter in Part No. “L” to “E”.
Example: ZRLM changes to ZREM.

**OIL-RESISTANT RUBBER GROMMETS—SYMBOL NUMBERS OF SIZES AVAILABLE**
Substitute the symbol number for the Delta ▲ in the catalog number of plug.
Example: ZRLM-▲-12-* for .500 to .625 Dia. cable changes to ZRLM-10 12-*

| Cable Dia. | Shell 12 | Shell 16 | Shells 20 & C20 | Shells 24 & C24 | Shells 28 & C28 | Cable Dia. | Shell 12 | Shell 16 | Shell 20 & C20 | Shells 24 & C24 | Shells 28 & C28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .062 to .125 | 02 | – | – | – | – | 1.500 to 1.625 | – | – | 26 | 26 | 26 |
| .125 to .250 | 04 | – | – | – | – | 1.625 to 1.750 | – | – | 28 | 28 | 28 |
| .250 to .375 | 06 | 06 | – | – | – | 1.750 to 1.875 | – | – | 30 | 30 | 30 |
| .375 to .500 | 08 | 08 | – | – | – | 1.875 to 1.937 | – | – | 31 | – | – |
| .500 to .625 | 10 | 10 | 10 | – | – | 1.875 to 2.000 | – | – | – | 32 | 32 |
| .625 to .750 | 12 | 12 | 12 | – | – | 2.000 to 2.125 | – | – | – | 34 | 34 |
| .750 to .875 | 14 | 14 | 14 | – | – | 2.125 to 2.250 | – | – | – | 36 | 36 |
| .875 to .937 | 15 | – | – | – | – | 2.250 to 2.375 | – | – | – | 38 | 38 |
| .875 to 1.000 | – | 16 | 16 | 16 | – | 2.375 to 2.437 | – | – | – | 39 | – |
| 1.000 to 1.125 | – | 18 | 18 | 18 | – | 2.437 to 2.500 | – | – | – | – | 40 |
| 1.125 to 1.250 | – | 20 | 20 | 20 | – | 2.500 to 2.625 | – | – | – | – | 42 |
| 1.250 to 1.375 | – | 22 | 22 | 22 | – | 2.625 to 2.750 | – | – | – | – | 44 |
| 1.375 to 1.437 | – | 23 | – | – | – | 2.750 to 2.875 | – | – | – | – | 46 |
| 1.375 to 1.500 | – | – | 24 | 24 | 24 | | | | | | |

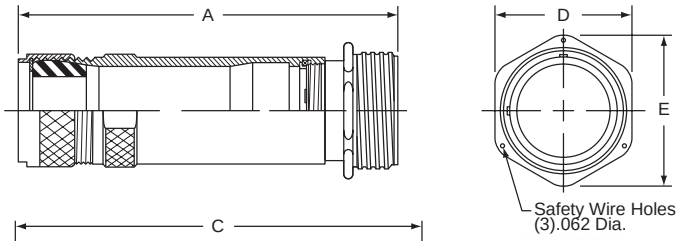
# In-Line Receptacle

## With Standard Compression Nut

To specify a complete receptacle, substitute the dash no. of the contact insert selected for the asterisk (*) in the catalog no. below.

**Types**
**ZRLD ZRED**

| Size Cable | Shell Size | Cat. No. | Dimensions A | C | D | E |
|---|---|---|---|---|---|---|
| Select from Table Below and Substitute Symbol No. for Delta ▲ | 12 | ZRLD-▲- 12-* | 5-3/8 | 6 | 1-3/4 | 1-61/64 |
| | 16 | ZRLD-▲- 16-* | 5-5/8 | 6-1/4 | 2-1/4 | 2-31/64 |
| | 20 | ZRLD-▲- 20-* | 6-1/8 | 6-3/4 | 2-3/4 | 3-1/32 |
| | C20 | ZRLD-▲- C20-* | 6-5/8 | 7-1/4 | 2-3/4 | 3-1/32 |
| | 24 | ZRLD-▲- 24-* | 6-5/8 | 7-1/4 | 3-1/4 | 3-9/16 |
| | C24 | ZRLD-▲- C24-* | 7-1/8 | 7-3/4 | 3-1/4 | 3-9/16 |
| | 28 | ZRLD-▲- 28-* | 7-1/8 | 7-3/4 | 3-3/4 | 4-1/16 |
| | C28 | ZRLD-▲- C28-* | 7-5/8 | 8-1/4 | 3-3/4 | 4-1/16 |
| | **With Long Cable Adapter** | | | | | |
| | 12 | ZRLDL-▲-12-* | 7-5/8 | 8-1/4 | 1-3/4 | 1-61/64 |
| | 16 | ZRLDL-▲-16-* | 7-7/8 | 8-1/2 | 2-1/4 | 2-31/64 |
| | 20 | ZRLDL-▲-20-* | 8-3/8 | 9 | 2-3/4 | 3-1/32 |
| | C20 | ZRLDL-▲-C20-* | 8-7/8 | 9-1/2 | 2-3/4 | 3-1/32 |
| | 24 | ZRLDL-▲-24-* | 8-7/8 | 9-1/2 | 3-1/4 | 3-9/16 |
| | C24 | ZRLDL-▲-C24-* | 9-3/8 | 10 | 3-1/4 | 3-9/16 |
| | 28 | ZRLDL-▲-28-* | 9-1/8 | 9-3/4 | 3-3/4 | 4-1/16 |
| | C28 | ZRLDL-▲-C28-* | 9-5/8 | 10-1/4 | 3-3/4 | 4-1/16 |



To specify receptacle with threaded environmental cover, change third letter in Part No. “L” to “E”.
Example: ZRLD changes to ZRED.

**OIL-RESISTANT RUBBER GROMMETS—SYMBOL NUMBERS OF SIZES AVAILABLE**
Substitute the symbol number for the Delta ▲ in the catalog number of plug.
Example: ZRLD-▲-12-* for .500 to .625 Dia. cable changes to ZRLD-10 12-*

| Cable Dia. | Shell 12 | Shell 16 | Shells 20 & C20 | Shells 24 & C24 | Shells 28 & C28 | Cable Dia. | Shell 12 | Shell 16 | Shell 20 & C20 | Shells 24 & C24 | Shells 28 & C28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .062 to .125 | 02 | – | – | – | – | 1.500 to 1.625 | – | – | 26 | 26 | 26 |
| .125 to .250 | 04 | – | – | – | – | 1.625 to 1.750 | – | – | 28 | 28 | 28 |
| .250 to .375 | 06 | 06 | – | – | – | 1.750 to 1.875 | – | – | 30 | 30 | 30 |
| .375 to .500 | 08 | 08 | – | – | – | 1.875 to 1.937 | – | – | 31 | – | – |
| .500 to .625 | 10 | 10 | 10 | – | – | 1.875 to 2.000 | – | – | – | 32 | 32 |
| .625 to .750 | 12 | 12 | 12 | – | – | 2.000 to 2.125 | – | – | – | 34 | 34 |
| .750 to .875 | 14 | 14 | 14 | – | – | 2.125 to 2.250 | – | – | – | 36 | 36 |
| .875 to .937 | 15 | – | – | – | – | 2.250 to 2.375 | – | – | – | 38 | 38 |
| .875 to 1.000 | – | 16 | 16 | 16 | – | 2.375 to 2.437 | – | – | – | 39 | – |
| 1.000 to 1.125 | – | 18 | 18 | 18 | – | 2.437 to 2.500 | – | – | – | – | 40 |
| 1.125 to 1.250 | – | 20 | 20 | 20 | – | 2.500 to 2.625 | – | – | – | – | 42 |
| 1.250 to 1.375 | – | 22 | 22 | 22 | – | 2.625 to 2.750 | – | – | – | – | 44 |
| 1.375 to 1.437 | – | 23 | – | – | – | 2.750 to 2.875 | – | – | – | – | 46 |
| 1.375 to 1.500 | – | – | 24 | 24 | 24 | | | | | | |

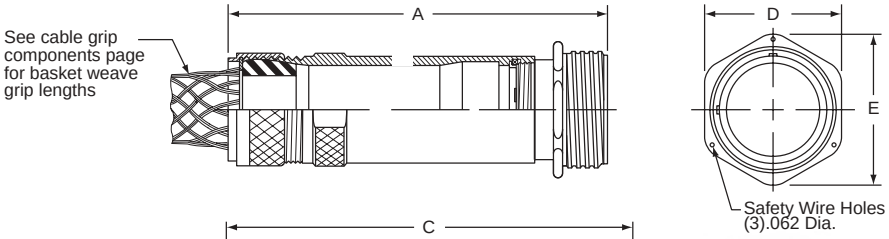
# In-Line Receptacle

## With Basketweave Cable Grip

*To specify a complete receptacle, substitute the dash no. of the contact insert selected for the asterisk (*) in the catalog no. below.*

**Types**
**ZRLK ZREK**

| Size Cable | Shell Size | Cat. No. | Dimensions A | C | D | E |
|---|---|---|---|---|---|---|
| Select from Table Below and Substitute Symbol No. for Delta ▲ | 12 | ZRLK-▲- 12-* | 5-3/8 | 6 | 1-3/4 | 1-61/64 |
| | 16 | ZRLK-▲- 16-* | 5-5/8 | 6-1/4 | 2-1/4 | 2-31/64 |
| | 20 | ZRLK-▲- 20-* | 6-1/8 | 6-3/4 | 2-3/4 | 3-1/32 |
| | C20 | ZRLK-▲- C20-* | 6-5/8 | 7-1/4 | 2-3/4 | 3-1/32 |
| | 24 | ZRLK-▲- 24-* | 6-5/8 | 7-1/4 | 3-1/4 | 3-9/16 |
| | C24 | ZRLK-▲- C24-* | 7-1/8 | 7-3/4 | 3-1/4 | 3-9/16 |
| | 28 | ZRLK-▲- 28-* | 7-1/8 | 7-3/4 | 3-3/4 | 4-1/16 |
| | C28 | ZRLK-▲- C28-* | 7-5/8 | 8-1/4 | 3-3/4 | 4-1/16 |
| | **With Long Cable Adapter** | | | | | |
| | 12 | ZRLKL-▲-12-* | 7-5/8 | 8-1/4 | 1-3/4 | 1-61/64 |
| | 16 | ZRLKL-▲-16-* | 7-7/8 | 8-1/2 | 2-1/4 | 2-31/64 |
| | 20 | ZRLKL-▲-20-* | 8-3/8 | 9 | 2-3/4 | 3-1/32 |
| | C20 | ZRLKL-▲-C20-* | 8-7/8 | 9-1/2 | 2-3/4 | 3-1/32 |
| | 24 | ZRLKL-▲-24-* | 8-7/8 | 9-1/2 | 3-1/4 | 3-9/16 |
| | C24 | ZRLKL-▲-C24-* | 9-3/8 | 10 | 3-1/4 | 3-9/16 |
| | 28 | ZRLKL-▲-28-* | 9-1/8 | 9-3/4 | 3-3/4 | 4-1/16 |
| | C28 | ZRLKL-▲-C28-* | 9-5/8 | 10-1/4 | 3-3/4 | 4-1/16 |



To specify receptacle with threaded environmental cover, change third letter in Part No. "L" to "E".
Example: ZRLK changes to ZREK.

**OIL-RESISTANT RUBBER GROMMETS—SYMBOL NUMBERS OF SIZES AVAILABLE**
Substitute the symbol number for the Delta ▲ in the catalog number of plug.
Example: ZRLK-▲-12-* for .500 to .625 Dia. cable changes to ZRLK-10 12-*

| Cable Dia. | Shell 12 | Shell 16 | Shells 20 & C20 | Shells 24 & C24 | Shells 28 & C28 | Cable Dia. | Shell 12 | Shell 16 | Shell 20 & C20 | Shells 24 & C24 | Shells 28 & C28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .062 to .125 | 02 | – | – | – | – | 1.500 to 1.625 | – | – | 26 | 26 | 26 |
| .125 to .250 | 04 | – | – | – | – | 1.625 to 1.750 | – | – | 28 | 28 | 28 |
| .250 to .375 | 06 | 06 | – | – | – | 1.750 to 1.875 | – | – | 30 | 30 | 30 |
| .375 to .500 | 08 | 08 | – | – | – | 1.875 to 1.937 | – | – | 31 | – | – |
| .500 to .625 | 10 | 10 | 10 | – | – | 1.875 to 2.000 | – | – | – | 32 | 32 |
| .625 to .750 | 12 | 12 | 12 | – | – | 2.000 to 2.125 | – | – | – | 34 | 34 |
| .750 to .875 | 14 | 14 | 14 | – | – | 2.125 to 2.250 | – | – | – | 36 | 36 |
| .875 to .937 | 15 | – | – | – | – | 2.250 to 2.375 | – | – | – | 38 | 38 |
| .875 to 1.000 | – | 16 | 16 | 16 | – | 2.375 to 2.437 | – | – | – | 39 | – |
| 1.000 to 1.125 | – | 18 | 18 | 18 | – | 2.437 to 2.500 | – | – | – | – | 40 |
| 1.125 to 1.250 | – | 20 | 20 | 20 | – | 2.500 to 2.625 | – | – | – | – | 42 |
| 1.250 to 1.375 | – | 22 | 22 | 22 | – | 2.625 to 2.750 | – | – | – | – | 44 |
| 1.375 to 1.437 | – | 23 | – | – | – | 2.750 to 2.875 | – | – | – | – | 46 |
| 1.375 to 1.500 | – | – | 24 | 24 | 24 | | | | | | |

# In-Line Receptacle

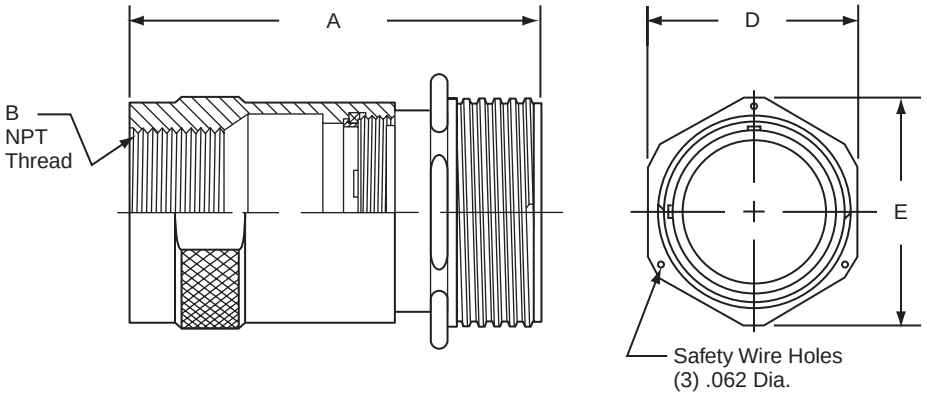
## With Conduit Adapter

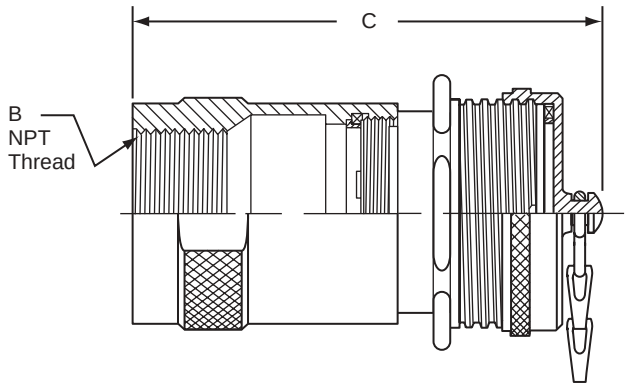
(for flexible conduit fittings)

**Types**
**ZRLT ZRET**

To specify a complete receptacle, substitute the dash no. of the contact insert selected, for the asterisk (*) in the catalog no. below.
To specify receptacle with threaded environmental cover, change third letter in part no. “L” to “E””.

| Shell Size | Size Conduit | Cat. No. | Dimensions | | | | |
|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E |
| 12 | 3/4 | ZRLT-2 12-* | 4-1/4 | 3/4 | 4-7/8 | 1-3/8 | 1-61/64 |
| 16 | 1-1/4 | ZRLT-4 16-* | 4-3/8 | 1-1/4 | 5 | 2-1/4 | 2-15/32 |
| 20 | 1-1/2 | ZRLT-5 20-* | 4-1/2 | 1-1/2 | 5-1/8 | 2-3/4 | 3-1/32 |
| C20 | 1-1/2 | ZRLT-5 C20-* | 5 | 1-1/2 | 5-5/8 | 2-3/4 | 3-1/32 |
| 24 | 2 | ZRLT-6 24-* | 4-5/8 | 2 | 5-1/4 | 3-1/4 | 3-9/16 |
| C24 | 2 | ZRLT-6 C24 | 5-1/8 | 2 | 5-3/4 | 3-1/4 | 3-9/16 |
| 28 | 2-1/2 | ZRLT-7 28-* | 5-3/32 | 2-1/2 | 5-23-32 | 3-3/4 | 4-1/16 |
| C28 | 2-1/2 | ZRLT-7 C28-* | 5-19/32 | 2-1/2 | 6-7/32 | 3-3/4 | 4-1/16 |



To specify receptacle with threaded environmental cover, change third letter in Part No. “L” to “E”.
Example: ZRLT changes to ZRET.

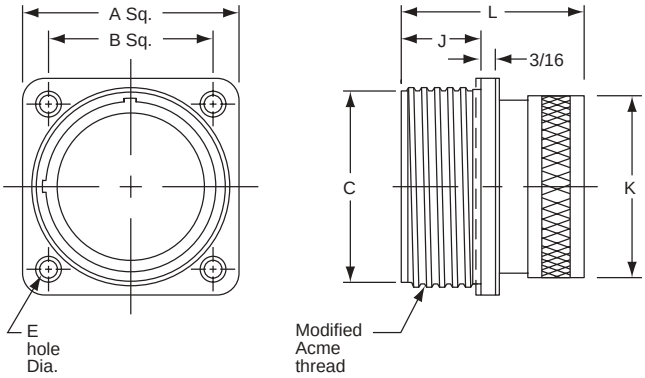
# Square Flange Receptacle

To specify a complete receptacle, substitute the dash no. of the contact insert selected, for the asterisk (*) in the catalog no. below.

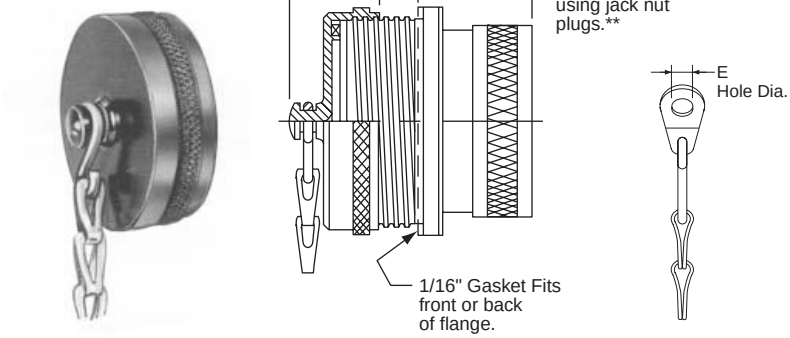
**Types**
**_RLP _RCP _REP**

For Star-Line series add a "**Z**" to the beginning of catalog no. (Ex. ZRLP).
For Star-Lok series add an "**S**" to the beginning of catalog no. (Ex. SRLP).

| Shell Size | Open Back | Catalog No. | DIMENSIONS WITH STANDARD CABLE ADAPTER | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C* | E | F | G | J | K | L | N |
| 12 | Use with | _RLP- 12-* | 1-3/4 | 1-3/8 | 1-1/12 | 11/64 | 2-15/16 | 2-1/8 | 1 | 1-11/32 | 2-15/16 | 1/4 |
| 16 | or without | _RLP- 16-* | 2-1/4 | 1-11/16 | 2 | 13/64 | 2-15/16 | 2-1/8 | 1 | 1-27/32 | 2-21/64 | 1/4 |
| 20 | Potting | _RLP- 20-* | 2-3/4 | 2-3/32 | 2-1/2 | 7/32 | 2-15/16 | 2-3/16 | 1 | 2-11/32 | 2-21/64 | 1/4 |
| C20 | Sleeves | _RLP- C20-* | 2-3/4 | 2-3/32 | 2-1/2 | 7/32 | 2-7/16 | 2-11/16 | 1-1/2 | 2-11/32 | 2-53/64 | 3/4 |
| 24 | | _RLP- 24-* | 3-1/4 | 2-17/32 | 3 | 9/32 | 2-15/16 | 2-3/16 | 1 | 2-27/32 | 2-21/64 | 1/4 |
| C24 | | _RLP- C24-* | 3-1/4 | 2-17/32 | 3 | 9/32 | 2-7/16 | 2-11/16 | 1-1/2 | 2-27/32 | 2-53/64 | 3/4 |
| 28 | | ZRLP- 28-* | 3-3/4 | 3-1/32 | 3-1/2 | 11/32 | 2-15/16 | 2-3/16 | 1 | 3-11/32 | 2-21/64 | 1/4 |
| C28 | | ZRLP- C28* | 3-3/4 | 3-1/32 | 3-1/2 | 11/32 | 2-7/16 | 2-11/16 | 1-1/2 | 3-11/32 | 2-53/64 | 3/4 |

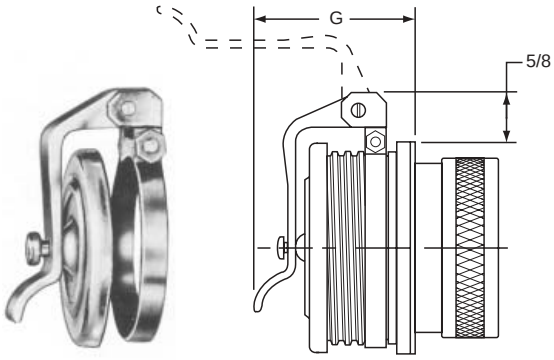



WITH THREADED ENVIRONMENTAL COVER AND SASH CHAIN




To specify receptacle with threaded environmental cover, change third letter in part number from "L" to "E". Example: _RLP changes to _REP.

WITH HINGED SPRING COVER




To specify receptacle with spring door cover, change third letter in part number from "L" to "C". Example: _RLP changes to _RCP.

Drill hole in panel 1/64" larger than Dimension "K" for front mounting or dimension "C" for back mounting
**Maximum panel thickness may be increased 1/8" when using Standard Coupling Nut Plugs.

Amphenol INDUSTRIAL

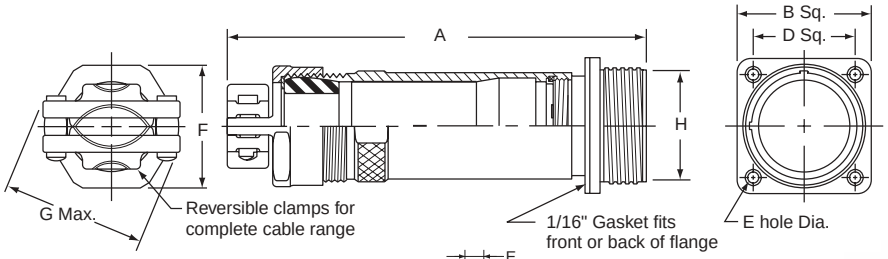
# Square Flange Receptacle with Mechanical Clamp Nut

**Type**
**_RLPM _RCPM _REPM**

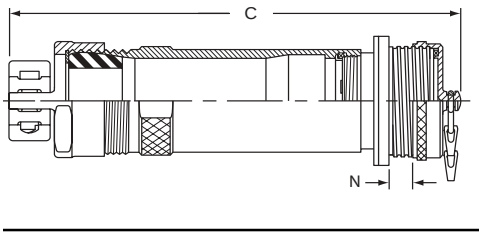
To specify a complete receptacle, substitute the dash no. of the contact insert selected, for the asterisk (*) in the catalog no. below.

For Star-Line series add a "**Z**" to the beginning of catalog no. (Ex. ZRLP).
For Star-Lok series add an "**S**" to the beginning of catalog no. (Ex. SRLP).

| Size Cable | Shell Size | Catalog Number | Dimensions A | B | C | D | E | F | G | H | N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Select from Table Below and Substitute Symbol No. for Delta ▲ | 12 | _RLPM-▲- 12-* | 5-3/8 | 1-3/4 | 6 | 1-3/8 | 11/64 | 1-3/4 | 2-3/8 | 1-1/2 | 1/4 |
| | 16 | _RLPM-▲- 16-* | 5-5/8 | 2-1/4 | 6-1/4 | 1-11/16 | 13/64 | 2-1/4 | 3 | 2 | 1/4 |
| | 20 | _RLPM-▲- 20-* | 6-1/8 | 2-3/4 | 6-3/4 | 2-3/32 | 7/32 | 2-3/4 | 3-3/4 | 2-1/2 | 1/4 |
| | C20 | _RLPM-▲- C20-* | 6-5/8 | 2-3/4 | 7-1/4 | 2-3/32 | 7/32 | 2-3/4 | 3-3/4 | 2-1/2 | 3/4 |
| | 24 | _RLPM-▲- 24-* | 6-5/8 | 3-1/4 | 7-1/4 | 2-17/32 | 9/32 | 3-1/4 | 4-1/2 | 3 | 1/4 |
| | C24 | _RLPM-▲- C24-* | 7-1/8 | 3-1/4 | 7-3/4 | 2-17/32 | 9/32 | 3-1/4 | 4-1/2 | 3 | 3/4 |
| | 28 | _RLPM-▲- 28-* | 7-1/8 | 3-3/4 | 7-3/4 | 3-1/32 | 11/32 | 3-3/4 | 5-1/8 | 3-1/2 | 1/4 |
| | C28 | _RLPM-▲- C28-* | 7-5/8 | 3-3/4 | 8-1/4 | 3-1/32 | 11/32 | 3-3/4 | 5-1/8 | 3-1/2 | 3/4 |
| | | **With Long Cable Adapter** | | | | | | | | | |
| | 12 | _RLPML-▲-12-* | 7-5/8 | 1-3/4 | 1-3/4 | 1-3/8 | 11/64 | 1-3/4 | 2-3/8 | 1-1/2 | 1/4 |
| | 16 | _RLPML-▲-16-* | 7-7/8 | 2-1/4 | 2-1/4 | 1-11/16 | 13/64 | 2-1/4 | 3 | 2 | 1/4 |
| | 20 | _RLPML-▲-20-* | 8-3/8 | 2-3/4 | 2-3/4 | 2-3/32 | 7/32 | 2-3/4 | 3-3/4 | 2-1/2 | 1/4 |
| | C20 | _RLPML-▲-C20-* | 8-7/8 | 2-3/4 | 2-3/4 | 2-3/32 | 7/32 | 2-3/4 | 3-3/4 | 2-1/2 | 3/4 |
| | 24 | _RLPML-▲-24-* | 8-7/8 | 3-1/4 | 3-1/4 | 2-17/32 | 9/32 | 3-1/4 | 4-1/2 | 3 | 1/4 |
| | C24 | _RLPML-▲-C24-* | 9-3/8 | 3-1/4 | 3-1/4 | 2-17/32 | 9/32 | 3-1/4 | 4-1/2 | 3 | 3/4 |
| | 28 | _RLPML-▲-28-* | 9-1/8 | 3-3/4 | 3-3/4 | 3-1/32 | 11/32 | 3-3/4 | 5-1/8 | 3-1/2 | 1/4 |
| | C28 | _RLPML-▲-C28-* | 9-5/8 | 3-3/4 | 3-3/4 | 3-1/32 | 11/32 | 3-3/4 | 5-1/8 | 3-1/2 | 3/4 |




Drill hole in panel 1/64" larger than Dimension "H" for back mounting..



To specify receptacle with threaded environmental cover, change third letter in Part No. "L" to "E".
Example: ZRLPM changes to ZREPM.

To specify receptacle with spring door cover, change third letter in Part No. "L" to "C".
Example: ZRLPM changes to ZRCPM.

**OIL-RESISTANT RUBBER GROMMETS—SYMBOL NUMBERS OF SIZES AVAILABLE**
Substitute the symbol number for the Delta ▲ in the catalog number of plug.
Example: ZRLK-▲-12-* for .500 to .625 Dia. cable changes to ZREK-10 12-*

| Cable Dia. | Shell 12 | Shell 16 | Shells 20 & C20 | Shells 24 & C24 | Shells 28 & C28 | Cable Dia. | Shell 12 | Shell 16 | Shell 20 & C20 | Shells 24 & C24 | Shells 28 & C28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .062 to .125 | 02 | – | – | – | – | 1.500 to 1.625 | – | – | 26 | 26 | 26 |
| .125 to .250 | 04 | – | – | – | – | 1.625 to 1.750 | – | – | 28 | 28 | 28 |
| .250 to .375 | 06 | 06 | – | – | – | 1.750 to 1.875 | – | – | 30 | 30 | 30 |
| .375 to .500 | 08 | 08 | – | – | – | 1.875 to 1.937 | – | – | 31 | – | – |
| .500 to .625 | 10 | 10 | 10 | – | – | 1.875 to 2.000 | – | – | – | 32 | 32 |
| .625 to .750 | 12 | 12 | 12 | – | – | 2.000 to 2.125 | – | – | – | 34 | 34 |
| .750 to .875 | 14 | 14 | 14 | – | – | 2.125 to 2.250 | – | – | – | 36 | 36 |
| .875 to .937 | 15 | – | – | – | – | 2.250 to 2.375 | – | – | – | 38 | 38 |
| .875 to 1.000 | – | 16 | 16 | 16 | – | 2.375 to 2.437 | – | – | – | 39 | – |
| 1.000 to 1.125 | – | 18 | 18 | 18 | – | 2.437 to 2.500 | – | – | – | – | 40 |
| 1.125 to 1.250 | – | 20 | 20 | 20 | – | 2.500 to 2.625 | – | – | – | – | 42 |
| 1.250 to 1.375 | – | 22 | 22 | 22 | – | 2.625 to 2.750 | – | – | – | – | 44 |
| 1.375 to 1.437 | – | 23 | – | – | – | 2.750 to 2.875 | – | – | – | – | 46 |
| 1.375 to 1.500 | – | – | 24 | 24 | 24 | | | | | | |

# Receptacle Mounted to Junction Box

## With Angle Adapter

**Types**
**_RLBB _RCBB _REBB**

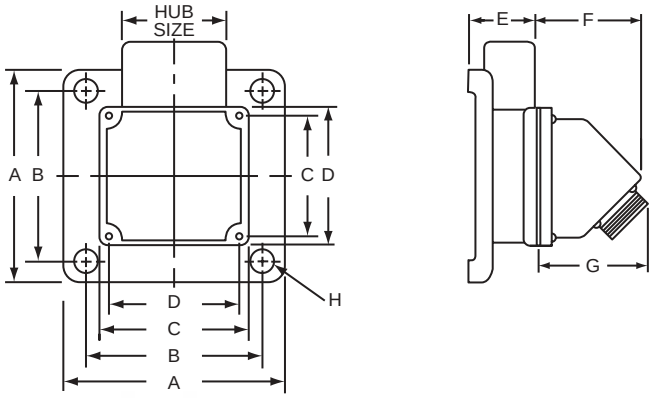
To specify a complete receptacle, substitute the dash no. of the contact insert selected, for the asterisk (*) in the catalog no. below.

For Star-Line series add a "**Z**" to the beginning of catalog no. (Ex. ZRLBB).
For Star-Lok series add an "**S**" to the beginning of catalog no. (Ex. SRLBB).

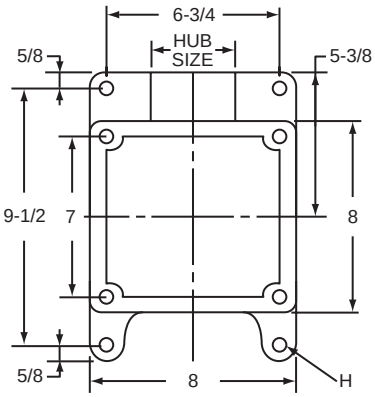
| Shell Size | Hub Size† | Cat. No. | Dimensions | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | G | H |
| 12 | 3/4 | _RLBB- 2 12-* | 5-1/4 | 4-5/8 | 4-3/16 | 3-9/16 | 2-3/8 | 2-13/16 | 2-7/16 | 9/32 |
| | 1 | _RLBB-3 12-* | 5-1/4 | 4-5/8 | 4-3/16 | 3-9/16 | 2-3/8 | 2-13/16 | 2-7/16 | 9/32 |
| 16 | 1 | _RLBB-3 16-* | 5-1/4 | 4-5/8 | 4-3/16 | 3-9/16 | 2-3/8 | 2-15/16 | 2-17/32 | 9/32 |
| | 1-1/4 | _RLBB-4 16-* | 5-1/4 | 4-5/8 | 4-3/16 | 3-9/16 | 2-5/8 | 2-15/16 | 2-17/32 | 9/32 |
| | 1-1/2 | _RLBB-5 16-* | 5-1/4 | 4-5/8 | 4-3/16 | 3-9/16 | 2-5/8 | 2-15/16 | 2-17/32 | 9/32 |
| 20 | 1-1/4 | _RLBB-4 20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 3-39/64 | 3 | 9/32 |
| | 1-1/2 | _RLBB-5 20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 3-39/64 | 3 | 9/32 |
| | 2 | RLBB-6 20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 3-39/64 | 3 | 9/32 |
| C20 | 1-1/4 | _RLBB-4 C20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 3-39/64 | 3-3/8 | 9/32 |
| | 1-1/2 | _RLBB-5 C20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 3-39/64 | 3-3/8 | 9/32 |
| | 2 | _RLBB-6 C20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 3-39/64 | 3-3/8 | 9/32 |
| 24 | 2-1/2 | _RLBB-7 24-* | See Drawing Below | | 8 | 7 | 3-3/4 | 3-33/64 | 2-19/64 | 7/16 |
| | 3 | RLBB-8 24-* | | | 8 | 7 | 4-1/2 | 3-33/64 | 2-19/64 | 7/16 |
| C24 | 2-1/2 | _RLBB-7 C24-* | | | 8 | 7 | 3-3/4 | 3-33/64 | 2-21-32 | 7/16 |
| | 3 | _RLBB-8 C24-* | | | 8 | 7 | 4-1/2 | 3-33-64 | 2-21-32 | 7/16 |
| 28 | 2-1/2 | ZRLBB-7 28-* | | | 8 | 7 | 3-3/4 | 3-1/2 | 2-7/64 | 7/16 |
| | 3 | ZRLBB-8 28-* | | | 8 | 7 | 4-1/2 | 3-1/2 | 2-7/64 | 7/16 |
| C28 | 2-1/2 | ZRLBB-7 C28-* | | | 8 | 7 | 3-3/4 | 3-1/2 | 2-15/32 | 7/16 |
| | 3 | ZRLBB-8 C28-* | | | 8 | 7 | 4-1/2 | 3-1/2 | 2-15/32 | 7/16 |

† Other hub sizes are available. Consult Amphenol Industrial Operations.

SHELL SIZES 12 - 16 - 20 - C20




SHELL SIZES 24 - C24 - 28 - C28



WITH HINGED SPRING COVER

To specify receptacle with spring door cover, change third letter in part number from "L" to "C". Example: _RLBB changes to _RCBB.

WITH THREADED ENVIRONMENTAL COVER AND SASH CHAIN

To specify receptacle with threaded environmental cover, change third letter in part number from "L" to "E". Example: _RLBB changes to _REBB.

# Receptacle Mounted to Junction Box

## With Straight Adapter

**Types**
**_RLA _RCA _REA**

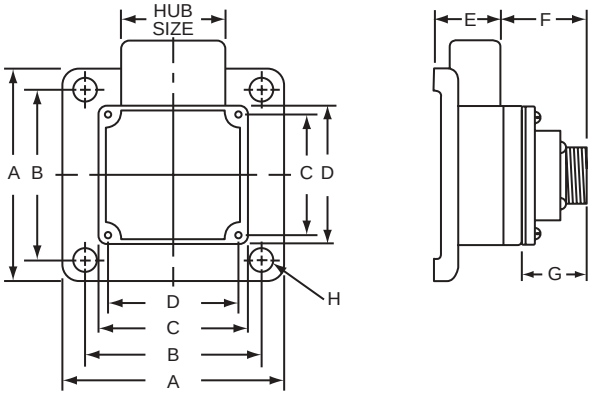
To specify a complete receptacle, substitute the dash no. of the contact insert selected, for the asterisk (*) in the catalog no. below.

For Star-Line series add a “Z” to the beginning of catalog no. (Ex. ZRLA).
For Star-Lok series add an “S” to the beginning of catalog no. (Ex. SRLA).

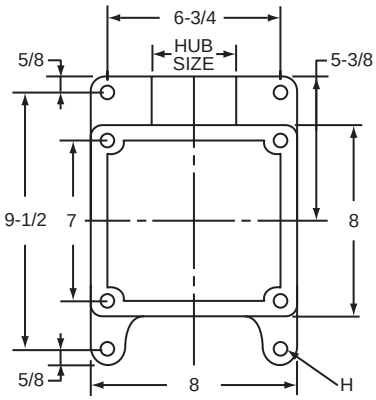
| Shell Size | Hub Size† | Cat. No. | Dimensions | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | G | H |
| 12 | 3/4 | _RLA- 2 12-* | 5-1/4 | 4-5/8 | 4-3/16 | 3-9/16 | 2-3/8 | 1-27/32 | 1 | 9/32 |
| | 1 | _RLA-3 12-* | 5-1/4 | 4-5/8 | 4-3/16 | 3-9/16 | 2-3/8 | 1-27/32 | 1 | 9/32 |
| 16 | 1 | _RLA-3 16-* | 5-1/4 | 4-5/8 | 4-3/16 | 3-9/16 | 2-3/8 | 1-27/32 | 1 | 9/32 |
| | 1-1/4 | _RLA-4 16-* | 5-1/4 | 4-5/8 | 4-3/16 | 3-9/16 | 2-5/8 | 1-27/32 | 1 | 9/32 |
| | 1-1/2 | _RLA-5 16-* | 5-1/4 | 4-5/8 | 4-3/16 | 3-9/16 | 2-5/8 | 1-27/32 | 1 | 9/32 |
| 20 | 1-1/4 | _RLA-4 20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 3-1/16 | 1-7/32 | 9/32 |
| | 1-1/2 | _RLA-5 20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 3-1/16 | 1-7/32 | 9/32 |
| | 2 | RLA-6-20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 3-1/16 | 1-7/32 | 9/32 |
| C20 | 1-1/4 | _RLA-4 C20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 2-9/16 | 1-7/32 | 9/32 |
| | 1-1/2 | _RLA-5 C20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 2-9/16 | 1-7/32 | 9/32 |
| | 2 | _RLA-6 C20-* | 6 | 5-1/4 | 4-1/2 | 3-7/8 | 3-3/4 | 2-9/16 | 1-7/32 | 9/32 |
| 24 | 2-1/2 | _RLA-7 24-* | See Drawing Below | | 8 | 7 | 3-3/4 | 2-11/32 | 1-1/2 | 7/16 |
| | 3 | RLA-8 24-* | | | 8 | 7 | 4-1/2 | 2-11/32 | 1-1/2 | 7/16 |
| C24 | 2-1/2 | _RLA-7 C24-* | | | 8 | 7 | 3-3/4 | 2-27/32 | 1-1/2 | 7/16 |
| | 3 | _RLA-8 C24-* | | | 8 | 7 | 4-1/2 | 3-33-64 | 1-1/2 | 7/16 |
| 28 | 2-1/2 | ZRLA-7 28-* | | | 8 | 7 | 3-3/4 | 2-27/32 | 1-1/2 | 7/16 |
| | 3 | ZRLA-8 28-* | | | 8 | 7 | 4-1/2 | 2-9/32 | 1-1/2 | 7/16 |
| C28 | 2-1/2 | ZRLA-7 C28-* | | | 8 | 7 | 3-3/4 | 2-25/32 | 1-1/2 | 7/16 |
| | 3 | ZRLA-8 C28-* | | | 8 | 7 | 4-1/2 | 2-25/32 | 1-1/2 | 7/16 |

† Other hub sizes are available. Consult Amphenol Industrial Operations.

SHELL SIZES 12 - 16 - 20 - C20




SHELL SIZES 24 - C24 - 28 - C28



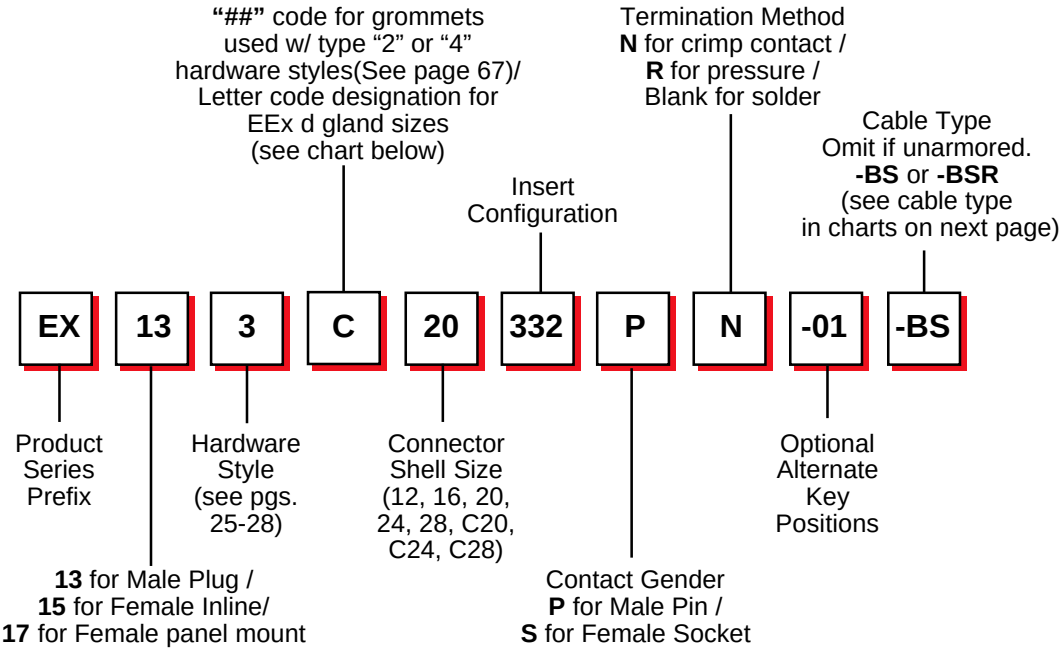
WITH HINGED SPRING COVER

To specify receptacle with spring door cover, change third letter in part number from “L” to “C”. Example: _RLA changes to _RCA.

WITH THREADED ENVIRONMENTAL COVER AND SASH CHAIN

To specify receptacle with threaded environmental cover, change third letter in part number from “L” to “E”. Example: _RLA changes to _REA.

# Code Logic
# Star-Line EX




Example:

EX-13-3-C-20-332PN
Male Plug with EEX gland for a cable with 0.95" 24.1mm O.D., 20ea #12/4.0mm male contacts

EX-15-4-1620-332SN
Female Inline with basket weave grip for a cable with 0.95" 24.1mm O.D., 20ea #12/4.0mm female contacts

EX-17-1-20-332SN
Female Panel Mount, 20ea #12/4.0mm female contacts.

EX-13-3-C-16-22PR-BA
Male Plug with EEX gland for an armored cable with 1.25"/31.75mm O.D., 4ea #4/25.0mm male contacts

EX-17-3-C-16-22SR-BS
Female Panel Mount with cable adapter with and EEX gland for an armored and sheathed cable

**RoHS COMPLIANT PRODUCT AVAILABLE** – Consult Amphenol Industrial Operations.

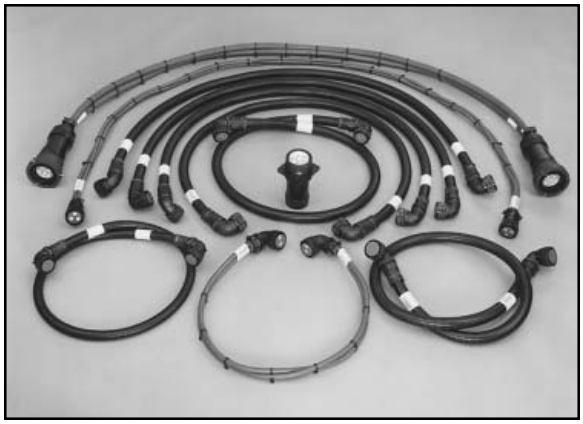
The items in this catalog have been reviewed and approved by Amphenol's authorized person, as required in Directive 94/9/EC of the ATEX specification.

# EEx d Cable Types

| EEx d Cable Gland Size Code | Unarmored Cable No deviation if Unarmored | | Armored & Sheathed Cable -BS | | | | Armored & Sheathed with reduced bore -BSR | |
|---|---|---|---|---|---|---|---|---|
| | | | UA | | Standard | | OD-Reduced | |
| | Min | Max | Min | Max | Min | Max | Min | Max |
| A1 | .1575 (4.0) | .3307 (8.4) | .1339 (3.4) | .3307 (8.4) | .3543 (9.0) | .5315 (13.5) | .2638 (6.7) | .4055 (10.3) |
| A2 | .2835 (7.2) | .4606 (11.7) | .2835 (7.2) | .4606 (11.7) | .4528 (11.5) | .6299 (16.0) | .3701 (9.4) | .4921 (12.5) |
| A | .3780 (9.6) | .5512 (14.0) | .3701 (9.4) | .5512 (14.0) | .6102 (15.5) | .8307 (21.1) | .4724 (12.0) | .6929 (17.6) |
| B | .5315 (13.5) | .7874 (20.0) | .5315 (13.5) | .7874 (20.0) | .7992 (20.3) | 1.079 (27.4) | .6614 (16.8) | .9409 (23.9) |
| C | .7677 (19.5) | 1.035 (26.3) | .7677 (19.5) | 1.035 (26.3) | 1.051 (26.7) | 1.339 (34.0) | .9134 (23.2) | 1.201 (30.5) |
| C2 | .9055 (23.0) | 1.268 (32.2) | .9055 (23.0) | 1.268 (32.2) | 1.299 (33.0) | 1.598 (40.6) | 1.126 (28.6) | 1.425 (36.2) |
| D | 1.110 (28.2) | 1.504 (38.2) | 1.106 (28.1) | 1.504 (38.2) | 1.551 (39.4) | 1.839 (46.7) | 1.370 (34.8) | 1.669 (42.4) |
| D2 | 1.307 (33.2) | 1.736 (44.1) | 1.303 (33.1) | 1.736 (44.1) | 1.799 (45.7) | 2.094 (53.2) | 1.618 (41.1) | 1.909 (48.5) |
| E | 1.547 (39.3) | 1.972 (50.1) | 1.543 (39.2) | 1.969 (50.0) | 2.051 (52.1) | 2.343 (59.5) | 1.870 (47.5) | 2.157 (54.8) |
| E2 | 1.839 (46.7) | 2.205 (56.0) | 1.839 (46.7) | 2.205 (56.0) | 2.299 (58.4) | 2.591 (65.8) | 2.118 (53.8) | 2.409 (61.2) |
| F | 2.059 (52.3) | 2.441 (62.0) | 2.051 (52.1) | 2.441 (62.0) | 2.551 (64.8) | 2.843 (72.2) | 2.370 (60.2) | 2.677 (68.0) |
| F2 | 2.287 (58.1) | 2.677 (68.0) | 2.283 (58.0) | 2.677 (68.0) | 2.799 (71.1) | 3.071 (78.0) | 2.618 (66.5) | 2.890 (73.4) |
| G | 2.453 (62.3) | 2.835 (72.0) | 2.449 (62.2) | 2.835 (72.0) | 3.031 (77.0) | 3.307 (84.0) | – | |

*Amphenol offers an extensive line of explosion proof and general duty cable glands. Consult Amphenol Industrial Operations and ask for new catalog 12-055, Amphenol Cable Glands and Cord Grips.*

**Star-Line EX Plug with EX Gland**

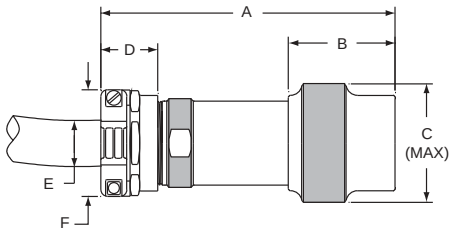


*Cables can be designed with a custom overmold to any Amphenol cylindrical connector for any industrial application. Consult Amphenol Industrial Operations for further information.*

# Hardware

## Plug with Mechanical Clamp — EX-13-2 Style

| Dimension Shell | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| **12** | 8-3/4 (222.3) | 1-3/4 (44.5) | 1-1/2 (38.1) | 2 (50.8) | 15/16 (23.8) | 2-3/8 (60.3) |
| **16** | 8-13/16 (223.8) | 1-3/4 (44.5) | 2 (50.8) | 2-1/16 (52.4) | 1-7/16 (36.5) | 3 (76.2) |
| **20** | 8-7/8 (225.4) | 1-3/4 (44.5) | 2-1/2 (63.5) | 2-18 (54.0) | 1-15/16 (49.2) | 3-3/4 (95.3) |
| **24** | 8-15/16 (227.0) | 1-3/4 (44.5) | 3 (76.2) | 2-3/16 (55.6) | 2-7/16 (61.9) | 4-1/2 (114.3) |
| **28** | 9 (228.6) | 3 1/16 (77.8) | 4 3/16 (106.4) | 2 1/4 (57.2) | 2-7/8 (73.0) | 5-1/8 (130.2) |




## Plug with EEx d Gland — EX-13-3 Style

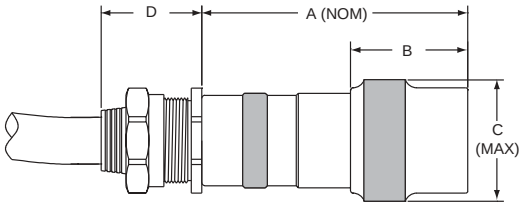
Note: Dimensions “D” and “E” are controlled by the gland manufacturer, gland is included with the connector.

POTTING IS NOT REQUIRED

| Dimension Shell | A | B | C* |
|---|---|---|---|
| **12** | 7-5/8 (193.7) | 1-3/4 (44.5) | 1-1/2 (38.1) |
| **16** | 7-5/8 (193.7) | 1-3/4 (44.5) | 2 (50.8) |
| **20** | 7-5/8 (193.7) | 1-3/4 (44.5) | 2-1/2 (63.5) |
| **24** | 7-5/8 (193.7) | 1-3/4 (44.5) | 3 (76.2) |
| **28** | 7-5/8 (193.7) | 1-3/4 (44.5) | 3-1/2 (88.9) |

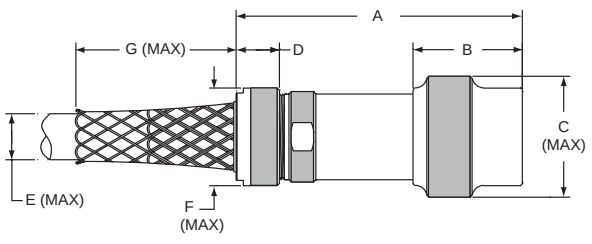
*Notes: For “C” length inserts, add 1/2” to both dimensions “A” & “B”.

‘D’ Dimension varies according to cable gland. Detailed cable dimensions and type required.



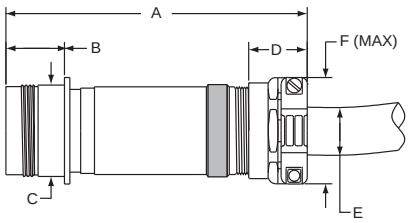

## Plug with Basketweave Cable Grip — EX-13-4 Style

| Dimension Shell | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| **12** | 7-3/8 (187.3) | 1-3/4 (44.5) | 1-1/2 (38.1) | 1-1/4 (31.8) | 15/16 (23.8) | 1-1/2 (38.1) | 8 (203.2) |
| **16** | 7-3/8 (187.3) | 1-3/4 (44.5) | 2 (50.8) | 1-1/4 (31.8) | 1-7/16 (36.5) | 2 (50.8) | 10-1/2 (266.7) |
| **20** | 7-3/8 (187.3) | 1-3/4 (44.5) | 2-1/2 (63.5) | 1-1/4 (31.8) | 1-15/16 (49.2) | 2-1/2 (63.5) | 14-1/2 (368.3) |
| **24** | 7-3/8 (187.3) | 1-3/4 (44.5) | 3 (76.2) | 1-1/4 (31.8) | 2-7/16 (61.9) | 3 (76.2) | 17-1/2 (444.5) |
| **26** | 7-3/8 (187.3) | 1-3/4 (44.5) | 3-1/2 (88.9) | 1-1/4 (31.8) | 2-7/8 (73.0) | 3-1/2 (88.9) | 19 (482.6) |



## In-line Receptacle with Mechanical Clamp — EX-15-2 Style

| Dimension Shell | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 12 | 8-3/4 (222.3) | 1-3/4 (44.5) | 1-1/2 (38.1) | 2 (50.8) | 15/16 (23.8) | 2-3/8 (60.3) |
| 16 | 8-13/16 (223.8) | 1-3/4 (44.5) | 2 (50.8) | 2-1/16 (52.4) | 1-7/16 (36.5) | 3 (76.2) |
| 20 | 8-7/8 (225.4) | 1-3/4 (44.5) | 2-1/2 (63.5) | 2-1/8 (54.0) | 1-15/16 (49.2) | 3-3/4 (95.3) |
| 24 | 8-15/16 (227.0) | 1-3/4 (44.5) | 3 (76.2) | 2-3/16 (55.6) | 2-7/16 (61.9) | 4-1/2 (114.3) |
| 28 | 9 (228.6) | 1-3/4 (44.5) | 3-1/2 (88.9) | 2-1/4 (57.2) | 2-7/8 (73.0) | 5-1/8 (130.2) |

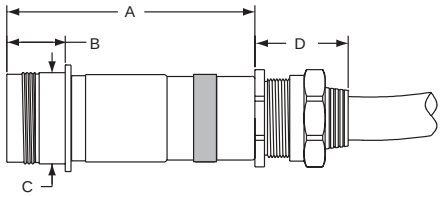



## In-line Receptacle with EEx d Gland — EX-15-3 Style

POTTING IS NOT REQUIRED

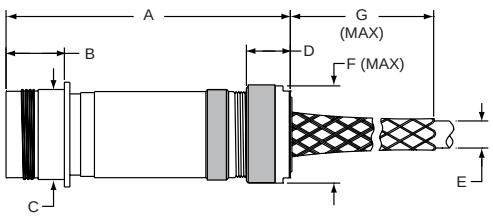
| Dimension Shell | A | B | C* |
|---|---|---|---|
| 12 | 7-5/8 (193.7) | 1-3/4 (44.5) | 1-1/2 (38.1) |
| 16 | 7-5/8 (193.7) | 1-3/4 (44.5) | 2 (50.8) |
| 20 | 7-5/8 (193.7) | 1-3/4 (44.5) | 2-1/2 (63.5) |
| 24 | 7-5/8 (193.7) | 1-3/4 (44.5) | 3 (76.2) |
| 28 | 7-5/8 (193.7) | 1-3/4 (44.5) | 3-1/2 (88.9) |

*Notes: For “C” length inserts, add 1/2” to both dimensions “A” & “B”.
‘D’ Dimension varies according to cable gland. Detailed cable dimension and type required.



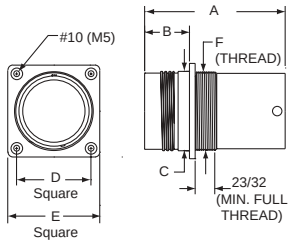

## In-line Receptacle with Basketweave Cable Grip — EX-15-4 Style

| Dimension Shell | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 12 | 7-3/8 (187.3) | 1-3/4 (44.5) | 1-1/2 (38.1) | 1-1/4 (31.8) | 15/16 (23.8) | 1-1/2 (38.1) | 8 (203.2) |
| 16 | 7-3/8 (187.3) | 1-3/4 (44.5) | 2 (50.8) | 1-1/4 (31.8) | 1-7/16 (36.5) | 2 (50.8) | 10-1/2 (266.7) |
| 20 | 7-3/8 (187.3) | 1-3/4 (44.5) | 2-1/2 (63.5) | 1-1/4 (31.8) | 1-15/16 (49.2) | 2-1/2 (63.5) | 14-1/2 (368.3) |
| 24 | 7-3/8 (187.3) | 1-3/4 (44.5) | 3 (76.2) | 1-1/4 (31.8) | 2-7/16 (61.9) | 3 (76.2) | 17-1/2 (444.5) |
| 28 | 7-3/8 (187.3) | 1-3/4 (44.5) | 3-1/2 (88.9) | 1-1/4 (31.8) | 2-7/8 (73.0) | 3-1/2 (88.9) | 19 (482.6) |



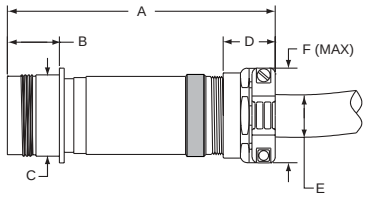
## Panel Mount Receptacle (Potting Required) — EX-17-1 Style

| Dimension Shell | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 12 | 4-3/4 (120.7) | 1-3/4 (44.5) | 1-1/2 (38.1) | 1.654 (42) | 2-1/4 (57.2) | M25 |
| 16 | 4-3/4 (120.7) | 1-3/4 (44.5) | 2 (50.8) | 2.047 (52) | 2-5/8 (66.7) | M40 |
| 20 | 4-3/4 (120.7) | 1-3/4 (44.5) | 2-1/2 (63.5) | 2.441 (62) | 3 (76.2) | M50 |
| 24 | 4-3/4 (120.7) | 1-3/4 (44.5) | 3 (76.2) | 2.835 (72) | 3-1/2 (88.9) | M63 |
| 28 | 4-3/4 (120.7) | 1-3/4 (44.5) | 3-1/2 (88.9) | 3.228 (82) | 4 (101.6) | M75 |



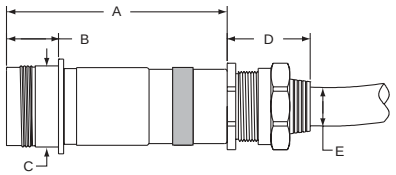

## Fixed In-Line Receptacle with Mechanical Clamp — EX-17-2 Style

| Dimension Shell | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 12 | 8-3/4 (222.3) | 1-3/4 (44.5) | 1-1/2 (38.1) | 2 (50.8) | 5/16 (23.8) | 2-3/8 (60.3) |
| 16 | 8-13/16 (223.8) | 1-3/4 (44.5) | 2 (50.8) | 2-1/16 (52.4) | 1-7/16 (36.5) | 3 (76.2) |
| 20 | 8-7/8 (225.4) | 1-3/4 (44.5) | 2-1/2 (63.5) | 2-1/8 (54.0) | 1-15/16 (49.2) | 3-3/4 (95.3) |
| 24 | 8-15/16 (227.0) | 1-3/4 (44.5) | 3 (76.2) | 2-3/16 (55.6) | 2-7/16 (61.9) | 4-1/2 (114.3) |
| 28 | 9 (228.6) | 1-3/4 (44.5) | 3-1/2 (88.9) | 2-1/4 (57.2) | 2-7/8 (73.0) | 5-1/8 (130.2) |




## Fixed In-Line Receptacle with EEx d Gland — EX-17-3 Style

| Dimension Shell | A | B | C* |
|---|---|---|---|
| 12 | 7-5/8 (193.7) | 1-3/4 (44.5) | 1-1/2 (38.1) |
| 16 | 7-5/8 (193.7) | 1-3/4 (44.5) | 2 (50.8) |
| 20 | 7-5/8 (193.7) | 1-3/4 (44.5) | 1-/12 (63.5) |
| 24 | 7-5/8 (193.7) | 1-3/4 (44.5) | 3 (76.2) |
| 28 | 7-5/8 (193.7) | 1-3/4 (44.5) | 3-1/2 (88.9) |

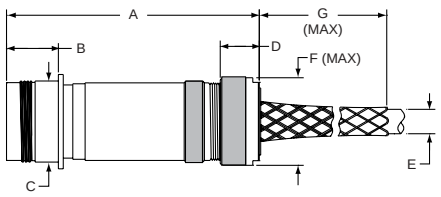



*Notes: For “C” length inserts, add 1/2” to both dimensions “A” & “B”.

‘D’ Dimension varies according to cable gland. Detailed cable dimension and type required.

## Fixed In-Line Receptacle with Basketweave Cable Grip — EX-17-4 Style

| Dimension Shell | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 12 | 7-3/8 (187.3) | 1-3/4 (44.5) | 1-1/2 (38.1) | 1-1/4 (31.8) | 15/16 (23.8) | 1-1/2 (38.1) | 8 (203.2) |
| 16 | 7-3/8 (187.3) | 1-3/4 (44.5) | 2 (50.8) | 1-1/4 (31.8) | 1-7/16 (36.5) | 2 (50.8) | 10-1/2 (266.7) |
| 20 | 7-3/8 (187.3) | 1-3/4 (44.5) | 2-1/2 (63.5) | 1-1/4 (31.8) | 1-15/16 (49.2) | 2-1/2 (63.5) | 14-1/2 (368.3) |
| 24 | 7-3/8 (187.3) | 1-3/4 (44.5) | 3 (76.2) | 1-1/4 (31.8) | 2-7/16 (61.9) | 3 (76.2) | 17-1/2 (444.5) |
| 28 | 7-3/8 (187.3) | 1-3/4 (44.5) | 3-1/2 (88.9) | 1-1/4 (31.8) | 2-7/8 (73.0) | 3-1/2 (88.9) | 19 (482.6) |

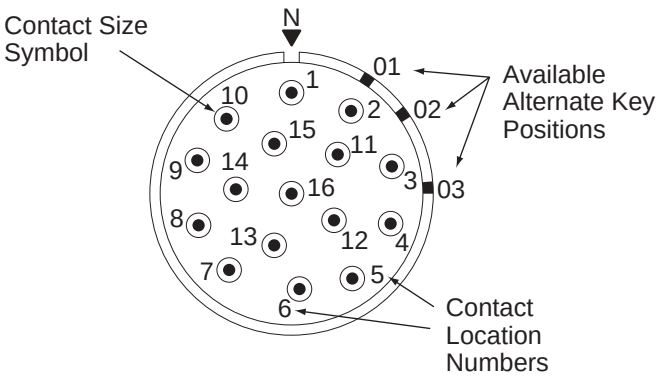


# Insert Configuration Listing

## For Amphenol®/ Pyle® Star-Line, Star-Lok and Star-Line EX Connectors

### Introduction

The Amphenol/Pyle Star-Line Insert Configuration Listing is issued primarily to identify various contact insert arrangements. For the engineer, it provides visual selection of the insert configuration needed to satisfy his requirements. For the end user, the list provides general information useful in the termination of plugs and receptacles. To aid the reader, the insert configurations are presented in numerical order, based on the number of contacts in each.




The male insert illustration shown left (and those on the following pages) is shown as it appears when viewed from the front. Contacts are shown by both physical position within the configuration and by contact number. The contact number corresponds to the contact position shown on the rear face of the insert illustrated as well as to both the front and rear faces of the mating insert. The symbol used to show contact location is indicative of contact size. For example, the contact symbol in this illustration represents a #8 contact. An explanation of contact symbols is presented on each page of the listing. Each drawing also provides data on normal and alternate key positions. Drawings are reduced from actual size of the insert configuration.

NOTE: Alternate keying or insert polarization is intended to resist improper intermating of plugs and receptacles of like shell sizes and like insert arrangements.

### Contact Insert Ordering

Plug and receptacle contact inserts are selected according to requirements for Service Voltage Rating, Number of Contacts, Wire Size and Ampere Rating.

Mod I and II inserts may be purchased separately for assembly into the basic barrel. The Catalog Number for each is shown on the chart accompanying each drawing. Pin or socket inserts are interchangeable in male and female barrels.

Mod III inserts, as a unit, cannot be purchased separately because contact inserts are factory assembled to, and sealed in, the basic barrel. The Dash Number given with each Mod Ill configuration must be shown as a suffix to the basic barrel Catalog Number to identify the insert desired.

Arrangements are available with high amperage RADSOK® contacts specifically designed for Star-Line inserts. These are designated with an ‘R’ in the part number. For example: ZP-C28-R42PR would designate an insert with size 4/0 RADSOK pin contacts. ZP-C28-R42SR would designate an insert with size 4/0 socket contacts.

# ELECTRICAL Ratings

## Service Voltage Ratings

The voltage to which contact inserts are limited is a function of the dielectric separation between adjacent contacts and between contacts and shell.

The voltage rating is designated by a service voltage rating letter which is shown in the service voltage rating table with each contact configuration listing.

| Service Voltage | MIlitary Ratings MIL-5015 Specifications Non-Circuit Breaking | | N.E.C. Ratings | | Over Surface Distance Inches Nominal | Thru-Air Spacing Inches Nominal |
|---|---|---|---|---|---|---|
| | | | Non-Circuit | Circuit Breaking | | |
| | D.C. Volts RMS | A.C. Volts RMS | D.C. RMS | A.C. RMS | | |
| Instrument | 250 | 200 | – | – | 1/16 | – |
| A | 700 | 500 | 250 | 240 | 1/8 | 1/16 |
| D | 1250 | 900 | 600 | 600 | 3/16 | 1/8 |
| E | 1750 | 1250 | 600 | 600 | 1/4 | 3/16 |
| B | 2450 | 1750 | 600 | 600 | 5/16 | 1/4 |
| C | 4200 | 3000 | 600 | 600 | 1 | 5/16 |

## Three Classifications of Ampere Ratings

## MS Ampere Ratings: (MIL-C-39029)

Based on the combination of the following:

The amount of current which an individual pin and socket contact may carry is a function of contact material and design efficiency of the pin and socket system as well as the ability of the primary conductor insulation to resist temperature rises due to inherent copper losses and bundling factors.

Total current carrying capacity of the connector is a function of the insert temperature which is rated at 225° F for continuous operation. The total operating temperature is the summation of the ambient temperature plus the temperature rise resulting from the thermal losses of each contact.

MIL-W-5088 specifications may be used as a general reference on the subject inasmuch as pertinent cable derating data is included.

## N.E.C. Non-Circuit-Breaking or Disconnect Ampere Ratings

The non-interrupting current ratings, shown in the table, are based on the temperature of the contacts being within the range specified by Underwriter's Laboratories, Inc. when wire sizes are selected in accordance with the National Electrical Code.

When multiple conductors are used, the load factor and temperature rise based on ambient and total insert temperature must be taken into consideration..

| Contact Size AWG/ MCM | Non-Circuit Breaking Ampere Rating | | † MV Drop | |
|---|---|---|---|---|
| | MS | N.E.C. *** | Solder Contacts | Crimp Contacts |
| #18 | – | 9 | 22 | 30 |
| #16 | 13 | 16 | 21 | 29 |
| #12 | 23 | 30 | 20 | 27 |
| #10 | 33 | 40 | 16 | 26 |
| # 8 | 46 | 50 | 12 | 23 |
| # 4 | 80 | 90 | 10 | 22 |
| #1/0 | 150 | 155 | 10 | 22 |
| #4/0 | 225 | 225 | 8 | 22 |
| 350 MCM | – | 325 | 8 | – |
| 500 MCM | – | 750 | – | 30 |
| 535 MCM | – | 839 | – | – |
| 646 MCM | – | 937 | – | – |
| 777 MCM | – | 1048 | – | – |

NOTE: The N.E.C. circuit breaking and non-circuit breaking ratings are based on test results of contacts and connectors. Consult the N.E.C. when selecting wire/cable for specific applications. Under certain conditions, a wire size may be rated higher or lower than the table indicates for a given contact size.

† Measurements made at extreme ends of mated contacts with probe touching contact and wire (MIL-5015 specifications).

** Based on temperature rise (National Electrical Code Requirement).

*** Based on Arcing Control (National Electrical Code Requirement).

# Spare/Replacement Contacts for MOD II and MOD III Inserts

Contacts are machined copper alloy ranging in size (AWG) from #18 to 500 MCM.
Standard line contacts are silver plated but can also be furnished with gold over silver, gold over nickel, and other combinations of plating systems available upon request.
Pin contacts are of blended geometry to provide extra strength and protection against damage. Socket contacts are the closed entry type.
Contacts for MOD I inserts are not listed because these inserts are factory assembled and damage may be done to the resilient center insulation if contacts are inserted or removed by inexperienced personnel in the field.

## MOD II

| Size Awg/MCM | "W" Length | "C" Length | "W" Ground | Polarizing Standard | Polarizing "C" |
|---|---|---|---|---|---|
| 18 Pin<br>18 Socket | ZP-4018-36L<br>ZP-4118-36L | | | | |
| 16 Pin<br>16 Socket | ZP-4016-36L<br>ZP-4116-36L | | ZP-4016-37L | | |
| 12 Pin<br>12 Socket | ZP-4012-36L<br>ZP-4112-36L | | ZP-4012-37L3 | | |
| 10 Pin<br>10 Socket | ZP-4010-36L<br>ZP-4110-36L | | ZP-4010-37L2 | | |
| 8 Pin<br>8 Socket | ZP-4008-66L<br>ZP-4108-66L | | | | |
| 4 Pin<br>4 Socket | ZP-4004-66L<br>ZP-4104-66L | | | ZP-4804-66L<br>ZP-4904-66L | |
| 1/0 Pin<br>1/0 Socket | ZP-4100-66L | ZP-4000-66LB | | ZP-4900-66LK | ZP-4800-66LKB |
| 4/0 Pin<br>4/0 Socket | ZP-4141-76L | ZP-4041-76LB | | | |
| 500 MCM Pin<br>500 MCM Socket | | P-206053-CP<br>P-206053-CS | | | |
| 535 MCM Pin<br>535 MCM Socket | | RIG-C24-535PN<br>RIG-C24-535SN | | | |
| 646-777 MCM Pin<br>646-777 MCM Socket | | RIG-C24-386PN<br>RIG-C24-386SN | | | |

## MOD III

| Size Awg/MCM | "W" Length | "C" Length | "W" Ground | Polarizing Standard | Polarizing "C" |
|---|---|---|---|---|---|
| 18 Pin<br>18 Socket | ZP-4018-50L<br>ZP-4118-50L | | | | |
| 16 Pin<br>16 Socket | ZP-4016-50L<br>ZP-4116-50L | | | | |
| 12 Pin<br>12 Socket | ZP-4012-50L<br>ZP-4112-50L | ZP-4012-50LB | ZP-4012-52LK | | |
| 10 Pin<br>10 Socket | ZP-4010-50L<br>ZP-4110-50L | | ZP-4010-52LK | | |
| 8 Pin<br>8 Socket | ZP-4008-50L<br>ZP-4108-50L | ZP-4008-50LB | | | |
| 4 Pin<br>4 Socket | ZP-4004-50L<br>ZP-4104-50L | | ZP-4004-52LK | ZP-4804-50LK<br>ZP-4904-50LK | |
| 1/0 Pin<br>1/0 Socket | ZP-4100-50L<br>ZP-4100-50L | ZP-4000-50LB | ZP-4800-52LKB | ZP-4800-50LK<br>ZP-4900-50LK | ZP-4800-50LKB |

"W" length represents standard insert lenght for sizes 12, 16, 20 24 and 28. "C" length represents longer insert length for sizes C20, C24 and C28. Contacts in "C" length inserts are 1/2" longer than standard. Ground contacts are 1/8" longer than standard. Ground clips are part of inserts. "C' length ground contacts are 1/8" longer than "C" length line contacts.

Note: For RADSOK contact availability consult Amphenol Industrial Operations.

# Termination Data

Amphenol – Pyle Connectors Corporation's tools for contact crimping, insertion and removal are required for terminating and assembling contacts.

## Contact Dimensions

| Contact Size AWG (mm) | WIRE WELL DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|
| | Solder Mod I | | Crimp* Mod II | | Crimp* Mod III | |
| | Diameter | Depth | Diameter | Depth | Diameter | Depth |
| #18 (0.75) | .060" (1.52) | 13/64" (5.15) | .059" (1.49) | 3/8" (9.52) | .058" (1.47) | 3/8" (9.52) |
| #16 (1.5) | .079" (2.00) | 13/64" (5.15) | .079" (2.00) | 1/2" (12.70) | .079" (2.00) | 1/2" (12.70) |
| #12 (4.0) | .117" (2.97) | 17/64" (6.47) | .113" (2.87) | 17/32" (6.74) | .113" (2.87) | 17/32" (13.49) |
| #10 (6.0) | .142" (3.61) | 25/64" (9.92) | .142" (3.60) | 19/32" (15.09) | .142" (3.60) | 19/32" (15.08) |
| #8 (10.0) | .210" (5.33) | 33/64" (9.12) | .189" (4.80) | 3/4" (19.05) | .188" (4.77) | 3/4" (19.05) |
| #4 (25.0) | .333" (8.45) | 37/64" (14.63) | .289" (7.34) | 53/64" (21.03) | .278" (7.06) | 53/64" (21.03) |
| 1/0 (50.0) | .470" (11.94) | 41/64" (16.27) | .445" (11.30) | 1-1/8" (28.58) | .455" (11.56) | 15/16" (23.81) |
| 4/0 (120.00) | .656" (16.7) | 57/64" (22.62) | | | .656" (16.7) | 15/16" (23.81) |
| 350MCM | .798" (20.27) | 1-1/8" (28.58) | | | | |
| (185.00) | | | | | | |
| 500 MCM | | | 1.00" (25.40) | 1-3/8" (34.93) | | |
| (240.00) | | | | | | |

* Crimp contacts have inspection hole.

## Crimp Data

| Contact Size | Conductor Wire Size (AWG) Crimped | Crimp Retention Min. Force Lbs. (N) |
|---|---|---|
| #18 (0.75) | #18<br>#20<br>#22 | 38 (169.0)<br>19 (84.5)<br>15 (66.7) |
| #16 (1.5) | #16<br>#18<br>#20 | 50 (222.4)<br>38 (169.0)<br>19 (84.5) |
| #12 (4.0) | #12<br>#14<br>#16 | 110 (489.3)<br>70 (311.4)<br>50 (222.4) |
| #10 (6.0) | #10<br>#12<br>#14 | 180** (800.7)<br>110 (489.3)<br>70 (311.4) |
| #8 (10.0) | #8<br>to<br>#10 | 225 (1000)<br><br>180 (800) |
| #4 (25.0) | #4<br>to<br>#6 | 400 (1779)<br><br>300 (1334) |
| 1/0 (50.0) | #2<br>to<br>1/0 | 550 (2447)<br><br>700 (3114) |
| 4/0 (120.00) | 4/0<br>3/0<br>2/0 | 875 (3892)<br>825 (3670)<br>750 (3336) |
| 500(240.00) | 500 MCM | 2500 (11120) |
| 535<br>646<br>777 | Recommend using Thomas & Betts TBM 15 crimp tool with appropriate sized dies. | |

** Stranded wire

## Torque Data for Pressure Contacts MOD I

| Contact/Conductor Size/Awg (mm) | Torque Req. In./Lbs. (N•m) | Retention Force Lbs. (N) |
|---|---|---|
| 4/0 (120.00) | 100 (11.3) | 4/0 450 (2001.7)<br>3/0 350 (1556.9)<br>2/0 300 (1334.5) |
| 1/0 (50.0) | 50 (5.7) | 1/0 250 (1112.0)<br>#1 200 (889.6)<br>#2 180 (800.7) |
| #4 (25.0) | 20 (2.3) | #4 140 (622.8)<br>#6 100 (444.8)<br>#8 90 (400.3) |
| #8 (10.0) | 25 (2.8) | #8 75 (333.6) |
| #10 (6.0) | 15 (1.7) | #10 80 (355.9)<br>#12 70 (311.4)<br>#14 60 (266.9) |

# Thermocouple Contacts

Thermocouple contacts are available for use in all insert configurations. Contact can be either purchased separately or included in the insert/connector-please coordinate with the factory on this latter option. For crimp terminations-see tools shown on page 76. When soldering, please adhere to the following procedures: (1) clean wire and solder well with stainless scratch brush. (2) Use Handy and Harman Silver Solder Flux. (3) Use Handy and Harman AMS 2665 Silver Solder with flame torch. *IMPORTANT-Use* extreme care to prevent overheating the female contact, otherwise tension will be lost and result in poor contact. (4) Clean flux from all surfaces using boiling water or steam.

## Table Temperature Range of Thermocouple Material

| Material* | Temperature Range | |
|---|---|---|
| | Degrees Continuous | Short Time |
| Electrolytic Copper & Constantan | 190-350°C | to 600°C |
| Chromel & Constantan | 0-900°C | to 1100°C |
| Iron & Constantan | 0-1100°C | to 1100°C |
| Chromel & Alumel | 0-1100°C | to 1350°C |

## MOD I & II

| Size | Gender | Cat. No. | Color Code | Thermocouple Material* |
|---|---|---|---|---|
| #16 | Pin<br>Socket | ZP-4016-10MF<br>ZP-4116-10MF | Black | Iron |
| #16 | Pin<br>Socket | ZP-4016-10NF<br>ZP-4116-10NF | Yellow | Constantan |
| #16 | Pin<br>Socket | ZP-4016-10PO<br>ZP-4116-10PO | White | Chromel |
| #16 | Pin<br>Socket | ZP-4016-10RO<br>ZP-4116-10RO | Green | Alumel |
| #16 | Pin<br>Socket | ZP-4016-10CF<br>ZP-4116-10CF | Red | Cooper |

## MOD III

| Size | Gender | Cat. No. | Color Code | Thermocouple Material* |
|---|---|---|---|---|
| #16 | Pin<br>Socket | ZP-4016-50MF<br>ZP-4116-50MF | Black | Iron |
| #16 | Pin<br>Socket | ZP-4016-50NF<br>ZP-4116-50NF | Yellow | Constantan |
| #16 | Pin<br>Socket | ZP-4016-50PO<br>ZP-4116-50PO | White | Chromel |
| #16 | Pin<br>Socket | ZP-4016-50RO<br>ZP-4116-50RO | Green | Alumel |
| #16 | Pin<br>Socket | ZP-4016-50CF<br>ZP-4116-50CF | Red | Cooper |
| #16 | Pin<br>Socket | ZP-4016-50SO<br>ZP-4116-50SO | None | Alloy #11 |

| ISA Symbol | Nomenclature* | ISA Color Coding | | | Military Color Coding | | Conductor Identification | |
|---|---|---|---|---|---|---|---|---|
| | | (+) | (–) | Jacket | (+) | (–) | Positive (+) | Negative (–) |
| J | Iron/Constantan | White | Red | Black | Black | Yellow | Magnetic | Non-Magnetic |
| K | Chromel/Alumel | Yellow | Red | Yellow | White | Green | Non-Magnetic | Magnetic |
| T | Copper/Constantan | Blue | Red | Blue | Red | Yellow | Copper Color | Non-Magnetic |
| E | Chromel/Constantan | Purple | Red | Purple | White | Yellow | Non-Magnetic | Silver Color Non-Magnetic |
| B | Copper/Copper | Black | White | Black | Red | Red | Copper Color | Non-Magnetic |
| S | Alloy #11 | | | | | | | |

* Chromel and Alumel are registered trademarks of Hoskins Manufacturing Company.

# Insert Configuration Index

For drawings and further information of insert arrangements listed see the referenced page numbers. Arrangements with RADSOK contacts are designated with an 'R' in front of the dash number in the part number. For availability of other arrangements, consult Amphenol Industrial Operations.

| Insert Arrangement Number | MOD I | MOD II | MOD III | Radsok Contacts | Total Number of Contacts | 18 (0.75) | 16 (1.5) | 12 (4.0) | 10 (6.0) | 8 (10.0) | 4 (250) | 1/0 (50.0) | 4/0 (120.0) | 350 MCM (185.0) | 500MCM (240.0) | 646-777 (300-400) | Page No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RIG-C24-386 | | X | | | 1 | | | | | | | | | | | 1 | 37 |
| RIG-C24-R386 | | X | | X | 1 | | | | | | | | | | | 1 | 37 |
| RIG-C24-535 | | X | | | 1 | | | | | | | | | | 1 | | 37 |
| RIG-C24-R535 | | X | | X | 1 | | | | | | | | | | 1 | | 37 |
| ZP-C20-379 | | | | | 1 | | | | | | | | | | 1 | | 37 |
| ZP-12-27 | X | | | | 3 | | | 3 | | | | | | | | | 37 |
| ZP-12-327 | | X | | | 3 | | | 3 | | | | | | | | | 37 |
| ZP-12-R327 | | X | | X | 3 | | | 3 | | | | | | | | | 37 |
| ZP-12-330 | | X(G) | | | 3 | | | 3 | | | | | | | | | 38 |
| ZP-12-R330 | | X(G) | | X | 3 | | | 3 | | | | | | | | | 38 |
| ZP-12-56 | X(G) | | | | 3 | | | | | 3 | | | | | | | 38 |
| ZP-16-74 | X(G) | | | | 3 | | | | | | 3 | | | | | | 38 |
| ZP-16-70 | X | | | | 3 | | | | | | 3 | | | | | | 38 |
| ZP-12-33 | X | | | | 4 | | 4 | | | | | | | | | | 39 |
| ZP-12-333 | | X | | | 4 | | 4 | | | | | | | | | | 39 |
| ZP-12-14 | X | | | | 4 | | | | 4 | | | | | | | | 39 |
| ZP-12-314 | | X | | | 4 | | | | 4 | | | | | | | | 39 |
| ZP-12-22 | X(G) | | | | 4 | | | | 4 | | | | | | | | 39 |
| ZP-16-28 | X | | | | 4 | | | | | 4 | | | | | | | 39 |
| ZP-16-628 | | | X | | 4 | | | | | 4 | | | | | | | 39 |
| ZP-16-22 | X | | | | 4 | | | | | | 4 | | | | | | 40 |
| ZP-16-322 | | X | | | 4 | | | | | | 4 | | | | | | 40 |
| ZP-16-38 | X(G) | | | | 4 | | | | | | 4 | | | | | | 40 |
| ZP-16-638 | | | X(G) | | 4 | | | | | | 4 | | | | | | 40 |
| ZP-C20-40 | X(G) | | | | 4 | | | | | | | 4 | | | | | 40 |
| ZP-C20-640 | | | X(G) | | 4 | | | | | | | 4 | | | | | 40 |
| ZP-24-83 | X | | | | 4 | | | | | | | 4 | | | | | 40 |
| ZP-C24-26 | X(G) | | | | 4 | | | | | | | | 4 | | | | 41 |
| ZP-C24-R26 | X(G) | | | X | 4 | | | | | | | | 4 | | | | 41 |
| ZP-C24-38 | X | | | | 4 | | | | | | | | 4 | | | | 41 |
| ZP-12-53 | X(G) | | | | 5 | | | 5 | | | | | | | | | 41 |
| ZP-12-653 | | | X(G) | | 5 | | | 5 | | | | | | | | | 41 |
| ZP-12-24 | X | | | | 5 | | | 5 | | | | | | | | | 41 |
| ZP-12-324 | | X | | | 5 | | | 5 | | | | | | | | | 41 |
| ZP-12-R324 | | X | | X | 5 | | | 5 | | | | | | | | | 41 |
| ZP-16-16 | X | | | | 5 | | | | | 5 | | | | | | | 42 |
| ZP-16-316 | | X | | | 5 | | | | | 5 | | | | | | | 42 |
| ZP-16-75 | X(G) | | | | 5 | | | | | 5 | | | | | | | 42 |
| ZP-20-84 | X | | | | 5 | | | | | | 5 | | | | | | 42 |
| ZP-20-384 | | X | | | 5 | | | | | | 5 | | | | | | 42 |
| ZP-20-38 | X(G) | | | | 5 | | | | | | 5 | | | | | | 42 |
| ZP-C24-79 | X | | | | 5 | | | | | | | 5 | | | | | 43 |
| ZP-C24-49 | X(G) | | | | 5 | | | | | | | 5 | | | | | 43 |
| ZP-C28-23 | X(G) | | | | 5 | | | | | | | | 5 | | | | 43 |
| ZP-C28-R23 | X(G) | | | X | 5 | | | | | | | | 5 | | | | 43 |
| ZP-12-326 | | X | | | 5 | | 3 | | | 2 | | | | | | | 43 |
| ZP-20-49 | X | | | | 5 | | | 3 | | | | 2 | | | | | 44 |
| ZP-20-649 | | | X | | 5 | | | 3 | | | | 2 | | | | | 44 |
| ZP-C24-48 | X | | | | 5 | | | 2 | | | | | 3 | | | | 44 |
| ZP-20-43 | X(G) | | | | 6 | | | | 2 | | 4 | | | | | | 44 |

(G) depicts arrangement with grounded contact

Amphenol INDUSTRIAL

# Insert Configuration Index

For drawings and further information of insert arrangements listed see the referenced page numbers. Arrangements with RADSOK contacts are designated with an 'R' in front of the dash number in the part number. For availability of other arrangements, consult Amphenol Industrial Operations.

| Insert Arrangement Number | MOD I | MOD II | MOD III | Radsok Contacts | Total Number of Contacts | 18 (0.75) | 16 (1.5) | 12 (4.0) | 10 (6.0) | 8 (10.0) | 4 (250) | 1/0 (50.0) | 4/0 (120.0) | 350 MCM (185.0) | 500MCM (240.0) | 646-777 (300-400) | Page No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ZP-20-643 | | | X(G) | | 6 | | | | 2 | | 4 | | | | | | 44 |
| ZP-20-46 | X | | | | 6 | | | | | | 4 | 2 | | | | | 44 |
| ZP-20-646 | | | X | | 6 | | | | | | 4 | 2 | | | | | 44 |
| ZP-20-48 | X | | | | 6 | | | 3 | | | | 3 | | | | | 45 |
| ZP-20-648 | | | X | | 6 | | | 3 | | | | 3 | | | | | 45 |
| ZP-C24-50 | X(G) | | | | 6 | | | | 2 | | 1 | 3 | | | | | 45 |
| ZP-C24-72 | X | | | | 6 | | | 3 | | | | | 3 | | | | 45 |
| ZP-C28-327 | | X | | | 6 | | | | | | | 6 | | | | | 45 |
| ZP-C28-18 | X | | | | 6 | | | 2 | | | | | | 4 | | | 46 |
| ZP-C28-R18 | X | | | X | 6 | | | 2 | | | | | | 4 | | | 46 |
| ZP-C28-42 | X(G) | | | | 6 | | | | 2 | | | | 4 | | | | 46 |
| ZP-C28-R42 | X(G) | | | X | 6 | | | | 2 | | | | 4 | | | | 46 |
| ZP-12-648 | | | X | | 7 | | 7 | | | | | | | | | | 46 |
| ZP-12-310 | | X(G) | | | 7 | | | 7 | | | | | | | | | 46 |
| ZP-12-R310 | | X(G) | | X | 7 | | | 7 | | | | | | | | | 46 |
| ZP-12-354 | | X | | | 7 | | | 7 | | | | | | | | | 47 |
| ZP-12-R354 | | X | | X | 7 | | | 7 | | | | | | | | | 47 |
| ZP-16-378 | | X(G) | | | 7 | | | 7 | | | | | | | | | 47 |
| ZP-20-659 | | | X | | 7 | | | | | 7 | | | | | | | 47 |
| ZP-C24-353 | | X | | | 8 | | | 4 | | | | 4 | | | | | 47 |
| ZP-C28-21 | X | | | | 8 | | | 4 | | | | | | 4 | | | 48 |
| ZP-C28-R21 | X | | | X | 8 | | | 4 | | | | | | 4 | | | 48 |
| ZP-C28-43 | X(G) | | | | 8 | | | 4 | | | | | | 4 | | | 48 |
| ZP-C28-R43 | X(G) | | | X | 8 | | | 4 | | | | | | 4 | | | 48 |
| ZP-16-29 | X | | | | 9 | | 8 | | | | 1 | | | | | | 48 |
| ZP-16-346 | | X | | | 9 | | | 6 | | 3 | | | | | | | 48 |
| ZP-12-355 | | X | | | 10 | | 10 | | | | | | | | | | 49 |
| ZP-12-334 | | X(G) | | | 10 | | 10 | | | | | | | | | | 49 |
| ZP-16-681 | | | X | | 10 | | | 6 | 4 | | | | | | | | 49 |
| ZP-16-676 | | | X(G) | | 10 | | | 6 | 4 | | | | | | | | 49 |
| ZP-20-55 | X | | | | 10 | | | 8 | | | | 2 | | | | | 50 |
| ZP-C24-680 | | | X(G) | | 10 | | | 6 | | | | 4 | | | | | 50 |
| ZP-20-375 | | X | | | 12 | | | | 12 | | | | | | | | 50 |
| ZP-16-349 | | X | | | 14 | | 12 | | | | 2 | | | | | | 50 |
| ZP-24-40 | X | | | | 15 | | 10 | | | | | 5 | | | | | 51 |
| ZP-C24-47 | X | | | | 15 | | | 10 | | | | 5 | | | | | 51 |
| ZP-C24-81 | X(G) | | | | 15 | | | 10 | | | | 5 | | | | | 51 |
| ZP-16-325 | | X | | | 16 | | 16 | | | | | | | | | | 51 |
| ZP-20-358 | | X | | | 16 | | | | | 16 | | | | | | | 52 |
| ZP-12-323 | | X | | | 17 | 17 | | | | | | | | | | | 52 |
| ZP-16-324 | | X | | | 18 | | 16 | | 2 | | | | | | | | 52 |
| ZP-16-377 | | X | | | 19 | | | 19 | | | | | | | | | 52 |
| ZP-16-R377 | | X | | X | 19 | | | 19 | | | | | | | | | 52 |
| ZP-16-312 | | X(G) | | | 19 | | | 19 | | | | | | | | | 53 |
| ZP-16-R312 | | X(G) | | X | 19 | | | 19 | | | | | | | | | 53 |
| ZP-16-355 | | X | | | 19 | | 19 | | | | | | | | | | 53 |
| ZP-16-655 | | | X | | 19 | | 19 | | | | | | | | | | 53 |
| ZP-20-376 | | X | | | 19 | | | 19 | | | | | | | | | 53 |
| ZP-20-R376 | | X | | X | 19 | | | 19 | | | | | | | | | 53 |
| ZP-20-688 | | | X(G) | | 19 | | | 19 | | | | | | | | | 53 |

(G) depicts arrangement with grounded contact

# Insert Configuration Index

For drawings and further information of insert arrangements listed see the referenced page numbers. Arrangements with RADSOK contacts are designated with an 'R' in front of the dash number in the part number. For availability of other arrangements, consult Amphenol Industrial Operations.

| Insert Arrangement Number | MOD I | MOD II | MOD III | Radsok Contacts | Total Number of Contacts | 18 (0.75) | 16 (1.5) | 12 (4.0) | 10 (6.0) | 8 (10.0) | 4 (250) | 1/0 (50.0) | 4/0 (120.0) | 350 MCM (185.0) | 500MCM (240.0) | 646-777 (300-400) | Page No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ZP-20-32 | X | | | | 20 | | | 20 | | | | | | | | | 54 |
| ZP-20-332 | | X | | | 20 | | | 20 | | | | | | | | | 54 |
| ZP-20-R332 | | X | | X | 20 | | | 20 | | | | | | | | | 54 |
| ZP-20-387 | | X(G) | | | 20 | | | 20 | | | | | | | | | 54 |
| ZP-20-R387 | | X(G) | | X | 20 | | | 20 | | | | | | | | | 54 |
| ZP-20-334 | | X | | | 20 | | 16 | | | 4 | | | | | | | 54 |
| ZP-16-344 | | X | | | 21 | | 11 | 10 | | | | | | | | | 54 |
| ZP-20-331 | | X | | | 22 | | 20 | | | 2 | | | | | | | 55 |
| ZP-16-37 | X | | | | 26 | 18 | 4 | 4 | | | | | | | | | 55 |
| ZP-16-335 | | X | | | 27 | | 24 | 3 | | | | | | | | | 55 |
| ZP-16-673 | | | X(G) | | 27 | | 24 | 3 | | | | | | | | | 55 |
| ZP-20-374 | | X | | | 27 | | | 25 | | | 2 | | | | | | 56 |
| ZP-C28-328 | | X | | | 29 | | | 23 | | 2 | | 4 | | | | | 56 |
| ZP-16-321 | | X | | | 37 | | 37 | | | | | | | | | | 56 |
| ZP-20-386 | | X | | | 37 | | | 37 | | | | | | | | | 56 |
| ZP-20-R386 | | X | | X | 37 | | | 37 | | | | | | | | | 56 |
| ZP-20-350 | | X(G) | | | 37 | | | 37 | | | | | | | | | 57 |
| ZP-20-R350 | | X(G) | | X | 37 | | | 37 | | | | | | | | | 57 |
| ZP-24-371 | | X | | | 37 | | 37 | | | | | | | | | | 57 |
| ZP-C24-36 | X | | | | 37 | | | 35 | | | | 2 | | | | | 57 |
| ZP-20-323 | | X | | | 38 | | 35 | | 3 | | | | | | | | 57 |
| ZP-28-339 | | X | | | 42 | | | 42 | | | | | | | | | 58 |
| ZP-28-R339 | | X | | X | 42 | | | 42 | | | | | | | | | 58 |
| ZP-16-371 | | X | | | 46 | 45 | | | | 1 | | | | | | | 58 |
| ZP-20-354 | | X | | | 47 | | 45 | | | 2 | | | | | | | 58 |
| ZP-C28-15 | X | | | | 47 | | | 43 | | | 3 | 1 | | | | | 58 |
| ZP-20-673 | | | X | | 50 | | 46 | | | 4 | | | | | | | 59 |
| ZP-16-640 | | | X | | 55 | 55 | | | | | | | | | | | 59 |
| ZP-28-324 | | X | | | 55 | | 41 | 5 | | 3 | 6 | | | | | | 59 |
| ZP-24-84 | X | | | | 58 | | | 58 | | | | | | | | | 59 |
| ZP-24-384 | | X | | | 58 | | | 58 | | | | | | | | | 59 |
| ZP-24-R384 | | X | | X | 58 | | | 58 | | | | | | | | | 59 |
| ZP-24-352 | | X(G) | | | 58 | | | 58 | | | | | | | | | 60 |
| ZP-24-R352 | | X(G) | | X | 58 | | | 58 | | | | | | | | | 60 |
| ZP-20-35 | X | | | | 60 | | 60 | | | | | | | | | | 60 |
| ZP-24-331 | | X | | | 60 | | 53 | 7 | | | | | | | | | 60 |
| ZP-16-333 | | X | | | 61 | 61 | | | | | | | | | | | 60 |
| ZP-20-329 | | X | | | 64 | | 62 | | 2 | | | | | | | | 61 |
| ZP-20-313 | | X | | | 68 | | 68 | | | | | | | | | | 61 |
| ZP-24-354 | | X | | | 75 | | 61 | 11 | | 3 | | | | | | | 61 |
| ZP-20-344 | | X | | | 81 | 70 | | 11 | | | | | | | | | 61 |
| ZP-20-345 | | X | | | 90 | 90 | | | | | | | | | | | 62 |
| ZP-24-313 | | X | | | 100 | | 100 | | | | | | | | | | 62 |
| ZP-24-385 | | X | | | 100 | | 100 | | | | | | | | | | 62 |
| ZP-28-314 | | X | | | 100 | | 83 | 17 | | | | | | | | | 63 |
| ZP-28-322 | | X | | | 143 | | 143 | | | | | | | | | | 63 |

(G) depicts arrangement with grounded contact

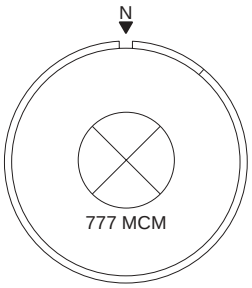
# Insert Configurations

## 1 Contact (Dead Front Male Contact/Line Side)

front face of pin insert shown

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number |
|---|---|---|---|---|---|
| Mod II | Crimp | C24 | Pin | 386PN | RIG-C24-386PN |
| | | | Socket | 386SN | RIG-C24-386SN |
| Mod II | Radsok Crimp | C24 | Pin | R386PN | RIG-C24-R386PN |
| | | | Socket | R386SN | RIG-C24-R386SN |

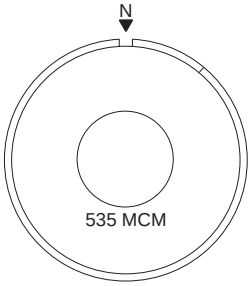
| Qty. | Size AWG (mm) | Current Rating | Voltage |
|---|---|---|---|
| 1 | 646-777 (300-400) | 1135A | 1000V |




## 1 Contact (Dead Front Male Contact/Line Side)

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number |
|---|---|---|---|---|---|
| Mod II | Crimp | C24 | Pin | 535PN | RIG-C24-535PN |
| | | | Socket | 535SN | RIG-C24-535SN |
| Mod II | Radsok Crimp | C24 | Pin | R535PN | RIG-C24-R535PN |
| | | | Socket | R535SN | RIG-C24-R535SN |

| Qty. | Size AWG (mm) | Current Rating | Voltage |
|---|---|---|---|
| 1 | 444-535 (240.00) | 900A | 1000V |

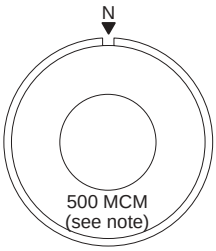



## 1 Contact

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number |
|---|---|---|---|---|---|
| **Mod II** | **Crimp** | **C20** | **Pin** | **379PN** | **ZP-C20-379PN** |
| | | | **Socket** | **379SN** | **ZP-C20-379SN** |

| Qty. | Size AWG | Service Voltage Rating |
|---|---|---|
| **1** | **500MCM** | **D** |

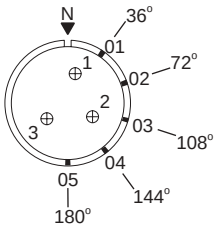
NOTE: Will accept 535 standard stranding 500 MCM extra flexible cable.




## 3 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number |
|---|---|---|---|---|---|
| Mod I | Solder | 12 | Pin | 27P | ZP-12-27P |
| | | | Socket | 27S | ZP-12-27S |
| Mod II | Crimp | 12 | Pin | 327PN | ZP-12-327PN |
| | | | Socket | 327SN | ZP-12-327SN |
| Mod II | Radsok Crimp | 12 | Pin | R327PN | ZP-12-R327PN |
| | | | Socket | R327SN | ZP-12-R327SN |

| Qty. | Size AWG | Service Voltage Rating |
|---|---|---|
| 3 | 12 | D |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|

| Contact Symbols | ○ | • | ⊕ | ○ | ◉ | ● | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

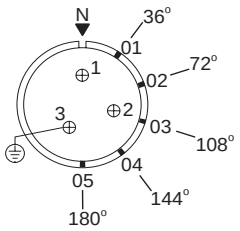
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

## 3 Contacts

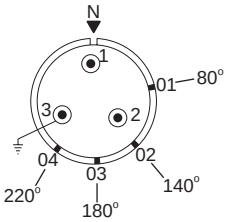
front face of pin insert shown

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 12 | Pin | 330PN | ZP-12-330PN | 3 | 12 | D |
| | | | Socket | 330SN | ZP-12-330SN | | | |
| Mod II | Radsok Crimp | 12 | Pin | R330PN | ZP-12-R330PN | | | |
| | | | Socket | R330SN | ZP-12-R330SN | | | |



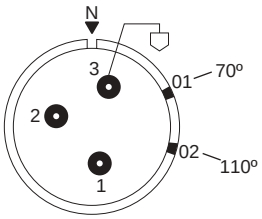

## 3 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 12 | Pin | 56P | ZP-12-56P | 3 | 8 | ◆A |
| | | | Socket | 56S | ZP-12-56S | | | |



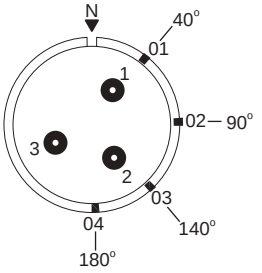

## 3 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 16 | Pin | 74P | ZP-16-74P | 3 | 4 | D |
| | | | Socket | 74S | ZP-16-74S | | | |
| Mod I | Pressure | 16 | Pin | 74PR | ZP-16-74-PR | | | |
| | | | Socket | 74SR | ZP-16-74-SR | | | |




## 3 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 16 | Pin | 70P | ZP-16-70P | 3 | 4 | D |
| | | | Socket | 70S | ZP-16-70S | | | |
| Mod I | Pressure | 16 | Pin | 70PR | ZP-16-70PR | | | |
| | | | Socket | 70SR | ZP-16-70SR | | | |




Grounding Contact Termination Symbol

Solder Well | Pressure | Crimp

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

◆ For non-circuit breaking service only.
★ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

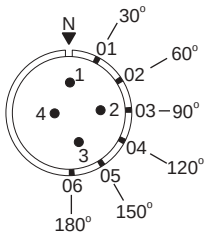
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

## 4 Contacts

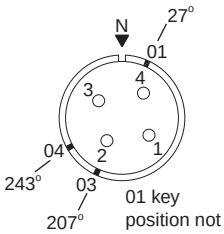
front face of pin insert shown

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 12 | Pin | 33P | ZP-12-33P | 4 | 16 | D |
| | | | Socket | 33S | ZP-12-33S | | | |
| Mod II | Crimp | 12 | Pin | 333PN | ZP-12-333PN | | | |
| | | | Socket | 333SN | ZP-12-333SN | | | |




## 4 Contacts

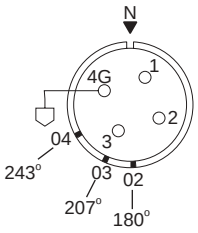
| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 12 | Pin | 14P | ZP-12-14P | 4 | 10 | D |
| | | | Socket | 14S | ZP-12-14S | | | |
| Mod I | Pressure | 12 | Pin | 14PR | ZP-12-14PR | | | |
| | | | Socket | 14SR | ZP-12-14SR | | | |
| Mod II | Crimp | 12 | Pin | 314PN | ZP-12-314PN | | | |
| | | | Socket | 314SN | ZP-12-314SN | | | |




01 key position not available in pressure termination

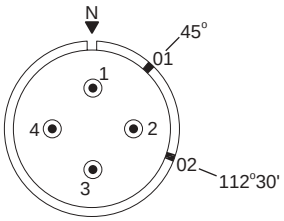
## 4 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 12 | Pin | 22P | ZP-12-22P | 4 | 10 | D |
| | | | Socket | 22S | ZP-12-22S | | | |
| Mod I | Pressure | 12 | Pin | 22PR | ZP-12-22PR | | | |
| | | | Socket | 22SR | ZP-12-22SR | | | |




## 4 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 16 | Pin | 28P | ZP-16-28P | 4 | 8 | D |
| | | | Socket | 28S | ZP-16-28S | | | |
| Mod III | Crimp | 16 | Pin | 628PN | ★ | | | |
| | | | Socket | 628SN | ★ | | | |




NOTE: Cannot be used with short cable adapter

Grounding Contact Termination Symbol

Solder Well | Pressure | Crimp

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | ◬ | ▢ | ◯ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

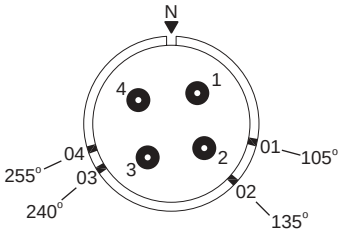
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

## 4 Contacts

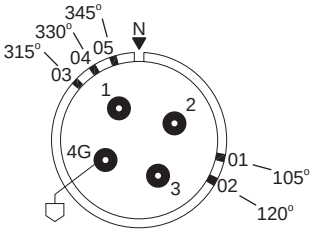
front face of pin insert shown

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 16 | Pin<br>Socket | 22P<br>22S | ZP-16-22P<br>ZP-16-22S | 4 | 4 | D |
| Mod I | Pressure | 16 | Pin<br>Socket | 22PR<br>22SR | ZP-16-22PR<br>ZP-16-22SR | | | |
| Mod II | Crimp | 16 | Pin<br>Socket | 322PN<br>322SN | ZP-16-322PN<br>ZP-16-322SN | | | |



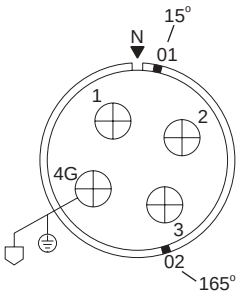

## 4 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 16 | Pin<br>Socket | 38P<br>38S | ZP-16-38P<br>ZP-16-38S | 4 | 4 | D |
| Mod I | Pressure | 16 | Pin<br>Socket | 38PR<br>38SR | ZP-16-38PR<br>ZP-16-38SR | | | |
| Mod III | Crimp | 16 | Pin<br>Socket | 638PN<br>638SN | ★<br>★ | | | |



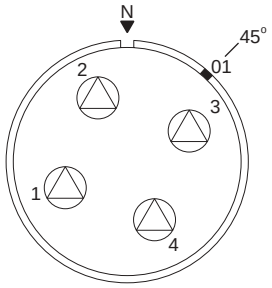

## 4 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Current Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C20 | Pin<br>Socket | 40P<br>40S | ZP-C20-40P<br>ZP-C20-40S | 4 | 1/0 | D |
| Mod I | Pressure | C20 | Pin<br>Socket | 40PR<br>40SR | ZP-C20-40PR<br>Zp-C20-40SR | | | |
| Mod III | Crimp | C20 | Pin<br>Socket | 640PN<br>640SN | ★<br>★ | | | |




## 4 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 24 | Pin<br>Socket | 83P<br>83S | ZP-24-83P<br>ZP-24-83S | 4 | 4/0 | ◆D |




Grounding Contact Termination Symbol

Solder Well | Pressure | Crimp

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ◉ | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

◆ For non-circuit breaking service only.
★ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

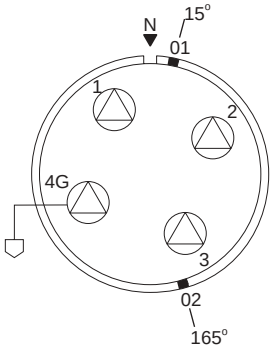
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

## 4 Contacts

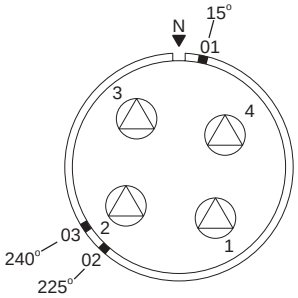
front face of pin insert shown

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C24 | Pin<br>Socket | 26P<br>26S | ZP-C24-26P<br>ZP-C24-26S | 4 | 4/0 | D |
| Mod I | Pressure | C24 | Pin<br>Socket | 26PR<br>26SR | ZP-C24-26PR<br>ZP-C24-26SR | | | |
| Mod I | Radsok Pressure | C24 | Pin<br>Socket | R26PR<br>R26SR | ZP-C24-R26PR<br>ZP-C24-R26SR | | | |



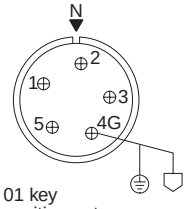

## 4 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C24 | Pin<br>Socket | 38P<br>38S | ZP-C24-38P<br>ZP-C24-38S | 4 | 4/0 | D |
| Mod II | Pressure | C24 | Pin<br>Socket | 38PR<br>38SR | ZP-C24-38PR<br>ZP-C24-38SR | | | |




## 5 Contacts

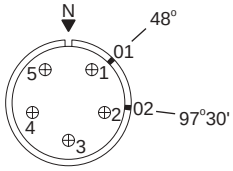
| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 12 | Pin<br>Socket | 53P<br>53S | ZP-12-53P<br>ZP-12-53S | 5 | 12 | D |
| Mod III | Crimp | 12 | Pin<br>Socket | 653PN<br>653SN | ★<br>★ | | | |




01 key position not available in presssure termination

## 5 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| ModI | Solder | 12 | Pin<br>Socket | 24P<br>24S | ZP-12-24P<br>ZP-12-24S | 5 | 12 | D |
| Mod II | Crimp | 12 | Pin<br>Socket | 324PN<br>324SN | ZP-12-324PN<br>ZP-12-324SN | | | |
| Mod II | Radsok Crimp | 12 | Pin<br>Socket | R324PN<br>R324SN | ZP-12-R324PN<br>ZP-12-R324SN | | | |




Grounding Contact Termination Symbol

Solder Well | Pressure | Crimp

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

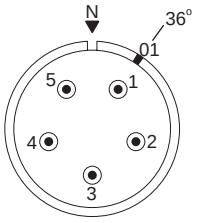
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

## 5 Contacts

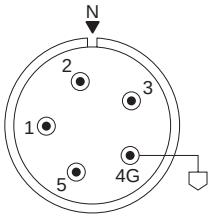
front face of pin insert shown

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 16 | Pin | 16P | ZP-16-16P | 5 | 8 | D |
| | | | Socket | 16S | ZP-16-16S | | | |
| Mod II | Crimp | 16 | Pin | 316PN | ZP-16-316PN | | | |
| | | | Socket | 316SN | ZP-16-316SN | | | |



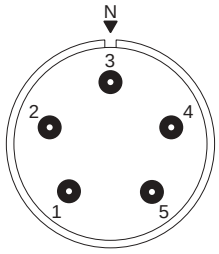

## 5 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 16 | Pin | 75P | ZP-16-75P | 5 | 8 | D |
| | | | Socket | 75S | ZP-16-75S | | | |



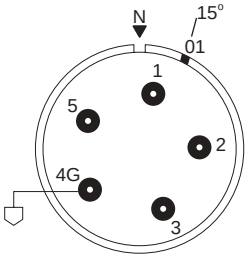

## 5 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 20 | Pin | 84P | ZP-20-84P | 5 | 4 | D |
| | | | Socket | 84S | ZP-20-84S | | | |
| Mod I | Pressure | 20 | Pin | 84PR | ZP-20-84PR | | | |
| | | | Socket | 84SR | ZP-20-84SR | | | |
| Mod II | Crimp | 20 | Pin | 384PN | ZP-20-384PN | | | |
| | | | Socket | 384SN | ZP-20-384SN | | | |




## 5 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 20 | Pin | 38P | ZP-20-38P | 5 | 4 | D |
| | | | Socket | 38S | ZP-20-38S | | | |
| Mod I | Pressure | 20 | Pin | 38PR | ZP-20-38PR | | | |
| | | | Socket | 38SR | ZP-20-38SR | | | |




Grounding Contact Termination Symbol

Solder Well | Pressure | Crimp

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ◉ | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

◆ For non-circuit breaking service only.
★ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

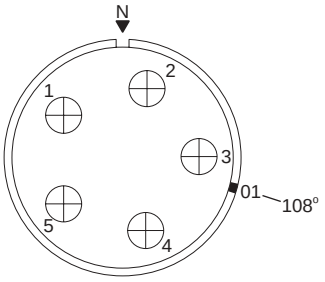
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

## 5 Contacts

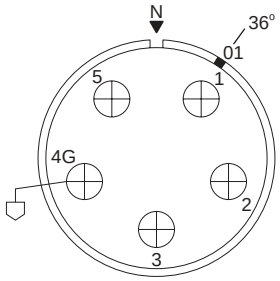
front face of pin insert shown

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C24 | Pin | 79P | ZP-C24-79P | 5 | 1/0 | E |
| | | | Socket | 79S | ZP-C24-79S | | | |
| Mod I | Pressure | C24 | Pin | 79PR | ZP-C24-79PR | | | |
| | | | Socket | 79SR | ZP-C24-79SR | | | |



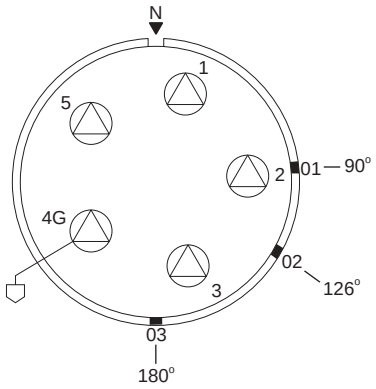

## 5 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C24 | Pin | 49P | ZP-C24-49P | 5 | 1/0 | E |
| | | | Socket | 49S | ZP-C24-49S | | | |
| Mod I | Pressure | C24 | Pin | 49PR | ZP-C24-49PR | | | |
| | | | Socket | 49SR | ZP-C24-49SR | | | |



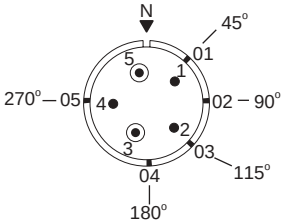

## 5 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C28 | Pin | 23P | ZP-C28-23P | 5 | 4/0 | D |
| | | | Socket | 23S | ZP-C28-23S | | | |
| Mod I | Pressure | C28 | Pin | 23PR | ZP-C28-23PR | | | |
| | | | Socket | 23SR | ZP-C28-23SR | | | |
| Mod I | Radsok Pressure | C28 | Pin | R23PR | ZP-C28-R23PR | | | |
| | | | Socket | R23SR | ZP-C28-R23SR | | | |




## 5 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 12 | Pin | 326PN | ZP-12-326PN | 2 | 8 | ◆A |
| | | | Socket | 326SN | ZP-12-326SN | 3 | 16 | ◆A |




Grounding Contact Termination Symbol

Solder Well | Pressure | Crimp

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | ◬ | ▢ | ◯ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

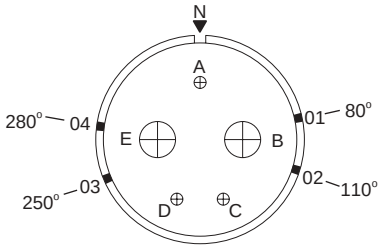
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

## 5 Contacts

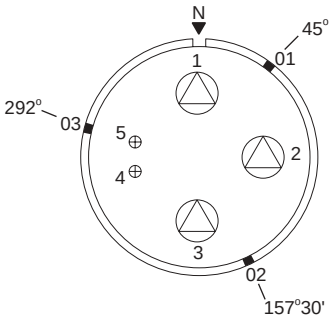
front face of pin insert shown

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 20 | Pin | 49P | ZP-20-49P | 2 | 1/0 | ◆E |
| | | | Socket | 49S | ZP-20-49S | 3 | 12 | ◆E |
| Mod III | Crimp | 20 | Pin | 649PN | ★ | | | |
| | | | Socket | 649SN | ★ | | | |



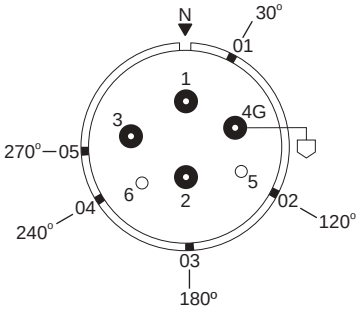

## 5 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C24 | Pin | 48P | ZP-C24-48P | 3 | 4/0 | ✶D |
| | | | Socket | 48S | ZP-C24-48S | 2 | 12 | ✶A |



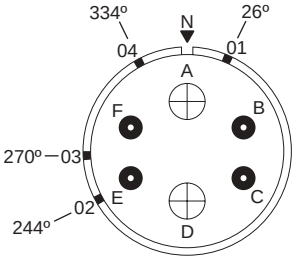

## 6 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Pressure | 20 | Pin | 43PR | ZP-20-43PR | 4 | 4 | ✶D |
| | | | Socket | 43SR | ZP-20-43SR | 2 | 10 | ✶D |
| Mod III | Crimp | 20 | Pin | 643PN | ★ | | | |
| | | | Socket | 643SN | ★ | | | |




## 6 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 20 | Pin | 46PR | ZP-20-46P | 2 | 1/0 | ✥A |
| | | | Socket | 46SR | ZP-20-46S | 4 | 4 | ✥A |
| Mod III | Crimp | 20 | Pin | 646PN | ★ | | | |
| | | | Socket | 646SN | ★ | | | |




Grounding Contact Termination Symbol

Solder Well | Pressure | Crimp

| Contact Symbols | ○ | • | ⊕ | ○ | ◉ | ● | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

◆ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

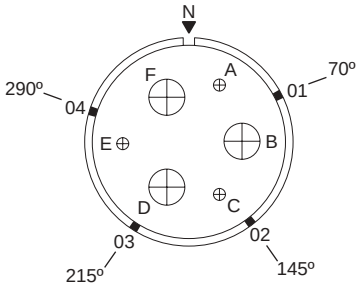
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

## 6 Contacts

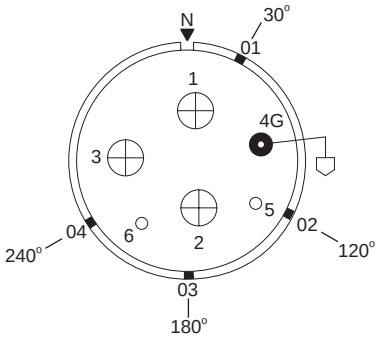
front face of pin insert shown

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 20 | Pin | 48P | ZP-20-48P | 3 | 1/0 | ✦D |
| | | | Socket | 48S | ZP-20-48S | 3 | 12 | ✦D |
| Mod III | Crimp | 20 | Pin | 648PN | ★ | | | |
| | | | Socket | 648SN | ★ | | | |



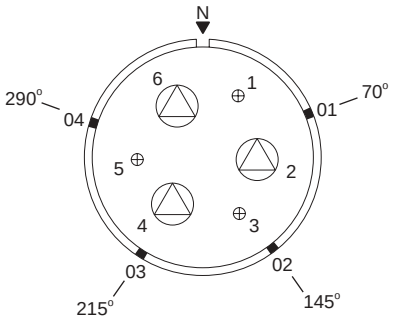

## 6 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Pressure | C24 | Pin | 50PR | ZP-C24-50PR | 3 | 1/0 | ✶D |
| | | | Socket | 50SR | ZP-C24-50SR | 2 | 10 relay | ✶D |
| | | | | | | 1 | 4 | ✶D |



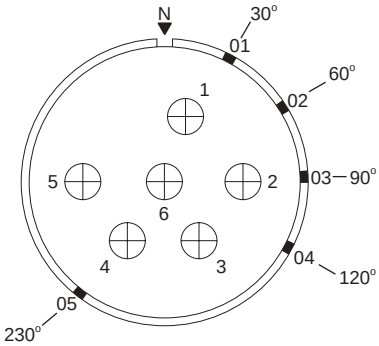

## 6 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C24 | Pin | 72P | ZP-C24-72P | 3 | 4/0 | D |
| | | | Socket | 72S | ZP-C24-72S | 3 | 12 | D |




## 6 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | C28 | Pin | 327PN | ZP-C28-327PN | 6 | 1/0 | D |
| | | | Socket | 327SN | ZP-C28-327SN | | | |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|
| ⏚ | ⏚ | ⏚ |

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | ⊕ | ⊕ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

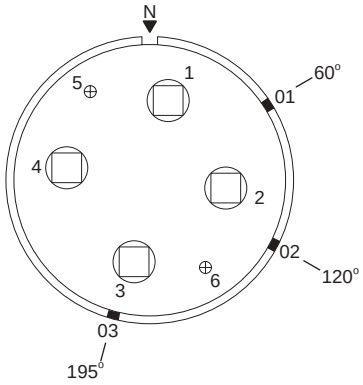
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

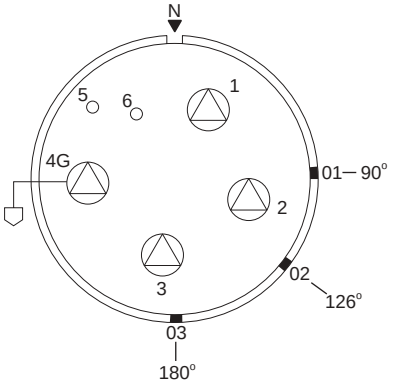
## 6 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C28 | Pin | 18P | ZP-C28-18P | 4 | 350 MCM | ✶D |
| | | | Socket | 18S | ZP-C28-18S | 2 | 12 Relay | ✶E |
| Mod I | Radsok Solder | C28 | Pin | R18P | ZP-C28-R18P | | | |
| | | | Socket | R18S | ZP-C28-R18S | | | |



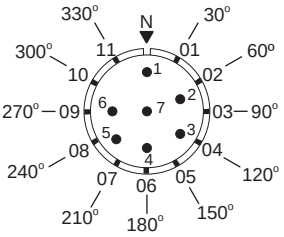

## 6 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C28 | Pin | 42P | ZP-C28-42P | 4 | 4/0 | ✶D |
| | | | Socket | 42S | ZP-C28-42S | 2 | 10 Relay | ✶D |
| Mod I | Pressure | C28 | Pin | 42PR | ZP-C28-42PR | | | |
| | | | Socket | 42SR | ZP-C28-42SR | | | |
| Mod I | RADSOK Pressure | C28 | Pin | R42PR | ZP-C28-R42PR | | | |
| | | | Socket | R42SR | ZP-C28-R42SR | | | |



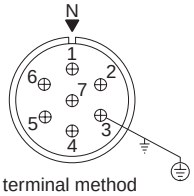

## 7 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod III | Crimp | 12 | Pin | 648PN | ★ | 7 | 16 | A |
| | | | Socket | 648SN | ★ | | | |




## 7 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 12 | Pin | 310PN | ZP-12-310PN | 7 | 12 | ✦A |
| | | | Socket | 310SN | ZP-12-310SN | | | |
| Mod II | Radsok Crimp | 12 | Pin | R310PN | ZP-12-R310PN | | | |
| | | | Socket | R310SN | ZP-12-R310SN | | | |




Ground terminal method same as corresponding line contacts

Grounding Contact Termination Symbol

Solder Well | Pressure | Crimp

| Contact Symbols | ○ | • | ⊕ | ○ | ◉ | ◉ | ⊕ | ◭ | ▣ | ◯ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

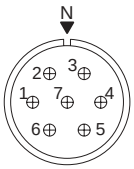
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

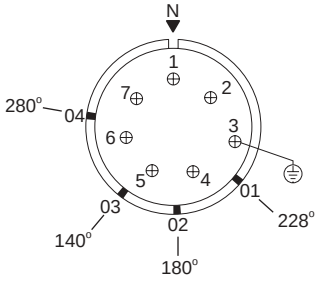
## 7 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 12 | Pin | 354PN | ZP-12-354PN | 7 | 12 | ✦A |
| | | | Socket | 354SN | ZP-12-354SN | | | |
| Mod II | RADSOK Crimp | 12 | Pin | R354PN | ZP-12-R354PN | | | |
| | | | Socket | R354SN | ZP-12-R354SN | | | |



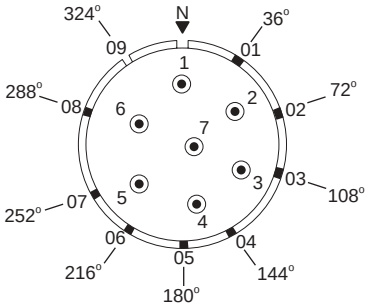

## 7 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 378PN | ZP-16-378PN | 7 | 12 | D |
| | | | Socket | 378SN | ZP-16-378SN | | | |



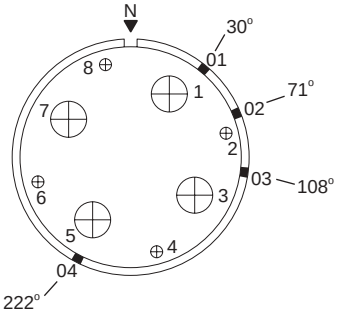

## 7 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod III | Crimp | 20 | Pin | 659PN | ★ | 7 | 8 | E |
| | | | Socket | 659SN | ★ | | | |




## 8 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | C24 | Pin | 353PN | ZP-C24-353PN | 4 | 1/0 | ✦B |
| | | | Socket | 353SN | ZP-C24-353SN | 4 | 12 | ✦A |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|
| ⏚ | ⏛ | ⊜ |

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | ⊕ | ⊕ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

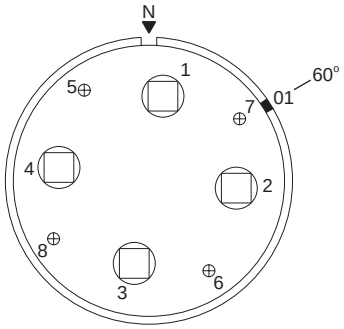
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

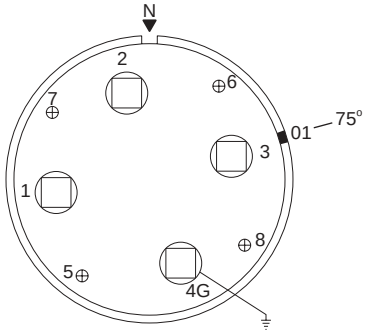
## 8 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C28 | Pin | 21P | ZP-C28-21P | 4 | 350 MCM | ✶D |
| | | | Socket | 21S | ZP-C28-21S | 4 | 12 Relay | ✶E |
| Mod I | Radsok Solder | C28 | Pin | R21P | ZP-C28-R21P | | | |
| | | | Socket | R21S | ZP-C28-R21S | | | |



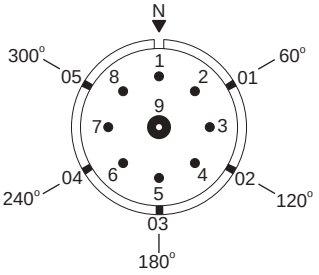

## 8 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C28 | Pin | 43P | ZP-C28-43P | 4 | 350 MCM | ✶D |
| | | | Socket | 43S | ZP-C28-43S | 4 | 12 Relay | ✶E |
| Mod I | Radsok Solder | C28 | Pin | R43P | ZP-C28-R43P | | | |
| | | | Socket | R43S | ZP-C28-R43S | | | |



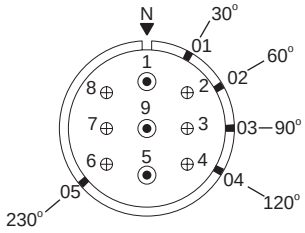

## 9 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 16 | Pin | 29P | ZP-16-29P | 1 | 4 | ✦D |
| | | | Socket | 29S | ZP-16-29S | 8 | 16 | ✦D |




## 9 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 346PN | ZP-16-346PN | 6 | 12 | A |
| | | | Socket | 346SN | ZP-16-346SN | 3 | 8 | A |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|
| ⏚ | ⏛ | ⏚ |

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ◉ | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

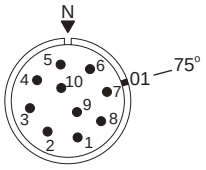
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

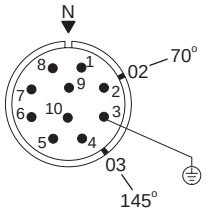
## 10 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 12 | Pin | 355PN | ZP-12-355PN | 10 | 16 | ✦A |
| | | | Socket | 355SN | ZP-12-355SN | | | |



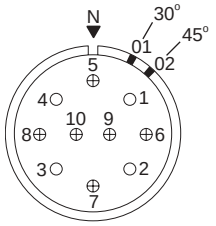

## 10 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 12 | Pin | 334PN | ZP-12-334PN | 10 | 16 | A |
| | | | Socket | 334SN | ZP-12-334SN | | | |



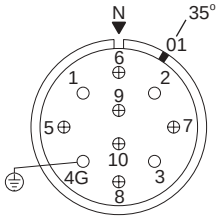

## 10 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod III | Crimp | 16 | Pin | 681PN | ★ | 4 | 10 | D |
| | | | Socket | 681SN | ★ | 6 | 12 | D |




## 10 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod III | Crimp | 16 | Pin | 676PN | ★ | 4 | 10 | D |
| | | | Socket | 676SN | ★ | 6 | 12 | D |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|
| ⏚ | ⏛ | ⊜ |

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

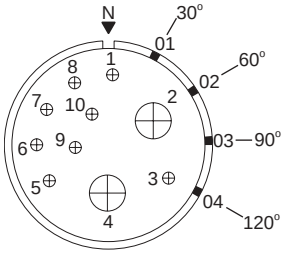
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

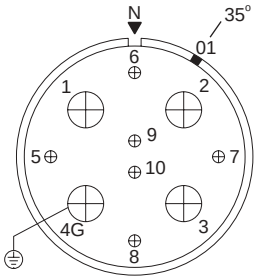
## 10 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 20 | Pin | 55P | ZP-20-55P | 2 | 1/0 | D |
| | | | Socket | 55S | ZP-20-55S | 8 | 12 | D |



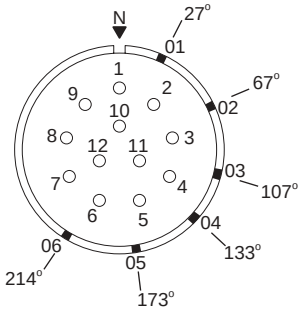

## 10 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod III | Crimp | C24 | Pin | 680PN | ★ | 4 | 1/0 | D |
| | | | Socket | 680SN | ★ | 6 | 12 | D |



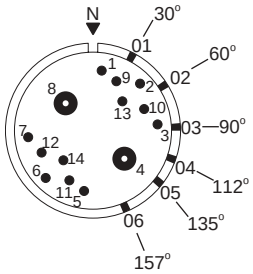

## 12 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 375PN | ZP-20-375PN | 12 | 10 | D |
| | | | Socket | 375SN | ZP-20-375SN | | | |




## 14 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 349PN | ZP-16-349PN | 2 | 4 | ❖D |
| | | | Socket | 349SN | ZP-16-349SN | 12 | 16 | ❖A |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|
| ⏚ | ⏛ | ⊜ |

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ◉ | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

❖ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

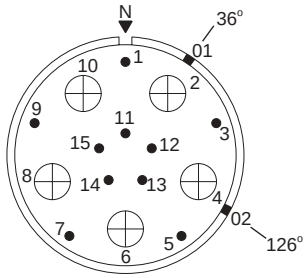
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

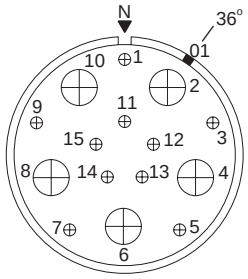
## 15 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 24 | Pin | 40P | ZP-24-40P | 5 | 1/0 | ✦D |
| | | | Socket | 40S | ZP-24-40S | 10 | 16 | ✦D |



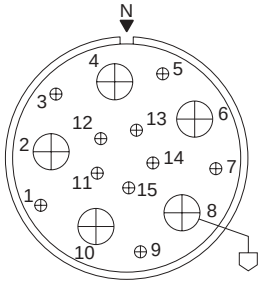

## 15 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C24 | Pin | 47P | ZP-C24-47P | 5 | 1/0 | D |
| | | | Socket | 47S | ZP-C24-47S | 10 | 12 | A |



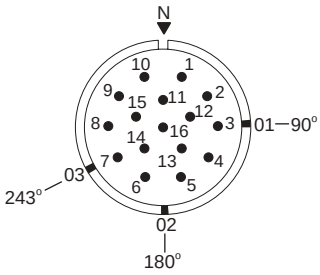

## 15 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C24 | Pin | 81P | ZP-C24-81P | 5 | 1/0 | D |
| | | | Socket | 81S | ZP-C24-81S | 10 | 12 | A |




## 16 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 325PN | ZP-16-325PN | 16 | 16 | D |
| | | | Socket | 325SN | ZP-16-325SN | | | |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|
| ⏚ | ⏛ | ⊜ |

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

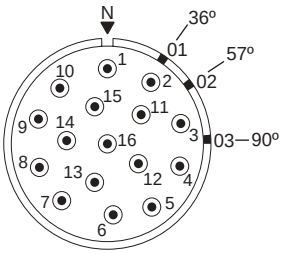
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

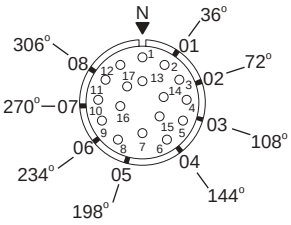
## 16 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 358PN | ZP-20-358PN | 16 | 8 | ✦A |
| | | | Socket | 358SN | ZP-20-358SN | | | |



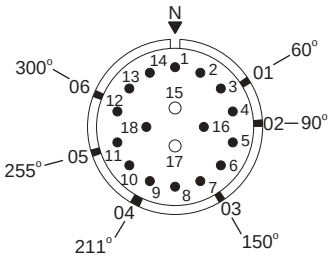

## 17 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 12 | Pin | 323PN | ZP-12-323PN | 17 | 18 | ✦A |
| | | | Socket | 323SN | ZP-12-323PN | | | |



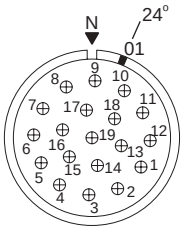

## 18 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 324PN | ZP-16-324PN | 2 | 10 | D |
| | | | Socket | 324SN | ZP-16-324SN | 16 | 16 | D |




## 19 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 377PN | ZP-16-377PN | 19 | 12 | ✦A |
| | | | Socket | 377SN | ZP-16-377SN | | | |
| Mod II | Radsok Crimp | 16 | Pin | R377PN | ZP-16-R377PN | | | |
| | | | Socket | R377SN | ZP-16-R377SN | | | |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|
| ⏚ | ⏛ | ⏚ |

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ◉ | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
★ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

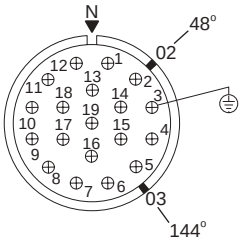
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

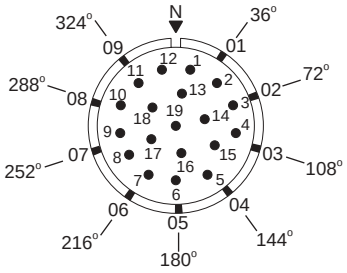
## 19 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 312PN | ZP-16-312PN | 19 | 12 | ✦A |
| | | | Socket | 312SN | ZP-16-312SN | | | |
| Mod II | Radsok Crimp | 16 | Pin | R312PN | ZP-16-R312PN | | | |
| | | | Socket | R312SN | ZP-16-R312SN | | | |



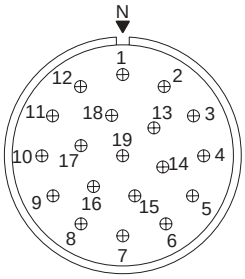

## 19 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 355PN | ZP-16-355PN | 19 | 16 | A |
| | | | Socket | 355SN | ZP-16-355SN | | | |
| Mod III | Crimp | 16 | Pin | 655PN | ★ | | | |
| | | | Socket | 655SN | ★ | | | |



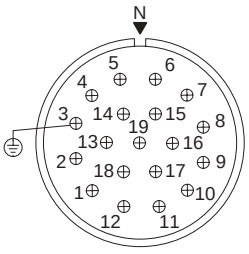

## 19 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 376PN | ZP-20-376PN | 19 | 12 | D |
| | | | Socket | 376SN | ZP-20-376SN | | | |
| Mod II | Radsok Crimp | 20 | Pin | R376PN | ZP-20-R376PN | | | |
| | | | Socket | R376SN | ZP-20-R376SN | | | |




## 19 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod III | Crimp | 20 | Pin | 688PN | ★ | 19 | 12 | D |
| | | | Socket | 688SN | ★ | | | |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|

| Contact Symbols | ○ | • | ⊕ | ○ | ◉ | ● | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

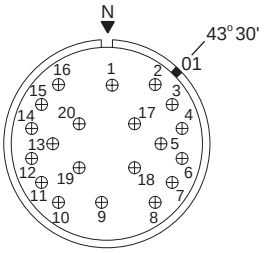
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

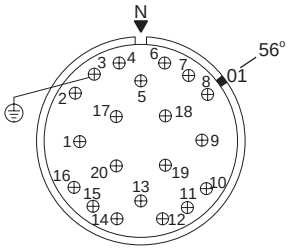
## 20 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 20 | Pin | 32P | ZP-20-32P | 20 | 12 | ❖B Center |
| | | | Socket | 32S | ZP-20-32S | | | ❖A Outer |
| Mod II | Crimp | 20 | Pin | 332PN | ZP-20-332PN | | | |
| | | | Socket | 332SN | ZP-20-332SN | | | |
| Mod II | Radsok Crimp | 20 | Pin | R332PN | ZP-20-R332PN | | | |
| | | | Socket | R332SN | ZP-20-R332SN | | | |



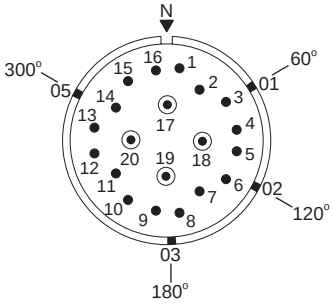

## 20 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 387PN | ZP-20-387PN | 20 | 12 | ❖B Center |
| | | | Socket | 387SN | ZP-20-387SN | | | ❖A Outer |
| Mod II | Radsok Crimp | 20 | Pin | R387PN | ZP-20-R387PN | | | |
| | | | Socket | R387SN | ZP-20-R387SN | | | |



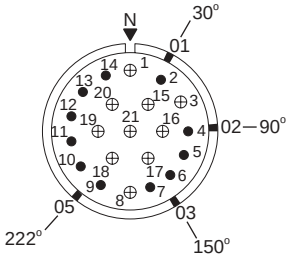

## 20 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 334PN | ZP-20-334PN | 4 | 8 | ❖D |
| | | | Socket | 334SN | ZP-20-334SN | 16 | 16 | ❖D |




## 21 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 344PN | ZP-16-344PN | 10 | 12 | ❖A |
| | | | Socket | 344SN | ZP-16-344SN | 11 | 16 | ❖A |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|
| ⏚ | ⏛ | ⊜ |

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ◉ | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

❖ For non-circuit breaking service only.
★ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

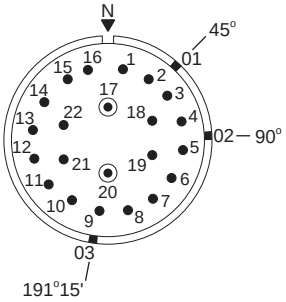
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

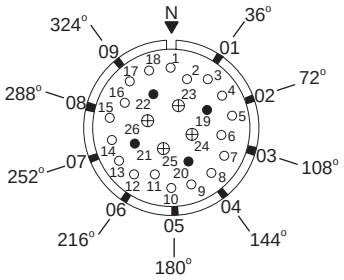
## 22 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 331PN | ZP-20-331PN | 2 | 8 | ✦E |
| | | | Socket | 331SN | ZP-20-331SN | 20 | 16 | ✦D |



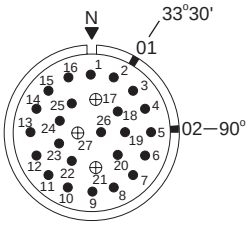

## 26 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 16 | Pin | 37P | ZP-16-37P | 4 | 12 | ✦A |
| | | | Socket | 37S | ZP-16-37S | 4 | 16 | ✦A |
| | | | | | | 18 | 18 | ✦A |



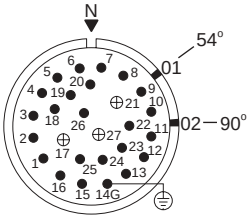

## 27 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 335PN | ZP-16-335PN | 3 | 12 | ✦A |
| | | | Socket | 335SN | ZP-16-335SN | 24 | 16 | ✦A |




## 27 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod III | Crimp | 16 | Pin | 673PN | ★ | 24 | 16 | A |
| | | | Socket | 673SN | ★ | 3 | 12 | A |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ◉ | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
★ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

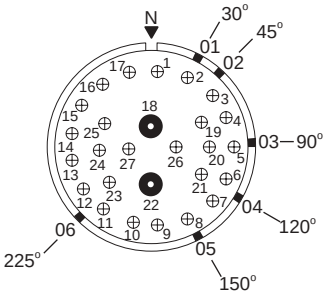
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

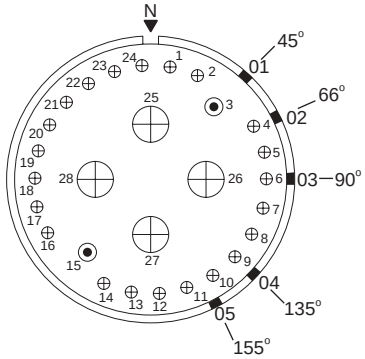
## 27 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 374PN | ZP-20-374PN | 2 | 4 | ✦D |
| | | | Socket | 374SN | ZP-20-374SN | 25 | 12 | ✦A |



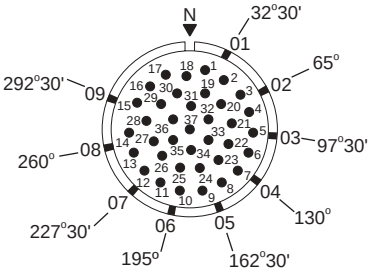

## 29 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | C28 | Pin | 328PN | ZP-C28-328PN | 4 | 1/0 | ✦D |
| | | | Socket | 328SN | ZP-C28-328SN | 2 | 8 | ✦D |
| | | | | | | 23 | 12 | ✦A |



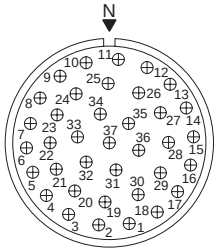

## 37 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 321PN | ZP-16-321PN | 37 | 16 | ✦A |
| | | | Socket | 321SN | ZP-16-321SN | | | |




## 37 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 386PN | ZP-20-386PN | 37 | 12 | ✦A |
| | | | Socket | 386SN | ZP-20-386SN | | | |
| Mod II | Radsok Crimp | 20 | Pin | R386PN | ZP-20-R386PN | | | |
| | | | Socket | R386SN | ZP-20-R386SN | | | |




Grounding Contact Termination Symbol

Solder Well | Pressure | Crimp

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ◉ | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
★ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

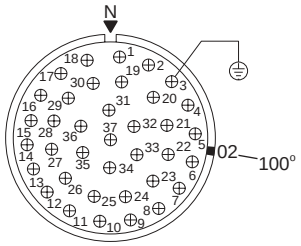
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

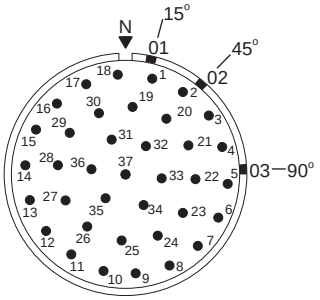
## 37 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 350PN | ZP-20-350PN | 37 | 12 | A |
| | | | Socket | 350SN | ZP-20-350SN | | | |
| Mod II | Radsok Crimp | 20 | Pin | R350PN | ZP-20-R350PN | | | |
| | | | Socket | R350SN | ZP-20-R350SN | | | |



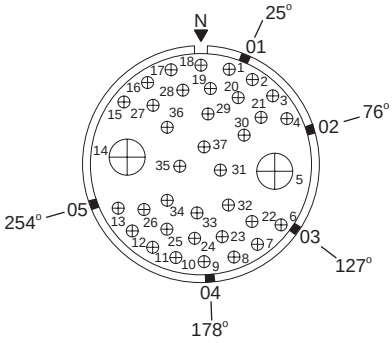

## 37 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 24 | Pin | 371PN | ZP-24-371PN | 37 | 16 | D |
| | | | Socket | 371SN | ZP-24-371SN | | | |



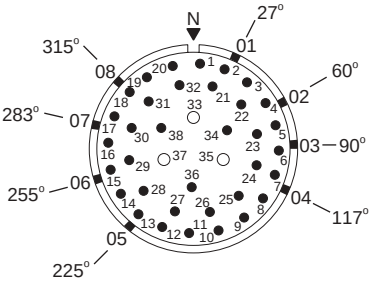

## 37 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C24 | Pin | 36P | ZP-C24-36P | 2 | 1/0 | D |
| | | | Socket | 36S | ZP-C24-36S | 35 | 12 | A |




## 38 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 323PN | ZP-20-323PN | 3 | 10 | A |
| | | | Socket | 323SN | ZP-20-323SN | 35 | 16 | A |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | ◬ | ▢ | ◯ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

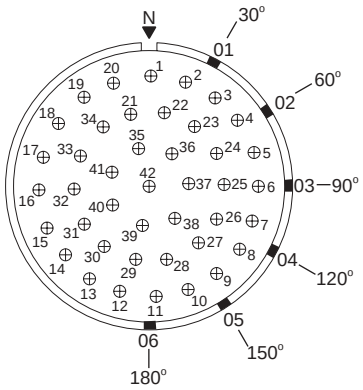
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

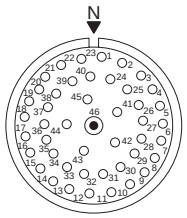
## 42 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 28 | Pin | 339PN | ZP-28-339PN | 42 | 12 | D |
| | | | Socket | 339SN | ZP-28-339SN | | | |
| Mod II | Radsok Crimp | 28 | Pin | R339PN | ZP-28-R339PN | | | |
| | | | Socket | R339SN | ZP-28-R339SN | | | |



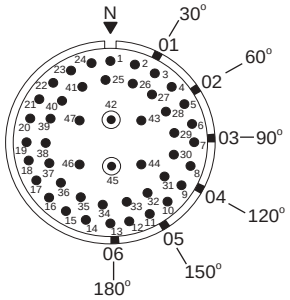

## 46 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 371PN | ZP-16-371PN | 45 | 18 | A |
| | | | Socket | 371SN | ZP-16-371SN | 1 | 8 | A |



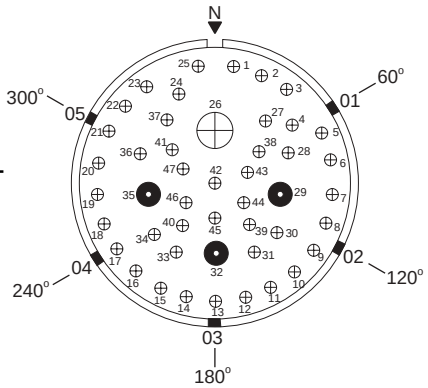

## 47 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 354PN | ZP-20-354PN | 2 | 8 | ✦D |
| | | | Socket | 354SN | ZP-20-354SN | 45 | 16 | ✦A |




## 47 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | C28 | Pin | 15P | ZP-C28-15P | 1 | 1/0 | D |
| | | | Socket | 15S | ZP-C28-15S | 3 | 4 | D |
| | | | | | | 43 | 12 | A |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ◉ | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

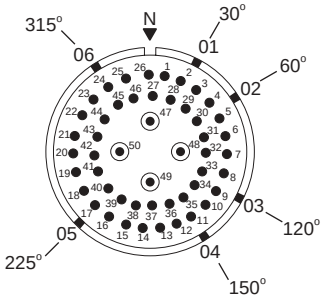
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

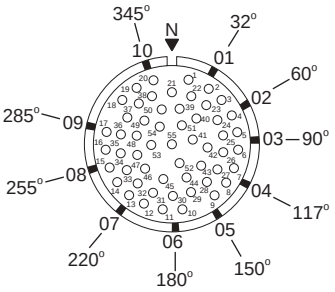
## 50 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod III | Crimp | 20 | Pin | 673PN | ★ | 4 | 8 | ✦D |
| | | | Socket | 673SN | ★ | 46 | 16 | ✦A |



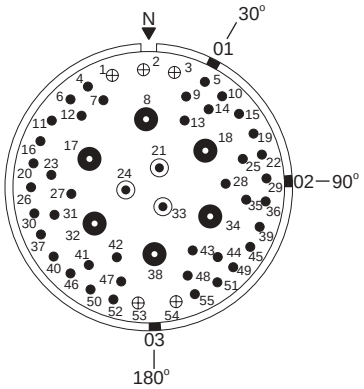

## 55 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod III | Crimp | 16 | Pin | 640PN | ★ | 55 | 18 | ✦ Inst. |
| | | | Socket | 640SN | ★ | | | |



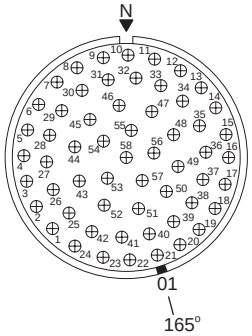

## 55 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 28 | Pin | 324PN | ZP-28-324PN | 3 | 8 | ✦D |
| | | | Socket | 324SN | ZP-28-324SN | 6 | 4 | ✦D |
| | | | | | | 5 | 12 | ✦A |
| | | | | | | 41 | 16 | ✦A |




## 58 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 24 | Pin | 84P | ZP-24-84P | 58 | 12 | ✦A |
| | | | Socket | 84S | ZP-24-84S | | | |
| Mod II | Crimp | 24 | Pin | 384PN | ZP-24-384PN | | | |
| | | | Socket | 384SN | ZP-24-384SN | | | |
| Mod II | Radsok Crimp | 24 | Pin | R384PN | ZP-24-R384PN | | | |
| | | | Socket | R384SN | ZP-24-R384SN | | | |




Grounding Contact Termination Symbol

Solder Well | Pressure | Crimp

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

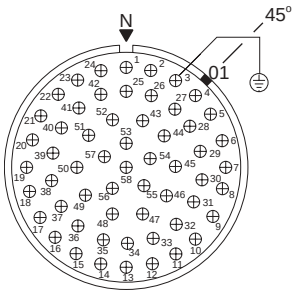
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

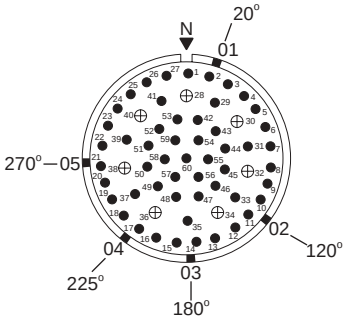
## 58 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 24 | Pin | 352PN | ZP-24-352PN | 58 | 12 | ✦A |
| | | | Socket | 352SN | ZP-24-352SN | | | |
| Mod II | Radsok Crimp | 24 | Pin | R352PN | ZP-24-R352PN | | | |
| | | | Socket | R352SN | ZP-24-R352SN | | | |



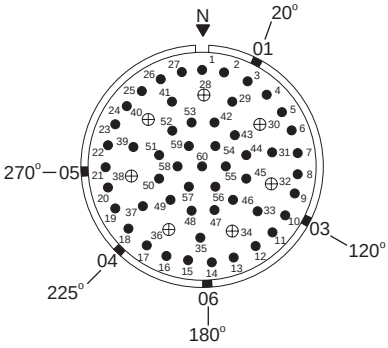

## 60 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod I | Solder | 20 | Pin | 35P | ZP-20-35P | 60 | 16 | ✦A |
| | | | Socket | 35S | ZP-20-35S | | | |



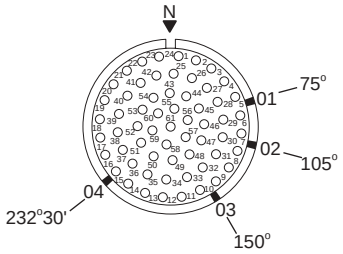

## 60 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 24 | Pin | 331PN | ZP-24-331PN | 7 | 12 | ✦A |
| | | | Socket | 331SN | ZP-24-331SN | 53 | 16 | ✦A |




## 61 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 16 | Pin | 333PN | ZP-16-333PN | 61 | 18 | Inst. |
| | | | Socket | 333SN | ZP-16-333SN | | | |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|
| ⏚ | ⏛ | ⊜ |

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ⊙ | ⊕ | △ | □ | ◯ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
★ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

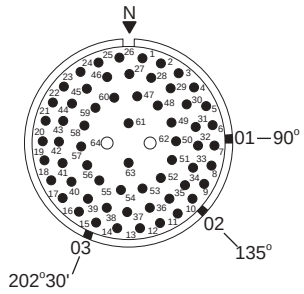
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

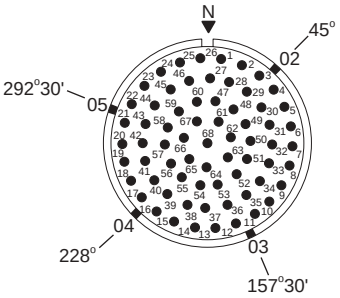
## 64 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 329PN | ZP-20-329PN | 2 | 10 | ✦A |
| | | | Socket | 329SN | ZP-20-329SN | 16 | 16 | ✦A |



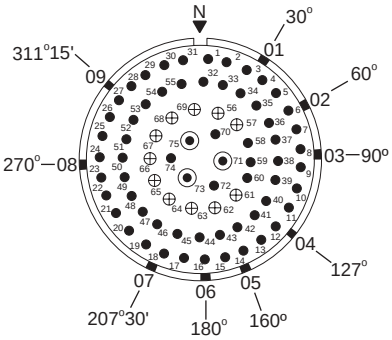

## 68 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 313PN | ZP-20-313PN | 68 | 18 | ✦ A |
| | | | Socket | 313SN | ZP-20-313SN | | | |



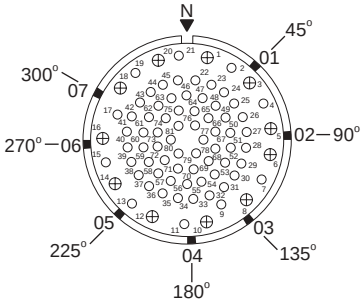

## 75 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 24 | Pin | 354PN | ZP-24-354PN | 3 | 8 | ✦A |
| | | | Socket | 354SN | ZP-24-354SN | 11 | 12 | ✦A |
| | | | | | | 61 | 16 | ✦A |




## 81 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 344PN | ZP-20-344PN | 11 | 12 | ✦A |
| | | | Socket | 344SN | ZP-20-344SN | 70 | 18 | ✦A |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|
| ⏚ | ⏛ | ⊜ |

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ● | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

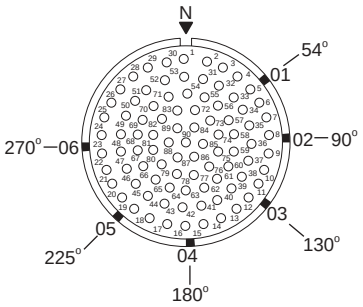
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

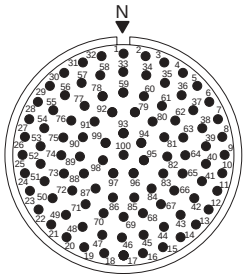
## 90 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 20 | Pin | 345PN | ZP-20-345PN | 90 | 18 | ✦A |
| | | | Socket | 345SN | ZP-20-345SN | | | |



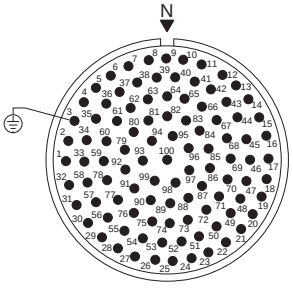

## 100 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 24 | Pin | 313PN | ZP-24-313PN | 100 | 16 | ✦A |
| | | | Socket | 313SN | ZP-24-313SN | | | |




## 100 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 24 | Pin | 385PN | ZP-24-385PN | 100 | 16 | A |
| | | | Socket | 385SN | ZP-24-385SN | | | |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|

| Contact Symbols | ○ | ● | ⊕ | ○ | ◉ | ◉ | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
★ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

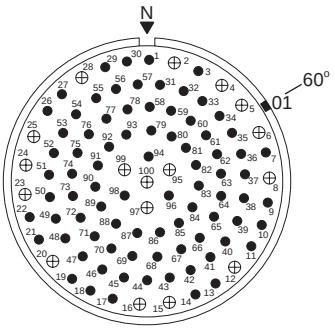
SERVICE VOLTAGE RATING
A = 240V, D = 600V

# Insert Configurations

front face of pin insert shown

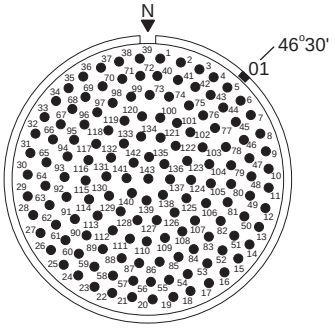
## 100 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 28 | Pin | 314PN | ZP-28-314PN | 17 | 12 | ✦A |
| | | | Socket | 314SN | ZP-28-314SN | 83 | 16 | ✦A |




## 143 Contacts

| Style | Wire Terminal Type | Shell Size | Insert Type | Dash Number | Catalog Number | Qty. | Size AWG | Service Voltage Rating |
|---|---|---|---|---|---|---|---|---|
| Mod II | Crimp | 28 | Pin | 322PN | ZP-28-322PN | 143 | 16 | ✦A |
| | | | Socket | 322SN | ZP-28-322SN | | | |




Grounding Contact Termination Symbol

| Solder Well | Pressure | Crimp |
|---|---|---|

| Contact Symbols | ○ | • | ⊕ | ○ | ◉ | ● | ⊕ | △ | □ | ○ | ⊗ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wire Size AWG | 18 | 16 | 12 | 10 | 8 | 4 | 1/0 | 4/0 | 350 MCM | 500 MCM | 646-777 |
| Metric | 0.75 | 1.5 | 4.0 | 6.0 | 10.0 | 25.0 | 50.0 | 120.00 | 185.00 | 240.00 | 300-400 |

✦ For non-circuit breaking service only.
✶ Small contacts disengage 1/8" before large contacts to provide time delay in control circuit.
★ Pre-assembled insert should be ordered mounted in barrel.

SERVICE VOLTAGE RATING
A = 240V, D = 600V

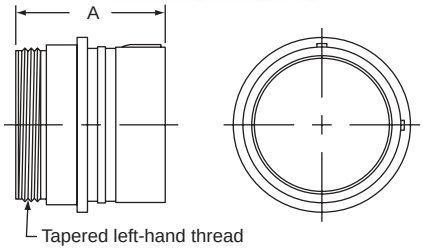
# Connector Components
# Spare Parts and Accessories

## Male Skirt for Straight Plug

Male skirts only for Mod I are designated by a four-digit number.
**Example: ZP-W-1312** (Star-Line)

Male skirts only for Mod II are designated by a seven-digit number.
**Example: ZP-W-1312-200** (Star-Line)

Mod II inserts must not be used in Mod I shells or Mod I inserts in Mod II shells as the method of accomplishing environmental sealing differs



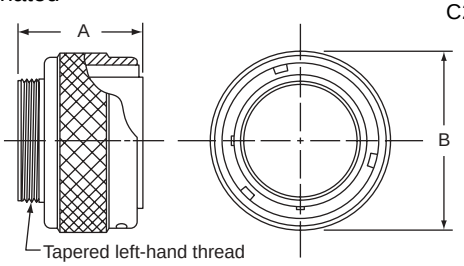

| Shell Size | Cat. No. Mod I | DIMENSIONS A |
|---|---|---|
| 12 | ZP-W-1312 | 2-1/64 |
| 16 | ZP-W-1316 | 2-1/64 |
| 20 | ZP-W-1320 | 2-1/64 |
| C20 | ZP-C-1320 | 2-33/64 |
| 24 | ZP-W-1324 | 2-1/64 |
| C24 | ZP-C-1324 | 2-33/64 |
| 28 | ZP-W-1328 | 2-1/64 |
| C28 | ZP-C-1328 | 2-33/64 |

## Plug Shell Assembly

Plug shell assemblies only for Mod I are designated by a four-digit number.
**Example: SP-WO-1012** (Star-Lok)

Plug shell assemblies only for Mod II are designated by a seven-digit number.
**Example: SP-WO-1012-200** (Star-Lok)

Mod II inserts must not be used in Mod I plug shell assemblies or Mod I inserts in Mod II plug shell assemblies as the method of accomplishing environmental sealing differs



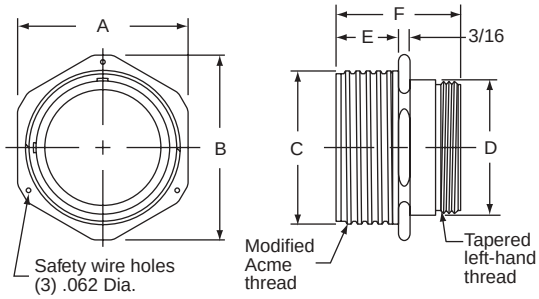

| Shell Size | Cat. No. Mod I | DIMENSIONS A | B |
|---|---|---|---|
| 12 | SP-W-1012 | 2-1/64 | 1-29/32 |
| 16 | SP-W-1016 | 2-1/64 | 2-13/32 |
| 20 | SP-W-1020 | 2-1/64 | 2-29/32 |
| C20 | SP-C-1020 | 2-33/64 | 2-29/32 |
| 24 | SP-W-1024 | 2-1/64 | 3-13/32 |
| C24 | SP-C-1024 | 2-33/64 | 3-13/32 |

## Female Skirt for In-Line Receptacle

Female skirts only for Mod I are designated by a four-digit number.
**Example: ZP-WO-1512** (Star-Line)

Female skirts only for Mod II are designated by a seven-digit number.
**Example: ZP-WO-1512-200** (Star-Line)

Mod II inserts must not be used in Mod I shells or Mod I inserts in Mod II shells as the method of accomplishing environmental sealing differs.




| Shell Size | Cat. No. Mod I | DIMENSIONS A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| 12 | ZP-WO-1512 | 1-3/4 | 1-61/64 | 1-1/2 | 1-3/32 | 1 | 2-1/64 |
| 16 | ZP-WO-1516 | 2-1/4 | 2-31/64 | 2 | 1-19/32 | 1 | 2-1/64 |
| 20 | ZP-WO-1520 | 2-3/4 | 3-1/32 | 2-1/2 | 2-3/32 | 1 | 2-1/64 |
| C20 | ZP-CO-1520 | 2-3/4 | 3-1/32 | 2-1/2 | 2-3/32 | 1-1/2 | 2-33/64 |
| 24 | ZP-WO-1524 | 3-1/4 | 3-9/16 | 3 | 2-19/32 | 1 | 2-1/64 |
| C24 | ZP-CO-1524 | 3-1/4 | 3-9/16 | 3 | 2-19/32 | 1-1/2 | 2-33/64 |
| 28 | ZP-WO-1528 | 3-3/4 | 4-1/16 | 3-1/2 | 3-3/32 | 1 | 2-1/64 |
| C28 | ZP-CO-1528 | 3-3/4 | 4-1/16 | 3-1/2 | 3-3/32 | 1-1/2 | 2-33/64 |

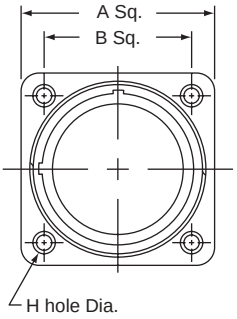
# Connector Components
# Spare Parts and Accessories

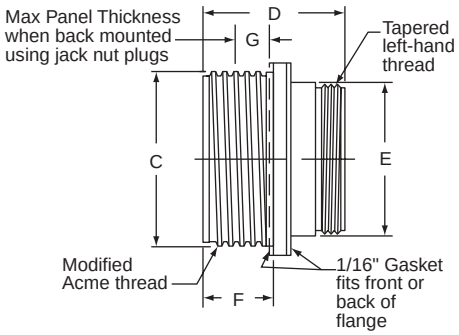
## Basic Barrel for Panel, Square Flange Receptacle

Square flange receptacles only for Mod I are designated by a four digit number.
**Example: ZP-WO-1712** (Star-Line)

Square flange receptacles only for Mod II are designated by a seven digit number.
**Example: ZP-WO-1712-200** (Star-Line)

Mod II inserts must not be used in Mod I shells or Mod I inserts in Mod II shells as the method of accomplishing environmental sealing differs.




| Shell Size | Cat. No. Mod I | DIMENSIONS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H |
| 12 | ZP-WO-1712 | 1-3/4 | 1-3/8 | 1-1/2 | 2-1/64 | 1-3/8 | 1 | 1/4 | 11/64 |
| 16 | ZP-WO-1716 | 2-1/4 | 1-11/16 | 2 | 2-1/64 | 1-7/8 | 1 | 1/4 | 13/64 |
| 20 | ZP-WO-1720 | 2-3/4 | 2-3/32 | 2-1/2 | 2-1/64 | 2-3/8 | 1 | 1/4 | 7/32 |
| C20 | ZP-CO-1720 | 2-3/4 | 2-3/32 | 2-1/2 | 2-33/64 | 2-3/8 | 1-1/2 | 3/4 | 7/32 |
| 24 | ZP-WO-1724 | 3-1/4 | 2-17/32 | 3 | 2-1/64 | 2-7/8 | 1 | 1/4 | 9/32 |
| C24 | ZP-CO-1724 | 3-1/4 | 2-17/32 | 3 | 2-33/64 | 2-7/8 | 1-1/2 | 3/4 | 9/32 |
| 28 | ZP-WO-1728 | 3-3/4 | 3-1/32 | 3-1/2 | 2-1/64 | 3-3/8 | 1 | 1/4 | 11/32 |
| C28 | ZP-CO-1728 | 3-3/4 | 3-1/32 | 3-1/2 | 2-33/64 | 3-3/8 | 1-1/2 | 3/4 | 11/32 |

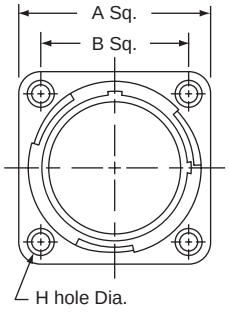
Drill hole on panel 1/64" larger than Dimension “E” for front mounting or Dimension “C” for back mounting.
**Maximum panel thickness may be increased 1/8" when using Standard Coupling Nut Plugs.

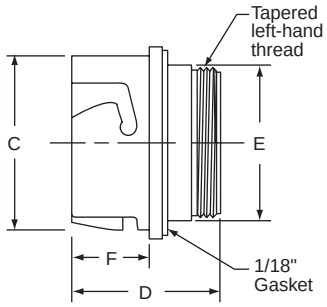
## Basic Barrel for Panel, Square Flange Receptacle

Square flange receptacles only for Mod I are designated by a four digit number.
**Example: SP-WO-1712** (Star-Lok)

Square flange receptacles only for Mod II are designated by a seven digit number.
**Example: SP-WO-1712-200** (Star-Lok)

Mod II inserts must not be used in Mod I shells or Mod I inserts in Mod II shells as the method of accomplishing environmental sealing differs.

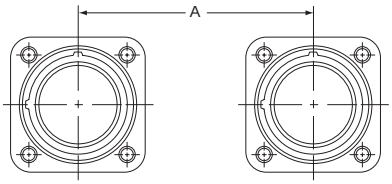



| Shell Size | Cat. No. Mod I | DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | H |
| 12 | SP-WO-1712 | 1-3/4 | 1-3/8 | 1-1/2 | 2-3/32 | 1-3/8 | 1-3/32 | 3/16 |
| 16 | SP-WO-1716 | 2-1/4 | 1-11/16 | 2 | 2-3/32 | 1-7/8 | 1-3/32 | 13/64 |
| 20 | SP-WO-1720 | 2-3/4 | 2-3/32 | 2-1/2 | 2-3/32 | 2-3/8 | 1-3/32 | 17/64 |
| C20 | SP-CO-1720 | 2-3/4 | 2-3/32 | 2-1/2 | 2-19/32 | 2-3/8 | 1-19/32 | 17/64 |
| 24 | SP-WO-1724 | 3-1/4 | 2-17/32 | 3 | 2-3/32 | 2-7/8 | 1-3/32 | 17/64 |
| C24 | SP-CO-1724 | 3-1/4 | 2-17/32 | 3 | 2-19/32 | 2-7/8 | 1-19/32 | 17/64 |

When mounting two or more receptacles to a panel, a certain distance must be kept, one from the other, so that the coupling nut of one plug does not interfere with the coupling nut of another.

For mixed-form sizes, add dimension “A” for each and divide by two.




| Shell Size | Dimension A |
|---|---|
| 12 | 3 |
| 16 | 3-1/2 |
| 20/C20 | 4-1/4 |
| 24/C24 | 4-3/4 |
| 28/C28 | 5-1/4 |

# Connector Accessories

## Cable Adapters Used on Types ZPLD & ZRLD

To order cable adapters complete with grommet, substitute the cable diameter code number for the delta ▲ (see page 67).

| Shell | Standard Style Catalog No. | Long Style Catalog No. | Extra Long Style Catalog No. |
|---|---|---|---|
| 12 | ZP-W-2012-▲-00 | ZP-W-2412-▲-00 | ZP-W-2912-▲-00 |
| 16 | ZP-W-2016-▲-00 | ZP-W-2416-▲-00 | ZP-W-2916-▲-00 |
| 20 & C20 | ZP-W-2020-▲-00 | ZP-W-2420-▲-00 | ZP-W-2920-▲-00 |
| 24 & C24 | ZP-W-2024-▲-00 | ZP-W-2424-▲-00 | ZP-W-2924-▲-00 |
| 28 & C28 | ZP-W-2028-▲-00 | ZP-W-2428-▲-00 | ZP-W-2928-▲-00 |

## Cable Adapters Used on Types ZPLM & ZRLM

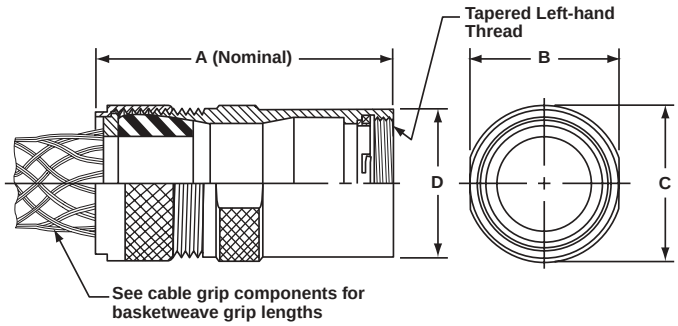
| Shell | Standard Style Catalog No. | Long Style Catalog No. | Extra Long Style Catalog No. |
|---|---|---|---|
| 12 | ZP-W-2012-▲-53 | ZP-W-2412-▲-53 | ZP-W-2912-▲-53 |
| 16 | ZP-W-2016-▲-53 | ZP-W-2416-▲-53 | ZP-W-2916-▲-53 |
| 20 & C20 | ZP-W-2020-▲-53 | ZP-W-2420-▲-53 | ZP-W-2920-▲-53 |
| 24 & C24 | ZP-W-2024-▲-53 | ZP-W-2424-▲-53 | ZP-W-2924-▲-53 |
| 28 & C28 | ZP-W-2028-▲-53 | ZP-W-2428-▲-53 | ZP-W-2928-▲-53 |

## Cable Adapters Used on Types ZPLK & ZRLK

| Shell | Standard Style Catalog No. | Long Style Catalog No. | Extra Long Style Catalog No. |
|---|---|---|---|
| 12 | ZP-W-2012-▲-50 | ZP-W-2412-▲-50 | ZP-W-2912-▲-50 |
| 16 | ZP-W-2016-▲-50 | ZP-W-2416-▲-50 | ZP-W-2916-▲-50 |
| 20 & C20 | ZP-W-2020-▲-50 | ZP-W-2420-▲-50 | ZP-W-2920-▲-50 |
| 24 & C24 | ZP-W-2024-▲-50 | ZP-W-2424-▲-50 | ZP-W-2924-▲-50 |
| 28 & C28 | ZP-W-2028-▲-50 | ZP-W-2428-▲-50 | ZP-W-2928-▲-50 |

NOTE: Cable adapters with potting ports and molding accessories are also available in all shell sizes-consult Amphenol Industrial Operations.

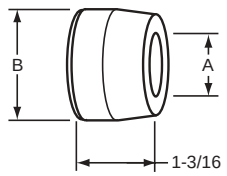
### Dimensions




| Shell Size | A | | | B | C | D |
|---|---|---|---|---|---|---|
| | Standard | Long | Extra Long | | | |
| 12 | 3-29/32 | 6-5/32 | 7-13/32 | 1-13/32 | 1-1/2 | 1-3/8 |
| 16 | 4-5/32 | 6-13/32 | 7-21/32 | 1-29/32 | 2 | 1-7/8 |
| 20 & C20 | 4-21/32 | 6-29/32 | 8-5/32 | 2-13/32 | 2-1/2 | 2-3/8 |
| 24 & C24 | 5-5/32 | 7-13/32 | 8-21/32 | 2-29/32 | 3 | 2-7/8 |
| 28 &C28 | 5-21/32 | 7-21/32 | 8-29/32 | 3-13/32 | 3-1/2 | 3-3/8 |

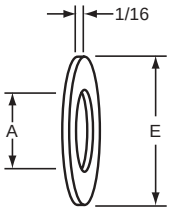
# Cable Grip Components

Gland washers are not required when grommets are used with basket weave cable grips.




**Grommets**

| Shell Size | Washer Dimensions A | Washer Dimensions B |
|---|---|---|
| 12 | See | 1-7/32 |
| 16 | cable dia. | 1-3/4 |
| 20 & C20 | column "A" | 2-7/32 |
| 24 & C24 | for cable | 2-3/4 |
| 28 & C28 | range | 3-1/4 |




**Gland Washers**

| Shell Size | Washer Dimensions A | Washer Dimensions B |
|---|---|---|
| 12 | See | 1-1/4 |
| 16 | cable dia. | 1-3/4 |
| 20 & C20 | column "A" | 2-1/4 |
| 24 & C24 | for cable | 2-3/4 |
| 28 & C28 | range | 3-1/4 |

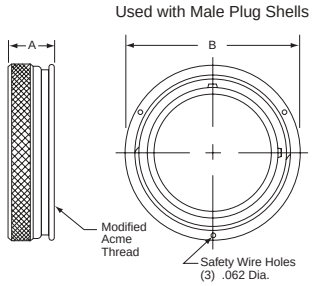
* Substitute Symbol for ▲ in Cable Adapter Catalog Number

| Shell Size | Cable Dia. Dimension Min. | Cable Dia. Dimension Max. | Cable Dia. Code No.* | Grommets Oil Resistant Rubber Cat. No. | Gland Washer Steel Cat. No. | Basket Weave Grips Stainless Steel Cat. No. | Basket Weave Grips Nominal Length Inches |
|---|---|---|---|---|---|---|---|
| 12 | .062 | .125 | 02 | ZP-6312-2C | ZP-8012-4E | ZP-5012-4E | 3 |
| | .125 | .250 | 04 | ZP-6312-4C | | | |
| | .250 | .375 | 06 | ZP-6312-6C | ZP-8012-8E | ZP-5012-6E | 4 |
| | .375 | .500 | 08 | ZP-6312-8C | | ZP-5012-8E | 5 |
| | .500 | .625 | 10 | ZP-6312-10C | ZP-8012-12E | ZP-5012-10E | 6 |
| | .625 | .750 | 12 | ZP-6312-12C | | ZP-5012-12E | 7 |
| | .750 | .875 | 14 | ZP-6312-14C | ZP-8012-15E | ZP-5012-14E | 7-1/2 |
| | .875 | .937 | 15 | ZP-6312-15C | | ZP-5012-15E | 8 |
| 16 | .250 | .375 | 06 | ZP-6316-6C | ZP-8016-8E | ZP-5016-6E | 4 |
| | .375 | .500 | 08 | ZP-6316-8C | | ZP-5016-8E | 5 |
| | .500 | .625 | 10 | ZP-6316-10C | ZP-8016-12E | ZP-5016-10E | 6 |
| | .625 | .750 | 12 | ZP-6316-12C | | ZP-5016-12E | 7 |
| | .750 | .875 | 14 | ZP-6316-14c | zp-8016-16E | ZP-5016-14E | 7-1/2 |
| | .875 | 1.000 | 16 | ZP-6316-16C | | ZP-5016-16E | 8-1/2 |
| | 1.000 | 1.125 | 18 | ZP-6316-18C | ZP-8016-20E | ZP-5016-18E | 9 |
| | 1.125 | 1.250 | 20 | ZP-6316-20C | | ZP-5016-20E | 10 |
| | 1.250 | 1.375 | 22 | ZP-6316-22C | ZP-8016-23E | ZP-5016-23E | 10-1/2 |
| | 1.375 | 1.437 | 23 | ZP-6316-23C | | | |
| 20/C20 | .500 | .625 | 10 | ZP-6320-10C | ZP-8020-12E | ZP-5020-10E | 6 |
| | .625 | .750 | 12 | ZP-6320-12C | | ZP-5020-14E | 7-1/2 |
| | .750 | .875 | 14 | ZP-6320-14C | ZP-8020-16E | ZP-5020-14E | 7-1/2 |
| | .875 | 1.000 | 16 | ZP-6320-16C | | ZP-5020-18E | 9 |
| | 1.000 | 1.125 | 18 | ZP-6320-18C | ZP-8020-20E | ZP-5020-18E | 9 |
| | 1.125 | 1.250 | 20 | ZP-6320-20C | | ZP-5020-20E | 10 |
| | 1.250 | 1.375 | 22 | ZP-6320-22C | ZP-8020-24E | ZP-5020-24E | 11 |
| | 1.375 | 1.500 | 24 | ZP-6320-24C | | | |
| | 1.500 | 1.625 | 26 | ZP-6320-26C | ZP-8020-28E | ZP-5020-28E | 13 |
| | 1.625 | 1.750 | 28 | ZP-6320-28C | | | |
| | 1.750 | 1.875 | 30 | ZP-6320-30C | ZP-8020-31E | ZP-5020-31E | 14-1/2 |
| | 1.875 | 1.937 | 31 | ZP-6320-31C | | | |
| 24/C24 | .875 | 1.000 | 16 | ZP-6324-16C | ZP-8024-16E | ZP-5024-16E | 8-1/2 |
| | 1.000 | 1.125 | 18 | ZP-6324-18C | ZP-8024-20E | ZP-5024-20E | 10 |
| | 1.125 | 1.250 | 20 | ZP-6324-20C | | | |
| | 1.250 | 1.375 | 22 | ZP-6324-22C | ZP-8024-24E | ZP-5024-24E | 11 |
| | 1.375 | 1.500 | 24 | ZP-6324-24C | | | |
| | 1.500 | 1.625 | 26 | ZP-6324-26C | ZP-8024-28E | ZP-5024-28E | 13 |
| | 1.625 | 1.750 | 28 | ZP-6324-28C | | | |
| | 1.750 | 1.875 | 30 | ZP-6324-30C | ZP-8024-32E | ZP-5024-32E | 15 |
| | 1.875 | 2.000 | 32 | ZP-6324-32C | | | |
| | 2.000 | 2.125 | 34 | ZP-6324-34C | ZP-8024-36E | ZP-5024-36E | 16 |
| | 2.125 | 2.250 | 36 | ZP-6324-36C | | | |
| | 2.250 | 2.375 | 38 | ZP-6324-38C | ZP-8024-39E | ZP-5024-39E | 17-1/2 |
| | 2.375 | 2.437 | 39 | ZP-6324-39C | | | |
| 28/C28 | 1.375 | 1.500 | 24 | ZP-6328-24C | ZP-8028-24E | ZP-5028-28E | 13 |
| | 1.500 | 1.625 | 26 | ZP-6328-26C | ZP-8028-28E | ZP5028-28E | 13 |
| | 1.625 | 1.750 | 28 | ZP-6328-28C | | | |
| | 1.750 | 1.875 | 30 | ZP-6328-30C | ZP-8028-32E | ZP-5028-32E | 15 |
| | 1.875 | 2.000 | 32 | ZP-6328-32C | | | |
| | 2.000 | 2.125 | 34 | ZP-6328-34C | ZP-8028-36E | ZP-5028-36E | 16 |
| | 2.125 | 2.250 | 36 | ZP-6328-36C | | | |
| | 2.250 | 2.375 | 38 | ZP-6328-38C | ZP-8028-40E | ZP-5028-40E | 17-1/2 |
| | 2.375 | 2.500 | 40 | ZP-6328-40C | | | |
| | 2.500 | 2.625 | 42 | ZP-6328-42C | ZP-8028-44E | ZP-5028-46E | 19 |
| | 2.625 | 2.750 | 44 | ZP-6328-44C | | | |
| | 2.750 | 2.875 | 46 | ZP-6328-46C | ZP-8028-46E | ZP-5028-46E | 19 |

# Connector Accessories

## Standard and Jacking Coupling Nuts

(Star-Line only)

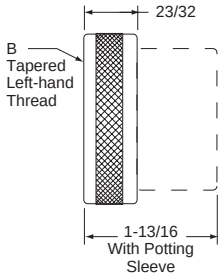


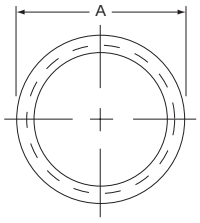

| Shell Size | Catalog No. Standard | DIMENSIONS A | B |
|---|---|---|---|
| 12 | ZP-7012-10A | 47/64 | 1-13/16 |
| 16 | ZP-7016-10A | 47/64 | 2-5/16 |
| 20/C20 | ZP-7020-10A | 47/64 | 2-13/16 |
| 24/C24 | ZP-7024-10A | 47/64 | 3-5/16 |
| 28/C28 | ZP-7028-10A | 47/64 | 3-13/16 |

| Shell Size | Catalog No. Jacking | DIMENSIONS A | B |
|---|---|---|---|
| 12 | ZP-7012-30A | 1-1/32 | 1-13/16 |
| 16 | ZP-7016-30A | 1-1/32 | 2-5/16 |
| 20/C20 | ZP-7020-30A | 1-1/32 | 2-13/16 |
| 24/C24 | ZP-7024-30A | 1-1/32 | 3-5/16 |
| 28/C28 | ZP-7028-30A | 1-1/32 | 3-13/16 |

## Insert Clamp Nuts

Used when open-back wiring is desired behind panelboards or within large junction boxes on which the basic barrel is mounted

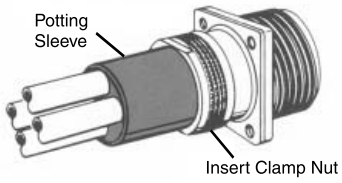



| Shell Size | Without Potting Sleeve Cat. No. | With Type 8200 Potting Sleeve Cat. No. | DIMENSIONS A | B |
|---|---|---|---|---|
| 12 | ZP-W-7512 | ZP-W-7512-B | 1-11/32 | 1-3/32 |
| 16 | ZP-W-7516 | ZP-W-7516-B | 1-27/32 | 1-19/32 |
| 20 & C20 | ZP-W-7520 | ZP-W-7520-B | 1-11/32 | 2-3/32 |
| 24 & C24 | ZP-W-7524 | ZP-W-7524-B | 2-27/32 | 2-19/32 |
| 28 & C28 | ZP-W-7528 | ZP-W-7528-B | 3-11/32 | 3-3/32 |

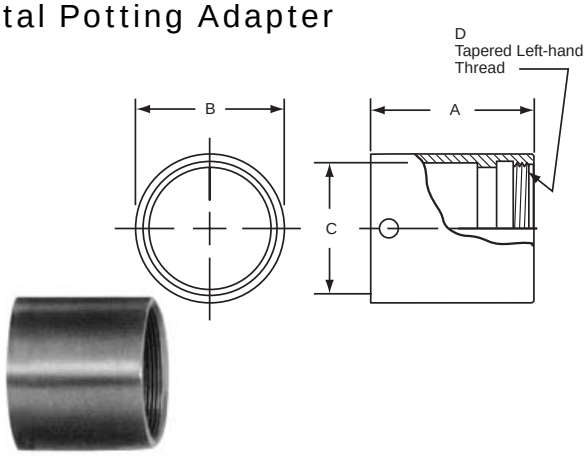
## Potting Sleeve

For use with insert clamp nut or panel board adapter to accept compound for sealing wire terminals. Potting sleeves are not for use with pressure-type contact units with insulator extension at back.




| Shell Size | Catalog No. | Overall Length | DIMENSIONS O. D. | I. D. |
|---|---|---|---|---|
| 12 | ZP-8212-11 | 1-1/4 | 1-3/64 | 55/64 |
| 16 | ZP-8216-11 | 1-1/4 | 1-35/64 | 1-23/64 |
| 20 & C20 | ZP-8220-11 | 1-1/4 | 2-3/64 | 1-55/64 |
| 24 & C24 | ZP-8224-11 | 1-1/4 | 2-35/64 | 2-23/64 |
| 28 & C28 | ZP-8228-11 | 1-1/4 | 2-63/64 | 2-51/64 |

## Metal Potting Adapter




| Shell Size | Standard Length Cat. No. | DIMENSIONS A | B | C | D |
|---|---|---|---|---|---|
| 12 | ZP-W-8612-11 | 2-15/32 | 1.4675 | 1.12 | 1-3/32 |
| 16 | ZP-W-8616-11 | 2-15/32 | 1.8575 | 1.62 | 1-19/32 |
| 20 & C20 | ZP-W-8620-11 | 2-15/32 | 2.3675 | 2.12 | 2-3/32 |
| 24 & C24 | ZP-W-8624-11 | 2-15/32 | 2.8425 | 2.62 | 2-19/32 |
| 28 & C28 | ZP-W-8628-11 | 2-15/32 | 3.4325 | 3.12 | 3-3/32 |

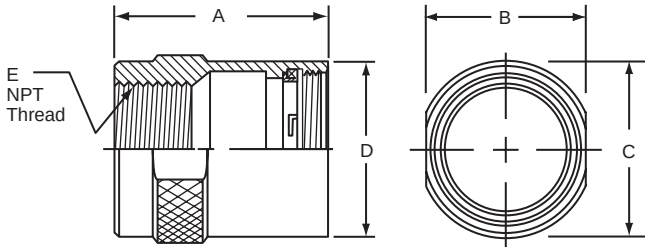
| Shell Size | Short Version Cat. No. | DIMENSIONS A | B | C | D |
|---|---|---|---|---|---|
| 12 | ZP-W-8612-12 | 1-3/4 | 1.4675 | 1.12 | 1-3/32 |
| 16 | ZP-W-8616-12 | 1-3/4 | 1.8575 | 1.62 | 1-19/32 |
| 20 & C20 | ZP-W-8620-12 | 2 | 2.3675 | 2.12 | 2-3/32 |
| 24 & C24 | NA | | | | |
| 28 & C28 | NA | | | | |

# Cable Adapter Components and Accessories

## Conduit Adapters Tapped for Conduit

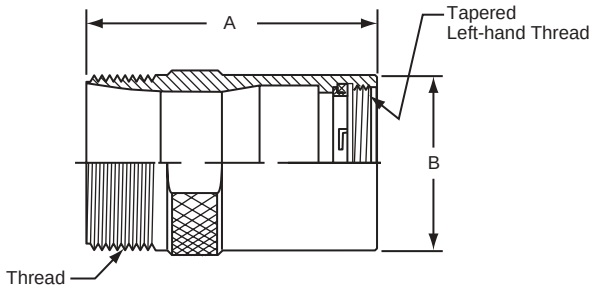
For use with all inserts other than those with pressure terminals.
Internal tapered pipe thread takes various types of threaded connectors.

| Shell Size | Conduit Tap Size | Catalog No. | DIMENSIONS | | | | |
|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E |
| 12 | 3/4 | ZP-W-2812 | 2-5/8 | 1-13/32 | 1-1/2 | 1-3/8 | 3/4 |
| 16 | 1-1/4 | ZP-W-2816 | 2-3/4 | 1-29/32 | 2 | 1-7/8 | 1-1/4 |
| 20 & C20 | 1-1/2 | ZP-W-2820 | 2-7/8 | 2-13/32 | 2-1/2 | 2-3/8 | 1-1/2 |
| 24 & C24 | 2 | ZP-W-2824 | 3 | 2-29/32 | 3 | 2-7/8 | 2 |
| 28 & C28 | 2-1/2 | ZP-W-2828 | 3-15/32 | 3-13/32 | 3-1/2 | 3-3/8 | 2-1/2 |




## Cable Adapter

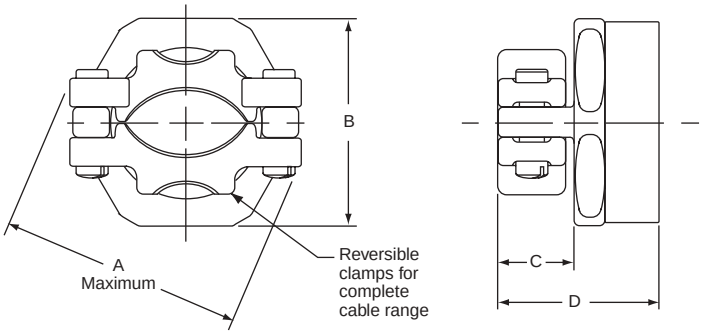
| Thread Size | Shell Size | Standard Style Cat. No. | Long Style Cat. No. | Extra Long Style Cat. No. | DIMENSIONS | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | A | | | B |
| | | | | | Std. | Lg. | X Lg. | |
| 1-3/8-12 | 12 | ZP-W-2012 | ZP-W-2412 | ZP-W-2912 | 3 | 5-1/4 | 6-1/2 | 1-3/8 |
| 1-7/8-12 | 16 | ZP-W-2016 | ZP-W-2416 | ZP-W-2916 | 3-1/4 | 5-1/2 | 6-3/4 | 1-7/8 |
| 2-3/8-12 | 20 & C20 | ZP-W-2020 | ZP-W-2420 | ZP-W-2920 | 3-3/4 | 6 | 7-1/4 | 2-3/8 |
| 2-7/8-12 | 24 & C24 | ZP-W-2024 | ZP-W-2424 | ZP-W-2924 | 4-1/4 | 6-1/2 | 7-3/4 | 2-7/8 |
| 3-3/8-12 | 28 & C28 | ZP-W-2028 | ZP-W-2428 | ZP-W-2928 | 4-3/4 | 6-3/4 | 8 | 3-3/8 |



# Cable Adapter Components and Accessories

## Mechanical Clamp Nut

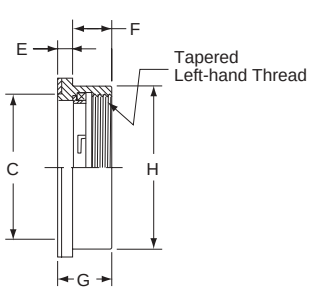
| Shell Size | Catalog No. | DIMENSIONS | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| 12 | ZP-W-5312 | 2-3/8 | 1-3/4 | 7/8 | 2 |
| 16 | ZP-W-5316 | 3 | 2-1/4 | 15/16 | 2-1/16 |
| 20 & C20 | ZP-W-5320 | 3-3/4 | 2-3/4 | 1 | 2-1/8 |
| 24 & C24 | ZP-W-5324 | 4-1/2 | 3-1/4 | 1-1/16 | 2-3/16 |
| 28 & C28 | ZP-W-5328 | 5-1/8 | 3-3/4 | 1-1/8 | 2-1/4 |

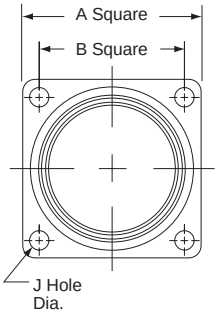



## Panelboard Adapters
(Star-Line only)

For Basic Barrels. Used when a completely external mounting is required. Gasket furnished may be used for front panel mounting only.

| Shell Size | Catalog No. | DIMENSIONS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | J |
| 12 | ZP-W-2112 | 1-5/8 | 1-1/4 | 1-1/8 | 1-3/32 | 3/32 | 9/16 | 3/4 | 1-3/8 | 3/16 |
| 16 | ZP-W-2116 | 2-1/8 | 1-11/16 | 1-5/8 | 1-19/32 | 1/8 | 9/16 | 25/32 | 1-7/8 | 7/32 |
| 20 & C20 | ZP-W-2120 | 2-5/8 | 2-3/32 | 2-1/8 | 2-3/32 | 5/32 | 9/16 | 13/16 | 2-3/8 | 9/32 |
| 24 & C24 | ZP-W-2124 | 3-1/8 | 2-17/32 | 2-5/8 | 2-19/32 | 3/16 | 9/16 | 27/32 | 2-7/8 | 11/32 |
| 28 & C28 | ZP-W-2128 | 3-3/4 | 3-1/32 | 3-1/8 | 2-3/32 | 9/32 | 29/64 | 27/32 | 3-3/8 | 11/32 |

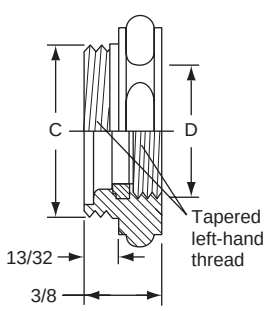


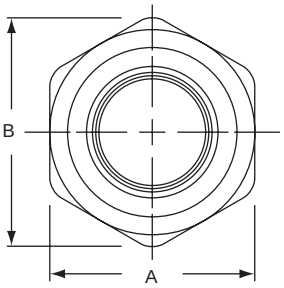



# Cable Adapter Components and Accessories

## Transition Adapters

Transition adapters provide for using cable adapters one shell size larger than that of the basic barrel selected. They are used when terminating shielded cables require an increase in adapter diameter for additional wiring space.

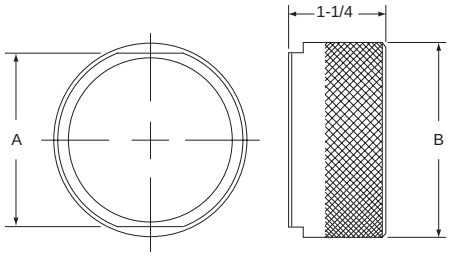



| Shell Size | Adapter Shell Size | DIMENSIONS | | | | |
|---|---|---|---|---|---|---|
| | | Catalog No. | A | B | C | D |
| 12 | 16 | ZP-W-2316-40 | 2 | 2-15/64 | 1-19/32 | 1-3/32 |
| 16 | 20 & C20 | ZP-W-2320-40 | 2-1/2 | 2-49/64 | 2-3/32 | 1-19/32 |
| 20 & C20 | 24 & C24 | ZP-W-2324-40 | 3 | 3-9/32 | 2-19/32 | 2-3/32 |
| 24 & C24 | 28 & C28 | ZP-W-2328-40 | 3-1/2 | 3-15/16 | 3-3/32 | 2-19/32 |

## Gland Nut

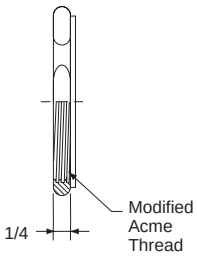
Use plain, or with basket weave cable grip

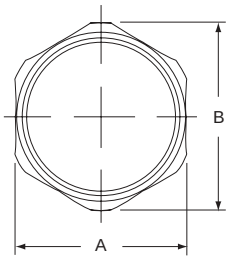



| Shell Size | Catalog No. | DIMENSIONS | |
|---|---|---|---|
| | | A | B |
| 12 | ZP-7312-10A | 1-1/2 | 1-9/32 |
| 16 | ZP-7316-10A | 2 | 1-25/32 |
| 20 & C20 | ZP-7320-10A | 2-1/2 | 2-9/32 |
| 24 & C24 | ZP-7324-10A | 3 | 2-25/32 |
| 28 & C28 | ZP-7328-10A | 3-1/2 | 3-9/32 |

## Safety Jam Nuts

To securely lock plug coupling nut or threaded dust cap. Jam nut cannot be used on barrels with hinged spring cover.



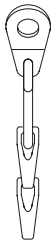

| Shell Size | Catalog No. | DIMENSIONS | |
|---|---|---|---|
| | | A | B |
| 12 | ZP-7212-10A | 1-3/4 | 1-61/64 |
| 16 | ZP-7216-10A | 2-1/4 | 1-32/64 |
| 20 & C20 | ZP-7220-10A | 2-3/4 | 3-1/2 |
| 24 & C24 | ZP-7224-10A | 3-1/4 | 3-9/16 |

# Connector Accessories - Protection Covers & Caps

## Environmental Covers with Chain

Environmental covers are furnished with a six-inch length of stainless steel link chain. The chain is freely attached to a shouldered swivel post to avoid twisting when covers are applied or removed. The opposite end has a stainless steel ring for back of barrel attachment or a stainless steel eyelet for flange screw or separate screw attachment.

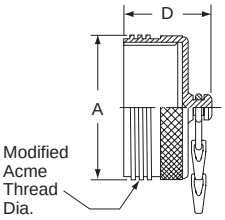
**Example: ZP-W-5512-A** (Starline) **SP-W-5512-A** (Star-Lok)

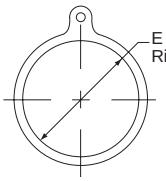


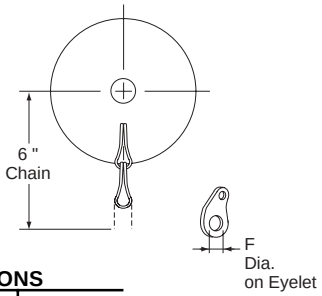
APPLICATION:
**RING TYPE:** For use with plugs and inline receptacles. To assemble slide ring over back end of barrel before applying cable adapter.
**EYELET TYPE:** For use with flange mount plugs and flange mount receptacles. To assemble attach eyelet to flange mounting screw or drill and tap hole in adjacent mounting surface.

### Threaded Cap for Plugs

| Shell Size | Cover Catalog No. with Ring and Chain | Cover Catalog No. with Eyelet and Chain | DIMENSIONS A | D | E | F |
|---|---|---|---|---|---|---|
| 12 | _P-W-5512-A | _P-WF-5512-A | 1-1/2 | 1-1/2 | 1-1/4 | 11/64 |
| 16 | _P-W-5516-A | _P-WF-5516-A | 2 | 1-1/2 | 1-3/4 | 13/64 |
| 20 | _P-W-5520-A | _P-WF-5520-A | 2-1/2 | 1-1/2 | 2-1/4 | 7/32 |
| C20 | _P-C-5520-A | _P-CF-5520-A | 2-1/2 | 2 | 2-1/4 | 7/32 |
| 24 | _P-W-5524-A | _P-WF-5524-A | 3 | 1-1/2 | 2-3/4 | 9/32 |
| C24 | _P-C-5524-A | _P-CF-5524-A | 3 | 2 | 2-3/4 | 9/32 |
| 28 | ZP-W-5528-A | ZP-WF-5528-A | 3-1/2 | 1-1/2 | 3-1/4 | 11/32 |
| C28 | ZP-C-5528-A | ZP-CF-5528-A | 3-1/2 | 2 | 3-1/4 | 11/32 |



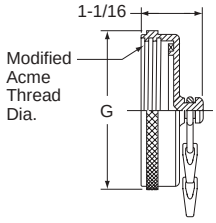




### Threaded Cap for Receptacles

Cap has a captive gasket for sealing.

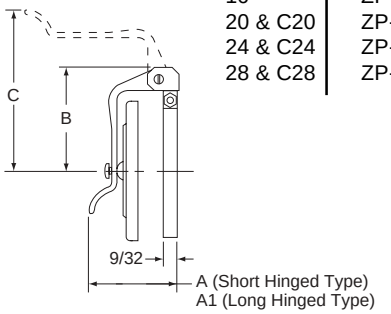
| Shell Size | Cover Catalog No. with Ring and Chain | Cover Catalog No. with Eyelet and Chain | DIMENSIONS E | F | G |
|---|---|---|---|---|---|
| 12 | _P-W-5612-A | _P-WF-5612-A | 1-1/4 | 11/64 | 1-23/32 |
| 16 | _P-W-5616-A | _P-WF-5616-A | 1-3/4 | 13/64 | 2-7/32 |
| 20/C20 | _P-W-5620-A | _P-WF-5620-A | 2-1/4 | 7/32 | 2-23/32 |
| 24/C24 | _P-W-5624-A | _P-WF-5624-A | 2-3/4 | 9/32 | 3-7/32 |
| 28/C28 | ZP-W-5628-A | ZP-WF-5628-A | 3-1/4 | 11/32 | 3-23/32 |



# Connector Accessories - Protection Covers & Caps

## Hinged Spring Door Covers-Gasketed

Covers have a stainless steel band to clamp over the coupling thread of female receptacles. The cover plate with a captive rubber gasket is pressed aluminum. A self-aligning seal is assured by the floating action of the cover on the center stainless-steel shouldered post. The hinge arm and support are machined aluminum extrusions.




| Shell Size | Short Hinged Type Catalog No. | DIMENSIONS A | B | C |
|---|---|---|---|---|
| 12 | ZP-C-5712 | 1-19/32 | 1-1/2 | 2-1/2 |
| 16 | ZP-C-5716 | 1-19/32 | 1-3/4 | 2-3/4 |
| 20 & C20 | ZP-C-5720 | 1-41/64 | 2-9/64 | 3-9/16 |
| 24 & C24 | ZP-C-5724 | 1-41/64 | 2-25/64 | 3-25/64 |
| 28 & C28 | ZP-C-5728 | 1-41/64 | 2-5/8 | 3-5/8 |

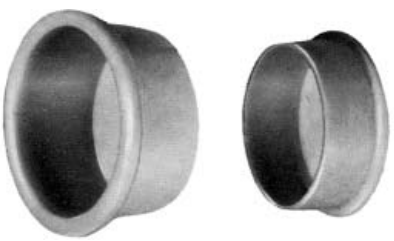
APPLICATION:
**SHORT HINGED TYPE:**
To clear standard coupling nut - Use with Square Flange Receptacles when front or back mounted.

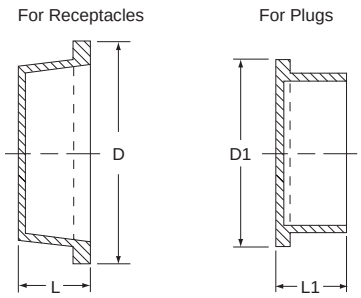
| Shell Size | Long Hinged Type Catalog No. | DIMENSIONS A1 | B | C |
|---|---|---|---|---|
| 12 | ZP-C-5712-14 | 1-23/32 | 1-1/2 | 2-1/2 |
| 16 | ZP-C-5716-14 | 1-23/32 | 1-3/4 | 2-3/4 |
| 20 & C20 | ZP-C-5720-14 | 1-49/64 | 2-9/64 | 3-9/16 |
| 24 & C24 | ZP-C-5724-14 | 1-49/64 | 2-25/64 | 3-25/64 |
| 28 & C28 | ZP-C-5728-14 | 1-41/64 | 2-5/8 | 3-5/8 |

APPLICATION:
**LONG HINGED TYPE:**
To clear coupling jack nut - Use with Square Flange Receptacles when front mounted only.

## Plastic Dust Caps

For temporary protection of assembled barrels while in storage and shipment.






| Shell Size | Receptacle Caps Catalog No. | DIMENSIONS D | L |
|---|---|---|---|
| 12 | ZP-5612-11 | 1-3/4 | 5/8 |
| 16 | ZP-5616-11 | 2-1/4 | 11/16 |
| 20 & C20 | ZP-5620-11 | 2-22/32 | 21/32 |
| 24 & C24 | ZP-5624-11 | 3-7/32 | 21/32 |
| 28 & C28 | ZP-5628-11 | 3-15/16 | 1/2 |

| Shell Size | Plug Caps Catalog No. | DIMENSIONS D1 | L1 |
|---|---|---|---|
| 12 | ZP-5512-11 | 1-13/32 | 11/16 |
| 16 | ZP-5516-11 | 1-29/32 | 11/16 |
| 20 & C20 | ZP-5520-11 | 2-3/8 | 11/16 |
| 24 & C24 | ZP-5524-11 | 2-29/32 | 11/16 |
| 28 & C28 | ZP-5528-11 | 3-11/16 | 1/2 |

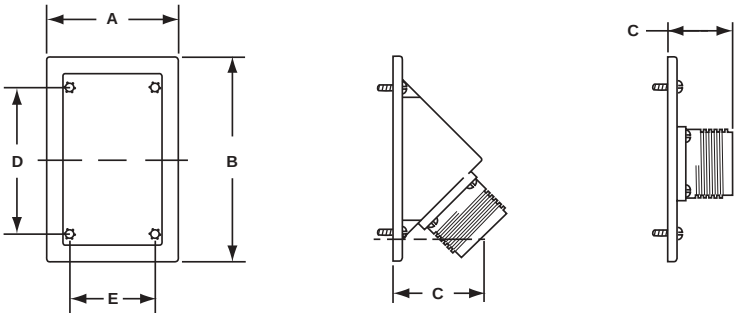
# Conduit System Accessories

## FS and FD Conduit Adapter Covers and Conduit Fitting Bodies

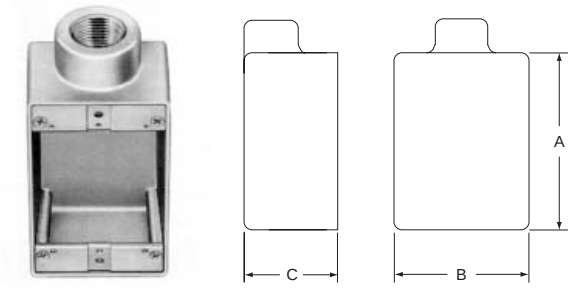
Adapter covers and Bodies have environmental resistance adequate for most general applications.
All adapter covers are supplied with screws and clips for mounting receptacle as well as bolts, washers and gasket for mounting cover to panel or conduit fitting body.
Cast aluminum alloy adapter covers accept type ZRLP barrels.

### Conduit Adapter Covers - FS and FD Type

| Style | Shell Size | Adapter Cover Catalog No. | DIMENSIONS (Including Barrel) | | | | |
|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E |
| Straight | 12 | ZP-C-2512-11 | 2-7/8 | 4-5/16 | 1-1/2 | 3-1/4 | 1-7/8 |
| | 16 | ZP-C-2516-11 | | | | | |
| 45 Degree | 12 | ZP-C-2512-13 | 2-7/8 | 4-5/16 | 2-5/16 | 3-1/4 | 1-7/8 |
| | 16 | ZP-C-2516-13 | | | | | |




### Conduit Fitting Bodies - FS and FD Type available in die cast copper-free aluminum or cadmium plated ferrous alloy




| Die Cast Copper-Free Aluminum Type | Shell Size | Hub Size | Conduit Body Catalog No. | DIMENSIONS | | |
|---|---|---|---|---|---|---|
| | | | | A | B | C |
| FS | 12 | 1/2 | N-FS18 | 4-9/16 | 2-13/16 | 2-1/16 |
| | 12 | 3/4 | N-FS28 | 4-9/16 | 2-13/16 | 2-1/16 |
| | 12 | 1 | N-FS38 | 4-9/16 | 2-13/16 | 2-1/16 |

| Cadmium Plated Ferrous Alloy Type | Shell Size | Hub Size | Conduit Body Catalog No. | DIMENSIONS | | |
|---|---|---|---|---|---|---|
| | | | | A | B | C |
| FD | 16 | 1 | N-FD38 | 4-9/16 | 2-13/16 | 3-1/16 |

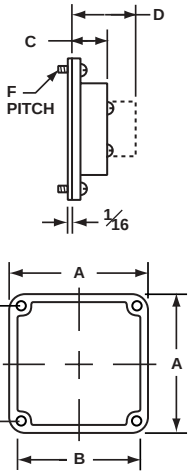
Note: 1/2" and 3/4" hub deep junction boxes information available upon request.

# Conduit System Accessories

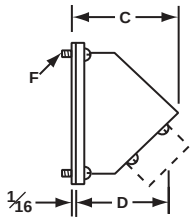
## Watertight Conduit Adapter Covers and Conduit Fitting Bodies

Adapter covers and Bodies have environmental resistance adequate for most general applications.
All adapter covers are supplied with screws and clips for mounting receptacle as well as bolts, washers and gasket for mounting cover to panel or conduit fitting body.
Cast aluminum alloy adapter covers accept type ZRLP barrels.

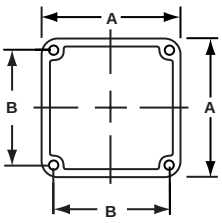
STRAIGHT COVER




STANDARD COVER

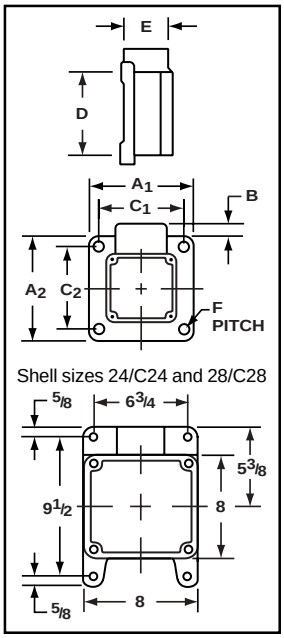



DEEP COVER




CONDUIT FITTING BODY
Mount with hub at top, bottom or either side.

FITTING DIMENSIONS




### Conduit Adapter Covers - Watertight Type

| Style | Shell Size | Adapter Cover Catalog No. | DIMENSIONS (Including Barrel) A | B | C | D | F Pitch UNC-2B |
|---|---|---|---|---|---|---|---|
| Straight | 12 | ZP-C-2512-10 | 4-3/16 | 3-9/16 | 1 | 1-27/32 | 1/4-20 |
| | 16 | ZP-C-2516-10 | 4-3/16 | 3-9/16 | 1 | 1-27/32 | 1/4-20 |
| | 20/C20 | ZP-C-2520-10 | 4-1/2 | 3-7/8 | 1-7/32 | 2-1/16 | 1/4-20 |
| | 24 | ZP-C-2524-10 | 8 | 7 | 1-1/2 | 2-9/16 | 1/2-13 |
| | C24 | ZP-C-2524-10 | 8 | 7 | 1-1/2 | 2-27/32 | 1/2-13 |
| | 28 | ZP-C-2528-10 | 8 | 7 | 1-1/2 | 2-9/32 | 1/2-13 |
| | C28 | ZP-C-2528-10 | 8 | 7 | 1-1/2 | 2-25/32 | 1/2-13 |

Above should not be used with pressure-type contact inserts.

### Conduit Adapter Covers cont.

| Shell Size | Adapter Cover Style: Standard Cat. No. | Deep Cat. No. | DIMENSIONS (Including Barrel) A | B | C | D | F Pitch UNC-2B |
|---|---|---|---|---|---|---|---|
| 12 | ZP-C-2512-12 | | 4-3/16 | 3-9/16 | 2-13/16 | 2-7/16 | 1/4-20 |
| 16 | ZP-C-2516-12 | | 4-3/16 | 3-9/16 | 2-15/16 | 2-17/32 | 1/4-20 |
| 16 | | P-202704-16 | 4-3/16 | 3-9/16 | 4-7/16 | 4-1/16 | 1/4-20 |
| 20 | ZP-C-2520-12 | | 4-1/2 | 3-7/8 | 3-39/64 | 3 | 1/4-20 |
| C20 | | | 4-1/2 | 3-7/8 | 3-39/64 | 3-3/8 | 1/4-20 |
| 20/C20 | | ZP-C-2520-26 | 4-1/2 | 3-7/8 | 5 | 4-1/2 | 1/4-20 |
| | | | 4-1/2 | 3-7/8 | 5 | 4-7/8 | 1/4-20 |
| 24 | ZP-C-2524-12 | | 8 | 7 | 3-33/64 | 2-19/64 | 1/2-13 |
| C24 | | | 8 | 7 | 3-33/64 | 2-21/32 | 1/2-13 |
| 24 | | P-202708-24 | 8 | 7 | 5-3/4 | 4-9/16 | 1/2-13 |
| C24 | | | 8 | 7 | 5-3/4 | 5 | 1/2-13 |
| 28 | ZP-C-2528-12 | | 8 | 7 | 3-5/8 | 2-7/16 | 1/2-13 |
| C28 | | | 8 | 7 | 3-5/8 | 2-3/4 | 1/2-13 |
| 28 | | P-202708-28 | 8 | 7 | 5-3/4 | 4-9/16 | 1/2-13 |
| C28 | | | 8 | 7 | 5-3/4 | 5 | 1/2-13 |

### Conduit Fitting Bodies – Cadmium Plated Ferrous Alloy

| Shell Size | Conduit Body Hub Size | Conduit Body Cat. No. | DIMENSIONS A1 | A2 | B | C1 | C2 | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|
| 12 or 16 | 3/4 | P-202760-42 | 5-1/4 | 5-1/4 | 25/64 | 4-5/8 | 4-5/8 | 4-3/16 | 2-3/8 | 9/32 |
| | 1 | P-202760-43 | 5-1/4 | 5-1/4 | 25/64 | 4-5/8 | 4-5/8 | 4-3/16 | 2-3/8 | 9/32 |
| | 1-1/4 | P-202760-64 | 5-1/4 | 5-1/4 | 25/64 | 4-5/8 | 4-5/8 | 4-3/16 | 2-3/8 | 9/32 |
| | 1-1/2 | P-202760-65 | 5-1/4 | 5-1/4 | 25/64 | 4-5/8 | 4-5/8 | 4-3/16 | 2-3/8 | 9/32 |
| 20 or C20 | 1-1/4 | JRZ-610064 | 6 | 6 | 9/16 | 5-1/4 | 5-1/4 | 4-1/2 | 3-3/4 | 9/32 |
| | 1-1/2 | JRZ-610065 | 6 | 6 | 9/16 | 5-1/4 | 5-1/4 | 4-1/2 | 3-3/4 | 9/32 |
| | 2 | JRZ-610066 | 6 | 6 | 9/16 | 5-1/4 | 5-1/4 | 4-1/2 | 3-3/4 | 9/32 |
| 24 or C24 | 2-1/2 | JR-720036-A | SEE BOTTOM DRAWING | | | | | | 3-3/4 | 7/16 |
| 28 or C28 | 3 | JRZ-820036-A | SEE BOTTOM DRAWING | | | | | | 4-1/2 | 7/16 |

# Contact Crimping Tools

TP-201411-AG

**TP-201411-AG** HAND CRIMP TOOL COMPLETE
This tool is complete with 3 contact locators and instructions, and will crimp all contacts #10 through #18 of the Mod II and Mod III design.

**TP-201411-TO** Hand crimp tool only (less locators)

**TP-201411-16-18** Locator only for #16 and #18 pins and sockets

**TP-201411-10-12** Locator only for #10 pin and sockets and #12 sockets

**TP-201411-12P** Locator only for all #12 pins any length

TP-201328
Crimping Tool Only
and Accessories for Contacts
#12 through #4/0

**TP-201351-AG HAND CRIMP TOOL**
This tool is complete with carrying case, checking gage and complete instructions for crimping #10 through #18 contacts of MOD II or MOD III design.

**TP-201351-TC HAND CRIMP TOOL**
This tool crimps #18 - #20 contacts utilizing thermocouple wire.

**TP-201351-TL HAND CRIMP TOOL**
This tool crimps #8 contacts only.

**Thomas & Betts TOOL NUMBER TBM15 AND DIE NUMBER 15505**
To terminate 500 MCM contact.

| Contact Size | Wire Size | Die Number | Check Gage | Color | (Locator) Mod II | (Locator) Mod III |
|---|---|---|---|---|---|---|
| 12 W Length<br>12 C Length | 12-14 | TP-201328-12D | TP-201328-12G | Yellow | TP-201328-12<br>TP-201328-12C | TP-201328-12L |
| 10 W Length<br>10 C Length | 10-12 | TP-201328-10D | TP-201328-10G | Black | TP-201328-10<br>TP-210328-10C | TP-210328-10L |
| 8 W Length<br>8 C Length | 8-10 | TP-201328-8D | TP-201328-8G | Red | TP-201328-8<br>TP-201328-8C | TP-201328-8L |
| 4 W Length<br>4 C Length | 4-6 | TP-201328-4D | TP-201328-4G | Brown | TP-201328-4<br>TP-201328-4C | TP-201328-4L |
| 1/0 | 1/0-1<br>2 | TP-201-328-0D<br>TP-201328-2D | TP-201328-0G<br>TP-201328-2G | Blue | TP-201328-0C | TP-201328-0L |
| 4/0 | 4/0 - 3/0 | TP-210328-41D | TP-201328-41G | Green | TP-201328-41 | TP-201328-41L |

TP-201328-F

* Foot control unit with
6 foot hose –
Catalog No. TP-201328-F
Normal operation 100 P.S.I.

**TP-201328 CRIMP TOOL**

**TP-201328 PS-POWER SUPPLY**

**TP-201328 BC-CARRYING CASE**

NOTE: Carrying case will accommodate crimp tool.

NOTE: Power supply will include 5 dies and locators.

Amphenol INDUSTRIAL

# Insertion and Removal Tools for MOD II & MOD III

## Tools for Crimp Type Contacts

### Insertion Tools

Used for inserting contacts after they are terminated to conductor. Pin and socket contacts have identical terminal ends; the same tool is used for both.

| Size | Insertion Tool Catalog No. | | Replacement Tips |
|---|---|---|---|
| 18 | TP-201047-1 | Use Same | TP-201047-PA |
| 16 | TP-201048-1 | Tool for | TP-201048-PA |
| 12 | TP-201049-1 | Pin or | TP-201049-PA |
| 10 | TP-201046-1 | Socket | TP-201046-PA |

| Size | Expander Barrel Catalog No. | Tapered Lead Style | T-Bar Handle Style |
|---|---|---|---|
| 8 | TP-201007-A | TP-201007-B | – |
| 4 | TP-201033-A | TP-201033-B | – |
| 0 | TP-201000-EBL | TP-201000-TL | TP-201000-TH |
| 0 | TP-201000-EBS | | |

A separate expander barrel is required for each cavity of the contact inset.

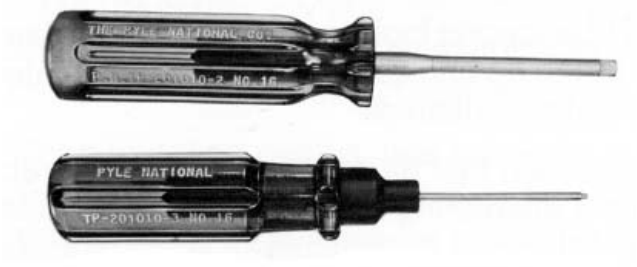
An even number of long and short barrels should be used: Example: if the insert contains four cavities, use two long (EBL) and two short (EBS). Insert the short ones first and remove them last.
NOTE: EBS = Expander Barrel Short, EBL= Expander Barrel Long.

The T-Bar handle should be used in the insertion and extraction of the expander barrel for the 1/0 cavities – only one is required.

One tapered lead required only.

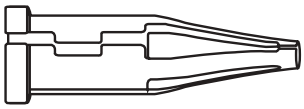
### Removal Tools

Used for extracting contacts from the insert assembly after contacts have been seated.
Expanders and taper leads are required for sizes 8, 4, 1/0 MOD II contacts only.




#### Removal Tools for MOD II

| Size | Removal Tool Number for Pin | Removal Tool Number for Socket |
|---|---|---|
| 18 | TP-201459 | TP-201011-3 |
| 16 | TP-201459 | TP-201010-3 |
| 12 | TP-201459 | TP-201009-3 |
| 10 | TP-201459 | TP-201008-3 |



#### MOD III Pin and Socket Removal Tools

| Contact Size | Removal Tool Number for Pin and Socket |
|---|---|
| 18 | TP-201315-18 |
| 16 | TP-201315-16 |
| 12 | TP-201315-12 |
| 10 | TP-201315-10 |
| 8 | TP-201315-08 |
| 4 | TP-201315-04 |
| 1/0 | TP-201260-00 |

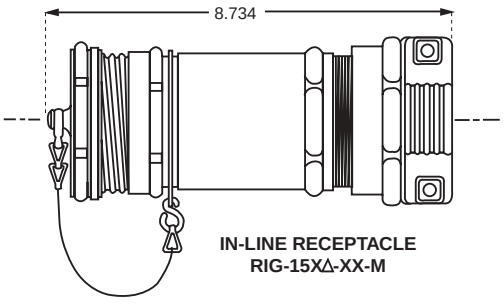
# Single Pole Power Connectors

## RIG-Power® Connectors (1000v AC/DC)

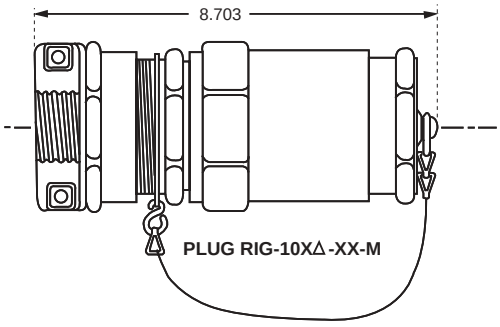
| Ampacity (Using 535 MCM) | Ampacity (Using 777 MCM) | Wire Range | Connector Style | Insert Gender | Part Number* |
|---|---|---|---|---|---|
| 900 | 1135 | 444-777 kcmil | Plug w/ Mech. Clamp | Dead Front Pin (Line side) | RIG-10P▲-XX-M-◆ |
| | | | Plug w/ Mech. Clamp | Socket Contact (Load Side) | RIG-10S▲-XX-M-◆ |
| | | | Cable Receptacle w/ Mech. Clamp | Dead Front Pin (Line side) | RIG-15P▲-XX-M-◆ |
| | | | Cable Receptacle w/ Mech. Clamp | Socket Contact (Load Side) | RIG-15S▲-XX-M-◆ |
| | | | Fixed CableReceptacle w/ Mech. Clamp | Dead Front Pin (Line side) | RIG-17P▲-XX-M-◆ |
| | | | Fixed Cable Receptacle w/ Mech. Clamp | Socket Contact (Load Side) | RIG-17S▲-XX-M-◆ |
| | | | Panel Mount Receptacle (Bus Bar) | Dead Front Pin (Line side) | RIG-17PR-◆ |
| | | | Panel Mount Receptacle (Bus Bar) | Socket Contact (Load Side) | RIG-17SR-◆ |
| | | | Panel Mount Receptacle (Direct Cable Entry) | Dead Front Pin (Line side) | RIG-17PN-◆ |
| | | | Panel Mount Receptacle (Direct Cable Entry) | Socket Contact (Load Side) | RIG-17SN-◆ |

* ▲ Select Cable Size: (4=444 kcmil, 5=535 MCM, 6 = 646 MCM, 7=777 MCM)
XX - Select Cable Diameter Code #. See Grommet Selection Guide below.
M designates Mechanical Clamp (For basketweave grip substitute K for M).
◆ Select standard color code from Color Code options below.
Use Crimp Tool: Anderson (Square D) Versa Crimp # VC8

**For Radsok RIG-Power Connectors** consult Amphenol Industrial for assistance in ordering.
Example part numbers with Radsok contacts are:
Plug: RIG-R10P▲-XX-M-◆
Receptacle: RIG-R17PR-◆

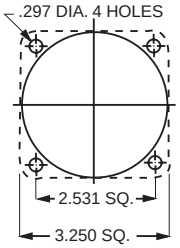



**IN-LINE RECEPTACLE RIG-15XΔ-XX-M**

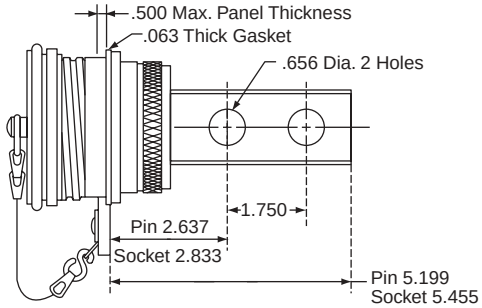



**PLUG RIG-10XΔ-XX-M**

NOTE:
See page 20, shell size C24 for full mounting dimensions.




**PANEL MOUNTING HOLES**




**PANEL MOUNT RECEPTACLE RIG-17X**

## RIG-POWER Grommet Selection Guide

| Cable Diameter | 1.000-1.125 | 1.125-1.250 | 1.250-1.375 | 1.375-1.500 | 1.500-1.625 | 1.625-1.750 | 1.750-1.875 |
|---|---|---|---|---|---|---|---|
| Code No.(XX) | 18 | 20 | 22 | 24 | 26 | 28 | 30 |

## ◆ Color Code Options

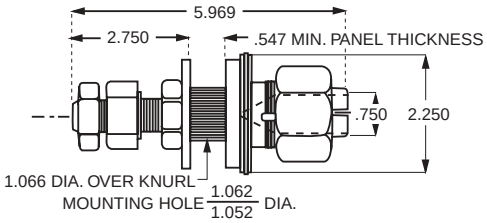
| Current Type | DC | | | | AC | | | |
|---|---|---|---|---|---|---|---|---|
| Standard Color Code | Blue | Orange | Yellow | Brown | Red | White | Black | Green |
| Part Number Suffix ◆ | -BL | -OR | -Y | -BR | -R | -W | -BK | -G |

# Single Pole Power Connectors

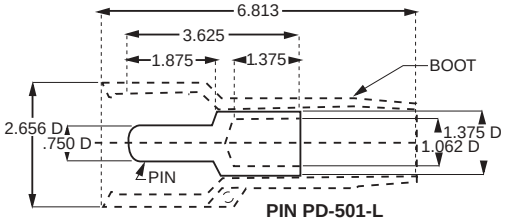
## P-500™ / PD-501 POWER Connectors

| Ampacity | Wire Size | Type of Termination | Gender | Part Number | Boot Part # (See Color Code) | Cable Sealing Range |
|---|---|---|---|---|---|---|
| 900* | – | Stud | Socket | P-500126-BS-◆ | – | – |
| 900* | 535MCM | Solder | Pin | PD-501-L | TMPC-10-◆ | 1.125 - 1.500 |
| 900* | 535MCM | Crimp | Pin | PD-500126-P | TMPC-10-◆ | 1.125 - 1.500 |
| 325 | 313MCM | Solder | Pin | PD-501-S | TMPC-10-◆ | 1.125 - 1.500 |

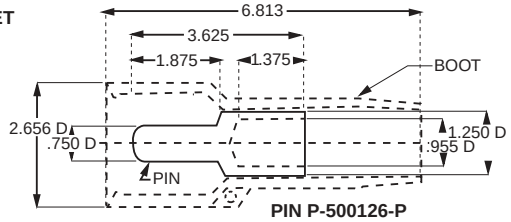
Note: Connectors are rated at 1000 Volts AC/DC when mounted on 5" centers.
Copper alloy, silver plated contacts for maximum conductivity.
Crimp tool required for P-500126-P is Thomas & Betts hex crimp using Tool # TBM15 & die catalog #15505 or Anderson (Square D) Versa Crimp VC8.
* When used with 125° C rated cable.



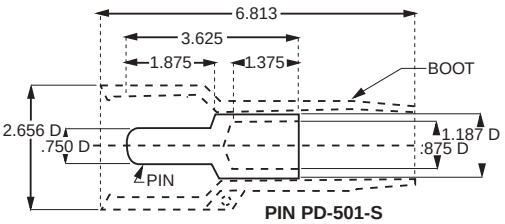

**PANEL BOARD SOCKET P-500126-BS**




**PIN PD-501-L**




**PIN P-500126-P**

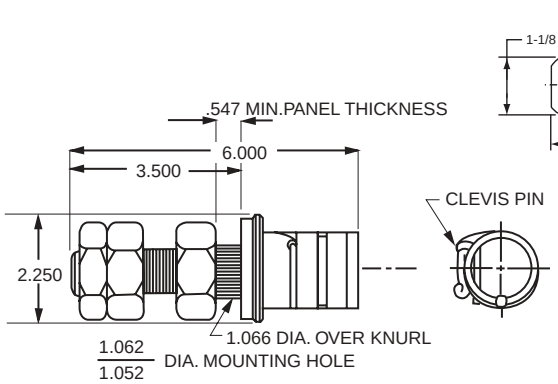



**PIN PD-501-S**

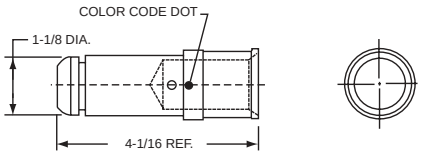
## TMPC™ Connectors

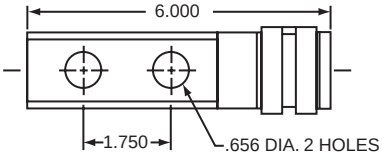
| Gender | Type of Termination | With Standard Contacts: Part Number | With Standard Contacts: Current Range | With Radsok Contacts: Part Number | With Radsok Contacts: Current Range | Wire Size | Boot Part No. | Cable Sealing Range |
|---|---|---|---|---|---|---|---|---|
| Socket | 7/8" Stud/Panel Board | TMPC-41777-L-◆ | 900-1135 amps | TMPC-41777-RL-◆ | 1500 | N/A | N/A | N/A |
| Socket | 2 Hole Bus Bar | TMPC-41777-24L | 900-1135 amps | TMPC-41777-R24L | 1500 | N/A | N/A | N/A |
| Pin | Crimp | TMPC-40535-L | 900 amps | TMPC-40535-RL | 1500 | 444-535 kcmil | TMPC-10-◆ | 1.125-1.500 |
| Pin | Crimp | TMPC-40777-L | 900-1135 amps | TMPC-40777-RL | 1500 | 646-777 kcmil | TMPC-10-◆ | 1.125-1.500 |

Note: TMPC Connectors are rated at 1000 Volts AC/DC when mounted on 5" centers.
Material is copper alloy, silver plated for maximum conductivity and corrosion resistance.
Recommended crimping tools are as follows: Anderson (Square D) Versa Crimp VC8 (four indent).




**PANEL BOARD SOCKET TMPC-41777-L**



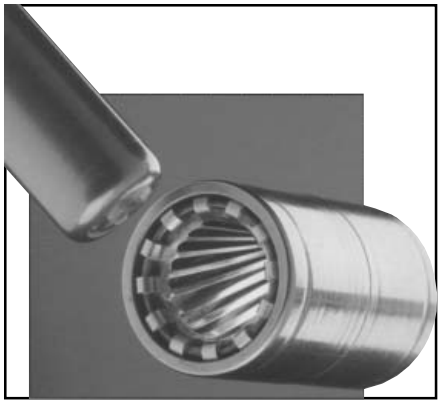

**MOTOR BUS BAR MOUNT SOCKET TMPC-41777-24L**

# STAR-LINE Connector Assembly and Termination Instructions

Proper assembly of multiple-contact connectors, for the most part requires common sense. The simplicity of these instructions is perhaps the reason why they are easily overlooked or taken for granted. These 27 reminders can help eliminate connector failures caused by improper assembly.

1. Read the assembly instructions carefully before actually starting to assemble connectors. Besides the matter of instruction on correct procedures, there are two important reasons for this preliminary step: To identify the various component parts, and to check for any missing parts.
2. Cut cable jackets and sheathing squarely and to correct length, using only wire strippers that have been approved for the operation. In preparing the individual wires in cables and harnesses for assembly, make allowances in length for reaching the outermost circle of contact cavities in the connector insert. This, of course, means that the conductors and the insulation should be cut progressively longer as they extend out from the center of the cable or harness to assure sufficient length for any necessary forming.
3. Follow specifications covering maximum cable stripping lengths for efficient cable grommet sealing. All wires should be cut squarely so that they will fit into contact wire wells correctly.
4. Before starting actual termination wires, it is essential that cables and harnesses be laid out in a specified order in accordance with the wiring diagram. Proper layout will reduce the need for twisting and crossover of conductors. If the wiring layout is not correct, the termination operation will be difficult or even impossible and the chances for making errors will be increased. Cable and harness assemblies having a spiral layout also must be matched carefully to the correct contacts in both the male and female inserts.
5. Some cables have a soft filler or braid on the conductors which, compresses when external pressure is applied. As a result, the cable diameter may be reduced to a point where the sealing range of the grommet is exceeded. In addition, the seal may take a permanent set and further reduce sealing efficiency. To avoid leakage at the seal under these conditions, it is suggested that, where construction of the cable permits, a metal ferrule be slipped under the cable jacket at the stressed position. This ferrule will serve as a compression supporting member and enable the gland seal to withstand high external pressures.
6. Use only correct size sealing grommets to assure resistance to moisture and other contaminants. Make certain that cable jacket is smooth where grommet is to seal. Remove any grooves or ridges if present by sanding or scarfing.
7. Use only the proper crimping tools that have been set or calibrated with precision gages.
8. When contacts are to be soldered, avoid direct contact of soldering tools to inserts. An open flame or hot soldering tip can carbonize insulating materials and make them useless.
9. Make certain that all contacts are the correct size before attempting to assemble them into insert cavities. This point is particularly important when both power and control types of contacts are used in the same connector.
10. Be sure that grounding contacts are correctly located.
11. Seat all contacts properly so that they will not be damaged or become disengaged during connector mating operations.
12. Use only the proper insertion tools and be sure that they are aligned axially when pushing contacts into their fully seated position.
13. When inserts have more cavities than conductors, plug unused cavities with either plain contacts or special seal plugs designed for the purpose. Some connectors require both a contact and seal plug in unused cavities to meet military specifications and to assure complete internal environmental sealing.
14. After all terminated contacts are inserted in their respective cavities and inspected, the cable adapter or insert clamp nut should be tightened with a wrench. This assembly operation should be done by placing the components in a vise with smooth-faced jaws and using a strap wrench.
15. If for any reason terminated conductors have to be removed from an insert because of any assembly error or change in circuitry, be sure to remove the cable clamp or insert clamp nut first before extracting the contact and reinserting it. This step is important because any attempt to remove the contacts when the resilient insulator components are compressed will result in damage.
16. When handling cables, use adequate support to prevent damage to the internal wires. Gland nuts and grommets are intended for sealing purposes and should not be used as a cable grip.
17. If one of the connector poles is a grounding wire, make sure that it is grounded properly before the connector is actually engaged.
18. When connectors having the same configuration are to be mounted close together, different or alternate keying arrangements should be used to prevent mismating or cross-mating and possible damage to the electrical system or human injury.
19. Always inspect all aspects of connector assembly operations before putting connectors into actual operation.
20. Crimping and terminating of conductors to contacts must be done carefully. Make certain that wire strands are fully bottomed in contact wells by checking through inspection hole provided.
21. Soldering conductors to contacts must be done carefully and a non-conductive flux should be used to avoid corrosion or hygroscopic action. Do not use solder salts or acids because they may affect the dielectric properties of insulation materials.
22. Be careful not to damage wire grommets or contact retaining collets when inserting or extracting contacts.
23. Never try to straighten bent contacts. Straightening cannot be done properly and the plating on contacts will very likely be marred. This will result in a high resistance connection and will expose the base metal to possible corrosion.
24. Do not attempt to remove inserts that are bonded or locked in place in their shells.
25. Be certain that all components of connectors are assembled. Each part performs a vital function and it would not be included if it wasn't useful.
26. Each assembler of connectors should be his own inspector. Assembly workmanship is a significant factor in determining the quality of multiple-contact connectors. Quality cannot be "inspected" into connectors; it must be "built-in" during each and every assembly operation.
27. When potting connectors be sure to apply potting only in mated condition to assure that contacts will align properly.

# STAR-LINE Connectors with RADSOK® Contacts



## RADSOK Contact Design:

- Socket cylinder within female contact has several equally spaced longitudinal beams twisted into a hyperbolic shape.
- As male pin is inserted, axial members in the female half deflect, imparting high current flow across the connection with minimal voltage loss.
- The hyperbolic, stamped grid configuration ensures a large, coaxial, face-to-face surface area engagement.
- Ideal for crimp termination applications requiring repeated mating cycles and high current with a low milli-volt drop.

Certain designs are available for variable frequency drive (VFD) applications. Consult Amphenol Industrial Operations for further information.

**The new RADSOK contact design has been incorporated into the Star-Line connector family of connectors.**

Insert arrangements with RADSOK's are shown in this catalog. For information on availability of additional inserts with RADSOK's consult Amphenol Industrial Operations.

Amphe-Power connectors with RADSOK sockets can handle up to 150% higher amperages than connectors with standard contacts. Current Amphe-Power product lines support from 50A to 500A continuous duty. RADSOK contacts are available in size 8 (69 amps), size 4 (120 amps), and size 0 (250 amps).

## RADSOK Contact Advantages:

- Low contact resistance - the RADSOK contact's multiplicity of flat grid surfaces assures the greatest possible contact area on the mating pin. This results in longer life - reduced contact pressure yields reduced wear.
- Low milli-volt drop performance - due to the intimate contact provided by the spring force of the grid, the flat contact surface and the wiping action during insertion.
- Higher current capacity with minimized temperature rise. Lower overall contact resistance reduces heat build-up, thereby allowing higher current capacities at given temperature limits. Connectors with RADSOK contacts may be produced in various sizes with a variety of amperage capabilities.
- Reliability under vibration and shock. System inertia is minimized by the small package and the fact that the contact is under a spring load.
- High quality, consistency and lower cost with high speed, automated precision stamping and assembly technology

See Brochure SL-391, Amphenol Amphe-Power Connectors with RADSOK Technology for more information on other Amphenol connector types that incorporate RADSOK contacts.

# Additional Amphenol® Industrial Connector Products

## Neptune® Series

Amphenol Industrial Operations has introduced a new power connector family that features the Amphenol exclusive RADSOK® contact system. This new Neptune® connector series is designed to perform in the most demanding environments. It features the same aluminum constructions with anodic hardcoat plated components as the Star-Line product.
The RADSOK contact provides increased amperage. See page 81 for more information on RADSOK contact features and benefits.
Other features: 30 Amp through 400 Amp/480 Volt inserts available; decreased weight and panel layout compared to competition; double lead Acme threads for easy coupling.
Used in oil exploration equipment, convention center power distribution, portable power distribution equipment, geophysical trucks, and communication shelters.

Reference Product Data Sheet #192

## Amphenol Cord Grips

Amphenol's industrial product offering also includes a wide variety of cord grips that provide liquid tight strain relief for cord, cable and flexible conduit. They have threaded coupling for panel board or threaded hub applications. Straight, 45 degree or 90 degree styles. Moisture sealing is provided with oil-resistant grommets and compression nuts. Tapered conduit threads assure strong water and oil-tight joints. UL listed and CSA certified.

Reference Catalog 12-055

## Amphenol Cable Glands

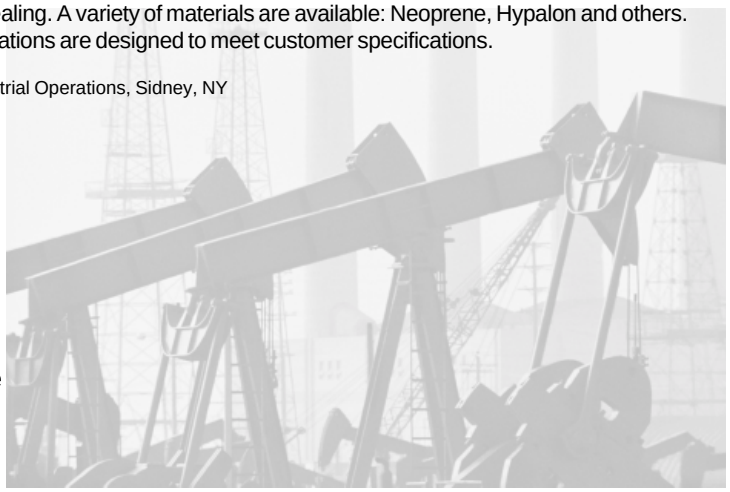
Amphenol Industrial Operations, the worldwide leader of explosion proof and hazardous environment interconnects, introduces a broad range of explosion proof and industrial cable glands. The cable gland products are designed to perform in the most demanding environments. Amphenol provides a complete line of EX Zone 1 and 2 rated cable glands along with general duty cable glands that are suitable for armored and unarmored cable. Brass and stainless steel types are available. IP66/68; deluge; NEMA rated products. SIRA/ATEX certified to Exd/Exe (Class I, Div. I) and CSA approved.

Reference Catalog 12-055

## Overmolded Cable Assemblies

Cables can be designed with a custom overmold to any Amphenol cylindrical connector for almost any industrial application. Overmold seals to the rear of the connector and to the cable jacket providing moisture sealing. A variety of materials are available: Neoprene, Hypalon and others. Lengths and configurations are designed to meet customer specifications.

Consult Amphenol Industrial Operations, Sidney, NY



Amphenol's combination of cable glands and cord grip products, along with their design and manufacturing expertise in cable assemblies makes Amphenol Industrial the one-stop supplier for connector and cable sealing solutions.

# Additional Amphenol® Industrial Connector Products

## MIL-5015

Amphenol has long been the accepted leader in providing MS/Standard MIL-5015 type connectors. The Amphenol MS/Standard product is a large family of time-tested medium to heavyweight connectors with resilient inserts, threaded coupling. Other features include: over 200 insert arrangements, both crimp and solder terminations, plating options including cadmium-free.
There are five classes to meet different requirements: A- solid shell, for general, non-environmental applications; C- pressurized, for use on pressurized bulkheads or pressure barriers; E/F - environmental resisting with strain reliefs, designed for applications where the connector with be exposed to moisture, vibration and rapid changes in pressure and temperature; R- lightweight environmental resisting, shorter in weight than the E/F classes.
Used in heavy equipment, off-road vehicles, mass transportation and power generation.

Reference Catalog 12-020

## GT-Series

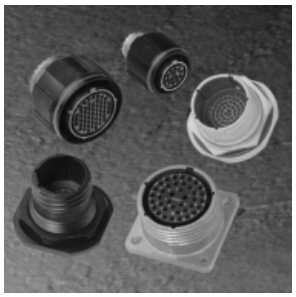
Amphenol GT Series of connectors are heavy duty, rugged and environmentally resistant. They have reverse bayonet coupling which provides quick mating, audible, visual and tactile full mating indicators. They incorporate 5015 inserts, available in Neoprene, Viton or low smoke/flame retardant material. Over 40 varieties of shell styles and backend accessory combinations. Rugged construction - aluminum or stainless steel components.
Other features and benefits include: UL recognized; rated to 2000 couplings min., available in both crimp and solder terminations. Numerous military and commercial finishes available including cadmium free zinc alloy.
Used in mass transportation, power generation, petrochemical applications, heavy equipment and geophysical applications.

Reference Catalog 12-024

## MIL-C-26482

A medium size cylindrical connector family with a wide variety of styles. MS versions are produced in strict accordance to MIL-C-26482, Series 1 with several non-MS types also offered. MS-PT Service classes E, F and F types are UL recognized.
Styles include three point bayonet coupling, crimp, solder or printed board termination. Resilient inserts provide high dielectric strength and moisture barrier. There are 7 shell styles including hermetics, and 57 insert patterns. Variety of finishes, contact options and backend accessories options.
Used in instrumentation, machine tool, communications and geophysical applications.

Reference Catalog 12-070



## Amphe-Lite Series

Amphenol offers a commercial 38999, Series III type connector for higher performance industrial usage. This family offers 38999 type high performance capabilities for severe environment applications, yet is cost effective enough for general duty and non-environmental use as well. There is a class which provides an excellent EMI shielding and a class that provides a non-conductive finish. Composite shells resist severe corrosion.
The Amphe-lite series has 3 shell styles and 59 insert patterns available. It offers wide versatility in contact options such as twinax, coax, filter contacts and fiber optic termini, which makes it ideal for usage in communications equipment, medical equipment and automotive applications.

Reference Catalog 12-094

For an overview of Amphenol Industrial Connector Products ask for Amphenol brochure SL-381. Call your local Amphenol sales office or 800-678-0141 for further information. The Industrial Overview brochure and all the product brochures listed above can be viewed, printed and downloaded from the Amphenol website: **www.amphenol-industrial.com**.