

Amphenol®/Pyle® Industrial Connectors Star-Line®, Star-Line EX®, Rig-Power®

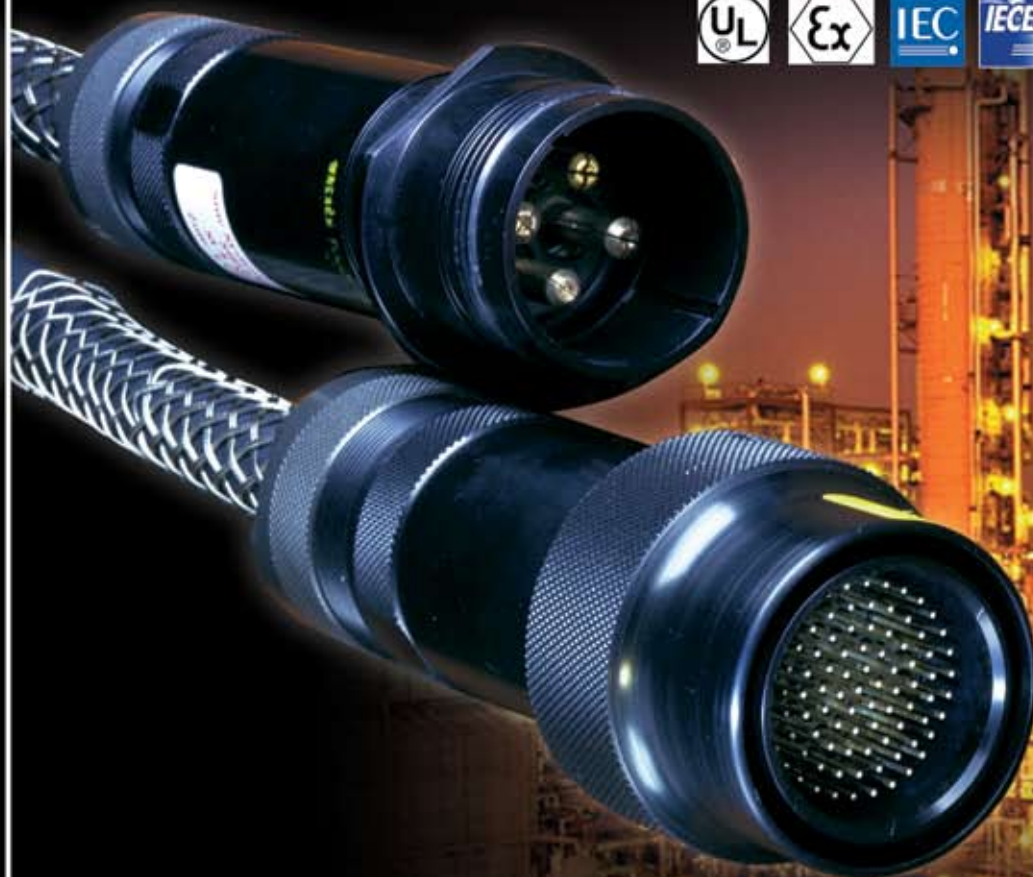
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Heavy Duty, Environmentally Sealed,
Power and Control Connectors



Amphenol

Interconnects for Control & Signal Applications

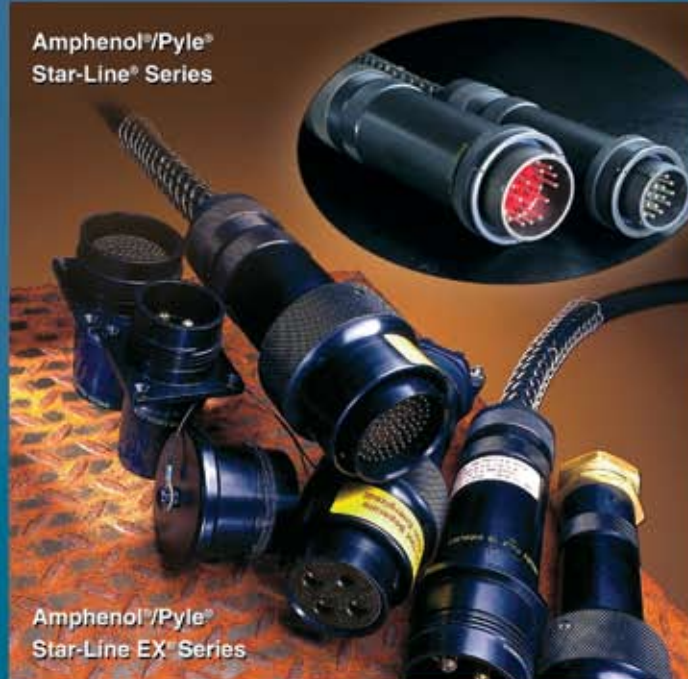
Rugged, Heavy Duty, Environmentally Sealed



Amphenol®
Star-Lok Series



Star-Line with
Basketweave Cable Grip



Amphenol®/Pyle®
Star-Line® Series

Amphenol®/Pyle®
Star-Line EX® Series



Star-Line®
with Backshell



Star-Line®
with Cable Gland

Amphenol® PT Series
Miniature 26482 Type



Amphenol® RPT Series



Amphenol®
Amphe-EX® Series



Amphenol® Cable Glands



Amphenol® Cord Grips



Amphenol®



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

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 UL1977/CSA C22.2 requirements
- **ENVIRONMENTAL RESISTANCE** – Design and materials withstand the most challenging operating conditions. Series has an IP 68-8 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 1977 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.

- **ATEX CERTIFIED** – for Zone 1-IIc hazardous environment. For certificate contact factory
- **IECEx CERTIFIED** – For certificate contact factory
- **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. *For Amphenol Star-Line product insert de-rating information per the National Electric Code, please consult the Amphenol Industrial website, www.amphenol-industrial.com. Chart is located under LITERATURE tab.*
- **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-Line EX Series connectors are certified for use in Zone 1-IIc hazardous environment



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



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Environmental Highlights

PROPERTY	MIL-5015 REQUIREMENTS CLASSES A, B, E J & R	STAR-LINE, STAR-LOK CONNECTORS
TEMPERATURE	-67° F to 225° F (-55° C to 107° C)	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 Certain inserts available to 200 G.
VIBRATION	Method 2005 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:

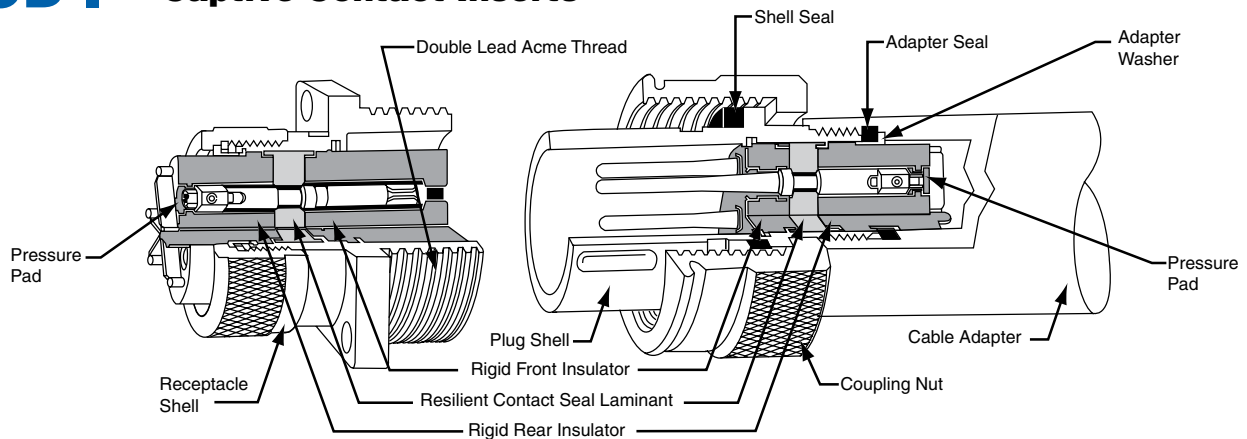
Wire size	Maximum diameter
#4/0	.747"
#1/0	.555"
#4	.400"
#8	.262"
#10	.201"
#12	.150"
#16	.107"
#18	.086"
Mod II & III	
#10	.248"
#12	.193"
#16	.130"
#18	.110"



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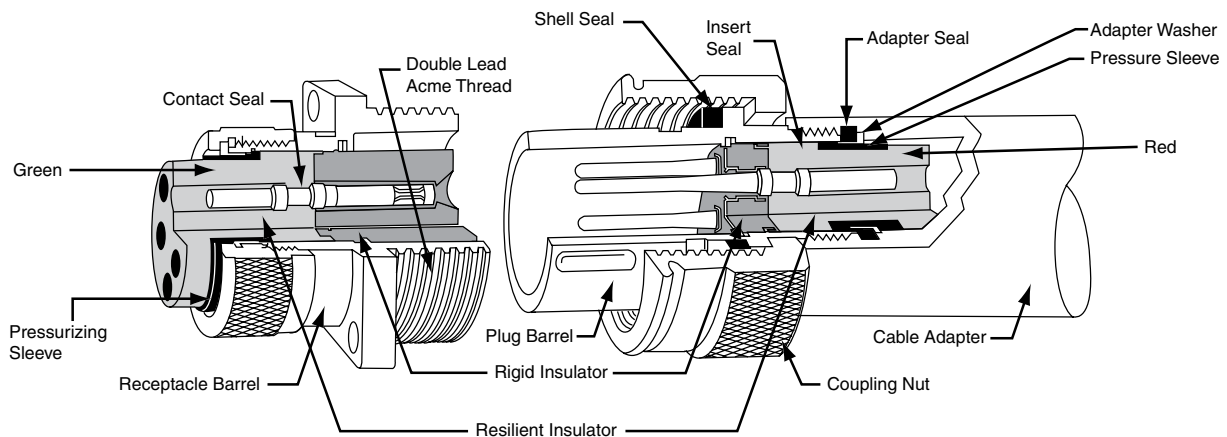
MOD I Captive Contact Inserts



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.

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:

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

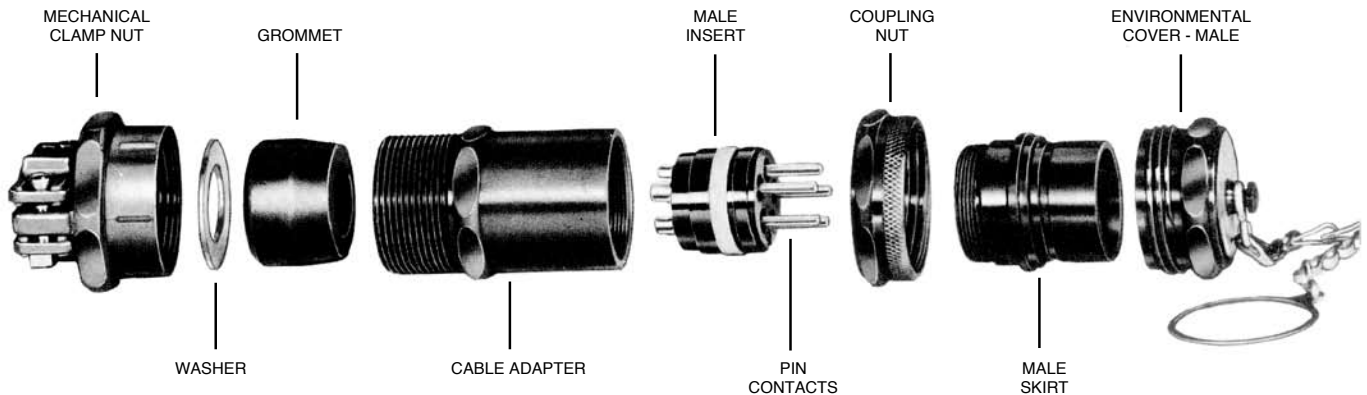
- To insure proper coupling the following torque values should be used on the coupling nut:

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

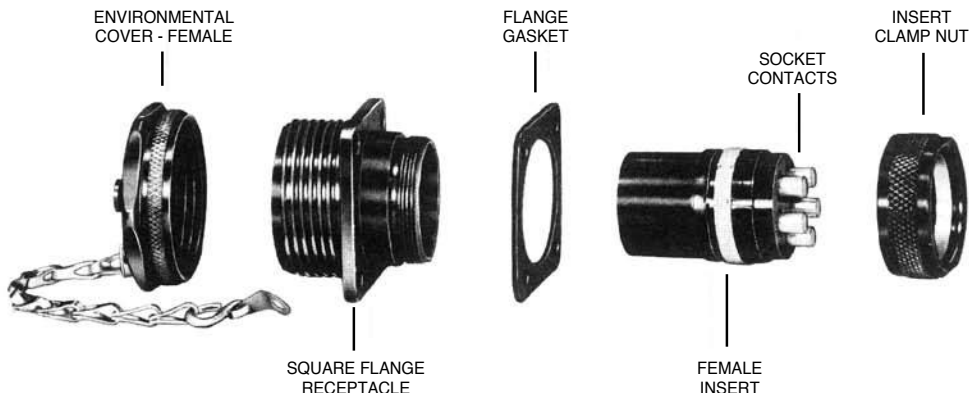
NOTE: The N.E.C. circuit breaking and non-circuit breaking ratings are based on test results of contacts and connectors. Consult the N.E.C. when selecting wire/cable for specific applications. Under certain conditions, a wire size may be rated higher or lower than our table indicates for a given contact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

Connector Assemblies

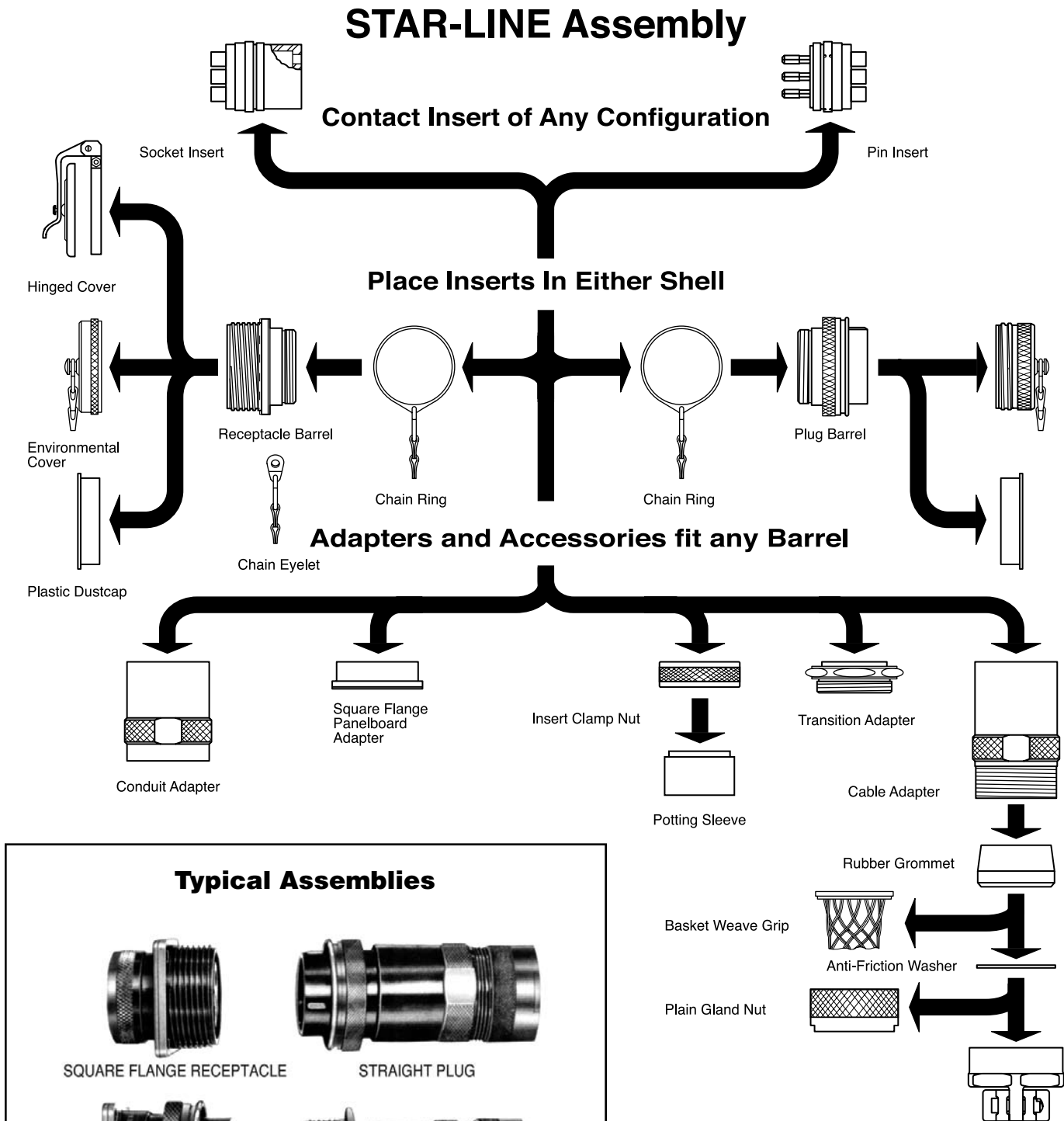
Typical MOD I Plug Components



Typical MOD I Receptacle Components

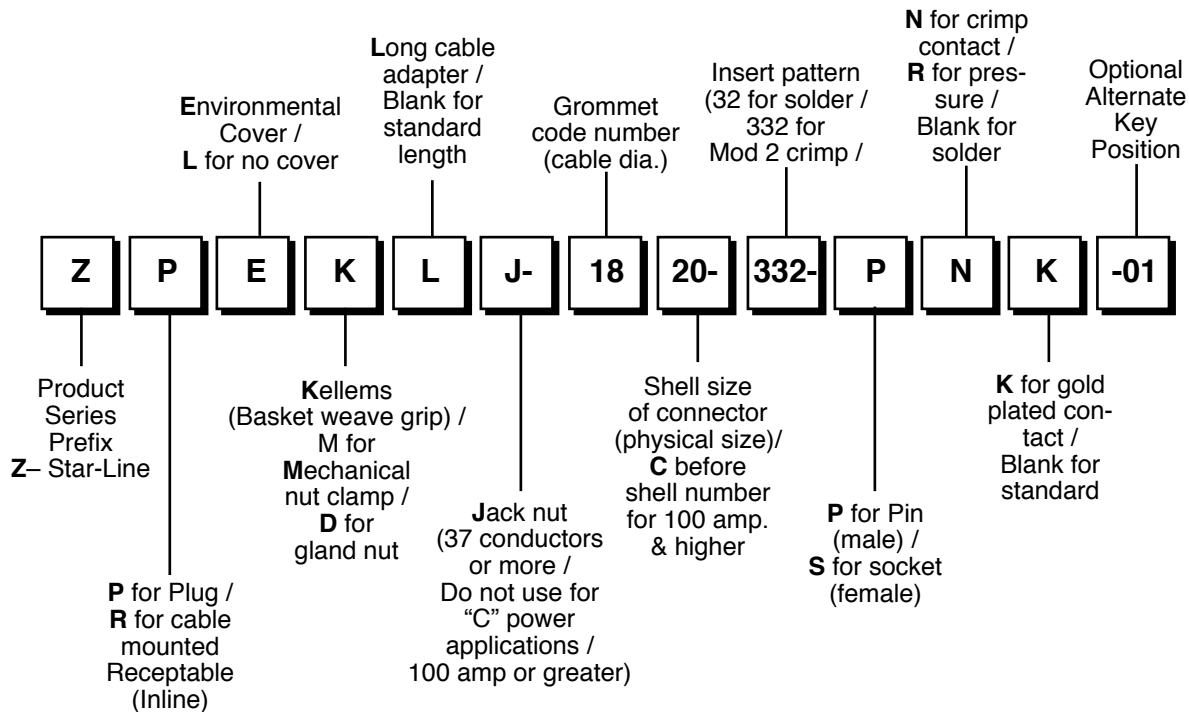


Connector Basic Components

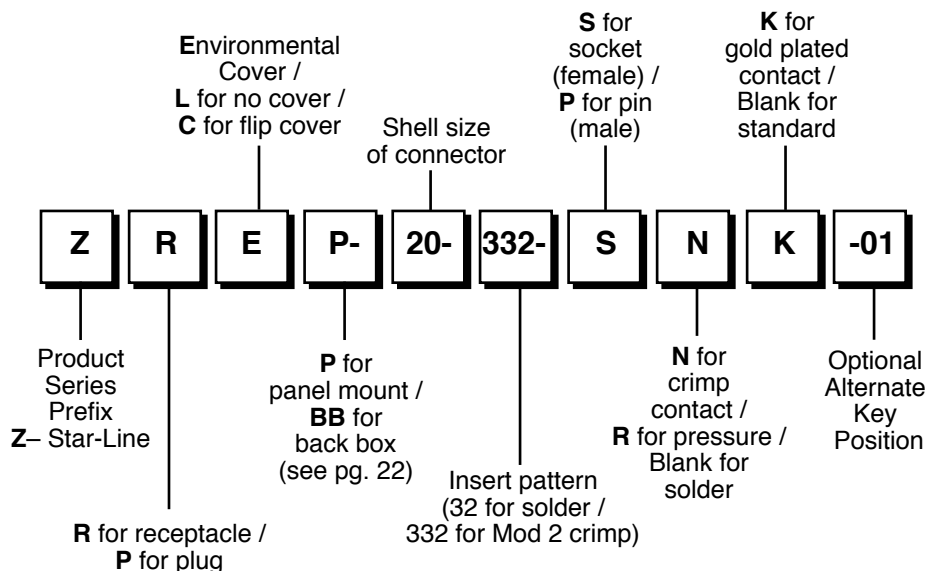


Code Logic Star-Line Series

Cable Mounted Connectors



Fixed Connectors



RoHS COMPLIANT PRODUCT
AVAILABLE – Consult
Amphenol Industrial Operations.





Straight Plug

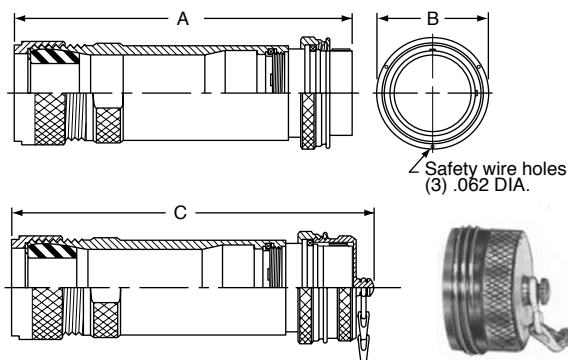
With Standard Compression Nut

To specify a complete plug, substitute the Dash No. of the contact insert selected, for the Asterisk (*) in the Catalog No. below.



Types
ZPLD ZPED

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



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

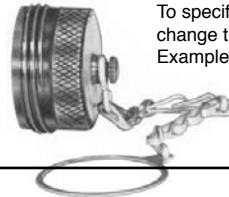
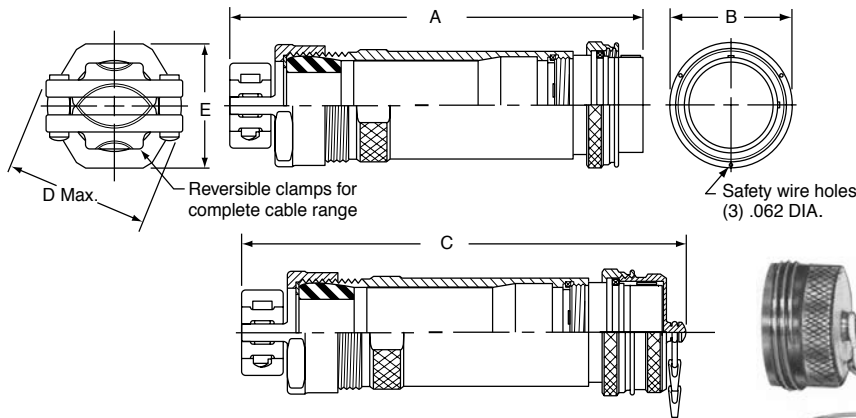
Straight Plug With Mechanical Clamp Nut

To specify a complete plug, substitute the Dash No. of the contact insert selected, for the Asterisk (*) in the Catalog No. below.



Types ZPLM ZPEM

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



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

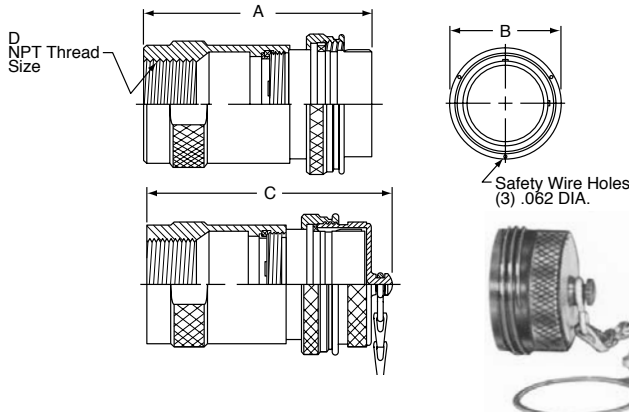
To specify a complete plug, substitute the dash no. of the contact insert selected for the asterisk (*) In the catalog no. below.

A PLUG WITH JACK COUPLING NUT SHOULD BE USED WITH INSERTS HAVING 37 OR MORE CONTACTS.



Types
ZPLT ZPET

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

Straight Male Plug

Panel Mount

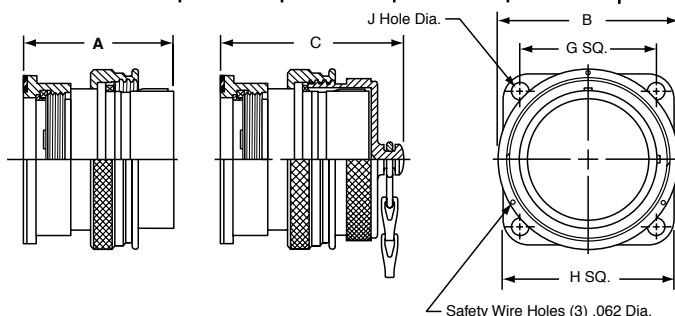
To specify a complete plug, substitute the dash no. of the contact insert selected for the asterisk (*) in the catalog no. below.

A PLUG WITH JACK COUPLING NUT SHOULD BE USED WITH INSERTS HAVING 37 OR MORE CONTACTS.



Types
ZPLP ZPEP

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

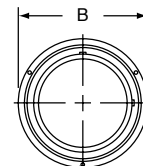
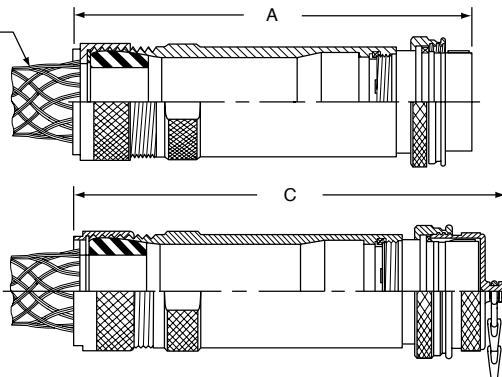
To specify a complete plug, substitute the Dash No. of the contact insert selected for the asterisk (*) in the catalog no.
A PLUG WITH JACK COUPLING NUT SHOULD BE USED WITH INSERTS HAVING 37 OR MORE CONTACTS



Types
ZPLK ZPEK

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

See cable grip
components page
for basket weave
grip lengths



Safety wire holes
(3) .062 DIA.



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



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

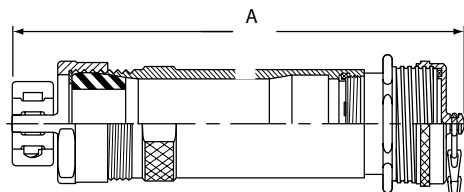
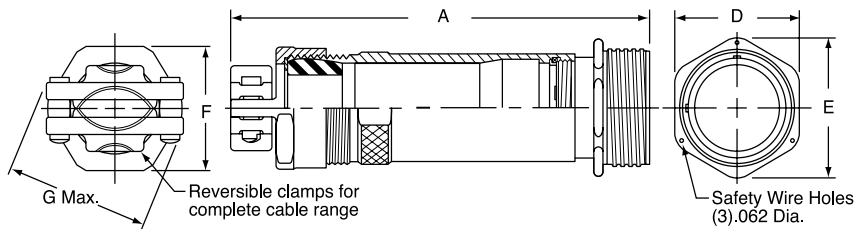
With Mechanical Clamp Nut

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

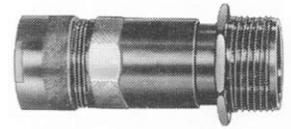
Substitute the symbol number for the Delta ▲ in the catalog number of plug.
Example: ZRLM-▲-12-* for .500 to .625 Dia. cable changes to ZRLM-10 12-*

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

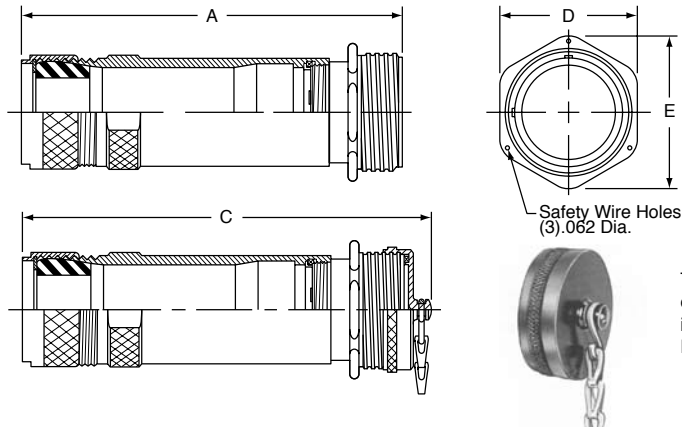
With Standard Compression Nut

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 Substi- tute 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

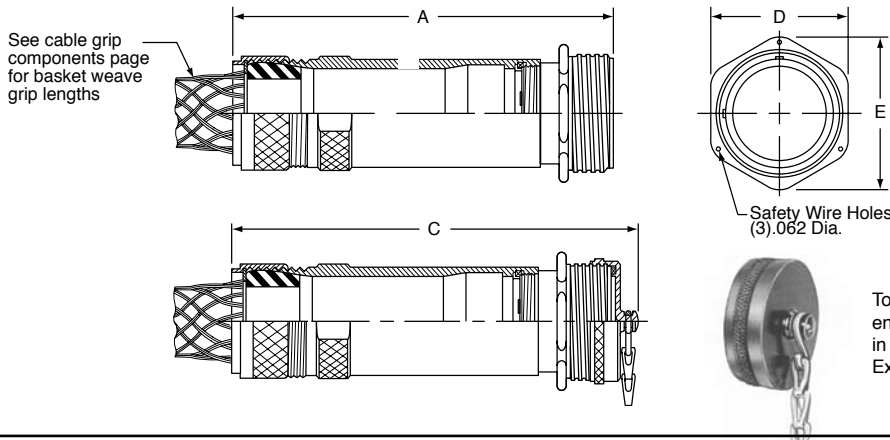
With Basketweave Cable Grip

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)

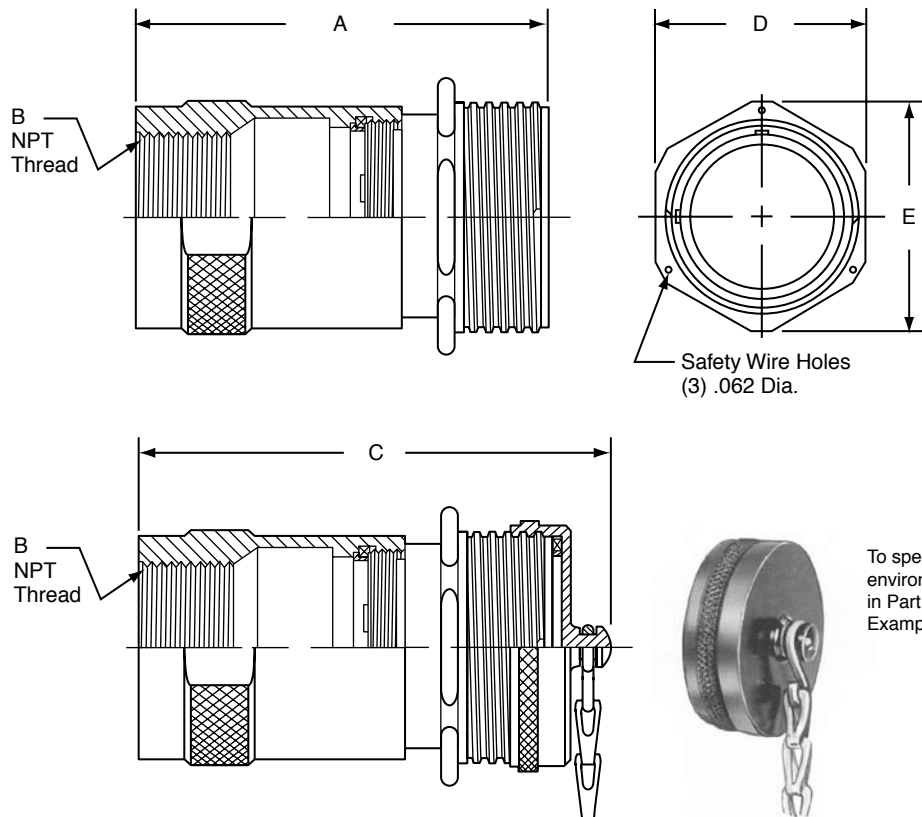
To specify a complete receptacle, substitute the dash no. of the contact insert selected, for the asterisk (*) in the catalog no. below.

To specify receptacle with threaded environmental cover, change third letter in part no. "L" to "E".



Types
ZRLT ZRET

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.

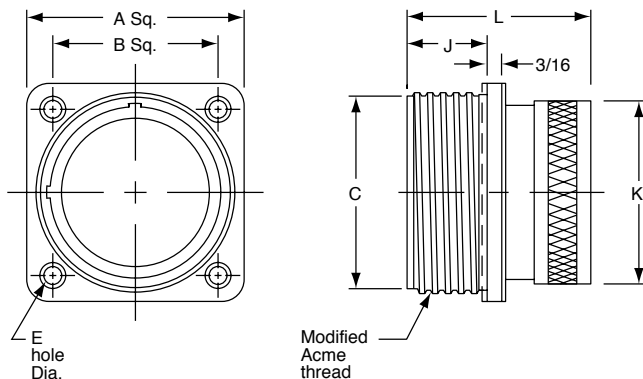
Square Flange Receptacle

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

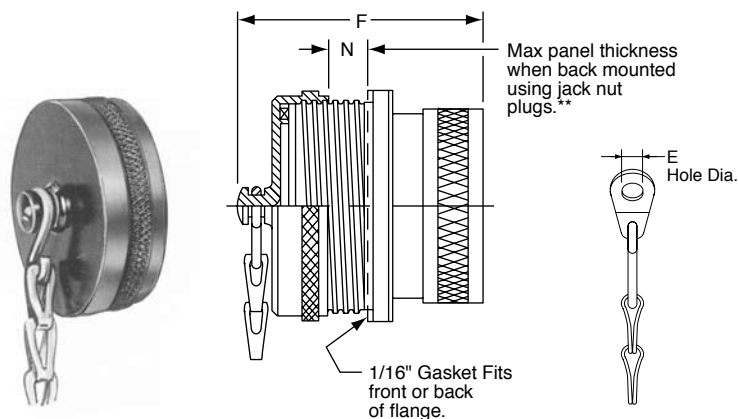


Types
ZRLP ZRCP ZREP

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

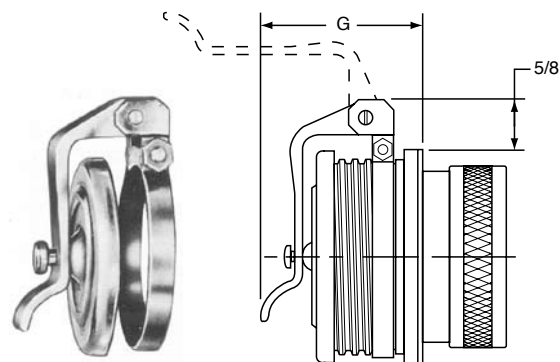


WITH THREADED ENVIRONMENTAL COVER AND SASH CHAIN



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

WITH HINGED SPRING COVER



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

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.

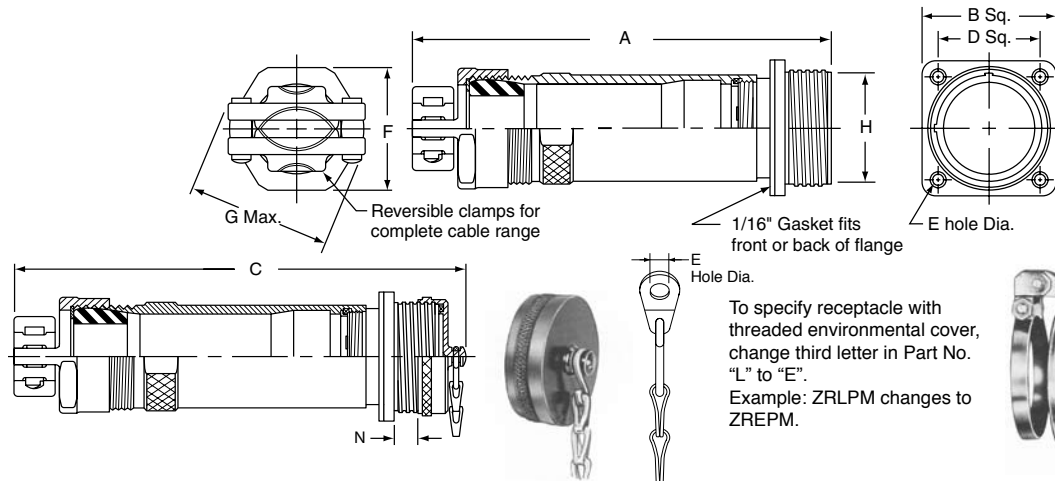
Square Flange Receptacle with Mechanical Clamp Nut

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



Type
ZRLPM ZRCPM ZREPM

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	ZRLPM-▲-12-*	6-1/8	1-3/4	6-3/4	1-3/8	11/64	1-3/4	2-3/8	1-1/2	1/4
	16	ZRLPM-▲-16-*	6-7/16	2-1/4	7-1/16	1-11/16	13/64	2-1/4	3	2	1/4
	20	ZRLPM-▲-20-*	7	2-3/4	7-5/8	2-3/32	7/32	2-3/4	3-3/4	2-1/2	1/4
	C20	ZRLPM-▲-C20-*	7-1/2	2-3/4	8-1/8	2-3/32	7/32	2-3/4	3-3/4	2-1/2	3/4
	24	ZRLPM-▲-24-*	7-9/16	3-1/4	8-3/16	2-17/32	9/32	3-1/4	4-1/2	3	1/4
	C24	ZRLPM-▲-C24-*	8-1/16	3-1/4	8-11/16	2-17/32	9/32	3-1/4	4-1/2	3	3/4
	28	ZRLPM-▲-28-*	8-1/8	3-3/4	8-3/4	3-1/32	11/32	3-3/4	5-1/8	3-1/2	1/4
	C28	ZRLPM-▲-C28-*	8-5/8	3-3/4	9-1/4	3-1/32	11/32	3-3/4	5-1/8	3-1/2	3/4
	With Long Cable Adapter										
	12	ZRLPML-▲-12-*	8-3/8	1-3/4	9	1-3/8	11/64	1-3/4	2-3/8	1-1/2	1/4
	16	ZRLPML-▲-16-*	8-11/16	2-1/4	9-5/16	1-11/16	13/64	2-1/4	3	2	1/4
	20	ZRLPML-▲-20-*	9-1/4	2-3/4	9-7/8	2-3/32	7/32	2-3/4	3-3/4	2-1/2	1/4
	C20	ZRLPML-▲-C20-*	9-3/4	2-3/4	10-3/8	2-3/32	7/32	2-3/4	3-3/4	2-1/2	3/4
	24	ZRLPML-▲-24-*	9-13/16	3-1/4	10-7/16	2-17/32	9/32	3-1/4	4-1/2	3	1/4
	C24	ZRLPML-▲-C24-*	10-5/16	3-1/4	10-15/16	2-17/32	9/32	3-1/4	4-1/2	3	3/4
	28	ZRLPML-▲-28-*	10-1/8	3-3/4	10-3/4	3-1/32	11/32	3-3/4	5-1/8	3-1/2	1/4
	C28	ZRLPML-▲-C28-*	10-5/8	3-3/4	11-1/4	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						

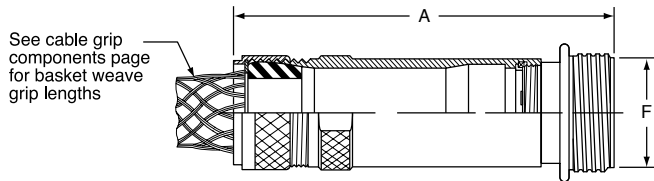
Square Flange Receptacle

With Basketweave Cable Grip

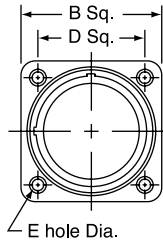
To specify a complete receptacle, substitute the dash no. of the contact insert selected for the asterisk (*) in the catalog no. below.



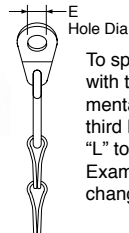
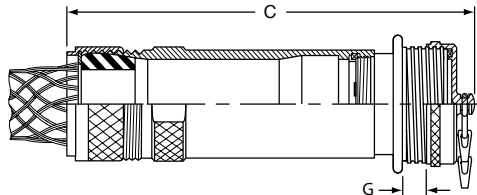
Size Cable	Shell Size	Catalog Number	Dimensions							ZRLPK, ZRCPK, ZREPK
			A	B	C	D	E	F	G	
Select from Table Below and Substitute Symbol No. for Delta ▲	12	ZRLPK-▲-12-*	5-3/8	1-3/4	6	1-3/8	11/64	1-1/2	1/4	
	16	ZRLPK-▲-16-*	5-5/8	2-1/4	6-1/4	1-11/16	13/64	2	1/4	
	20	ZRLPK-▲-20-*	6-1/8	2-3/4	6-3/4	2-3/32	7/32	2-1/2	1/4	
	C20	ZRLPK-▲-C20-*	6-5/8	2-3/4	7-1/4	2-3/32	7/32	2-1/2	3/4	
	24	ZRLPK-▲-24-*	6-5/8	3-1/4	7-1/4	2-17/32	9/32	3	1/4	
	C24	ZRLPK-▲-C24-*	7-1/8	3-1/4	7-3/4	2-17/32	9/32	3	3/4	
	28	ZRLPK-▲-28-*	7-1/8	3-3/4	7-3/4	3-1/32	11/32	3-1/2	1/4	
	C28	ZRLPK-▲-C28-*	7-5/8	3-3/4	8-1/4	3-1/32	11/32	3-1/2	3/4	
With Long Cable Adapter										
Select from Table Below and Substitute Symbol No. for Delta ▲	12	ZRLPKL-▲-12-*	7-5/8	1-3/4	8-1/4	1-3/8	11/64	1-1/2	1/4	
	16	ZRLPKL-▲-16-*	7-7/8	2-1/4	8-1/2	1-11/16	13/64	2	1/4	
	20	ZRLPKL-▲-20-*	8-3/8	2-3/4	9	2-3/32	7/32	2-1/2	1/4	
	C20	ZRLPKL-▲-C20-*	8-7/8	2-3/4	9-1/2	2-3/32	7/32	2-1/2	3/4	
	24	ZRLPKL-▲-24-*	8-7/8	3-1/4	9-1/2	2-17/32	9/32	3	1/4	
	C24	ZRLPKL-▲-C24-*	9-3/8	3-1/4	10	2-17/32	9/32	3	3/4	
	28	ZRLPKL-▲-28-*	9-1/8	3-3/4	9-3/4	3-1/32	11/32	3-1/2	1/4	
	C28	ZRLPKL-▲-C28-*	9-5/8	3-3/4	10-1/4	3-1/32	11/32	3-1/2	3/4	



See cable grip components page for basket weave grip lengths



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: ZRLPK changes to ZREPR.



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



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

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

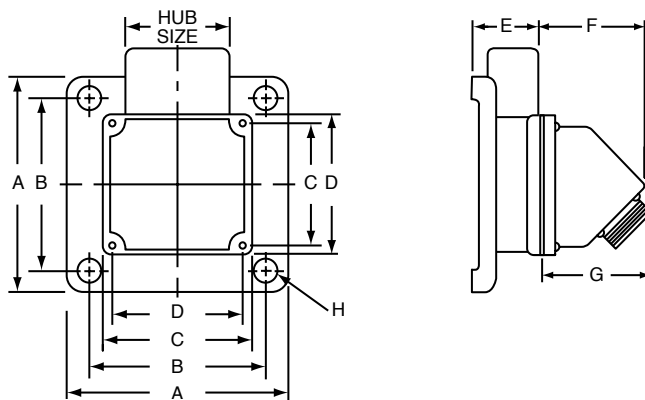


Types ZRLBB ZRCBB ZREBB

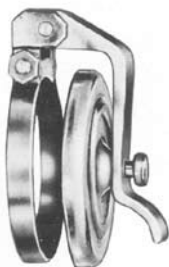
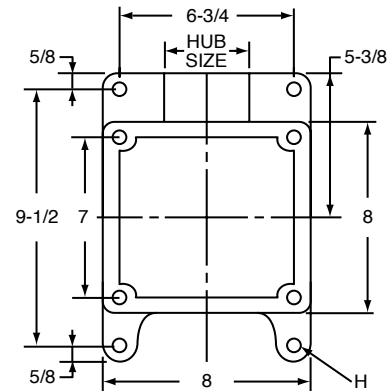
Shell Size	Hub Size†	Cat. No.	Dimensions							
			A	B	C	D	E	F	G	H
12	3/4	ZRLBB- 2 12-*	5-1/4	4-5/8	4-3/16	3-9/16	2-3/8	2-13/16	2-7/16	9/32
	1	ZRLBB-3 12-*	5-1/4	4-5/8	4-3/16	3-9/16	2-3/8	2-13/16	2-7/16	9/32
16	1	ZRLBB-3 16-*	5-1/4	4-5/8	4-3/16	3-9/16	2-3/8	2-15/16	2-17/32	9/32
	1-1/4	ZRLBB-4 16-*	5-1/4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



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: ZRLBB changes to ZREBB

Receptacle Mounted to Junction Box

With Straight Adapter

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

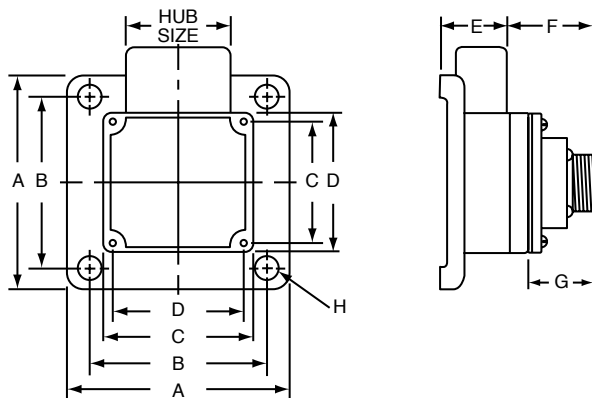


Types
ZRLA ZRCA ZREA

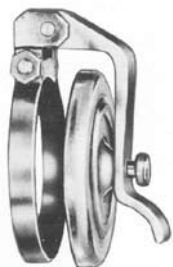
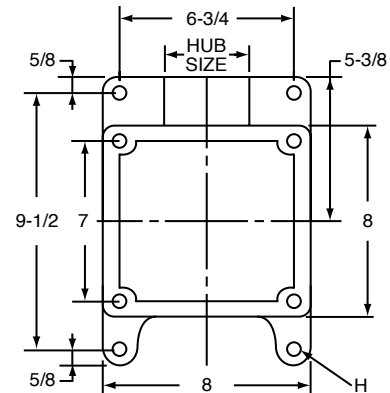
Shell Size	Hub Size†	Cat. No.	Dimensions							
			A	B	C	D	E	F	G	H
12	3/4	ZRLA- 2 12-*	5-1/4	4-5/8	4-3/16	3-9/16	2-3/8	1-27/32	1	9/32
	1	ZRLA-3 12-*	5-1/4	4-5/8	4-3/16	3-9/16	2-3/8	1-27/32	1	9/32
16	1	ZRLA-3 16-*	5-1/4	4-5/8	4-3/16	3-9/16	2-3/8	1-27/32	1	9/32
	1-1/4	ZRLA-4 16-*	5-1/4	4-5/8	4-3/16	3-9/16	2-5/8	1-27/32	1	9/32
	1-1/2	ZRLA-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	ZRLA-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	ZRLA-5 20-*	6	5-1/4	4-1/2	3-7/8	3-3/4	3-1/16	1-7/32	9/32
	2	ZRLA-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	ZRLA-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	ZRLA-5 C20-*	6	5-1/4	4-1/2	3-7/8	3-3/4	2-9/16	1-7/32	9/32
	2	ZRLA-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	ZRLA-7 24-*	See Drawing Below		8	7	3-3/4	2-11/32	1-1/2	7/16
	3	ZRLA-8 24-*			8	7	4-1/2	2-11/32	1-1/2	7/16
C24	2-1/2	ZRLA-7 C24-*			8	7	3-3/4	2-27/32	1-1/2	7/16
	3	ZRLA-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: ZRLA changes to ZRCA.



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: ZRLA changes to ZREA.

TMPC POWER MOUNT



Amphenol® TMPC POWER MOUNT Flange Mounted Traction Motor Power Connector series featuring RADSOK® Contacts.

Amphenol Industrial Operations introduces the addition of our “NEW” TMPC Power Mount flange mounted connector series. The New TMPC Power Mount series is an addition to our time tested TMPC Single Pin power connector line. The TMPC Power Mount incorporates our existing TMPC connectors with RADSOK® contacts into our new thermoplastic molded receptacle flange.

Available in color codes per the NEC AC/DC Electrical requirements, the TMPC Power Mount series is designed to work with current IEEE Type P drilling cables (sizes range from 313 MCM through 777 MCM). The RADSOK® contacts allow for higher amperages and reduced insertion/removal forces when compared to similar products in the market.

Features & Benefits:

- RADSOK contact provide increased amperages than competition
- Contacts rated at 1500 amp for 777 MCM cables
- Contacts machined from high grade aluminum to offer longer life, more mating cycles
- Lower insertion/removal forces is a by-product of our RADSOK contacts
- Molded flange base mounts directly to Stainless or Aluminum panels, thus eliminating the need for added secondary mounting fixtures
- Color coded mounting bases and cable side boots available to help prevent cross mating, while allowing easier electrical phase identification
- Connector series comes complete with molded Hypalon caps and insulation boots
- Patent Pending

PLUG KIT PART NUMBER

COLOR	313 MCM	444 MCM	535 MCM	646 MCM	777 MCM
BLACK	TMPC-SP3-BK	TMPC-SP4-BK	TMPC-SP5-BK	TMPC-SP6-BK	TMPC-SP7-BK

COLOR OPTIONS AVAILABLE:
Black, Blue, Brown, Green, Gray,
Orange, Purple, Red, White, Yellow

Plug Kit Consist of:

- Pin Contact
- Boot (color designation)
- Rubber Cover



RECEPTACLE KIT PART NUMBER

COLOR	FLANGE KIT W/ CONTACT	FLANGE KIT LESS CONTACT	BOOT PART
Black	TMPC-SR-BK	TMPC-SRLC-BK	TMPC-10-BK

COLOR OPTIONS AVAILABLE: Black, Blue,
Brown, Green, Gray, Orange, Purple, Red, White,
Yellow

Receptacle Kit Consist of:

- Socket Contact (affixed into the flange)
- Flange (color designation)
- Rubber Cover



CONTACTS ONLY (FOR PIN RETENTION RING ADD -RR)

CABLE SIZE	BUSBAR CONTACT
313-777 MCM	TMPC-1
CABLE SIZE	PIN CONTACT
313-535 MCM	TMPC-40535-RL
646-777 MCM	TMPC-40777-RL

ACCESSORIES

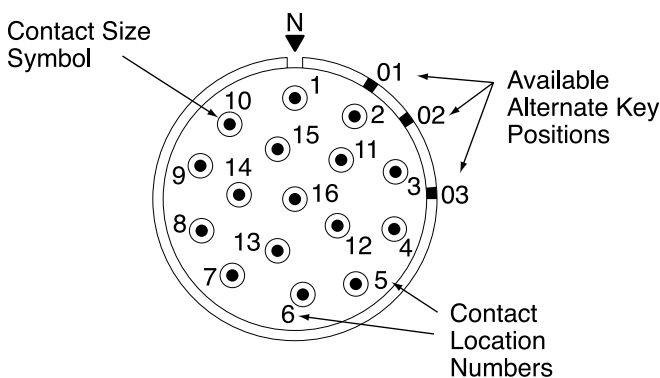
DESCRIPTION	PART NUMBER
RECEPTACLE CAP	TMPC-SR-CAP
BOOT CAP	TMPC-SP-CAP
MOUNTING GASKET	TMPC-SR-G
BOOT RING 313 MCM	SR1-313R
BOOT RING 444 MCM	SR1-444R
BOOT RING 535 MCM	SR1-535R
BOOT RING 646 MCM	SR1-646R
BOOT RING 777 MCM	SR1-777R

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 III 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  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 (107° C) 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).

For Amphenol Star-Line product insert de-rating information per the National Electric Code, please consult the Amphenol Industrial website, www.amphenol-industrial.com. Chart is located under LITERATURE tab.

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

"W" length represents standard insert length 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.

For Amphenol Star-Line product insert de-rating information per the National Electric Code, please consult the Amphenol Industrial website, www.amphenol-industrial.com. Chart is located under LITERATURE tab.

Termination Data

Amphenol – Pyle Connectors Corporation 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 (185.00)	.798" (20.27)	1-1/8" (28.58)				
500 MCM (240.00)			1.00" (25.40)	1-3/8" (34.93)		

* Crimp contacts have inspection hole.

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

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)
		3/0 350 (1556.9)
		2/0 300 (1334.5)
1/0 (50.0)	50 (5.7)	1/0 250 (1112.0)
		#1 200 (889.6)
		#2 180 (800.7)
#4 (25.0)	20 (2.3)	#4 140 (622.8)
		#6 100 (444.8)
		#8 90 (400.3)
#8 (10.0)	25 (2.8)	#8 75 (333.6)
#10 (6.0)	15 (1.7)	#10 80 (355.9)
		#12 70 (311.4)
		#14 60 (266.9)

** Stranded wire

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.

MOD I & II

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

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

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.

For Amphenol Star-Line product insert de-rating information per the National Electric Code, please consult the Amphenol Industrial website, www.amphenol-industrial.com. Chart is located under LITERATURE tab.

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  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)	313MCM	350 MCM (185.0)	373 MCM	444 MCM	535 MCM (240.0)	646-777 (300-400)	Page No.
RIG-C24-386		X			1														1	54
RIG-C24-R386		X		X	1														1	54
RIG-C24-535		X			1													1		54
RIG-C24-R535		X		X	1													1		54
RIG-C24-313		X			1									1						54
RIG-C24-R313		X		X	1									1						54
RIG-C24-373		X			1											1				54
RIG-C24-R373		X		X	1											1				54
RIG-C24-444		X			1												1			54
RIG-C24-R444		X		X	1												1			54
ZP-12-310		X(G)		X	7			7												64
ZP-12-14	X				4				4											56
ZP-12-314		X			4				4											56
ZP-12-316		X			4				4											56
ZP-12-22	X(G)				4				4											56
ZP-12-322		X(G)			4				4											56
ZP-12-323		X			17	17														70
ZP-12-24	X				5			5												59
ZP-12-324		X		X	5			5												59
ZP-12-326		X			5		3			2										61
ZP-12-27	X				3			3												55
ZP-12-327		X		X	3			3												55
ZP-12-330		X(G)		X	3			3												55
ZP-12-33	X				4		4													56
ZP-12-333		X			4		4													56
ZP-12-334		X(G)			10		10													67
ZP-12-348		X			7		7													64
ZP-12-53	X(G)				5			5												59
ZP-12-653			X(G)		5			5												59
ZP-12-354		X		X	7			7												65
ZP-12-355		X			10		10													67
ZP-12-56	X(G)				3				3											55
ZP-C-16-341	X											1								54
ZP-16-312		X(G)		X	19			19												71
ZP-16-16	X				5				5											59
ZP-16-316		X			5				5											59
ZP-16-321		X			37		37													74
ZP-16-22	X				4					4										57
ZP-16-322		X			4					4										57
ZP-16-324		X			18		16		2											70
ZP-16-325		X			16		16													69
ZP-16-28	X				4					4										57
ZP-16-328		X			4					4										57
ZP-16-29	X				9		8				1									66
ZP-16-333		X			61	61														79
ZP-16-335		X			27		24	3												73
ZP-16-37	X				26	18	4	4												73
ZP-16-38	X(G)				4						4									57
ZP-16-638			X(G)		4						4									57
ZP-16-640			X		55	55														77
ZP-16-344		X			21		11	10												72
ZP-16-346		X			9			6		3										66
ZP-16-349		X			14		12				2									68
ZP-16-355		X			19		19													71

(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  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-16-70	X				3						3						55
ZP-16-371	X			46	45	45				1							76
ZP-16-373		X(G)			27		24	3									73
ZP-16-74	X(G)				3						3						55
ZP-16-75	X(G)				5					5							59
ZP-16-376		X(G)			10			6	4								67
ZP-16-377		X		X	19			19									70
ZP-16-378		X(G)			7			7									65
ZP-16-381		X			10			6	4								67
ZP-20-313		X			68		68										79
ZP-20-323		X			38		35		3								75
ZP-20-329		X			64		62		2								79
ZP-20-331		X			22		20			2							73
ZP-20-32	X				20			20									72
ZP-20-332		X		X	20			20									72
ZP-20-334		X			20		16			4							72
ZP-20-35	X				60		60										78
ZP-20-38	X(G)				5						5						60
ZP-C20-40	X(G)				4							4					57
ZP-C20-640			X(G)		4							4					57
ZP-C20-42	X				4							4					58
ZP-20-43	X(G)				6				2		4						62 & 82
ZP-20-643			X(G)		6				2		4						62
ZP-20-344		X			81	70		11									80
ZP-20-345		X			90	90											80
ZP-20-46	X				6						4	2					62
ZP-20-646			X		6						4	2					62
ZP-20-48	X				6			3				3					62
ZP-20-648			X		6			3				3					62
ZP-20-49	X				5			3				2					61
ZP-20-649			X		5			3				2					61
ZP-20-350		X(G)		X	37			37									75
ZP-20-354		X			47		45			2							76
ZP-20-55	X				10			8				2					68
ZP-20-358		X			16					16							70
ZP-20-359		X			7					7							65
ZP-20-673			X		50		46			4							77
ZP-20-374		X			27			25			2						74
ZP-20-375		X			12				12								68
ZP-20-376		X		X	19			19									71
ZP-C20-379		X			1										1		54
ZP-20-84	X				5						5						60
ZP-20-384		X			5						5						60
ZP-20-386		X		X	37			37									74
ZP-20-387		X(G)		X	20			20									72
ZP-20-388		X(G)			19			19									71
ZP-24-313		X			100		100										81
ZP-C24-26	X(G)				4								4				58

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  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-24-331		X			60		53	7									78
ZP-C24-36	X				37			35				2					75
ZP-C24-38	X				4								4				58
ZP-24-40	X				15		10					5					69
ZP-C24-47	X				15			10				5					69
ZP-C24-48	X				5			2					3				61
ZP-C24-49	X(G)				5							5					60
ZP-24-352		X(G)		X	58			58									78
ZP-C24-353		X			8			4				4					65
ZP-24-354		X			75		61	11		3							80
ZP-24-362		X			62		62										79
ZP-24-371		X			37		37										75
ZP-C24-72	X				6			3					3				63
ZP-C24-79	X				5							5					60
ZP-C24-680			X(G)		10			6				4					68
ZP-C24-81	X(G)				15			10				5					69
ZP-24-83	X				4							4					58
ZP-24-84	X				58			58									77
ZP-24-384		X		X	58			58									77
ZP-24-385		X			100		100										81
ZP-24-388		X			72		72										80
ZP-24-389		X			60		60										78
ZP-28-314		X			100		83	17									81
ZP-C28-15	X				47			43			3	1					76
ZP-C28-18	X				6			2						4			63 & 82
ZP-C28-R18	X				6			2						4			82
ZP-C28-21	X				8			4						4			66
ZP-28-322		X			143		143										81
ZP-C28-23	X(G)				5								5				61
ZP-28-324		X			55		41	5		3	6						77
ZP-C28-327		X			6							6					63
ZP-C28-328		X			29			23		2		4					74
ZP-28-339		X		X	42			42									76
ZP-C28-42	X(G)				6				2				4				64 & 83
ZP-C28-43	X(G)				8			4						4			66
ZP-C28-R44	X			X	7				1	3			4				64 & 83
ZPC28-R44																	83

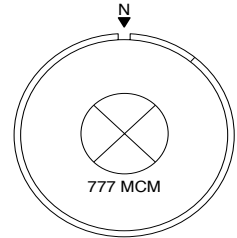
(G) depicts arrangement with grounded contact

Insert Configurations

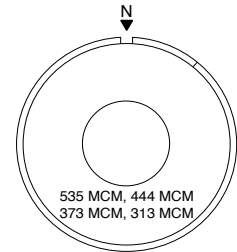
1 Contact (Dead Front Male Contact/Line Side)

front face of pin insert shown

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG (mm)	Current Rating	Voltage
Mod II	Crimp	C24	Pin Socket	386PN 386SN	RIG-C24-386PN RIG-C24-386SN	1	646-777 (300-400)	1135A	1000V
Mod II	Radsok Crimp	C24	Pin Socket	R386PN R386SN	RIG-C24-R386PN RIG-C24-R386SN	1	646-777 (300-400)	1135A	1000V
Mod II	Radsok Busbar	C24	Pin Socket	R386PR R386SR	RIG-C24-R386PR RIG-C24-R386SR	1	646-777 (300-400)	1135A	1000V



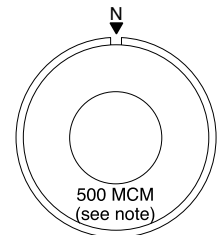
Mod II	Crimp	C24	Pin Socket	535PN 535SN	RIG-C24-535PN RIG-C24-535SN	1	535 (240)	900A	1000V
Mod II	Radsok Crimp	C24	Pin Socket	R535PN R535SN	RIG-C24-R535PN RIG-C24-R535SN	1	535 (240)	900A	1000V
Mod II	Crimp	C24	Pin Socket	R444PN R444SN	RIG-C24-444PN RIG-C24-444SN	1	444 (185)	800A	1000V
Mod II	Radsock Crimp	C24	Pin Socket	R444PN R444SN	RIG-C24-R444PN RIG-C24-R444SN	1	444 (185)	800A	1000V
Mod II	Crimp	C24	Pin Socket	R373PN R373SN	RIG-C24-373PN RIG-C24-373SN	1	373 (150)	700A	1000V
Mod II	Radsock Crimp	C24	Pin Socket	R373PN R373SN	RIG-C24-R373PN RIG-C24-R373SN	1	373 (150)	700A	1000V
Mod II	Crimp	C24	Pin Socket	R313PN R313SN	RIG-C24-313PN RIG-C24-313SN	1	313 (120)	625A	1000V
Mod II	Radsock Crimp	C24	Pin Socket	R313PN R313SN	RIG-C24-R313PN RIG-C24-R313SN	1	313 (120)	625A	1000V



1 Contact

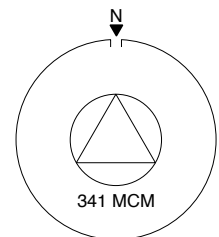
Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Crimp	C20	Pin Socket	379PN 379SN	ZP-C20-379PN ZP-C20-379SN	1	500MCM	D

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



1 Contact

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Crimp	C16	Pin Socket	341PN 341SN	ZP-C16-341PN ZP-C16-341SN	1	4/0	D



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⦿	⦿	⊕	△	□	○	⊗
⏏	⏏	⏏	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400

★ Pre-assembled insert should be ordered mounted in barrel.

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

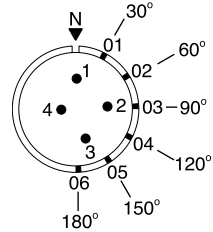
Insert Configurations

4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	12	Pin Socket	33P 33S	ZP-12-33P ZP-12-33S
Mod II	Crimp	12	Pin Socket	333PN 333SN	ZP-12-333PN ZP-12-333SN

Qty.	Size AWG	Service Voltage Rating
4	16	D

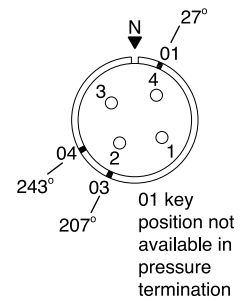
front face of pin insert shown



4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	12	Pin Socket	14P 14S	ZP-12-14P ZP-12-14S
Mod I	Pressure	12	Pin Socket	14PR 14SR	ZP-12-14PR ZP-12-14SR
Mod II	Crimp	12	Pin Socket	314PN 314SN	ZP-12-314PN ZP-12-314SN

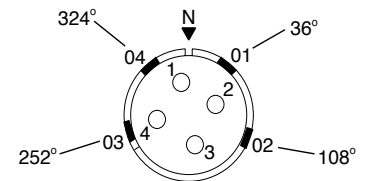
Qty.	Size AWG	Service Voltage Rating
4	10	D



4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod II	Crimp	12	Pin Socket	316PN 316SN	ZP-12-316PN ZP-12-316SN

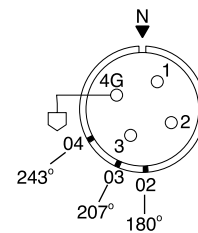
Qty.	Size AWG	Service Voltage Rating
4	10	D



4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	12	Pin Socket	22P 22S	ZP-12-22P ZP-12-22S
Mod I	Pressure	12	Pin Socket	22PR 22SR	ZP-12-22PR ZP-12-22SR
Mod II	Crimp	12	Pin Socket	322PN 322SN	ZP-12-322PN ZP-12-322SN

Qty.	Size AWG	Service Voltage Rating
4	10	D



Grounding Contact Termination Symbol			Contact Symbols											
			Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400

★ Pre-assembled insert should be ordered mounted in barrel.

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

★ Pre-assembled insert should be ordered mounted in barrel.

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

Insert Configurations

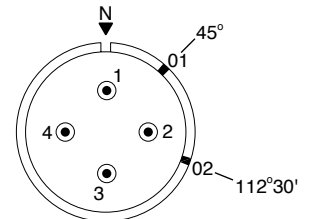
4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	16	Pin	28P	ZP-16-28P
			Socket	28S	ZP-16-28S
Mod II	Crimp	16	Pin	328PN	ZP-16-328PN
			Socket	328SN	ZP-16-328SN

Qty.	Size AWG	Service Voltage Rating
4	8	D



front face of pin insert shown

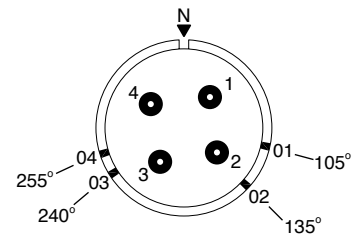


NOTE: Cannot be used with short cable adapter

4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	16	Pin	22P	ZP-16-22P
			Socket	22S	ZP-16-22S
Mod I	Pressure	16	Pin	22PR	ZP-16-22PR
			Socket	22SR	ZP-16-22SR
Mod II	Crimp	16	Pin	322PN	ZP-16-322PN
			Socket	322SN	ZP-16-322SN

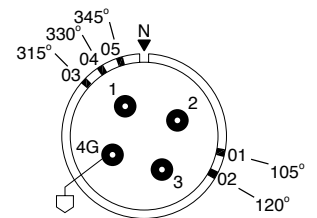
Qty.	Size AWG	Service Voltage Rating
4	4	D



4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	16	Pin	38P	ZP-16-38P
			Socket	38S	ZP-16-38S
Mod I	Pressure	16	Pin	38PR	ZP-16-38PR
			Socket	38SR	ZP-16-38SR
Mod III	Crimp	16	Pin	638PN	★
			Socket	638SN	★

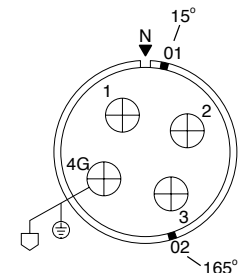
Qty.	Size AWG	Service Voltage Rating
4	4	D



4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C20	Pin	40P	ZP-C20-40P
			Socket	40S	ZP-C20-40S
Mod I	Pressure	C20	Pin	40PR	ZP-C20-40PR
			Socket	40SR	ZP-C20-40SR
Mod III	Crimp	C20	Pin	640PN	★
			Socket	640SN	★

Qty.	Size AWG	Current Rating
4	1/0	D



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⊙	⦿	⊕	⊗	⊙	⊗	⊙	⊗
⊕	⊙	⊗	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

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

Insert Configurations

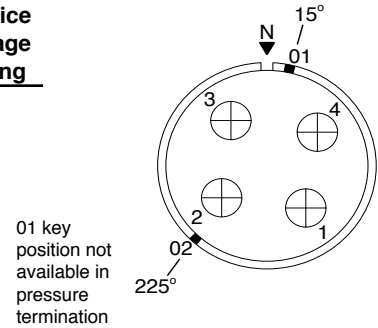
4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C20	Pin Socket	42P 42S	ZP-C20-42P ZP-C20-42S
Mod I	Pressure	C20	Pin Socket	42PR 42SR	ZP-C20-42PR ZP-C20-42SR

Qty.	Size AWG	Service Voltage Rating
4	1/0	D



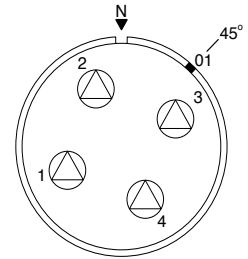
front face of pin insert shown



4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	24	Pin Socket	83P 83S	ZP-24-83P ZP-24-83S

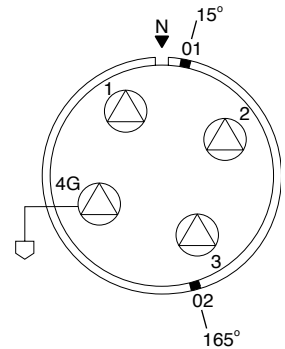
Qty.	Size AWG	Service Voltage Rating
4	4/0	D



4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C24	Pin Socket	26P 26S	ZP-C24-26P ZP-C24-26S
Mod I	Pressure	C24	Pin Socket	26PR 26SR	ZP-C24-26PR ZP-C24-26SR

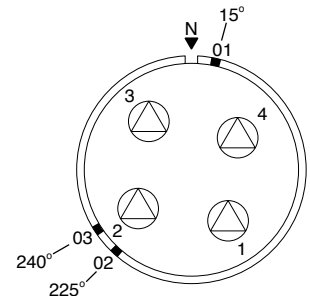
Qty.	Size AWG	Service Voltage Rating
4	4/0	D



4 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C24	Pin Socket	38P 38S	ZP-C24-38P ZP-C24-38S
Mod II	Pressure	C24	Pin Socket	38PR 38SR	ZP-C24-38PR ZP-C24-38SR

Qty.	Size AWG	Service Voltage Rating
4	4/0	D



Grounding Contact Termination Symbol			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	

★ Pre-assembled insert should be ordered mounted in barrel.

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

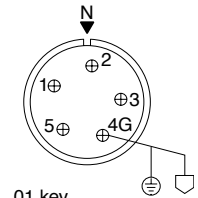
Insert Configurations

5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	12	Pin Socket	53P 53S	ZP-12-53P ZP-12-53S
Mod III	Crimp	12	Pin Socket	653PN 653SN	★ ★

Qty.	Size AWG	Service Voltage Rating
5	12	D

front face of pin insert shown

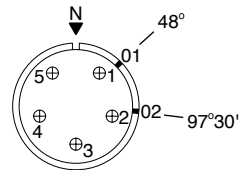


01 key position not available in pressure termination

5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	12	Pin Socket	24P 24S	ZP-12-24P ZP-12-24S
Mod II	Radsok Crimp	12	Pin Socket	324PN 324SN	ZP-12-324PN ZP-12-324SN

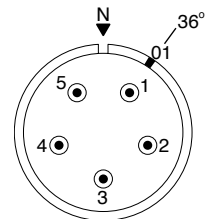
Qty.	Size AWG	Service Voltage Rating
5	12	D



5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	16	Pin Socket	16P 16S	ZP-16-16P ZP-16-16S
Mod II	Crimp	16	Pin Socket	316PN 316SN	ZP-16-316PN ZP-16-316SN

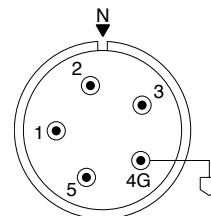
Qty.	Size AWG	Service Voltage Rating
5	8	D



5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	16	Pin Socket	75P 75S	ZP-16-75P ZP-16-75S

Qty.	Size AWG	Service Voltage Rating
5	8	D



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⦿	●	⊕	⊕	⊕	⊕	⊕	⊕
⊕	⦿	⊕	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

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

Insert Configurations

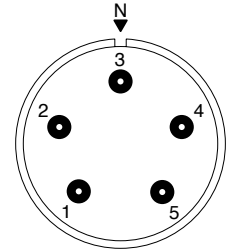
5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	20	Pin Socket	84P 84S	ZP-20-84P ZP-20-84S
Mod I	Pressure	20	Pin Socket	84PR 84SR	ZP-20-84PR ZP-20-84SR
Mod II	Crimp	20	Pin Socket	384PN 384SN	ZP-20-384PN ZP-20-384SN

Qty.	Size AWG	Service Voltage Rating
5	4	D



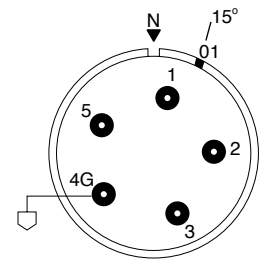
front face of pin insert shown



5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	20	Pin Socket	38P 38S	ZP-20-38P ZP-20-38S
Mod I	Pressure	20	Pin Socket	38PR 38SR	ZP-20-38PR ZP-20-38SR

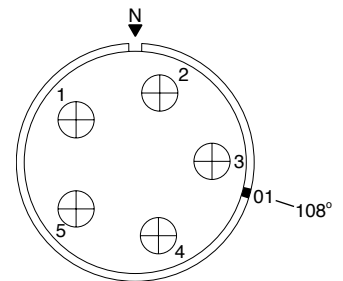
Qty.	Size AWG	Service Voltage Rating
5	4	D



5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C24	Pin Socket	79P 79S	ZP-C24-79P ZP-C24-79S
Mod I	Pressure	C24	Pin Socket	79PR 79SR	ZP-C24-79PR ZP-C24-79SR

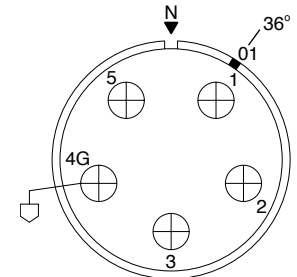
Qty.	Size AWG	Service Voltage Rating
5	1/0	E



5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C24	Pin Socket	49P 49S	ZP-C24-49P ZP-C24-49S
Mod I	Pressure	C24	Pin Socket	49PR 49SR	ZP-C24-49PR ZP-C24-49SR

Qty.	Size AWG	Service Voltage Rating
5	1/0	E



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⦿	●	⊕	⊗	⊙	⊙	⊙	⊙
⏏	⏏	⏏	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

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

Insert Configurations

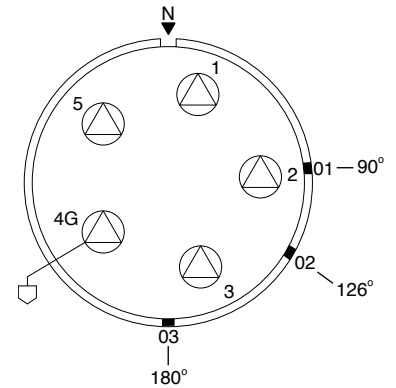
5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C28	Pin	23P	ZP-C28-23P
			Socket	23S	ZP-C28-23S
Mod I	Pressure	C28	Pin	23PR	ZP-C28-23PR
			Socket	23SR	ZP-C28-23SR

Qty.	Size AWG	Service Voltage Rating
5	4/0	D



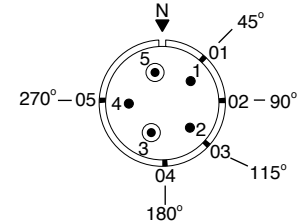
front face of pin insert shown



5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod II	Crimp	12	Pin	326PN	ZP-12-326PN
			Socket	326SN	ZP-12-326SN

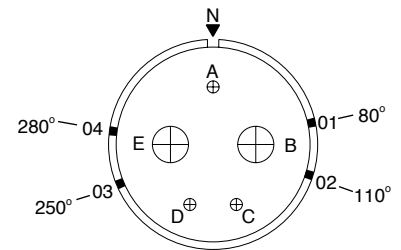
Qty.	Size AWG	Service Voltage Rating
2	8	A
3	16	A



5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	20	Pin	49P	ZP-20-49P
			Socket	49S	ZP-20-49S
Mod III	Crimp	20	Pin	649PN	★
			Socket	649SN	★

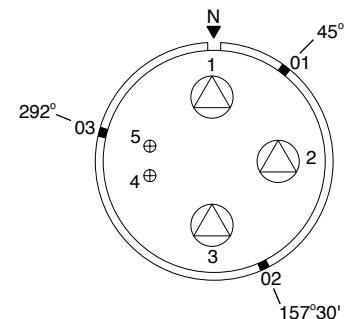
Qty.	Size AWG	Service Voltage Rating
2	1/0	E
3	12	E



5 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C24	Pin	48P	ZP-C24-48P
			Socket	48S	ZP-C24-48S

Qty.	Size AWG	Service Voltage Rating
3	4/0	D
2	12	A



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⊙	●	⊕	⊕	⊕	⊕	⊕	⊕
⊕	⊕	⊕	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

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

Insert Configurations

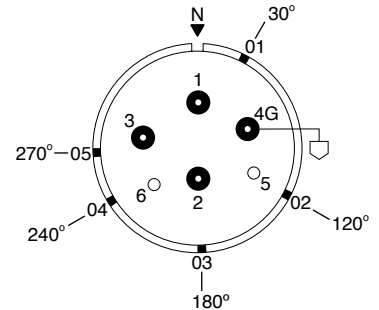
6 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Pressure	20	Pin Socket	43PR 43SR	ZP-20-43PR ZP-20-43SR
Mod III	Crimp	20	Pin Socket	643PN 643SN	★ ★

Qty.	Size AWG	Service Voltage Rating
4	4	D
2	10	D



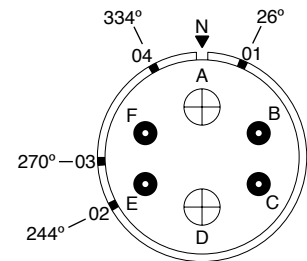
front face of pin insert shown



6 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	20	Pin Socket	46PR 46SR	ZP-20-46P ZP-20-46S
Mod III	Crimp	20	Pin Socket	646PN 646SN	★ ★

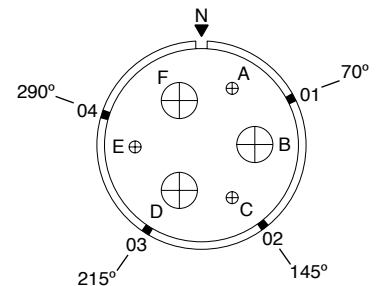
Qty.	Size AWG	Service Voltage Rating
2	1/0	A
4	4	A



6 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	20	Pin Socket	48P 48S	ZP-20-48P ZP-20-48S
Mod III	Crimp	20	Pin Socket	648PN 648SN	★ ★

Qty.	Size AWG	Service Voltage Rating
3	1/0	D
3	12	D



Grounding Contact Termination Symbol			Contact Symbols											
			Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400

★ Pre-assembled insert should be ordered mounted in barrel.

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

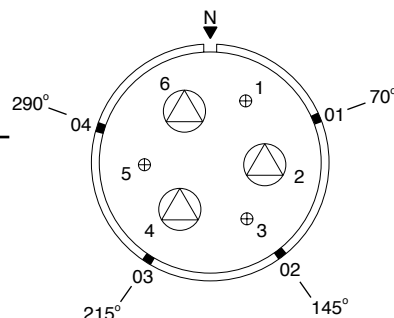
Insert Configurations

6 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C24	Pin Socket	72P 72S	ZP-C24-72P ZP-C24-72S

Qty.	Size AWG	Service Voltage Rating
3	4/0	D
3	12	D

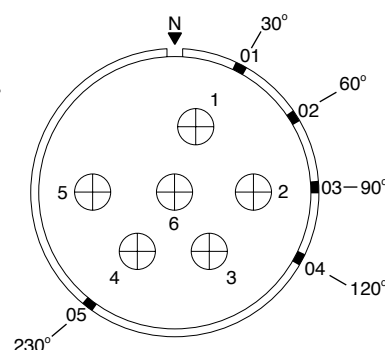
front face of pin insert shown



6 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod II	Crimp	C28	Pin Socket	327PN 327SN	ZP-C28-327PN ZP-C28-327SN

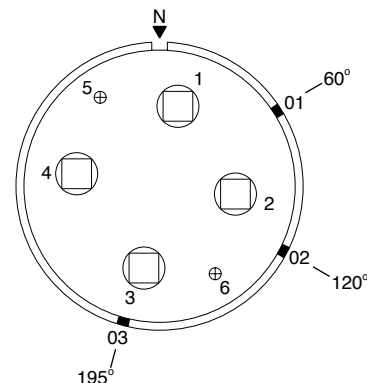
Qty.	Size AWG	Service Voltage Rating
6	1/0	D



6 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C28	Pin Socket	18P 18S	ZP-C28-18P ZP-C28-18S

Qty.	Size AWG	Service Voltage Rating
4	350 MCM	D
2	12	E



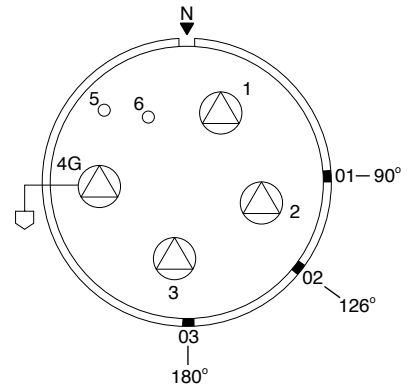
Grounding Contact Termination Symbol			Contact Symbols											
			Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400
★ Pre-assembled insert should be ordered mounted in barrel.														
SERVICE VOLTAGE RATING A = 240V, D = 600V														

Insert Configurations

front face of pin insert shown

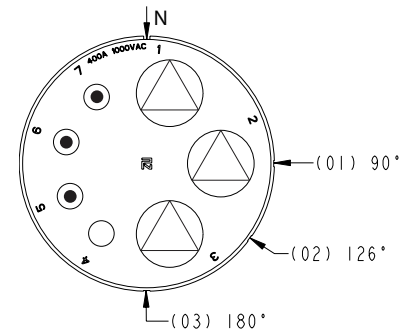
6 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod I	Solder	C28	Pin	42P	ZP-C28-42P	4	4/0	D
			Socket	42S	ZP-C28-42S	2	10	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			



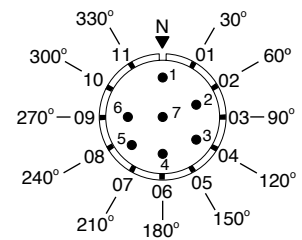
7 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod I	Radsok Pressure	C28	Pin	R44PR	ZP-C28-R44PR	3	4/0	D
			Socket	R44SR	ZP-C28-R44SR	3	8	D
						1	10	D



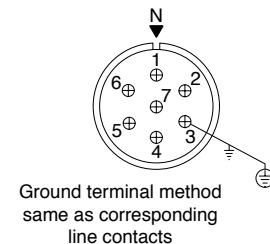
7 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Crimp	12	Pin Socket	348PN 348SN	ZP-12-348PN ZP-12-348SN	7	16	A



7 Contacts

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



Ground terminal method same as corresponding line contacts

Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⊙	●	⊕	⊕	⊕	⊕	⊕	⊕
⊕	⊕	⊕	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

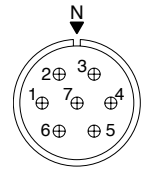
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

front face of pin insert shown

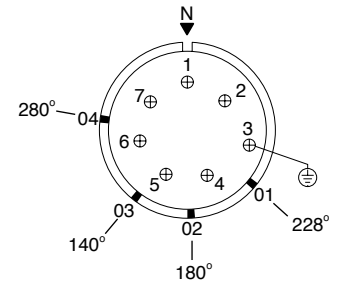
7 Contacts

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



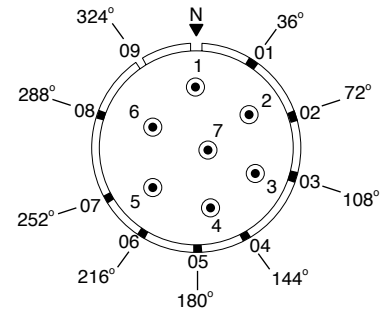
7 Contacts

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



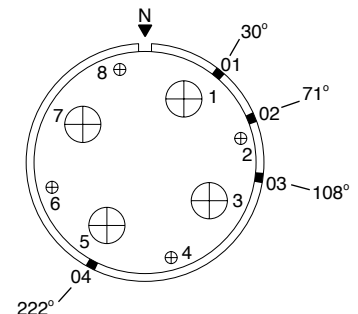
7 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Crimp	20	Pin Socket	359PN 359SN	ZP-20-359PN ZP-20-359SN	7	8	E



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 Socket	353PN 353SN	ZP-C24-353PN ZP-C24-353SN	4 4	1/0 12	B A



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⦿	●	⊕	⊕	⊕	⊕	⊕	⊕
⦿	⦿	⦿	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

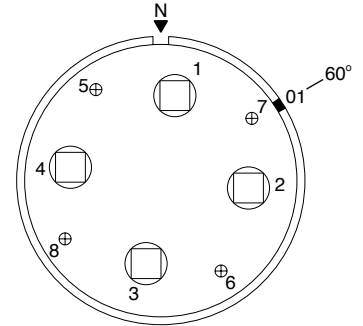
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

front face of pin insert shown

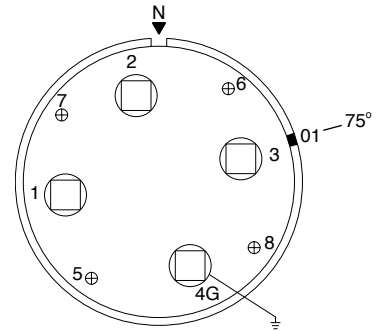
8 Contacts

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
				21S	ZP-C28-21S	4	12 Relay	E



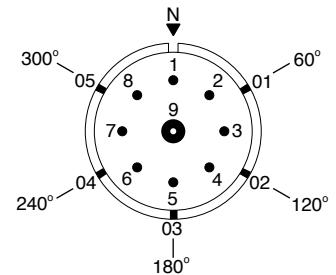
8 Contacts

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
				43S	ZP-C28-43S	4	12 Relay	E



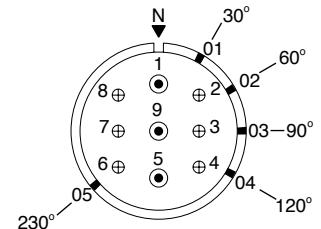
9 Contacts

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
				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
				346SN	ZP-16-346SN	3	8	A



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⊙	●	⊕	⊗	⊙	⊙	⊙	⊙
			Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

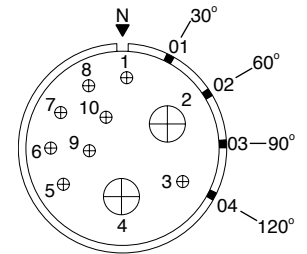
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

front face of pin insert shown

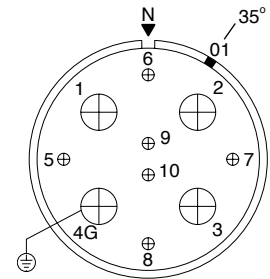
10 Contacts

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



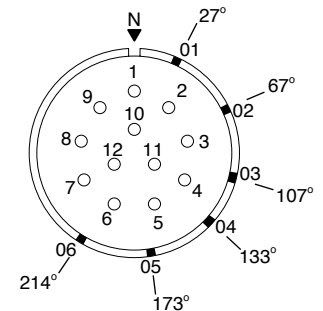
10 Contacts

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



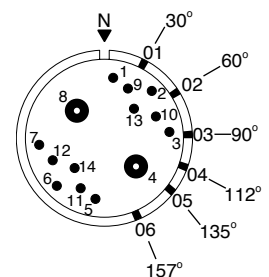
12 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Crimp	20	Pin Socket	375PN	ZP-20-375PN	12	10	D
				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 Socket	349PN	ZP-16-349PN	2	4	D
				349SN	ZP-16-349SN	12	16	A



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⊙	●	⊕	⊗	⊙	⊙	⊙	⊙
⊕	⊙	⊕	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

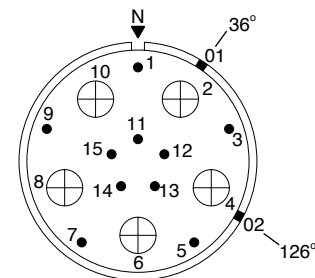
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

front face of pin insert shown

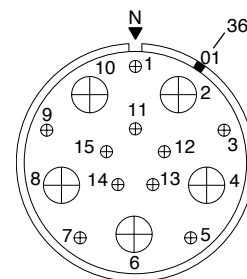
15 Contacts

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



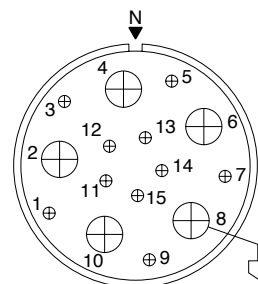
15 Contacts

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



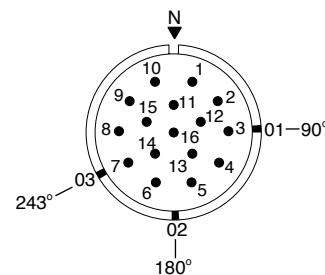
15 Contacts

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

★ Pre-assembled insert should be ordered mounted in barrel.

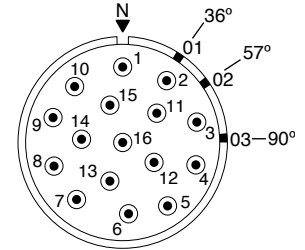
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

front face of pin insert shown

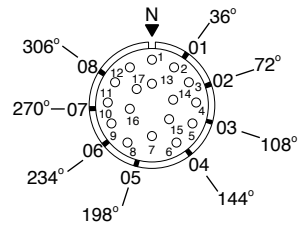
16 Contacts

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



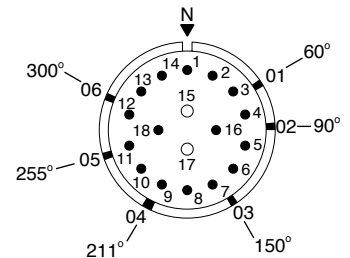
17 Contacts

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



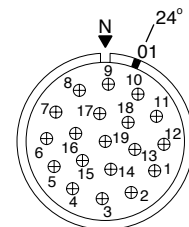
18 Contacts

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



19 Contacts

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



Grounding Contact Termination Symbol			Contact Symbols											
Solder Well	Pressure	Crimp	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

★ Pre-assembled insert should be ordered mounted in barrel.

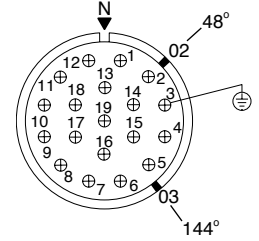
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

front face of pin insert shown

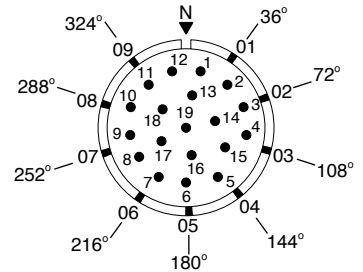
19 Contacts

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



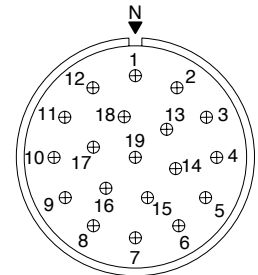
19 Contacts

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



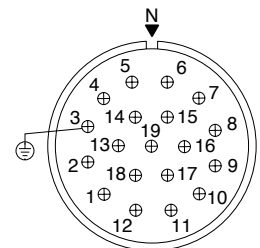
19 Contacts

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



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 Socket	388PN 388SN	ZP-20-388PN ZP-20-388SN	19	12	D



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⦿	⦿	⦿	⦿	⦿	⦿	⦿
⦿	⦿	⦿	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400

★ Pre-assembled insert should be ordered mounted in barrel.

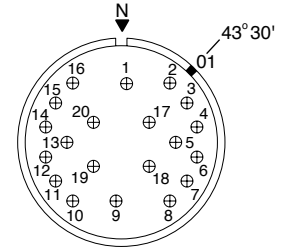
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

front face of pin insert shown

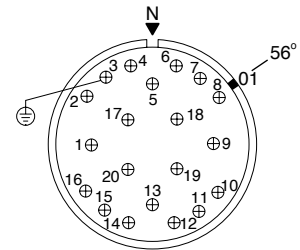
20 Contacts

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 A Outer
			Socket	32S	ZP-20-32S			
Mod II	Radsok Crimp	20	Pin	332PN	ZP-20-332PN			
			Socket	332SN	ZP-20-332SN			



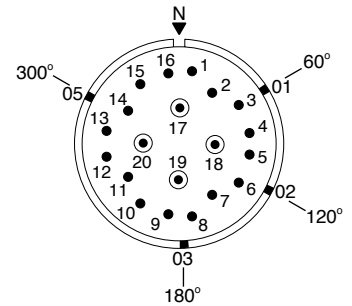
20 Contacts

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



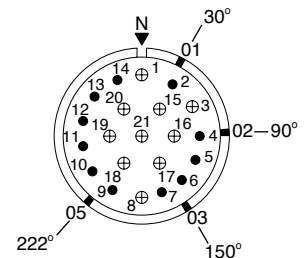
20 Contacts

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			



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			



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⊙	⦿	⊕	⊗	⊙	⊙	⊙	⊙
⊕	⊙	⊕	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

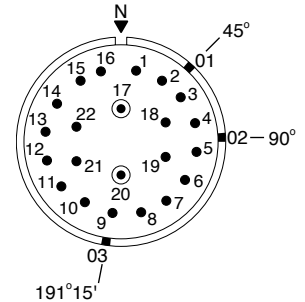
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

front face of pin insert shown

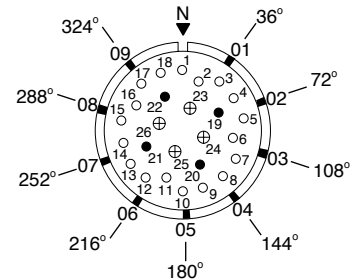
22 Contacts

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



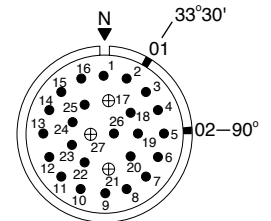
26 Contacts

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



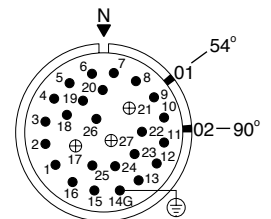
27 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Crimp	16	Pin Socket	335PN 335SN	ZP-16-335PN ZP-16-335SN	3 24	12 16	A 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 Socket	373PN 373SN	ZP-16-373PN ZP-16-373SN	24 3	16 12	A A



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⊙	⦿	⊕	⊗	⊙	⊗	⊙	⊗
⊕	⊙	⊗	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

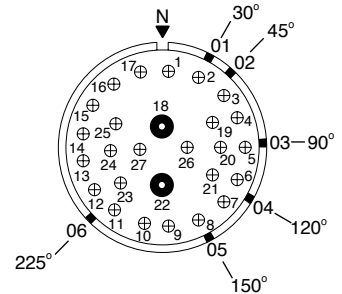
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

front face of pin insert shown

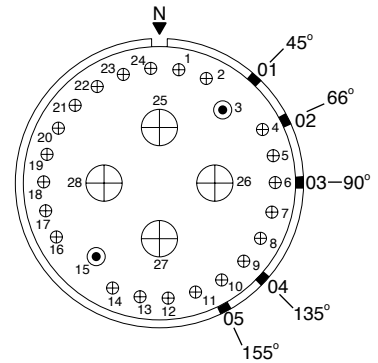
27 Contacts

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



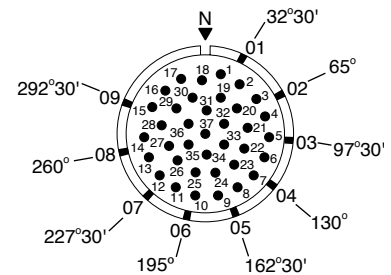
29 Contacts

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



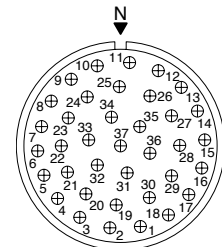
37 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Crimp	16	Pin Socket	321PN	ZP-16-321PN	37	16	A
				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	Radsok Crimp	20	Pin Socket	386PN	ZP-20-386PN	37	12	A
				386SN	ZP-20-386SN			



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⊙	●	⊕	⊗	⊙	⊙	⊙
Solder Well	Pressure	Crimp	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

★ Pre-assembled insert should be ordered mounted in barrel.

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

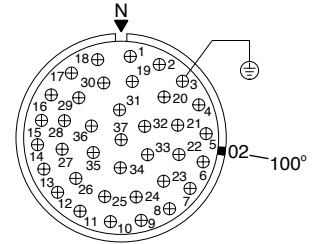
Insert Configurations

front face of pin insert shown

37 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod II	Radsok Crimp	20	Pin Socket	350PN 350SN	ZP-20-350PN ZP-20-350SN

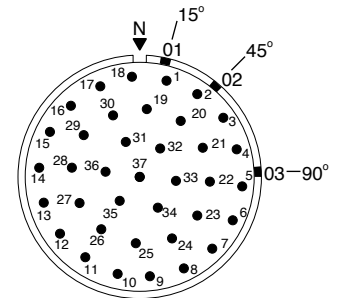
Qty.	Size AWG	Service Voltage Rating
37	12	A



37 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod II	Crimp	24	Pin Socket	371PN 371SN	ZP-24-371PN ZP-24-371SN

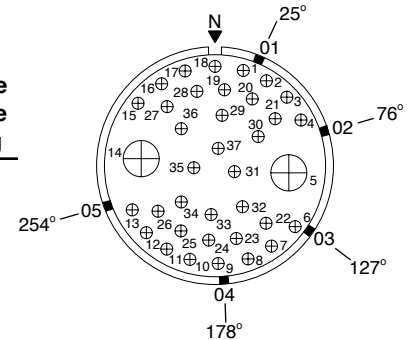
Qty.	Size AWG	Service Voltage Rating
37	16	D



37 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C24	Pin Socket	36P 36S	ZP-C24-36P ZP-C24-36S

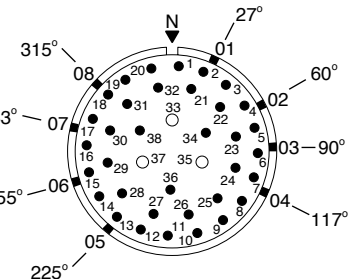
Qty.	Size AWG	Service Voltage Rating
2	1/0	D
35	12	A



38 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod II	Crimp	20	Pin Socket	323PN 323SN	ZP-20-323PN ZP-20-323SN

Qty.	Size AWG	Service Voltage Rating
3	10	A
35	16	A



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⦿	⦿	⊕	⊕	⊕	⊕	⊕	⊕
⦿	⦿	⦿	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

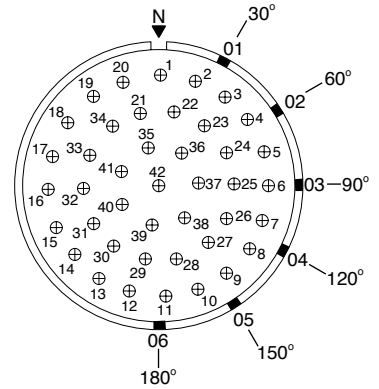
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

front face of pin insert shown

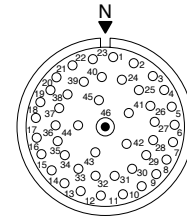
42 Contacts

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



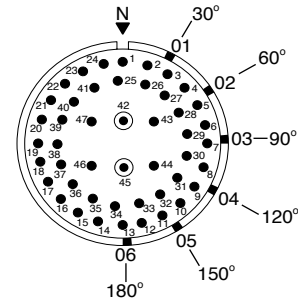
46 Contacts

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



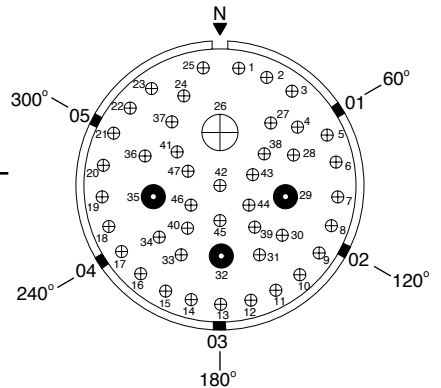
47 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Crimp	20	Pin Socket	354PN 354SN	ZP-20-354PN ZP-20-354SN	2 45	8 16	D 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 Socket	15P 15S	ZP-C28-15P ZP-C28-15S	1 3 43	1/0 4 12	D D A



Grounding Contact Termination Symbol			Contact Symbols											
			Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400

★ Pre-assembled insert should be ordered mounted in barrel.

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

Insert Configurations

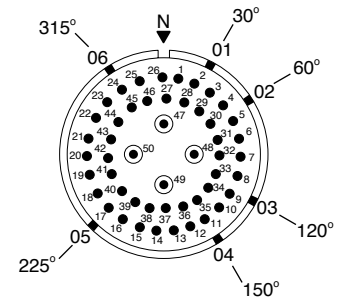
50 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod III	Crimp	20	Pin	673PN	★
			Socket	673SN	★

Qty.	Size AWG	Service Voltage Rating
4	8	D
46	16	A



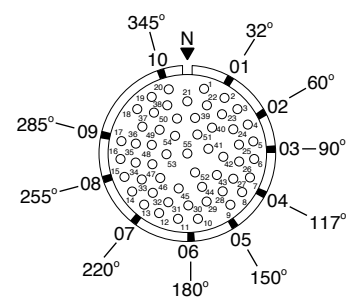
front face of pin insert shown



55 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod III	Crimp	16	Pin	640PN	★
			Socket	640SN	★

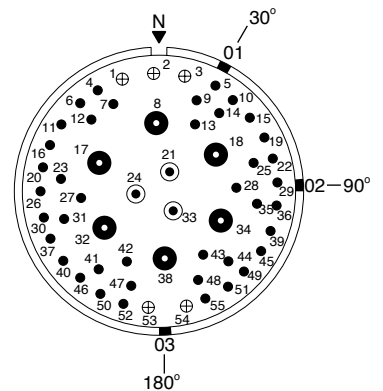
Qty.	Size AWG	Service Voltage Rating
55	18	Inst.



55 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod II	Crimp	28	Pin	324PN	ZP-28-324PN
			Socket	324SN	ZP-28-324SN

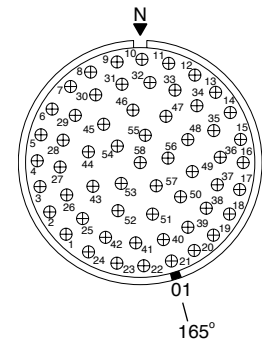
Qty.	Size AWG	Service Voltage Rating
3	8	D
6	4	D
5	12	A
41	16	A



58 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	24	Pin	84P	ZP-24-84P
			Socket	84S	ZP-24-84S
Mod II	Radsok Crimp	24	Pin	384PN	ZP-24-384PN
			Socket	384SN	ZP-24-384SN

Qty.	Size AWG	Service Voltage Rating
58	12	A



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⊙	⦿	⊕	⊗	⊙	⊗	⊙	⊗
⊕	⊙	⊕	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

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

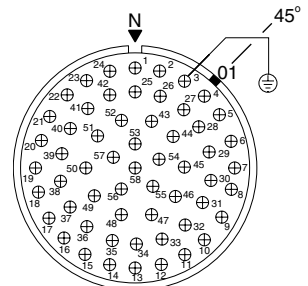
Insert Configurations

58 Contacts

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

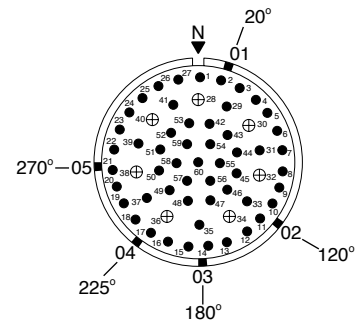


front face of pin insert shown



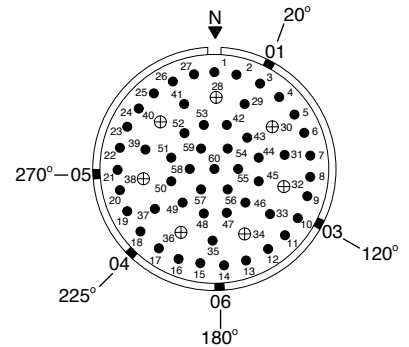
60 Contacts

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



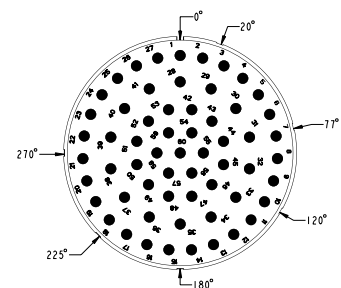
60 Contacts

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



60 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Radsok Crimp	24	Pin Socket	389PN 389SN	ZP-24-389PN ZP-24-389SN	60	16	A



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⦿	⦿	⊕	⊕	⊕	⊕	⊕	⊕
			Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

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

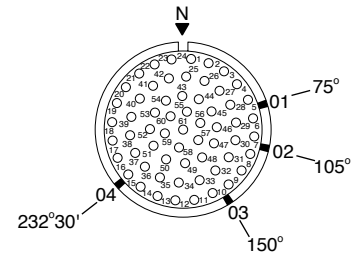
Insert Configurations

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 Socket	333PN 333SN	ZP-16-333PN ZP-16-333SN	61	18	Inst.

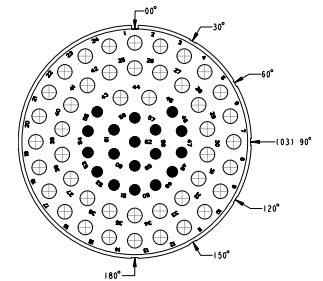


front face of pin insert shown



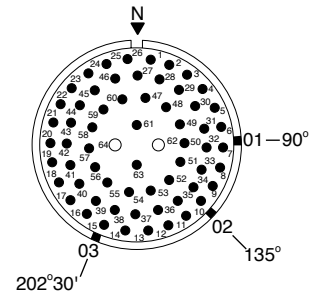
62 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Radsok Crimp	20	Pin Socket	362PN 362SN	ZP-24-362PN ZP-24-362SN	44 18	12 16	A



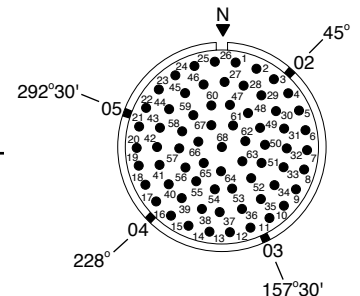
64 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Crimp	20	Pin Socket	329PN 329SN	ZP-20-329PN ZP-20-329SN	2 62	10 16	A 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 Socket	313PN 313SN	ZP-20-313PN ZP-20-313SN	68	16	A



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⦿	⦿	⊕	⊕	⊕	⊕	⊕	⊕
⦿	⦿	⦿	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

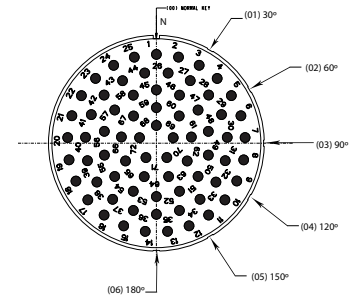
SERVICE VOLTAGE RATING
A = 240V, D = 600V

Insert Configurations

72 Contacts

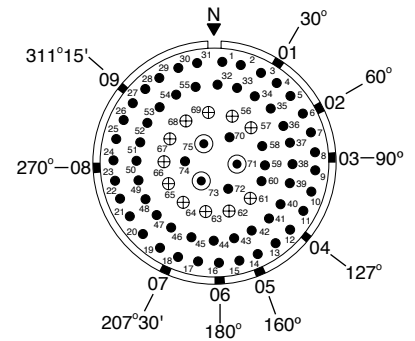
Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Radsok Crimp	24	Pin Socket	388PN 388SN	ZP-24-388PN ZP-24-388SN	72	16	A

front face of pin insert shown



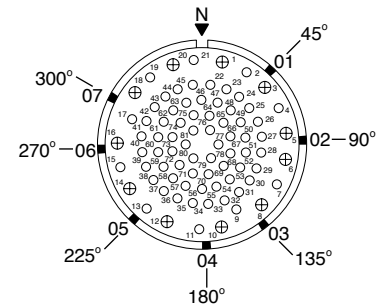
75 Contacts

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



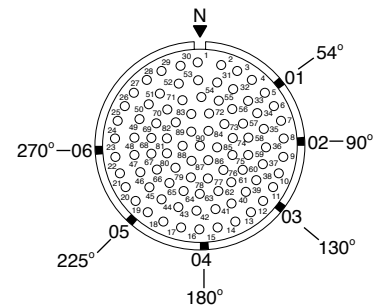
81 Contacts

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



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 Socket	345PN 345SN	ZP-20-345PN ZP-20-345SN	90	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

★ Pre-assembled insert should be ordered mounted in barrel.

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

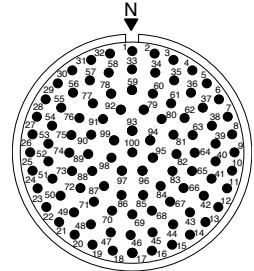
Insert Configurations

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 Socket	313PN 313SN	ZP-24-313PN ZP-24-313SN	100	16	◆A

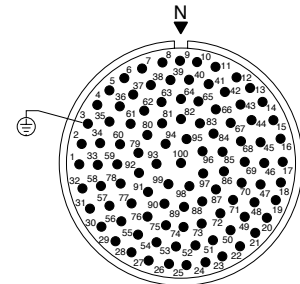


front face of pin insert shown



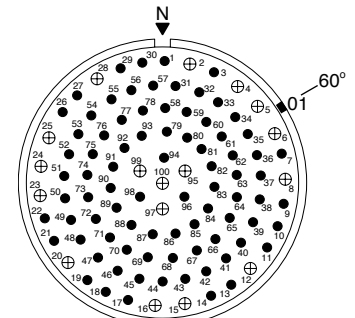
100 Contacts

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



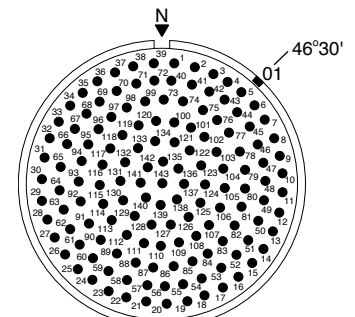
100 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number	Qty.	Size AWG	Service Voltage Rating
Mod II	Crimp	28	Pin Socket	314PN 314SN	ZP-28-314PN ZP-28-314SN	17 83	12 16	A 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 Socket	322PN 322SN	ZP-28-322PN ZP-28-322SN	143	16	A



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⦿	⦿	⊕	⊕	⊕	⊕	⊕	⊕
⦿	⦿	⦿	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777	
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400	

★ Pre-assembled insert should be ordered mounted in barrel.

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

V.F.D. Insert Configurations

A **variable-frequency drive (VFD)** controls the rotational speed of an alternating current (AC) electric motor by controlling the frequency of the electrical power supplied to the motor. VFD motors operate at varied voltages and frequencies, which in turn create higher operating temperatures - creating issues for most electrical connectors. Amphenol is able to meet the operating requirements of a VFD motor by incorporating a specially designed insert material. The inserts can carry a higher dielectric rating, allowing them to withstand the voltage spikes found in a VFD application.

In addition, Amphenol utilizes our patented RADSOK® contact design in our VFD inserts. The RADSOK® contacts allow a higher amperage, and result in lower temperature rise in our connectors. These specific inserts have been selected to accommodate the phase conductors, as well as grounding conductors present in VFD rated cables.

In addition, shielding contacts are provided in these inserts to allow for terminating the overall cable shield to reduce EMI. These inserts are all also rated to 1000 V.A.C.



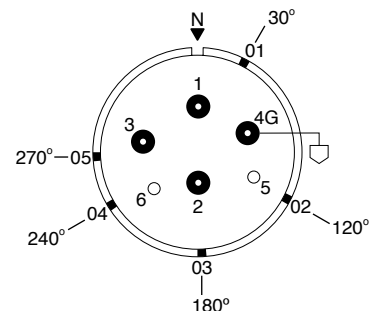
6 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Pressure	20	Pin	43PR	ZP-20-43PR
			Socket	43SR	ZP-20-43SR
Mod III	Crimp	20	Pin	643PN	★
			Socket	643SN	★

Qty.	Size AWG	Service Voltage Rating
4	4	D
2	10	D



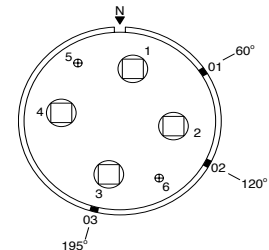
front face of pin insert shown



6 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C28	Pin	18P	ZP-C28-18P
			Socket	18S	ZP-C28-18S
Mod I	Radsok Solder	C28	Pin	R18P	ZP-C28-R18P
			Socket	R18S	ZP-C28-R18S

Qty.	Size AWG	Service Voltage Rating
4	350 MCM	D
2	12	E



Grounding Contact Termination Symbol			Contact Symbols											
Solder Well	Pressure	Crimp	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

★ Pre-assembled insert should be ordered mounted in barrel.

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

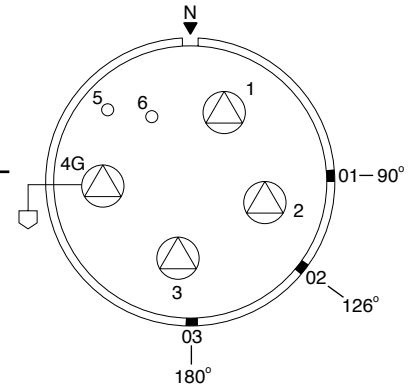
V.F.D. Insert Configurations

front face of pin insert shown

6 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Solder	C28	Pin	42P	ZP-C28-42P
			Socket	42S	ZP-C28-42S
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

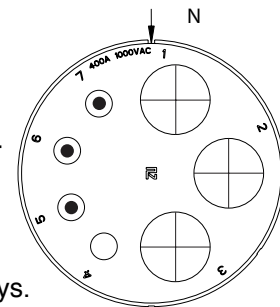
Qty.	Size AWG	Service Voltage Rating
4	4/0	D
2	10	D



7 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Radsok Pressure	C24	Pin	R44PR	ZP-C24-R44PR
			Socket	R44SR	ZP-C24-R44SR

Qty.	Size AWG	Service Voltage Rating
3	1/0	D
3	8	D

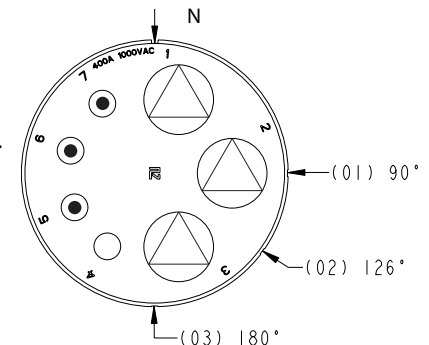


Refer to factory for current alternate keyways.

7 Contacts

Style	Wire Terminal Type	Shell Size	Insert Type	Dash Number	Catalog Number
Mod I	Radsok Pressure	C28	Pin	R44PR	ZP-C28-R44PR
			Socket	R44SR	ZP-C28-R44SR

Qty.	Size AWG	Service Voltage Rating
3	4/0	D
3	8	D
1	10	D



Grounding Contact Termination Symbol			Contact Symbols	○	●	⊕	○	⊙	⦿	⊕	⊗	⊗	⊗	⊗
⊕	⊙	⊗	Wire Size AWG	18	16	12	10	8	4	1/0	4/0	350 MCM	500 MCM	646-777
Solder Well	Pressure	Crimp	Metric	0.75	1.5	4.0	6.0	10.0	25.0	50.0	120.00	185.00	240.00	300-400

★ 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

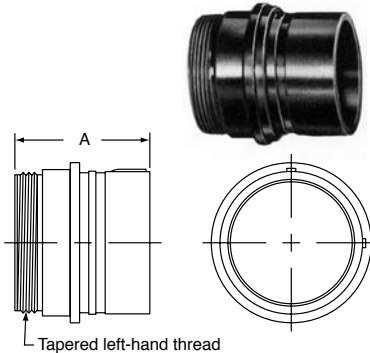
Male skirts only for Mod I are designated by a four-digit number.

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

Female Skirt for In-Line Receptacle

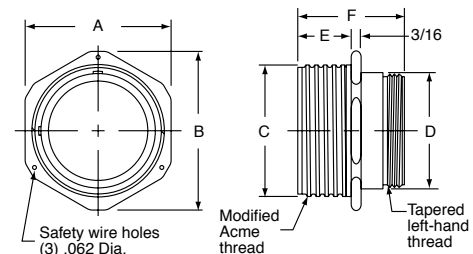
Female skirts only for Mod I are designated by a four-digit number.

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

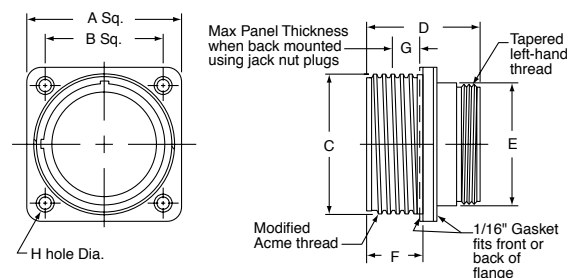
Basic Barrel for Panel, Square Flange Receptacle

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)



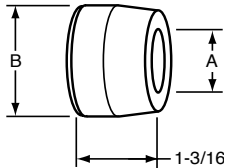
Shell Size	Cat. No. Mod I	DIMENSIONS							
		A	B	C	D	E	F	G	H
12	ZP-WO-1712	1-3/4	1-3/8	1-1/2	2-1/64	1-3/8	1	1/4	11/64
16	ZP-WO-1716	2-1/4	1-11/16	2	2-1/64	1-7/8	1	1/4	13/64
20	ZP-WO-1720	2-3/4	2-3/32	2-1/2	2-1/64	2-3/8	1	1/4	7/32
C20	ZP-CO-1720	2-3/4	2-3/32	2-1/2	2-33/64	2-3/8	1-1/2	3/4	7/32
24	ZP-WO-1724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

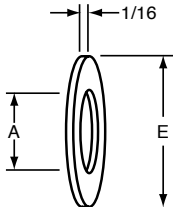
Cable Grip Components

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



Grommets

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



Gland Washers

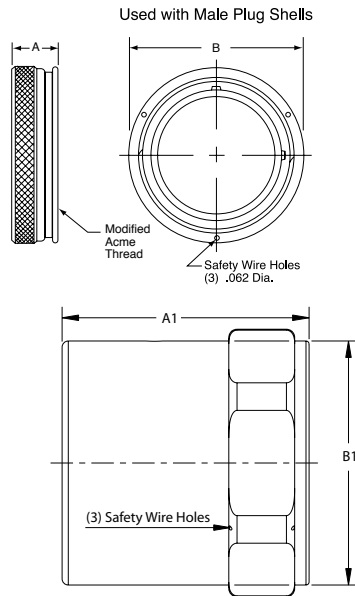
Shell Size	Washer Dimensions	
	A	B
12	See cable dia. column "A" for cable range	1-1/4
16		1-3/4
20 & C20		2-1/4
24 & C24		2-3/4
28 & C28		3-1/4

* Substitute Symbol for ▲ in Cable Adapter Catalog Number

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

Connector Accessories

Coupling Nuts (Star-Line only)



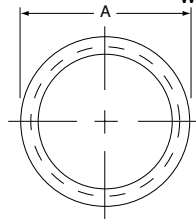
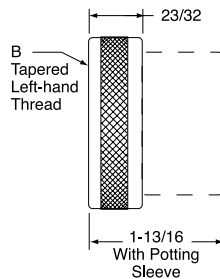
Shell Size	Catalog No. Standard Nut	DIMENSIONS	
		A	B
12	ZP-7012-10A	47/64	1-13/16
16	ZP-7016-10A	47/64	2-5/16
20/C20	ZP-7020-10A	47/64	2-13/16
24/C24	ZP-7024-10A	47/64	3-5/16
28/C28	ZP-7028-10A	47/64	3-13/16

Shell Size	Catalog No. Jacking Nut	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

Shell Size	Catalog No. Delay Nut	DIMENSIONS	
		A1	B1
12	ZP-7012-20A	3.09	1.71
16	ZP-7016-20A	3.09	2.00
20/C20	ZP-7020-20A	3.09	2.50
24/C24	ZP-7024-20A	3.75	3.00
28/C28	ZP-7028-20A	3.75	3.50

Insert Clamp Nuts

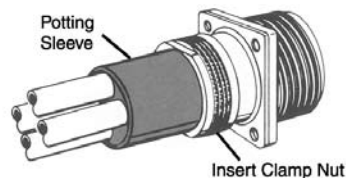
Used when open-back wiring is desired behind panelboards or within large junction boxes on which the basic barrel is mounted



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

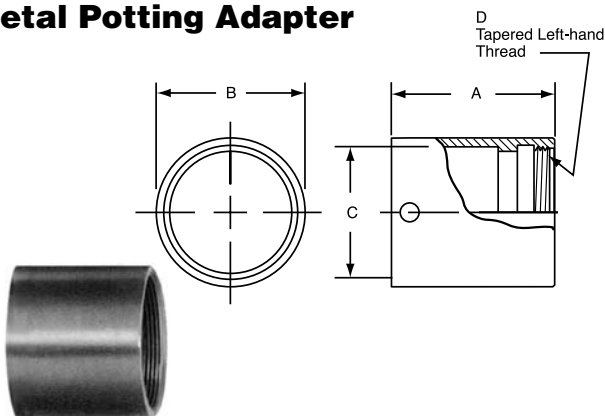
Potting Sleeve

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-8612-11	2-15/32	1.4675	1.12	1-3/32
16	ZP-8616-11	2-15/32	1.8575	1.62	1-19/32
20 & C20	ZP-8620-11	2-15/32	2.3675	2.12	2-3/32
24 & C24	ZP-8624-11	2-15/32	2.8425	2.62	2-19/32
28 & C28	ZP-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-8612-12	1-3/4	1.4675	1.12	1-3/32
16	ZP-8616-12	1-3/4	1.8575	1.62	1-19/32
20 & C20	ZP-8620-12	2	2.3675	2.12	2-3/32
24 & C24	NA				
28 & C28	NA				

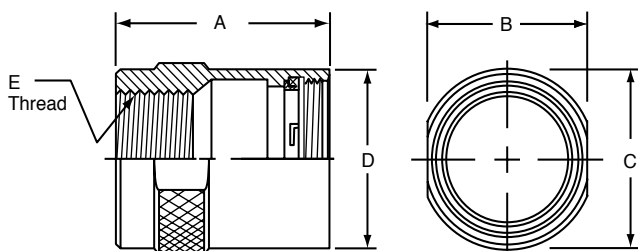
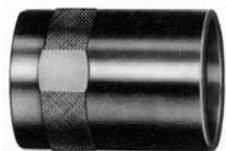
Cable Adapter Components and Accessories

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.

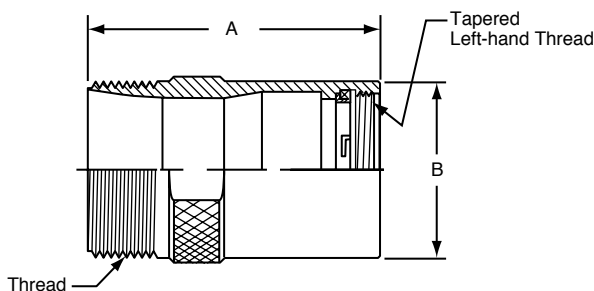
Shell Size	NPT Conduit Tap Size	Catalog No.	DIMENSIONS				
			A	B	C	D	E
12	3/4	ZP-W-2812	2-5/8	1-13/32	1-1/2	1-3/8	3/4
16	1-1/4	ZP-W-2816	2-3/4	1-29/32	2	1-7/8	1-1/4
20 & C20	1-1/2	ZP-W-2820	2-7/8	2-13/32	2-1/2	2-3/8	1-1/2
24 & C24	2	ZP-W-2824	3	2-29/32	3	2-7/8	2
28 & C28	2-1/2	ZP-W-2828	3-15/32	3-13/32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

Shell Size	Metric Conduit Tap Size	Catalog No.	DIMENSIONS				
			A Dim.	B Dim.	C Dim.	D Dim.	E Dim.
12	M25	ZP-W-2412-H402	4.00	1.39	1.50	1.38	M25
16	M40	ZP-W-2416-H402	6.00	1.89	2.00	1.88	M40
20 & C20	M50	ZP-W-2420-H40	6.00	2.39	2.50	2.38	M50
24 & C24	M63	ZP-W-2424-H402	6.00	2.89	3.00	2.88	M63
28 & C28	M75	ZP-W-2428-H402	6.00	3.9	3.50	3.38	M75



Cable Adapter

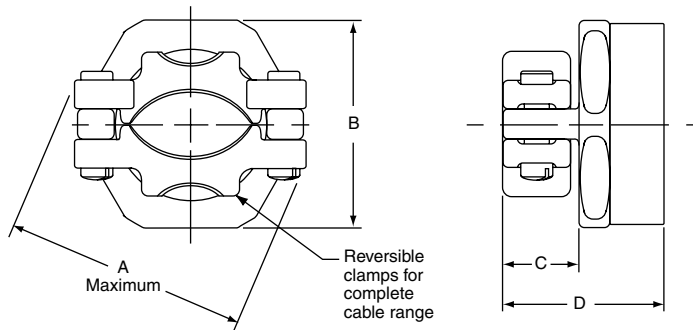
Thread Size	Shell Size	Standard Style Cat. No.	Long Style Cat. No.	Extra Long Style Cat. No.	DIMENSIONS			
					A			B
1-3/8-12	12	ZP-W-2012	ZP-W-2412	ZP-W-2912	Std.	Lg.	X Lg.	
1-7/8-12	16	ZP-W-2016	ZP-W-2416	ZP-W-2916	3	5-1/4	6-1/2	1-3/8
2-3/8-12	20 & C20	ZP-W-2020	ZP-W-2420	ZP-W-2920	3-1/4	5-1/2	6-3/4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



Cable Adapter Components and Accessories

Mechanical Clamp Nut

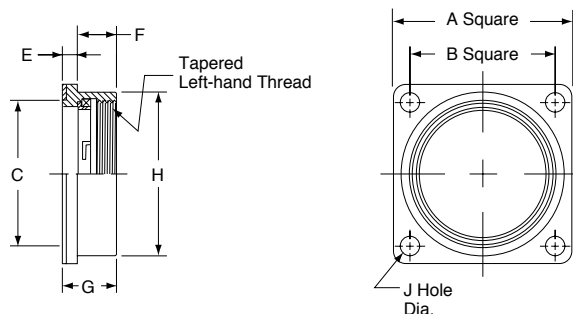
Shell Size	Catalog No.	DIMENSIONS			
		A	B	C	D
12	ZP-W-5312	2-3/8	1-3/4	7/8	2
16	ZP-W-5316	3	2-1/4	15/16	2-1/16
20 & C20	ZP-W-5320	3-3/4	2-3/4	1	2-1/8
24 & C24	ZP-W-5324	4-1/2	3-1/4	1-1/16	2-3/16
28 & C28	ZP-W-5328	5-1/8	3-3/4	1-1/8	2-1/4



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.

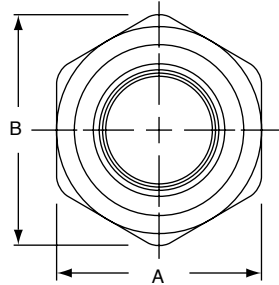
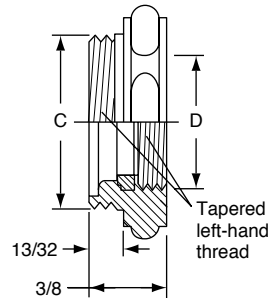
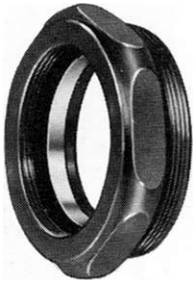
Shell Size	Catalog No.	DIMENSIONS								
		A	B	C	D	E	F	G	H	J
12	ZP-W-2112	1-5/8	1-1/4	1-1/8	1-3/32	3/32	9/16	3/4	1-3/8	3/16
16	ZP-W-2116	2-1/8	1-11/16	1-5/8	1-19/32	1/8	9/16	25/32	1-7/8	7/32
20 & C20	ZP-W-2120	2-5/8	2-3/32	2-1/8	2-3/32	5/32	9/16	13/16	2-3/8	9/32
24 & C24	ZP-W-2124	3-1/8	2-17/32	2-5/8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

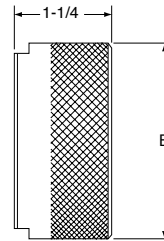
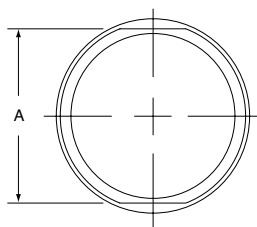
Transition adapters provide for using cable adapters one shell size larger than that of the basic barrel selected. They are used when terminating shielded cables require an increase in adapter diameter for additional wiring space.



Shell Size	Adapter Shell Size	Catalog No.	DIMENSIONS			
			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

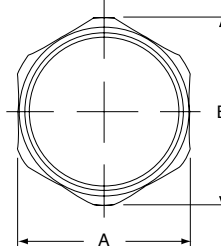
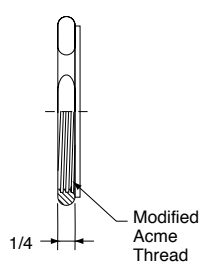
Use plain, or with basket weave cable grip



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)

Threaded Cap for Plugs

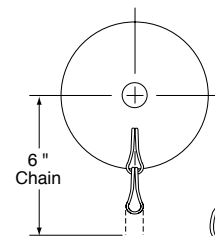
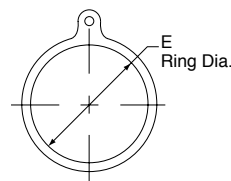
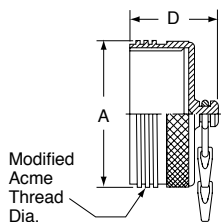


Shell Size	Cover Catalog No. with Ring and Chain	Cover Catalog No. with Eyelet and Chain	DIMENSIONS			
			A	D	E	F
12	ZP-W-5512-A	ZP-WF-5512-A	1-1/2	1-1/2	1-1/4	11/64
16	ZP-W-5516-A	ZP-WF-5516-A	2	1-1/2	1-3/4	13/64
20	ZP-W-5520-A	ZP-WF-5520-A	2-1/2	1-1/2	2-1/4	7/32
C20	ZP-C-5520-A	ZP-CF-5520-A	2-1/2	2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

APPLICATION:

RING TYPE: For use with plugs and inline receptacles. To assemble slide ring over back end of barrel before applying cable adapter.

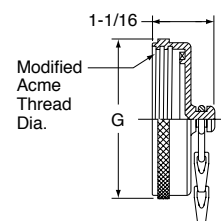
EYELET TYPE: For use with flange mount plugs and flange mount receptacles. To assemble attach eyelet to flange mounting screw or drill and tap hole in adjacent mounting surface.



Threaded Cap for Receptacles

Cap has a captive gasket for sealing.

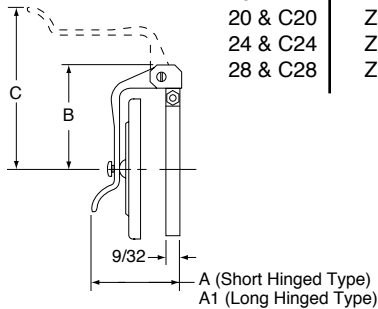
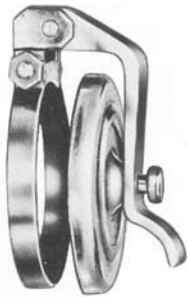
Shell Size	Cover Catalog No. with Ring and Chain	Cover Catalog No. with Eyelet and Chain	DIMENSIONS		
			E	F	G
12	ZP-W-5612-A	ZP-WF-5612-A	1-1/4	11/64	1-23/32
16	ZP-W-5616-A	ZP-WF-5616-A	1-3/4	13/64	2-7/32
20/C20	ZP-W-5620-A	ZP-WF-5620-A	2-1/4	7/32	2-23/32
24/C24	ZP-W-5624-A	ZP-WF-5624-A	2-3/4	9/32	3-7/32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

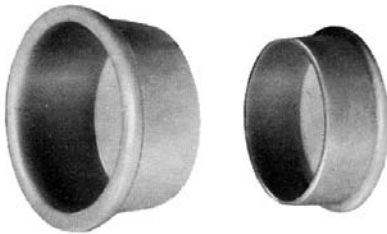
APPLICATION:

LONG HINGED TYPE:

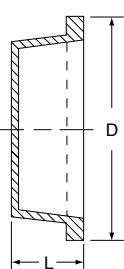
To clear coupling jack nut - Use with Square Flange Receptacles when front mounted only.

Plastic Dust Caps

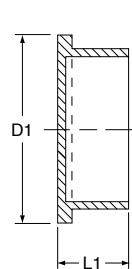
For temporary protection of assembled barrels while in storage and shipment.



For Receptacles



For Plugs



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

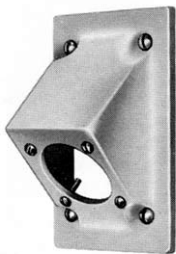
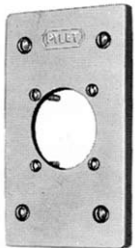
Conduit System Accessories

FS and FD Conduit Adapter Covers and Conduit Fitting Bodies

Adapter covers and Bodies have environmental resistance adequate for most general applications.

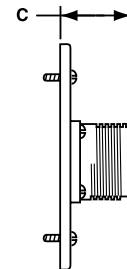
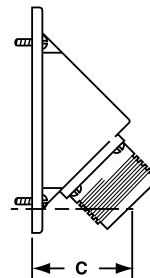
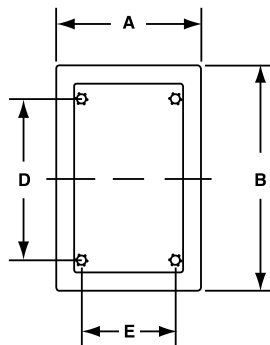
All adapter covers are supplied with screws and clips for mounting receptacle as well as bolts, washers and gasket for mounting cover to panel or conduit fitting body.

Cast aluminum alloy adapter covers accept type ZRLP barrels.

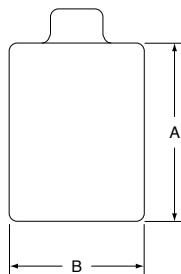


Conduit Adapter Covers - FS and FD Type

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

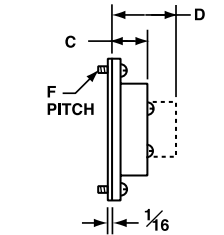
Watertight Conduit Adapter Covers and Conduit Fitting Bodies

Adapter covers and Bodies have environmental resistance adequate for most general applications.

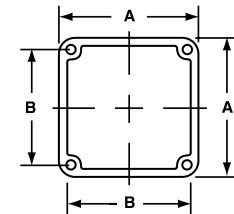
All adapter covers are supplied with screws and clips for mounting receptacle as well as bolts, washers and gasket for mounting cover to panel or conduit fitting body.

Cast aluminum alloy adapter covers accept type ZRLP barrels.

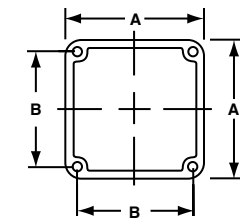
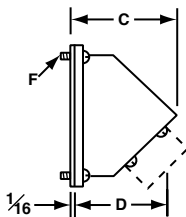
STRAIGHT COVER



STANDARD COVER



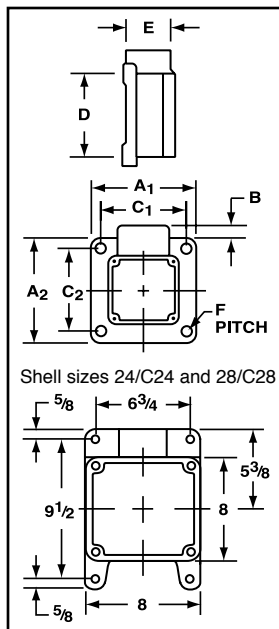
DEEP COVER



FITTING DIMENSIONS

CONDUIT FITTING BODY

Mount with hub at top, bottom or either side.



Shell sizes 24/C24 and 28/C28

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		DIMENSIONS (Including Barrel)				
	Standard Cat. No.	Deep Cat. No.	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 HAND CRIMP TOOL COMPLETE KIT

This tool is complete with carrying case, checking gage, three contact locators and complete instructions for crimping #10 through #18 contacts of MOD II or 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-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.

TP-201352-HAND/FOOT PNEUMATIC CRIMP TOOL

This tool is complete with foot control, checking gage, wrench, and complete instructions for crimping #10 through #18 contacts of MOD II or MOD III design.

Thomas & Betts TOOL NUMBER TBM15 AND DIE NUMBER 15505

To terminate 500 MCM contact.



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.

TP-201328-F



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

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

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

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.	
18	TP-201047-1	Use Same Tool for Pin or Socket
16	TP-201048-1	
12	TP-201049-1	
10	TP-201046-1	

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

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.

Additional Amphenol® Industrial Connector Products



Amphe EX

The Amphe-EX™ is a new miniature explosion-proof threaded connector family from Amphenol Industrial. The Amphe-EX™ product line offers inserts that accommodate standard copper contacts, as well as coax and fiber optic contacts, to allow power and signal to pass through Hazardous rated areas. In addition, the Amphe-EX™ offers the availability of RJ45 and USB inserts. The Amphe-EX™ family provides an overall smaller package than most hazardous area connectors. The rugged AMPHE-EX™ connectors are ATEX and IECEx approved for Zone 1 (and Class 1, Div. 2) rated applications. Consult factory for certificate details. For more information, refer to Amphenol Catalog 12-056 or visit www.amphenol-industrial.com.



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



Cable Assemblies & Value Add Solutions

Amphenol Industrial, one of the world's premiere interconnect solutions providers, offers a complete array of cable assemblies and turnkey junction box options. From standard cable harnesses, to complete ATEX and IECEx rated junction boxes, Amphenol can provide all your value add solutions. Amphenol can provide simple cable assemblies using any of our full line of connectors. Also available are over-molded cable assemblies that provide a water tight, molded solution that requires no additional strain relief hardware.



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INTERNATIONAL

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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 50% 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.

Amphenol Industrial Oceanus Subsea Connectors

Amphenol Industrial Operations offers a broad range of harsh environment interconnect solutions. Our new OCEANUS Series of Connectors are tailored to meet the rugged demands of the subsea market. The OCEANUS series consists of 3 new product ranges: POSEIDON, AQUA POWER and SUBMARINER. The product family offers versatile, high performance characteristics including 9,000 PSI open face pressure ratings, underwater wet mate-able connectors, multi-pin configurations, high speed (coax and fiber optic) and over-molded cable assembly options.

POSEIDON



For more information
reference IDS-42

- 500 VDC Signal and 3kv Power contacts
- Up to 9,000 PSI open face pressure rating (6,000M)
- Configurable for use with Solid and Oil –Filled Cables
- Sealing caps, overmolding, and other options available
- Solder contacts range from 22 awg through 10 awg
- High Speed Coax (50 & 75 Ω) and Fiber Optic available
- MIL-C-24217/4-005 spec, IP68
- MIL-G-45204, Type II, Class 1 (50 microns Au)
- Intermateable/intermountable with competitive products



AQUA POWER



For more information
reference IDS-43

- 316 stainless steel, Passivated per ATSM A967
- 500 vdc Signal and 3kv Power contacts
- Up to 9,000 PSI open face pressure rating (6,000 M)
- Configurable for use with Solid and Oil –Filled Cables
- Sealing caps, overmolding (straight or 90°)
- Custom build option available
- Optional coupling nut locking set screw available
- Operating Temperature -50°C to +60°C
- Solder contacts range from 20 awg through 2 awg
- IP68 rated



SUBMARINER



For more information
reference IDS-44

- ROVs and other Wet Mateable applications
- Numerous configurations available
- 1-16 contacts
- Molded high-insulation neoprene
- Heat-treated beryllium copper sockets, gold plating, and stainless steel bodies
- Operating Temperature -50°C to +60°C
- Up to 9,000 PSI open face pressure rating (6,000 M)



Interconnects for Power Applications

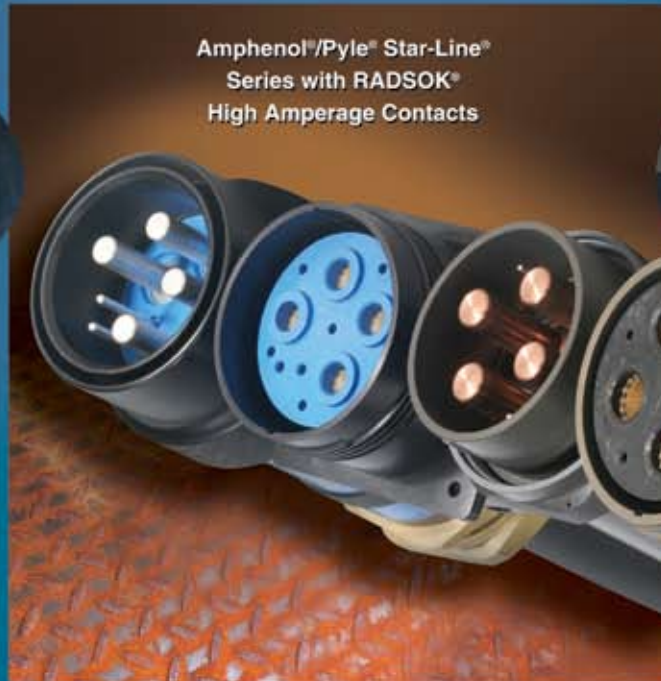
For High Amperage and the Most Challenging Conditions



Star-Line®
with RADSOX®
and Backshell



Star-Line with VFD Inserts



Amphenol®/Pyle® Star-Line®
Series with RADSOX®
High Amperage Contacts



Star-Line®
with RADSOX®
and Cable Gland



Star-Line® on Rapid Rig



Amphenol®
Overmolded
Cable
Assemblies



Amphenol® RADSOX®
Contact Technology



Hyperbolic, Stamped Grid
Configuration



Amphenol®
Amphe-EX®
Series



Amphenol® RIG Power Inserts
with EMI Shielding



Amphenol® RIG Power Star-Line



Amphenol®
Cable
Glands



Amphenol®



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