

Amphe-PUSH-PULL CONNECTORS

Rapid mating single-pin
power connector

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Manufacturing connectors since 1932, we take pride that Amphenol Industrial 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.



AIO Headoffice, Sidney, NY,USA

Amphenol Industrial Operations (AIO), division of 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 1,400 employees, incorporating state-of-the-art manufacturing technologies. The facility is both ISO9001 certified and qualified to MIL-STD-790 requirements.

Our manufacturing capabilities include state-of-the-art CNC machining, die-casting, molding, impact and extruding, plating, screw machining and process controls.

AIO also has a fully equipped material evaluation lab and an engineering support organization utilizing the latest in computer aided design software and analysis tools.

The Amphenol Industrial division is supported by two satellite plants and one of the largest distributor networks in the world.

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- Rapid mate spring loaded , push to mate, pull to unmate coupling system
- Audible & tactile conformation of positive locking connection
- Eliminates problems inherent in threaded connectors such as cross threading, improper mating & loose connections



Amphe-PUSH-PULL CONNECTORS most exciting feature is it's rapid mating coupling system. This connector creates a positive locking action of the plug and receptacle through the use of a spring loaded coupling ring on the plug and stainless steel ball bearings on the plug. This coupling design has proven to be reliable, positive and simple to use. Align the single keyway on the plug to the key on the receptacle and push the halves together to create a locked, mated connection. To disengage the connection simply pull back on the plug's coupling ring, separating the connector halves. Amphe-PUSH-PULL CONNECTORS is reliable and eliminates all the issues that are inherent with Mil-C-5015 threaded connectors.



Everything about Amphe-PUSH-PULL CONNECTORS construction is more advanced than the similar threaded connectors. This allows Amphe-PUSH-PULL CONNECTORS connectors to excel in applications where threaded connectors do not. PUSH-PULL CONNECTORS is an environmentally sealed connector system that is rated to IP67 specification.

Application:

- Storage Base Station.
- Hybrid/Electric Vehicle
- Power Supply .
- Smart Grid Power.
- UPS for Industrial.
- motion control & vision systems,
- photographic lighting equipment,
- industrial controls,



PERFORMANCE SPECIFICATION

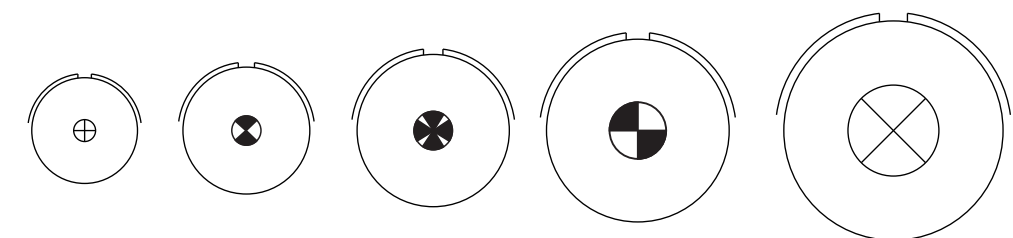
OPERATING VOLTAGE: 600 V

CURRENT RATE:

CONTACT SIZE	5.7mm RADSOK	8.0mm RADSOK	9.1mm RADSOK	10.3mm RADSOK	14.0mm RADSOK
CURRENT RATE	120A	200A	250A	300A	500A

OPERATING TEMPERATURE:	-40°C TO 125°C
DIELECTRIC WITHSTANDING VOLTAGE:	2500V AC
INSULATION RESISTANCE:	5000 MEGOHMS MIN. (AT 25°C)
CONTACT RESISTANCE:	0.5 MILLIOHMS MAX.
DURABILITY:	500 CYCLES
WATERPROOF:	IP67 CLASS
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

HOW TO ORKER,CONNECTOR INTERMATEABILITY

To more easily illustrate ordering procedure, part number P3102E-20-91PD(SC)(1)(027)(050) is shown as follows:

P	3102	E	-20	-	91	P	D	(SC)	(1)	(027)	(050)	()
1	2	3	4		5	6	7	8	9	10	11	12

See code below:

1. Connector Type

"P" designates push pull connector

2. Shell Style

"P3101" designates in line receptacle
"P3102" designates box mounting receptacle
"P3106" designates straight plug

3. Service Classes

"E" designates environmental resisting

4. Shell Size

"20" designates shell size

5. Insert Arrangement

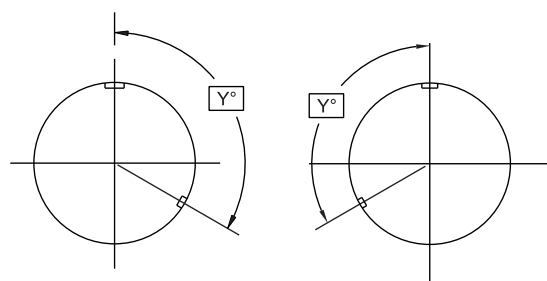
"20-91" designates insert arrangement

6. Contacts

"P" designates pin contacts
"S" designates socket contacts

7. Keyway Rotation

"A", "B", "C", "D", "E" designates keyway rotation



RECEPTACLE (front face shown)

PLUG (front face shown)

KEYWAYS ROTATION identification letter	KEYWAYS ROTATION Y°	COLOR BRAND
A	100°	SILVER
B	120°	BLACK
C	160°	BLUE
D	200°	GREEN
E	240°	RED

8. Connector Modification *

omit designates box mounting, receptacle, contacts with BusBar type,
in line, receptacle and straight plug with cable gland

"SC" designates box mounting receptacle only, contacts with screw type
"C" designates box mounting receptacle only, with crimp contacts
"RA" designates straight plug only, right angle, overmolded
"ST" designates straight plug only, straight overmolded

9. Cotacts Finishes *

omit Ag Plate

"1" Sn Plate

"2" Ni Plate

"3" Au Plate

"4" Others

10. Optional Finishes *

omit electroless nickel

(005) anodic coating

"025" non-conductive black zinc cobalt plating

"027" conductive black zinc cobalt plating

"HAC" hard anodic coating

11. Wire Range *

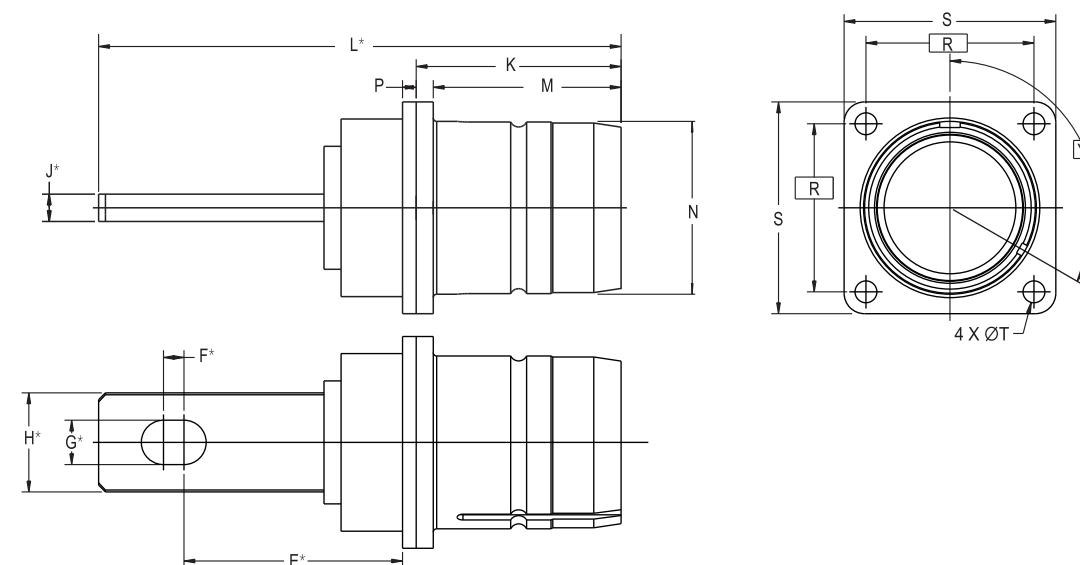
12. Specials *

Specials include optional contact styles and cable gland.

CABLE GLAND	CABLE RANGE
M16	4 - 8
M20	6 - 12
M25	13 - 18
M27	13 - 18
M32	18 - 25

* Consult Amphenol Industrial Operations

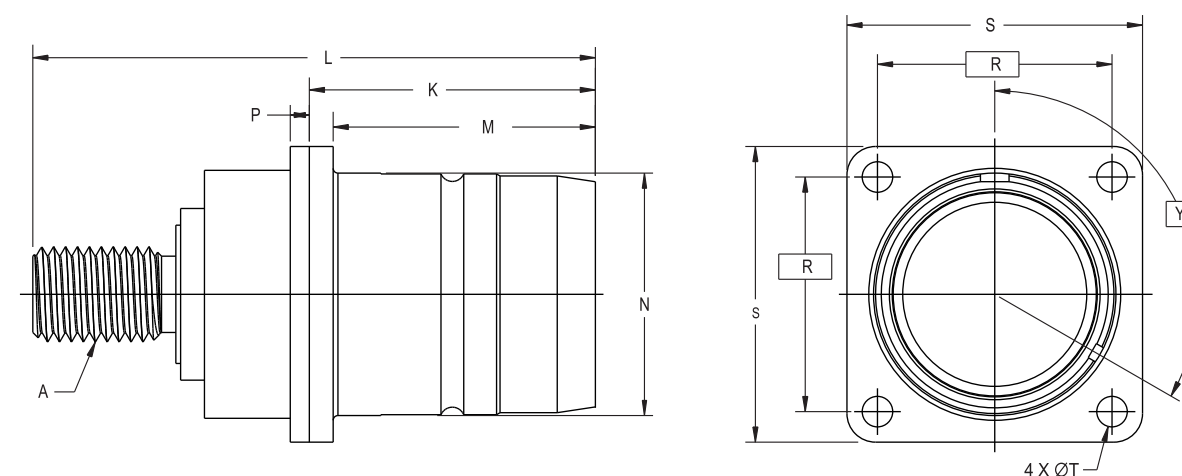
P3102E, BOX MOUNTING RECEPTACLE, CONTACTS WITH BUSBAR TYPE



* Consult Amphenol Industrial Operations

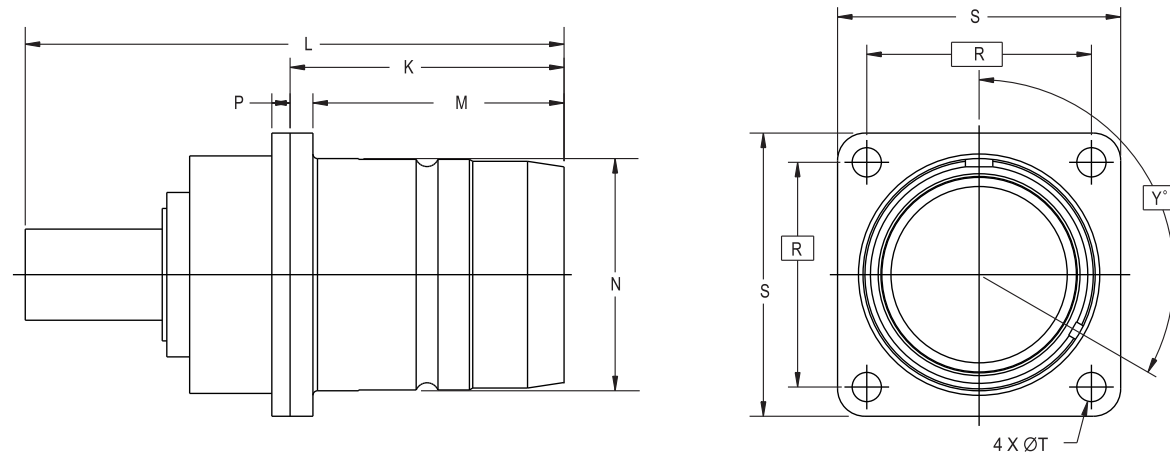
SHELL SIZE		F	G	H	J	K	L	M	N	P	R	S	T
14	32	3	6.5	10	4	30	76.5	Ø27.5	18.3	2	20	26	3.2
18	32	3	6.5	13	4	30	76.5	Ø27.5	22.3	2	23	30	3.2
20	32	3	6.5	14.5	4	30	76.5	Ø27.5	25.3	2	24.6	31	3.2
22	32	3	6.5	18	4	30	76.5	Ø27.5	28.3	2	27	35	3.2
28	37.6	4	7	24.5	8	45	97	Ø42	36.8	2	31.8	41	3.2

P3102E, BOX MOUNTING RECEPTACLE, CONTACTS WITH SCREW TYPE



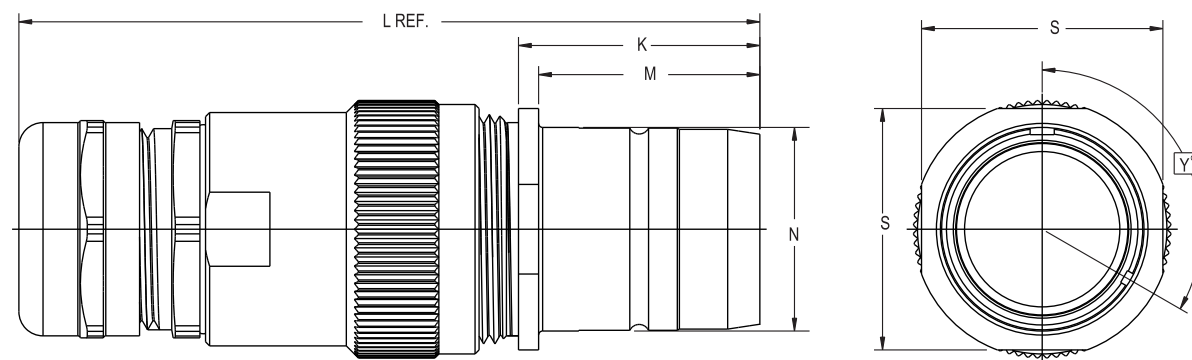
SHELL SIZE	A THREAD	K	L	M	N	P	R	S	T
14	M6 X 1 - 6g	30	55	27.5	Ø18.3	2	20	26	3.2
18	M8 X 1 - 6g	30	60	27.5	Ø22.3	2	23	30	3.2
20	M10 X 1.25 - 6g	30	59	27.5	Ø25.3	2	24.6	31	3.2
22	M12 X 1.5 - 6g	30	65	27.5	Ø28.3	2	27	35	3.2
28	M14 X 1.5 - 6g	45	90	42	Ø36.8	2	31.8	41	3.2

P3102E, BOX MOUNTING RECEPTACLE, WITH CRIMP CONTACTS



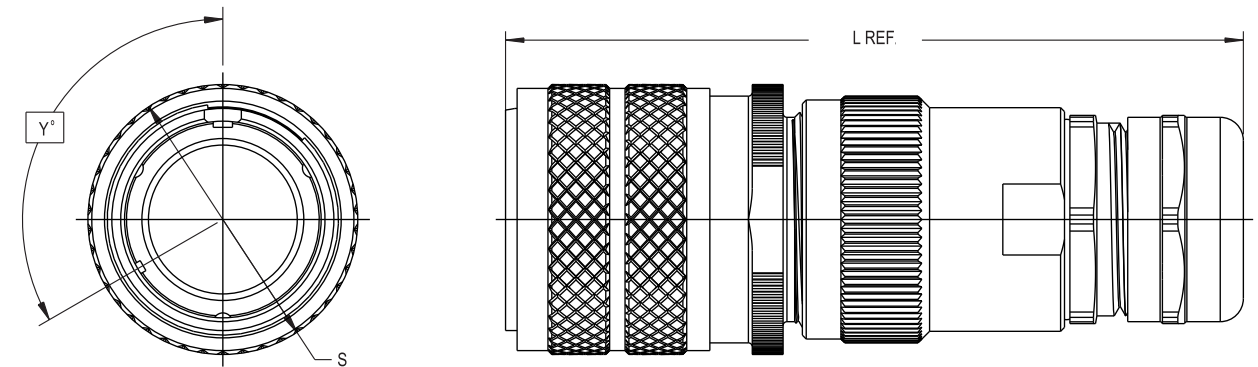
SHELL SIZE	K	L	M	N	P	R	S	T
14	30	55	27.5	Ø18.3	2	20	26	3.2
18	30	62.5	27.5	Ø22.3	2	23	30	3.2
20	30	57	27.5	Ø25.3	2	24.6	31	3.2
22	30	64.5	27.5	Ø28.3	2	27	35	3.2
28	45	83.5	42	Ø36.8	2	31.8	41	3.2

P3101E, IN LINE RECEPTACLE



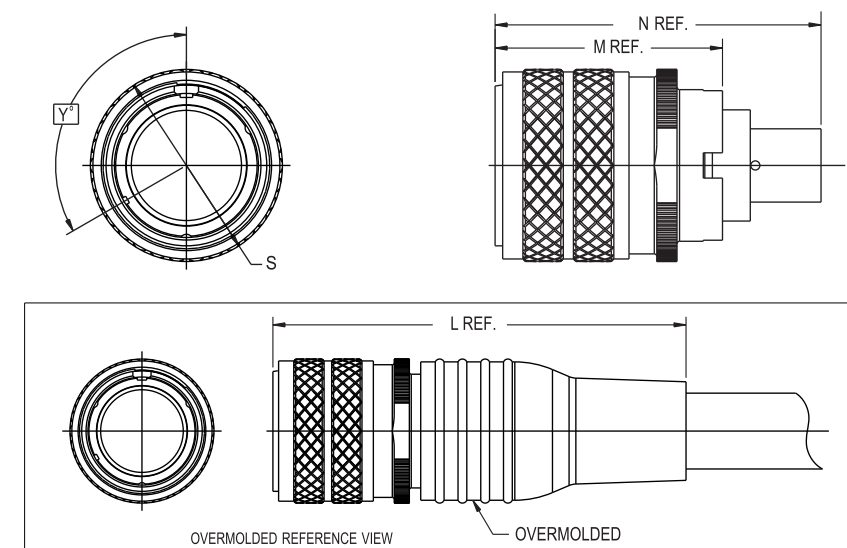
SHELL SIZE	K	L	M	N	S
14	30	100	27.5	Ø18.3	24
18	30	100	27.5	Ø22.3	28
20	30	100	27.5	Ø25.3	30
22	30	110	27.5	Ø28.3	32
28	45	130	42	Ø36.8	40

P3106E, STRAIGHT PLUG, WITH CABLE GLAND



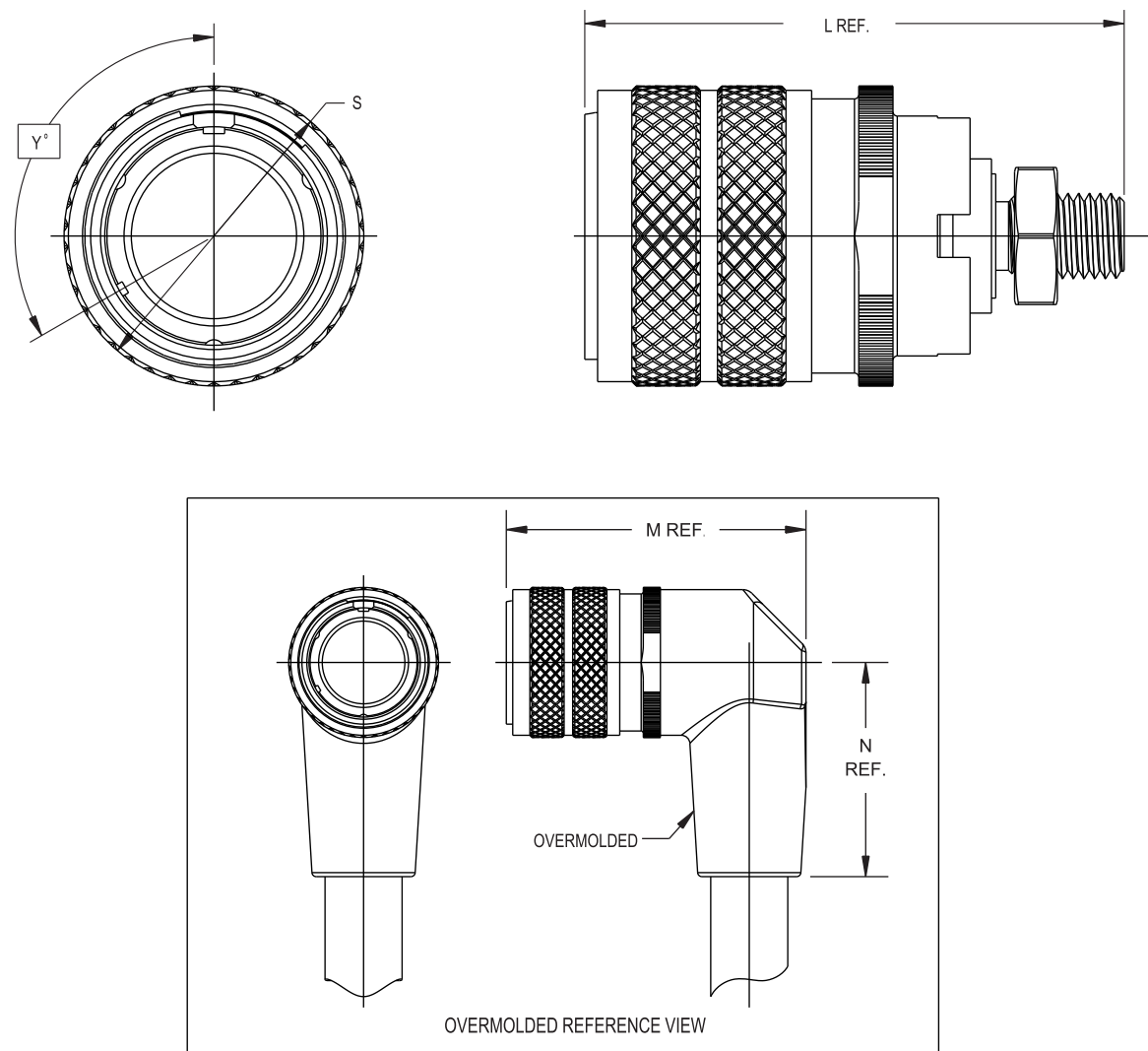
SHELL SIZE	L	S
14	100	28
18	100	32
20	100	35
22	110	38
28	135	48

P3106E, STRAIGHT PLUG, STRAIGHT OVERMOLDED



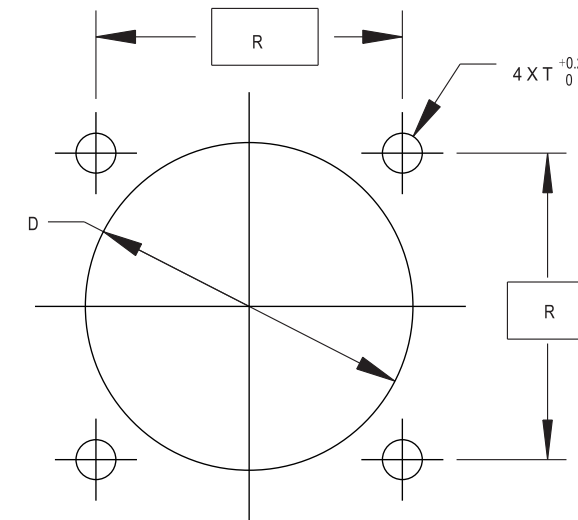
SHELL SIZE	L	M	N	S
14	100	45	60	28
18	100	45	62.5	32
20	100	45	61	35
22	110	45	64.5	38
28	130	60	83.5	48

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 RECOMMENDATIONS

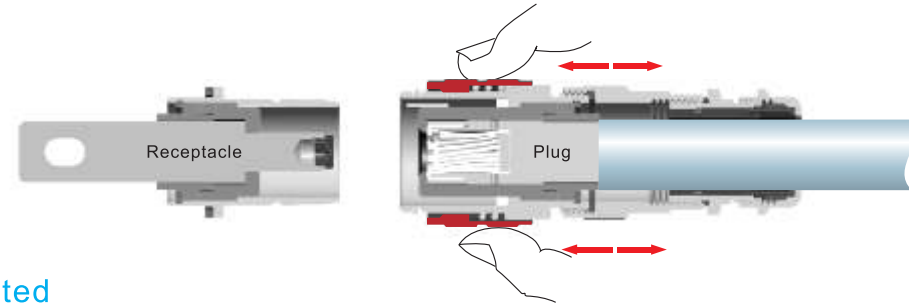


RECOMMENDATION PANEL CUT OUT

SHELL SIZE	D	R	T
14	Ø20.5	20	3.2
18	Ø24.5	23	3.2
20	Ø26.5	24.6	3.2
22	Ø30.5	27	3.2
28	Ø37.5	31.8	3.2

■ How Does it work?

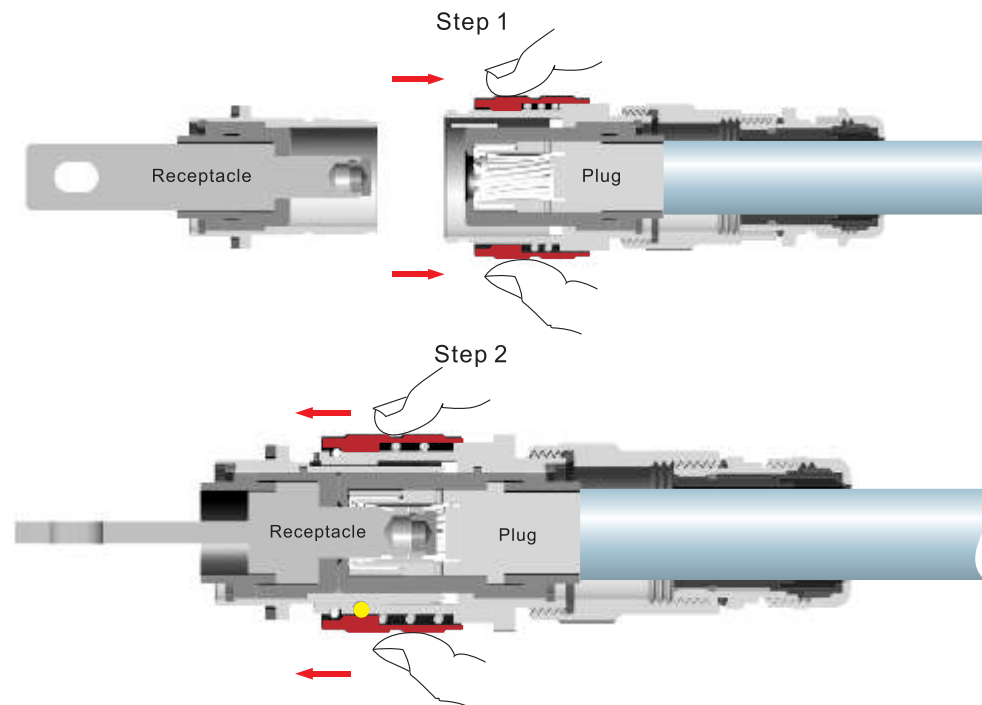
The plug has a coupling nut, which slides forward and backwards along the plug body



■ When Mated

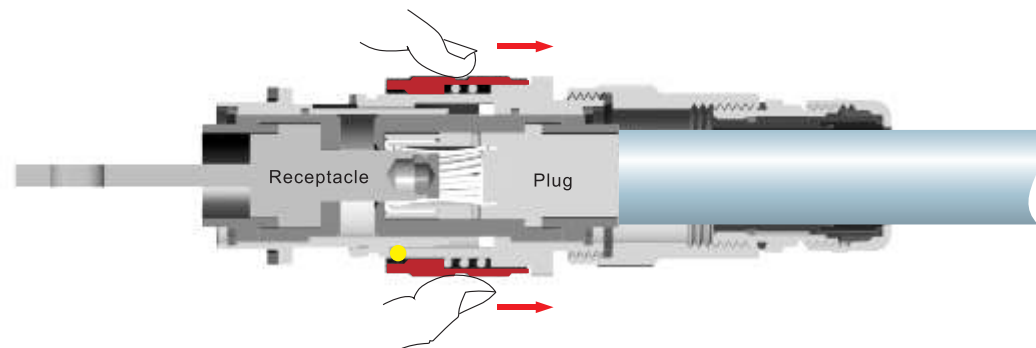
Step 1: pull back on the plug's coupling ring about 5 mm

Step 2: Align the single keyway on the plug to the key on the receptacle and push the halves together to create a locked



■ When Unplugging

To disengage the connector simply pull back on the plug's coupling ring, separating the connector ring



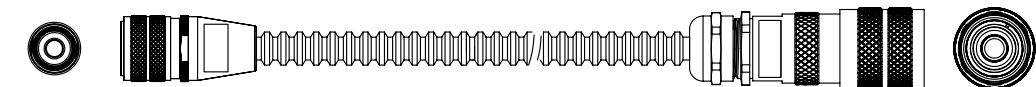
PUSH PULL, OVERMOLD

PRODUCT PERFORMANCE

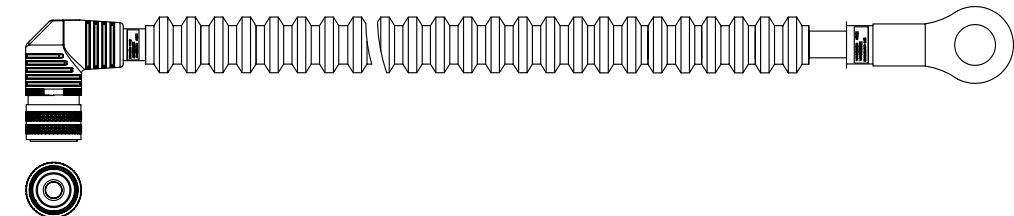
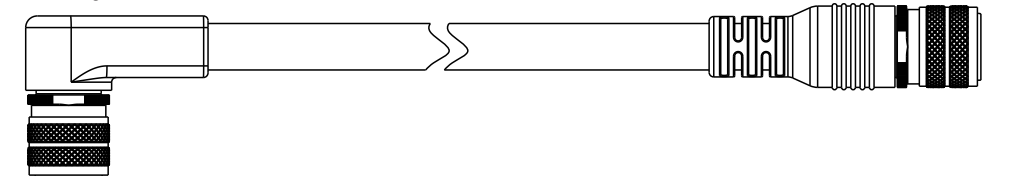
1. Cable sizes from 25mm² up to 70mm²
2. Bare copper or tinned copper best soft conductors.
3. Silicone insulation material that support -40°C to 125°C rating temperature
4. Up to 250a current rating and 600vac voltage rating
5. Straight to straight, straight to r/a, r/a to r/a overmolding connectors.
6. Rapid mate spring loaded, push to mate/unmate coupling system.
7. Ip 67 waterproof class.
8. Motion control, vision system, photographic lighting equipment applications.

Examples of cable assemblies

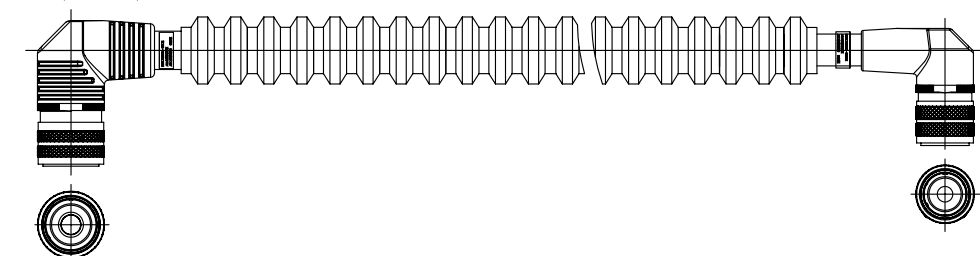
* Straight to straight



* Straight to R/A



* R/A to R/A



Amphe-Push Pull cable assembly Work Instruction

Install the connector components in order as the picture. Strip the wire insulation and crimp with the contact.



Insert the contact to connector, and insert the insulation insert to hold the terminal. See picture:



Install the retaining ring to fix the insert, then assembly the adapter and cable gland.



Flexible Cable for EV/HEV

Construction:

Conductor	1Core,Rope-Lay-Stranded Bare Copper/Tinned Copper						
MM2	16MM²	25MM²	30MM²	35MM²	50MM²	70MM²	90MM²
Construction	316/0.254	494/0.254	593/0.254	692/0.254	988/0.254	1384/0.254	1779/0.254
Stranded Dia.(+/-0.2mm)	5.63	7.46	7.79	8.56	10.50	12.80	14.37
Insulation	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone
Nom. Thinkness(mm)	1.00	1.20	1.20	1.20	1.40	1.40	1.60
Min. Thinkness(mm)	0.80	0.98	0.98	0.98	1.16	1.16	1.34
O.D..(+/-0.4mm)	7.73	9.98	10.31	11.08	13.44	15.74	17.73
Color	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Braided Overall Shield	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper
Coverage density(%)	85	85	85	85	85	85	85
Overall Jacked	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone
Nom. Thinkness(mm)	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Min. Thinkness(mm)	1.24	1.24	1.24	1.24	1.24	1.24	1.24
O.D..(+/-0.4mm)	12.13	14.58	14.91	15.68	17.82	20.34	22.33
Color	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Rated Voltage(V)	600	600	600	600	600	600	600
Rated Temperature(°C)	-40°C~125°C	-40°C~125°C	-40°C~125°C	-40°C~125°C	-40°C~125°C	-40°C~125°C	-40°C~125°C

Electrical Characteristics

Dielectric Strength(KV/5Min)	3.50	3.50	3.50	3.50	3.50	3.50	3.50
RoHS Compliant(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Construction:

Conductor	1Core,Rope-Lay-Stranded Bare Copper/Tinned Copper						
MM2	16MM²	25MM²	30MM²	35MM²	50MM²	70MM²	90MM²
Construction	510/0.20	798/0.20	960/0.20	1121/0.20	1596/0.20	2234/0.2	2873/0.2
Stranded Dia.(+/-0.2mm)	5.50	7.50	8.50	9.00	12.00	15.00	18.50
Insulation	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone	XLPO/Silicone
Nom. Thinkness(mm)	1.80	1.80	1.80	2.00	2.50	2.80	2.80
Min. Thinkness(mm)	1.50	1.50	1.50	1.50	1.50	1.60	1.60
O.D..(+/-0.4mm)	10.00	11.20	12.00	13.00	17.00	20.00	24.00
Color	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Rated Voltage(V)	1500	1500	1500	1500	1500	1500	1500
Rated Temperature(°C)	-40°C~150°C	-40°C~150°C	-40°C~150°C	-40°C~150°C	-40°C~150°C	-40°C~150°C	-40°C~150°C

Electrical Characteristics

Dielectric Strength(KV/5Min)	3.50	3.50	3.50	3.50	3.50	3.50	3.50
RoHS Compliant(Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes

