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 TECHNICAL DATA SHEET

# PMA Automation - KIT-CCH - Cobot Cable Protection Kit



The PMA Cobot Cable Protection Kit offers an easy-to-use dress pack solution for collaborative robots, allowing to fasten, rout and protect cables & tubes. The KIT includes PMA Cobot Conduit Holders, a PMA Cobot Strain Relief (additionally with a BFH-0 for mounting) and a 3m sample of the XTPC multilayer conduit, featuring a wear indication function.




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**Product selection:**

Part no.	Conduit size	Conduit Part no.	Cobot Conduit Holder Part no.	Cobot Strain Relief Ring Part no.	Cobot Strain Relief Ring Holder Part no.	Packing unit
black	NW	XTPC	BCCH	BCSR	BFH-0	pcs/PU
KIT-CCH-17	17	XTPCG-17BB.3	BCCH-17	BCSR-17	BFH-23-0	1
KIT-CCH-23	23	XTPCG-23BB.3	BCCH-23	BCSR-23	BFH-29-0	1
KIT-CCH-29	29	XTPCG-29BB.3	BCCH-29	BCSR-29	BFH-36-0	1

Our customer service dept. or local distribution partner will be pleased to help you concerning product availability and lead time

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**Content of delivery:**

- 2x BCCH - Cobot Conduit Holder
- 1x BCSR - Cobot Strain Relief Ring
- 1x BFH-0 System Support
- 1x 3m XTPC multilayer conduit

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# PMA Automation - BCCH - Cobot Conduit Holder

**PMA**



**Applications:**

- In automation applications for fixing PMA conduits along a variety of cylindrical & elliptical shaped collaborative robot (cobot) arms

**Features & Benefits:**

- Flexible design of swivel base ensures compatibility with cobot models of most widely used brands (e.g., ABB™, UR™, Omron™, etc.)
- Fastening along cobot arm with Velcro® and/or cables ties
- 360° swiveling of BFH-0 clip gives flexibility and reduces mechanical stress induced by cobot movements
- 10° tilt angle of FH-clip in any direction
- Fits G- and T conduit profile
- Easy to install and to exchange

**Materials:**

- High-grade, specially formulated polyamide 6

**Compatible with:**

- PMAFLEX Pro Conduits
- PMAFLEX Multilayer Conduits
- PMAFLEX Conduits
- PMA Smart Line Conduits

**Colour:**

- Black

**Additional information:**

- Installation with Velcro® for cylindrical arm diameter 56mm – 120mm
- For arm diameter 120mm-370mm, the use of a Velcro® and additional cable ties (not included) is recommended

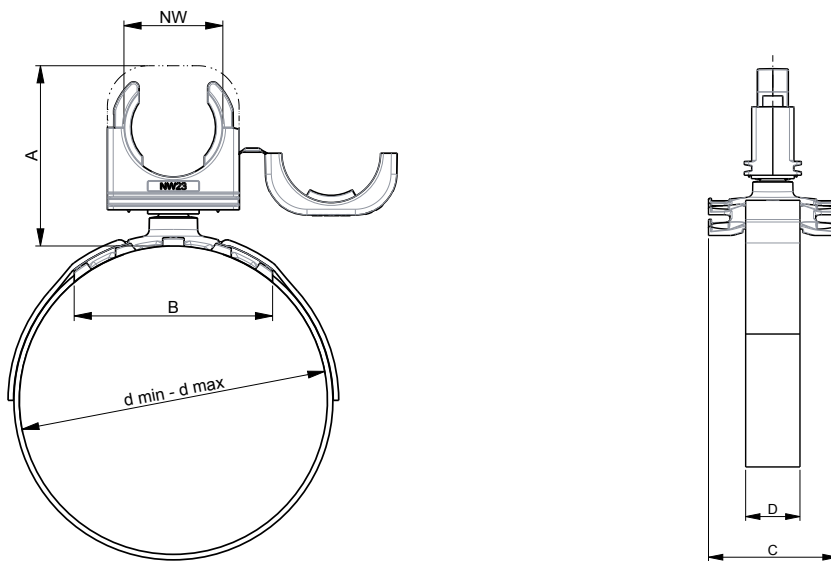
**Environmental properties:**

- Free from halogens and cadmium
- RoHS and REACH compliant

**Product selection:**

Part no.	Conduit size	Dimensions in mm (nom.)						Weight
		d min.	d max.	A	B	C	D	
black	NW							kg/100 pcs
BCCH-17	17	56.0	370.0	44.5	57.9	45.0	19.0	20.3
BCCH-23	23	56.0	370.0	52.5	57.9	45.0	19.0	23.1
BCCH-29	29	56.0	370.0	58.5	57.9	45.0	19.0	25.2

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**Assembly instructions:**

- Please consider the appropriate assembly instructions on [www.pma.ch](http://www.pma.ch)

TECHNICAL DATA SHEET

# PMA Automation - BCSR - Cobot Strain Relief Ring

**PMA**



**Applications:**

- In automation applications to relief strain and to fixate individual cables/tubes to a conduit terminal

**Features & Benefits:**

- Fastening of individual cables/tubes to a conduit terminal via cable ties (not included)
- To be used freely rotating around conduit axis, or in “lock” mode using a BFH-0 clip (see drawing page 2)
- Fits G- and T conduit profile
- Easy to install and to exchange

**Materials:**

- High-grade, specially formulated polyamide 6

**Compatible with:**

- PMAFLEX Pro Conduits
- PMAFLEX Multilayer Conduits
- PMAFLEX Conduits
- PMA Smart Line conduits
- PMA Clip - BFH-0 - System support
- PMA Trust - BGPM - System support

**Colour:**

- Black

**Chemical properties:**

- Please refer to [www.pma.ch](http://www.pma.ch) (Technical Information / Chemical Resistance)

**Additional information:**

- Combining the BCSR with a BFH-0, requires a BFH-0 of the next larger NW (i.e., BCSR-17 is used in combination with BFH-23-0)

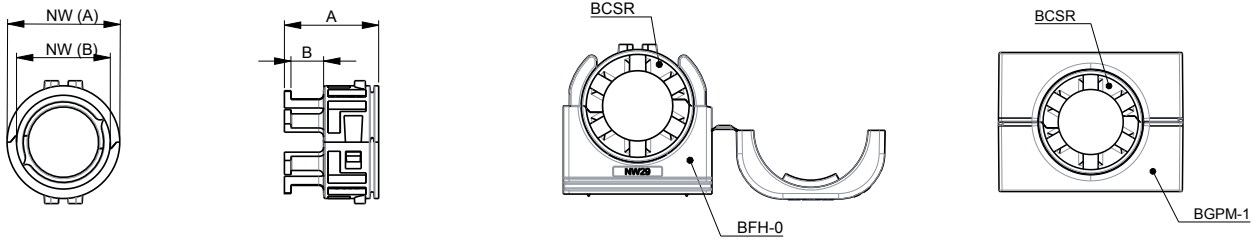
**Environmental properties:**

- Free from halogens and cadmium
- RoHS and REACH compliant

**Product selection:**

Part no.	Conduit size	Fits to BFH-0 BGPM-1x	Strain relief teeth	Dimensions in mm (nom.)		Weight
				A	B	
black	NW (B)	NW (A)	qty	A	B	kg/100 pcs
BCSR-17	17	23	4	28.8	10.0	5.0
BCSR-23	23	29	6	28.8	10.0	6.0
BCSR-29	29	36	6	28.8	10.0	8.6

Our customer service dept. or local distribution partner will be pleased to help you concerning product availability and lead time



Mechanical Properties:	Value:	Test parameters:	Test method:
Tensile modulus	1'200 ... 3'700 N/mm <sup>2</sup>		ISO 527
Tensile strength	45 ... 65 N/mm <sup>2</sup>		ISO 527
Notched bar impact test	4 ... 20 kJ/m <sup>2</sup>		ISO 180/1C

Thermal properties:	Value:	Test parameters:	Test method:
Continuous application temperature	-50 ... +105°C		PMA DO 9.21-4510
Upper application temperature	+120°C	(20'000 h)	PMA DO 9.21-4360
Short-term	+160°C	(168 h)	PMA DO 9.21-4360

**Assembly instructions:**

- Please consider the appropriate assembly instructions on [www.pma.ch](http://www.pma.ch)

## TECHNICAL DATA SHEET

**PMAFLEX Multilayer - XTPC - Corrugated Conduit**

Highly flexible, medium-duty

**PMA**

Highly flexible conduit for robotic applications with high resistance to abrasion and wear indication function. Especially suitable for narrow bending radii

**Applications:**

- For dynamic conduit systems in robotics and automation industry

**Features & Benefits:**

- With wear indication function
- High resistance to continuous bending
- No abrupt conduit failure due to high tear propagation resistance
- Very high abrasion resistance
- High resistance to torsion
- Suitable for tight bending-radii
- Long service life

**Materials:**

- Outer, intermediate and inner layer made from High-grade, specially modified Thermoplastic copolyester elastomer

**Compatible with:**

- PMA Automation Products
- PMAFIX Pro, PMAFIX fittings
- PMAGRIP flange
- PMA Accessories

**Temperature range:**

- -40°C ... +105°C continuous, +150°C short-term

**Weathering resistance:**

- Good UV resistance and weathering characteristics

**Colour:**

- Outer layer: black (protection layer) abrasion and UV resistant
- Intermediate layer: yellow (warning layer)
- Inner layer: blue (wear limit reached) conduit should be replaced

**Chemical properties:**

- Please refer to [www.pma.ch](http://www.pma.ch) (Technical Information / Chemical Resistance)

**Environmental properties:**

- Free from halogens and cadmium
- RoHS and REACH compliant

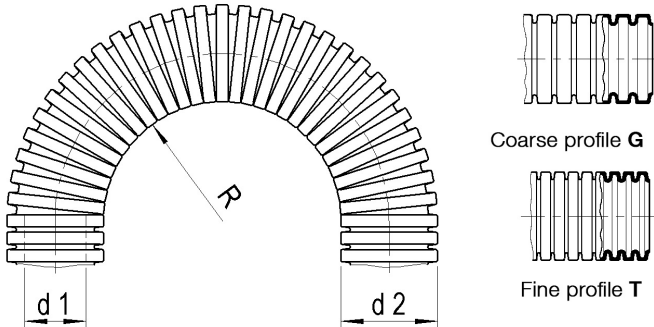
**XTPC-Index**

min.										max.
Ductility										
Fatigue reversed bending										
Compression resistance										
Low temperature performance										
Weathering resistance										

**Product selection:**

Part no.	Profile	Conduit size		rec. fitting thread size		Dimensions in mm (nom.)				Weight kg/100 m
		NW	metric	PG	metric	d1	d2	stat. R	dyn. R.	
black/blue	T/G									
XTPCG-17BB.3	G	17	20	16	M20x1.5	15.2	21.1	30	75	8.5
XTPCG-23BB.3	G	23	25	21	M25x1.5	21.2	28.4	40	100	13.0
XTPCG-29BB.3	G	29	32	29	M32x1.5	26.8	34.5	50	120	17.0

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stat. R. = min. bending radius for static (fixed) installation

dyn. R. = min. bending radius for dynamic (flexible) installation

Mechanical Properties:	Value:	Test parameters:	Test method:
Impact strength	> 4.5 J		PMA DO 9.21-4330
Compression strength	> 160 N	(50 x 50 mm)	PMA DO 9.21-4320
	> 320 N	(100 x 100 mm)	
Resistance to fatigue	> 5'000'000 cycles		PMA DO 9.21-4420
	> 10'000'000 cycles		PMA DO 9.21-4425
Pull-out resistance conduit - fitting series			
PMAFIX Pro	> 280 N		PMA DO 9.21-4610
PMAFIX IP68	> 260 N		PMA DO 9.21-4610
PMAFIX IP66	> 220 N		PMA DO 9.21-4610

Note: Testing at 23°C, 50% r.h., conduit nominal width 17, unless otherwise stated

Additional sealing may be required to archive IP performance in combination with the fitting series PMAFIX, PMAFIXpro and PMAGRIP due to higher material shrinkage of the corrugated conduit

Thermal properties:	Value:	Test parameters:	Test method:
Continuous application temperature	-40 ... +105°C		PMA DO 9.21-4510
Upper application temperature	+120°C	(20'000 h)	PMA DO 9.21-4360
Short-term	+150°C	(168 h)	PMA DO 9.21-4360

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