

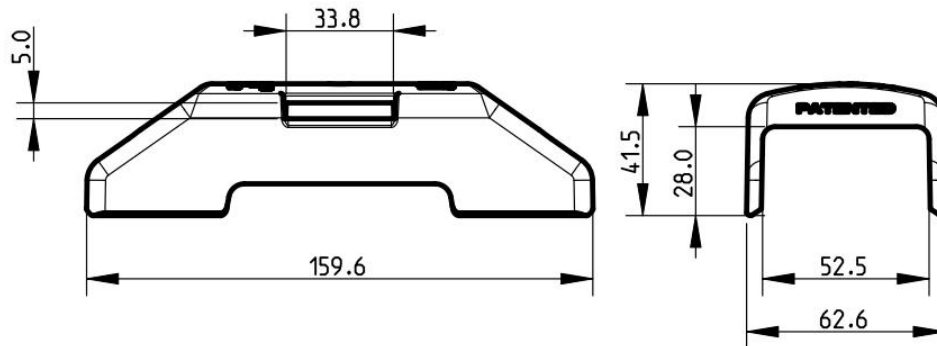
Smart® Protector, SP400-5228, Material PA12 Part No. SP-400-5228-PA12



Description

Patented cable clamping device for use in downhole applications capable of handling a flat ESP cable or for other cable clamping applications as required.

Outline Dimensions (General Tolerance $\pm 0.2\text{mm}$)



General Properties PA12¹

Property		Unit
Weight	56.9 (2.01) +/- 2%	g (oz)
Cable Suitability ²	52x28 (2.05x1.10) Flat ESP	mm (inch)
Maximum Smart Tie width	32 (1.27)	mm (inch)
Maximum Smart Band width	32 (1.27)	mm (inch)

¹PA 12 is the material code for Polyamide 12 The generic designation is Nylon 12

²These are the ideal cable sizes but smaller cables sizes may be used depending on the application

Material Properties PA12¹

Property	Dry as Moulded	Conditioned 50%RH	Unit	Test Method
Density	1.01 (0.58)		g/cm ³ (oz/inch ³)	ISO 1183
Water Absorption at 23°C Equilibrium at 50% RH	0.7		%	ISO 62
Saturation	1.5		%	ISO 62
Tensile Modulus +23°C/+73°F		1100 (160)	MPa (kpsi)	ISO 527-2

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Material Properties PA12 ¹ Cont'd				
Property	Dry as Moulded	Conditioned 50%RH	Unit	Test Method
Tensile Stress (Yield, +23°C/+73°F)		40 (5.8)	MPa (kpsi)	ISO 527-2
Tensile Stress (Break, +23°C/+73°F)		50 (7.3)	MPa (kpsi)	ISO 527-2
Tensile Strain (Yield, +23°C/+73°F)		12	%	ISO 527-2
Tensile Strain (Break, +23°C/+73°F)		>50	%	ISO 527-2
Flexural Modulus		1100 (160)	MPa (kpsi)	ISO 178
Flexural Strength			MPa (kpsi)	ISO 178
Charpy Unnotched Impact Strength +23°C/+73°F -30°C/-22°F -55°C/-67°F		>100 (47.6)	kJ/m ² (ft-lb/in ²)	ISO 179
		>100 (47.6)	kJ/m ² (ft-lb/in ²)	ISO 179
			kJ/m ² (ft-lb/in ²)	ISO 179
Charpy Notched Impact Strength +23°C/+73°F -30°C/-22°F		7 (3.33)	kJ/m ² (ft-lb/in ²)	ISO 179
		6 (2.85)	kJ/m ² (ft-lb/in ²)	ISO 179
Heat Deflection Temperature 0.45 MPa, Unannealed 1.82 MPa, Unannealed	115 (239)		°C (°F)	ISO 75-2/B
	45 (113)		°C (°F)	ISO 75-2/A
Vicat Softening Temperature 50N 10N	154 (309)		°C (°F)	ISO 306/B
	166 (331)		°C (°F)	ISO 306/B
Melting Temperature	178 (352)		°C (°F)	ISO 11357
Flammability	HB			UL 94
RoHS Compliance	RoHS Compliant			
UL File Number				

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Further Technical Information and Design Guidelines can be found in the following booklets:

- Smart® Products Technical Booklet for Downhole Use



Important Notice to User

Shelf Life: Store in a cool dry area in original cartons and use within 5 years after date of receipt.

Warranty: HCL warrants that all products when stored, used and maintained in accordance with HCL's written instructions will meet or exceed the above specification. HCL makes no other warranties or conditions, expressed or implied, including, but not limited to, any implied warranty or condition of merchantability or fitness for a particular purpose or any implied warranty or condition arising out of a course of dealing, custom or usage of trade. If any HCL product does not conform to this warranty then only replacement or refund of the affected parts will be considered.

Limitation of Liability: Except where expressly prohibited by law, HCL will not be liable for any damage or loss arising from the use of the HCL product.

Product Use: It is the user's responsibility to determine the suitability of the product for the task it is to be used for. HCL reserve the right to continually improve its product and would advise the user to contact HCL at all times to ensure they have up to date current data to work with.

