

# Amphenol<sup>®</sup>

## Industrial



### **Amphe-Push Pull**

Single-Pin Power Connector

# Company Introduction



## **Amphenol Industrial Sidney, New York Facility**

Manufacturing connectors since 1932, we take pride that the Amphenol Industrial Products Group is the undisputed leader in interconnect systems for harsh environment applications. Such applications require a high degree of engineering sophistication and precision manufacturing capability. Innovations like our RADSOK® contact technology can provide roughly 50% more current through the same size pin. Connectors utilizing this RADSOK® technology will outperform similar products in the market hands down.

The Amphenol Industrial Products Group (AIPG), a division of the Amphenol Corporation, is the leading manufacturer of cylindrical connectors in the world. Amphenol Industrial's product lines consist of rectangular, standard miniature, fiber optic, EMI/EMP filter, and a variety of special application connectors.

The Sidney, NY facility, nestled at the foothills of the Catskill Mountains, is over 675,000 square feet. This complex houses over 1,000+ employees, incorporating state-of-the-art manufacturing technologies. The facility is both ISO9001 certified and qualified to MIL-STD-790 requirements.



## **Amphenol Technology Zhuhai, China Facility**

Established in 2007, Amphenol Technology (Zhuhai) Co., Ltd. is a key facility for Amphenol Industrial Products Group, which serves a number of industrial markets, included but not limited to Factory Automation, Transportation, Heavy Equipment, Alternative Energy, Oil & Gas, Server/Data Comm and Power Distribution.

Amphenol Technology (Zhuhai) Co., Ltd. covers an area of 28,470 m<sup>2</sup> and is equipped with CNCs, plating, injection molding and assembly workshops. This plant specializes in the design and manufacturing of industrial connectors featuring high power, high density inserts, medium to high voltage electrical properties, and harsh environment applications.

With industry leading engineering, design and manufacturing expertise, Amphenol Technology (Zhuhai) Co., Ltd. has earned more than 10 utility patents on its innovative interconnects. Many of the products produced have been certified by independent standards including UL, IEC/TUV, ATEX, IECEx and MA. The facility is also certified to ISO 9001, ISO 14001 and TS 16949.

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## Markets



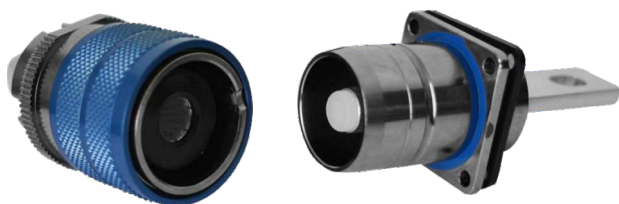
Hybrid/Electric Vehicle	Rail Mass/Transit
BMS/Energy Storage	Process Control/Automation
Medical	Heavy Equipment

# Features & Specifications

**Amphe-Push Pull** connectors feature a rapid mating coupling system. This technology creates a positive locking action of the plug and receptacle. The mechanism is enacted through the use of a spring loaded coupling ring and stainless steel ball bearings on the plug. This coupling design has proven to be reliable and simple to use.

To engage, align the single keyway on the plug to the key on the receptacle and push the halves together to create a secure mated connection. To disengage, simply pull back on the plug's coupling nut.

The Amphe-Push Pull series is an environmentally sealed connector system that is rated to the IP67 specification.



## Features & Benefits

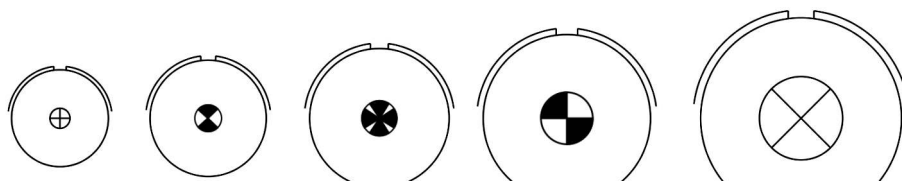
1. Push-Pull quick mating coupling
2. Positive mating locking system
3. Current up to 500A
4. Vibration resistant
5. Minimum of 500 mating cycles
6. 5 alternate keyways
7. EMI shielding available

## Specification

Contact Size	5.7mm RADSOK®	8.0mm RADSOK®	9.1mm RADSOK®	10.3mm RADSOK®	14.0mm RADSOK®
Current Rating	120A	200A	250A	300A	500A

Operating Voltage	600V AC
Operating Temperature	-40° C to 125° C
Dielectric Withstanding Voltage	2500V AC
Insulation Resistance	5000 MΩ Min (at 25° C)
Contact Resistance	0.5 mΩ Max
Durability	500 Mating Cycles
Water Ingress Protection	IP67
Salt Spray	48H - 720H
Vibration	10 - 500Hz, 10g per SAE J2223-2-1998

## Insert Arrangement



Insert Arrangement  
Contact Size

14-57  
5.7mm RADSOK®

18-8  
8.0mm RADSOK®

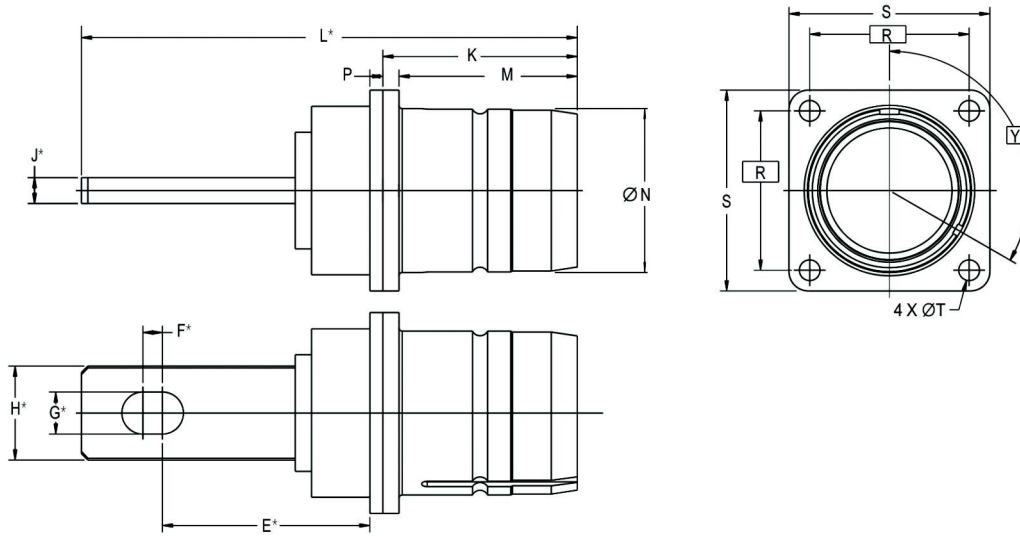
20-91  
9.1mm RADSOK®

22-10  
10.3mm RADSOK®

28-14  
14.0mm RADSOK®

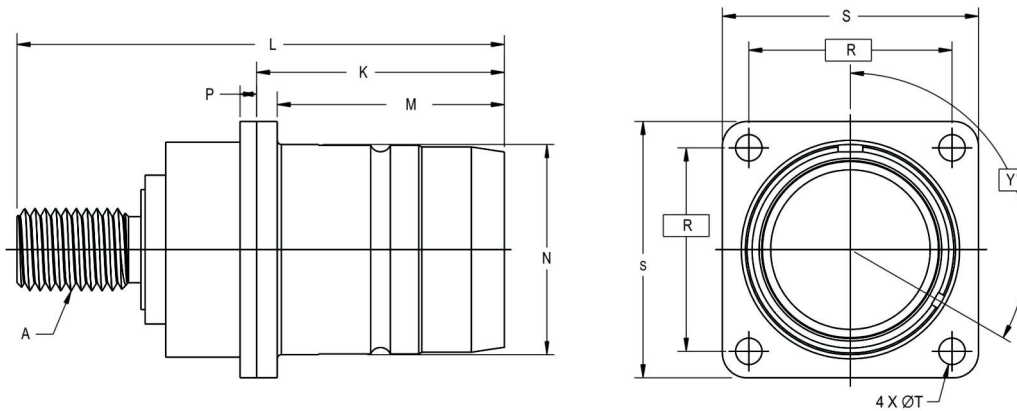
# Dimensional Information

## P3102E Box Mount Receptacle (Contact with Busbar Termination)



Shell Size	E	F	G	H	J	K	L	M	N	P	R	S	T
14	32.0	3.0	6.5	10.0	4.0	30.0	76.5	27.5	Ø18.3	2.0	20.0	26.0	3.2
18	32.0	3.0	6.5	13.0	4.0	30.0	76.5	27.5	Ø22.3	2.0	23.0	30.0	3.2
20	32.0	3.0	6.5	14.5	4.0	30.0	76.5	27.5	Ø25.3	2.0	24.6	31.0	3.2
22	32.0	3.0	6.5	18.0	4.0	30.0	76.5	27.5	Ø28.3	2.0	27.0	35.0	3.2
28	37.6	4.0	7.0	24.5	8.0	45.0	97.0	42.0	Ø36.8	2.0	31.8	41.0	3.2

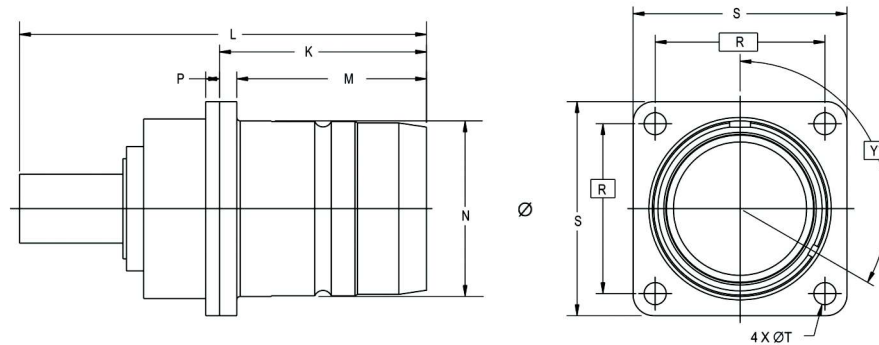
## P3102E Box Mount Receptacle (Contact with Threaded Termination)



Shell Size	A Thread	K	L	M	N	P	R	S	T
14	M6X1-6g	30.0	55.0	27.5	Ø18.3	2.0	20.0	26.0	3.2
18	M8X1-6g	30.0	60.0	27.5	Ø22.3	2.0	23.0	30.0	3.2
20	M10X1.25-6g	30.0	59.0	27.5	Ø25.3	2.0	24.6	31.0	3.2
22	M12X1.5-6g	30.0	65.0	27.5	Ø28.3	2.0	27.0	35.0	3.2
28	M14X1.5-6g	45.0	90.0	42.0	Ø36.8	2.0	31.8	41.0	3.2

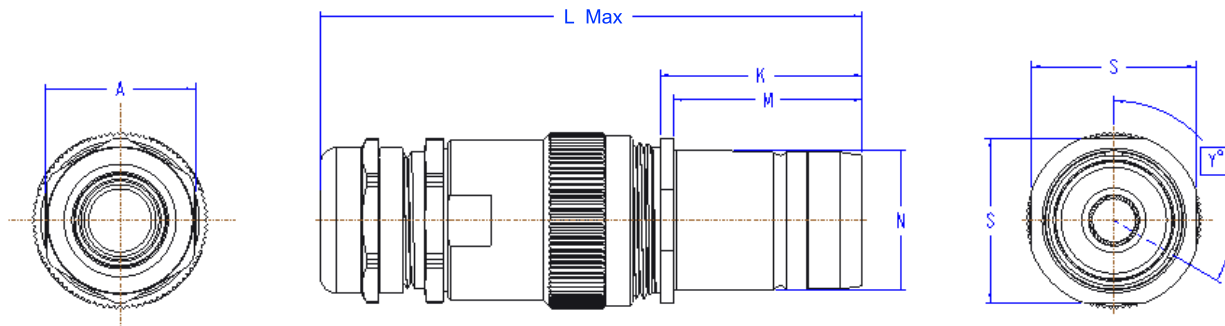
# Dimensional Information

## P3102E Box Mount Receptacle (with Crimp Contact)



Shell Size	K	L	M	N	P	R	S	T
14	30.0	55.0	27.5	Ø18.3	2.0	20.0	26.0	3.2
18	30.0	62.5	27.5	Ø22.3	2.0	23.0	30.0	3.2
20	30.0	57.0	27.5	Ø25.3	2.0	24.6	31.0	3.2
22	30.0	64.5	27.5	Ø28.3	2.0	27.0	35.0	3.2
28	45.0	83.5	42.0	Ø36.8	2.0	31.8	41.0	3.2

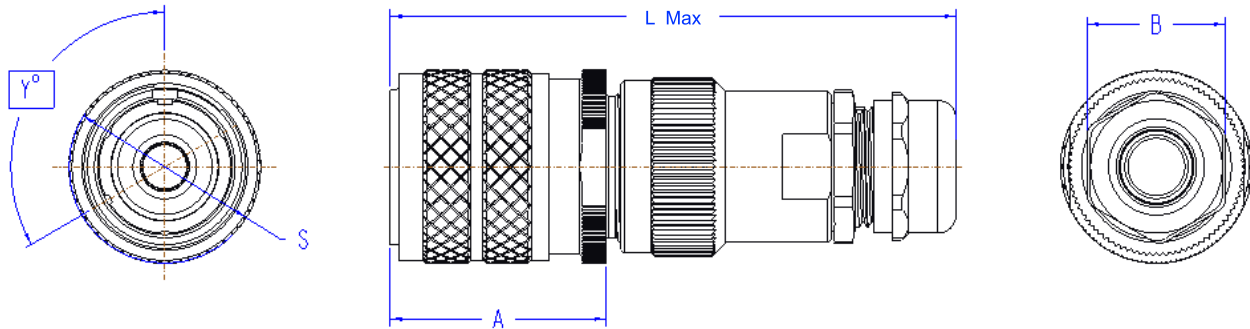
## P3101E Inline Receptacle



Shell Size	K	L(Max)	M	N	S	A
14	30	100	27.5	Ø18.3	24	22.8
18	30	100	27.5	Ø22.3	28	27.5
20	30	100	27.5	Ø25.3	30	27.5
22	30	110	27.5	Ø28.3	32	27.5
28	45	130	42	Ø36.8	40	34.5

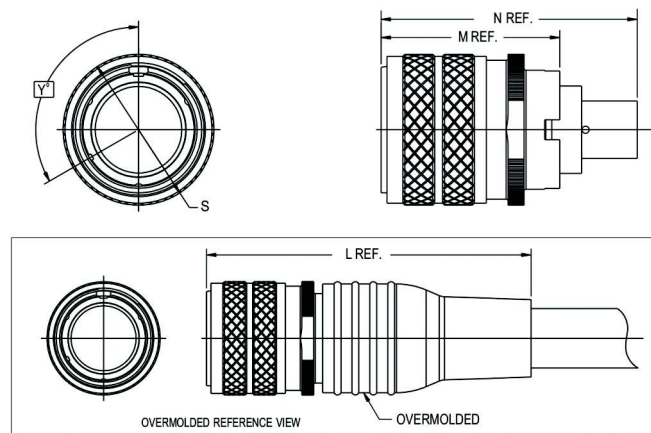
# Dimensional Information

## P3106E Straight Plug (with Cable Gland)



Shell Size	L(Max)	S	A	B
14	100.0	28.0	31.0	22.8
18	100.0	32.0	36.0	27.5
20	100.0	35.0	36.0	27.5
22	110.0	38.0	36.0	27.5
28	135.0	48.0	45.0	34.5

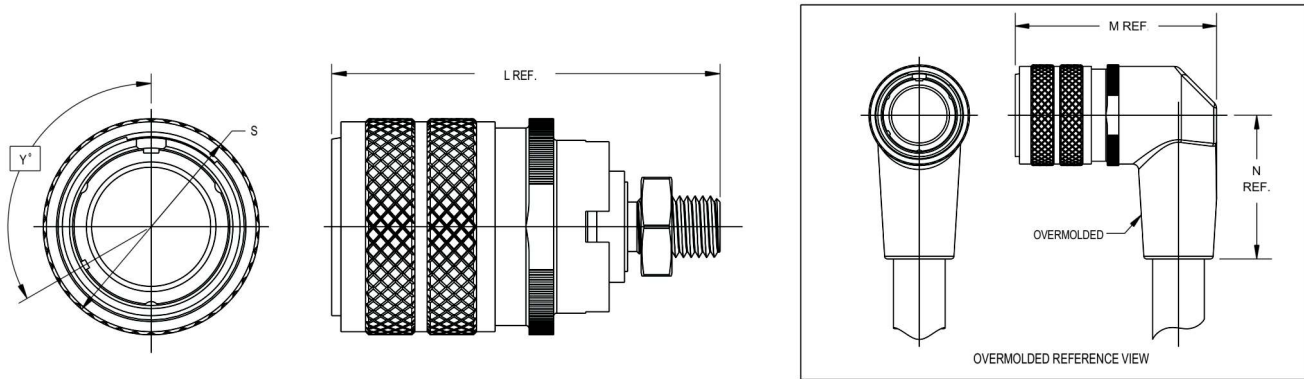
## P3106E Straight Plug, Straight Overmolded



Shell Size	L	M	N	S
14	100.0	45.0	60.0	28.0
18	100.0	45.0	62.5	32.0
20	100.0	45.0	61.0	35.0
22	110.0	45.0	64.5	38.0
28	130.0	60.0	83.5	48.0

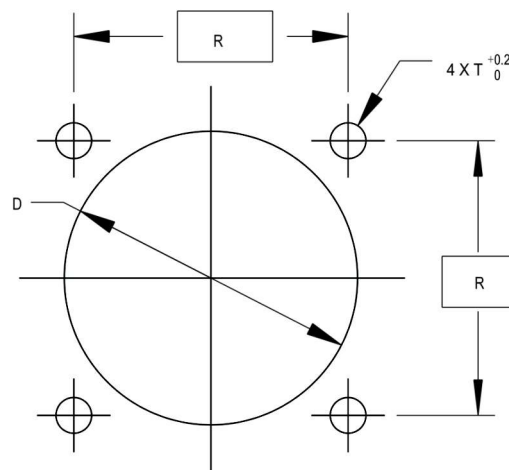
# Dimensional Information

## P3106E Straight Plug Overmolded Right Angle



Shell Size	L	M	N	S
14	55	45	50	Ø28
18	60	45	50	Ø32
20	65	70	50	Ø35
22	65	80	55	Ø38
28	90	105	60	Ø48

## Mounting Information



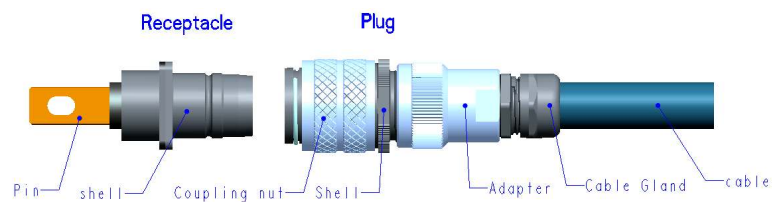
Recommended Panel Cut-out	D	R	T
14	Ø20.5	20.0	3.2
18	Ø24.5	23.0	3.2
20	Ø26.5	24.6	3.2
22	Ø30.5	27.0	3.2
28	Ø37.5	31.8	3.2



# Assembly Instructions

## ■ How does it work?

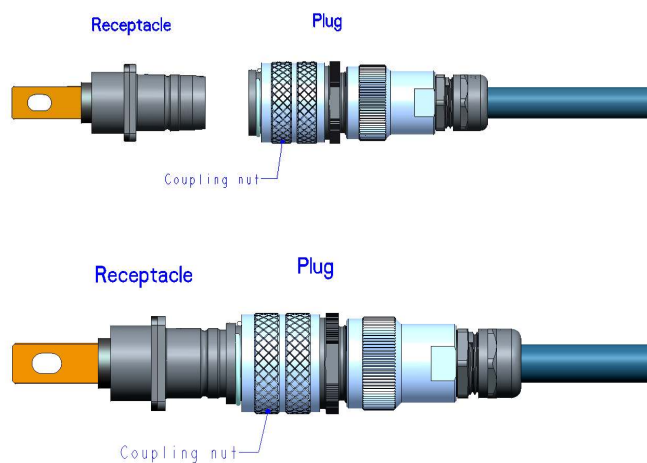
The plug has a coupling nut, which slides forward and backwards along the plug body.



## ■ Mating

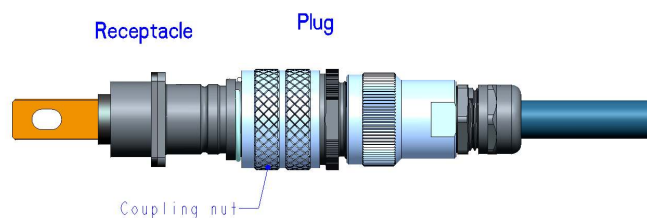
Step 1: Pull back on the coupling nut of the plug about 5 mm.

Step 2: Align the single keyway on the plug to the keyway on the receptacle and push both halves together.



## ■ Unmating

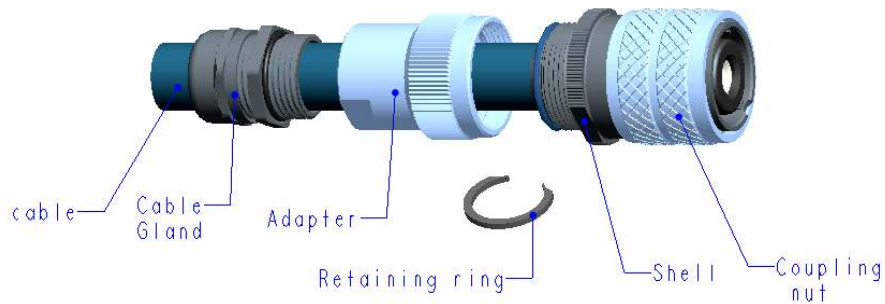
To disengage the connector simply pull back on the plug coupling nut separating the connector.



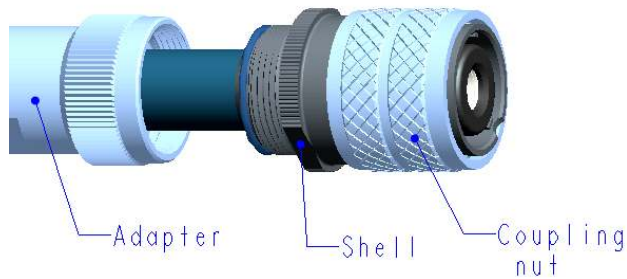
# Assembly Instructions

## Amphe-Push Pull Cable Assembly Instructions

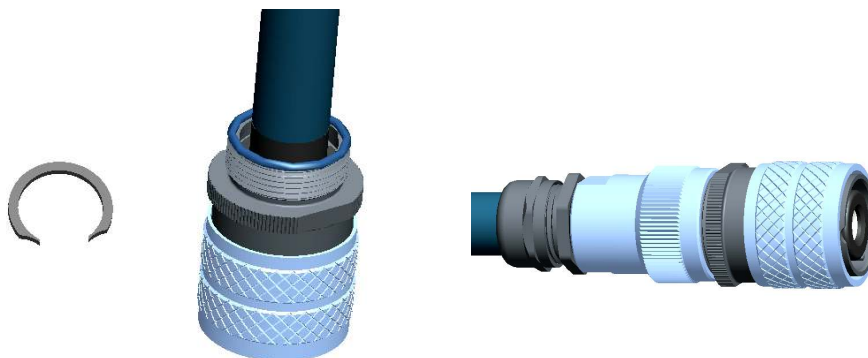
Strip the wire insulation, put the cable gland and adapter onto the wire and then crimp the contact so it is terminated to the wire.



Insert the contact into the connector, and push the rear insert in to secure the terminal.



Install the retaining ring to hold the insert in place, then assemble the adapter and cable gland.



# Cable Assembly Information

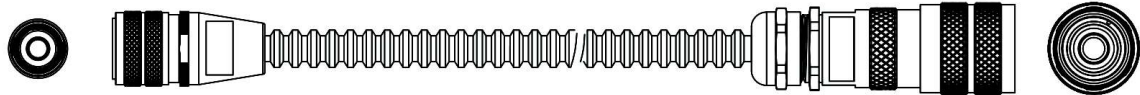
## Overmolded Push Pull

### Features:

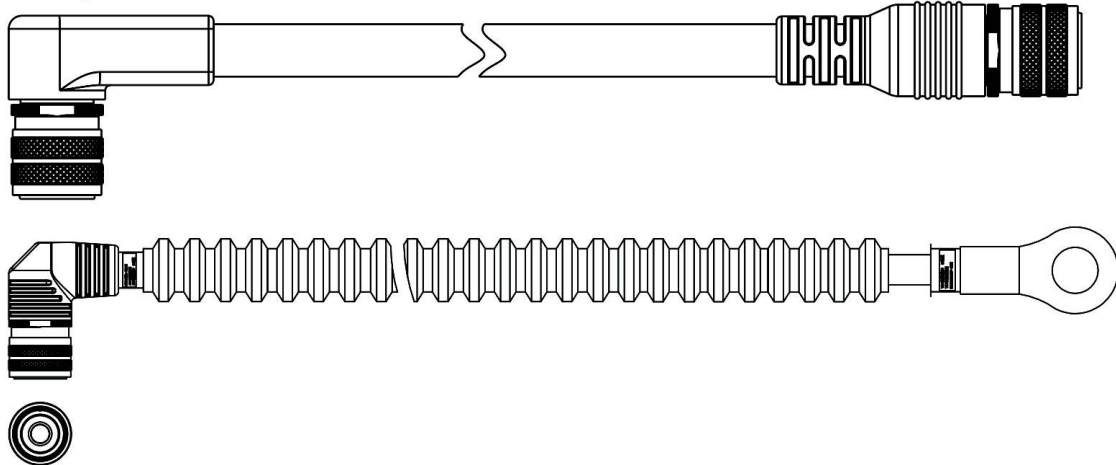
1. Cable sizes from 25mm<sup>2</sup> up to 180mm<sup>2</sup>
2. Bare copper or tinned copper
3. Silicone insulation material that supports -40° C to 125° C
4. Up to 500A current rating and 600V AC rating
5. Straight plug to straight plug, straight to right angle plug, right angle to right angle plug
6. Rapid mate spring loaded, push to mate/pull to unmate
7. IP67 rated

## Cable Assembly Examples

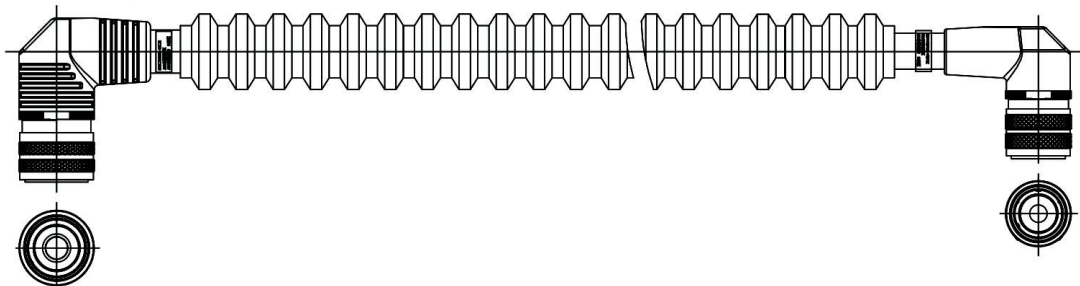
\* Straight to straight



\* Straight to R/A



\* R/A to R/A



## How to Order

P    3102   E    - 20 - 91   P   D    (SC)   (1)    (027)    (050)    (  )  
 1        2        3                    4                    5    6        7        8        9        10        11

See code below:

1. Connector Type  
 "P" Push-Pull connector

2. Shell Style  
 "P3101" Inline receptacle  
 "P3102" Box mount receptacle  
 "P3106" Straight plug  
 "P3100" Wall mount receptacle

3. Service Class  
 "E" Environmental

4. Shell Size/Insert Arrangement  
 "14-57" "18-8" "20-91"  
 "22-10" "28-14"

5. Contacts  
 'P' Pin  
 'S' Pocket

6. Keyway Rotation  
 "A", "B", "C", "D", "E"

7. Modification\*  
 For receptacle  
 Blank: busbar contact in box mount receptacle  
 or crimp contact in inline receptacle  
 SC: screw contact in box mount receptacle  
 C: crimp contact in box mount receptacle  
 For plug  
 Blank: plug with cable gland  
 RA: plug, right angle overmolded  
 ST: plug, straight overmolded

8. Contact Finish\*  
 Blank: Ag plating

"1" Tin  
 "2" Nickel

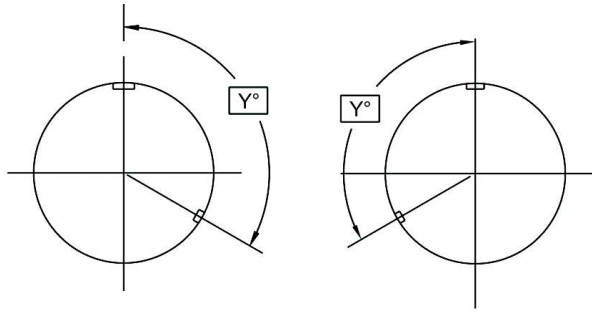
9. Shell Finish\*  
 Blank: Electroless nickel

"027" Conductive black zinc cobalt plating  
 "HAC" Hard anodic coating  
 "025" Non-conductive black zinc cobalt plating

10. Wire Range\*

11. Specials\*

# Product Ordering Guide



Keyway Rotation Identification Letter	Keyway Rotation $Y^\circ$	Color
A	100°	Silver
B	120°	Black
C	160°	Blue
D	200°	Green
E	240°	Red

Identification Number	Wire Range mm <sup>2</sup>
025	25
035	35
050	50
060	60
070	70
080	80
100	100
120	120
150	150
180	180

Specials include optional contact styles and cable gland.

Cable Gland	Cable Range (mm)
M16	4-8
M20	6-12
M25	13-18
M27	13-18
M32	18-25

## North America

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