FACTSHEET

Product recommendations for robots and automation applications

PMA conduits and accessories for increased requirements

New multilayer conduits and optimised accessories for a long service life and reduced costs for maintenance and repair.

PMA conduits for robotics, automation and continuously movable systems

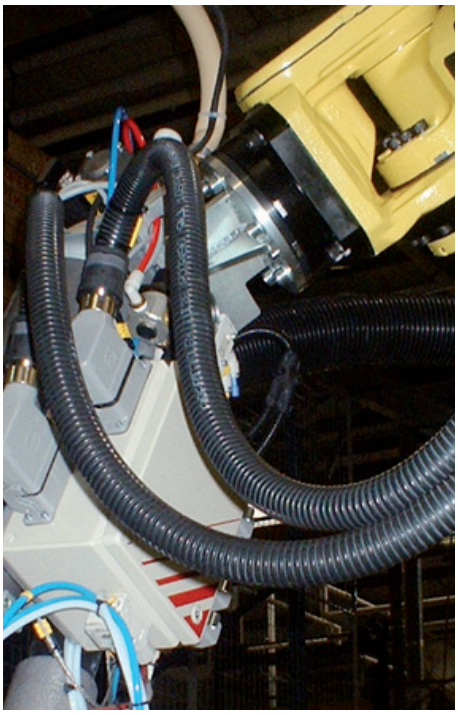
- **XTPC:** TPC/TPC – Heavy-duty, highly flexible, medium stiff-grade multilayer conduit. It supports heavy torsion created by the rotation of axis 6 and/or 4
  - High resistance against torsion
  - Suitable for tight bending-radii
  - Very high abrasion resistance
  - No abrupt conduit failure due to high tear propagation resistance
  - Wear indicator

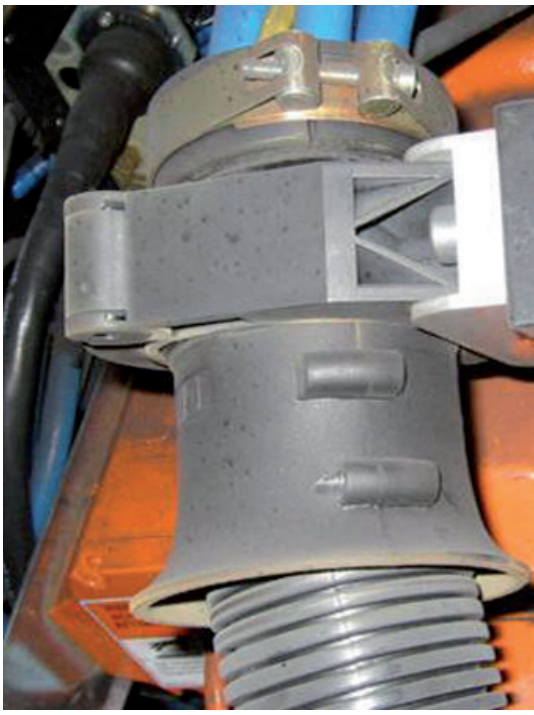
- **XR90:** PA12/PA12 – Heavy-duty, highly flexible, stiff-grade multilayer conduit. It supports mechanical wear and elongation created by the movement of axis 2 and/or 5
  - Suitable for applications with pullback-system
  - High resistance to continuous bending
  - No abrupt conduit failure due to high tear propagation resistance
  - High abrasion resistance
  - High resistance to torsion and elongation
  - Wear indicator

- **PIS/PIH:** PA12 – Heavy-duty conduit preferably for dynamic applications which require recognition by UL laboratories
  - Excellent flexibility and fatigue / reversed bending
  - In black excellent weathering and UV resistance
  - UL Recognised

- **POS:** PA12/PA12 – Medium-duty conduit for applications subjected to continuous movements
  - Excellent flexibility and fatigue / reversed bending
  - Good impact resistance
  - Very good resistance against strong acids
  - Excellent value for money

- **ESD:** PA12 – Medium duty, highly flexible conduit for applications where electrostatic charge and uncontrolled discharge need to be avoided, for instance painting cells
  - Prevents electrostatic charging
  - High dynamic load resistance
  - For indoor and outdoor use (very good cold temperature performance)
  - Excellent UV-resistance
  - Very good chemical properties





Accessories
General technical details of PMA accessories:

- **Material**
  - Specially formulated polyamide 6
  - Temperature range: -40 °C to +105 °C, short term to +160 °C
- **Characteristics**
  - Reduce wear to guidance and control elements
  - Increase the degree of freedom of robotic installations
  - Allow optimal layout of cables along moving elements
  - Increase the lifetime of moving installations
  - Allow quick and easy installation

Abrasion Protection

- **SS/SV:** Abrasion protection sleeve
  - Abrasion protection for corrugated conduits in positions exposed to chafing
  - Excellent chafing characteristicale

Tube clamps

- **LH:** Compact and space saving two-pice tube clamp for positioning/guiding/fixing of PMA conduits
  - Allows optimum installations in automation applications due to space saving design
  - Can be combined with different half-shells
- **SH:** Rapid assembly robust one-piece tube clamp for positioning/guiding/fixing of PMA conduits
  - Suitable for very high stress
  - One-Piece design for easy installation
  - Can be combined with numerous special inserts/ half-shells
- **GH:** Light-weight and compact plastic one-piece tube clamp for general use in static applications
  - Integrated rib provides axial strain relief
  - Allows turning of the conduit thus avoiding torsion stresses
  - Pre-fixation on the conduit possible
  - Allows solid fixation with 2 screws
- **GS:** Solid metallic one-piece tube clamp for general use in static applications
  - Galvanised steel
  - Elastomer profile (EPDM) free from halogens
  - Smooth connection to PMA conduits
  - Good resistance to ozone and ageing
  - Allows solid fixation with 2 screws

Swivel base

- **DKLK:** Heavy-duty swivel base
  - For SH + LH tube clamps
  - Allows rotation of cable pack supports
  - Black anodised aluminium
  - Robust construction, sealed high quality bearing with minimal play

Half-shells and inserts

- **GN-S:** Strain relief half-shell
  - For conduit fixation in combination with tube clamp SH and LH
  - Fixes conduit against axial movements
  - Allows for rotation of the conduit (within tube clamp SH)
- **GN-R:** Slide half-shell
  - Insert in combination with tube clamp SH and thus reduce axial stress on the conduit
  - Allow for both rotation of the conduit and axial movement

- **GN-R56G/70G:** Strain relief half-shell reduction
  - For reduction size 70 to size 56
  - In combination with ball joint parts NW70
- **GS:** Grommet half-shell
  - Insert to the SH-R70 tube clamp to hold a grommet (KS-R70/xx)
- **SSK:** Ball-joint half shells
  - Ball-joint half shells providing additional freedom of movement (15° - 20° within tube clamp SH)
- **TK:** Ball joint sleeve
  - Used within SH-R70 tube clamp
  - Increased degree of freedom for cable packs
  - Additional flexibility and reduced mechanical stress on the conduit
  - Can be used with TR strain relief insert to fix the conduit in axial direction
- **TR:** Strain relief insert
  - Used to fix the conduit against axial movements in TK ball joint sleeves
  - Rotation of the conduit remains possible
- **KE:** Ball joint termination
  - Used within the SH-R70 tube clamp
  - Offers highest flexibility at the end of the installation
  - Provides additional relief to conduit and cables due to reduced mechanical stress
  - A grommet can be inserted directly into this termination to hold and strain-relief the cables

Support sleeves

- **AS:** Conduit support sleeve sizes 29, 36, 48
  - Conduit support sleeve for PMA conduit type PUE to increase the system pull-out strength
- **ES:** C Internal conduit sleeve support size 70
  - Conduit support sleeve for PMA conduits type PUE and PIH to increase the system pull-out strength

Flanges

- **GG:** Flange straight
  - Robust flange for straight connection of the conduit
  - Available in sizes 56 and 70
  - Ingress protection: IP50 without conduit seal ring, P65 with conduit seal ring
- **GO:** Flange 90° elbow
  - Robust flange for 90°-connection of the conduit
  - Available in sizes 56 and 70
  - Ingress protection: IP50 without conduit seal ring, P65 with conduit seal ring

For Automation applications with little dynamic loading (e.g. handling robots) other PMA conduits can be considered as alternatives.

Please contact PMA for further application specific technical support:
Either your local PMA representative
or
PMA AG
CH-8610 Uster
Switzerland
Tel: +41 58 585 0011
pma-conduitsystems@ch.abb.com

All PMA conduits are self-extinguishing, free from halogens and cadmium and non-corrosive. PMA RoHS, REACH and Conflict minerals confirmation documents can be supplied on request.

For technical details and specifications please see our technical data sheets on www.pma.ch.

If PMA products are used in conjunction with cable protection products from other companies all product liability claims will be rejected.

ABB Switzerland Ltd
PMA Cable Protection
Aathalstrasse 90
8610 Ulster
Tel: +41 (0) 44 905 61 11
Fax: +41 (0) 44 905 61 22
E-mail: pma-info@ch.abb.com

www.pma.ch

Info-Nr. 05 / 11.2020