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General Information

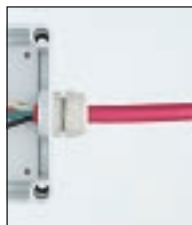
Liquid Tight Strain Reliefs (Cord Grips) serve two main purposes:

- A. Seal cable entries and keep contaminants from entering into enclosures.**
- B. Provide strain relief to reduce stress on components and termination points mounted inside of enclosures.**

Altech offers three Liquid Tight Strain Relief Series:

Standard

Offering an excellent price / performance ratio. Suitable for most applications. Widely used.



1. Straight-Through

High Performance

Excellent for demanding applications, special requirements, and tough environmental conditions.



2. Increased Strain

Economy

Suitable for basic applications.



3. Bend Protection

Functions

Altech Cord Grips are available for a wide range of functions:

- 1. Straight-Through
- 2. Increased Strain Relief
- 3. Bend Protection
- 4. Pull / Bend Protection
- 5. Multi-Conductor
- 6. Flat Cable
- 7. EMI / RFI



4. Pull / Bend Protection

PG and NPT Threads

Most Cord Grips are available with PG and NPT external threads. Metric sizes and extended length thread versions are available. Please consult Altech.

Cable and Cord Types

Use Liquid Tight Strain Reliefs with almost any type of cable, cord or conductor — solid, stranded, flat, shielded, high temperature, etc.



5. Multi-Conductor

Wide Range of Materials

Altech provides Cord Grips in a wide range of Body and Sealing materials to meet difficult environmental conditions. Please see the next page for available materials, functions and protection ratings.



6. Flat Cable



7. EMI / RFI

Temperature Rating

Temperature ratings for Cord Grip materials of construction are listed throughout the catalog. Please see each ordering page for specific temperature ratings.

To determine the minimum / maximum usable temperature rating of any Cord Grip combination, compare the individual temperature rating of each component and use the rating of the component with the lesser temperature as the limiting factor.

Ready for Installation

Cord Grips are supplied complete and ready to install.

Accessories

Altech offers Locknuts, Seal Rings, Socket Wrenches and Sealing Plugs for Cord Grips. Order Locknuts and Seal Rings separately as required. Refer to pages 52 to 54 for more information.

Technical Data

General technical data can be found on pages 5 through 10. Specific technical information can be found in the Intro Section for each product group and the ordering pages.

How to Select Cord Grips

To properly select Altech Cord Grips, the following should be considered.

Protection Rating

Determine the Protection Rating Required. Refer to Chart I "International Protection (IP) Codes" and Chart II "NEMA / IP Cross Reference" on page 6. Protection Ratings are listed in on each ordering page.

Material

Select a Cord Grip that will withstand expected environmental conditions. Refer to Chart III, "Chemical Resistance" and Chart IV, "Selection Criteria" on page 7.

Function

Refer to Chart V "Possible Combinations of Body and Sealing Materials by Function" on pages 8 and 9.

Thread Definitions for Cord Grips

PG

Current European Standard. Large installed base, widely used. Use with PG Locknuts.

NPT

National Pipe Thread (US). Use with NPT Locknuts.

Metric

Future European Standard. Will be phased in for PG after 1998. Not commonly used at this time and not always readily available. Not shown in this catalog. Please contact Altech for availability.

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Sealing Sleeve



Tubular Sealing Insert



Sealing Ring

Body Materials

- Polyamide (PA)
- Brass, Nickel Plated (BN)

Sealing Sleeve Material

- Neoprene (NE)

Sealing Insert Material

- Multi-Conductor: PVC Polyvinylchloride (PV)
- Flat Cable: Neoprene (NE)

Functions

- Straight-Through
- Pull / Bend
- Multi-Conductor
- Bend
- Flat Cable

Protection Rating

Up to IP68
(NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13)¹

Body Materials

- Polyamide (PA)
- PVDF Polyvinylidene (PO)
- Brass, Nickel Plated (BN)
- Stainless Steel (SS)

Tubular Sealing Insert Materials

- PVC Polyvinylchloride (PV)
- Santoprene (ST)
- TPE Polyolefin (TP)
- Silicone (SI)

Functions

- Straight-Through
- Pull / Bend
- Multi-Conductor
- Increased Strain Relief
- Bend
- Flat Cable
- EMI / RFI

Protection Rating

Up to IP68
(NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13)¹

Pressure Rating

Up to 10 Bar (140 psi)

Body Materials

- Polystyrene (PS)
- Brass, Nickel Plated (BN)

Sealing Ring Material

- Rubber (RU)

Function

- Straight-Through

Protection Rating

Up to IP55
(NEMA 1, 2, 5, 12, 13)¹

¹Please refer to Chart I, IP Codes and Chart II, NEMA Codes on page 6.

INSTALLATION

Liquid Tight Strain Reliefs can be installed into threaded or nonthreaded holes (order Locknuts separately for installation in nonthreaded holes). Locknuts are shown on the ordering pages for each product and on page 54. For Mounting Hole Diameters refer to the dimensional information on each ordering page. If installation is into threaded holes, please contact Altech for required Hole Diameters and tap sizes.

Once the Cord Grip is mounted, insert cable(s) or cord(s) and tighten the Pressure Nut or Pressure Dome.

For high density installation of Cord Grips, please refer to the Installation Worksheet on page 55 for minimum clearance distances. Socket Wrenches for installing Cord Grips are shown on page 53.

Recommended Tightening Torques

- Use torque listed for Cord Grip installation in threaded or nonthreaded holes
- Use 2/3 of the listed torque to fasten Pressure Dome



2



3



4



5

Recommended Tightening Torques

External Thread	Metal Nm (lbin)	Nonmetallic Nm (lbin)
PG7	6.25 (55.31)	2.50 (22.12)
PG9	6.25 (55.31)	3.75 (33.19)
PG11	6.25 (55.31)	3.75 (33.19)
PG13.5	6.25 (55.31)	3.75 (33.19)
PG16	7.50 (66.37)	5.00 (44.25)
PG21	10.00 (88.50)	7.50 (66.37)
PG29	10.00 (88.50)	7.50 (66.37)
PG36	10.00 (88.50)	7.50 (66.37)
PG42	10.00 (88.50)	7.50 (66.37)
PG48	10.00 (88.50)	7.50 (66.37)
NPT3/8	6.25 (55.31)	3.75 (33.19)
NPT1/2	6.25 (55.31)	3.75 (33.19)
NPT3/4	10.00 (88.50)	7.50 (66.37)

CHART I

International Protection (IP) Ratings to IEC 529

First digit of IP Number - Ingress of foreign objects			Second digit of IP Number - Ingress of water								
			IP 0	IP 1	IP 2	IP 3	IP 4	IP 5	IP 6	IP 7	IP 8
	Meaning for the protection of equipment against ingress of solid foreign objects	Meaning for the protection of persons against access to hazardous parts with	Non-protected	Protected against vertically falling water drops.	Protected against vertically falling water drops when device is tilted up to 15°	Water sprayed at an angle up to 60° on either side of the vertical shall have no harmful effects	Water splashed from any direction shall have no harmful effects	Water projected in jets from any direction shall have no harmful effects	Water projected in powerful jets from any direction shall have no harmful effects	Protected against temporary immersion	Protected against continuous immersion
IP 0	non-protected	non-protected	IP 00								
IP 1	Protected against solid foreign objects larger in diameter than 50mm (1.97 in.)	Protected against access to hazardous parts with the back of the hand	IP 10	IP 11	IP 12						
IP 2	Protected against solid foreign objects larger in diameter than 12.5mm (.49 in.)	Protected against access to hazardous parts with a finger	IP 20	IP 21	IP 22	IP 23					
IP 3	Protected against solid foreign objects larger in diameter than 2.5mm (.10 in.)	Protected against access to hazardous parts with a tool larger in diameter than 2.5 mm (.10 in.)	IP 30	IP 31	IP 32	IP 33	IP 34				
IP 4	Protected against solid foreign objects larger in diameter than 1.0mm (.04 in.)	Protected against access to hazardous parts with a wire larger in diameter than 1.0mm (.04 in.)	IP 40	IP 41	IP 42	IP 43	IP 44				
IP 5	Ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety	Protected against access to hazardous parts with a wire larger in diameter than 1.0mm (.04 in.)					IP 54	IP 55			
IP 6	No ingress of dust	Protected against access to hazardous parts with a wire larger in diameter than 1.0mm (.04 in.)							IP 66	IP 67	IP 68

Note: Protection Rating for each product is shown on ordering page.

CHART II

NEMA / IP Cross Reference

The chart below provides a cross-reference from NEMA to International Protection (IP) Ratings. This cross-reference is an approximation based on the most current information available. It is not sanctioned by NEMA, IEC, or any other regulatory body. This chart should be used only as a guideline.

IEC 529 Protection Ratings	NEMA Ratings									
	1	2	3	3R	4	4X	5	6	12	13
IP00	↓	↓								
IP10										
IP11										
IP 20										
IP 21										
IP 22										
IP 23										
IP 30										
IP 31										
IP 32										
IP 33										
IP 40										
IP 41										
IP 42										
IP 43										
IP 50										
IP 51										
IP 52										
IP 53										
IP 54										
IP 55										
IP 56										
IP 60										
IP 61										
IP 62										
IP 63										
IP 64										
IP 65										
IP 66										
IP 67										
IP 68										

CHART III CHEMICAL RESISTANCE

		BODY MATERIAL						SEALING INSERT MATERIAL						SEAL RING MATERIAL		
		Polyamide (PA)	PVDF Polyvinylidene (PO)	Polystyrene (PS)	Brass, Nickel Plated (BN)	Stainless Steel (SS)	Neoprene (NE)	Santoprene (ST)	PVC Polyvinylchloride (PV)	Rubber (RU)	Silicone (SI)	TPE Polyolefin (TP)	Polyethylene (PE)	Centellen (CE)	Silicone (SI)	Perbunan (PR)
*	●	*	●	●	○	○	*	○	○	○	●	●	○	●	#1 Fuel Oil	
●	●	○	●	●	○	○	○	○	○	○	●	●	○	○	#2 Fuel Oil	
○	●	○	●	●	●	●	*	●	○	*	*	*	○	○	Acetone	
●	●	●	●	●	*	○	●	●	●	●	*	*	●	*	Ammonia	
*	*	●	●	●	○	○	○	○	○	○	○	○	○	○	ASTM #1 Oil	
*	*	●	●	●	○	○	○	○	○	○	○	○	○	○	ASTM #3 Oil	
●	●	○	●	●	○	○	○	○	○	○	*	○	○	*	Benzene	
*	*	*	●	●	○	○	*	●	●	○	○	○	*	○	Brake Fluid	
●	●	●	●	●	*	○	○	○	○	○	○	○	*	*	Caustic Soda 50%	
*	●	○	●	●	○	○	○	○	*	○	*	○	*	*	Chlorine Water 10ppm	
*	*	*	●	●	○	○	*	○	*	○	*	○	○	*	Cutting Fluids	
●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	Gasoline	
*	*	*	●	●	○	○	*	○	○	○	○	○	○	○	Hydraulic Oil	
○	*	●	●	●	○	○	*	○	○	○	○	○	○	○	Isopropyl Alcohol	
○	*	●	●	●	○	○	*	○	○	○	○	○	○	○	Lacquer Thinner	
○	*	●	●	●	○	○	*	○	○	○	○	○	○	○	Lactic Acid	
○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	Methyl Alcohol	
○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	Mineral Oil	
○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	Mineral Spirits	
○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	Nitric Acid 25%	
○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	Muriatic Acid 10%	
○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	Phosphoric Acid 25%	
○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	Sulfuric Acid 25%	
○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	Toluene	
○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	Turpentine	
○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	Vegetable Oils & Fats	

Use this Table as a guide to determine whether the materials intended to be used are suitable for your application.

Please note that the Chemical Resistance can only be used as a guideline. Material properties can change with temperature, humidity, etc.

Contact Altech if you have any questions or need help in selecting materials.

Key

- = Good Resistance
- = Limited Resistance
- = Not Recommended
- * = Consult Altech

Selection Criteria	STANDARD		HIGH PERFORMANCE				ECONOMY	
	PA	BN	PA	PO	BN	SS	PS	BN
Liquid Tight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strain Relief	●	●	●	●	●	●	○	○
Corrosion Resistance	●	●	●	●	●	●	●	●
Chemical Resistance	○	●	○	○	○	○	○	○
Quick Installation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Selection of Colors	Yes	-	Yes	Yes	-	-	No	-
Pressure Dome/Nut	Dome	Dome	Dome	Dome	Dome	Dome	Nut	Nut
Fully Insulated	Yes	○	Yes	Yes	○	○	Yes	○
Rubber Sealing Ring	-	-	-	-	-	-	Yes	Yes
Sealing Sleeve	Yes ³	Yes ³	-	-	-	-	-	-
Tubular Sealing Insert	-	-	Yes	Yes	Yes	Yes	-	-
Preinstalled Seal Ring	PG29 - PG48	Yes	No	No	Yes	Yes	No	No
Integral Sealing Ridges	PG7 - PG21	No	No	No	No	No	No	No
Protection- IEC ¹	IP68	IP68	IP68	IP68	IP68	IP68	IP55	IP55
Protection- NEMA ¹	1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13	1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13	1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13	1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13	1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13	1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13	1, 2, 5, 12, 13	1, 2, 5, 12, 13
Max. Temperature ²	100°C (212°F)	100°C (212°F)	100°C (212°F)	150°C (302°F) ²	200°C (392°F) ²	200°C (392°F) ²	65°C (149°F)	80°C (176°F)
Min. Temperature ²	-20°C (-4°F)	-40°C (-40°F)	-20°C (-4°F)	-40°C (-40°F) ²	-40°C (-40°F) ²	-60°C (-65°F) ²	-20°C (-4°F)	-20°C (-4°F)
Cable Diameter mm	2.0 - 44.0	2.0 - 44.0	5.0 - 44.0	4.0 - 44.0	4.0 - 44.0	4.0 - 40.0	5.0 - 47.0	5.0 - 47.0
Cable Diameter (in.)	(.08 - 1.73)	(.08 - 1.73)	(.20 - 1.73)	(.16 - 1.73)	(.16 - 1.73)	(.16 - 1.57)	(.20 - 1.85)	(.20 - 1.85)

¹Refer to page 6 for explanation. Refer to appropriate ordering pages for exceptions.

²Temperature may be limited by seal or body materials. Refer to each ordering page.

³Except for Multi-Conductor and Flat Cable Liquid Tight Strain Reliefs, which use a Sealing Ring.

CHART IV SELECTION CRITERIA

Key

- = Good
- = Limited

Material Key

- PS = Polystyrene
- PA = Polyamide
- PO = PVDF Polyvinylidene-fluoride
- BN = Brass, Nickel Plated
- SS = Stainless Steel

CHART V

POSSIBLE COMBINATIONS OF BODY AND SEALING MATERIALS BY FUNCTION

To simplify selection, possible material combinations are shown.
Please refer to the pages indicated for technical and ordering information.

1. Straight-Through

Sealing plus standard strain relief.



Sealing Material	STANDARD			HIGH PERFORMANCE			ECONOMY	
	Body Material	Polyamide (PA)	Brass, Nickel Plated (BN)	Polyamide (PA)	PVDF Polyvinylidene (PO)	Brass, Nickel Plated (BN)	Stainless Steel (SS)	Polystyrene (PS)
Neoprene (NE)	16	17						
PVC Polyvinylchloride (PV)			28	30	32	34		
Santoprene (ST)			29	31	33	35		
TPE Polyolefin (TP)				31	33	35		
Silicone (SI)				31	33	35		
Rubber (RU)							51	51

2. Increased Strain Relief

Sealing plus increased strain relief.



Sealing Material	STANDARD			HIGH PERFORMANCE			ECONOMY	
	Body Material	Polyamide (PA)	Brass, Nickel Plated (BN)	Polyamide (PA)	PVDF Polyvinylidene (PO)	Brass, Nickel Plated (BN)	Stainless Steel (SS)	Polystyrene (PS)
Neoprene (NE)		19						
PVC Polyvinylchloride (PV)			36	37	37			
Santoprene (ST)								
TPE Polyolefin (TP)								
Silicone (SI)								
Rubber (RU)	19							

3. Bend

Sealing plus bend protection and standard strain relief.



Sealing Material	STANDARD			HIGH PERFORMANCE			ECONOMY	
	Body Material	Polyamide (PA)	Brass, Nickel Plated (BN)	Polyamide (PA)	PVDF Polyvinylidene (PO)	Brass, Nickel Plated (BN)	Stainless Steel (SS)	Polystyrene (PS)
Neoprene (NE)	18							
PVC Polyvinylchloride (PV)			38	39	39			
Santoprene (ST)								
TPE Polyolefin (TP)								
Silicone (SI)								
Rubber (RU)								

4. Pull / Bend

Sealing plus bend protection and increased strain relief.



Sealing Material	STANDARD			HIGH PERFORMANCE			ECONOMY	
	Body Material	Polyamide (PA)	Brass, Nickel Plated (BN)	Polyamide (PA)	PVDF Polyvinylidene (PO)	Brass, Nickel Plated (BN)	Stainless Steel (SS)	Polystyrene (PS)
Neoprene (NE)		19						
PVC Polyvinylchloride (PV)			40		41			
Santoprene (ST)								
TPE Polyolefin (TP)								
Silicone (SI)								
Rubber (RU)	19							

5. Multi-Conductor

Sealing plus strain relief for multiple conductors, cables or cords of identical or different diameters.



Sealing Material	STANDARD			HIGH PERFORMANCE			ECONOMY	
	Body Material	Polyamide (PA)	Brass, Nickel Plated (BN)	Polyamide (PA)	PVDF Polyvinylidene (PO)	Brass, Nickel Plated (BN)	Stainless Steel (SS)	Polystyrene (PS)
Neoprene (NE)								
PVC Polyvinylchloride (PV)	20		42 - 45 ¹		42 - 45 ¹			
Santoprene (ST)								
TPE Polyolefin (TP)								
Silicone (SI)								
Rubber (RU)								

1. Multi-Conductor Bodies page 42; Multi-Conductor Inserts pages 43 - 45.

6. Flat Cable

Sealing plus strain relief for flat cables.



Sealing Material	STANDARD			HIGH PERFORMANCE			ECONOMY	
	Body Material	Polyamide (PA)	Brass, Nickel Plated (BN)	Polyamide (PA)	PVDF Polyvinylidene (PO)	Brass, Nickel Plated (BN)	Stainless Steel (SS)	Polystyrene (PS)
Neoprene (NE)	21							
PVC Polyvinylchloride (PV)			48 - 49 ²		49			
Santoprene (ST)								
TPE Polyolefin (TP)								
Silicone (SI)								
Rubber (RU)								

2. Flat Cable Bodies page 48; Flat Cable Inserts page 49.

7. EMI / RFI

Sealing and strain relief plus shielding against electromagnetic and radio frequency interference.



Sealing Material	STANDARD			HIGH PERFORMANCE			ECONOMY	
	Body Material	Polyamide (PA)	Brass, Nickel Plated (BN)	Polyamide (PA)	PVDF Polyvinylidene (PO)	Brass, Nickel Plated (BN)	Stainless Steel (SS)	Polystyrene (PS)
Neoprene (NE)								
PVC Polyvinylchloride (PV)								
Santoprene (ST)					47			
TPE Polyolefin (TP)								
Silicone (SI)								
Rubber (RU)								

How To Order Liquid Tight Strain Reliefs From Altech

We have provided this sample page to help you order Liquid Tight Strain Reliefs from Altech. This page provides you with information on how to read the ordering pages inclusive of a legend and abbreviations used, which are consistent throughout the catalog.

- STANDARD 1
- STRAIGHT-THROUGH 2
- Polyamide (PA) 3

- IP68 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13).
- PG, NPT standard. Metric available.
- Integral Sealing Ridges (Only PG7 to PG21 and NPT3/8 to NPT3/4). Order Seal Rings separately if required.
- Preinstalled Perbunan (PR) Seal Rings (Only PG29 to PG48).
- Standard Color: Light Gray and Black, Dark Gray available.

Temperature Ranges	
Body	Sealing Sleeve
Polyamide (PA)	Neoprene (NE)
-20 to 100°C (-4 to 176°F)	-20 to 80°C (-4 to 176°F)



4
5
6
7
Polyamide (PA)
with Neoprene (NE) Sealing Sleeve

Type	Cat. No.		Std.	Pk.	Cable Dia.		Mtg. Hole Dia. ¹		Nearest Drill Size
	Lt. Gray	Black			mm	(in.)	mm	(in.)	
PG7 - S PA- 12 13 05	80.000	80.030		100	2.0- 5.0	(.08- .20)	13.0	(.51)	33/64
8 9 10 11 12 13 14	15	16		17	18	19	20	21	22

Legend

- 1- Product Group
- 2- Function
- 3- Body Material
- 4- Brief Description and Technical Info.
- 5- Photograph of Product
- 6- Photo Caption
- 7- Chart Headers
- 8- Thread Type and Size
- 9- Product Group
- 10-Function
- 11-Body Material
- 12-Body Color
- 13-Insert Material
- 14-Maximum usable Cable Diameter in millimeters rounded down to the nearest whole number
- 15 and 16 - Catalog Numbers
- 17-Standard Pack
- 18-Cable Diameter Range in millimeters
- 19-Cable Diameter Range in inches
- 20-Mounting Hole Diameter in millimeters
- 21-Mounting Hole Diameter in inches
- 22-Nearest suitable Drill Size for Mounting Hole

Standard Abbreviations					
Product Groups	Functions	Body Materials	Body Colors	Insert Materials	
S- Standard	S - Straight Through	BN - Brass, Nickel Plated	BD - Dark Blue	LG - Light Grey	NE - Neoprene
P- High Performance	I - Increased Strain Relief	PA - Polyamide	BE - Beige	MG - Medium Gray	PV - PVC Polyvinylchloride
E - Economy	B - Bend	PO - PVDF Polyvinylidene	BK - Black	OL - Olive	RU - Rubber
	P - Pull / Bend	PS - Polystyrene	BL - Light Blue	OP - Opaque	SI - Silicone
	M - Multi-Conductor	SS - Stainless Steel	BM - Medium Blue	OR - Orange	ST - Santoprene
	F - Flat Cable		BR - Brown	RD - Red	TP - TPE Polyolefin
	E - EMI / RFI		DG - Dark Gray	TN - Tan	
			GR - Green	TU - Turquoise	
			IV - Ivory	WT - White	

Product Bulletin

Introducing Pulsotronic Proximity Sensors. . . The Newest Addition to Altech Corp.'s Line of Control and Automation Products!

Altech / Pulsotronic now offer a comprehensive line of Proximity Sensors to satisfy today's diverse sensor applications. Our sensors are used for a wide range of functions in industrial plants and machinery. Typical applications of our sensors include automatic machinery, conveyor systems, machine tools, packaging machines, production lines, robotic systems, etc.

Altech / Pulsotronic Proximity Sensors are available in DC (PNP and NPN) and AC, n.o./n.c. and flush and non-flush configurations. They are available in Tubular, Limit, Block and Ring models.



Proximity Sensor in a conveyer application.



Pulsotronic Proximity Sensors:

- π 25 years of proven quality and reliability
- π Pulsotronic manufacturing is ISO 9001 Certified
- π Selection of Quick Disconnects
- π Choose from Tubular, Limit, Block, and Ring Sensors
- π Immediate delivery of most models
- π New line of rotatable, 25-position Limit Style Sensors now available
- π Short circuit, overload, and reverse polarity protection

Specifications:

- π Digital output standard. Linear output available
- π Meet or exceed IP67 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13) protection specifications
- π 10 - 30 VDC and 20 - 250 VAC, 120 - 500 mA current
- π 0.5mm to 1600mm (0.01 to 63 in.) sensing range

***To find out more about our new,
extensive line of Proximity
Sensors,***

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Offering an excellent price / performance ratio, the Standard Liquid Tight Strain Reliefs are suitable for a wide range of applications. They can be used with cables, cords, etc. in a wide range of diameters.

Select the most suitable Cord Grip for your application from a variety of Functions, Body and Sealing Insert material combinations.

Body Materials

- Polyamide (PA)
- Brass, Nickel Plated (BN)

Sealing Sleeve Material

- Neoprene (NE)

Sealing Insert Material

- Multi-Conductor: PVC
Polyvinylchloride (PV)
- Flat Cable: Neoprene (NE)

Functions

- Straight-Through
- Bend
- Pull / Bend
- Multi-Conductor
- Flat Cable

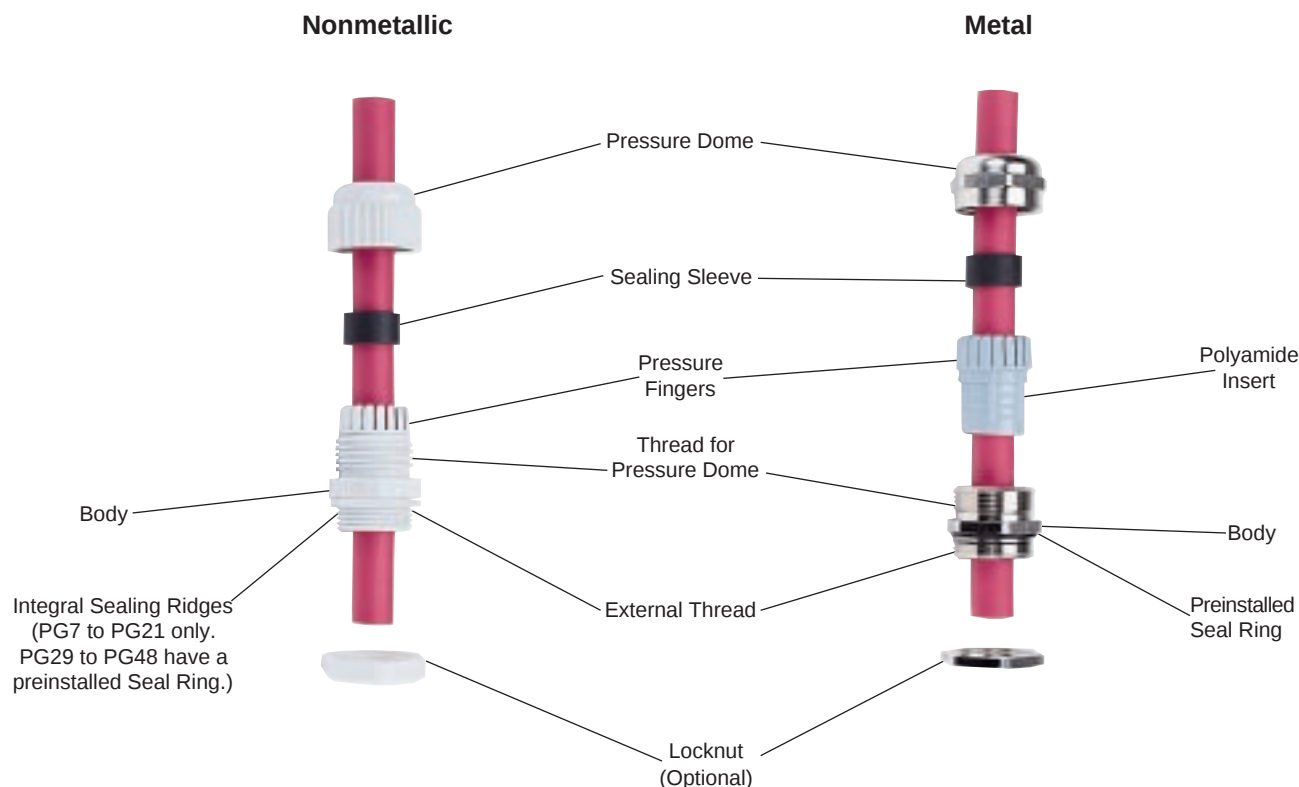
Protection Rating

Up to IP68

(NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13)

STANDARD

Standard Cord Grips are supplied complete and ready to install. The illustration below shows the various components of the Nonmetallic and the Metal Straight-Through Cord Grips. Basic functions for each component are described below.



Pressure Dome

The conical interior of the Pressure Dome transfers pressure to the Pressure Fingers when the Dome is tightened.

“Secur-Grip” grooves, molded into the outer surface of the Dome, provide a secure gripping surface (Polyamide (PA) types).

Pressure Fingers

Pressure Fingers are an integral part of the Cord Grip Body and Polyamide (PA) Insert (Brass, Nickel Plated (BN)) and are arranged concentrically. When the Pressure Dome is tightened, they push the Sealing Sleeve against the cable or cord and help provide sealing and strain relief functions.

Sealing Sleeve

The Sealing Sleeve is contained by the Pressure Fingers and a circular

groove inside the Body and Polyamide (PA) Insert. It provides strain relief and prevents rotation of the cable when the Pressure Dome is tightened.

Polyamide (PA) Insert

The Brass, Nickel Plated (BN) Cord Grip Body contains a Polyamide (PA) Insert with Pressure Fingers. Molded-in splines fit into grooves at the lower end of the Brass, Nickel Plated (BN) Body and prevent rotation of the insert and cable during installation.

External Seal

The External Seal provides a hermetic seal between the Cord Grip and the enclosure wall. Integral Sealing Ridges are standard on Polyamide (PA) Cord Grips sizes PG7 to PG21, and NPT 3/8, 1/2, 3/4 sizes. Sizes PG29 through PG48 have factory

installed Seal Rings. If required, Seal

Rings can also be used for sizes PG7 through PG21 and NPT 3/8, 1/2 and 3/4. Please refer to page 52 for ordering information.

All Standard Series Brass, Nickel Plated (BN) Cord Grips are delivered with preinstalled Perbunan (PR) Seal Rings.

External Thread

Most Standard Series Cord Grips are offered with external PG or NPT threads. For metric and extended length threads, please contact Altech.

Locknuts

Use Locknuts for installation into nonthreaded holes. Order Locknuts separately. Please refer to each ordering page or to page 54 for technical and ordering information.

Straight-Through *pages 16 and 17*

Provide a liquid-tight seal and reliable strain relief for most applications.



Sealing Function

The sealing function for the Polyamide (PA) and the Brass, Nickel Plated (BN) Cord Grips is identical.

When tightening the Pressure Dome, the conical interior surface applies pressure to the tips of the concentrically arranged Pressure Fingers, forcing them to move towards the center. This movement is transferred to the Sealing Sleeve, causing it to contract and provide a seal to the installed cable.

Installation

Please refer to page 5 to install Cord Grips.

Bend Protection *page 18*

Bend Protection Cord Grips provide standard Pull-Out (Strain Relief) plus Bend protection. The increased bending radius is achieved by a “Pigtail” extension, which reduces punctual stress and the possibility of cable/cord damage.



Sealing Function

Uses the same sealing function as Straight-Through Cord Grips.

Installation

Please refer to page 5 to install Cord Grips.

Pull / Bend Protection *page 19*

Trumpet-shaped Pull / Bend Cord Grips provide increased Strain Relief and Bend protection by increasing the bending radius of the cable/cord, reducing the possibility of cable/cord damage.



Polyamide (PA)



Brass, Nickel Plated (BN)

Sealing Function

When tightening the trumpet-shaped extension, the Neoprene (NE) (Brass, Nickel Plated (BN)) or Rubber (RU) Sealing Ring (Polyamide (PA)) is compressed, providing a seal to the installed cable.

Installation

Please refer to page 5 to install Cord Grips.

- 1. Install Cord Grip.
- 2. Loosen stainless steel screws and open clamp.
- 3. Insert cable/cord
- 4. Tighten trumpet-shaped Pressure Nut.
- 5. Tighten screws until cable/cord is securely installed.

	Function					
	Straight -Through		Bend	Pull / Bend		
Body Material	Polyamide (PA)		Brass, Nickel Plated (BN)	Polyamide (PA)		
Standard Color	Lt. Gray, Black	—	Lt. Gray, Black	Lt. Gray	—	—
Sealing Ring / Sleeve	NE	NE	NE	RU	NE	NE
Seal Ring Preinstalled	Yes†	Yes	No	No	No	No
Sizes	PG	PG7 - PG48	PG7 - PG48	PG7 - PG21	PG9 - PG29	PG9 - PG29
	NPT	NPT3/8-3/4	NPT 3/8-3/4	NPT3/8-3/4	—	—
Cable	mm	2.0 - 44.0	2.0 - 44.0	3.5 - 18.0	5.5 - 25.0	6.0 - 30.0
Diameter (in.)		(.08 - 1.73)	(.08 - 1.73)	(.14 - .71)	(.22 - .98)	(.24 - 1.18)

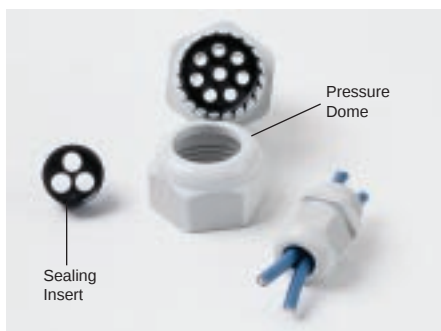
Key
NE = Neoprene
RU = Rubber
† = PG29 - PG48 only

Multi-Conductor page 20

For limited space applications when ever two or more cables, cords or conductors must be installed through a single Cord Grip.

Insert Sealing Inserts with premolded holes for cables, cords or conductors of identical diameters.

Use Sealing Plugs to seal unused holes, ensuring proper strain relief and IP54 (NEMA 1, 2, 5, 12, 13) protection for installed cables. Please refer to page 52.



Sealing Function

When tightening the Pressure Dome, the conical interior surface applies pressure onto the tips of the concentrically arranged Pressure Fingers, forcing them to move towards the center. This movement is transferred to the Sealing Insert, causing it to contract and seal the cables/cords or conductors.

Installation

Please refer to page 5 to install Cord Grips. Insert Cables after installing Cord Grips. Plug unused holes to obtain rated protection and strain relief after cables have been installed, but before tightening Pressure Dome.

Flat Cable page 21

Flat Cable for Cord Grips are typically used with festooning cables. The openings in the sealing insert have rounded corners to match the shape of the cable, providing a liquid tight seal and reliable strain relief.



Sealing Function

When the Pressure Nut is tightened, pressure is applied to the Galvanized Steel Washers. This pressure is transferred to the Sealing Insert, causing it to contract and seal the cable.

Installation

Please refer to page 5 to install Cord Grips.

1. Remove Pressure Nut, Washers and Sealing Insert.
2. Slide Pressure Nut, Washer 1, Sealing Insert and Washer 2 onto the Flat Cable.
3. Install the cable with the installed parts into the Cord Grip Body.
4. Tighten Pressure Nut.

	Function	
	Multi-Conductor	Flat Cable
Body Material	Polyamide (PA)	Polyamide (PA), Glass Fiber
Standard Color	Lt. Gray, Black	Lt. Gray
Sealing Ring / Sleeve	PV	NE
Seal Ring Preinstalled	Yes††	No
Sizes	PG11 - PG29	PG16 - PG48
PG	—	—
NPT	—	—
Cable mm	4.0 - 9.0	5x15-14x44
Diameter (in.)	.16 - .35	.20x.59-.63x1.73

Key
 PV = PVC Polyvinylchloride
 NE = Neoprene
 †† = PG29 only

Material And Temperature Ranges By Function

Straight-Through Polyamide (PA)

Body: Polyamide (PA)
 -20 to 100°C (-4 to 212°F)
 Sealing Sleeve: Neoprene (NE)
 -40 to 100°C (-40 to 212°F)

Brass, Nickel Plated (BN)

Body: Brass, Nickel Plated (BN)
 -40 to 300° C (-40 to 572°F)
 Sealing Sleeve: Neoprene (NE)
 -40 to 100°C (-40 to 212°F)
 Seal Ring: Perbunan (PR)
 -20 to 120°C (-4 to 248°F)

Multi-Conductor

Body: Polyamide (PA)
 -20 to 100°C (-4 to 212°F)
 Sealing Insert: PVC Polyvinylchloride (PV)
 -20 to 80° C (-4 to 176°F)

Flat Cable

Body: Polyamide (PA) Glass-Fiber Reinforced
 -20 to 100°C (-4 to 212°F)
 Sealing Insert: Neoprene (NE)
 -40 to 100°C (-40 to 212°F)

Bend

Body: Polyamide (PA)
 -20 to 100°C (-4 to 212°F)
 Sealing Sleeve: Neoprene (NE)
 -40 to 100°C (-40 to 212°F)

Pull / Bend

Polyamide (PA)
 Body: Polyamide (PA) Glass-Fiber Reinforced
 -20 to 100°C (-4 to 212°F)
 Sealing Ring: Rubber (RU)
 -20 to 60°C (-4 to 140°F)

Brass, Nickel Plated (BN)

Body: Brass, Nickel Plated (BN)
 -40 to 300°C (-40 to 572°F)
 Sealing Sleeve : Neoprene (NE)
 -40 to 100°C (-40 to 212°F)
 Seal Ring: Perbunan (PR)
 -20 to 120°C (-4 to 248°F)

Accessories

Ordering information for Accessories is shown on each ordering page. Please refer to pages 52 through 54 for detailed information.

STANDARD STRAIGHT-THROUGH

Polyamide (PA)

- IP68 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13).
- PG, NPT standard. Metric available.
- Integral Sealing Ridges (Only PG7 to PG21 and NPT3/8 to NPT3/4). Order Seal Rings separately if required.
- Preinstalled Perbunan (PR) Seal Rings (Only PG29 to PG48).
- Standard Color: Light Gray and Black, Dark Gray available.

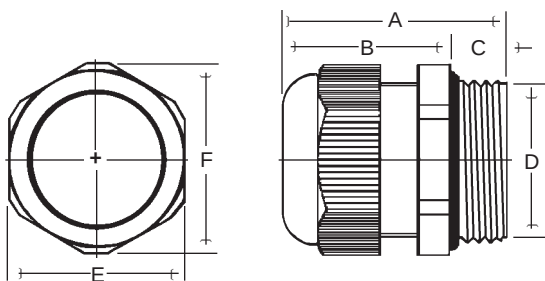
Temperature Ranges	
Body	Sealing Sleeve
Polyamide (PA)	Neoprene (NE)
-20 to 100°C (-4 to 212°F)	-40 to 100°C (-40 to 212°F)



Polyamide (PA) with Neoprene (NE) Sealing Sleeve

Liquid Tight Strain Reliefs (Cord Grips)									Seal Rings ³ Polyethylene (PE)		Locknuts ² Polyamide (PA)		
Type	Cat. No.		Std. Pk.	Cable Dia.		Mtg. Hole Dia. ¹		Nearest Drill Size	Cat. No. Opaque	Std. Pk.	Cat. No.		Std. Pk.
	Lt. Gray	Black		mm	(in.)	mm	(in.)				Lt. Gray	Black	
PG7-SSPA - 	NE 05	80.000	80.030	100	2.0- 5.0	(.08- .20)	13.0 (.51)	33/64	86.600	100	86.000	86.021	100
PG7-SSPA - 	NE 06	80.001	80.031	100	3.0- 6.5	(.12- .26)	13.0 (.51)	33/64	86.600	100	86.000	86.021	100
PG9-SSPA - 	NE 06	80.002	80.032	100	2.0- 6.0	(.08- .24)	15.5 (.61)	39/64	86.601	100	86.001	86.022	100
PG9-SSPA - 	NE 08	80.003	80.033	100	4.0- 8.0	(.16- .31)	15.5 (.61)	39/64	86.601	100	86.001	86.022	100
PG11-SSPA - 	NE 07	80.004	80.034	100	3.0- 7.0	(.12- .28)	19.0 (.75)	3/4	86.602	100	86.002	86.023	100
PG11-SSPA - 	NE 10	80.005	80.035	100	5.0-10.0	(.20- .39)	19.0 (.75)	3/4	86.602	100	86.002	86.023	100
PG13.5-SSPA - 	NE 09	80.006	80.036	100	5.0- 9.0	(.20- .35)	21.0 (.83)	53/64	86.603	100	86.003	86.024	100
PG13.5-SSPA - 	NE 12	80.007	80.037	100	6.0-12.0	(.24- .47)	21.0 (.83)	53/64	86.603	100	86.003	86.024	100
PG16-SSPA - 	NE 12	80.008	80.038	50	7.0-12.0	(.28- .47)	23.0 (.91)	29/32	86.604	50	86.004	86.025	50
PG16-SSPA - 	NE 14	80.009	80.039	50	10.0-14.0	(.39- .55)	23.0 (.91)	29/32	86.604	50	86.004	86.025	50
PG21-SSPA - 	NE 16	80.010	80.040	50	9.0-16.0	(.35- .63)	29.0 (1.14)	1-9/64	86.605	50	86.005	86.026	50
PG21-SSPA - 	NE 18	80.011	80.041	50	13.0-18.0	(.51- .71)	29.0 (1.14)	1-9/64	86.605	50	86.005	86.026	50
PG29-SSPA - 	NE 20	80.012	80.042	25	12.0-20.0	(.47- .79)	37.5 (1.48)	1-31/64	Preinstalled		86.006	86.027	25
PG29-SSPA - 	NE 25	80.013	80.043	25	18.0-25.0	(.71- .98)	37.5 (1.48)	1-31/64			86.006	86.027	25
PG36-SSPA - 	NE 26	80.014	80.044	10	20.0-26.0	(.79-1.02)	47.5 (1.87)	1-7/8			86.007	86.028	10
PG36-SSPA - 	NE 32	80.015	80.045	10	22.0-32.0	(.87-1.26)	47.5 (1.87)	1-7/8			86.007	86.028	10
PG42-SSPA - 	NE 38	80.017	80.047	5	30.0-38.0	(1.18-1.50)	54.5 (2.15)	2-5/32			86.008	86.029	5
PG48-SSPA - 	NE 44	80.019	80.049	5	34.0-44.0	(1.34-1.73)	60.0 (2.36)	2-3/8			86.009	86.030	5
NPT3/8-SSPA - 	NE 07	80.020	80.050	50	3.0- 7.0	(.12- .28)	17.5 (.69)	11/16	86.602	50	86.061	86.081	50
NPT3/8-SSPA - 	NE 10	80.021	80.051	50	5.0-10.0	(.20- .39)	17.5 (.69)	11/16	86.602	50	86.061	86.081	50
NPT1/2-SSPA - 	NE 12	80.022	80.052	50	7.0-12.0	(.28- .47)	21.5 (.85)	27/32	86.603	50	86.062	86.082	50
NPT1/2-SSPA - 	NE 14	80.023	80.053	50	10.0-14.0	(.39- .55)	21.5 (.85)	27/32	86.603	50	86.062	86.082	50
NPT3/4-SSPA - 	NE 16	80.024	80.054	25	9.0-16.0	(.35- .63)	27.0 (1.06)	1-1/16	86.605	25	86.063	86.083	25
NPT3/4-SSPA - 	NE 18	80.025	80.055	25	13.0-18.0	(.51- .71)	27.0 (1.06)	1-1/16	86.605	25	86.063	86.083	25

Body Color, Example: Light Gray **[LG]** or Black **[BK]**



Dimensions mm (in.)

Size	A	B	C	D	E	F
PG7	30.0 (.118)	22.0 (.87)	8.0 (.31)	12.5 (.49)	15.0	16.5 (.65)
PG9	33.5 (.132)	25.5 (1.00)	8.0 (.31)	15.2 (.60)	19.0	21.0 (.83)
PG11	36.0 (.142)	28.5 (1.12)	8.0 (.31)	18.6 (.73)	22.0	24.5 (.96)
PG13.5	38.5 (.152)	29.7 (1.17)	9.0 (.35)	20.4 (.80)	24.0	26.6 (1.05)
PG16	42.0 (.165)	32.0 (1.26)	10.0 (.39)	22.5 (.89)	27.0	30.0 (1.18)
PG21	47.5 (.187)	36.5 (1.44)	11.0 (.43)	28.3 (1.11)	33.0	36.6 (1.44)
PG29	53.5 (.211)	43.5 (1.71)	11.0 (.43)	37.0 (1.46)	42.0	46.3 (1.82)
PG36	66.5 (2.62)	54.0 (2.13)	13.0 (.51)	47.0 (1.85)	53.0	58.0 (2.28)
PG42	65.8 (2.59)	53.5 (2.11)	13.0 (.51)	54.0 (2.13)	60.0	66.0 (2.60)
PG48	69.5 (2.74)	55.7 (2.19)	14.0 (.55)	59.3 (2.33)	65.0	71.0 (2.80)
NPT3/8"	44.2 (1.74)	29.0 (1.14)	15.0 (.59)	17.2 (.68)	22.0	24.3 (.96)
NPT1/2"	46.0 (1.81)	31.3 (1.23)	15.0 (.59)	21.3 (.84)	27.0	29.6 (1.17)
NPT3/4"	51.6 (2.03)	36.7 (1.44)	15.0 (.59)	26.7 (1.05)	33.0	36.1 (1.42)

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.

² Order Locknuts separately if required. Please refer to page 54 for more information.

³ Order Seal Rings separately if required. Please refer to page 52 for more information.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.

STANDARD STRAIGHT-THROUGH

Brass, Nickel Plated (BN)

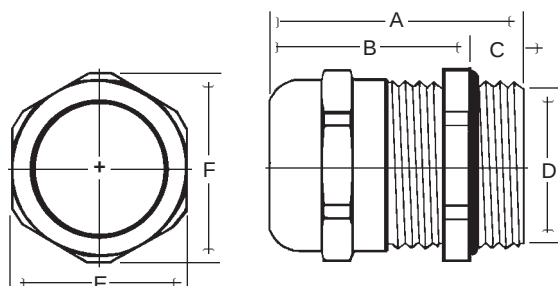
- IP68 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13).
- PG, NPT standard. Metric available.
- Preinstalled Perbunan (PR) Seal Rings (All sizes).



Temperature Ranges	
Body	Sealing Sleeve
Brass, Nickel Plated (BN)	Neoprene (NE)
-40 to 300°C (-40 to 572°F)	-40 to 100°C (-40 to 212°F)

Brass, Nickel Plated (BN) with Neoprene (NE) Sealing Sleeve

Liquid Tight Strain Reliefs (Cord Grips)										Locknuts ² Brass, Nickel Plated (BN)	
Type			Cat. No.	Std. Pk.	Cable Dia.		Mtg. Hole Dia. ¹		Nearest	Cat. No.	Std. Pk.
					mm	(in.)	mm	(in.)	Drill Size		
PG7-SSBN -		NE 05	80.100	100	2.0 - 5.0	(.08 - .20)	13.0	(.51)	33/64	86.500	100
PG7-SSBN -		NE 06	80.101	100	3.0 - 6.5	(.12 - .26)	13.0	(.51)	33/64	86.500	100
PG9-SSBN -		NE 06	80.102	100	2.0 - 6.0	(.08 - .24)	15.5	(.61)	39/64	86.501	100
PG9-SSBN -		NE 08	80.103	100	4.0 - 8.0	(.16 - .31)	15.5	(.61)	39/64	86.501	100
PG11-SSBN -		NE 07	80.104	50	3.0 - 7.0	(.12 - .28)	19.0	(.75)	3/4	86.502	50
PG11-SSBN -		NE 10	80.105	50	5.0 - 10.0	(.20 - .39)	19.0	(.75)	3/4	86.502	50
PG13.5-SSBN -		NE 09	80.106	50	5.0 - 9.0	(.20 - .35)	21.0	(.83)	53/64	86.503	50
PG13.5-SSBN -		NE 12	80.107	50	6.0 - 12.0	(.24 - .47)	21.0	(.83)	53/64	86.503	50
PG16-SSBN -		NE 12	80.108	50	7.0 - 12.0	(.28 - .47)	23.0	(.91)	29/32	86.504	50
PG16-SSBN -		NE 14	80.109	50	10.0 - 14.0	(.39 - .55)	23.0	(.91)	29/32	86.504	50
PG21-SSBN -		NE 16	80.110	50	9.0 - 16.0	(.35 - .63)	29.0	(1.14)	1-9/64	86.505	50
PG21-SSBN -		NE 18	80.111	50	13.0 - 18.0	(.51 - .71)	29.0	(1.14)	1-9/64	86.505	50
PG29-SSBN -		NE 20	80.112	25	12.0 - 20.0	(.47 - .79)	37.5	(1.48)	1-31/64	86.506	25
PG29-SSBN -		NE 25	80.113	25	18.0 - 25.0	(.71 - .98)	37.5	(1.48)	1-31/64	86.506	25
PG36-SSBN -		NE 26	80.114	10	20.0 - 26.0	(.79 - 1.02)	47.5	(1.87)	1-7/8	86.507	10
PG36-SSBN -		NE 32	80.115	10	22.0 - 32.0	(.87 - 1.26)	47.5	(1.87)	1-7/8	86.507	10
PG42-SSBN -		NE 38	80.117	5	30.0 - 38.0	(1.18 - 1.50)	54.5	(2.15)	2-5/32	86.508	5
PG48-SSBN -		NE 44	80.119	5	34.0 - 44.0	(1.34 - 1.73)	60.0	(2.36)	2-3/8	86.509	5
NPT3/8-SSBN -		NE 06	80.120	50	2.0 - 6.0	(.08 - .24)	17.5	(.69)	11/16	86.541	50
NPT3/8-SSBN -		NE 08	80.121	50	4.0 - 8.0	(.16 - .31)	17.5	(.69)	11/16	86.541	50
NPT1/2-SSBN -		NE 09	80.122	50	5.0 - 9.0	(.20 - .35)	21.5	(.85)	27/32	86.542	50
NPT1/2-SSBN -		NE 12	80.123	50	6.0 - 12.0	(.24 - .47)	21.5	(.85)	27/32	86.542	50
NPT3/4-SSBN -		NE 16	80.124	25	9.0 - 16.0	(.35 - .63)	27.0	(1.06)	1-1/16	86.543	25
NPT3/4-SSBN -		NE 18	80.125	25	13.0 - 18.0	(.51 - .71)	27.0	(1.06)	1-1/16	86.543	25



Dimensions mm (in.)

Size	A	B	C	D	E	F
PG7	24.0 (.94)	19.3 (.76)	5.0 (.20)	12.5 (.49)	14.0	15.5 (.61)
PG9	28.8 (1.13)	22.0 (.87)	6.0 (.24)	15.2 (.60)	17.0	18.9 (.74)
PG11	29.2 (1.15)	22.5 (.89)	6.0 (.24)	18.6 (.73)	20.0	22.2 (.87)
PG13.5	29.5 (1.16)	23.0 (.91)	6.5 (.26)	20.4 (.80)	22.0	24.5 (.96)
PG16	31.0 (1.22)	24.5 (.96)	6.5 (.26)	22.5 (.89)	24.0	26.7 (1.05)
PG21	34.3 (1.35)	27.7 (1.09)	7.0 (.28)	28.3 (1.11)	30.0	33.5 (1.32)
PG29	41.0 (1.61)	32.0 (1.26)	8.0 (.31)	37.0 (1.46)	40.0	43.5 (1.71)
PG36	46.2 (1.82)	38.0 (1.50)	9.0 (.35)	47.0 (1.85)	50.0	54.0 (2.13)
PG42	48.3 (1.90)	39.3 (1.55)	10.0 (.39)	54.0 (2.13)	57.0	61.0 (2.40)
PG48	50.4 (1.98)	41.3 (1.63)	10.0 (.39)	59.3 (2.33)	64.0	69.0 (2.72)
NPT3/8"	37.0 (1.46)	16.9 (.67)	15.0 (.59)	17.1 (.67)	17.0	19.0 (.75)
NPT1/2"	37.5 (1.48)	24.5 (.96)	13.0 (.51)	21.3 (.84)	24.0	26.7 (1.05)
NPT3/4"	40.7 (1.60)	27.7 (1.09)	13.0 (.51)	26.7 (1.05)	30.0	33.5 (1.32)

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.

² Order Locknuts separately if required. Please refer to page 54 for more information.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.

STANDARD BEND PROTECTION

Polyamide (PA)

- IP68 (NEMA1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13).
- PG, NPT standard. Metric available.
- Integral Sealing Ridges (Only PG7 to PG21 and NPT3/8 to NPT3/4). Order Seal Rings separately if required.
- Standard Color: Light Gray and Black.

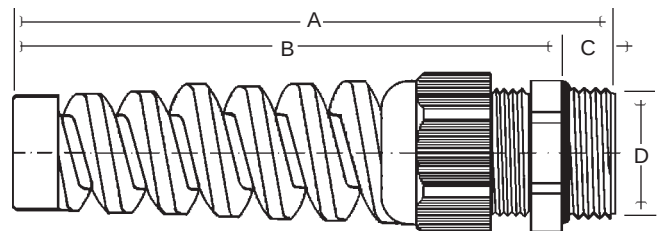
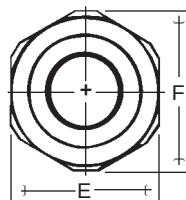


Temperature Ranges	
Body	Sealing Sleeve
Polyamide (PA)	Neoprene (NE)
-20 to 100°C (-4 to 212°F)	-40 to 100°C (-40 to 212°F)

Polyamide (PA) with Neoprene (NE) Sealing Sleeve

Liquid Tight Strain Reliefs (Cord Grips)										Seal Rings ³ Polyethylene (PE)		Locknuts ² Polyamide (PA)		
Type	Cat. No.			Std. Pk.	Cable Dia.		Mtg. Hole Dia. ¹		Nearest Drill Size	Cat. No. Opaque	Std. Pk.	Cat. No.		Std. Pk.
	Lt. Gray	Black	Pk.		mm	(in.)	mm	(in.)				Lt. Gray	Black	
PG7-SBPA - 	NE 06	80.300	80.310	50	3.5 - 6.5	(.14 - .26)	13.0	(.51)	33/64	86.600	100	86.000	86.021	100
PG9-SBPA - 	NE 08	80.301	80.311	50	4.0 - 8.0	(.16 - .31)	15.5	(.61)	39/64	86.601	100	86.001	86.022	100
PG11-SBPA - 	NE 10	80.302	80.312	50	5.0 - 10.0	(.20 - .39)	19.0	(.74)	3/4	86.602	100	86.002	86.023	100
PG13.5-SBPA - 	NE 12	80.303	80.313	50	6.0 - 12.0	(.24 - .47)	21.0	(.82)	53/64	86.603	100	86.003	86.024	100
PG16-SBPA - 	NE 14	80.304	80.314	25	10.0 - 14.0	(.39 - .55)	23.0	(.90)	29/32	86.604	50	86.004	86.025	50
PG21-SBPA - 	NE 18	80.305	80.315	25	13.0 - 18.0	(.51 - .71)	29.0	(1.14)	1-9/64	86.605	50	86.005	86.026	50
NPT3/8-SBPA - 	NE 10	80.306	80.316	50	5.0 - 10.0	(.20 - .39)	17.5	(.69)	11/16	80.602	50	86.061	86.081	50
NPT1/2-SBPA - 	NE 14	80.307	80.317	50	10.0 - 14.0	(.39 - .55)	21.5	(.85)	27/32	80.603	50	86.062	86.082	50
NPT3/4-SBPA - 	NE 18	80.308	80.318	25	13.0 - 18.0	(.51 - .71)	27.0	(1.06)	1-1/16	80.605	25	86.063	86.083	25

☐ Body Color, Example: Light Gray ☐ or Black ☐



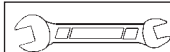
Dimensions mm (in.)

Size	A	B	C	D	E	F
PG7	68.0 (2.67)	60.0 (2.36)	8.0 (.31)	12.5 (.49)	15.0	16.5 (.65)
PG9	80.0 (3.14)	72.0 (2.83)	8.0 (.31)	15.2 (.59)	19.0	21.0 (.82)
PG11	92.0 (3.62)	84.0 (3.30)	8.0 (.31)	18.6 (.73)	22.0	24.4 (.96)
PG13.5	104.5 (4.11)	95.5 (3.75)	9.0 (.35)	20.4 (.80)	24.0	26.6 (1.05)
PG16	119.0 (4.68)	109.0 (4.29)	10.0 (.39)	22.5 (.88)	27.0	30.0 (1.18)
PG21	138.0 (5.43)	128.0 (5.03)	11.0 (.43)	28.3 (1.11)	33.0	36.6 (1.44)
NPT3/8"	92.0 (3.62)	84.0 (3.30)	15.0 (.59)	17.2 (.68)	22.0	24.3 (.96)
NPT1/2"	119.0 (4.68)	109.0 (4.29)	15.0 (.59)	21.3 (.84)	27.0	29.6 (1.17)
NPT3/4"	138.0 (5.43)	128.0 (5.03)	15.0 (.59)	26.7 (1.05)	33.0	36.1 (1.42)

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.

² Order Locknuts separately if required. Please refer to page 54 for more information.

³ Order Seal Rings separately if required. Please refer to page 52 for more information.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.

STANDARD PULL / BEND PROTECTION

- IP55 (NEMA 1, 2, 5, 12, 13).
- PG standard.
- Standard Color: Light Gray Polyamide (PA) or Brass, Nickel Plated (BN).
- We recommend the use of Polyethylene (PE) Seal Rings with Polyamide (PA) Cord Grips and Perbunan (PR) Seal Rings with Brass, Nickel Plated (BN) Cord Grips. Order Seal Rings separately. Refer to page 52 for technical and ordering information.
- Order Locknuts separately if required. We recommend the use of Polyamide (PA) Locknuts with Polyamide (PA) Cord Grips and Brass, Nickel Plated (BN) Locknuts with Brass, Nickel Plated (BN) Cord Grips. Refer to page 54 for technical and ordering information.

Temperature Ranges	
Body	Sealing Ring
Polyamide (PA)	Rubber (RU)
-20 to 100°C (-4 to 212°F)	-20 to 60°C (-4 to 140°F)
Brass, Nickel Plated (BN)	Neoprene (NE)
-40 to 300°C (-40 to 572°F)	-40 to 100°C (-40 to 212°F)

Liquid Tight Strain Reliefs (Cord Grips)

Cable Dia. mm (in.)	Mtg. Hole Dia. ¹ mm (in.)	Nearest Drill Size
Polyamide (PA)		
5.5 - 7.5 (.20 - .30)	15.5 (.61)	39/64
7.5 - 9.5 (.30 - .37)	19.0 (.75)	3/4
9.0 - 11.0 (.35 - .43)	21.0 (.83)	53/64
10.0 - 13.0 (.39 - .51)	23.0 (.91)	29/32
13.0 - 17.5 (.51 - .69)	29.0 (1.14)	1-9/64
18.0 - 25.0 (.71 - .98)	37.5 (1.48)	1-31/64
Brass, Nickel Plated (BN)		
6.0 - 9.0 (.24 - .35)	15.5 (.61)	39/64
8.0 - 12.0 (.31 - .47)	19.0 (.75)	3/4
9.0 - 14.0 (.35 - .55)	21.0 (.83)	53/64
10.0 - 16.0 (.39 - .62)	23.0 (.91)	29/32
14.0 - 21.0 (.55 - .82)	29.0 (1.14)	1-9/64
18.0 - 30.0 (.70 - 1.18)	37.5 (1.48)	1-31/64



Polyamide (PA)
with Rubber (RU) Sealing Ring

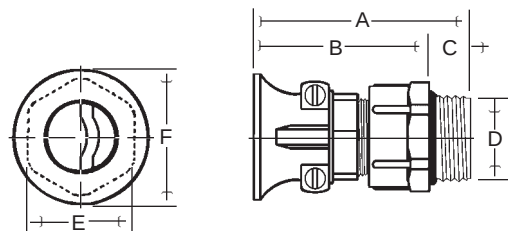


Brass, Nickel Plated (BN)
with Neoprene (NE) Sealing Ring

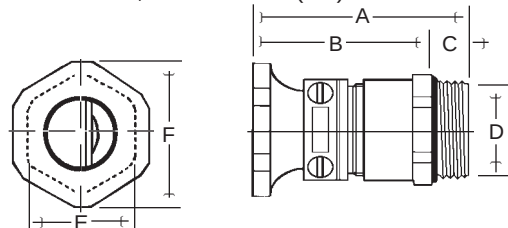
Type	Cat. No.	Std. Pk.
PG9-SSPA - LG RU 07	80.200	50
PG11-SSPA - LG RU 09	80.201	50
PG13.5-SSPA - LG RU 11	80.202	50
PG16-SSPA - LG RU 13	80.203	25
PG21-SSPA - LG RU 17	80.204	25
PG29-SSPA - LG RU 25	80.205	20

Type	Cat. No.	Std. Pk.
PG9-SSBN - - - NE 09	80.206	50
PG11-SSBN - - - NE 12	80.207	50
PG13.5-SSBN - - - NE 14	80.208	50
PG16-SSBN - - - NE 16	80.209	25
PG21-SSBN - - - NE 21	80.210	25
PG29-SSBN - - - NE 30	80.211	20

Polyamide (PA)



Brass, Nickel Plated (BN)



Dimensions mm (in.)

Size	A	B	C	D	E	F
Polyamide (PA)						
PG9	50.0 (1.97)	42.0 (1.65)	8.0 (.31)	15.2 (.60)	19.0	21.0 (.83)
PG11	52.0 (2.05)	44.0 (1.73)	8.0 (.31)	18.6 (.73)	22.0	24.5 (.96)
PG13.5	59.0 (2.32)	49.5 (1.95)	9.5 (.37)	20.4 (.80)	24.0	26.6 (1.05)
PG16	64.0 (2.52)	54.0 (2.13)	10.0 (.39)	22.5 (.89)	27.0	30.0 (1.18)
PG21	72.0 (2.83)	61.0 (2.40)	11.0 (.43)	28.3 (1.11)	32.0	36.6 (1.44)
PG29	80.0 (3.15)	69.0 (2.72)	11.0 (.43)	37.0 (1.46)	42.0	46.3 (1.82)
Brass, Nickel Plated (BN)						
PG9	34.0 (1.34)	28.0 (1.10)	6.0 (.24)	15.2 (.60)	17.0	18.9 (.74)
PG11	35.0 (1.38)	29.0 (1.14)	6.0 (.24)	18.6 (.73)	20.0	22.2 (.87)
PG13.5	36.5 (1.44)	30.0 (1.18)	6.5 (.26)	20.4 (.80)	22.0	24.5 (.96)
PG16	37.5 (1.48)	31.0 (1.22)	6.5 (.26)	22.5 (.89)	24.0	32.0 (1.26)
PG21	43.0 (1.69)	36.0 (1.42)	7.0 (.28)	28.3 (1.11)	30.0	38.0 (1.50)
PG29	49.0 (1.93)	41.0 (1.61)	8.0 (.31)	37.0 (1.46)	40.0	50.0 (1.97)

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.



Installation
To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.

STANDARD MULTI-CONDUCTOR

Polyamide (PA)

- IP54 (NEMA 1, 2, 5, 12, 13).
- PG standard, NPT available.
- Integral Sealing Ridges (Only PG11 to PG21). Order Seal Rings separately if required. Refer to page 52.
- Preinstalled Perbunan (PR) Seal Rings (Only PG29).
- Plug unused holes with Sealing Plugs. Refer to page 52.
- Standard Color: Light Gray and Black.

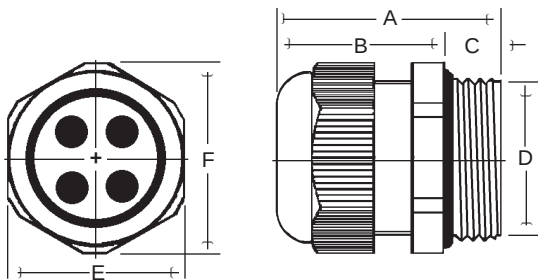
Temperature Ranges	
Body	Sealing Insert
Polyamide (PA)	PVC Polyvinylchloride (PV)
-20 to 100°C (-4 to 212°F)	-20 to 80°C (-4 to 176°F)



Polyamide (PA) with PVC Polyvinylchloride (PV) Sealing Insert

Liquid Tight Strain Reliefs (Cord Grips)										Seal Rings ³ Polyethylene (PE)		Locknuts ² Polyamide (PA)				
Type			Cat. No. Lt. Gray	Black	Std. Pk.	No. of Cables	Cable Dia. mm	(in.)	Mtg. Hole Dia. ¹ mm	(in.)	Nearest Drill Size	Cat. No. Opaque	Std. Pk.	Cat. No. Lt. Gray	Black	Std. Pk.
PG11-SMPA -		PV 04	80.400	80.430	50	2	4.0	(.16)	19.0	(.75)	3/4	86.602	100	86.002	86.023	100
PG11-SMPA -		PV 04	80.401	80.431	50	3	4.0	(.16)	19.0	(.75)	3/4	86.602	100	86.002	86.023	100
PG11-SMPA -		PV 05	80.402	80.432	50	3	5.0	(.20)	19.0	(.75)	3/4	86.602	100	86.002	86.023	100
PG11-SMPA -		PV 00	80.422	80.452	50	Solid Core Insert			19.0	(.75)	3/4	86.602	100	86.002	86.023	100
PG13.5-SMPA -		PV 06	80.403	80.433	50	2	6.0	(.24)	21.0	(.82)	53/64	86.603	100	86.003	86.024	100
PG13.5-SMPA -		PV 06	80.404	80.434	50	3	6.0	(.16)	21.0	(.82)	53/64	86.603	100	86.003	86.024	100
PG13.5-SMPA -		PV 05	80.405	80.435	50	3	5.0	(.20)	21.0	(.82)	53/64	86.603	100	86.003	86.024	100
PG13.5-SMPA -		PV 00	80.423	80.453	50	Solid Core Insert			21.0	(.82)	53/64	86.603	100	86.003	86.024	100
PG16-SMPA -		PV 04	80.406	80.436	50	2	4.0	(.16)	23.0	(.91)	29/32	86.604	50	86.004	86.025	50
PG16-SMPA -		PV 06	80.407	80.437	50	2	6.0	(.24)	23.0	(.91)	29/32	86.604	50	86.004	86.025	50
PG16-SMPA -		PV 04	80.408	80.438	50	3	4.0	(.16)	23.0	(.91)	29/32	86.604	50	86.004	86.025	50
PG16-SMPA -		PV 05	80.409	80.439	50	3	5.0	(.20)	23.0	(.91)	29/32	86.604	50	86.004	86.025	50
PG16-SMPA -		PV 06	80.410	80.440	50	3	6.5	(.26)	23.0	(.91)	29/32	86.604	50	86.004	86.025	50
PG16-SMPA -		PV 05	80.411	80.441	50	4	5.0	(.20)	23.0	(.91)	29/32	86.604	50	86.004	86.025	50
PG16-SMPA -		PV 06	80.412	80.442	50	4	6.0	(.24)	23.0	(.91)	29/32	86.604	50	86.004	86.025	50
PG16-SMPA -		PV 04	80.413	80.443	50	5	4.0	(.16)	23.0	(.91)	29/32	86.604	50	86.004	86.025	50
PG16-SMPA -		PV 00	80.424	80.454	50	Solid Core Insert			23.0	(.91)	29/32	86.604	50	86.004	86.025	50
PG21-SMPA -		PV 07	80.414	80.444	25	2	7.0	(.28)	29.0	(1.14)	1-9/64	86.605	50	86.005	86.026	50
PG21-SMPA -		PV 08	80.415	80.445	25	2	8.0	(.31)	29.0	(1.14)	1-9/64	86.605	50	86.005	86.026	50
PG21-SMPA -		PV 09	80.416	80.446	25	2	9.0	(.35)	29.0	(1.14)	1-9/64	86.605	50	86.005	86.026	50
PG21-SMPA -		PV 07	80.417	80.447	25	3	7.0	(.28)	29.0	(1.14)	1-9/64	86.605	50	86.005	86.026	50
PG21-SMPA -		PV 08	80.418	80.448	25	3	8.0	(.31)	29.0	(1.14)	1-9/64	86.605	50	86.005	86.026	50
PG21-SMPA -		PV 00	80.425	80.455	25	Solid Core Insert			29.0	(1.14)	1-9/64	86.605	50	86.005	86.026	50
PG29-SMPA -		PV 05	80.421	80.451	25	8	5.0	(.20)	37.5	(1.14)	1-31/64	Preinstalled		86.006	86.027	25
PG29-SMPA -		PV 00	80.426	80.456	25	Solid Core Insert			37.5	(1.14)	1-31/64			86.006	86.027	25

Body Color, Example: Light Gray **[L G]** or Black **[B K]**



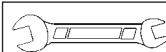
Dimensions mm (in.)

Size	A	B	C	D	E	F
PG11	36.0 (1.42)	28.5 (1.12)	8.0 (.31)	18.6 (.73)	22.0	24.5 (.96)
PG13.5	38.5 (1.52)	29.7 (1.17)	9.0 (.35)	20.4 (.80)	24.0	26.6 (1.05)
PG16	42.0 (1.65)	32.0 (1.26)	10.0 (.39)	22.5 (.89)	27.0	30.0 (1.18)
PG21	47.5 (1.87)	36.5 (1.44)	11.0 (.43)	28.3 (1.11)	33.0	36.6 (1.44)
PG29	53.5 (2.11)	43.5 (1.71)	11.0 (.43)	37.0 (1.46)	42.0	46.3 (1.82)

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.

² Order Locknuts separately if required. Please refer to page 54 for more information.

³ Order Seal Rings separately if required. Please refer to page 52 for more information.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.

STANDARD FLAT CABLE

Polyamide (PA)

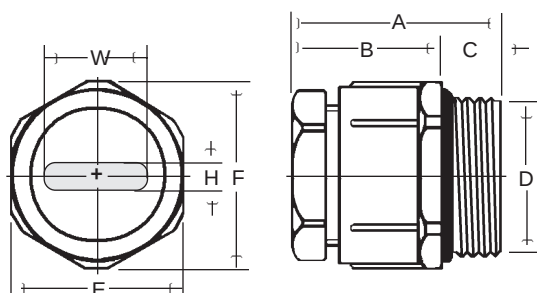
- IP 55 (NEMA 1, 2, 5, 12, 13).
- PG standard.
- Galvanized Steel Washers.
- Standard Color: Light Gray.
- Sealing Insert Color: Black.
- We recommend the use of Polyethylene (PE) Seal Rings with the Cord Grips shown on this page. Please order separately. Refer to column below and page 52 for additional information.
- Other sizes available, please contact Altech.

Temperature Ranges	
Body	Sealing Insert
Polyamide (PA)	Neoprene (NE)
-20 to 100°C (-4 to 212°F)	-40 to 100°C (-40 to 212°F)



Polyamide (PA) with Neoprene (NE) Oval Opening Sealing Insert

Liquid Tight Strain Reliefs (Cord Grips)							Seal Rings ³ Polyethylene (PE)		Locknuts ² Polyamide (PA)	
Type	Cat. No.	Std. Pk.	Opening Dims. H x W mm (in.)	Mtg. Hole Dia. ¹ mm (in.)	Nearest Drill Size		Cat. No. Opaque	Std. Pk.	Cat. No. Lt. Gray	Std. Pk.
PG16-SFPA - LG NE 15	80.500	50	5.0 x 15.0 (.20 x .59)	23.0 (.91)	29/32		86.604	50	86.004	50
PG21-SFPA - LG NE 18	80.501	50	6.0 x 18.0 (.24 x .71)	29.0 (1.14)	1-9/64		86.605	50	86.005	50
PG21-SFPA - LG NE 19	80.502	50	7.5 x 19.0 (.30 x .75)	29.0 (1.14)	1-9/64		86.605	50	86.005	50
PG21-SFPA - LG NE 21	80.503	50	11.0 x 21.0 (.43 x .83)	29.0 (1.14)	1-9/64		86.605	50	86.005	50
PG29-SFPA - LG NE 24	80.504	25	6.0 x 24.0 (.24 x .94)	37.5 (1.48)	1-31/64		86.606	20	86.006	25
PG29-SFPA - LG NE 28	80.505	25	6.0 x 28.0 (.24 x 1.10)	37.5 (1.48)	1-31/64		86.606	20	86.006	25
PG29-SFPA - LG NE 30	80.506	25	7.0 x 30.0 (.28 x 1.18)	37.5 (1.48)	1-31/64		86.606	20	86.006	25
PG29-SFPA - LG NE 22	80.507	25	8.0 x 22.0 (.31 x .87)	37.5 (1.48)	1-31/64		86.606	20	86.006	25
PG29-SFPA - LG NE 26	80.508	25	9.0 x 26.0 (.35 x 1.02)	37.5 (1.48)	1-31/64		86.606	20	86.006	25
PG29-SFPA - LG NE 30	80.509	25	10.5 x 30.0 (.41 x 1.18)	37.5 (1.48)	1-31/64		86.606	20	86.006	25
PG36-SFPA - LG NE 32	80.511	10	6.0 x 32.0 (.24 x 1.26)	47.5 (1.87)	1-7/8		86.607	10	86.007	10
PG36-SFPA - LG NE 35	80.512	10	6.0 x 35.0 (.24 x 1.38)	47.5 (1.87)	1-7/8		86.607	10	86.007	10
PG36-SFPA - LG NE 38	80.513	10	7.0 x 38.0 (.28 x 1.50)	47.5 (1.87)	1-7/8		86.607	10	86.007	10
PG36-SFPA - LG NE 34	80.514	10	8.0 x 34.0 (.31 x 1.34)	47.5 (1.87)	1-7/8		86.607	10	86.007	10
PG36-SFPA - LG NE 32	80.515	10	10.0 x 32.0 (.39 x 1.26)	47.5 (1.87)	1-7/8		86.607	10	86.007	10
PG36-SFPA - LG NE 37	80.516	10	12.5 x 37.0 (.49 x 1.46)	47.5 (1.87)	1-7/8		86.607	10	86.007	10
PG42-SFPA - LG NE 40	80.518	5	6.0 x 40.0 (.24 x 1.57)	54.5 (2.15)	2-5/32		86.608	5	86.008	5
PG42-SFPA - LG NE 40	80.519	5	7.5 x 40.0 (.30 x 1.57)	54.5 (2.15)	2-5/32		86.608	5	86.008	5
PG42-SFPA - LG NE 39	80.520	5	11.5 x 39.0 (.45 x 1.54)	54.5 (2.15)	2-5/32		86.608	5	86.008	5
PG42-SFPA - LG NE 41	80.521	5	13.5 x 41.0 (.53 x 1.61)	54.5 (2.15)	2-5/32		86.608	5	86.008	5
PG48-SFPA - LG NE 49	80.522	5	7.0 x 49.0 (.28 x 1.93)	60.0 (2.36)	2-3/8		86.609	5	86.009	5
PG48-SFPA - LG NE 44	80.523	5	10.0 x 44.0 (.39 x 1.73)	60.0 (2.36)	2-3/8		86.609	5	86.009	5
PG48-SFPA - LG NE 44	80.524	5	14.0 x 44.0 (.55 x 1.73)	60.0 (2.36)	2-3/8		86.609	5	86.009	5



Dimensions mm (in.)

Size	A	B	C	D	E	F
PG16	41.0 (.161)	33.0 (1.30)	10.0 (.39)	22.5 (.89)	27.0	29.0 (1.14)
PG21	43.5 (1.71)	36.0 (1.42)	11.0 (.43)	28.3 (1.11)	32.0	35.5 (1.40)
PG29	46.0 (1.81)	38.0 (1.50)	11.0 (.43)	37.0 (1.46)	42.0	45.5 (1.79)
PG36	57.0 (2.24)	42.4 (1.67)	13.0 (.51)	47.0 (1.85)	53.0	57.0 (2.24)
PG42	61.0 (2.40)	50.0 (1.97)	13.0 (.51)	54.0 (2.13)	60.0	65.0 (2.56)
PG48	60.0 (2.36)	50.0 (1.97)	14.0 (.55)	59.3 (2.33)	65.0	70.0 (2.76)

*Tolerances

Minimum cable size should not be less than .5mm (.02 in.) in length and height than opening in Cord Grip.

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.

² Order Locknuts separately if required. Please refer to page 54 for more information.

³ Order Seal Rings separately if required. Please refer to page 52 for more information.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.



Excellent for demanding applications, special requirements, and tough environmental conditions. High Performance Liquid Tight Strain Reliefs (Cord Grips) can be used with cables, cords, etc. in a wide range of diameters.

Select the most suitable Cord Grip for your application from a variety of Functions, Body and Tubular Sealing Insert material combinations.

Body Materials

- Polyamide (PA)
- PVDF Polyvinylidene Fluoride (PO)
- Brass, Nickel Plated (BN)
- Stainless Steel (SS)

Tubular Sealing Insert Materials

- PVC Polyvinylchloride (PV)
- Santoprene (ST)
- TPE Polyolefin (TP)
- Silicone (SI)

Functions

- Straight-Through
- Increased Strain Relief
- Bend
- Pull / Bend
- Multi-Conductor
- EMI / RFI
- Flat Cable

Protection Rating

Up to IP68
(NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13)

Pressure Rating

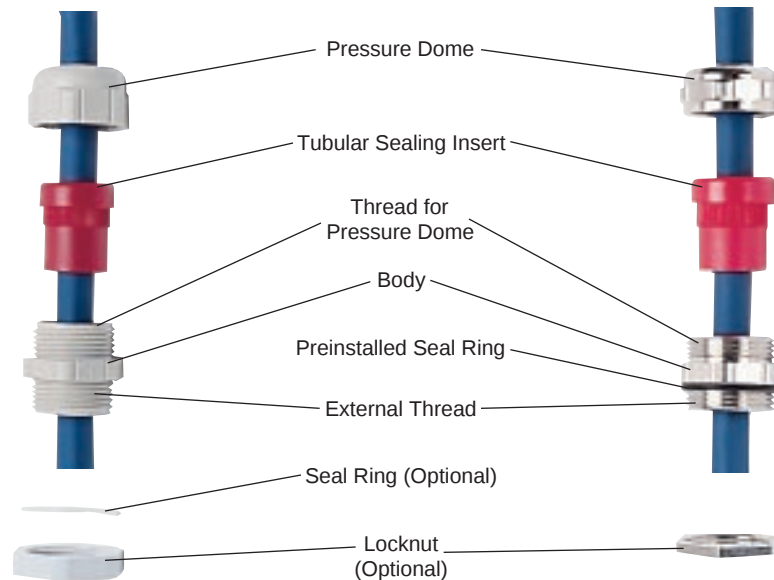
Up to 10 Bar (140 psi)

HIGH PERFORMANCE

High Performance Cord Grips are supplied complete and ready to install. The illustration below shows the various components of the Nonmetallic and the Metal Straight-Through Cord Grips. Basic functions of each component are described below.

Nonmetallic

Metal

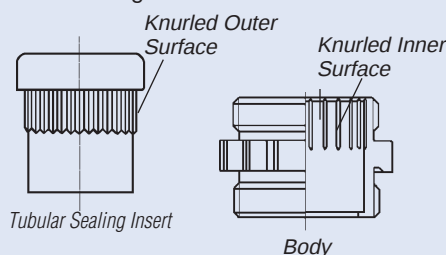


Pressure Dome

The conical interior of the Pressure Dome transfers pressure to the Tubular Sealing Insert when the Dome is tightened.

Tubular Sealing Insert

The Sealing Insert is extended in length to provide a Protection Rating of IP68 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13), up to 10 Bar (140 psi). The knurled outer surface of the Insert interlocks with the knurled inner surface of the Cord Grip to prevent the twisting of cable, cord, etc. when the Pressure Dome is tightened.



The Membrane at the lower end of the Insert has a reduced diameter. By simply pushing the cable/cord through, IP54 (NEMA 1, 2, 5, 12, 13) protection is provided without tightening the Pressure Dome.

PVC Polyvinylchloride (PV) Tubular Sealing Inserts are color-coded by cable diameter for easy identification.



External Seal

Provides a hermetic seal between the Cord Grip and the enclosure wall. Seal Rings are not preinstalled on

nonmetallic Cord Grips. Please order separately if required, page 52.

Metal Cord Grips have preinstalled Perbunan (PR) or Silicone (SI) Seal Rings. Please refer to the ordering pages or to page 52.

External Thread

High Performance Cord Grips are offered with external PG or NPT threads. For metric and extended length threads, please contact Altech.

Locknuts

Use Locknuts for installation of Cord Grips into nonthreaded holes. Order Locknuts separately. Please refer to ordering pages or to page 54 for technical and ordering information.

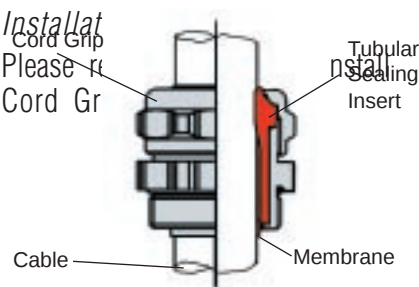
Straight-Throughpages 28 - 35

Provide a liquid-tight seal and reliable strain relief for demanding applications.

Sealing Function

When the Pressure Dome is tightened, its conical interior surface applies pressure to the Tubular Sealing Insert. This pressure causes the Tubular Insert to move toward the center of the Cord Grip to securely grip the cable over a wide surface area. As this occurs, the Tubular Insert will bulge along the cable and slightly out of the top of the Pressure Dome to seal the entire Cord Grip.

The Membrane at the lower end of the Insert has a reduced diameter. By simply pushing the cable/cord through, IP54 (NEMA 1, 2, 5, 12, 13) protection is provided without tightening the Pressure Dome.



Increased Strain Reliefpages 36 and 37

For applications requiring increased strain relief.

Increased pull-out protection is achieved by using a Polyamide (PA) "Grip" Ring, which is integrated into the PVC Tubular Sealing Insert.



Sealing Function

Cord Grips with Increased Pull-Out Protection use the same sealing function as the Straight-Through Cord Grips.

Installation

Please refer to page 5 to install Cord Grips.

Bend Protectionpages 38 and 39

Prevents sharp bending plus provides strain relief, extending cable life.

An Extended Tubular Sealing Insert/Sleeve provides strain relief and Bend Protection in one. It increases the bending preventing sharp bend punctual stress. The cable sleeve can be easily changed to different cable/cord diameters.



Sealing Function

Cord Grips with Bend Protection use the same sealing function as the Straight-Through Cord Grips.

Installation

Please refer to page 5 to install Cord Grips.

- Key**
- PV = PVC Polyvinylchloride
 - ST = Santoprene
 - TP = TPE Polyolefin
 - SI = Silicone
 - PP = Polyamide (PA) "Grip" Ring molded into PVC Polyvinylchloride (PV) Sleeve

		Function									
		Straight - Through					Increased Strain Relief			Bend Protection	
Body Material		Polyamide (PA)	PVDF Polyvinylidene (PO)	Brass, Nickel Plated (BN)	Stainless Steel (SS)	Polyamide (PA)	PVDF Polyvinylidene (PO)	Brass, Nickel Plated (BN)	Polyamide (PA)	PVDF Polyvinylidene (PO)	Brass, Nickel Plated (BN)
Standard Color		Beige, Black	Opaque, Black	—	—	Beige, Black	Opaque, Black	—	Beige, Black	Opaque, Black	—
Sealing Insert / Sleeve		PV, ST	PV,ST,TP,SI	PV,ST,TP,SI	PV,ST,TP,SI	PP	PP	PP	PV	PV	PV
Seal Ring Preinstalled		No	No	Yes	Yes	No	No	Yes	No	No	Yes
Size	PG	PG9 - PG48	PG7 - PG48	PG7 - PG48	PG7 - PG42	PG9 - PG42	PG7 - PG42	PG9 - PG36	PG9 - PG36	PG9 - PG36	PG9 - PG36
	NPT	—	NPT3/8-3/4	—	—	—	—	—	—	—	—
Cable	mm	5.0 - 44.0	4.0 - 44.0	4.0 - 44.0	4.0 - 40.0	4.0 - 40.0	4.0 - 40.0	5.0 - 28.0	5.0 - 28.0	5.0 - 28.0	5.0 - 28.0
Diameter	(in.)	(.20 - 1.73)	(.16 - 1.73)	(.16 - 1.73)	(.16 - 1.57)	(.16 - 1.57)	(.16 - 1.57)	(.20 - 1.10)	(.20 - 1.10)	(.20 - 1.10)	(.20 - 1.10)

Pull / Bend Protection pages 40 and 41

Provide Bend Protection and increased strain relief.

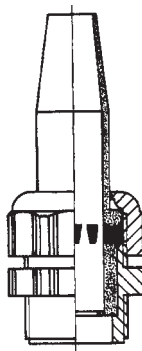
The Extended Tubular Insert/Sleeve has a molded in "Grip" Ring that provides increased Pull-Out protection. The sleeve determines the bend radius, preventing sharp bending of the cable/cord. The conical tip of the sleeve can be easily cut to fit different cable/cord diameters.

Sealing Function

Cord Grips with Pull / Bend protection use the same sealing function as the Straight-Through Cord Grips.

Installation

Please refer to page 5 to install Cord Grips.



Multi-Conductor pages 42 - 45

Saves cost, space and installation time. Multi-Conductor Cord Grips provide strain relief for multiple cables, cords and/or conductors of the same or varying diameters through a single Cord Grip.

Altech Multi-Conductor Cord Grip bodies are sold without Sealing Inserts and are constructed of Polyamide (PA) and Brass, Nickel Plated (BN). See page 42 for details.

We offer three types of PVC Polyvinylchloride (PV) Sealing Inserts; A.) Solid Core for shop drilling to meet various cable diameter combination(s), B.) A wide variety of premolded patterns and C.) Custom molding patterns. Please consult Altech with your custom or high volume requirements.



Sealing Plugs are available to seal unused holes, ensuring strain relief and IP65 (NEMA 1, 2, 3, 3R, 5, 12, 13) protection rating. Please refer to page 52 for Sealing Plug selection.

For your convenience, a handy Worksheet with Solid Core Sealing Insert Templates is provided on page 46.

Installation

Please refer to page 5 to install Cord Grips.

Flat Cable pages 48 and 49

Typically used with festooning and other flat cables. Rounded Sides and Oval Openings help to provide a better seal and maintain a Protection Rating of IP65 (NEMA 1, 2, 3, 3R, 5, 12, 13).

High Performance Flat Cable Cord Grips are supplied with a PVC Polyvinylchloride (PV) Tubular Sealing Insert.



Rounded Sides



Oval Openings

Installation

Please refer to page 5 to install Cord Grips.

Key

PV = PVC Polyvinylchloride
PP = Polyamide (PA) "Grip" Ring molded into PVC Polyvinylchloride (PV) Sleeve

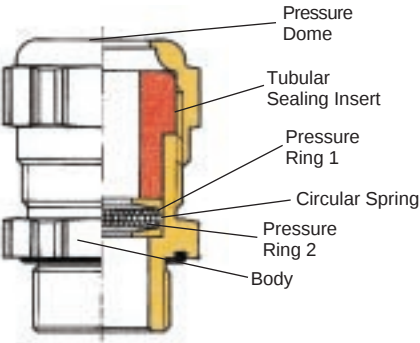
Function

	Function					
	Pull/Bend Protection		Multi-Conductor		Flat Cable	
Body Material	Polyamide (PA)	Brass, Nickel Plated (BN)	Polyamide (PA)	Brass, Nickel Plated (BN)	Polyamide (PA)	Brass, Nickel Plated (BN)
Standard Color	Beige, Black	—	Beige, Black	—	Beige, Black	—
Sealing Insert / Sleeve	PP	PP	PV	PV	PV	PV
Seal Ring Preinstalled	No	Yes	No	Yes	No	Yes
Size	PG	PG9 - PG29	PG9 - PG29	PG9 - PG36	PG9 - PG48	PG9 - PG48
	NPT	—	—	—	—	—
Cable mm	4.0 - 25.0	4.0 - 25.0	1 - 21	1 - 21	3.5x5.5-9.0x43.0	3.5x5.5-9.0x43.0
Diameter (in.)	(.16-.98)	(.16-.98)	(.04-.83)	(.04-.83)	(.14x.22-.35x1.69)	(.14x.22-.35x1.69)

Provide sealing and strain relief plus shielding against electromagnetic and radio frequency interference.

Electromagnetic and radio frequency interference can cause costly interruptions of industrial machinery, etc. Therefore, associated control systems must be protected.

The most common way to provide EMI / RFI protection is to install electronics, controls, etc. into a shielded enclosure. However, the protective function of the enclosure shield can be greatly reduced if the

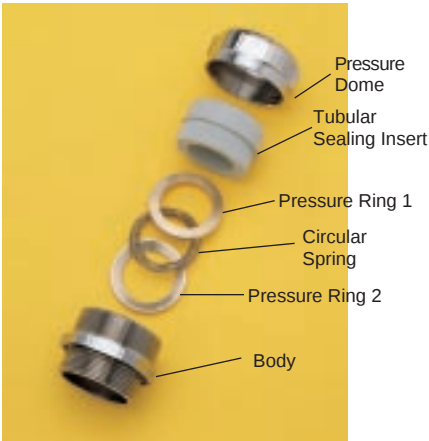


cable entries are not protected as well.

Altech's new generation of EMI / RFI Liquid Tight Strain Reliefs help prevent unwanted interference from entering and exiting the shielded enclosure. They become an integral part of the overall shield. The shielding function is obtained by producing a continuous ground connection between the cable shield and the enclosure itself.

Shielding Function

When the Pressure Dome is tightened, a Circular Spring is forced against the cable shield by two tapered Pressure Rings. At the same time, the Pressure Rings are grounded to the Strain Relief Body, which in turn is connected to the enclosure and its shield.



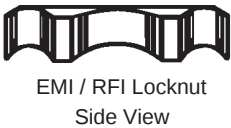
Sealing Function

EMI / RFI Cord Grips provide the same sealing function as the Straight-Through Cord Grips.

Installation

Installation into nonthreaded holes

To ensure a good ground connection between the Cord Grip and a **Metal Enclosure**, we strongly recommend the use of EMI / RFI Locknuts for nonthreaded mounting. The Locknut has six cutting edges, which will cut through paint and coatings into the metal of the enclosure.



If **Nonmetallic Enclosures** used, we suggest to connect the cable shield to a reliable ground potential within the enclosure and use a regular Locknut for the installation.

Installation into threaded holes

If a **Metal Enclosure** is used, be sure that the threads are free and clean of grease, lubricants, dust and other foreign materials, so that positive ground contact is ensured.

If the installation is into a **Nonmetallic Enclosure**, care must be taken to ensure continuity of the ground connection between the cable shield and the enclosure shield.

Installation

1. Install the Cord Grip body into the enclosure. Refer to page 5.
2. Remove Pressure Dome, Tubular Sealing Insert, Pressure Ring 1, Circular Spring and Pressure Ring 2.
3. Strip outer sheath from shielded cable. Make sure that sufficient wire length is available for connection.
4. Install the Pressure Dome and the Sealing Insert onto the cable sheath. Refer to photograph over the center column.
5. Install Pressure Ring 1 onto the exposed shield, with the tapered side facing the enclosure, and push against Cable Sheath.
6. Install the Circular Spring onto the shield.
7. Install Pressure Ring 2 onto the cable shield with the tapered side facing the Circular Spring.
8. Insert the cable with the installed parts into the Cord Grip Body. Make sure the outer cable sheath is firmly inserted into the Tubular Sealing Insert to obtain the specified IP/NEMA Rating.
9. Push the Tubular Sealing Insert with the installed cable into the Cord Grip Body.
10. Tighten down the Pressure Dome.

		Function	
		EMI/RFI	
		Body Material	
		Brass, Nickel Plated (BN)	
Standard Color		—	
Sealing Ring / Sleeve		ST	
Seal Ring Preinstalled		Yes	
Size	PG	PG9 - PG42	
	NPT	—	
Cable Diameter	mm	4.0 - 41.0	
	(in.)	(.16 - 1.61)	

Key
ST = Santoprene

Temperature Range of Materials Used For High Performance Cord Grips

Body Materials

Polyamide (PA)
-20 to 100°C (-4 to 212°F)

PVDF Polyvinylidene (PO)
-40 to 150°C (-40 to 302°F)

Brass, Nickel Plated (BN)
-40 to 300°C (-40 to 572°F)

Stainless Steel (SS)
-60 to 500°C (-65 to 932°F)

Tubular Sealing Insert Materials

PVC Polyvinylchloride (PV)
-20 to 80°C (-4 to 176°F)

Santoprene (ST)
-60 to 125°C (-65 to 257°F)

TPE Polyolefin (TP)
-40 to 120°C (-40 to 248°F)

Silicone (SI)
-60 to 200°C (-65 to 392°F)

PVC Polyvinylchloride/Polyamide (PP)
-20 to 80°C (-4 to 176°F)

Seal Ring Materials

Polyethylene (PE)
-20 to 100°C (-4 to 212°F)

Centellen (CT)
-60 to 300°C (-65 to 572°F)

Perbunan (PR)
-20 to 120°C (-4 to 248°F)

Silicone (SI)
-60 to 200°C (-65 to 392°F)

Accessories

For best results, Altech offers a full line of Accessories. For more specific information, please refer to the pages indicated.



Seal Rings *page 52*



Socket Wrenches *page 53*



Sealing Plugs *page 52*



Locknuts *page 54*

HIGH PERFORMANCE STRAIGHT-THROUGH

Polyamide (PA)

- IP68 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13) / 10 Bar (140 psi).
- PG standard.
- PVC Polyvinylchloride (PV) Tubular Sealing Inserts are color coded.
- Order Seal Rings and Locknuts separately if required.
- Standard color: Beige or Black.



Polyamide (PA) with PVC Polyvinylchloride (PV) Tubular Sealing Insert

Liquid Tight Strain Reliefs (Cord Grips)

Body Material

Body Temperature

Sealing Insert Material

Sealing Insert Temperature Range

Sealing Insert Color

Polyamide (PA)

-20 to 100°C (-4 to 212°F)

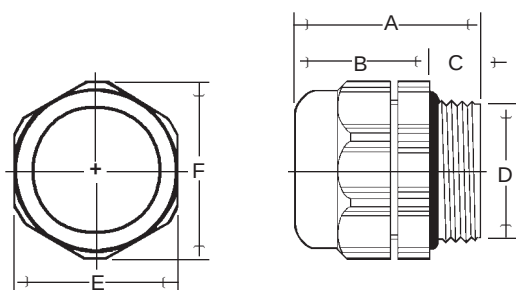
PVC Polyvinylchloride (PV)

-20 to 80°C (-4 to 176°F)

Multi

Type	Std. Pk.	Cable Dia. mm	Mtg. Hole Dia. ¹ (in.)	mm	(in.)	Nearest Drill Size	Beige	Black	Sealing Insert Color
PG9-PSPA - [][][][]08	50	5.0 - 8.0	(.20- .31)	15.5	(.61)	39/64	70.001	70.031	Gray
PG9-PSPA - [][][][]09	50	6.5 - 9.5	(.26- .37)	15.5	(.61)	39/64	70.002	70.032	Black
PG11-PSPA - [][][][]08	50	5.0 - 8.0	(.20- .31)	19.0	(.75)	3/4	70.003	70.033	Gray
PG11-PSPA - [][][][]09	50	6.5 - 9.5	(.26- .37)	19.0	(.75)	3/4	70.004	70.034	Black
PG11-PSPA - [][][][]10	50	7.0 - 10.5	(.28- .41)	19.0	(.75)	3/4	70.005	70.035	Green
PG13.5-PSPA - [][][][]09	50	6.5 - 9.5	(.26- .37)	21.0	(.83)	53/64	70.006	70.036	Black
PG13.5-PSPA - [][][][]10	50	7.0 - 10.5	(.28- .41)	21.0	(.83)	53/64	70.007	70.037	Green
PG13.5-PSPA - [][][][]13	50	9.0 - 13.0	(.35- .51)	21.0	(.83)	53/64	70.008	70.038	Red
PG16-PSPA - [][][][]10	25	7.0 - 10.5	(.28- .41)	23.0	(.91)	29/32	70.009	70.039	Green
PG16-PSPA - [][][][]13	25	9.0 - 13.0	(.35- .51)	23.0	(.91)	29/32	70.010	70.040	Red
PG16-PSPA - [][][][]15	25	11.5 - 15.5	(.45- .61)	23.0	(.91)	29/32	70.011	70.041	White
PG21-PSPA - [][][][]15	25	11.5 - 15.5	(.45- .61)	29.0	(1.14)	1-9/64	70.012	70.042	White
PG21-PSPA - [][][][]18	25	14.0 - 18.0	(.55- .71)	29.0	(1.14)	1-9/64	70.013	70.043	Blue
PG21-PSPA - [][][][]20	25	17.0 - 20.5	(.67- .81)	29.0	(1.14)	1-9/64	70.014	70.044	Brown
PG29-PSPA - [][][][]25	20	20.0 - 25.0	(.79- .98)	37.5	(1.48)	1-31/64	70.015	70.045	Orange
PG29-PSPA - [][][][]28	20	24.0 - 28.0	(.94-1.10)	37.5	(1.48)	1-31/64	70.016	70.046	Light Yellow
PG36-PSPA - [][][][]32	10	27.0 - 32.0	(1.06-1.26)	47.5	(1.87)	1-7/8	70.017	70.047	Dark Gray
PG36-PSPA - [][][][]36	10	32.0 - 36.0	(1.26-1.42)	47.5	(1.87)	1-7/8	70.018	70.048	Rose
PG42-PSPA - [][][][]40	5	36.0 - 40.0	(1.42-1.57)	54.5	(2.15)	2-5/32	70.019	—	White
PG48-PSPA - [][][][]44	5	39.0 - 44.0	(1.54-1.73)	60.0	(2.36)	2-3/8	70.020	—	White

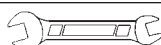
Sealing Insert Material, Example: PVC Polyvinylchloride **P.V.** or Santoprene **S.T.**
Body Color, Example: Beige **B.E.** or Black **B.K.**



Dimensions mm (in.)

Size	A	B	C	D	E	F
PG9	31.0 (.122)	22.0 (.87)	9.0 (.35)	15.2 (.60)	19.0	16.2 (.64)
PG11	32.0 (.126)	23.0 (.91)	9.0 (.35)	18.6 (.73)	22.0	21.0 (.83)
PG13.5	32.0 (.126)	23.0 (.91)	9.0 (.35)	20.4 (.80)	24.0	24.5 (.96)
PG16	32.5 (.128)	23.0 (.91)	9.5 (.37)	22.5 (.89)	27.0	26.5 (1.04)
PG21	38.0 (.150)	27.0 (1.06)	11.0 (.43)	28.3 (1.11)	33.0	29.5 (1.16)
PG29	45.5 (1.79)	34.0 (1.34)	11.5 (.45)	37.0 (1.46)	43.0	36.5 (1.44)
PG36	48.0 (1.89)	34.0 (1.34)	14.0 (.55)	47.0 (1.85)	53.0	46.0 (1.81)
PG42	53.0 (2.09)	38.0 (1.50)	15.0 (.59)	54.0 (2.13)	60.0	57.0 (2.24)
PG48	53.0 (2.09)	38.0 (1.50)	15.0 (.59)	59.3 (2.33)	65.0	64.0 (2.52)
						70.0 (2.76)

¹ For installation into nonthreaded holes with Locknuts.
Please refer to page 5 for installation instructions.



Installation

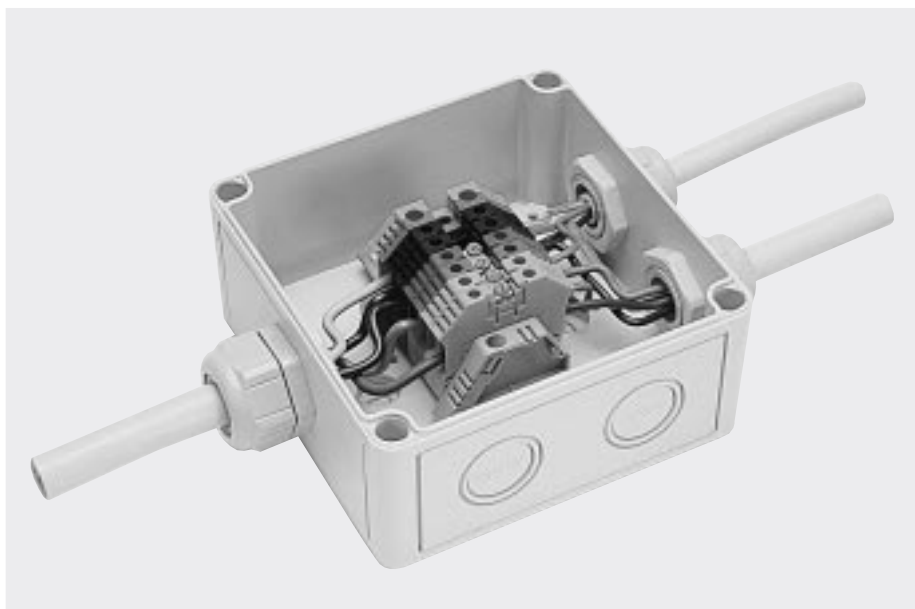
To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches.
Please refer to column "E" in the Dimensions Table for sizes.



Polyamide (PA) with Santoprene (ST) Tubular Sealing Insert

Polyamide (PA)
-20 to 100°C (-4 to 212°F)
Santoprene (ST)
-60 to 125°C (-65 to 257°F)
Beige

Beige	Cat. No.	Black
—	—	—
70.060	—	70.080
—	—	—
—	—	—
70.061	—	70.081
70.062	—	70.082
70.063	—	70.083
70.064	—	70.084
70.065	—	70.085
70.066	—	70.086
70.067	—	70.087
70.068	—	70.088
70.069	—	70.089
70.070	—	70.090
—	—	—
70.072	—	70.092
—	—	—
70.073	—	70.093
—	—	—
—	—	—



Accessories

Material Temperature Range	Seal Rings (Additional information on page 52.)			Locknuts (Additional information on page 54.)			
	Polyethylene (PE) -20 to 100°C (-4 to 212°F)			Polyamide (PA) -20 to 100°C (-4 to 212°F)		Brass, Nickel Plated (BN) -40 to 300°C (-40 to 572°F)	
Size	Cat. No. Opaque	Std. Pk.		Cat. No. Gray	Std. Pk.	Cat. No.	Std. Pk.
PG9	86.601	100		86.001	100	86.501	100
PG11	86.602	100		86.002	100	86.502	50
PG13.5	86.603	100		86.003	100	86.503	50
PG16	86.604	50		86.004	50	86.504	50
PG21	86.605	50		86.005	50	86.505	50
PG29	86.606	20		86.006	25	86.506	25
PG36	86.607	10		86.007	10	86.507	10
PG42	86.608	5		86.008	5	86.508	5
PG48	86.609	5		86.009	5	86.509	5

HIGH PERFORMANCE STRAIGHT-THROUGH PVDF Polyvinylidene (PO)

- IP68 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13) / 10 Bar (140 psi).
- PG, NPT standard.
- Long Thread 15mm (.59 in.) available.
- Order Seal Rings and Locknuts separately if required.
- Standard color: Opaque or Black. Blue available.



PVDF Polyvinylidene (PO) with PVC Polyvinylchloride (PV) Tubular Sealing Insert

Liquid Tight Strain Reliefs (Cord Grips)

Body Material

Body Temperature Range

Sealing Insert Material

Sealing Insert Temperature Range

Sealing Insert Color

PVDF Polyvinylidene (PO)

-40 to 150°C (-40 to 302°F)

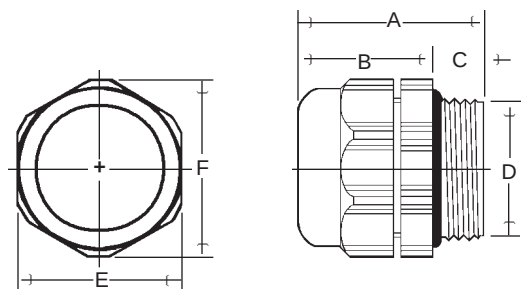
PVC Polyvinylchloride (PV)

-20 to 80°C (-4 to 176°F)

Multi

Type	Std. Pk.	Cable Dia. mm (in.)	Mtg. Hole Dia. ¹ mm (in.)	Nearest Drill Size	Cat. No.	Sealing Insert Color
Opaque	Black					
PG7-PSPO- [] [] [] 06	50	4.0 - 6.5 (.16- .26)	13.0 (.51)	33/64	70.100	70.130 Yellow
PG9-PSPO- [] [] [] 08	50	5.0 - 8.0 (.20- .31)	15.5 (.61)	39/64	70.101	70.131 Gray
PG9-PSPO- [] [] [] 09	50	6.5 - 9.5 (.26- .37)	15.5 (.61)	39/64	70.102	70.132 Black
PG11-PSPO- [] [] [] 08	50	5.0 - 8.0 (.20- .31)	19.0 (.75)	3/4	70.103	70.133 Gray
PG11-PSPO- [] [] [] 09	50	6.5 - 9.5 (.26- .37)	19.0 (.75)	3/4	70.104	70.134 Black
PG11-PSPO- [] [] [] 10	50	7.0 - 10.5 (.28- .41)	19.0 (.75)	3/4	70.105	70.135 Green
PG13.5-PSPO- [] [] [] 09	50	6.5 - 9.5 (.26- .37)	21.0 (.83)	53/64	70.106	70.136 Black
PG13.5-PSPO- [] [] [] 10	50	7.0 - 10.5 (.28- .41)	21.0 (.83)	53/64	70.107	70.137 Green
PG13.5-PSPO- [] [] [] 13	50	9.0 - 13.0 (.35- .51)	21.0 (.83)	53/64	70.108	70.138 Red
PG16-PSPO- [] [] [] 10	25	7.0 - 10.5 (.28- .41)	23.0 (.91)	29/32	70.109	70.139 Green
PG16-PSPO- [] [] [] 13	25	9.0 - 13.0 (.35- .51)	23.0 (.91)	29/32	70.110	70.140 Red
PG16-PSPO- [] [] [] 15	25	11.5 - 15.5 (.45- .61)	23.0 (.91)	29/32	70.111	70.141 White
PG21-PSPO- [] [] [] 15	25	11.5 - 15.5 (.45- .61)	29.0 (1.14)	1-9/64	70.112	70.142 White
PG21-PSPO- [] [] [] 18	25	14.0 - 18.0 (.55- .71)	29.0 (1.14)	1-9/64	70.113	70.143 Blue
PG21-PSPO- [] [] [] 20	25	17.0 - 20.5 (.67- .81)	29.0 (1.14)	1-9/64	70.114	70.144 Brown
PG29-PSPO- [] [] [] 25	20	20.0 - 25.0 (.79- .98)	37.5 (1.48)	1-31/64	70.115	70.145 Orange
PG29-PSPO- [] [] [] 28	20	24.0 - 28.0 (.94-1.10)	37.5 (1.48)	1-31/64	70.116	70.146 Light Yellow
PG36-PSPO- [] [] [] 32	10	27.0 - 32.0 (1.06-1.26)	47.5 (1.87)	1-7/8	70.117	70.147 Dark Gray
PG36-PSPO- [] [] [] 36	10	32.0 - 36.0 (1.26-1.42)	47.5 (1.87)	1-7/8	70.118	70.148 Rose
PG42-PSPO- [] [] [] 40	5	36.0 - 40.0 (1.42-1.57)	54.5 (2.15)	2-5/32	70.119	— White
PG48-PSPO- [] [] [] 44	5	39.0 - 44.0 (1.54-1.73)	60.0 (2.36)	2-3/8	70.120	— White
NPT3/8-PSPO- [] [] [] 08	50	5.0 - 8.0 (.20- .31)	17.5 (.69)	11/16	70.121	70.151 Gray
NPT1/2-PSPO- [] [] [] 10	50	7.0 - 10.5 (.28- .41)	21.5 (.85)	27/32	70.122	70.152 Green
NPT3/4-PSPO- [] [] [] 15	25	11.5 - 15.5 (.45- .61)	27.0 (1.06)	1-1/16	70.123	70.153 White

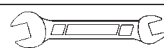
Sealing Insert Material, Example: PVC Polyvinylchloride **[PVC]** or Santoprene **[SFP]** or TPE Polyolefin **[TPE]** or Silicone **[SI]**
Body Color, Example: Beige **[BE]** or Black **[BK]**



Dimensions mm (in.)

Size	A	B	C	D	E	F
PG7	29.0 (.114)	21.0 (.83)	8.0 (.31)	12.5 (.49)	15.0	16.2 (.64)
PG9	31.0 (.122)	22.0 (.87)	9.0 (.35)	15.2 (.60)	19.0	21.0 (.83)
PG11	32.0 (.126)	23.0 (.91)	9.0 (.35)	18.6 (.73)	22.0	24.5 (.96)
PG13.5	32.0 (.126)	23.0 (.91)	9.0 (.35)	20.4 (.80)	24.0	26.5 (1.04)
PG16	32.5 (.128)	23.0 (.91)	9.5 (.37)	22.5 (.89)	27.0	29.5 (1.16)
PG21	38.0 (1.50)	27.0 (1.06)	11.0 (.43)	28.3 (1.11)	33.0	36.5 (1.44)
PG29	45.5 (1.79)	34.0 (1.34)	11.5 (.45)	37.0 (1.46)	43.0	46.0 (1.81)
PG36	48.0 (1.89)	34.0 (1.34)	14.0 (.55)	47.0 (1.85)	53.0	57.0 (2.24)
PG42	53.0 (2.09)	38.0 (1.50)	15.0 (.59)	54.0 (2.13)	60.0	64.0 (2.52)
PG48	53.0 (2.09)	38.0 (1.50)	15.0 (.59)	59.3 (2.33)	65.0	70.0 (2.76)
NPT3/8"	41.5 (1.63)	28.5 (1.12)	13.0 (.51)	17.1 (.67)	22.0	24.4 (.96)
NPT1/2"	44.5 (1.75)	28.5 (1.12)	16.0 (.63)	21.2 (.83)	24.0	26.7 (1.05)
NPT3/4"	48.5 (1.91)	32.5 (1.28)	16.0 (.63)	26.6 (1.05)	33.0	36.5 (1.44)

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.



PVDF Polyvinylidene (PO)
with Santoprene (ST)
Tubular Sealing Insert



PVDF Polyvinylidene (PO)
with TPE Polyolefin (TP)
Tubular Sealing Insert



PVDF Polyvinylidene (PO)
with Silicone (SI)
Tubular Sealing Insert

PVDF Polyvinylidene (PO)
-40 to 150°C (-40 to 302°F)
Santoprene (ST)
-60 to 125°C (-65 to 257°F)
Beige

PVDF Polyvinylidene (PO)
-40 to 150°C (-40 to 302°F)
TPE Polyolefin (TP)
-40 to 120°C (-40 to 248°F)
Beige

PVDF Polyvinylidene (PO)
-40 to 150°C (-40 to 302°F)
Silicone (SI)
-60 to 200°C (-65 to 392°F)
Opaque

Opaque	Cat. No.	Black
—	—	—
—	—	—
70.160	70.190	—
—	—	—
70.161	70.191	—
70.162	70.192	—
70.163	70.193	—
70.164	70.194	—
70.165	70.195	—
70.166	70.196	—
70.167	70.197	—
70.168	70.198	—
70.169	70.199	—
70.170	70.200	—
—	—	—
70.171	70.201	—
—	—	—
70.172	70.202	—
—	—	—
—	—	—

Opaque	Cat. No.	Black
70.210	70.230	—
—	—	—
70.211	70.231	—
—	—	—
70.212	70.232	—
70.213	70.233	—
70.214	70.234	—
70.215	70.235	—
70.216	70.236	—
70.217	70.237	—
70.218	70.238	—
70.219	70.239	—
—	—	—
70.220	70.240	—
70.221	70.241	—
70.222	70.242	—
70.223	70.243	—
—	—	—
—	—	—
—	—	—
—	—	—

Opaque	Cat. No.	Black
—	—	—
—	—	—
70.250	70.270	—
—	—	—
70.251	70.271	—
70.252	70.272	—
70.253	70.273	—
70.254	70.274	—
70.255	70.275	—
70.256	70.276	—
70.257	70.277	—
70.258	70.278	—
70.259	70.279	—
70.260	70.280	—
70.261	70.281	—
70.262	70.282	—
70.263	70.283	—
70.264	70.284	—
70.265	70.285	—
—	—	—
—	—	—

Accessories

	Seal Rings (Additional information on page 52.)				Locknuts (Additional information on page 54.)				
Material	Polyethylene (PE)		Centellen (CT)		Polyamide (PA)			Brass, Nickel Plated (BN)	
Temperature Range	-20 to 100°C (-4 to 212°F)		-60 to 300°C (-65 to 572°F)		-20 to 100°C (-4 to 212°F)			-40 to 300°C (-40 to 572°F)	
Size	Cat. No.	Std. Pk.	Cat. No.	Std. Pk.	Cat. No.	Std. Pk.	Cat. No.	Std. Pk.	Std. Pk.
PG7	86.600	100	79.000	50	86.000	86.021	100	86.500	100
PG9	86.601	100	79.001	50	86.001	86.022	100	86.501	100
PG11	86.602	100	79.002	50	86.002	86.023	100	86.502	50
PG13.5	86.603	100	79.003	50	86.003	86.024	100	86.503	50
PG16	86.604	50	79.004	25	86.004	86.025	50	86.504	50
PG21	86.605	50	79.005	25	86.005	86.026	50	86.505	50
PG29	86.606	20	79.006	20	86.006	86.027	25	86.506	25
PG36	86.607	10	79.007	10	86.007	86.028	10	86.507	10
PG42	86.608	5	79.008	5	86.008	86.029	5	86.508	5
PG48	86.609	5	79.009	5	86.009	86.030	5	86.509	5
NPT3/8	86.602	100	79.002	50	86.061	86.081	50	86.541	50
NPT1/2	86.603	100	79.003	50	86.062	86.082	50	86.542	50
NPT3/4	86.605	50	79.005	25	86.063	86.083	25	86.543	25

HIGH PERFORMANCE STRAIGHT-THROUGH

Brass, Nickel Plated (BN)

- IP68 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13) / 10 Bar (140 psi).
- PG standard.
- Preinstalled Perbunan (PR) or Silicone (SI) Seal Ring.
- Long Thread 15mm (.59 in.) available.
- Order Locknuts separately if required.



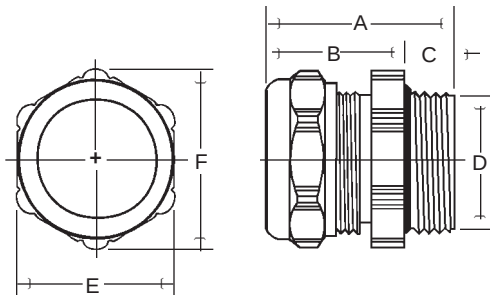
Brass, Nickel Plated (BN) with PVC Polyvinylchloride (PV) Tubular Sealing Insert

Liquid Tight Strain Reliefs (Cord Grips)

Body Material	Brass, Nickel Plated (BN)
Body Temperature Range	-40 to 300° C (-40 to 572°F)
Sealing Insert Material	PVC Polyvinylchloride (PV)
Sealing Insert Temperature Range	-20 to 80°C (-4 to 176°F)
Sealing Insert Color	Multi
Seal Ring Material	Perbunan (PR)
Seal Ring Temperature Range	-20 to 120°C (-4 to 248°F)

Type	Std. Pk.	Cable Dia. mm (in.)	Mtg. Hole Dia. ¹ mm (in.)	Nearest Drill Size	Cat. No.	Sealing Insert Color
PG7-PSBN- [] [] [] 06	50	4.0 - 6.5 (.16 - .26)	13.0 (.51)	33/64	70.300	Yellow
PG9-PSBN- [] [] [] 08	50	5.0 - 8.0 (.20 - .31)	15.5 (.61)	39/64	70.301	Gray
PG9-PSBN- [] [] [] 09	50	6.5 - 9.5 (.26 - .37)	15.5 (.61)	39/64	70.302	Black
PG11-PSBN- [] [] [] 08	50	5.0 - 8.0 (.20 - .31)	19.0 (.75)	3/4	70.303	Gray
PG11-PSBN- [] [] [] 09	50	6.5 - 9.5 (.26 - .37)	19.0 (.75)	3/4	70.304	Black
PG11-PSBN- [] [] [] 10	50	7.0 - 10.5 (.28 - .41)	19.0 (.75)	3/4	70.305	Green
PG13.5-PSBN- [] [] [] 09	50	6.5 - 9.5 (.26 - .37)	21.0 (.83)	53/64	70.306	Black
PG13.5-PSBN- [] [] [] 10	50	7.0 - 10.5 (.28 - .41)	21.0 (.83)	53/64	70.307	Green
PG13.5-PSBN- [] [] [] 13	50	9.0 - 13.0 (.35 - .51)	21.0 (.83)	53/64	70.308	Red
PG16-PSBN- [] [] [] 10	25	7.0 - 10.5 (.28 - .41)	23.0 (.91)	29/32	70.309	Green
PG16-PSBN- [] [] [] 13	25	9.0 - 13.0 (.35 - .51)	23.0 (.91)	29/32	70.310	Red
PG16-PSBN- [] [] [] 15	25	11.5 - 15.5 (.45 - .61)	23.0 (.91)	29/32	70.311	White
PG21-PSBN- [] [] [] 15	25	11.5 - 15.5 (.45 - .61)	29.0 (1.14)	1-9/64	70.312	White
PG21-PSBN- [] [] [] 18	25	14.0 - 18.0 (.55 - .71)	29.0 (1.14)	1-9/64	70.313	Blue
PG21-PSBN- [] [] [] 20	25	17.0 - 20.5 (.67 - .81)	29.0 (1.14)	1-9/64	70.314	Brown
PG29-PSBN- [] [] [] 25	20	20.0 - 25.0 (.79 - .98)	37.5 (1.48)	1-31/64	70.315	Orange
PG29-PSBN- [] [] [] 28	20	24.0 - 28.0 (.94 - 1.10)	37.5 (1.48)	1-31/64	70.316	Light Yellow
PG36-PSBN- [] [] [] 32	10	27.0 - 32.0 (1.06 - 1.26)	47.5 (1.87)	1-7/8	70.317	Dark Gray
PG36-PSBN- [] [] [] 36	10	32.0 - 36.0 (1.26 - 1.42)	47.5 (1.87)	1-7/8	70.318	Rose
PG42-PSBN- [] [] [] 40	5	36.0 - 40.0 (1.42 - 1.57)	54.5 (2.15)	2-5/32	70.319	White
PG48-PSBN- [] [] [] 44	5	39.0 - 44.0 (1.54 - 1.73)	60.0 (2.36)	2-3/8	70.320	White

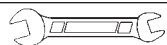
Sealing Insert Material, Example: PVC Polyvinylchloride **[PV]** or Santoprene **[SI]** or TPE Polyolefin **[TP]** or Silicone **[SI]**



Dimensions mm (in.)

Size	A	B	C	D	E	F
PG7	25.0 (.98)	20.0 (.79)	5.0 (.20)	12.5 (.49)	14.0	15.5 (.61)
PG9	26.0 (1.02)	20.0 (.79)	6.0 (.24)	15.2 (.60)	17.0	18.9 (.74)
PG11	26.0 (1.02)	20.0 (.79)	6.0 (.24)	18.6 (.73)	20.0	22.2 (.87)
PG13.5	27.5 (1.08)	21.0 (.83)	6.5 (.26)	20.4 (.80)	22.0	24.4 (.96)
PG16	27.5 (1.08)	21.0 (.83)	6.5 (.26)	22.5 (.89)	24.0	26.7 (1.05)
PG21	32.0 (1.26)	25.0 (.98)	7.0 (.28)	28.3 (1.11)	30.0	33.5 (1.32)
PG29	35.0 (1.38)	27.0 (1.06)	8.0 (.31)	37.0 (1.46)	40.0	43.5 (1.71)
PG36	37.0 (1.46)	28.0 (1.10)	9.0 (.35)	47.0 (1.85)	50.0	54.0 (2.24)
PG42	40.0 (1.57)	30.0 (1.18)	10.0 (.39)	54.0 (2.13)	57.0	61.0 (2.40)
PG48	40.0 (1.57)	30.0 (1.18)	10.0 (.39)	59.3 (2.33)	64.0	69.0 (2.72)

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.



**Brass, Nickel Plated (BN)
with Santoprene (ST)
Tubular Sealing Insert**



**Brass, Nickel Plated (BN)
with TPE Polyolefin (TP)
Tubular Sealing Insert**



**Brass, Nickel Plated (BN)
with Silicone (SI)
Tubular Sealing Insert**

Brass, Nickel Plated (BN)
-40 to 300° C (-40 to 572°F)
Santoprene (ST)
-60 to 125°C (-65 to 257°F)
Beige
Perbunan (PR)
-20 to 120°C (-4 to 248°F)

Cat. No.

—
—
70.330
—
—
70.331
70.332
70.333
70.334
70.335
70.336
70.337
70.338
70.339
70.340
—
70.341
—
70.342
—
—

Brass, Nickel Plated (BN)
-40 to 300° C (-40 to 572°F)
TPE Polyolefin (TP)
-40 to 120°C (-40 to 248°F)
Beige
Silicone (SI)
-60 to 200°C (-65 to 392°F)

Cat. No.

70.350
—
70.351
—
70.352
70.353
70.354
70.355
70.356
70.357
70.358
70.359
—
70.360
70.361
70.362
70.363
—
—
—
—

Brass, Nickel Plated (BN)
-40 to 300° C (-40 to 572°F)
Silicone (SI)
-60 to 200°C (-65 to 392°F)
Opaque
Silicone (SI)
-60 to 200°C (-65 to 392°F)

Cat. No.

—
—
70.370
—
70.371
70.372
70.373
70.374
70.375
70.376
70.377
70.378
70.379
70.380
70.381
70.382
70.383
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70.384
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—

Accessories

		Locknuts (Additional information on page 54.)	
Material		Brass, Nickel Plated (BN)	
Temperature Range		-40 to 300°C (-40 to 572°F)	
Size	Cat. No.	Std. Pk.	
PG7	86.500	100	
PG9	86.501	100	
PG11	86.502	50	
PG13.5	86.503	50	
PG16	86.504	50	
PG21	86.505	50	
PG29	86.506	25	
PG36	86.507	10	
PG42	86.508	5	
PG48	86.509	5	

HIGH PERFORMANCE STRAIGHT-THROUGH

Stainless Steel (SS)

- IP68 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13) / 10 Bar (140 psi).
- PG standard.
- Preinstalled Perbunan (PR) or Silicone (SI) Seal Ring.
- Order Locknuts separately if required.



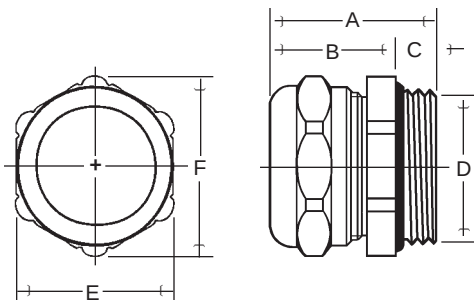
Stainless Steel (SS) with PVC Polyvinylchloride (PV) Tubular Sealing Insert

Liquid Tight Strain Reliefs (Cord Grips)

Body Material	Stainless Steel (SS)
Body Temperature Range	-60 to 500°C (-65 to 932°F)
Sealing Insert Material	PVC Polyvinylchloride (PV)
Sealing Insert Temperature Range	-20 to 80°C (-4 to 176°F)
Sealing Insert Color	Multi
Seal Ring Material	Perbunan (PR)
Seal Ring Temperature Range	-20 to 120°C (-4 to 248°F)

Type	Std. Pk.	Cable Dia. mm (in.)	Mtg. Hole Dia. ¹ mm (in.)	Nearest Drill Size	Cat. No.	Sealing Insert Color
PG7-PSSS- [] [] [] 06	10	4.0 - 6.5 (.16 - .26)	13.0 (.51)	33/64	70.400	Yellow
PG9-PSSS- [] [] [] 08	10	5.0 - 8.0 (.20 - .31)	15.5 (.61)	39/64	70.401	Gray
PG9-PSSS- [] [] [] 09	10	6.5 - 9.5 (.26 - .37)	15.5 (.61)	39/64	70.402	Black
PG11-PSSS- [] [] [] 08	10	5.0 - 8.0 (.20 - .31)	19.0 (.75)	3/4	70.403	Gray
PG11-PSSS- [] [] [] 10	10	7.0 - 10.5 (.28 - .41)	19.0 (.75)	3/4	70.404	Green
PG13.5-PSSS- [] [] [] 09	10	6.5 - 9.5 (.26 - .37)	21.0 (.83)	53/64	70.405	Black
PG13.5-PSSS- [] [] [] 10	10	7.0 - 10.5 (.28 - .41)	21.0 (.83)	53/64	70.406	Green
PG13.5-PSSS- [] [] [] 13	10	9.0 - 13.0 (.35 - .51)	21.0 (.83)	53/64	70.407	Red
PG16-PSSS- [] [] [] 10	5	7.0 - 10.5 (.28 - .41)	23.0 (.91)	29/32	70.408	Green
PG16-PSSS- [] [] [] 13	5	9.0 - 13.0 (.35 - .51)	23.0 (.91)	29/32	70.409	Red
PG16-PSSS- [] [] [] 15	5	11.5 - 15.5 (.45 - .61)	23.0 (.91)	29/32	70.410	White
PG21-PSSS- [] [] [] 13	5	9.0 - 13.0 (.35 - .51)	29.0 (1.14)	1-9/64	70.411	Red
PG21-PSSS- [] [] [] 18	5	14.0 - 18.0 (.55 - .71)	29.0 (1.14)	1-9/64	70.412	Blue
PG21-PSSS- [] [] [] 20	5	17.0 - 20.5 (.67 - .81)	29.0 (1.14)	1-9/64	70.413	Brown
PG29-PSSS- [] [] [] 25	5	20.0 - 25.0 (.79 - .98)	37.5 (1.48)	1-31/64	70.414	Orange
PG29-PSSS- [] [] [] 28	5	24.0 - 28.0 (.94 - 1.10)	37.5 (1.48)	1-31/64	70.415	Light Yellow
PG36-PSSS- [] [] [] 32	2	27.0 - 32.0 (1.06 - 1.26)	47.5 (1.87)	1-7/8	70.416	Dark Gray
PG36-PSSS- [] [] [] 36	2	32.0 - 36.0 (1.26 - 1.42)	47.5 (1.87)	1-7/8	70.417	Rose
PG42-PSSS- [] [] [] 40	2	36.0 - 40.0 (1.42 - 1.57)	54.5 (2.15)	2-5/32	70.418	White

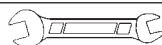
Sealing Insert Material, Example: PVC Polyvinylchloride **PV** or Santoprene **ST** or TPE Polyolefin **TP** or Silicone **SI**



Dimensions mm (in.)

Size	A	B	C	D	E	F
PG7	25.0 (.98)	20.0 (.79)	5.0 (.20)	12.5 (.49)	14.0	15.5 (.61)
PG9	26.0 (1.02)	20.0 (.79)	6.0 (.24)	15.2 (.60)	17.0	18.9 (.74)
PG11	26.0 (1.02)	20.0 (.79)	6.0 (.24)	18.6 (.73)	20.0	22.2 (.87)
PG13.5	27.5 (1.08)	21.0 (.83)	6.5 (.26)	20.4 (.80)	22.0	24.4 (.96)
PG16	27.5 (1.08)	21.0 (.83)	6.5 (.26)	22.5 (.89)	24.0	26.7 (1.05)
PG21	32.0 (1.26)	25.0 (.98)	7.0 (.28)	28.3 (1.11)	30.0	33.5 (1.32)
PG29	35.0 (1.38)	27.0 (1.06)	8.0 (.31)	37.0 (1.46)	40.0	43.5 (1.71)
PG36	37.0 (1.46)	28.0 (1.10)	9.0 (.35)	47.0 (1.85)	50.0	54.0 (2.24)
PG42	40.0 (1.57)	30.0 (1.18)	10.0 (.39)	54.0 (2.13)	57.0	61.0 (2.40)

¹ For installation into nonthreaded holes with Locknuts.
Please refer to page 5 for installation instructions.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches.
Please refer to column "E" in the Dimensions Table for sizes.



Stainless Steel (SS)
with Santoprene (ST)
Tubular Sealing Insert

Stainless Steel (SS)
-60 to 500°C (-65 to 932°F)
Santoprene (ST)
-60 to 125°C (-65 to 257°F)
Beige
Perbunan (PR)
-20 to 120°C (-4 to 248°F)

Cat. No.

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70.420
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70.421
70.422
70.423
70.424
70.425
70.426
70.427

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70.428
70.429
—
70.430
—
70.431
—



Stainless Steel (SS)
with TPE Polyolefin (TP)
Tubular Sealing Insert

Stainless Steel (SS)
-60 to 500°C (-65 to 932°F)
TPE Polyolefin (TP)
-40 to 120°C (-40 to 248°F)
Beige
Silicone (SI)
-60 to 200°C (-65 to 392°F)

Cat. No.

70.440
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70.441
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70.442
70.443
70.444
70.445
70.446
70.447
70.448

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70.449
70.450
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70.451
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—
—



Stainless Steel (SS)
with Silicone (SI)
Tubular Sealing Insert

Stainless Steel (SS)
-60 to 500°C (-65 to 932°F)
Silicone (SI)
-60 to 200°C (-65 to 392°F)
Opaque
Silicone (SI)
-60 to 200°C (-65 to 392°F)

Cat. No.

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70.460
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70.461
70.462
70.463
70.464
70.465
70.466
70.467

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70.468
70.469
70.470
70.471
—
70.472
—

Accessories

Material

Temperature Range

Locknuts (Additional information on page 54.)

Stainless Steel (SS)

-60 to 500°C (-65 to 932°F)

Size	Cat. No.	Std. Pk.
PG7	86.520	10
PG9	86.521	10
PG11	86.522	10
PG13.5	86.523	10
PG16	86.524	5
PG21	86.525	5
PG29	86.526	2
PG36	86.527	2

HIGH PERFORMANCE INCREASED STRAIN RELIEF PROTECTION

- IP54 (NEMA 1, 2, 5, 12, 13).
- PG standard.
- Brass, Nickel Plated (BN) Cord Grips feature preinstalled Perbunan (PR) Seal Rings. Order Seal Rings separately for Polyamide (PA) and PVDF Polyvinylidene (PO) Cord Grips (all sizes) if required.
- Order Locknuts separately if required.
- Standard color: Beige or Black Polyamide (PA), Opaque or Black PVDF Polyvinylidene (PO) or Brass, Nickel Plated (BN).



Polyamide (PA) with PVC Polyvinylchloride / Polyamide (PP) Tubular Sealing Insert

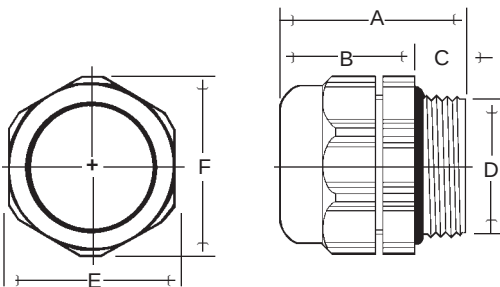
Liquid Tight Strain Reliefs (Cord Grips)

Body Material	Polyamide (PA)
Body Temperature Range	-20 to 100°C (-4 to 212°F)
Sealing Insert Material	PVC Polyvinylchloride/Polyamide (PP)
Sealing Insert Temperature Range	-20 to 80°C (-4 to 176°F)
Sealing Insert Color	Multi
Seal Ring Material	—
Seal Ring Temperature Range	—

Type	Std. Pk.	Insert Color	Mtg. Hole Dia. ¹ mm (in.)	Nearest Drill Size	Cable Dia. mm (in.)	Cat No. Beige Black
PG7-PI []-[] PP 06	50	Yellow	13.0 (.51)	33/64	4.0- 6.5 (.16- .26)	— —
PG9-PI []-[] PP 06	50	Yellow	15.5 (.61)	39/64	4.0- 6.5 (.16- .26)	70.501 70.521
PG9-PI []-[] PP 09	50	Black	15.5 (.61)	39/64	5.5- 9.0 (.22 .35)	70.502 70.522
PG11-PI []-[] PP 10	50	Gray	19.0 (.75)	3/4	6.0- 10.0 (.24- .39)	70.503 70.523
PG13.5-PI []-[] PP 09	50	Black	21.0 (.83)	53/64	6.5- 9.5 (.26- .37)	70.505 70.525
PG13.5-PI []-[] PP 10	50	Green	21.0 (.83)	53/64	6.0- 10.0 (.24- .39)	70.506 70.526
PG13.5-PI []-[] PP 12	50	Red	21.0 (.83)	53/64	8.0- 12.0 (.31- .47)	70.507 70.527
PG16-PI []-[] PP 10	25	Green	23.0 (.91)	29/32	6.0- 10.0 (.24- .39)	70.508 70.528
PG16-PI []-[] PP 12	25	Red	23.0 (.91)	29/32	9.0- 12.0 (.35- .47)	70.509 70.529
PG16-PI []-[] PP 15	25	White	23.0 (.91)	29/32	12.0- 15.0 (.47- .59)	70.510 70.530
PG21-PI []-[] PP 15	25	White	29.0 (1.14)	1-9/64	12.0- 15.0 (.47- .59)	70.511 70.531
PG21-PI []-[] PP 17	25	Blue	29.0 (1.14)	1-9/64	14.0- 17.0 (.55- .67)	70.512 70.532
PG21-PI []-[] PP 20	25	Brown	29.0 (1.14)	1-9/64	16.0- 20.0 (.63- .79)	70.513 70.533
PG29-PI []-[] PP 24	20	Orange	37.5 (1.48)	1-31/64	20.0- 24.0 (.79- .94)	70.514 70.534
PG29-PI []-[] PP 27	20	Light Yellow	37.5 (1.48)	1-31/64	23.0- 27.0 (.91-1.06)	70.515 70.535
PG36-PI []-[] PP 32	10	Dark Gray	47.5 (1.87)	1-7/8	27.0- 32.0 (1.06-1.26)	70.516 70.536
PG36-PI []-[] PP 36	10	Rose	47.5 (1.87)	1-7/8	32.0- 36.0 (1.26-1.42)	70.517 70.537
PG42-PI []-[] PP 40	5	White	54.5 (2.15)	2-5/32	34.0- 40.0 (1.34-1.57)	70.518 —

Body Color, Example: Beige [B E] or Black [B K] or Opaque [O P]

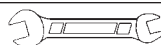
Body Material, Example: Polyamide [P A] or PVDF Polyvinylidene [P O] or Brass, Nickel Plated [B N]



Polyamide (PA) and PVDF Polyvinylidene (PO) Dimensions mm (in.)

Size	A	B	C	D	E	F
PG7	29.0 (1.14)	21.0 (.83)	8.0 (.31)	12.5 (.49)	15.0	16.2 (.64)
PG9	31.0 (1.22)	22.0 (.87)	9.0 (.35)	15.2 (.60)	19.0	21.0 (.83)
PG11	32.0 (1.26)	23.0 (.91)	9.0 (.35)	18.6 (.73)	22.0	24.5 (1.00)
PG13.5	32.0 (1.26)	23.0 (.91)	9.0 (.35)	20.4 (.80)	24.0	26.5 (1.04)
PG16	32.5 (1.28)	23.0 (.91)	9.5 (.37)	22.5 (.89)	27.0	29.5 (1.16)
PG21	38.0 (1.48)	27.0 (1.06)	11.0 (.43)	28.3 (1.11)	33.0	36.5 (1.44)
PG29	45.5 (1.79)	34.0 (1.34)	11.5 (.45)	37.0 (1.46)	43.0	46.0 (1.81)
PG36	48.0 (1.89)	34.0 (1.34)	14.0 (.55)	47.0 (1.85)	53.0	57.0 (2.24)
PG42	53.0 (2.09)	38.0 (1.48)	15.0 (.59)	54.0 (2.13)	60.0	64.0 (2.52)

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.



PVDF Polyvinylidene (PO) with PVC Polyvinylchloride / Polyamide (PP) Tubular Sealing Insert



Brass, Nickel Plated (BN) with PVC Polyvinylchloride / Polyamide (PP) Tubular Sealing Insert

PVDF Polyvinylidene (PO)
-40 to 150°C (-40 to 302°F)
PVC Polyvinylchloride/Polyamide (PP)
-20 to 80°C (-4 to 176°F)
Multi

Brass, Nickel Plated (BN)
-40 to 300°C (-40 to 572°F)
PVC Polyvinylchloride/Polyamide (PP)
-20 to 80°C (-4 to 176°F)
Multi
Perbunan (PR)
-20 to 120°C (-4 to 248°F)

Accessories

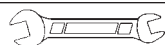
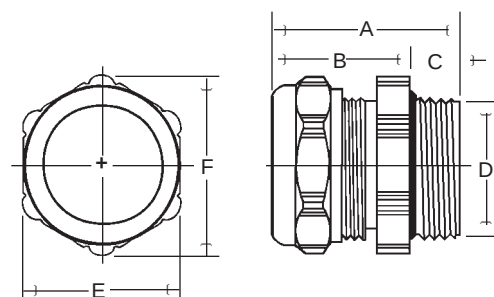
Seal Rings: please refer to page 52.
Locknuts: please refer to page 54.

Cable Dia. mm	(in.)	Cat No. Opaque	Black
5.0- 6.5	(.20- .26)	70.540	70.560
5.0- 6.5	(.20- .26)	70.541	70.561
5.5- 9.5	(.22- .37)	70.542	70.562
7.5- 10.0	(.30- .39)	70.543	70.563
6.5- 9.5	(.26- .37)	70.545	70.565
7.0- 10.0	(.28- .39)	70.546	70.566
9.0- 12.0	(.35- .47)	70.547	70.567
7.0- 10.0	(.28- .39)	70.548	70.568
10.0- 12.0	(.39- .47)	70.549	70.569
12.0- 15.0	(.47- .59)	70.550	70.570
12.0- 15.0	(.47- .59)	70.551	70.571
14.0- 17.0	(.55- .67)	70.552	70.572
16.0- 20.0	(.63- .79)	70.553	70.573
20.0- 24.0	(.79- .94)	70.554	70.574
23.0- 27.0	(.91-1.06)	70.555	70.575
27.0- 32.0	(1.06-1.26)	70.556	70.576
32.0- 36.0	(1.26-1.42)	70.557	70.577
34.0- 40.0	(1.34-1.57)	70.558	—

Cable Dia. mm	(in.)	Cat. No.
4.0- 6.5	(.16- .26)	70.580
4.0- 6.5	(.16- .26)	70.581
5.5- 9.5	(.22- .37)	70.582
6.0- 10.0	(.24- .39)	70.583
6.5- 9.5	(.26- .37)	70.585
6.0- 10.0	(.24- .39)	70.586
8.0- 12.0	(.31- .47)	70.587
6.0- 10.0	(.24- .39)	70.588
9.0- 12.0	(.35- .47)	70.589
12.0- 15.0	(.47- .59)	70.590
12.0- 15.0	(.47- .59)	70.591
14.0- 17.0	(.55- .67)	70.592
16.0- 20.0	(.63- .79)	70.593
20.0- 24.0	(.79- .94)	70.594
23.0- 27.0	(.91-1.06)	70.595
27.0- 32.0	(1.06-1.26)	70.596
32.0- 36.0	(1.26-1.42)	70.597
34.0- 40.0	(1.34-1.57)	70.598

Brass, Nickel Plated (BN) Dimensions mm (in.)

Size	A	B	C	D	E	F
PG7	25.0 (.98)	20.0 (.79)	5.0 (.20)	15.2 (.60)	14.0	15.5 (.61)
	26.0 (1.02)	20.0 (.79)	6.0 (.24)	15.2 (.60)	17.0	18.9 (.74)
PG11	26.0 (1.02)	20.0 (.79)	6.0 (.24)	18.6 (.73)	20.0	22.2 (.87)
PG13.5	27.5 (1.08)	21.0 (.83)	6.5 (.26)	20.4 (.80)	22.0	24.4 (.96)
PG16	27.5 (1.08)	21.0 (.83)	6.5 (.26)	22.5 (.89)	24.0	26.7 (1.05)
PG21	32.0 (1.26)	25.0 (.98)	7.0 (.28)	28.3 (1.11)	30.0	33.5 (1.32)
PG29	35.0 (1.38)	27.0 (1.06)	8.0 (.31)	37.0 (1.46)	40.0	43.5 (1.71)
PG36	37.0 (1.46)	28.0 (1.10)	9.0 (.35)	47.0 (1.85)	50.0	54.0 (2.24)
PG42	40.0 (1.57)	30.0 (1.18)	10.0 (.39)	54.0 (2.13)	57.0	61.0 (2.40)



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches.
Please refer to column "E" in the Dimensions Table for sizes.

HIGH PERFORMANCE BEND PROTECTION

- IP68 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13) / 10 Bar (140 psi).
- PG standard.
- Brass, Nickel Plated (BN) Cord Grips feature preinstalled Perbunan (PR) Seal Rings. Order Seal Rings separately for Polyamide (PA) and PVDF Polyvinylidene (PO) Cord Grips if required.
- Order Locknuts separately if required.
- Standard color: Beige or Black Polyamide (PA), Opaque or Black PVDF Polyvinylidene (PO) or Brass, Nickel Plated (BN).

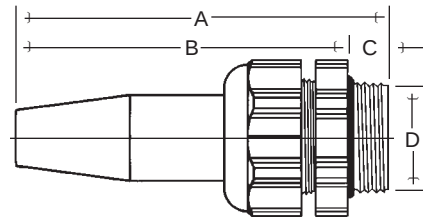
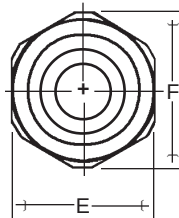


Polyamide (PA) with PVC Polyvinylchloride (PV) Sealing Insert/Sleeve

Liquid Tight Strain Reliefs (Cord Grips)							
Body Material				Polyamide (PA)			
Body Temperature Range				-20 to 100°C (-4 to 212°F)			
Sealing Insert/Sleeve Material				PVC Polyvinylchloride (PV)			
Sealing Insert/Sleeve Temperature Range				-20 to 80°C (-4 to 176°F)			
Sealing Insert/Sleeve Color				Black			
Seal Ring Material							
Seal Ring Temperature Range							
Type	Std. Pk.	Mtg. Hole Dia. ¹ mm (in.)	Nearest Drill Size	Cable Dia. mm (in.)	Cat. No.		
					Beige	Black	
PG9-PB	25	15.5 (.61)	39/64	5.0- 6.5 (.20- .26)	70.701	70.721	
PG9-PB	25	15.5 (.61)	39/64	5.0- 7.5 (.20- .30)	70.702	70.722	
PG11-PB	25	19.0 (.75)	3/4	5.0- 7.5 (.20- .30)	70.703	70.723	
PG11-PB	25	19.0 (.75)	3/4	6.0- 8.5 (.24- .33)	70.704	70.724	
PG11-PB	25	19.0 (.75)	3/4	6.5- 9.5 (.26- .37)	70.705	70.725	
PG13.5-PB	25	21.0 (.83)	53/64	6.0- 8.5 (.24- .33)	70.706	70.726	
PG13.5-PB	25	21.0 (.83)	53/64	8.0- 10.5 (.31- .41)	70.707	70.727	
PG16-PB	10	23.0 (.91)	29/32	6.5- 9.5 (.26- .37)	70.709	70.729	
PG16-PB	10	23.0 (.91)	29/32	8.0- 10.5 (.31- .41)	70.710	70.730	
PG16-PB	10	23.0 (.91)	29/32	10.5- 13.0 (.41- .51)	70.711	70.731	
PG21-PB	10	29.0 (1.14)	1-9/64	14.0- 17.0 (.55- .67)	70.712	70.732	
PG21-PB	10	29.0 (1.14)	1-9/64	17.0- 20.5 (.67- .81)	70.713	70.733	
PG29-PB	5	37.5 (1.48)	1-31/64	—	—	—	
PG29-PB	5	37.5 (1.48)	1-31/64	21.0- 24.0 (.83- .94)	70.714	70.734	
PG36-PB	5	47.5 (1.87)	1-7/8	24.0- 28.0 (.94-1.10)	70.715	70.735	

Body Color, Example: Beige [BIE] or Black [BK] or Opaque [OP]

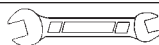
Body Material, Example: Polyamide [PA] or PVDF Polyvinylidene [PO] or Brass, Nickel Plated [BN]



Polyamide (PA) and PVDF Polyvinylidene (PO) Body Dimensions mm (in.)

Size	A	B	C	D	E	F
PG9	66.0 (2.60)	57.0 (2.24)	9.0 (.35)	15.2 (.60)	19.0	21.0 (.83)
PG11	73.0 (2.87)	64.0 (2.52)	9.0 (.35)	18.6 (.73)	22.0	24.5 (1.00)
PG13.5	81.0 (3.19)	72.0 (2.83)	9.0 (.35)	20.4 (.80)	24.0	26.5 (1.04)
PG16	81.0 (3.19)	71.5 (2.82)	9.5 (.37)	22.5 (.89)	27.0	29.5 (1.16)
PG21	90.0 (3.54)	79.0 (3.11)	11.0 (.43)	28.3 (1.11)	33.0	36.5 (1.44)
PG29	115.0 (4.53)	103.5 (4.07)	11.5 (.45)	37.0 (1.46)	43.0	46.0 (1.81)
PG36	124.0 (4.88)	110.0 (4.33)	14.0 (.55)	47.0 (1.85)	53.0	57.0 (2.24)

¹ For installation into nonthreaded holes with Locknuts.
Please refer to page 5 for installation instructions.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches.
Please refer to column "E" in the Dimensions Table for sizes.



PVDF Polyvinylidene (PO)
with PVC Polyvinylchloride (PV)
Sealing Insert/Sleeve



Brass, Nickel Plated (BN)
with PVC Polyvinylchloride (PV)
Sealing Insert/Sleeve

Accessories

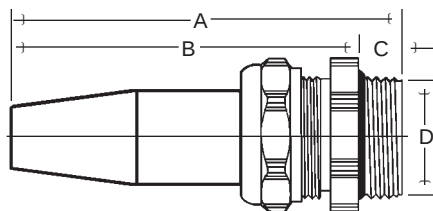
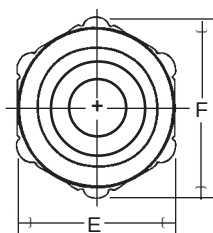
Seal Rings: please refer to page 52.
Locknuts: please refer to page 54.

PVDF Polyvinylidene (PO)
-40 to 150°C (-40 to 302°F)
PVC Polyvinylchloride (PV)
-20 to 80°C (-4 to 176°F)
Black

Brass, Nickel Plated (BN)
-40 to 300°C (-40 to 572°F)
PVC Polyvinylchloride (PV)
-20 to 80°C (-4 to 176°F)
Black
Perbunan (PR)
-20 to 120°C (-4 to 248°F)

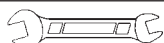
Cable Dia. mm	(in.)	Cat. No Opaque	Black
5.0- 6.5	(.20- .26)	70.761	70.741
5.0- 7.5	(.20- .30)	70.762	70.742
5.0- 7.5	(.20- .30)	70.763	70.743
6.0- 8.5	(.24- .33)	70.764	70.744
6.5- 9.5	(.26- .37)	70.765	70.745
6.0- 8.5	(.24- .33)	70.766	70.746
8.0-10.5	(.31- .41)	70.767	70.747
6.5- 9.5	(.26- .37)	70.769	70.749
8.0- 10.5	(.31- .41)	70.770	70.750
10.5- 13.0	(.41- .51)	70.771	70.751
14.0-17.0	(.55- .67)	70.772	70.752
17.0-20.5	(.67- .81)	70.773	70.753
17.0-20.5	(.66- .81)	70.774	70.754
21.0-24.0	(.83- .94)	70.775	70.755
24.0-28.0	(.94-1.10)	70.776	70.756

Cable Dia. mm	(in.)	Cat. No.
4.0- 6.5	(.16- .26)	70.781
5.0- 7.5	(.20- .30)	70.782
—	—	—
5.0- 8.5	(.20- .33)	70.783
6.5- 9.5	(.26- .37)	70.784
5.0- 8.5	(.20- .33)	70.785
7.0-10.5	(.28- .41)	70.786
6.0- 9.5	(.24- .37)	70.788
7.0-10.5	(.28- .41)	70.789
9.0-13.0	(.36- .51)	70.790
14.0-17.5	(.55- .69)	70.791
16.0-20.5	(.61- .81)	70.792
16.0-20.5	(.63- .81)	70.793
20.0-24.0	(.79- .94)	70.794
24.0-28.0	(.94-1.10)	70.795



Brass, Nickel Plated (BN) Body Dimensions mm (in.)

Size	A	B	C	D	E	F
PG9	61.0 (2.40)	55.0 (2.17)	6.0 (.24)	15.2 (.60)	17.0	18.9 (.74)
PG11	66.0 (2.60)	60.0 (2.36)	6.0 (.24)	18.6 (.73)	20.0	22.2 (.87)
PG13.5	76.0 (2.99)	69.5 (2.74)	6.5 (.26)	20.4 (.80)	22.0	24.4 (.96)
PG16	76.0 (2.99)	69.5 (2.74)	6.5 (.26)	22.5 (.89)	24.0	26.7 (1.05)
PG21	83.0 (3.27)	76.0 (2.99)	7.0 (.28)	28.3 (1.11)	30.0	33.5 (1.32)
PG29	108.0 (4.25)	100.0 (3.94)	8.0 (.31)	37.0 (1.46)	40.0	43.5 (1.71)
PG36	114.0 (4.49)	106.0 (4.17)	9.0 (.35)	47.0 (1.85)	50.0	54.0 (2.13)



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches.
Please refer to column "E" in the Dimensions Table for sizes.

HIGH PERFORMANCE PULL / BEND PROTECTION

- IP65 (NEMA 1, 2, 3, 3R, 5, 12, 13).
- PG standard.
- Brass, Nickel Plated (BN) Cord Grips feature preinstalled Perbunan (PR) Seal Rings. Order Seal Rings separately for Polyamide (PA) Cord Grips if required.
- Order Locknuts separately if required.
- Standard color: Beige or Black Polyamide (PA) or Brass, Nickel Plated (BN).



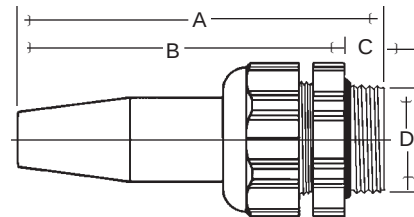
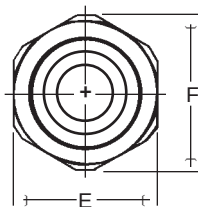
Polyamide (PA) with PVC Polyvinylchloride / Polyamide (PP) Sealing Insert/Sleeve

Liquid Tight Strain Reliefs (Cord Grips)

Body Material	Polyamide (PA)
Body Temperature Range	-20 to 100°C (-4 to 212°F)
Sealing Insert/Sleeve Material	PVC Polyvinylchloride/Polyamide (PP)
Sealing Insert/Sleeve Temperature Range	-20 to 80°C (-4 to 176°F)
Sealing Insert/Sleeve Color	Black
Seal Ring Material	
Seal Ring Temperature Range	

Type	Std. Pk.	Cable Dia. mm (in.)	Mtg. Hole Dia. ¹ mm (in.)	Nearest Drill Size	Beige	Cat No.	Black
PG9-PP  -  PV 06	25	4.0 - 6.5 (.16- .26)	15.5 (.61)	39/64	71.001		71.021
PG11-PP  -  PV 09	25	6.5 - 9.5 (.26- .37)	19.0 (.75)	3/4	71.003		71.023
PG13.5-PP  -  PV 09	25	6.5 - 9.5 (.26- .37)	21.0 (.83)	53/64	71.005		71.025
PG13.5-PP  -  PV 10	25	8.5 - 10.5 (.33- .41)	21.0 (.83)	53/64	71.006		71.026
PG16-PP  -  PV 09	10	6.5 - 9.5 (.26- .37)	23.0 (.91)	29/32	71.008		71.028
PG16-PP  -  PV 10	10	7.0 - 10.5 (.28- .41)	23.0 (.91)	29/32	71.009		71.029
PG16-PP  -  PV 13	10	9.5 - 13.0 (.37- .51)	23.0 (.91)	29/32	71.010		71.030
PG21-PP  -  PV 13	10	9.0 - 13.0 (.35- .51)	29.0 (1.14)	1-9/64	71.011		71.031
PG21-PP  -  PV 15	10	13.0 - 15.5 (.51- .61)	29.0 (1.14)	1-9/64	71.012		71.032
PG21-PP  -  PV 18	10	14.0 - 18.0 (.55- .71)	29.0 (1.14)	1-9/64	71.013		71.033
PG29-PP  -  PV 21	5	17.0 - 21.0 (.67- .83)	37.5 (1.48)	1-31/64	71.014		71.034
PG29-PP  -  PV 25	5	21.0 - 25.0 (.83- .98)	37.5 (1.48)	1-31/64	71.015		71.035

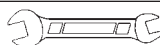
 -  Body Color, Example: Beige **[BIE]** or Black **[BK]**
 -  Body Material, Example: Polyamide **[PA]** or Brass, Nickel Plated **[BN]**



Polyamide (PA) Dimensions mm (in.)

Size	A	B	C	D	E	F
PG9	66.0 (2.60)	57.0 (2.24)	9.0 (.35)	15.2 (.60)	19.0	21.0 (.83)
PG11	73.0 (2.87)	64.0 (2.52)	9.0 (.35)	18.6 (.73)	22.0	24.5 (1.00)
PG13.5	81.0 (3.19)	72.0 (2.83)	9.0 (.35)	20.4 (.80)	24.0	26.5 (1.04)
PG16	81.0 (3.19)	71.5 (2.82)	9.5 (.37)	22.5 (.89)	27.0	29.5 (1.16)
PG21	90.0 (3.54)	79.0 (3.11)	11.0 (.43)	28.3 (1.11)	33.0	36.5 (1.44)
PG29	115.0 (4.53)	103.5 (4.07)	11.5 (.45)	37.0 (1.46)	43.0	46.0 (1.81)

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.



Brass, Nickel Plated (BN) with PVC Polyvinylchloride / Polyamide (PP) Sealing Insert/Sleeve

Brass, Nickel Plated (BN)
-40 to 300°C (-40 to 572°F)
PVC Polyvinylchloride/Polyamide (PP)
-20 to 80°C (-4 to 176°F)
Black
Perbunan (PR)
-20 to 120°C (-4 to 248°F)

Cat. No.

— —

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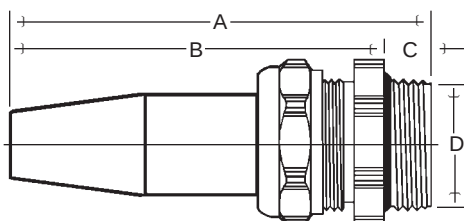
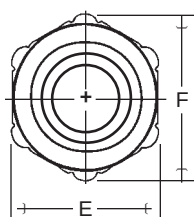
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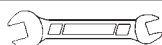
Accessories

Material	Seal Rings (Additional information on page 52.) Polyethylene (PE)		Locknuts (Additional information on page 54.) Polyamide (PA)			Brass, Nickel Plated (BN)	
	Temperature Range		Temperature Range			Temperature Range	
Size	Cat. No. Opaque	Std. Pk.	Gray	Black	Std. Pk.	Cat. No.	Std. Pk.
PG9	86.601	100	86.001	86.022	100	86.501	100
PG11	86.602	100	86.002	86.023	100	86.502	50
PG13.5	86.603	100	86.003	86.024	100	86.503	50
PG16	86.604	50	86.004	86.025	50	86.504	50
PG21	86.605	50	86.005	86.026	50	86.505	50
PG29	86.606	20	86.006	86.027	25	86.506	25
PG36	86.607	10	86.007	86.028	10	86.507	10
PG42	86.608	5	86.008	86.029	5	86.508	5
PG48	86.609	5	86.009	86.030	5	86.509	5



Brass, Nickel Plated (BN) Body Dimensions mm (in.)

Size	A	B	C	D	E	F
PG9	61.0 (2.40)	55.0 (2.17)	6.0 (.24)	15.2 (.60)	17.0	18.9 (.74)
PG11	66.0 (2.60)	60.0 (2.36)	6.0 (.24)	18.6 (.73)	20.0	22.2 (.87)
PG13.5	76.0 (2.99)	69.5 (2.74)	6.5 (.26)	20.4 (.80)	22.0	24.4 (.96)
PG16	76.0 (2.99)	69.5 (2.74)	6.5 (.26)	22.5 (.89)	24.0	26.7 (1.05)
PG21	83.0 (3.27)	76.0 (2.99)	7.0 (.28)	28.3 (1.11)	30.0	33.5 (1.32)
PG29	108.0 (4.25)	100.0 (3.94)	8.0 (.31)	37.0 (1.46)	40.0	43.5 (1.71)



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches.
Please refer to column "E" in the Dimensions Table for sizes.

HIGH PERFORMANCE MULTI-CONDUCTOR BODIES

Polyamide (PA) and Brass, Nickel Plated (BN)

High Performance Multi-Conductor Strain Reliefs are used to install several cables, cords, etc. of identical or different diameters through one Cord Grip into an enclosure.

Typically used when space is restricted or when multiple cables must be installed, Multi-Conductors seal and provide strain relief. They are available with Polyamide (PA) and Brass, Nickel Plated (BN) bodies. The Sealing Insert material is PVC Polyvinylchloride (PV) and is available in three different variations:

1. Premolded with a number of holes of the same or different diameters. Please refer to pages 43 to 45 for available patterns, keeping in mind that the hole size selected for specific cables should match the actual diameter closely. A tolerance of -1mm (0.04 in.) should not be exceeded to ensure proper sealing. If all of the holes are not required when using a Premolded Multi-Conductor Insert, refer to page 52 for the appropriate size Sealing Plug. Sealing Plugs should be inserted into unused holes to maintain the rated seal and strain relief rating.

2. Solid Inserts for self customization are available for sizes PG9 to PG36 bodies. Please refer to page 45 for more information on Solid Inserts and to page 46 for a shop drilling worksheet. Order inserts and Cord Grip bodies separately.

3. Custom drilled or Custom Molded Inserts can also be supplied. For low to medium quantities, Altech will gladly drill custom holes into the inserts for you. If higher volumes are required, special molding tools may help to keep the cost down. Please challenge us to help you solve your problem.

To select the proper insert, determine the number and diameters of cables/cords to be installed, then choose the matching body in the material and color you prefer and any accessories (page 52). Order bodies, inserts and accessories separately.

- IP65 (NEMA 1, 2, 3, 3R, 5, 12, 13).
- PG standard.
- Brass, Nickel Plated (BN) Cord Grips feature preinstalled Perbunan (PR) Seal Rings. Order Seal Rings separately for Polyamide (PA) Cord Grips if required. Please Refer to page 52.
- Standard color of body: Beige or Black Polyamide (PA) or Brass, Nickel Plated (BN).
- Insert color: White.
- Order Locknuts separately if required. Please refer to page 54.



Polyamide (PA)



Brass, Nickel Plated (BN)

Body Technical and Ordering Information. Order Inserts Separately

Body Material	Polyamide (PA)	Brass, Nickel Plated (BN)
Body Temperature Range	-20 to 100°C (-4 to 212°F)	-40 to 300°C (-40 to 572°F)

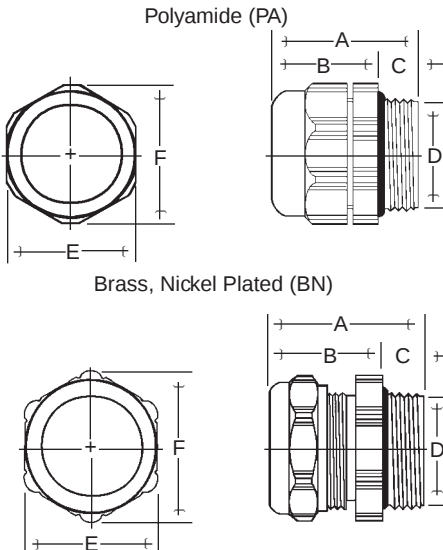
Polyamide (PA)

Type	Std. Pk.	Cat. No.		Mtg. Hole Dia. mm (in.)	Nearest Drill Size
		Beige	Black		
PG9-PMPA- 	25	71.701	71.711	15.5 (.61)	39/64
PG11-PMPA- 	25	71.702	71.712	19.0 (.75)	3/4
PG13.5-PMPA- 	25	71.703	71.713	21.0 (.83)	53/64
PG16-PMPA- 	25	71.704	71.714	23.0 (.91)	29/32
PG21-PMPA- 	10	71.705	71.715	29.0 (1.14)	1-9/64
PG29-PMPA- 	5	71.706	71.716	37.5 (1.48)	1-31/64
PG36-PMPA- 	5	71.707	71.717	47.5 (1.87)	1-7/8

Body Color, Example: Beige **[B][E]** or Black **[B][K]**

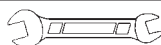
Brass, Nickel Plated (BN)

Type	Std. Pk.	Cat. No.		Mtg. Hole Dia. mm (in.)	Nearest Drill Size
PG9-PMBN- 	25	71.731		15.5 (.61)	39/64
PG11-PMBN- 	25	71.732		19.0 (.75)	3/4
PG13.5-PMBN- 	25	71.733		21.0 (.83)	53/64
PG16-PMBN- 	25	71.734		23.0 (.91)	29/32
PG21-PMBN- 	10	71.735		29.0 (1.14)	1-9/64
PG29-PMBN- 	5	71.736		37.5 (1.48)	1-31/64
PG36-PMBN- 	5	71.737		47.5 (1.87)	1-7/8



Dimensions mm (in.)

Size	A	B	C	D	E	F
Polyamide (PA)						
PG9	31.0 (1.22)	22.0 (.87)	9.0 (.35)	15.2 (.60)	19.0	21.0 (.83)
PG11	32.0 (1.26)	23.0 (.91)	9.0 (.35)	18.6 (.73)	22.0	24.5 (1.00)
PG13.5	33.0 (1.26)	23.0 (.91)	9.0 (.35)	20.4 (.80)	24.0	26.5 (1.04)
PG16	32.5 (1.28)	23.0 (.91)	9.5 (.37)	22.5 (.89)	27.0	29.5 (1.16)
PG21	38.0 (1.48)	27.0 (1.06)	11.0 (.43)	28.3 (1.11)	33.0	36.5 (1.44)
PG29	45.5 (1.79)	34.0 (1.34)	11.5 (.45)	37.0 (1.46)	43.0	46.0 (1.81)
PG36	48.0 (1.89)	34.0 (1.34)	14.0 (.55)	47.0 (1.85)	53.0	57.0 (2.24)
Brass, Nickel Plated (BN)						
PG9	26.0 (1.02)	20.0 (.79)	6.0 (.24)	15.2 (.60)	17.0	18.9 (.74)
PG11	26.0 (1.02)	20.0 (.79)	6.0 (.24)	18.6 (.73)	20.0	22.2 (.87)
PG13.5	27.5 (1.08)	21.0 (.83)	6.5 (.26)	20.4 (.80)	22.0	24.4 (.96)
PG16	27.5 (1.08)	21.0 (.83)	6.5 (.26)	22.5 (.89)	24.0	26.7 (1.05)
PG21	32.0 (1.26)	25.0 (.98)	7.0 (.28)	28.3 (1.11)	30.0	33.5 (1.32)
PG29	35.0 (1.38)	27.0 (1.06)	8.0 (.31)	37.0 (1.46)	40.0	43.5 (1.71)
PG36	37.0 (1.46)	28.0 (1.10)	9.0 (.35)	47.0 (1.85)	50.0	54.0 (2.24)



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.

HIGH PERFORMANCE PVC POLYVINYLCHLORIDE(PV) MULTI-CONDUCTOR INSERTS

Insert Technical and Ordering Information. Order Bodies Separately.

Sealing Insert Material PVC Polyvinylchloride (PV)

Sealing Insert Temperature Range -20 to 80°C
(-4 to 176°F)

HIGH PERFORMANCE PVC POLYVINYLCHLORIDE(PV) PREMOLDED MULTI-CONDUCTOR INSERTS



A wide variety of Premolded Inserts are available from stock with holes of identical or different diameters. Inserts are shown on pages 43 to 45. They have been organized by PG sizes as well as number and diameter of holes. To select the proper Cord Grip assemblies for your application, first determine the number and diameter of cables to be inserted through the Multi-Conductor Strain Relief(s). Next, select a suitable Insert from page 43 to 45, then select the body that matches the PG size of the selected Insert from page 42. Choose the body from Polyamide (PA) or Brass, Nickel Plated (BN) types, depending on your preference and environmental conditions expected. Spare holes should be plugged with Sealing Plugs (page 52) to obtain the rated protection level. Order Inserts (page 43 to 45), bodies (page 42) and any accessories (page 52) separately. Use the worksheet on page 46 when holes must be drilled. Use the same worksheet to communicate to Altech the quantity, diameter(s) and location of any holes you want us to drill or to order Custom Molded Inserts (a tooling charge may be required).

Metric to Inch Measurement Conversion
Millimeters ÷ (25.4) = Inches
Inches x (25.4) = Millimeters

PG9

Same Diameter							
Size	Std. Pk.	Hole Qty.	x Dia.	Cat. No. White	Size	Std. Pk.	Hole Qty. x Dia. Cat. No. White
PG9	25	1	x 3.0mm	71.400-MI	PG9	25	2 x 3.0mm 71.404-MI
PG9	25	1	x 4.0mm	71.401-MI	PG9	25	3 x 3.0mm 71.405-MI
PG9	25	1	x 5.0mm	71.402-MI	PG9	25	4 x 1.4mm 71.406-MI
PG9	25	2	x 1.0mm	71.403-MI	PG9	25	4 x 3.0mm 71.407-MI

Multiple Diameters							
Size	Std. Pk.	No. of Holes	Hole Qty. x Dia.	Hole Qty. x Dia.	Cat. No. White		
PG9	25	2	(1 x 4.0mm) +	(1 x 6.0mm)	71.408-MI		
PG9	25	3	(1 x 2.0mm) +	(2 x 4.0mm)	71.409-MI		
PG9	25	3	(1 x 5.0mm) +	(2 x 4.0mm)	71.410-MI		

PG11

Same Diameter							
Size	Std. Pk.	Hole Qty.	x Dia.	Cat. No. White	Size	Std. Pk.	Hole Qty. x Dia. Cat. No. White
PG11	25	1	x 3.0mm	71.420-MI	PG11	25	3 x 5.3mm 71.430-MI
PG11	25	1	x 4.0mm	71.421-MI	PG11	25	4 x 1.5mm 71.431-MI
PG11	25	1	x 5.0mm	71.422-MI	PG11	25	4 x 4.0mm 71.432-MI
PG11	25	2	x 2.3mm	71.423-MI	PG11	25	5 x 3.5mm 71.433-MI
PG11	25	2	x 3.0mm	71.424-MI	PG11	25	6 x 2.0mm 71.434-MI
PG11	25	2	x 4.0mm	71.425-MI	PG11	25	6 x 2.5mm 71.435-MI
PG11	25	2	x 5.0mm	71.426-MI	PG11	25	7 x 1.5mm 71.436-MI
PG11	25	2	x 6.0mm	71.427-MI	PG11	25	8 x 1.2mm 71.437-MI
PG11	25	3	x 3.0mm	71.428-MI	PG11	25	8 x 3.0mm 71.438-MI
PG11	25	3	x 4.0mm	71.429-MI	PG11	25	9 x 1.5mm 71.439-MI

PG13.5

Same Diameter							
Size	Std. Pk.	Hole Qty.	x Dia.	Cat. No. White	Size	Std. Pk.	Hole Qty. x Dia. Cat. No. White
PG13.5	25	1	x 6.0mm	71.450-MI	PG13.5	25	3 x 4.0mm 71.455-MI
PG13.5	25	2	x 5.0mm	71.451-MI	PG13.5	25	4 x 3.0mm 71.456-MI
PG13.5	25	2	x 6.0mm	71.452-MI	PG13.5	25	6 x 3.5mm 71.457-MI
PG13.5	25	3	x 2.0mm	71.453-MI	PG13.5	25	8 x 1.5mm 71.458-MI
PG13.5	25	3	x 3.0mm	71.454-MI	PG13.5	25	10 x 2.0mm 71.459-MI

Multiple Diameters							
Size	Std. Pk.	No. of Holes	Hole Qty. x Dia.	Hole Qty. x Dia.	Hole Qty. x Dia.	Cat. No. White	
PG13.5	25	3	(1 x 3.0mm) +	(2 x 6.0mm)		71.460-MI	
PG13.5	25	3	(1 x 3.0mm) +	(1 x 6.0mm) +	(1x8.0mm)	71.461-MI	
PG13.5	25	3	(1 x 5.5mm) +	(2 x 5.0mm)		71.462-MI	

PG16

Same Diameter									
Size	Std. Pk.	Hole Qty.	x Dia.	Cat. No. White	Size	Std. Pk.	Hole Qty.	x Dia.	Cat. No. White
PG16	25	1	x 4.0mm	71.470-MI	PG16	25	4	x 6.0mm	71.478-MI
PG16	25	1	x 5.0mm	71.471-MI	PG16	25	5	x 5.0mm	71.479-MI
PG16	25	2	x 4.0mm	71.472-MI	PG16	25	6	x 4.0mm	71.480-MI
PG16	25	2	x 6.0mm	71.473-MI	PG16	25	7	x 2.0mm	71.481-MI
PG16	25	2	x 8.0mm	71.474-MI	PG16	25	7	x 4.0mm	71.482-MI
PG16	25	2	x 9.0mm	71.475-MI	PG16	25	8	x 4.0mm	71.483-MI
PG16	25	3	x 7.0mm	71.476-MI	PG16	25	9	x 3.0mm	71.484-MI
PG16	25	3	x 8.0mm	71.477-MI	PG16	25	18	x 2.4mm	71.485-MI
Multiple Diameters									
Size	Std. Pk.	No. of Holes	Hole Qty.	x Dia.	Hole Qty.	x Dia.	Hole Qty.	x Dia.	Cat. No. White
PG16	25	2	(1	x 3.0mm) +	(1	x 8.0mm)			71.486-MI
PG16	25	2	(1	x 3.0mm) +	(1	x 9.0mm)			71.487-MI
PG16	25	2	(1	x 6.0mm) +	(1	x 8.0mm)			71.488-MI
PG16	25	3	(1	x 3.0mm) +	(2	x 8.0mm)			71.489-MI
PG16	25	3	(1	x 4.5mm) +	(2	x 6.5mm)			71.490-MI
PG16	25	3	(1	x 5.0mm) +	(2	x 6.0mm)			71.491-MI
PG16	25	3	(1	x 5.5mm) +	(2	x 5.0mm)			71.492-MI
PG16	25	3	(1	x 6.0mm) +	(2	x 5.0mm)			71.493-MI
PG16	25	3	(1	x 7.0mm) +	(2	x 6.0mm)			71.494-MI
PG16	25	3	(1	x 8.0mm) +	(2	x 6.0mm)			71.495-MI
PG16	25	3	(1	x 3.0mm) +	(1	x 6.0mm) +	(1	x 8mm)	71.496-MI

Accessories

Seal Rings: please refer to page 52.
Locknuts: please refer to page 54.

PG21

Same Diameter									
Size	Std. Pk.	Hole Qty.	x Dia.	Cat. No. White	Size	Std. Pk.	Hole Qty.	x Dia.	Cat. No. White
PG21	10	2	x 8.0mm	71.500-MI	PG21	10	5	x 9.5mm	71.510-MI
PG21	10	2	x 9.0mm	71.501-MI	PG21	10	6	x 4.0mm	71.511-MI
PG21	10	2	x 11.0mm	71.502-MI	PG21	10	6	x 5.0mm	71.512-MI
PG21	10	3	x 7.0mm	71.503-MI	PG21	10	6	x 5.5mm	71.513-MI
PG21	10	3	x 9.0mm	71.504-MI	PG21	10	6	x 7.5mm	71.514-MI
PG21	10	4	x 5.0mm	71.505-MI	PG21	10	8	x 3.0mm	71.515-MI
PG21	10	4	x 6.0mm	71.506-MI	PG21	10	8	x 4.0mm	71.516-MI
PG21	10	4	x 6.5mm	71.507-MI	PG21	10	8	x 5.0mm	71.517-MI
PG21	10	4	x 8.0mm	71.508-MI	PG21	10	11	x 5.2mm	71.518-MI
PG21	10	5	x 2.0mm	71.509-MI	PG21	10	21	x 2.0mm	71.519-MI
Multiple Diameters									
Size	Std. Pk.	No. of Holes	Hole Qty.	x Dia.	Hole Qty.	x Dia.	Hole Qty.	x Dia.	Cat. No. White
PG21	10	2	(1	x 7.0mm)	+	(1	x 10.5mm)		71.520-MI
PG21	10	2	(1	x 8.0mm)	+	(1	x 14.0mm)		71.521-MI
PG21	10	2	(1	x 8.5mm)	+	(1	x 12.0mm)		71.522-MI
PG21	10	2	(1	x 10.0mm)	+	(1	x 12.0mm)		71.523-MI
PG21	10	3	(2	x 4.5mm)	+	(1	x 13.0mm)		71.524-MI
PG21	10	3	(1	x 6.0mm)	+	(2	x 9.0mm)		71.525-MI
PG21	10	3	(1	x 7.0mm)	+	(1	x 8.0mm)	+ (1x12.0mm)	71.526-MI
PG21	10	4	(2	x 5.0mm)	+	(2	x 9.0mm)		71.527-MI
PG21	10	4	(2	x 6.0mm)	+	(2	x 8.0mm)		71.528-MI
PG21	10	4	(2	x 6.0mm)	+	(2	x 10.0mm)		71.529-MI
PG21	10	6	(4	x 5.0mm)	+	(2	x 3.2mm)		71.530-MI
PG21	10	7	(6	x 4.0mm)	+	(1	x 7.0mm)		71.531-MI

Metric to Inch Measurement Conversion
Millimeters ÷ (25.4)= Inches
Inches x (25.4)= Millimeters

PG29

Same Diameter

Size	Std. Pk.	Hole Qty.	x Dia.	Cat. No. White	Size	Std. Pk.	Hole Qty.	x Dia.	Cat. No. White
PG29	5	2	x 11.0mm	71.540-MI	PG29	5	5	x 10.0mm	71.549-MI
PG29	5	2	x 13.0mm	71.541-MI	PG29	5	6	x 6.0mm	71.550-MI
PG29	5	3	x 11.0mm	71.543-MI	PG29	5	6	x 8.0mm	71.551-MI
PG29	5	4	x 5.5mm	71.544-MI	PG29	5	7	x 7.0mm	71.552-MI
PG29	5	4	x 8.0mm	71.545-MI	PG29	5	8	x 5.5mm	71.553-MI
PG29	5	4	x 9.0mm	71.546-MI	PG29	5	10	x 6.0mm	71.554-MI
PG29	5	5	x 8.0mm	71.547-MI	PG29	5	12	x 5.3mm	71.555-MI
PG29	5	5	x 9.0mm	71.548-MI					

Multiple Diameters

Size	Std. Pk.	No. of Holes	Hole Qty. x Dia.	Hole Qty. x Dia.	Hole Qty. x Dia.	Cat. No. White
PG29	5	2	(1 x 6.5mm) +	(1 x 17.0mm)		71.556-MI
PG29	5	2	(1 x 9.0mm) +	(1 x 15.0mm)		71.557-MI
PG29	5	2	(1 x 10.5mm) +	(1 x 16.0mm)		71.558-MI
PG29	5	2	(1 x 12.0mm) +	(1 x 13.0mm)		71.559-MI
PG29	5	3	(1 x 6.0mm) +	(1 x 8.5mm) +	(1 x 1.5mm)	71.560-MI
PG29	5	3	(2 x 6.5mm) +	(1 x 10.0mm)		71.561-MI
PG29	5	3	(2 x 8.5mm) +	(1 x 13.5mm)		71.562-MI
PG29	5	3	(1 x 9.0mm) +	(1 x 10.0mm) +	1 x 11mm)	71.563-MI
PG29	5	5	(4 x 4.5mm) +	(1 x 8.0mm)		71.565-MI
PG29	5	6	(2 x 4.0mm) +	(2 x 5.0mm) +	(2 x 8mm)	71.566-MI
PG29	5	6	(3 x 7.0mm) +	(3 x 8.0mm)		71.567-MI
PG29	5	7	(4 x 6.0mm) +	(3 x 8.5mm)		71.568-MI
PG29	5	7	(3 x 7.0mm) +	(4 x 10.0mm)		71.569-MI
PG29	5	7	(2 x 7.0mm) +	(4 x 3.5mm) +	(1 x 11mm)	71.570-MI

PG36

Same Diameter

Size	Std. Pk.	Hole Qty. x Dia.	Cat. No. White	Size	Std. Pk.	Hole Qty. x Dia.	Cat. No. White
PG36	5	2 x15.0mm	71.580-MI	PG36	5	7 x 9.0mm	71.587-MI
PG36	5	2 x17.0mm	71.581-MI	PG36	5	8 x 8.0mm	71.588-MI
PG36	5	3 x10.0mm	71.582-MI	PG36	5	8 x 9.0mm	71.589-MI
PG36	5	4 x10.2mm	71.583-MI	PG36	5	11 x 8.0mm	71.590-MI
PG36	5	4 x11.5mm	71.584-MI	PG36	5	13 x 7.0mm	71.591-MI
PG36	5	4 x13.0mm	71.585-MI	PG36	5	15 x 5.0mm	71.592-MI
PG36	5	5 x11.5mm	71.586-MI				

Multiple Diameters

Size	Std. Pk.	No. of Holes	Hole Qty. x Dia.	Hole Qty. x Dia.	Hole Qty. x Dia.	Cat. No. White
PG36	5	2	(1 x 11.0mm) +	(1 x 21.0mm)		71.593-MI
PG36	5	2	(1 x 12.5mm) +	(1 x 16.5mm)		71.594-MI
PG36	5	2	(1 x 14.0mm) +	(1 x 17.0mm)		71.595-MI
PG36	5	3	(1 x 13.0mm) +	(2 x 16.5mm)		71.596-MI

HIGH PERFORMANCE PVC POLYVINYLCHLORIDE (PV) SOLID CORE INSERT



Solid

Size	Std. Pk.	Cat. No. White	Size	Std. Pk.	Cat. No. White
PG9	25	71.621-MI	PG21	10	71.625-MI
PG11	25	71.622-MI	PG29	5	71.626-MI
PG13.5	25	71.623-MI	PG36	5	71.627-MI
PG16	25	71.624-MI			

Metric to Inch Measurement Conversion
Millimeters ÷ (25.4)= Inches
Inches x (25.4)= Millimeters

HIGH PERFORMANCE MULTI-CONDUCTOR CORD GRIP WORKSHEET FOR SOLID CORE INSERTS

Solid Core Insert Template

Available Drilling Area Diameter (D)		For Use In Cord Grip Size
10mm (.39 in.)		PG9
11mm (.43 in.)		PG11
13mm (.51 in.)		PG13.5
16mm (.63 in.)		PG16
21mm (.83 in.)		PG21
28mm (1.10 in.)		PG29
37mm (1.46 in.)		PG36

General Information

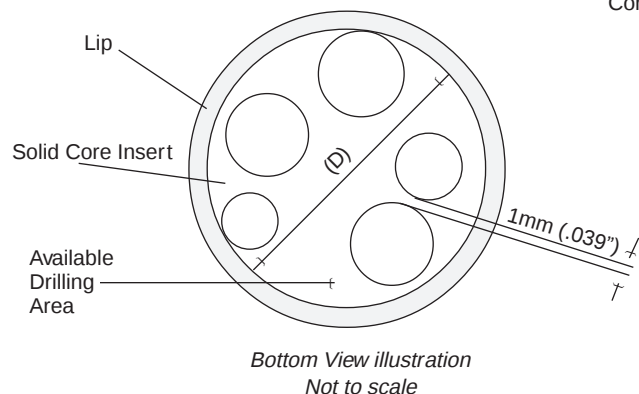
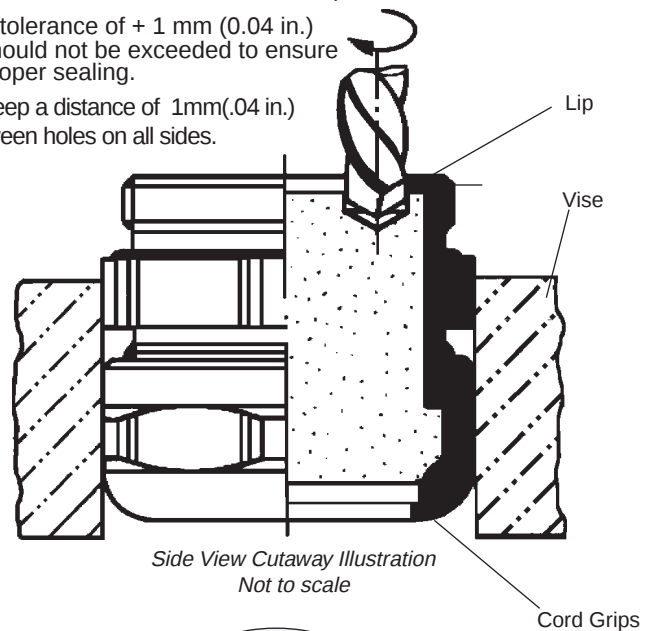
Use this worksheet to determine drill patterns or to communicate hole locations, quantity and diameters to Altech if you want us to drill holes for you (low to medium quantities) or, for higher quantities, to instruct us how to create a special molding tool to custom mold inserts for you.

Drill holes by using a standard high-speed steel drill bit of the proper size at approx. 800 RPM¹. To facilitate drilling we recommend to cool the solid core inserts to 7°C (45°F). Drill holes with Insert installed into Cord Grip. See cutaway illustration below. Keep a distance of 1mm (.04 in.) between holes on all sides. However, the outside holes can be located right against the lip of the strain relief body (shown on top of cutaway illustration) as sufficient insert material remains between the hole and the body wall, due to the design of the Cord Grip.

The useable area of the various Cord Grip sizes is shown by PG size in mm and inches at a 1:1 scale. Please feel free to copy this worksheet and use the template to prepare your own drilling pattern or to communicate the pattern to Altech.

Shop Drilling

- Slip Insert into Cord Grip.
- Tighten Pressure-Dome of Cord Grip prior to drilling.
- Place Cord Grip into vise.
- Drill holes.
- Cool drill bit with air or water if required.
- A tolerance of + 1 mm (0.04 in.) should not be exceeded to ensure proper sealing.
- Keep a distance of 1mm(.04 in.) between holes on all sides.



¹ Do not exceed 1,000 RPM as PVC Polyvinylchloride (PV) insert material might overheat and possibly melt.

HIGH PERFORMANCE EMI / RFI

Brass, Nickel Plated (BN)

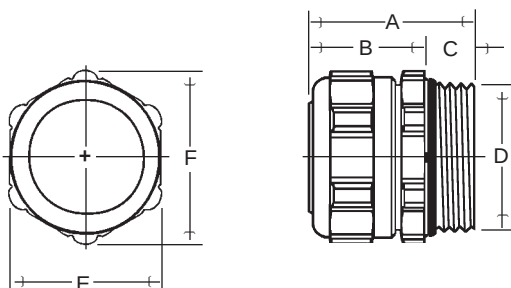
Provide sealing and strain relief plus shielding against electromagnetic and radio frequency interference. For more information about EMI / RFI Cord Grips, please refer to page 26.

- IP68 (NEMA 1, 2, 3, 3R, 4, 4X, 5, 6, 12, 13) / 10Bar (140 psi).
- PG standard.
- Preinstalled Perbunan (PR) Seal Ring.
- Order EMI / RFI or regular Locknuts separately if required. Please refer to pages 26 for general information and page 54 for ordering.



Brass, Nickel Plated (BN) with Santoprene (ST) Tubular Sealing Insert

Liquid Tight Strain Reliefs (Cord Grips)											
Body Material				Brass, Nickel Plated (BN)							
Body Temperature Range				-40 to 300°C (-40 to 572°F)							
Sealing Insert Material				Santoprene (ST)							
Temperature Range				-60 to 125°C (-65 to 257°F)							
Sealing Insert Color				Beige							
Seal Ring Material				Perbunan (PR)							
Seal Ring Temperatuer Range				-20 to 120°C (-4 to 248°F)							
Type	Std. Pk.	CableDia.		ShieldDia.Min.		ShieldDia.Min.		Mtg. Hole Dia. ¹		Nearest Drill Size	Cat.No.
		mm	(in.)	mm	(in.)	mm	(in.)	mm	(in.)		
PG9-STBN-BNST 06	5	4.0 - 6.0	(.16- .24)	1.5	(.06)	4.0	(.16)	15.5	(.61)	39/64	71.300
PG9-STBN-BNST 09	5	7.0 - 9.5	(.27- .37)	1.5	(.06)	6.5	(.26)	15.5	(.61)	39/64	71.301
PG11-STBN-BNST 06	5	6.0 - 8.0	(.24- .31)	3.0	(.12)	7.0	(.28)	19.0	(.75)	3/4	71.302
PG11-STBN-BNST 09	5	6.0 - 9.5	(.24- .37)	3.5	(.14)	8.0	(.31)	19.0	(.75)	3/4	71.303
PG11-STBN-BNST 10	5	8.0 - 10.5	(.31- .41)	4.0	(.16)	8.5	(.33)	19.0	(.75)	3/4	71.304
PG13.5-STBN-BNST 06	5	4.0 - 6.0	(.16- .24)	2.5	(.10)	6.0	(.24)	21.0	(.83)	53/64	71.305
PG13.5-STBN-BNST 09	5	6.0 - 9.5	(.24- .37)	5.0	(.20)	8.0	(.31)	21.0	(.83)	53/64	71.306
PG13.5-STBN-BNST 10	5	8.0 - 10.5	(.31- .41)	5.0	(.20)	8.0	(.31)	21.0	(.83)	53/64	71.307
PG16-STBN-BNST 09	5	6.0 - 9.5	(.24- .37)	6.0	(.24)	9.0	(.35)	23.0	(.91)	29/32	71.308
PG16-STBN-BNST 10	5	8.0 - 10.5	(.31- .41)	6.0	(.24)	9.0	(.35)	23.0	(.91)	29/32	71.309
PG16-STBN-BNST 11	5	10.0 - 11.5	(.39- .45)	6.5	(.26)	10.0	(.39)	23.0	(.91)	29/32	71.310
PG16-STBN-BNST 14	5	10.0 - 14.0	(.39- .55)	8.0	(.31)	12.0	(.47)	23.0	(.91)	29/32	71.311
PG16-STBN-BNST 16	5	14.0 - 16.5	(.55- .65)	8.0	(.31)	12.0	(.47)	23.0	(.91)	29/32	71.312
PG21-STBN-BNST 10	3	8.0 - 10.5	(.31- .41)	8.0	(.31)	10.0	(.39)	29.0	(1.14)	1-9/64	71.313
PG21-STBN-BNST 14	3	10.0 - 14.0	(.39- .55)	8.0	(.31)	12.0	(.47)	29.0	(1.14)	1-9/64	71.314
PG21-STBN-BNST 16	3	14.0 - 16.5	(.55- .64)	8.0	(.31)	12.0	(.47)	29.0	(1.14)	1-9/64	71.315
PG21-STBN-BNST 18	3	15.0 - 18.0	(.59- .71)	12.5	(.49)	17.5	(.69)	29.0	(1.14)	1-9/64	71.316
PG21-STBN-BNST 20	3	17.0 - 20.0	(.67- .79)	12.5	(.49)	17.5	(.69)	29.0	(1.14)	1-9/64	71.317
PG29-STBN-BNST 23	1	19.0 - 23.0	(.74- .90)	15.0	(.59)	21.0	(.83)	37.5	(1.48)	1-31/64	71.318
PG29-STBN-BNST 27	1	22.0 - 27.0	(.86-1.06)	15.0	(.59)	21.0	(.83)	37.5	(1.48)	1-31/64	71.319
PG36-STBN-BNST 30	1	25.0 - 30.0	(.98-1.18)	18.0	(.71)	25.0	(.98)	47.5	(1.87)	1-7/8	71.320
PG36-STBN-BNST 32	1	29.0 - 32.0	(1.14-1.26)	24.0	(.94)	30.0	(1.18)	47.5	(1.87)	1-7/8	71.321
PG42-STBN-BNST 41	1	37.0 - 41.0	(1.45-1.61)	29.0	(1.14)	33.0	(1.30)	54.5	(2.15)	2-5/32	71.322



Dimensions mm (in.)

Size	A	B	C	D	E	F
PG9	41.0 (1.61)	31.0 (1.22)	10.0 (.39)	15.2 (.60)	24.0	26.7 (1.05)
PG11	41.0 (1.61)	31.0 (1.22)	10.0 (.39)	18.6 (.73)	24.0	26.7 (1.05)
PG13.5	41.0 (1.61)	31.0 (1.22)	10.0 (.39)	20.4 (.80)	24.0	26.7 (1.05)
PG16	43.0 (1.70)	32.0 (1.26)	11.0 (.43)	22.5 (.89)	30.0	33.5 (1.32)
PG21	44.0 (1.73)	34.0 (1.34)	12.0 (.47)	28.3 (1.11)	30.0	33.5 (1.32)
PG29	52.0 (2.05)	39.0 (1.54)	13.0 (.51)	37.0 (1.46)	40.0	43.5 (1.71)
PG36	59.0 (2.32)	45.0 (1.77)	14.0 (.55)	47.0 (1.85)	50.0	54.0 (2.13)
PG42	65.0 (2.56)	50.0 (1.97)	15.0 (.59)	54.0 (2.13)	60.0	65.0 (2.56)

¹ For installation into norththreaded holes with Locknuts. For additional information please refer to the Installation Worksheet, page 55.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.

HIGH PERFORMANCE FLAT CABLE

Polyamide (PA) and Brass, Nickel Plated (BN)

- IP 65 (NEMA 1, 2, 3, 3R, 5, 12, 13).
- PG standard.
- Brass, Nickel Plated (BN) Cord Grips feature preinstalled Perbunan (PR) Seal Rings. Order Seal Rings separately for Polyamide (PA) Cord Grips if required.
- Order Locknuts separately if required.
- Standard color of body: Beige or Black Polyamide (PA) or Brass, Nickel Plated (BN) if required.



Polyamide (PA) Bodies

Liquid Tight Strain Reliefs (Cord Grips)

Body Material

Body Temperature Range

Sealing Insert Material

Sealing Insert Temperature Range

Sealing Insert Color

Seal Ring Material

Seal Ring Temperature Range

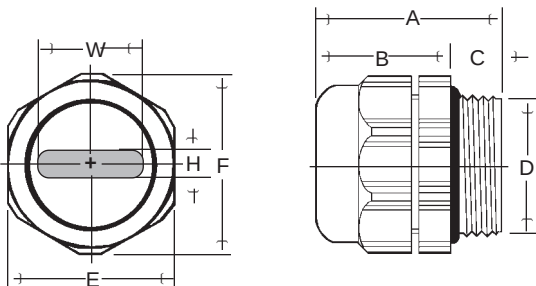
Polyamide (PA)

-20 to 100°C (-4 to 212°F)

Type	Std. Pk.	Mtg. Hole Dia. ¹ mm (in.)	Nearest Drill Size	Cat. No. Beige	Cat. No. Black
PG9-PF ☐ - ☐ BE 05	15	15.5 (.61)	39/64	71.701	71.711
PG11-PF ☐ - ☐ BE 06	15	19.0 (.75)	3/4	71.702	71.712
PG11-PF ☐ - ☐ BE 09	15	19.0 (.75)	3/4	71.702	71.712
PG11-PF ☐ - ☐ BE 10	15	19.0 (.75)	3/4	71.702	71.712
PG13.5-PF ☐ - ☐ BE 11	10	21.0 (.83)	53/64	71.703	71.713
PG13.5-PF ☐ - ☐ BE 12	10	21.0 (.83)	53/64	71.703	71.713
PG16-PF ☐ - ☐ BE 12	10	23.0 (.91)	29/32	71.704	71.714
PG16-PF ☐ - ☐ BE 14	10	23.0 (.91)	29/32	71.704	71.714
PG21-PF ☐ - ☐ BE 17	5	29.0 (1.14)	1-9/64	71.705	71.715
PG21-PF ☐ - ☐ BE 18	5	29.0 (1.14)	1-9/64	71.705	71.715
PG21-PF ☐ - ☐ BE 15	5	29.0 (1.14)	1-9/64	71.705	71.715
PG29-PF ☐ - ☐ BE 29	5	37.5 (1.48)	1-31/64	71.706	71.716
PG29-PF ☐ - ☐ BE 25	5	37.5 (1.48)	1-31/64	71.706	71.716
PG36-PF ☐ - ☐ BE 30	5	47.5 (1.87)	1-7/8	71.707	71.717
PG36-PF ☐ - ☐ BE 34	5	47.5 (1.87)	1-7/8	71.707	71.717
PG42-PF ☐ - ☐ BE 38	2	54.5 (2.15)	2-5/32	71.708	—
PG48-PF ☐ - ☐ BE 43	2	60.0 (2.36)	2-3/8	71.709	—

Body Color, Example: Beige ☐ or Black ☐

Body Material, Example: Polyamide ☐ or Brass, Nickel Plated ☐

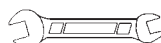


Polyamide Dimensions mm (in.)

Size	A	B	C	D	E	F
PG9	31.0 (1.22)	22.0 (.87)	9.0 (.35)	15.2 (.60)	19.0	21.0 (.83)
PG11	32.0 (1.26)	23.0 (.91)	9.0 (.35)	18.6 (.73)	22.0	24.5 (1.00)
PG13.5	33.0 (1.30)	23.0 (.91)	9.0 (.35)	20.4 (.80)	24.0	26.5 (1.04)
PG16	32.0 (1.26)	23.0 (.91)	9.5 (.37)	22.5 (.89)	27.0	29.5 (1.16)
PG21	38.0 (1.48)	27.0 (1.06)	11.0 (.43)	28.3 (1.11)	33.0	36.5 (1.44)
PG29	45.5 (1.79)	34.0 (1.34)	11.5 (.45)	37.0 (1.46)	43.0	46.0 (1.81)
PG36	48.0 (1.89)	34.0 (1.34)	14.0 (.55)	47.0 (1.85)	53.0	57.0 (2.24)
PG42	53.0 (2.09)	38.0 (1.48)	15.0 (.59)	54.0 (2.13)	60.0	64.0 (2.52)
PG48	53.0 (2.09)	38.0 (1.48)	15.0 (.59)	59.3 (2.33)	65.0	70.0 (2.76)

¹ For installation into nonthreaded holes with Locknuts.
Please refer to page 5 for installation instructions.

Note: Flat Cable cord grips are also available in PVDF and Stainless Steel with PVC Polyvinylchloride insert.
Inserts for other than listed cable dimensions are available. Please contact Altech



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches.
Please refer to column "E" in the Dimensions Table for sizes.



Brass, Nickel Plated (BN) Bodies

Brass, Nickel Plated (BN)
-40 to 300°C (-40 to 572°F)

Perbunan (PR)
-20 to 120°C (-4 to 248°F)

Cat. No.
Beige

71.731
71.732
71.732
71.732
71.733
71.733

71.734
71.734
71.735
71.735
71.735
71.736
71.736
71.737
71.737
71.738
71.739



PVC Polyvinylchloride (PV) Sealing Insert, Rounded Sides*

PVC Polyvinylchloride (PV)
-20 to 80°C (-4 to 176°F)
White

Type	Std. Pk.	Opening	Dim. mm	HxW (in.)
PG9-PF	15	3.5 x 5.5	(.14 x .22)	
PG11-PF	15	4.0 x 6.0	(.16 x .24)	
PG11-PF	15	3.5 x 9.0	(.14 x .35)	
PG11-PF	15	2.8 x 10.5	(.11 x .41)	
PG13.5-PF	10	5.0 x 11.0	(.20 x .43)	
PG13.5-PF	10	3.0 x 12.0	(.12 x .47)	
PG16-PF	10	5.0 x 12.0	(.20 x .47)	
PG16-PF	10	7.5 x 14.0	(.30 x .55)	
PG21-PF	5	5.0 x 17.0	(.20 x .67)	
PG21-PF	5	7.0 x 18.0	(.28 x .71)	
PG21-PF	5	9.0 x 15.0	(.35 x .59)	
PG29-PF	5	6.0 x 29.0	(.24 x 1.14)	
PG29-PF	5	8.0 x 25.0	(.31 x .98)	
PG36-PF	5	6.0 x 30.0	(.24 x 1.18)	
PG36-PF	5	11.0 x 34.0	(.43 x 1.34)	
PG42-PF	2	10.0 x 38.0	(.39 x 1.50)	
PG48-PF	2	9.0 x 43.0	(.35 x 1.69)	

Cat. No.
White

71.160-FI
71.161-FI
71.162-FI
71.163-FI
71.164-FI
71.165-FI

71.166-FI
71.167-FI
71.168-FI
71.169-FI
71.170-FI
71.171-FI
71.172-FI
71.173-FI
71.174-FI
71.175-FI
71.176-FI



PVC Polyvinylchloride (PV) Sealing Insert, Oval Openings*

PVC Polyvinylchloride (PV)
-20 to 80°C (-4 to 176°F)
White

Type	Std. Pk.	Opening	Dim. mm	HxW (in.)	Cat. No. White
PG13.5-PF	10	5.0 x 8.0	(.20 x .31)		71.140-FI
PG13.5-PF	10	5.0 x 12.0	(.20 x .47)		71.141-FI
PG16-PF	10	6.0 x 15.0	(.24 x .59)		71.142-FI
PG16-PF	10	7.0 x 14.0	(.28 x .55)		71.143-FI
PG21-PF	5	5.0 x 16.0	(.20 x .63)		71.144-FI
PG21-PF	5	7.0 x 16.5	(.28 x .65)		71.145-FI
PG21-PF	5	7.0 x 20.0	(.28 x .79)		71.146-FI
PG29-PF	5	10.0 x 27.0	(.39 x 1.06)		71.147-FI
PG36-PF	5	6.5 x 32.0	(.26 x 1.26)		71.148-FI
PG36-PF	5	11.0 x 35.0	(.43 x 1.38)		71.149-FI
PG42-PF	2	9.0 x 38.0	(.35 x 1.50)		71.150-FI

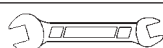
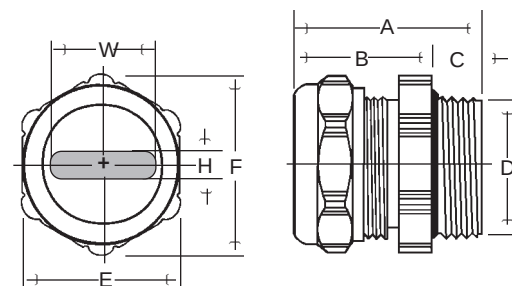
Accessories

For information on Seal Rings, please refer to page 52.

For information on Locknuts, please refer to page 54.

Brass, Nickel Plated Dimensions mm (in.)

Size	A	B	C	D	E	F
PG9	26.0 (.102)	20.0 (.79)	6.0 (.24)	15.2 (.60)	17.0	18.9 (.74)
PG11	26.0 (.102)	20.0 (.79)	6.0 (.24)	18.6 (.73)	20.0	22.2 (.87)
PG13.5	27.5 (.108)	21.0 (.83)	6.5 (.26)	20.4 (.80)	22.0	24.4 (.96)
PG16	27.5 (.108)	21.0 (.83)	6.5 (.26)	22.5 (.89)	24.0	26.7 (1.05)
PG21	32.0 (.126)	25.0 (.98)	7.0 (.28)	28.3 (1.11)	30.0	33.5 (1.32)
PG29	35.0 (.138)	27.0 (1.06)	8.0 (.31)	37.0 (1.46)	40.0	43.5 (1.71)
PG36	37.0 (.146)	28.0 (1.10)	9.0 (.35)	47.0 (1.85)	50.0	54.0 (2.24)
PG42	40.0 (.157)	30.0 (1.18)	10.0 (.39)	54.0 (2.13)	57.0	61.0 (2.40)
PG48	40.0 (.157)	30.0 (1.18)	10.0 (.39)	59.3 (2.33)	64.0	69.0 (2.72)



Installation
To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches.
Please refer to column "E" in the Dimensions Table for sizes.

*Tolerances

Minimum cable size should not be less than .5mm (.02 in.) in width and height than opening in Cord Grip.



Economy Liquid Tight Strain Reliefs (Cord Grips) are ideal for basic, straight-through applications. These Cord Grips seal cable/cord entries and prevent contaminants from entering into enclosures. They can be used with cables, cords, etc.

Body Material

- Polystyrene (PS)
- Brass, Nickel Plated (BN)

Sealing Ring Material

- Rubber (RU)

Function

- Straight-Through

Protection Rating

Up to IP54
(NEMA 1, 2, 5, 12,13)

ECONOMY

ECONOMY STRAIGHT-THROUGH

Polystyrene (PS) and Brass, Nickel Plated (BN)

- IP54 (NEMA 1, 2, 5, 12,13).
- PG standard.
- We recommend the use of Polyethylene (PE) Seal Rings with Polyamide (PA) and Perbunan (PR) with Brass, Nickel Plated (BN) Cord Grips. Order Seal Rings separately. Refer to page 52 for technical and ordering information.
- Order Locknuts separately if required. We recommend the use of Polyamide (PA) Locknuts with Polyamide (PA) Cord Grips and Brass, Nickel Plated (BN) Locknuts with Brass, Nickel Plated (BN) Cord Grips. Refer to page 54 for more information on Locknuts.
- Standard color: Light Gray Polystyrene (PS) or Brass, Nickel Plated (BN).

Temperature Ranges	
Body	Sealing Ring
Polystyrene (PS)	Rubber (RU)
-20 to 65°C (-4 to 149°F)	-20 to 80°C (-4 to 176°F)
Brass, Nickel Plated (BN)	Rubber (RU)
-40 to 300°C (-40 to 572°F)	-20 to 80°C (-4 to 176°F)



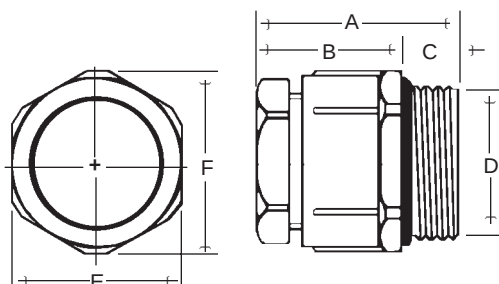
**Polystyrene (PS)
with Rubber (RU) Sealing Ring**



**Brass, Nickel Plated (BN)
with Rubber (RU) Sealing Ring**

Liquid Tight Strain Reliefs (Cord Grips)

Cable Dia. mm (in.)	Mtg. Hole Dia. ¹ mm (in.)	Nearest Drill Size ¹	Type	Cat. No.	Std. Pk.	Type	Cat. No.	Std. Pk.
5.0 - 7.0 (.20 - .28)	13.0 (.51)	33/64	PG7-ESPS- LG RU 07	80.600	100	PG7-ESBN- [] RU 07	80.610	100
6.0 - 8.0 (.24 - .31)	15.5 (.61)	39/64	PG9-ESPS- LG RU 08	80.601	100	PG9-ESBN- [] RU 08	80.611	100
8.0 - 10.0 (.31 - .39)	19.0 (.75)	3/4	PG11-ESPS- LG RU 10	80.602	100	PG11-ESBN- [] RU 10	80.612	50
10.0 - 12.0 (.39 - .47)	21.0 (.83)	53/64	PG13.5-ESPS- LG RU 12	80.603	100	PG13.5-ESBN- [] RU 12	80.613	50
12.0 - 14.0 (.47 - .55)	23.0 (.91)	29/32	PG16-ESPS- LG RU 14	80.604	50	PG16-ESBN- [] RU 14	80.614	50
15.0 - 17.0 (.59 - .67)	29.0 (1.14)	1-9/64	PG21-ESPS- LG RU 17	80.605	50	PG21-ESBN- [] RU 17	80.615	50
24.0 - 26.0 (.94 - 1.02)	37.5 (1.48)	1-31/64	PG29-ESPS- LG RU 26	80.606	25	PG29-ESBN- [] RU 26	80.616	25
31.0 - 33.0 (1.22 - 1.30)	47.5 (1.87)	1-7/8	PG36-ESPS- LG RU 33	80.607	10	PG36-ESBN- [] RU 33	80.617	10
39.0 - 41.0 (1.54 - 1.61)	54.5 (2.15)	2-5/32	PG42-ESPS- LG RU 41	80.608	5	PG42-ESBN- [] RU 41	80.618	5
45.0 - 47.0 (1.77 - 1.85)	60.0 (2.36)	2-3/8	PG48-ESPS- LG RU 47	80.609	5	PG48-ESBN- [] RU 47	80.619	5

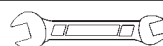


(Polystyrene (RS) Cord Grip Shown)

Dimensions mm (in.)

Size	A	B	C	D	E	F
Polystyrene (PS)						
PG7	29.0 (1.14)	22.0 (.87)	8.0 (.31)	12.5 (.49)	15.0	16.0 (.63)
PG9	31.5 (1.24)	23.5 (.93)	8.0 (.31)	15.2 (.60)	19.0	20.5 (.81)
PG11	33.0 (1.30)	25.0 (.98)	8.0 (.31)	18.6 (.73)	22.0	24.0 (.94)
PG13.5	36.0 (1.42)	26.5 (1.04)	9.5 (.37)	20.4 (.80)	24.0	26.0 (1.02)
PG16	40.5 (1.59)	30.5 (1.20)	10.0 (.39)	22.5 (.89)	27.0	29.0 (1.14)
PG21	43.5 (1.71)	32.5 (1.28)	11.0 (.43)	28.3 (1.11)	32.0	35.5 (1.40)
PG29	46.0 (1.81)	35.0 (1.38)	11.0 (.43)	37.0 (1.46)	42.0	45.5 (1.79)
PG36	57.0 (2.24)	44.0 (1.73)	13.0 (.51)	47.0 (1.85)	53.0	57.0 (2.24)
PG42	61.0 (2.40)	48.0 (1.89)	13.0 (.51)	54.0 (2.13)	60.0	65.0 (2.56)
PG48	60.0 (2.36)	46.0 (1.81)	14.0 (.55)	59.3 (2.33)	65.0	70.0 (2.76)
Brass, Nickel Plated (BN)						
PG7	21.0 (.83)	16.0 (.63)	5.0 (.18)	12.5 (.49)	14.0	15.5 (.61)
PG9	22.5 (.89)	16.5 (.65)	6.0 (.24)	15.2 (.60)	17.0	18.9 (.74)
PG11	24.0 (.94)	18.0 (.71)	6.0 (.24)	18.6 (.73)	20.0	22.2 (.87)
PG13.5	25.5 (1.00)	19.0 (.75)	6.5 (.26)	20.4 (.80)	22.0	24.4 (.96)
PG16	26.5 (1.04)	20.0 (.79)	6.5 (.26)	22.5 (.89)	24.0	26.5 (1.04)
PG21	30.0 (1.18)	23.0 (.91)	7.0 (.28)	28.3 (1.11)	30.0	33.5 (1.32)
PG29	33.0 (1.30)	25.0 (.98)	8.0 (.31)	37.0 (1.46)	40.0	44.0 (1.73)
PG36	39.0 (1.54)	30.0 (1.18)	9.0 (.35)	47.0 (1.85)	50.0	54.0 (2.13)
PG42	44.0 (1.73)	34.0 (1.34)	10.0 (.39)	54.0 (2.13)	57.0	61.0 (2.40)
PG48	46.0 (1.81)	36.0 (1.42)	10.0 (.39)	59.3 (2.33)	64.0	69.0 (2.72)

¹ For installation into nonthreaded holes with Locknuts. Please refer to page 5 for installation instructions.



Installation

To install, we recommend the use of Socket (Refer to page 53), Metric Open-end or Adjustable Wrenches. Please refer to column "E" in the Dimensions Table for sizes.

ACCESSORIES

Seal Rings - page 52

Provide an external seal between the Cord Grip body and the enclosure wall. Some Cord Grips have preinstalled Seal Rings. If the material of the preinstalled Seal Ring is not suitable for your application due to presence of chemicals, temperature or environmental conditions, choose a Seal Ring that will stand up to the expected environment.

Altech offers four different Seal Ring materials:

- Polyethelene (PE)
- Perbunan (PR)
- Silicone (SI)
- Centellen (CT)

Sealing Plugs - page 52

Sealing Plugs are available to seal unused holes, ensuring strain relief and IP65 (NEMA 1, 2, 3, 3R, 5, 12, 13) protection rating.

Socket Wrenches - page 53

We recommend the use of Socket Wrenches to install Cord Grips into enclosure walls. These Socket Wrenches are especially useful for high density installations. Please refer to page 53 for ordering information.

Locknuts - page 54

Use Locknuts for installations of Cord Grips into nonthreaded holes. Polyamide (PA) Locknuts are typically used for nonmetallic Cord Grips. However, Brass, Nickel Plated (BN) and Stainless Steel (SS) Locknuts can be used as well with these Cord Grips, especially if the available thread length is short or space is limited.

Brass, Nickel Plated (BN) Locknuts are typically used with Brass, Nickel Plated (BN) Cord Grips and Stainless Steel (SS) Locknuts are typically used with Stainless Steel (SS) Cord Grips.

EMI / RFI Locknuts have a specific function. Please refer to page 26 for information about these Locknuts.

Ordering information can be found on page 54.

Seal Rings

Standard

Polyamide (PA):

- Sizes PG7 to PG21 and NPT 3/8" to 3/4" have Integral Sealing Ridges
- Sizes PG29 to PG48 feature preinstalled Perbunan (PR) Seal Rings.

High Performance

Nonmetallic:

- Seal Rings not included - order separately if required.

Metal:

- Perbunan (PR) or Silicone (SI) Seal Ring are preinstalled depending on type. Refer to ordering pages.

Economy

Polystyrene (PS) and Brass, Nickel Plated (BN):

- Seal Rings not included - order separately if required.



Polyethylene (PE) - Opaque



Perbunan (PR) - Black



Silicon (SI) - Red



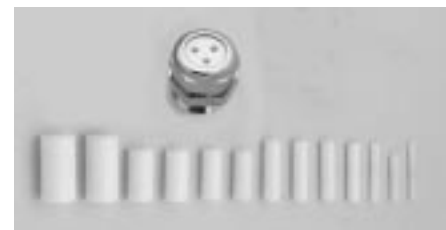
Centellen (CT) - Red

Material	Polyethylene (PE)		Perbunan (PR)		Silicone (SI)		Centellen (CT)	
Temperature Range	-20 to 100°C (-4 to 212°F)		-20 to 120°C (-4 to 248°F)		-60 to 200°C (-65 to 392°F)		-60 to 300°C (-65 to 572°F)	
Size	Cat. No.	Std. Pk.	Cat. No.	Std. Pk.	Cat. No.	Std. Pk.	Cat. No.	Std. Pk.
PG7	86.600	100	86.700	100	—	—	79.000	50
PG9	86.601	100	86.701	100	86.721	10	79.001	50
PG11	86.602	100	86.702	50	86.722	10	79.002	50
PG13.5	86.603	100	86.703	50	86.723	10	79.003	50
PG16	86.604	50	86.704	50	86.724	5	79.004	25
PG21	86.605	50	86.705	50	86.725	5	79.005	25
PG29	86.606	20	86.706	25	86.726	5	79.006	20
PG36	86.607	10	86.707	10	86.727	5	79.007	10
PG42	86.608	5	86.708	5	—	—	79.008	5
PG48	86.609	5	86.709	5	—	—	79.009	5
NPT3/8	86.602	100	86.702	50	—	—	79.002	50
NPT1/2	86.603	100	86.703	50	—	—	79.003	50
NPT3/4	86.605	50	86.705	25	—	—	79.005	25

Sealing Plugs

- Seal Unused Holes.
- Maintain Protection Rating of IP65 (NEMA 1, 2, 3, 3R, 5, 12, 13).

Sealing Plugs should be inserted into unused holes to maintain the rated seal and strain relief rating.



Type	Cat. No.	Size	Std.Pk.
SP1	86.750	3.0 x 25.0 (.12 x .98)	25
SP2	86.751	4.0 x 20.0 (.16 x .79)	25
SP3	86.752	4.0 x 25.0 (.16 x .98)	25
SP4	86.753	5.3 x 25.0 (.21 x .98)	25
SP5	86.754	6.0 x 25.0 (.24 x .98)	25
SP6	86.755	6.4 x 25.0 (.25 x .98)	25
SP7	86.756	7.0 x 25.0 (.28 x .98)	25
SP8	86.757	7.5 x 20.0 (.30 x .79)	25
SP9	86.758	8.0 x 20.0 (.32 x .79)	25
SP10	86.759	9.3 x 20.0 (.37 x .79)	25
SP11	86.760	10.0 x 20.0 (.39 x .79)	25
SP12	86.761	12.0 x 25.0 (.47 x .98)	25
SP13	86.762	13.0 x 25.0 (.51 x .98)	25

Socket Wrenches

These metric tools are ideal for installing Cord Grips into enclosure walls and are especially useful for high density installations.

Numbers in the “**TYPE**” column refer to the “E” dimensions in millimeters stated throughout the catalog for all Liquid Tight Strain Reliefs and Locknuts. The “E” dimension is the width across the flats of Cord Grip bodies or Locknuts.

- Hardened steel, zinc plated.
- Movable handle.



			Suitable for Cord Grips				Suitable for Locknuts			
Type	E Dim. (mm)	Cat. No.	PVDF, PA,PS	BN	SS	EMI / RFI	PA	BN	SS	EMI/RFI
SW14	14.0	86.800	PG7	PG7	PG7		PG7	PG7 NPT3/8 PG9	PG7, PG9	PG9
SW15	15.0	86.801								
SW17	17.0	86.802		PG9, NPT3/8	PG9					
SW18	18.0	86.803								
SW19	19.0	86.804								
SW20	20.0	86.805		PG11	PG11					
SW21	21.0	86.806	PG11, NPT3/8	PG13.5	PG13.5		PG9	PG11	PG11	PG11
SW22	22.0	86.807								
SW23	23.0	86.808						PG13.5		
SW24	24.0	86.809	PG13.5	PG16, NPT1/2	PG16	PG9-PG13.5	PG11	NPT1/2 PG16	PG13.5	PG13.5 PG16
SW26	26.0	86.810	PG16, NPT1/2	PG21, NPT3/4	PG21	PG16-PG21	PG13.5 PG16	NPT3/4 PG21	PG16	
SW27	27.0	86.811							PG21	
SW30	30.0	86.812	PG21, NPT3/4				PG21	PG29	PG29	PG21 PG29
SW32	32.0	86.813								
SW33	33.0	86.814								
SW35	35.0	86.815								
SW40	40.0	86.817								
SW41	41.0	86.818					PG29	PG29		
SW43	43.0	86.819	PG29	PG36	PG36	PG36		PG36	PG36	PG36
SW50	50.0	86.821								
SW51	51.0	86.822								
SW53	53.0	86.823	PG36	PG42 PG48	PG42 PG48		PG42	PG48		
SW57	57.0	86.824								
SW64	54.0	86.825								
SW65	65.0	86.826								
SW70	70.0	86.827	PG48							

LOCKNUTS

Use Locknuts to install Cord Grips into nonthreaded holes

- PG, NPT standard.
- Metric available.
- Standard color: Light Gray and Black Polyamide (PA), Brass, Nickel Plated (BN) or Stainless Steel (SS).



**Polyamide
(PA)**

**Brass, Ni Plated
(BN)**

**Stainless Steel
(SS)**

**EMI / RFI
Brass, Ni Plated
(BN)**

Ordering Information

Temperature Range

-20 to 100°C
(-4 to 212°F)

-40 to 300°C
(-40 to 572°F)

-50 to 500°C
(-65 to 932°F)

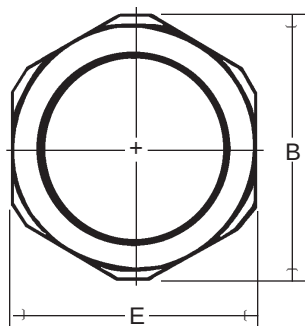
-40 to 300°C
(-40 to 572°F)

Size		Cat. No.			Std. Pk.	Cat. No.			Std. Pk.	Cat. No.			Std. Pk.	Cat. No.			Std. Pk.
		Gray	Black	Pk.													
PG7-	AL ☐ ☐ - ☐ ☐	86.000	86.021	100		86.500		100		86.520		10		—		—	
PG9-	AL ☐ ☐ - ☐ ☐	86.001	86.022	100		86.501		100		86.521		10		86.740		10	
PG11-	AL ☐ ☐ - ☐ ☐	86.002	86.023	100		86.502		50		86.522		10		86.741		10	
PG13.5-	AL ☐ ☐ - ☐ ☐	86.003	86.024	100		86.503		50		86.523		10		86.742		10	
PG16-	AL ☐ ☐ - ☐ ☐	86.004	86.025	50		86.504		50		86.524		5		86.743		5	
PG21-	AL ☐ ☐ - ☐ ☐	86.005	86.026	50		86.505		50		86.525		5		86.744		5	
PG29-	AL ☐ ☐ - ☐ ☐	86.006	86.027	25		86.506		25		86.526		2		86.745		2	
PG36-	AL ☐ ☐ - ☐ ☐	86.007	86.028	10		86.507		10		86.527		2		86.746		2	
PG42-	AL ☐ ☐ - ☐ ☐	86.008	86.029	5		86.508		5		—		—		—		—	
PG48-	AL ☐ ☐ - ☐ ☐	86.009	86.030	5		86.509		5		—		—		—		—	
NPT3/8-	AL ☐ ☐ - ☐ ☐	86.061	86.081	50		86.541		50		—		—		—		—	
NPT1/2-	AL ☐ ☐ - ☐ ☐	86.062	86.082	50		86.542		50		—		—		—		—	
NPT3/4-	AL ☐ ☐ - ☐ ☐	86.063	86.083	25		86.543		25		—		—		—		—	

Color, Example: Light Gray ☐ ☐ or Black ☐ ☐ or Brass, Nickel Plated ☐ ☐ or Stainless Steel ☐ ☐

Material, Example: Polyamide ☐ ☐ or Brass, Nickel Plated ☐ ☐ or Stainless Steel ☐ ☐

Dimensions



E = Width Across
Flats (mm.)

B = Width Across "Tips"

C = Thickness

Most Locknuts
(Front View)

Most Locknuts
(Side View)

EMI / RFI Locknuts
(Side View)

Locknut Material	Polyamide (PA)			Brass, Ni Plated (BN)			Stainless Steel (SS)			EMI / RFI Brass, Ni Plated (BN)		
	Size	E	B C	E	B C	E	B C	E	B C			
PG7	19.0	21.0 (.83)	5.0 (.20)	15.0	16.6 (.65)	2.8 (.11)	17.0	21.1 (.83)	3.0 (.12)	—	—	—
PG9	22.0	24.0 (.94)	5.0 (.20)	18.0	20.0 (.79)	2.8 (.11)	19.0	21.1 (.83)	3.0 (.12)	17.0	18.5 (.73)	6.0 (.24)
PG11	24.0	26.0 (1.02)	5.0 (.20)	21.0	23.5 (.93)	3.0 (.19)	22.0	22.3 (.88)	3.0 (.12)	22.0	24.4 (.96)	6.0 (.24)
PG13.5	27.0	29.0 (1.14)	6.0 (.24)	23.0	25.5 (1.00)	3.0 (.19)	24.0	26.8 (1.05)	3.0 (.12)	24.0	26.7 (1.05)	6.0 (.24)
PG16	30.0	33.0 (1.30)	6.0 (.24)	26.0	29.0 (1.14)	3.0 (.19)	27.0	30.2 (1.19)	3.0 (.12)	26.0	28.8 (1.13)	6.0 (.24)
PG21	36.0	39.0 (1.54)	7.0 (.28)	32.0	35.5 (1.40)	3.5 (.14)	32.0	35.8 (1.41)	3.5 (.14)	35.0	38.5 (1.52)	7.0 (.28)
PG29	46.0	50.0 (1.97)	7.0 (.28)	41.0	45.0 (1.77)	4.0 (.16)	41.0	45.7 (1.80)	4.0 (.16)	40.0	43.5 (1.71)	7.0 (.28)
PG36	60.0	66.0 (2.60)	8.0 (.32)	51.0	56.0 (2.20)	5.0 (.20)	50.0	55.8 (2.19)	5.0 (.20)	50.0	54.0 (2.13)	7.0 (.28)
PG42	65.0	73.0 (2.87)	8.0 (.32)	60.0	65.0 (2.56)	5.0 (.20)	—	—	—	—	—	—
PG48	70.0	78.0 (3.07)	8.0 (.32)	64.0	69.0 (2.72)	5.5 (.22)	—	—	—	—	—	—
NPT3/8"	22.0	24.0 (.94)	5.0 (.20)	17.0	—	3.0 (.19)	—	—	—	—	—	—
NPT1/2"	27.0	29.0 (1.14)	6.0 (.24)	24.0	—	3.0 (.19)	—	—	—	—	—	—
NPT3/4"	36.0	39.0 (1.54)	7.0 (.28)	30.0	—	3.5 (.14)	—	—	—	—	—	—

INSTALLATION WORKSHEET FOR HIGH DENSITY APPLICATIONS

High density installation of Cord Grips is called for whenever a large number of cables or cords must be installed into an Enclosure, or the Enclosure is relatively small and a larger one can not be used.

By following some basic guidelines, multiple Cord Grips, even different sizes and materials, can be installed into a small area.

Before starting the layout, please make sure that the mechanical integrity of the Enclosure is not compromised. Also, make sure that the Locknuts and Cord Grips can be turned for fastening and that there is no interference with corners, walls and bottoms of the Enclosure or with installed items such as Mounting Plates, DIN Rails or other components.

In order to use Socket Wrenches (refer to page 53) or other tools to tighten the Cord Grips and Locknuts, a minimum clearance of "Y" (please see table below) must be maintained between the "tips" of the Cord Grips or Locknuts and Enclosure walls, bottoms, covers, etc. The same clearance must also be maintained (please see table below) between the "tips" of adjacent Cord Grips and/or Locknuts.

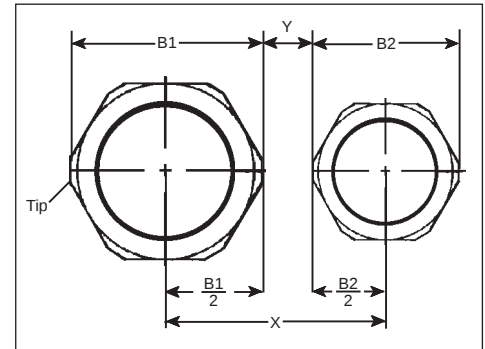
To help you determine the clearance required we provided the instructions and dimensional tables below:



Instructions:

Determine the B dimensions for adjacent Strain Reliefs and Locknuts from the tables below. Please note that either the B dimension of the Strain Relief or the Locknut of any combination may be larger. Use the largest of both for the calculations outlined in the example below to determine X, the spacing between the centers of adjacent Mounting Holes.

Example: B1, a PG16 Polyamide (PA) High Performance Cord Grip has to be installed by using a PG16 Polyamide (PA) Locknut next to B2, a PG21 Polyamide (PA) Cord Grip with a PG21 Brass, Nickel Plated (BN) Locknut.



A) PG16 Polyamide (PA) Cord Grip: B = 30mm (1.18 in.)
PG16 Polyamide (PA) Locknut: B = 33mm (1.30 in.)
Result: The Locknut is larger, it's B dimension should be used for B1.

B) PG21 Polyamide (PA) Cord Grip: = 36.6mm (1.44 in.)
PG21 Brass, Nickel Plated (BN) Locknut = 35.5mm (1.40 in.)
Result: In this case the Cord Grip B dimension is larger and should be used for B2.

Mathematical Spread

$$\text{Millimeters: } X = \frac{B1 + B2}{2} + Y \text{ mm} = \frac{33 + 36.6}{2} + 4.0 = 38.8 \text{ millimeters}$$

$$\text{Inches: } X = \frac{B1 + B2}{2} + Y \text{ in.} = \frac{1.3 + 1.44}{2} + .16 = 1.53 \text{ inches}$$

Thus, the minimum distance X between the center points of the Mounting Holes should be the 38.8 millimeters or 1.53 inches.

Repeat this calculation as many times as required. If Cord Grips are installed into Nonthreaded Holes use the "B" dimension of the Cord Grip, as no Locknuts are used.

If you prefer, prepare a drawing, showing the useable space available and draw circles with 1/2 the largest B dimension of any Cord Grip / Locknut combination, again maintaining the clearance of "Y" between the "tips" and "tips" to walls, bottoms, etc.

Type	Y mm (in.)	Type	Y mm (in.)
SW14	3.0 (.12)	SW32	4.0 (.16)
SW15	3.0 (.12)	SW33	4.0 (.16)
SW17	3.0 (.12)	SW35	4.5 (.18)
SW18	3.5 (.14)	SW40	5.0 (.20)
SW19	3.5 (.14)	SW41	5.0 (.20)
SW20	3.0 (.12)	SW43	5.0 (.20)
SW21	3.0 (.12)	SW50	5.5 (.22)
SW22	3.0 (.12)	SW51	5.5 (.22)
SW23	3.5 (.14)	SW53	6.0 (.24)
SW24	3.5 (.14)	SW57	6.5 (.26)
SW26	4.0 (.16)	SW54	7.0 (.28)
SW27	4.0 (.16)	SW65	7.5 (.30)
SW30	4.0 (.16)	SW70	8.0 (.31)

Locknut "B" Dimension (width across tips)

Cord Grip "B" Dimension (width across tips) Product Group and Body Material

					Standard		High Performance			Economy	
Locknut Material	Polyamide (PA)	Brass, Ni Plated (BN)	Stainless Steel (SS)	EMI/RFI (BN)	Polyamide (PA)	Brass, Ni Plated (BN)	Polyamide (PA) PVDF (PO)	Brass, (BN) Stainless (SS)	EMI/RFI (BN)	Polystyrene (PS)	Brass, Ni Plated (BN)
PG7	21.0 (.83)	16.6 (.65)	21.1 (.83)	—	16.5 (.69)	15.5 (.61)	16.2 (.64)	15.5 (.61)	—	16.0 (.63)	15.5 (.61)
PG9	24.0 (.94)	20.0 (.79)	21.1 (.83)	18.5 (.73)	21.0 (.83)	18.9 (.74)	21.0 (.83)	18.9 (.74)	26.7(1.05)	20.5 (.81)	18.9 (.74)
PG11	26.0(1.02)	23.5 (.93)	22.3 (.88)	24.4 (.96)	24.5 (.96)	22.2 (.87)	24.5 (.96)	22.2 (.87)	26.7(1.05)	24.0 (.94)	22.2 (.87)
PG13.5	29.0(1.14)	25.5(1.00)	26.8(1.06)	26.7 (1.05)	26.6(1.05)	24.5 (.96)	26.5 (1.04)	24.5 (.96)	26.7(1.05)	26.0(1.02)	24.4 (.96)
PG16	33.0(1.30)	29.0(1.14)	30.2(1.19)	28.8 (1.13)	30.0(1.18)	26.7(1.05)	29.5 (1.16)	26.7(1.05)	33.5(1.32)	29.0(1.14)	26.5(1.04)
PG21	39.0(1.54)	35.5(1.40)	35.8(1.41)	38.5 (1.52)	36.6(1.44)	33.5(1.32)	36.5 (1.44)	33.5(1.32)	33.5(1.32)	35.5(1.40)	33.5(1.32)
PG29	50.0(1.97)	45.0(1.77)	45.7(1.80)	43.5 (1.71)	46.3(1.82)	43.5(1.71)	46.0 (1.81)	43.5(1.71)	43.5(1.71)	45.5(1.79)	44.0(1.73)
PG36	66.0(2.60)	56.0(2.20)	55.8(2.20)	54.0 (2.13)	58.0(2.28)	54.0(2.13)	57.0 (2.24)	54.0(2.13)	54.0(2.13)	57.0(2.24)	54.0(2.13)
PG42	73.0(2.87)	65.0(2.56)	—	—	66.0(2.60)	61.0(2.40)	64.0 (2.52)	61.0(2.40)	65.0(2.56)	65.0(2.56)	61.0(2.40)
PG48	78.0(3.07)	69.0(2.72)	—	—	71.0(2.80)	69.0(2.72)	70.0 (2.76)	69.0(2.72)	—	70.0(2.76)	69.0(2.72)
NPT3/8"	24.0 (.94)	—	—	—	24.3 (.93)	19.0 (.75)	24.4 (.96)	—	—	—	—
NPT1/2"	29.0(1.14)	—	—	—	29.6(1.17)	26.7(1.05)	26.7 (1.05)	—	—	—	—
NPT3/4"	36.0(1.42)	—	—	—	36.1(1.42)	33.5(1.32)	36.5(1.44)	—	—	—	—

COMMONLY USED METRIC AND OTHER USEFUL CONVERSIONS

Length inch [in.] millimeters [mm] meters [m] miles [mi] kilometers [km] Torque Newtonmeter [Nm] lb-ft lb-in oz-in Power kilowatt [kW] hp Moment of Inertia (WR²) lb-ft² kilogrammeter² [kgm²] Weight Mass and Force Newton [N] kilogram [kg] pound [lb] pound [lb]	x25.4	=millimeters	Metric Cross-Sectional Areas ¹	American Wire Gauge		Metric Cross-Sections Areas ^a	American Wire Gauge	
	x0.03937	=inches						
	x3.281	=feet	Cross-Sectional Area	Equivalent Metric Area	AWG or MCM	Cross-Sectional Area	Equivalent Metric Area	AWG or MCM
	x1.609	=kilometers						
	x0.6214	=miles	mm ²	mm ²	mm ²	mm ²		
			0.50	0.519	20 AWG		21.15	4 AWG
			0.75	0.653	19	25.0	26.67	3
				0.823	18	35.0	33.63	2
							42.41	1
		x0.738	=lb-ft					
		x1.356	=Nm					
		x0.113	=Nm					
		x0.0071	=Nm					
		x1.341	=hp					
		x0.7457	=kW					

^aAs per IEC Publ. 228

DEGREES CELSIUS VERSUS DEGREES FAHRENHEIT

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-80	-112.0	-20	-4.0	5	41.0	30	86.0	55	131.0	80	176.0	105	221.0	130	266.0
-70	-94.0	-19	-2.2	6	42.8	31	87.8	56	132.8	81	177.8	106	222.8	131	267.8
-60	-65.0	-18	-0.4	7	44.6	32	89.6	57	134.6	82	179.6	107	224.6	132	269.6
-50	-58.0	-17	+1.4	8	46.4	33	91.4	58	136.4	83	181.4	108	226.4	133	271.4
-45	-49.1	-16	3.2	9	48.2	34	93.2	59	138.2	84	183.2	109	228.2	134	273.2
-40	-40.0	-15	5.0	10	50.0	35	95.0	60	140.0	85	185.0	110	230.0	135	275.0
-39	-38.2	-14	6.8	11	51.8	36	96.8	61	141.8	86	186.8	111	231.8	136	276.8
-38	-36.4	-13	8.6	12	53.6	37	98.6	62	143.6	87	188.6	112	233.6	137	278.6
-37	-34.6	-12	10.4	13	55.4	38	100.4	63	145.4	88	189.4	113	235.4	138	280.4
-36	-32.8	-11	12.2	14	57.2	39	102.2	64	147.2	89	192.2	114	237.2	139	282.2
-35	-31.0	-10	14.0	15	59.0	40	104.0	65	149.0	90	194.0	115	239.0	140	284.0
-34	-29.2	-9	15.8	16	60.8	41	105.8	66	150.8	91	195.8	116	240.8	141	285.8
-33	-27.4	-8	17.6	17	62.6	42	107.6	67	152.6	92	197.6	117	242.6	142	287.6
-32	-25.6	-7	19.4	18	64.4	43	109.4	68	154.4	93	199.4	118	244.4	143	289.4
-31	-23.8	-6	21.2	19	66.2	44	111.2	69	156.2	94	201.2	119	246.2	144	291.2
-30	-22.0	-5	23.0	20	68.0	45	113.0	70	158.0	95	203.0	120	248.0	145	293.0
-29	-22.0	-4	24.8	21	69.8	46	114.8	71	159.8	96	204.8	121	249.8	146	294.8
-28	-18.4	-3	26.6	22	71.6	47	116.6	72	161.6	97	206.6	122	251.6	147	296.6
-27	-16.6	-2	28.4	23	73.4	48	118.4	73	163.4	98	208.4	123	253.4	148	298.4
-26	-14.8	-1	30.2	24	75.2	49	120.2	74	165.2	99	210.2	124	255.2	149	300.2
-25	-13.0	0	32.0	25	77.0	50	122.0	75	167.0	100	212.0	125	257.0	150	302.0
-24	-11.2	1	33.8	26	78.8	51	123.8	76	168.8	101	213.8	126	258.8	160	320.0
-23	-9.4	2	35.6	27	80.6	52	125.6	77	170.6	102	215.6	127	260.6	170	338.0
-22	-7.6	3	37.4	28	82.4	53	127.4	78	172.4	103	217.4	128	262.4	180	356.0
-21	-5.8	4	39.2	29	84.2	54	129.2	79	174.2	104	219.2	129	264.2	190	374.0

Conversion Formula °F = 9/5 °C + 32°

°C = 5/9 (°F-32°)

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- | | |
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|------------------------------------|------------------------------------|
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|--|---|
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| ☐ Transportation Equipment | ☐ Other _____ |

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- | | | | | |
|--|---|---|--|--|
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