

SP MAX

POWER & SIGNAL CONNECTORS FOR RUGGED ENVIRONMENTS

- Developed specifically for power and signal management in military, space, satellite, and commercial air applications
- Precision machined shell, available in three sizes, provides EMI/RFI protection
- Combine a multitude of contact sizes in a single connector including #12, #16, #18, and #22 contacts
- Performance compatibility to EN4165 and DO-160



Positronic[®]
an Amphenol company

THE SCIENCE OF **CERTAINTY**[®]

M027 rev.A 23/02

FEATURES

- Liquid crystal polymer (LCP) insulators ensure proper operation from -55°C to 175°C
- Rated up to 35A per contact at 30°C temperature rise
- Integral blind mating allows for up to 2mm of offset
- Machined contacts in crimp, solder, or press-fit termination options
- Slim metal housing allows for heat dissipation and shielding
- Hardware options include angle brackets, boardlocks and jackscrews
- Sequential mating, selective loading, and customized contact positioning helps solve difficult application solutions

APPLICATIONS

- Power and signal I/O
- LRUs for military, space, satellite, and commercial air applications
- Ground-based, air/space transport, and operation in rugged environments (deep space complex and planetary-based communications)
- Battery and solar power distribution and management
- High-wattage switchable power supplies
- Inside-the-box power and signal distribution

TECH SPECS

GENERAL

Part Number Prefix	SM
Performance Level	Mil/Aero Spaceflight
Qualifications	FAR-25-853(a) FAR-25-855(d)
RoHS Compliance	Yes (by default)

MATERIAL AND FINISHES

Insulator	LCP
Insulator Color	Black
Flammability Rating	UL 94V-0
Contact Material	Copper alloy
Contact Plating	Gold flash 0.76µm Au (min) 1.27µm Au (min)
Shell Material	Aluminum

ELECTRICAL

Insulator Resistance	2.5 GΩ	
Proof Voltage (rms)	Up to 2200V	
Working Voltage (rms)	Up to 600V	
Initial Contact Resistance	As low as 0.5 mΩ	
Contact Current Rating at 30°C Temperature Rise	Standard Conductivity	High Conductivity
Size 12	27A	35A
Size 16	15A	21A
Size 18	13A	17A
Size 22	3A	

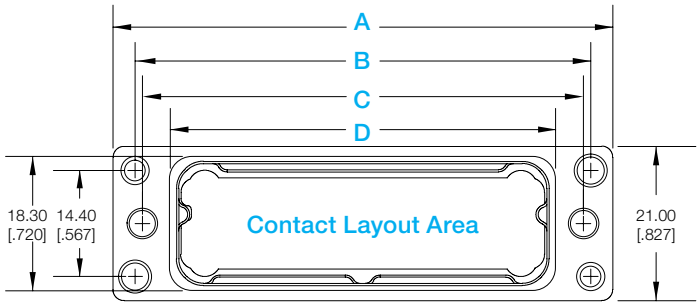
MECHANICAL

Shape	Rectangular
Body Style	Free cable Panel mount
Insulator Construction	One-piece
Locking System	Optional
Contact Style	Fixed Removable
Contact Size	#22 #18 #16 #12
Female Contact Design	Closed entry
Contact Retention Mechanism	Metal clip Press-in
Contact Retention	27N to 67N (6 lbs to 15 lbs)
Contact Termination	Wire PCB
Mating Cycles	500
Blind Mating Allowance	Up to 2mm offset
Shock	EIA 364-27 Condition D
Vibration	Random vibration per EN 60068-2-64 Method B Sine vibration per MIL-DTL-202 Procedure 204

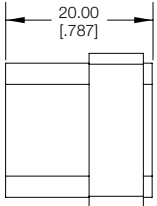
ENVIRONMENTAL

Operating Temperature	-55 to 175°C
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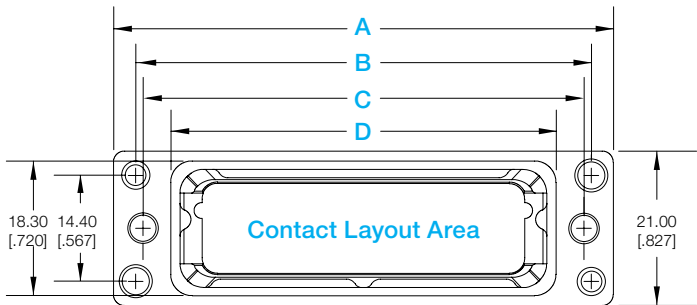
MALE FACE VIEW



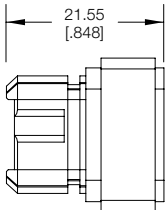
MALE SIDE VIEW



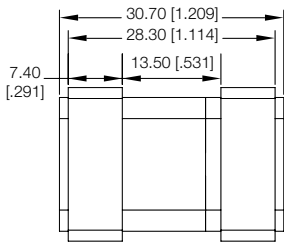
FEMALE FACE VIEW



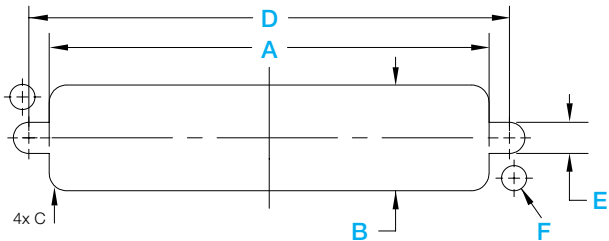
FEMALE SIDE VIEW



MATING VIEW

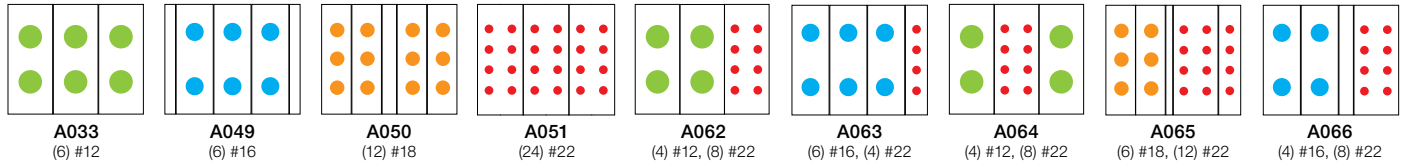


SHELL SIZE	Contact Layout Dimension	A	B	C	D
X	18.00 [0.709]	46.00 [1.811]	40.00 [1.575]	38.00 [1.496]	30.40 [1.197]
S	40.00 [1.574]	68.00 [2.678]	62.00 [2.441]	60.00 [2.363]	52.40 [2.063]
M	65.00 [2.362]	93.00 [3.662]	87.00 [3.426]	85.00 [3.347]	77.40 [3.048]



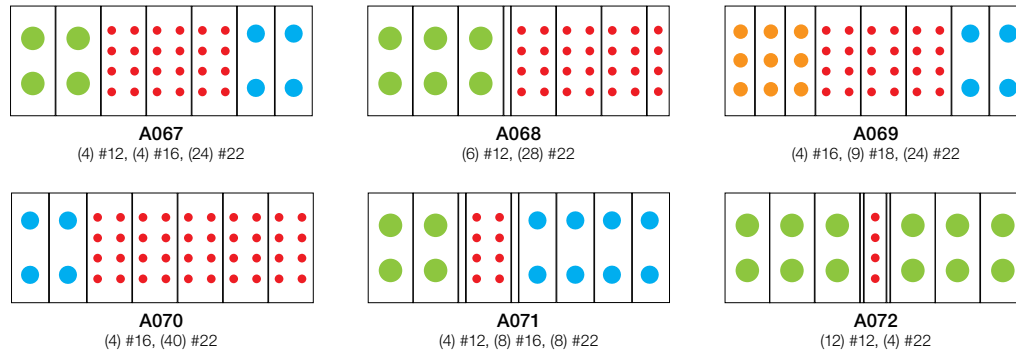
SHELL SIZE	A	B	C	D	E	F
X	30.80 [1.213]			38.00 [1.496]		
S	52.80 [2.078]	18.70 [0.736]	3.10 [0.122]	60.00 [2.362]	5.50 [0.216]	4.50 [0.177]
M	77.80 [3.063]			85.00 [3.346]		

Shell Size X



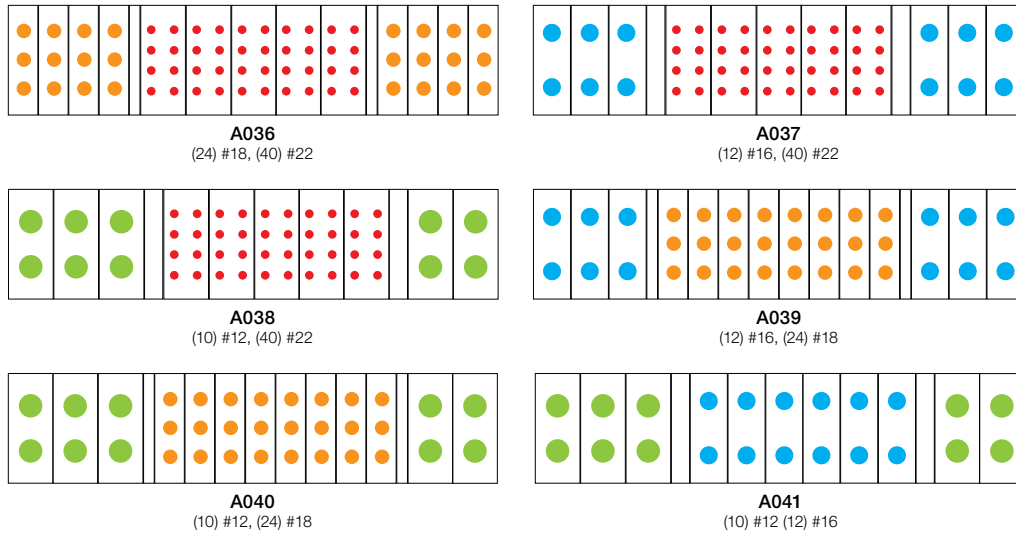
All 'X' modules measure 14.60 [.575] in height and 18.00 [.708] in length

Shell Size S



All 'S' modules measure 14.60 [.575] in height and 40.00 [1.574] in length

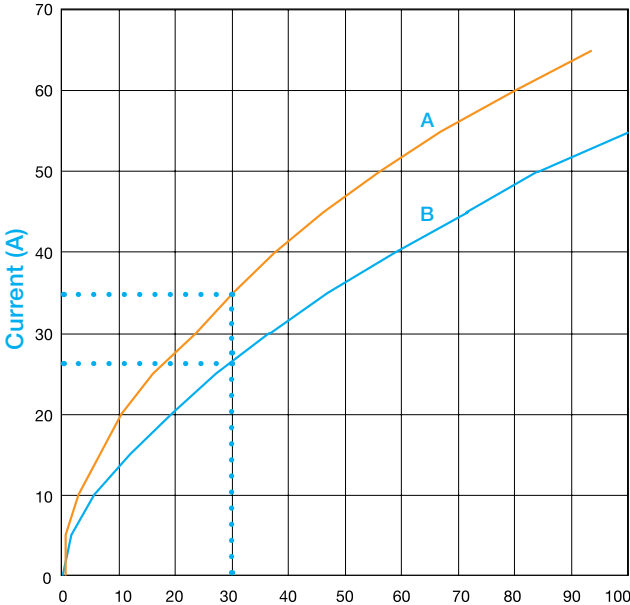
Shell Size M



All 'M' modules measure 14.60 [.575] in height and 65.00 [2.560] in length

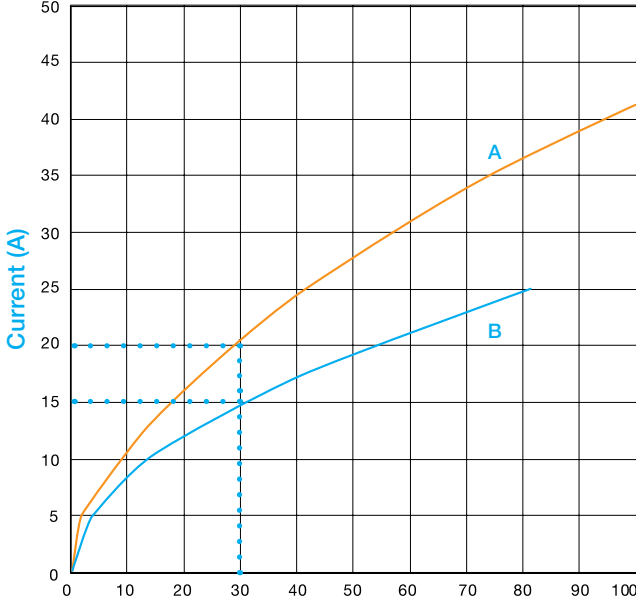
Contact Size Chart			
#12	#16	#18	#22

Tested per IEC Publication 60512-3, Test 5a



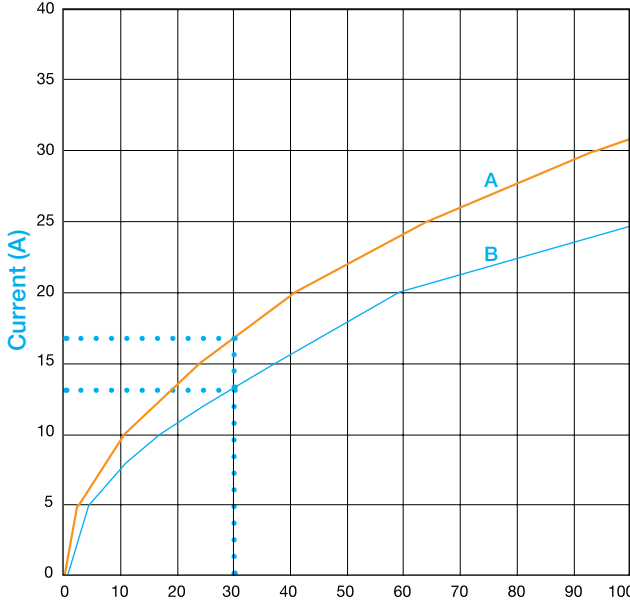
Size 12 Temperature rise (°C)

- A** Developed with (6) #12 high conductivity contacts
- B** Developed with (6) #12 standard conductivity contacts



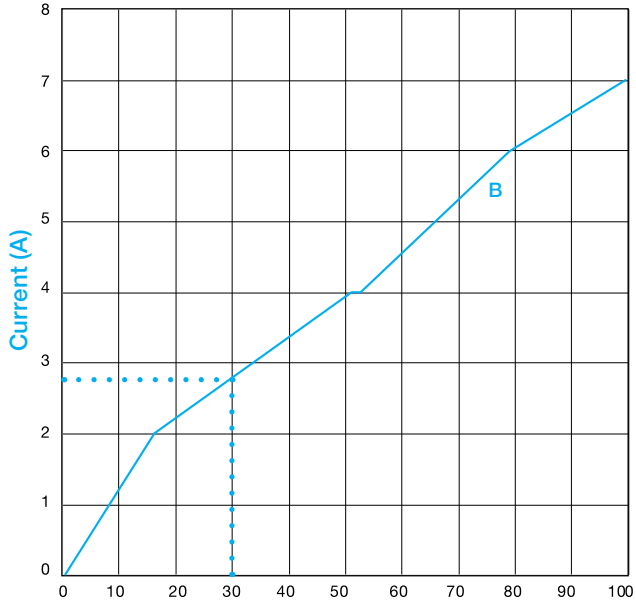
Size 16 Temperature rise (°C)

- A** Developed with (6) #16 high conductivity contacts
- B** Developed with (6) #16 standard conductivity contacts



Size 18 Temperature rise (°C)

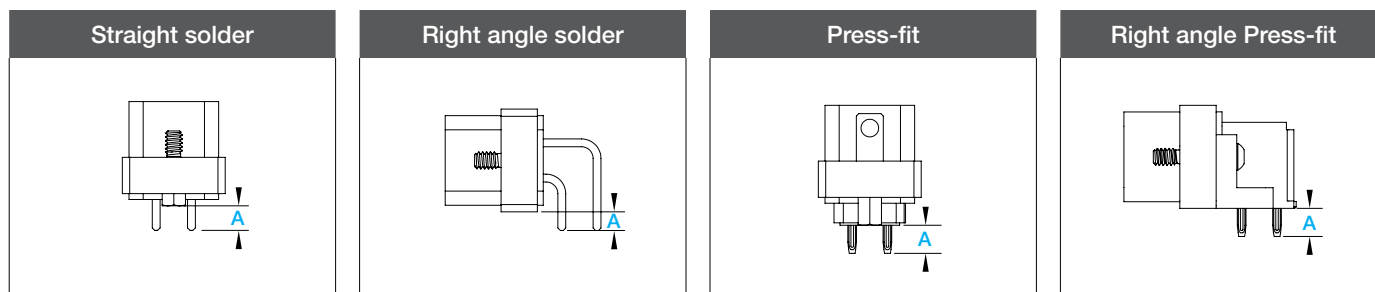
- A** Developed with (6) #18 high conductivity contacts
- B** Developed with (6) #18 standard conductivity contacts



Size 22 Temperature rise (°C)

- B** Developed with (6) #22 standard conductivity contacts

Positronic SP Max Contact Terminations



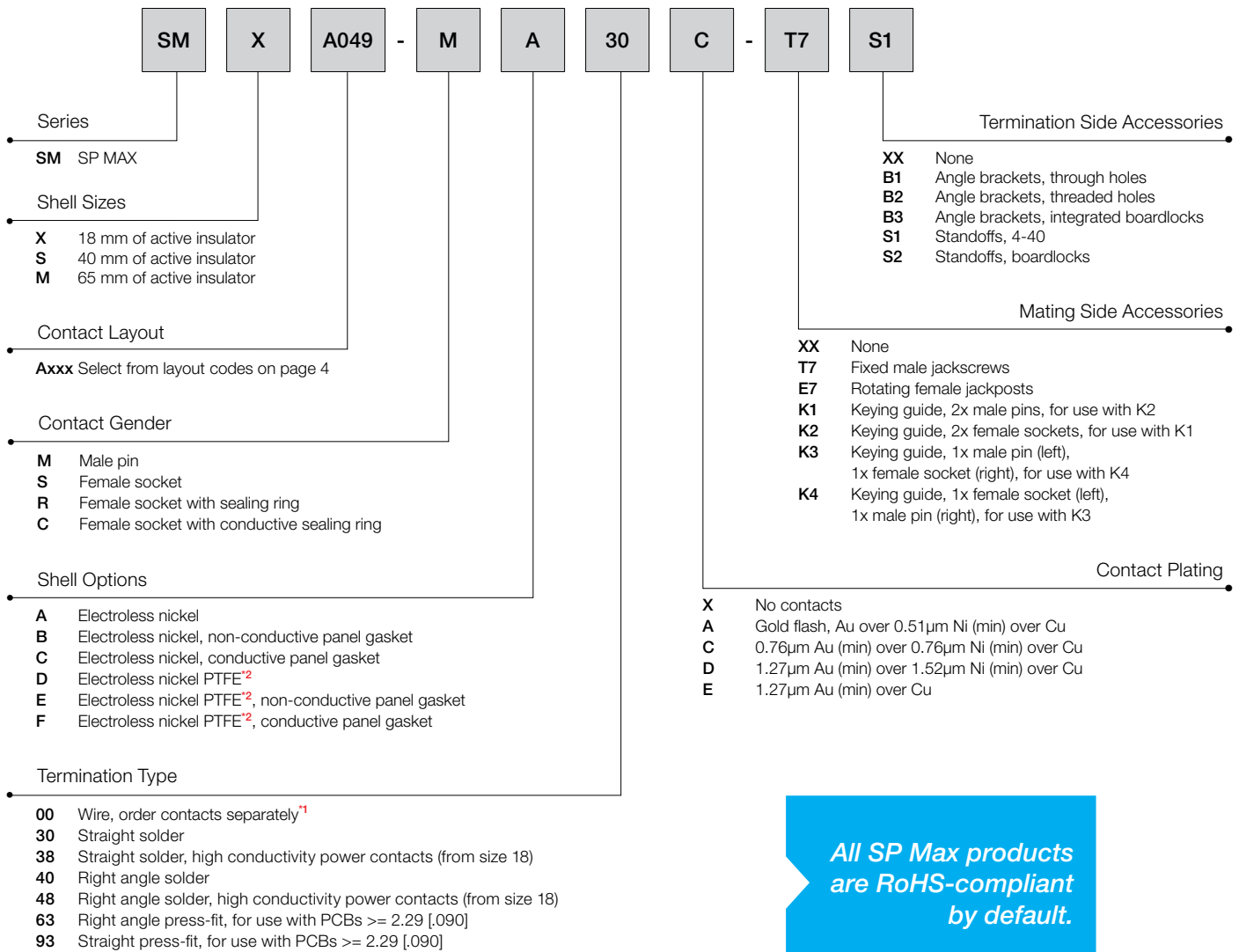
Code	Termination type	A
30	Straight solder	5.00 [.197]
38	Straight solder, high conductivity power contacts (from size 18)	5.00 [.197]
40	Right angle solder	5.00 [.197]
48	Right angle solder, high conductivity power contacts (from size 18)	5.00 [.197]
63	Right angle press-fit, for use with PCBs ≥ 2.29 [.090]	5.72 [.225]
93	Straight press-fit, for use with PCBs ≥ 2.29 [.090]	5.72 [.225]

Size	Standard Conductivity Female	High Conductivity Female	Stranded AWG [mm ²]
12	FC1210P2/AA	FC1210P2S/AA	#10 [6.0]
12	FC1212P2/AA	FC1212P2S/AA	#12 [4.0]
16	FC112P2/AA-PA907	FC112P2S/AA-PA907	#12 [4.0]
16	FC114P2/AA-PA907		#14-16 [2.5-1.5]
16	FC116P2/AA-PA907		#16-18-20 [1.5-1.0-0.5]
16	FC120P2/AA-PA907		#20-22-24 [0.5-0.3-0.25]
18	FC1816P2/AA	FC1816P2S/AA	#16-18 [1.5-1.0]
18	FC1820P2/AA	FC1820P2S/AA	#20 [0.5]
22	FC422P9/AA		#22-26 [0.3-0.12]

PLATING

Standard finish
Optional finishes

Gold flash over nickel plate.
0.76 μ m Au (min) over 0.76 μ m Ni (min) over Cu by adding "-14" suffix onto part number.
Example: FC1212P2/AA-14
1.27 μ m Au (min) over 1.52 μ m Ni (min) over Cu by adding "-15" suffix onto part number.
Example: FC1212P2/AA-15



All SP Max products are RoHS-compliant by default.

^{*1} Available on female connector only. Contact Technical Sales for availability of crimp contacts on male connector.

^{*2} Mating force improves when PTFE plating selected

COMING SOON!

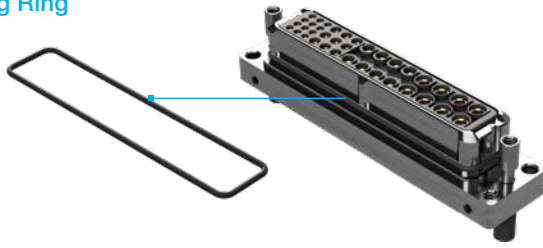
- MACHINED BACKSHELL
- MALE CRIMP CONNECTOR
- QUICK LOCKING SYSTEM
- FIBER OPTIC MT FERRULE



Positronic SP Max Accessories

SEALING RING / SHELL OPTIONS

Sealing Ring



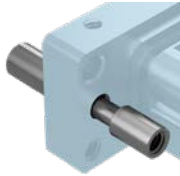
Conductive or non-conductive perimeter sealing ring for female connectors using code 'R' and 'C' in Contact Gender step

Gasket



Conductive or non-conductive panel gasket for shell using code 'B', 'C', 'E', 'F' in Shell Options step

MATING SIDE ACCESSORIES



E7

Rotating female jackposts



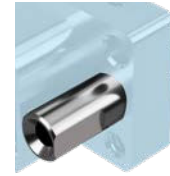
T7

Fixed male jackscrews



K1

Keying guide, 2x male pins, for use with K2



K2

Keying guide, 2x female sockets, for use with K1

K3

Keying guide, 1x male pin (left), 1x female socket (right), for use with K4



K4

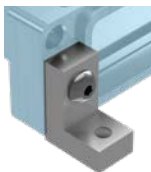
Keying guide, 1x female socket (left), 1x male pin (right), for use with K3



TERMINATION SIDE ACCESSORIES

B1

Angle brackets, through holes



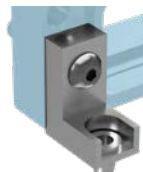
B2

Angle brackets, threaded holes



B3

Angle brackets, integrated boardlocks



S1

Standoffs, 4-40



S2

Standoffs, boardlocks



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