PRODUCT CATALOGUE

Harnessflex® Specialist Conduit Systems

Providing superior protection for heavy automotive wiring harnesses

Harnessflex
SPECIALIST CONDUIT SYSTEMS

Harnessflex® Specialist Conduit Systems offer complete system solutions for the routing and protection of electrical wiring against damage by mechanical abrasion, liquid ingress and corrosion.

Using a Harnessflex® conduit system ensures that cables and vulnerable connectors are not exposed to the elements, impact of foreign bodies or jet washing, all of which can cause vehicles and machines to malfunction and fail.

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Harnessflex® Specialist Conduit Systems

Premier wiring harness and electrical connector protection for Heavy Automotives including Electric Vehicles

Cable protection is not only important for agricultural vehicles, construction machines, lorries, buses and other heavy duty utility vehicles - it is essential. At Harnessflex®, we deliver specialist conduit systems suitable for use in a variety of applications, temperatures and environmental conditions.

To achieve this, we work closely alongside OEMs and harness makers to deliver bespoke design systems that are built for purpose. In addition, all the products we manufacture are extensively tested in our in-house testing facility, ensuring they meet the highest levels of performance at all times.

SEE MORE

Learn more about ABB's Harnessflex® cable protection products here.


Critical cables
operating in extremes of both high and low temperatures.
Susceptible to damage
from dust, dirt, greases, fuels, oils and liquid ingress.
Increased risk
of corrosion, abrasion, impact and excessive strain.

Harnessflex® Specialist Conduit Systems
Company overview

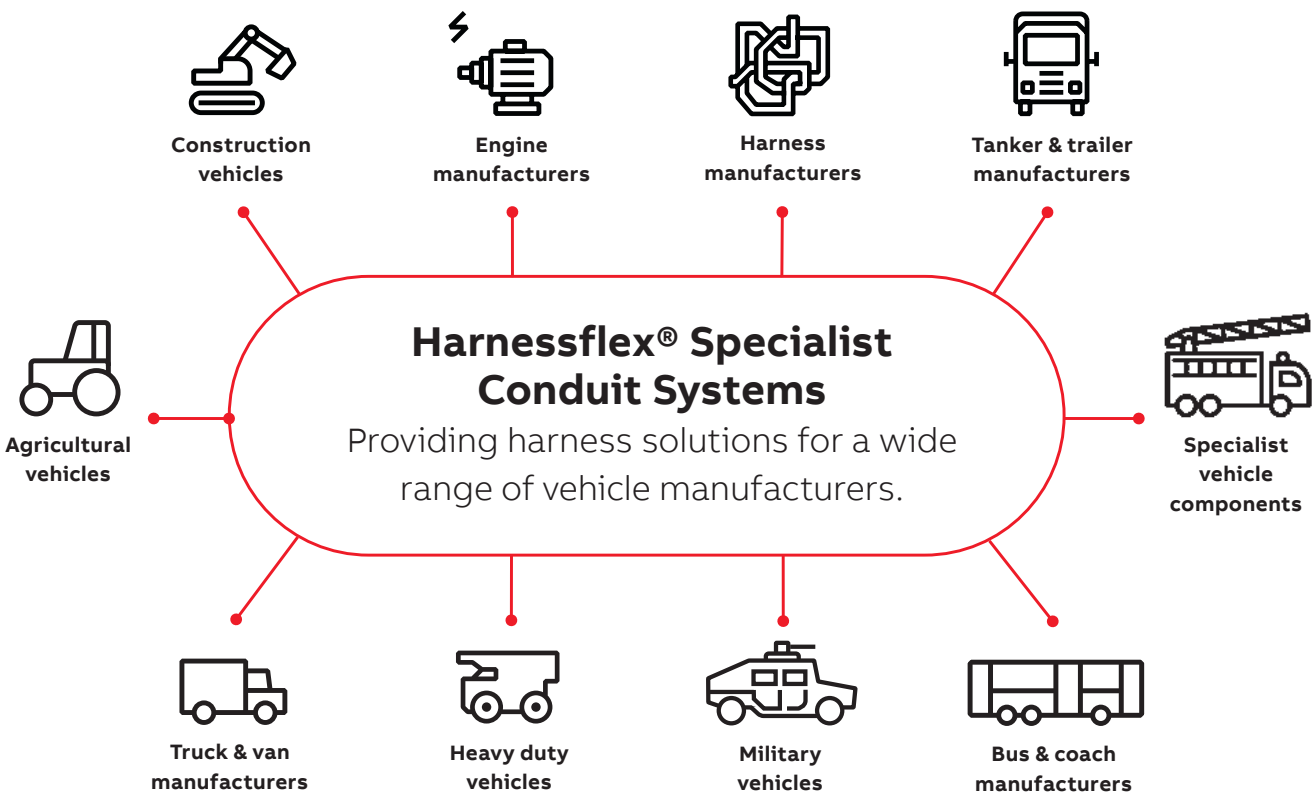
Harnessflex® is a trusted designer and manufacturer of flexible conduit systems and connector interfaces.

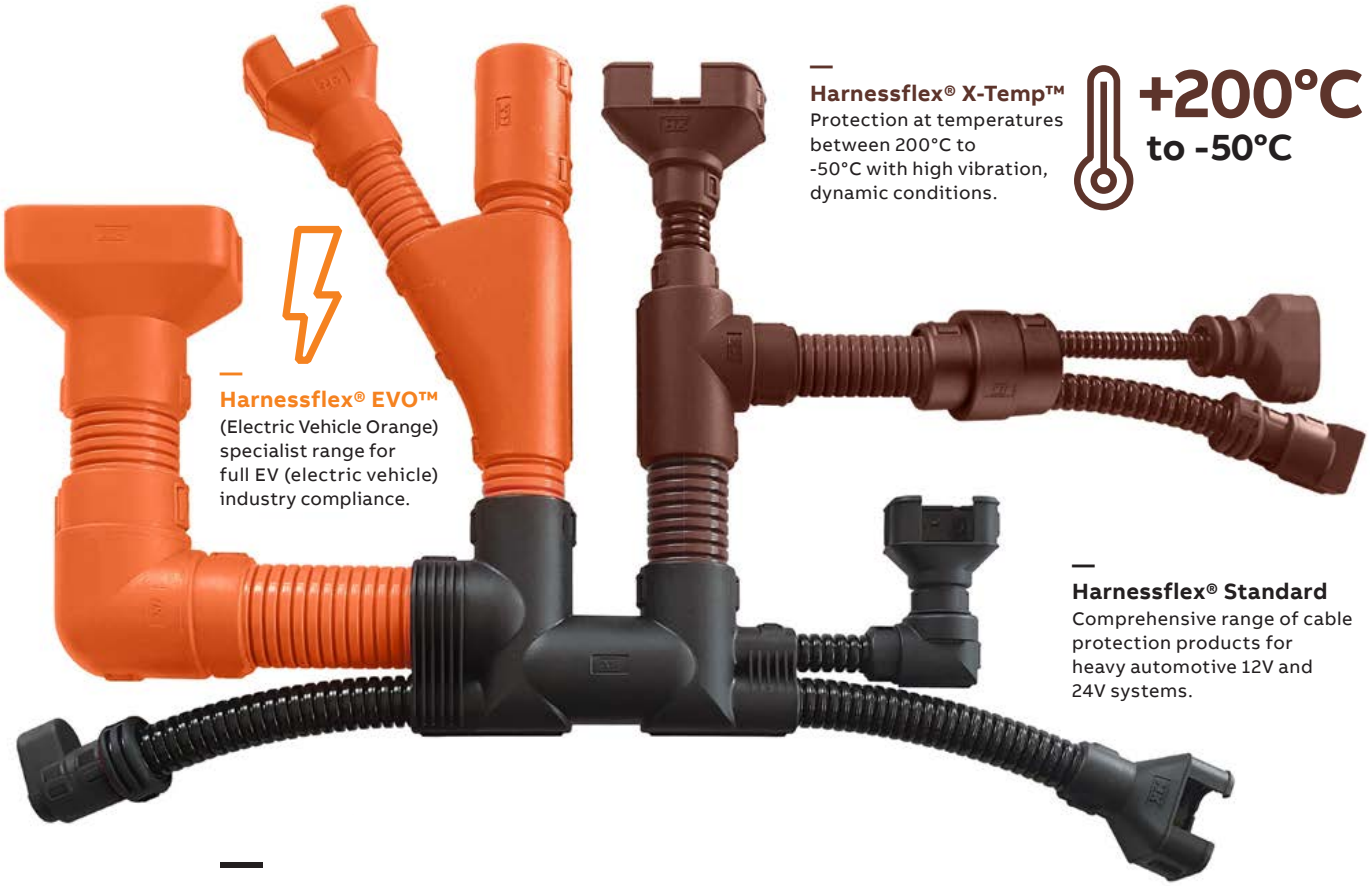
Our success has come from our systematic commitment to providing an extensive range of high-grade quality components. Combining a full range of slit and un-slit conduit, fittings and connectors, we also offer a large range of hinged system components and connector interfaces, protecting critical electrical and electronic wiring assemblies in the automotive industry.

Our customers
Offering bespoke design that utilises our extensive range of interfaces, we can offer tailored and innovative solutions for a range of applications.

Quality approvals and standards
Manufacturing is controlled in accordance with BS EN ISO 9001, whilst ongoing testing is conducted to the highest international standards and approvals. This provides the confidence that Harnessflex® products can be used across the widest variety of automotive applications, including those in the harshest and most aggressive environments.

All components comply with End of Life Vehicle (ELV) directive EU2000/53/EC. Harnessflex® also comply to ISO14001 - Environmental Standard.





Harnessflex® EVO™
(Electric Vehicle Orange) specialist range for full EV (electric vehicle) industry compliance.

Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

+200°C to -50°C

Harnessflex® Standard
Comprehensive range of cable protection products for heavy automotive 12V and 24V systems.

Electrical system risk factors & solutions

Applications
- LV / HV Cables
- Connectors & connectivity
- Delivering vehicle reliability and productivity

Mechanical
- Dust
- Dirt
- Impact
- Abrasion

Ingress
- Water
- Steam
- Material
- Chemical Attack

Environmental
- Temperature
- Humidity
- UV
- Operating conditions

Harnessflex® EVO™
Harnessflex EVO™ (Electric Vehicle Orange) conduit is flexible nylon (PA6) conduit suitable for electric vehicle applications. Able to withstand extremes of temperatures and resistant to automotive oils and solvents. It is extremely tough and has a very high impact strength and high fatigue life.

Features & benefits:
- High flexibility & fatigue life
- Very high abrasion, impact and shock resistance
- Temperature range: -40°C to +120°C
- Temperature range short-term: +150°C
- UV Resistance - Medium
- IP40 - IP68 (2 bar 30 mins) depending on fittings
- Available colours: Orange (RAL2003)
- Self extinguishing, low smoke toxicity & halogen free
- Available in slit variants

Harnessflex® X-Temp™
Built to operate at temperatures between -40°C to 200°C, X-Temp™ systems provide a complete extreme temperature resistant cable protection solution designed to withstand constant vibration, heavy flexing and movement.

Features & benefits:
- Extreme temperature resistance at -40°C to 200°C, offering greater protection for wiring
- Very high flexibility & fatigue life
- Protection from heat, abrasion, vibration and automotive fluids in all harness routing areas
- High temperature polyamide fittings and co-polyester conduit
- UL94 V2 certified fittings
- Tested for tensile and impact strength

Harnessflex®
Our success has come from our systematic commitment to providing an extensive range of high-grade quality components.

—
ABB's testing facility at the Coleshill, UK site for its global cable protection portfolio.

Harnessflex® Specialist Conduit Systems
Our services

From bespoke design of innovative products to in-house performance testing to levels even above the highest global standards, at Harnessflex® we ensure quality at every step.

At Harnessflex®, we deliver specialist conduit systems suitable for use in a variety of applications, temperatures and environmental conditions. To achieve this, we work closely alongside OEMs and harness makers to deliver bespoke design systems that are built for purpose. In addition, all the products we manufacture are extensively tested in our in-house testing facility, ensuring they meet the highest levels of performance at all times.

Conduit systems designed to specification
Following a specification from the OEM, our technical team will draw up detailed final system designs, with 3D printed samples and prototypes for approval. Once signed off, the product will be commissioned for manufacture, with our technical team continuing to deliver engineering and design support throughout the process.

5YR

5 year warranty on your Harnessflex® system
As all Harnessflex products are intensively tested under the most extreme conditions, we can guarantee the durability of the systems we provide. That's why as standard, we offer a 5 year extended warranty on all Harnessflex® products that are installed as part of a complete, fully integrated Harnessflex system.

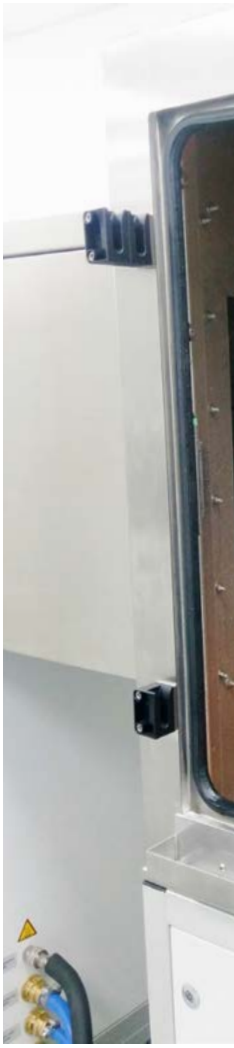
This gives you and your customers the peace of mind that once your Harnessflex® system is installed, it will deliver lasting protection of critical wiring over the vehicle's lifespan.

Harnessflex® Specialist Conduit Systems
Testing & approvals

Protecting critical electrical and electronic wiring assemblies in the heavy automotive industry.

Harnessflex® offers complete system solutions for the routing and protection of electrical wiring against damage by mechanical abrasion, liquid ingress and corrosion salts. Using a Harnessflex® conduit system ensures that vulnerable connectors are not exposed to the elements, impact of foreign bodies or jet washing, all of which can cause vehicle malfunction and failure. Our success has come from our systematic commitment to providing an extensive range of high-grade quality components. Combining a full range of slit and un-slit conduit, fittings and connectors, we also offer a large range of hinged system components and connector interfaces.

In-house product testing program
ABB has invested in a new testing facility at the Coleshill, UK site for its global cable protection portfolio. Our 1,150sqft facility offers a broad spectrum of testing capacity, from feasibility research to ingress protection, mechanical testing and the accelerated simulation of extreme working environments. The site infrastructure includes hi-end test equipment, most notably, an automated ingress protection water chamber capable of IP X5, X6, X9 testing in accordance with many globally recognised standards.



Quality approvals and standards
Manufacturing is controlled in accordance with BS EN ISO 9001, whilst ongoing testing is conducted to the highest international standards and approvals. This provides the confidence that **Harnessflex®** products can be used across the widest variety of automotive applications, including those in the harshest and most aggressive environments.

All components comply with End of Life Vehicle (ELV) directive EU2000/53/EC. Harnessflex® also comply to ISO14001 - Environmental Standard.

Our **complete** product testing capabilities include:

- **Ingress Protection (IP)** - Capable of testing to IPX3, IPX4, IPX5, IPX6, IPX7, IPX8 (to 20 Bar) and IPX9
- **Climatic** - Testing performance in temperatures from -70 to +180 degrees Celsius
- **Mechanical testing** - Including tensile, compression, impact and abrasion at extremes of temperature to establish long term product resilience, resistance and stability. Additionally testing to destruction to assess maximum performance levels.

Harnessflex® Cable protection solutions
From pioneer to market leader. High performance, reliability and safety in cable protection for the heavy duty automotive industry.

Additionally testing to destruction to assess maximum performance levels. Through our internal design and testing resources, we are able to deliver high-performance tailored solutions for a variety of challenging operating conditions, to the highest industry standards. By combining our R&D operations, product manufacturing and testing processes into one Harnessflex® services package, we can deliver market-leading cable protection solutions to customers around the world, in an accurate and efficient manner.

Harnessflex® cable protection systems provide a full range of wire harness solutions offering flexible, lightweight protection while maintaining strong mechanical properties.

Angloco Fire-fighting & rescue vehicles
Case study

Harnessflex® specialist conduit systems provide life-critical cable protection for Angloco fire-fighting and rescue vehicles.

Angloco

SEE MORE

—

Learn more about Dennis Eagle in this article.

Segment
Heavy automotive

Subsegment
Fire-fighting & rescue

Customer challenge
Angloco vehicles are deployed into all corners of the globe, encountering some of the worst weather and operating conditions along the way. The reliable performance of these vehicles is paramount in ensuring they can successfully protect people and property, as well as handle any life-critical emergencies.

ABB solution
Angloco turned to Harnessflex® Conduit Systems for a solution to protect the essential wiring that powers their fire engines.

Outcome for the customer

The Harnessflex® Conduit Systems installed on Angloco's vehicles are able to withstand the demanding elements they encounter on a daily basis, whilst also offering high electrical system protection that ensures safety and reliability.

Dennis Eagle RCVs
Case study

Harnessflex® provides environmental critical cable protection for Dennis Eagle RCVs (Refuse Collection Vehicles).

DENNIS EAGLE

SEE MORE

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Learn more about Dennis Eagle in this article.

Segment
Heavy automotive

Subsegment
Waste management

Customer challenge
Dennis Eagle worked closely with the ABB Research & Development team to create a cable protection system to suit their needs.
The constant start-stop nature of the vehicle's work can put significant strain on cabling. They must also operate in the most extreme weather conditions.

What's more, these vehicles must remain operational and available to work at all times to avoid not only disruption to this vital service but also causing distress to other road users and to householders. To achieve this, cables must be protected to minimise both breakdowns and the costly shortening of a vehicle's lifecycle.

ABB solution
Dennis Eagle worked closely with the ABB Research & Development team to create a cable protectionsystem to suit their needs. They helped us pioneer the Harnessflex® sealed systems and hinged back shell technology which is still used globally by vehicle manufacturers and harness makers today.

Outcome for the customer
"Dennis Eagle have been using Harnessflex® for the past 10+ years. We try to use their products wherever possible on our harness designs.
Over this period wenhave never had any supply issues with their products. We have been working with Harnessflex® to create new products and introduce them into our vehicles' variants when available." **Neil Peters**, Electrical Design Engineer for Dennis Eagle.

Harnessflex® solutions have enabled Munro to equip the new Munro Series M with the most optimum and robust cable protection products.

Munro 4x4 Electric vehicles
Case study

Harnessflex® Specialist Conduit Systems protect critical cables and connectors on the toughest terrains for Munro 4x4 Electric Vehicles.

SEE MORE

Watch our video case study here.

Segment
Heavy automotive

Subsegment
EV electric vehicles

Customer challenge
As fully electric vehicles, protecting electrical cables and connections on the Munro Vehicles in these tough conditions is crucial. This led to the electrical design engineers at Munro to work with and consult the Harnessflex® Specialist Conduit Systems team on their cable protection requirements.

One of the key areas at risk is the vital link between cable and connector. Without robust backshell protection, cables running into connectors are often left exposed, leaving them open to intrusion, excessive strain and impact damage - all of whichcan lead to electrical faults and vehicle failure.

ABB solution
Munro Vehicles chose to use Harnessflex® Specialist Conduit Systems throughout their vehicle as all Harnessflex solutions are designed and tested to withstand extreme environmental conditions.

Outcome for the customer
The Harnessflex® Specialist Conduit Systems now used on their electric vehicles are all designed to withstand increased EV running temperatures, abrasion, shock, vibration and potentially corrosive detergents, oils and grease.

Advanced Mini Piling Systems
Case study

Harnessflex® Specialist Conduit Systems protect critical electrical and electronic wiring assemblies for Advanced Mini Piling Systems.

ADVANCED MINI PILING SYSTEMS

Segment
Heavy automotive

Subsegment
Piling systems

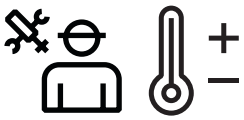
Customer challenge
Advanced Mini Piling Systems required a solution that could assist with the protection of the critical cables and connectors on their piling vehicles. With Harnessflex® systems already installed on other agricultural and construction vehicles, it seemed like it would be a natural fit.

ABB solution
Harnessflex® offered a complete system solution for the routing and protection of electrical wiring against damage by mechanical abrasion, liquid ingress and corrosion salts.

Outcome for the customer
“Harnessflex® Specialist Conduit Systems have saved us time and money whilst increasing value by enabling us to build a machine that is more durable and helps us maintain consistent quality from engine. As a small business, being able to work on an electrical harness schematic and have it produced with Harnessflex® products via a recommended harness manufacturer in the UK saved us a week's worth of work per machine.”
Oliver Noakes, Electrical Engineer, Advanced Mini Piling Systems Ltd.

Harnessflex® Conduit systems

Harnessflex® conduit systems are built for performance, designed to protect critical wiring in harnesses on HGVs, off-road vehicles and other heavy automotives.



From fit-and-forget CPC conduit systems offering unbeatable dynamic performance, to our X-Temp™ range that is designed and tested to withstand extreme temperatures, Harnessflex® can provide a solution for most applications and environments.

Features & benefits:

- High flexibility and fatigue life - continuous performance over a long product lifespan
- Protects critical cables with very high abrasion, impact and shock resistance
- Specialist ranges for use in extreme high and low temperatures
- Range includes products with IP40-IP69 rating, as well as self-extinguishing and low fire hazard capabilities and fittings offering reduction options
- VFP as standard, delivering minimal cable abrasion
- Designed to maximise tensile strength and reduce together with all Harnessflex® connector interface, Y&T and joining system installations
- 100% inspected and tested

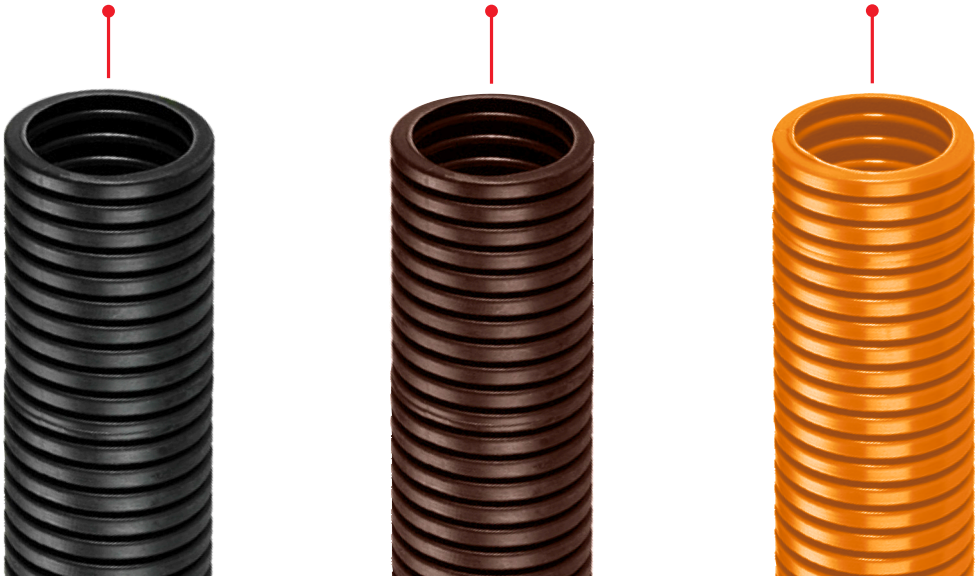
Harnessflex® has the largest range of flexible conduits, sealed fittings, hinged connector interfaces and Y&T pieces, anywhere in the global cable protection market. Constantly evolving through innovation driven by some of the most demanding automotive industry sectors, Harnessflex products are designed to be used together as a system for easy installation and complete wiring harness protection.

Featuring a unique vibration friendly profile (VFP) as standard, as well as UV and heat stabilisation as standard, Harnessflex® conduit systems provide 10-150% greater life expectancy in dynamic or vibrating applications, when compared with other products. This maximises the productivity of the system being protected, whilst minimising the risk of electrical failure.

Harnessflex® Standard
A comprehensive range of cable protection products for heavy automotive 12V and 24V systems.

Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

Harnessflex® EVO™
(Electric Vehicle Orange) specialist range for full EV (electric vehicle) industry compliance.



01 **Light, Medium and Standard weight flexible conduit** for a wide range of wiring harness applications and environments.

Product selection guide

Conduit systems

Product selection guide

Type	NC	CTPA	HTC	CPC	NCV	HNC	GPA
Conduit material	Polyamide 6	Polyamide 6	Modified Co-Polyester	Co-Polyester	FR Polyamide 6	Polyamide 12	Polyamide 6 / Polypropylene blend
Conduit weight	Standard	Light	Medium	Medium	Standard	Standard	Medium
Slit version available	•	•	•	–	–	–	–
Colour	● ●	● ●	●	● ●	●	●	●
Temperature range							
Long term static min.	-40°C	-40°C	-50°C	-50°C	-40°C	-60°C	-5°C
Long term static max.	+120°C	+120°C	+150°C	+135°C	+120°C	+105°C	+90°C
Short term (3000 hrs)	+150°C	+135°C	+175°C	+150°C	+150°C	+120°C	+105°C
Short term (200 hrs)	+175°C	+150°C	+190°C	+175°C	+170°C	+135°C	+105°C
Characteristics							
UV resistance	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	■■■□
Flexibility	■■■□	■■■■	■■■■	■■■■	■■■□	■■■■	■■■□
Fatigue life	■■■■	■■■□	■■■■	■■■■	■■■□	■■■■	■■□□
Ext. wear resistance	■■■■	■■■■	■■■□	■■■□	■■■■	■■■□	■■□□
Fire performance							
Self extinguishing	•	•	•	•	•	•	•
Halogen free	•	•	•	•	•	•	•
Low smoke toxicity	•	•	•	•	•	•	–
UL94 V0	–	–	–	–	•	–	–
UL94 V2	–	–	–	•	–	–	–
UL94 HB	•	•	•	–	–	•	•
R118	•	–	–	–	–	–	–
Approvals							
CE	•	•	•	•	•	•	•
RoHS Compliant	•	•	•	•	•	•	•
ADR Approved	•	–	–	–	–	–	–
(ELV) EU200/53/EC	•	•	•	•	•	•	•
Chemical resistance*							
IRM 903 (ASTM Oil No.2)	S	S	S	S	S	S	S
Diesel Oil	S	S	S	S	S	S	S
Ethylene Glycol (Anti-freeze)	S	S	S	S	S	S	S
Lubricating Oil	S	S	S	S	S	S	S
Methyl Alcohol	L	L	S	S	L	S	S
Parafin Oil	S	S	S	S	S	S	S
Petrol	S	S	S	S	S	S	S
Sodium Chloride	S	S	S	S	S	S	S
Sodium Hydroxide (10%)	S	S	S	S	S	S	S
Transformer Oil	S	S	S	S	S	S	S
Urea	S	S	S	NT	S	S	S
Vegetable Oil	S	S	S	S	S	S	S
Sea (Water)	S	S	S	S	S	S	S

Key: S = Suitable / L = Limited Suitability / U = Unsustainable / NT = Not Tested / Maximum Performance = ■■■■
*All chemicals tested for resistance at 23°C.

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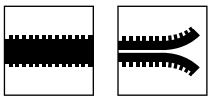
NC Standard weight, polyamide 6

General purpose conduit



Solid Slit

Description

Flexible standard weight nylon (PA6) conduit is a general-purpose conduit suitable for automotive harness applications. Able to withstand extremes of temperatures and resistant to automotive oils and solvents. It is extremely tough and has a very high impact strength and high fatigue life.

Applications

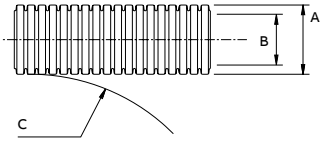
NC standard weight conduit is extensively used in harnesses on HGV and off road vehicle applications where a superior protection against impact and mechanical shock is preferred. The conduit is used for both chassis and engine applications and can be used in a wide range of temperatures. Polyamide 6 is highly resistant to all hydrocarbon based oils and fluids and many types of solvents.

NC Standard weight

Materials: Polyamide 6

Approvals	IP Rating	Appropriate fitting	Temperature range	UV resistance
ADR Approved (Sealed fittings)	**IP40** NC Slit (IP40 only)	Hinged fittings	Long term: -40°C to +120°C	Very high (Black)
CE Mark to the Low Voltage Directive			Short term: +150°C	
RoHS Compliant to 2011/65/EU	**IP67**	Sealed fittings	**Fire perfomance**	
Conforms with End of Life Vehicle directive (ELV) EU200/53/EC	**IP68** (2 bar 30 mins)	Sealed fittings	Self extinguishing	
	Degree of mechanical protection		Low smoke toxicity	
	High flexibility & fatigue life		Halogen free	
	Very high abrasion, impact and shock resistance		UL94 HB rated	
	Suited to high risk impact applications		UNECE R118 Annex 7 and 8	

Dimensions

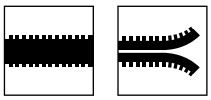


Solid Part No.	Slit Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal O/D A (mm)	Min. bore B (mm)	Min. static bend radius C (mm)	Reel length (m)
NC06	NC06-S	06	4.5	3/16	7.1	4.5	5.0	100
NC08	NC08-S	08	7.5	1/4	10.0	6.5	15.0	100
NC10	NC10-S	10	8.5	5/16	11.5	8.4	15.0	100
NC12	NC12-S	12	10	5/16	13.0	9.9	20.0	100
NC16	NC16-S	16	13	3/8	16.0	11.8	30.0	100
NC20	NC20-S	20	17	1/2	21.2	16.6	35.0	50
NC25	NC25-S	25	22	3/4	25.6	21.3	40.0	50
NC28	NC28-S	28	23	3/4	28.5	22.6	45.0	50
NC30	NC30-S	30	26	1	31.6	26.0	50.0	50
NC32	NC32-S	32	29	1	34.5	28.8	55.0	50
NC40	NC40-S	40	36	1 1/4	42.5	34.8	65.0	25
NC50	NC50-S	50	48	1 1/2	54.5	46.9	70.0	25

Colours available: Black ● RAL 9005 / Orange ● RAL 2003 / *Other colour options available, subject strictly to MOQ.
To order quote part number & reel length, e.g. NC06/100m. For slit conduit options add -S to part number, e.g. NC06-S/100m.
For colours other than standard Black also add colour, i.e. /OR for Orange conduit, e.g. NC06/OR/100m.
Bulk coil lengths over 200m are also available.

CTPA Lightweight, polyamide 6

Extra flexible conduit



Solid Slit

Description

Extra flexible lightweight nylon (PA6) conduit is a general-purpose conduit suitable for electrical loom applications. Able to withstand extremes of temperatures and resistant to automotive oils and solvents. It is extremely tough and has a medium impact strength and high fatigue life.

Applications

CTPA lightweight conduit is extensively used in general purpose, lightweight electrical loom applications. Polyamide 6 is highly resistant to all hydrocarbon based oils and fluids and many types of solvents.

CTPA Lightweight

Materials: Polyamide 6

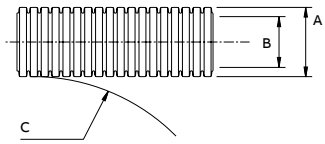
Approvals
CE Mark to the Low Voltage Directive
RoHS Compliant to 2011/65/EU
Conforms with End of Life Vehicle directive (ELV) EU200/53/EC

IP Rating	Appropriate fitting
IP40	Hinged fitting
IP67	Sealed fittings
Degree of mechanical protection	
High flexibility & fatigue life	
Medium impact resistance - suited to lower impact risk applications	

Temperature range
Long term: -40°C to +120°C
Short term: +150°C
Fire perfomance
Self extinguishing
Low smoke toxicity
Halogen free
UL94 HB rated

UV resistance
Very high (Black)

Dimensions

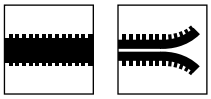


Solid Part No.	Slit Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal O/D A (mm)	Min. bore B (mm)	Min. static bend radius C (mm)	Reel length (m)
CTPA08	CTPA08-S	08	7.5	¼	10.0	6.5	10.0	100
CTPA10	CTPA10-S	10	8.5	5/16	11.5	8.7	15.0	100
CTPA12	CTPA12-S	12	10	5/16	13.0	10.1	20.0	100
CTPA16	CTPA16-S	16	13	⅜	16.0	11.8	35.0	100
CTPA20	CTPA20-S	20	17	½	21.2	16.9	45.0	50
CTPA25	CTPA25-S	25	22	¾	25.6	21.3	45.0	50
CTPA28	CTPA28-S	28	23	¾	28.5	23.1	45.0	50
CTPA32	CTPA32-S	32	29	1	34.5	28.8	55.0	50
CTPA40	CTPA40-S	40	36	1 ¼	42.5	35.0	65.0	25
CTPA50	CTPA50-S	50	48	1 ½	54.5	46.0	90.0	25

Colours available: Black ● RAL 9005 / Orange ● RAL 2003 / *Other colour options available, subject strictly to MOQ.
To order quote part number & reel length, e.g. CTPA08/100m. For slit conduit options add -S to part number, e.g. CTPA08-S/100m.
For colours other than standard Black also add colour, i.e. /OR for Orange conduit, e.g. CTPA08/OR/100m.
Bulk coil lengths over 200m are also available.

HTC High temperature, modified co-polyester

High temperature conduit



Solid Slit

Description

Flexible high temperature, modified co-polyester conduit is a high temperature conduit suitable for automotive harness applications. Able to withstand extremes of temperatures and resistant to automotive oils and solvents. It is extremely tough and has a very high impact strength and fatigue life.

Applications

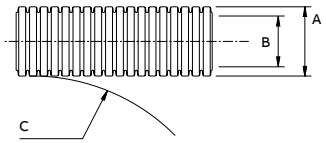
HTC high temperature, modified co-polyester conduit has been developed for use where elevated temperatures occur. Suitable for long term exposure, up to 190°C. HTC is resistant to hydrocarbons, greases, fuels and oils.

HTC Medium weight

Materials: Modified Co-Polyester

Approvals	IP Rating	Appropriate fitting	Temperature range	UV resistance
CE Mark to the Low Voltage Directive	**IP40**	TempGuard & standard hinged fittings	Long term: -50°C to +175°C	Very high
RoHS Compliant to 2011/65/EU	**IP67**	Sealed fittings	Short term: +190°C	
Conforms with End of Life Vehicle directive (ELV) EU200/53/EC		**Degree of mechanical protection**	**Fire perfomance**	
		Very high flexibility & fatigue life	Self extinguishing	
		Very high elevated temperature, abrasion, impact and shock resistance	Halogen free	

Dimensions

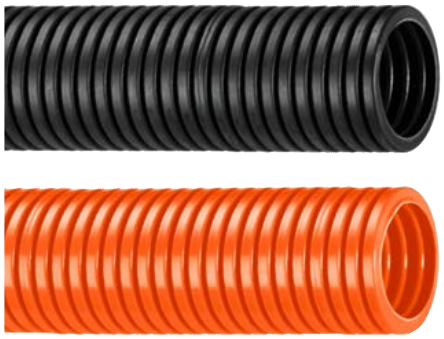


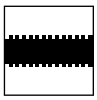
Solid Part No.	Conduit size NC	NW	US	Nominal O/D A (mm)	Min. bore B (mm)	Min. static bend radius C (mm)	Reel length (m)
HTC06	06	4.5	3/16	7.1	4.5	5.0	100
HTC08	08	7.5	¼	9.8	6.2	20.0	50
HTC10	10	8.5	5/16	11.5	8.7	15.0	50
HTC12	12	10	5/16	13.0	9.4	25.0	50
HTC16	16	13	⅜	16.0	11.0	30.0	50
HTC20	20	17	½	21.2	16.1	40.0	50
HTC25*	25	22	¾	25.3	21.0	45.0	50
HTC28*	28	23	¾	28.5	22.5	45.0	50
HTC32*	32	29	1	34.5	27.2	55.0	50
HTC40*	40	36	1 ¼	42.5	34.8	65.0	25
HTC50*	50	48	1 ½	54.5	46.9	70.0	25

Colours available: Brown ● RAL 8016 / To order quote part number & reel length, e.g. HTC08/50m.
For slit conduit options add -S to part number, e.g. NC08-S/50m.

CPC Medium weight, co-polyester

Dynamic conduit





Solid

Description

Dynamic and extra flexible medium weight, co-polyester conduit suitable for automotive harness applications. Able to withstand extremes of temperatures and resistant to automotive oils and solvents. It is extremely tough and has a very high impact strength and fatigue life.

Applications

A low smoke, low toxicity conduit, CPC has excellent high and low temperature properties, making it ideal for harness applications such as engine, body section and chassis. CPC is resistant to hydrocarbons, greases, fuels and oils.

CPC Medium weight

Materials: FR Co-Polyester

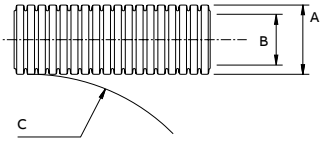
Approvals
CE Mark to the Low Voltage Directive
RoHS Compliant to 2011/65/EU
Conforms with End of Life Vehicle directive (ELV) EU200/53/EC

IP Rating	Appropriate fitting
IP40	Hinged fitting
IP67	Sealed fittings
	Degree of mechanical protection
	Very high flexibility & fatigue life
	Very high abrasion, impact and shock resistance at low temperatures

Temperature range
Long term: -50°C to +135°C
Short term: +175°C
Fire perfomance
Self extinguishing
Low smoke toxicity
Halogen free
UL94 V2 rated

UV resistance
Very high

Dimensions



Solid Part No.	Conduit size NC	NW	US	Nominal O/D A (mm)	Min. bore B (mm)	Min. static bend radius C (mm)	Reel length (m)
CPC08	08	7.5	¼	9.8	6.2	20.0	100
CPC12	12	10	5/16	13.0	9.4	25.0	100
CPC16	16	13	⅜	16.0	11.0	30.0	50
CPC20	20	17	½	21.2	16.1	40.0	50
CPC25	25	22	¾	25.3	21.0	45.0	50
CPC28	28	23	¾	28.5	22.5	45.0	50
CPC32	32	29	1	34.5	27.2	55.0	50
CPC40	40	36	1 ¼	42.5	34.2	60.0	25
CPC50	50	48	1 ½	54.5	46.9	70.0	25

Colours available: Black ● RAL 9005 / Orange ● RAL 2017 / To order quote part number & reel length, e.g. CPC08/100m.
For colours other than standard Black also add colour, i.e. /OR for Orange conduit, e.g. CPC08/OR/100m.

NCV Standard weight, FR polyamide 6

Flame retardant conduit

Solid

Description

Flexible standard weight, FR nylon (PA6) conduit is a flame retardant conduit suitable for automotive harness applications. Able to withstand average temperatures and resistant to automotive oils and solvents. It is extremely tough and has a very high impact strength and high fatigue life.

Applications

NCV is ussed in applications requiring repeated flexing coupled with flame retardant resistance.

NCV Standard weight

Materials: FR Polyamide 6

Approvals
CE Mark to the Low Voltage Directive
RoHS Compliant to 2011/65/EU
Conforms with End of Life Vehicle directive (ELV) EU200/53/EC

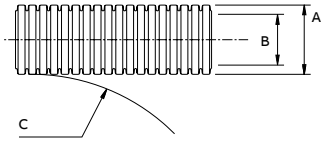
IP Rating	Appropriate fitting
IP40	Hinged fitting
IP67	Sealed fittings
IP68 (2 bar 30 mins)	Sealed fittings
Degree of mechanical protection	
High flexibility & fatigue life	
Very high abrasion, impact and shock resistance	

Temperature range
Long term: -40°C to +120°C
Short term: +150°C
Fire perfomance
Self extinguishing
Low smoke toxicity
Halogen free
UL94 V0 Rated

UV resistance
Very high

Dimensions

	Solid Part No.	Conduit size NC	NW	US	Nominal O/D A (mm)	Min. bore B (mm)	Min. static bend radius C (mm)	Reel length (m)
10mm	NCV06	06	4.5	3/16	7.2	4.5	10	100
	NCV08	08	7.5	1/4	9.8	6.2	20	100
	NCV10	10	8.5	5/16	11.5	8.0	23	100
	NCV12	12	10	5/16	13.0	9.6	26	100
	NCV16	16	13	3/8	16.0	11.7	32	100
	NCV20	20	17	1/2	21.2	16.3	42	50
	NCV25	25	22	3/4	25.3	21.3	52	50
	NCV28	28	23	3/4	28.5	22.5	57	50
	NCV32	32	29	1	34.5	28.6	79	50



Colours available: Black ● RAL 9005. To order quote part number & reel length, e.g. NCV06-S/100m.

HNC Standard weight, polyamide 12

Low temperature, extra flexible conduit

Solid

Description

Extra flexible standard weight nylon (PA12) conduit is suitable for low temperature automotive harness applications. It is extremely tough and has a very high impact strength and fatigue life.

Applications

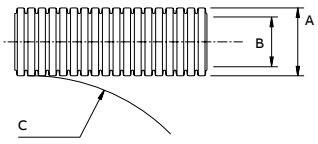
HNC is particularly used in applications requiring repeated flexing such as dynamic couplings, i.e. hydraulic arms and trailer couplings or rapid continuous motion, demanding high fatigue life and extra flexibility even in low temperature environments. Highly resistant to low temperature impact. HNC Standard weight conduit is designed for connection to all Harnessflex hinged and sealed fittings. Contact us for slit conduit options.

HNC Standard Weight

Materials: Polyamide 12

Approvals	IP Rating	Appropriate fitting	Temperature range	UV resistance
CE Mark to the Low Voltage Directive	**IP40**	Hinged fitting	Long term: -60°C to +105°C	Very high
RoHS Compliant to 2011/65/EU	**IP67**	Sealed fittings	Short term: +120°C	
Conforms with End of Life Vehicle directive (ELV) EU200/53/EC	**IP68** (2 bar 30 mins)	Sealed fittings	**Fire perfomance**	
	Degree of mechanical protection		Self extinguishing	
	Very high flexibility & fatigue life		Low smoke toxicity	
	Very high abrasion, impact and shock resistance at low temperatures		Halogen free	
			UL94 HB rated	

Dimensions

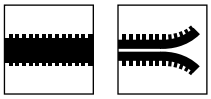


Solid Part No.	Conduit size NC	NW	US	Nominal O/D A (mm)	Min. bore B (mm)	Min. static bend radius C (mm)	Reel length (m)
HNC08	08	7.5	¼	10.0	6.2	15.0	100
HNC12	12	10	5/16	13.0	9.9	25.0	100
HNC16	16	13	⅜	15.8	11.7	30.0	100
HNC20	20	17	½	21.2	16.6	35.0	50
HNC25	25	22	¾	25.3	21.0	40.0	50
HNC28	28	23	¾	28.5	21.7	45.0	50
HNC32	32	29	1	34.5	27.7	55.0	50
HNC40	40	36	1 ¼	42.5	35.5	60.0	25
HNC50	50	48	1 ½	54.5	46.6	70.0	25

Colours available: Black ● RAL 9005. To order quote part number & reel length, e.g. HNC08/100m.

GPA Medium weight, polyamide 6 / polypropylene blend

General purpose automotive conduit



Solid Slit

Description

Flexible medium weight, polyamide 6 / polypropylene material blend conduit, suitable for automotive harness applications. Ideal for vehicle cable routing and protection and general purpose applications. Able to withstand average temperatures and resistant to hydrocarbons, greases, fuels and oils. It is extremely tough and has a high chemical resistance and medium fatigue life.

Applications

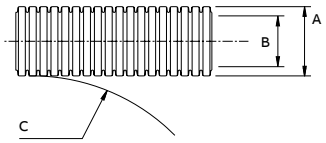
GPA is particularly used in lighter applications where compression strength and LFH is not so important. The main property of this conduit is chemical resistance. GPA is designed for connection to all Harnessflex Sealed and Hinged system fittings.

PP Medium weight

Materials: Polypropylene

Approvals	IP Rating	Appropriate fitting	Temperature range	UV resistance
CE Mark to the Low Voltage Directive	**IP40**	Hinged fitting	Long term: -5°C to +90°C	High
RoHS Compliant to 2011/65/EU		**Degree of mechanical protection**	Short term: +105°C	
Conforms with End of Life Vehicle directive (ELV) EU200/53/EC		Medium flexibility and fatigue life	**Fire perfomance**	
		Medium abrasion, impact and shock resistance	Self extinguishing	
			Halogen free	
			UL94 HB rated	

Dimensions



Solid Part No.	Conduit size NC	NW	US	Nominal O/D A (mm)	Min. bore B (mm)	Min. static bend radius C (mm)	Reel length (m)
GPA08	08	7.5	¼	10.0	6.6	20.0	100
GPA10	10	8.5	5/16	11.6	8.2	25.0	100
GPA12	12	10	5/16	13.1	10.0	25.0	100
GPA16	16	13	⅜	16.0	11.7	35.0	100
GPA20	20	17	½	21.2	16.6	45.0	50
GPA25	25	22	¾	25.6	20.6	55.0	50
GPA28	28	23	¾	28.4	22.8	60.0	50
GPA30	30	28	1	31.6	25.8	65.0	50
GPA32	32	29	1	34.5	28.6	80.0	50
GPA40	40	36	1 ¼	42.4	35.0	100.0	25
GPA50	50	48	1 ½	54.3	45.6	120.0	25

Colours available: Black ● RAL 9005. To order quote part number & reel length, e.g. GPA08/100m.
Bulk coil lengths over 200m are also available.
For slit conduit options add -S to part number, e.g. GPA08-S/100m.

Harnessflex® conduit systems are built for performance, designed to protect critical wiring in harnesses on HGVs, off-road vehicles and other heavy automotives.

Key features:

1

Compact design
Reducing distance between centres.

2

High pull-off strength
Conduit corrugations sit tightly into joiner junctions.

3

Integral retaining clips
Retains conduit in position during assembly.

Joiner

Elbow

Harnessflex® Cable routing

Harnessflex® conduit fittings and connector interfaces are designed to offer effective stable joints and connections in a wiring harness, that also shield against high pressure wash-down, excessive dust ingress, cable strain and mechanical abrasion.

Capabilities
Harnessflex® works closely with many OEMs to develop protection for critical electrical wiring through two-piece or hinged joints and junctions, sealed fittings and bespoke connector interfaces.

Our experienced internal design team uses 3D CAD modelling software to constantly develop innovative new solutions, as well as various bespoke concepts for customer approval.

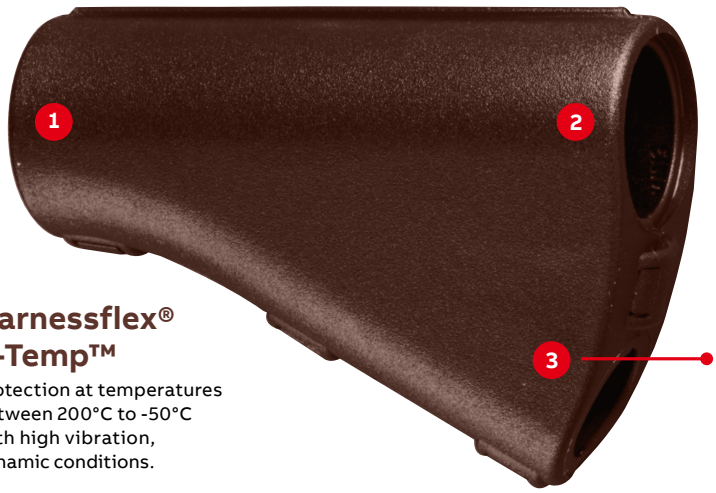
Through our astute understanding of customer requirements, Harnessflex® products are designed and manufactured to integrate seamlessly into harnesses for various heavy automotive applications.

Features & benefits

- Internal form of fittings protects cables from abrasion
- Internal backstop alleviates any potential problems caused by unevenly cut conduit and ensures correct assembly
- Interfaces can be used in areas where electrical connectors are vulnerable to high pressure washing
- Interfaces offer strain relief to crimped contacts
- When 90° swivel elbows are used with interfaces they allow the harness to self-level
- All Harnessflex® Y, T and joiners can be used with CCSB to further enhance the conduit and connection's tensile and bending performance

This has led to the automotive industry actively looking for a complete and effective solution for protecting wiring and connectors in their engines.

Y-piece



Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

x3 Junctions
For multiple conduit variations.

X-piece

x4 Junctions
For multiple conduit variations.

Harnessflex X-Temp™ conduits and fittings are a unique innovation designed to work specifically with high temperature wiring, allowing them to successfully operate at up to 200°C. Created from the outset for use as a full system, the range is made from specialist co-polyester and polyamide respectively, offering reliable protection for vital cable connections. The X-Temp™ system is manufactured from low smoke/zero halogen materials, and has also endured intensive long-term heat aging, tensile and impact strength testing to help ensure consistent performance.

Features & benefits

- High temperature range (up to 200°C) consisting of HTC conduit, T and Y-Piece fittings, straight and elbow joiners and common connector interfaces
- Safely protects against heat, abrasion, vibration and automotive fluids in all harness routing areas
- Very high fatigue life
- Made from high temperature Polyamide material
- UL94 V2 rated material
- Intensively tested for high tensile and impact strength

Standard fittings

Approvals	IP Rating	Appropriate fitting	Temperature range	UV resistance
CE Mark to the Low Voltage Directive		All Harnessflex conduits	-40°C to +120°C	Very high
RoHS Compliant to 2011/65/EU	**IP40**	Yes	**Fire perfomance**	
Conforms with End of Life Vehicle directive (ELV) EU200/53/EC			Self extinguishing	
			Low smoke toxicity	
			Halogen free	

Harnessflex X-Temp™ fittings

Approvals	IP Rating	Appropriate fitting	Temperature range	UV resistance
CE Mark to the Low Voltage Directive		For use with: All conduits in the Harnessflex range	-40°C to +200°C	High
RoHS Compliant to 2011/65/EU	**IP40**	Yes	**Fire perfomance**	
Conforms with End of Life Vehicle directive (ELV) EU200/53/EC			Self extinguishing	
			Low smoke toxicity	
			Halogen free	
			UL94 V2 / UL94 RTI 150 (Elec)	

JPS / JPH Joiner

External conduit fitting

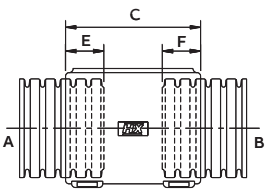
External joiner

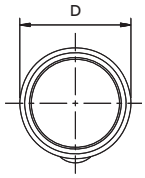
One-piece joiner fittings allow a variety of conduit size variations. These fittings are designed to snap together over all types of slit and unslit conduit, maintaining maximum conduit bore. Can be used as an in-line reducer as well as an enlarger.

Harnessflex® X-Temp™

Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

JPS / JPH External joiner





Part No.	X-Temp™ Part No.	Conduit size (NC / NW / US) A	B	Nominal dimensions (mm) C	D	E	F
JPS1208	JPH1208	12 / 10 / 5/16	08 / 7.5 / 1/4	38.0	16.0	10.0	10.0
JPS1212	JPH1212	12 / 10 / 5/16	12 / 10 / 5/16	36.0	16.0	10.0	10.0
JPS1612	JPH1612	16 / 13 / 3/8	12 / 10 / 5/16	36.0	21.0	10.0	10.0
JPS1616	JPH1616	16 / 13 / 3/8	16 / 13 / 3/8	36.0	21.0	10.0	10.0
JPS2008	JPH2008	20 / 17 / 1/2	08 / 7.5 / 1/4	38.0	26.0	12.0	10.0
JPS2012	JPH2012	20 / 17 / 1/2	12 / 10 / 5/16	38.0	26.0	12.0	10.0
JPS2016	JPH2016	20 / 17 / 1/2	16 / 13 / 3/8	38.0	26.0	12.0	10.0
JPS2020	JPH2020	20 / 17 / 1/2	20 / 17 / 1/2	38.0	26.0	12.0	12.0
JPS2520	–	25 / 22 / 3/4	20 / 17 / 1/2	39.0	33.0	12.0	12.0
JPS2525	–	25 / 22 / 3/4	25 / 22 / 3/4	39.0	33.0	13.0	13.0
JPS2820	–	28 / 23 / 3/4	20 / 17 / 1/2	39.0	33.0	13.0	13.0
JPS2825	–	28 / 23 / 3/4	25 / 22 / 3/4	39.0	33.0	13.0	13.0
JPS2828	–	28 / 23 / 3/4	28 / 23 / 3/4	39.0	33.0	13.0	13.0

Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

EPS / EPH Elbow

External conduit fitting

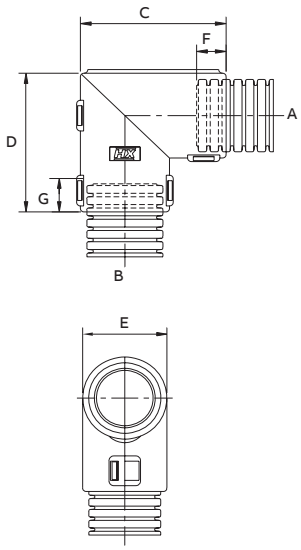
External hinged elbow

One-piece elbow fittings allow a variety of conduit size variations. These fittings are designed to snap together over all types of slit and unslit conduit, maintaining maximum conduit bore. Can be used as an in-line reducer as well as an enlarger.

Harnessflex® X-Temp™

Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

EPS / EPH External elbow



Part No.	X-Temp™ Part No.	Conduit size (NC / NW / US) A	B	Nominal dimensions (mm) C	D	E	F	G
EPS08S08*	EPH08S08	08 / 7.5 / ¼	08 / 7.5 / ¼	38.0	29.0	20.0	10.0	10.0
EPS12S12*	EPH12S12	12 / 10 / 5/16	12 / 10 / 5/16	38.0	29.0	20.0	10.0	10.0
EPS1608	EPH1608	16 / 10 / 5/16	08 / 7.5 / ¼	34.0	34.0	21.0	10.0	10.0
EPS1612	EPH1612	16 / 13 / ⅜	12 / 10 / 5/16	34.0	34.0	21.0	10.0	10.0
EPS1616	EPH1616	16 / 13 / ⅜	16 / 13 / ⅜	34.0	34.0	21.0	10.0	10.0
EPS2008	EPH2008	20 / 17 / ½	08 / 7.5 / ¼	41.0	39.0	26.0	12.0	10.0
EPS2012	–	20 / 17 / ½	12 / 10 / 5/16	41.0	41.0	26.0	10.0	10.0
EPS2016	EPH2016	20 / 17 / ½	16 / 13 / ⅜	41.0	41.0	26.0	12.0	10.0
EPS2020	EPH2020	20 / 17 / ½	20 / 17 / ½	41.0	41.0	26.0	12.0	12.0
EPS2520	–	25 / 22 / ¾	20 / 17 / ½	48.0	48.0	33.0	13.0	12.0
EPS2525	–	25 / 22 / ¾	25 / 22 / ¾	48.0	48.0	33.0	13.0	13.0
EPS2812	–	28 / 23 / ¾	12 / 10 / 5/16	48.0	48.0	33.0	13.0	10.0
EPS2816	–	28 / 23 / ¾	16 / 13 / ⅜	48.0	48.0	33.0	13.0	10.0
EPS2820	–	28 / 23 / ¾	20 / 17 / ½	48.0	48.0	33.0	13.0	12.0
EPS2825	–	28 / 23 / ¾	25 / 22 / ¾	48.0	48.0	33.0	13.0	13.0
EPS2828	–	28 / 23 / ¾	28 / 23 / ¾	48.0	48.0	33.0	13.0	13.0
EPS3232	–	32 / 29 / 1	32 / 29 / 1	60.0	60.0	38.0	12.0	12.0
EPS4040	–	40 / 36 / 1 ¼	40 / 36 / 1 ¼	67.0	67.0	47.0	15.0	15.0

*Swivel fitting / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

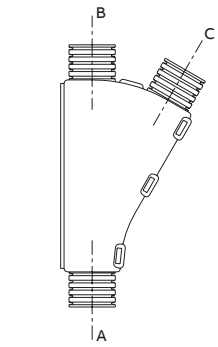
YPS / YPH Y-piece

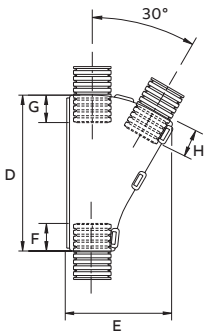
External conduit fitting

External Y-piece
Asymmetrical 3 junction fittings allow a variety of conduit size variations. These fittings are designed to snap together over all types of slit and unslit conduit, maintaining maximum conduit bore.

Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

YPS / YPH External Y-piece



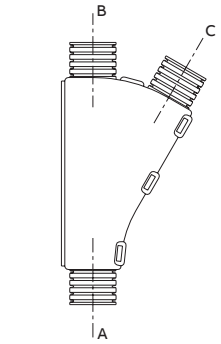


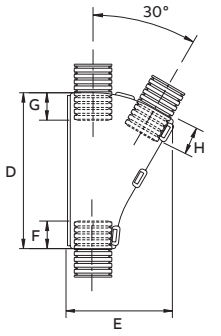
			Conduit size (NC / NW / US)			Nominal dimensions (mm)				
	Part No.	X-Temp™ Part No.	A	B	C	D	E	F	G	H
	YPS060606*	YPH060606*	06 / 4.5 / 3/16	06 / 4.5 / 3/16	06 / 4.5 / 3/16	55.0	37.0	10.0	10.0	10.0
	YPS080808	YPH080808	08 / 7.5 / 1/4	08 / 7.5 / 1/4	08 / 7.5 / 1/4	55.0	37.0	10.0	10.0	10.0
	YPS080812	YPH080812	08 / 7.5 / 1/4	08 / 7.5 / 1/4	12 / 10 / 5/16	55.0	37.0	10.0	10.0	10.0
	YPS081208	YPH081208	08 / 7.5 / 1/4	12 / 10 / 5/16	08 / 7.5 / 1/4	55.0	37.0	10.0	10.0	10.0
	YPS101010	YPH101010	10 / 8.5 / 5/16	10 / 8.5 / 5/16	10 / 8.5 / 5/16	55.0	37.0	10.0	10.0	10.0
	YPS120808	YPH120808	12 / 10 / 5/16	08 / 7.5 / 1/4	08 / 7.5 / 1/4	55.0	37.0	10.0	10.0	10.0
	YPS120810	YPH120810	12 / 10 / 5/16	08 / 7.5 / 1/4	10 / 8.5 / 5/16	55.0	37.0	10.0	10.0	10.0
	YPS120812	–	08 / 7.5 / 1/4	08 / 7.5 / 1/4	12 / 10 / 5/16	55.0	37.0	10.0	10.0	10.0
	YPS121010	YPH121010	12 / 10 / 5/16	10 / 8.5 / 5/16	10 / 8.5 / 5/16	55.0	37.0	10.0	10.0	10.0
	YPS121208	YPH121208	12 / 10 / 5/16	12 / 10 / 5/16	08 / 7.5 / 1/4	55.0	37.0	10.0	10.0	10.0
	YPS121210	YPH121210	12 / 10 / 5/16	12 / 10 / 5/16	10 / 8.5 / 5/16	55.0	37.0	10.0	10.0	10.0
	YPS121212	YPH121212	12 / 10 / 5/16	12 / 10 / 5/16	12 / 10 / 5/16	55.0	37.0	10.0	10.0	10.0
	YPS160812	–	16 / 13 / 3/8	08 / 7.5 / 1/4	08 / 7.5 / 1/4	55.0	37.0	10.0	10.0	10.0
	YPS161010	YPH161010	16 / 13 / 3/8	10 / 8.5 / 5/16	10 / 8.5 / 5/16	55.0	40.0	10.0	10.0	10.0
	YPS161208	YPH161208	16 / 13 / 3/8	12 / 10 / 5/16	08 / 7.5 / 1/4	55.0	40.0	10.0	10.0	10.0
	YPS161210	YPH161210	16 / 13 / 3/8	12 / 10 / 5/16	10 / 8.5 / 5/16	55.0	40.0	10.0	10.0	10.0
	YPS161212	YPH161212	16 / 13 / 3/8	12 / 10 / 5/16	08 / 7.5 / 1/4	55.0	40.0	10.0	10.0	10.0
	YPS161608	YPH161608	16 / 13 / 3/8	16 / 13 / 3/8	08 / 7.5 / 1/4	55.0	40.0	10.0	10.0	10.0
	YPS161610	YPH161610	16 / 13 / 3/8	16 / 13 / 3/8	10 / 8.5 / 5/16	55.0	40.0	10.0	10.0	10.0
	YPS161612	YPH161612	16 / 13 / 3/8	16 / 13 / 3/8	08 / 7.5 / 1/4	55.0	40.0	10.0	10.0	10.0
	YPS200808	YPH200808	20 / 17 / 1/2	08 / 7.5 / 1/4	08 / 7.5 / 1/4	43.0	37.0	12.0	10.0	10.0
	YPS201208	YPH201208	20 / 17 / 1/2	12 / 10 / 5/16	08 / 7.5 / 1/4	43.0	37.0	12.0	10.0	10.0
	YPS201210	YPH201210	20 / 17 / 1/2	12 / 10 / 5/16	10 / 8.5 / 5/16	43.0	37.0	12.0	10.0	10.0
	YPS201212	YPH201212	20 / 17 / 1/2	12 / 10 / 5/16	12 / 10 / 5/16	43.0	37.0	12.0	10.0	10.0
	YPS201608	YPH201608	20 / 17 / 1/2	16 / 13 / 3/8	08 / 7.5 / 1/4	43.0	37.0	12.0	10.0	10.0
	YPS201612	YPH201612	20 / 17 / 1/2	16 / 13 / 3/8	12 / 10 / 5/16	48.0	40.0	12.0	10.0	10.0
	YPS201616	YPH201616	20 / 17 / 1/2	16 / 13 / 3/8	16 / 13 / 3/8	48.0	40.0	12.0	10.0	10.0
	YPS202008	YPH202008	20 / 17 / 1/2	20 / 17 / 1/2	08 / 7.5 / 1/4	56.0	45.0	12.0	10.0	10.0
	YPS202010	YPH202010	20 / 17 / 1/2	20 / 17 / 1/2	10 / 8.5 / 5/16	58.0	45.0	12.0	12.0	10.0
	YPS202012	YPH202012	20 / 17 / 1/2	20 / 17 / 1/2	12 / 10 / 5/16	58.0	45.0	12.0	12.0	10.0
	YPS202016	YPH202016	20 / 17 / 1/2	20 / 17 / 1/2	16 / 13 / 3/8	64.0	48.0	12.0	12.0	10.0
	YPS252020	–	25 / 22 / 3/4	20 / 17 / 1/2	20 / 17 / 1/2	54.0	49.0	10.0	12.0	12.0
	YPS252508	–	25 / 22 / 3/4	25 / 22 / 3/4	08 / 7.5 / 1/4	67.0	56.0	10.0	12.0	10.0
	YPS252510	–	25 / 22 / 3/4	25 / 22 / 3/4	10 / 8.5 / 5/16	67.0	56.0	10.0	13.0	10.0
	YPS252512	–	25 / 22 / 3/4	25 / 22 / 3/4	12 / 10 / 5/16	67.0	56.0	10.0	13.0	10.0
	YPS252516	–	25 / 22 / 3/4	25 / 22 / 3/4	16 / 13 / 3/8	67.0	56.0	10.0	13.0	10.0
	YPS252520	–	25 / 22 / 3/4	25 / 22 / 3/4	20 / 17 / 1/2	77.0	60.0	10.0	13.0	12.0

*Item supplied as kit with x3 insertable reducer / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

YPS / YPH Y-piece

External conduit fitting (continued)





Part No.	X-Temp™ Part No.	Conduit size (NC / NW / US) A	B	C	Nominal Dimensions (mm) D	E	F	G	H
YPS252525	–	25 / 22 / ¾	25 / 22 / ¾	25 / 22 / ¾	91.0	67.0	10.0	13.0	13.0
YPS282012	–	28 / 23 / ¾	20 / 17 / ½	12 / 10 / 5/16	54.0	49.0	10.0	13.0	10.0
YPS282016	–	28 / 23 / ¾	20 / 17 / ½	16 / 13 / ⅜	54.0	49.0	10.0	12.0	10.0
YPS282020	–	28 / 23 / ¾	20 / 17 / ½	20 / 17 / ½	54.0	49.0	10.0	12.0	12.0
YPS282512	–	28 / 23 / ¾	25 / 22 / ¾	12 / 10 / 5/16	67.0	56.0	10.0	12.0	10.0
YPS282520	–	28 / 23 / ¾	25 / 22 / ¾	20 / 17 / ½	77.0	60.0	10.0	13.0	12.0
YPS282525	–	28 / 23 / ¾	25 / 22 / ¾	25 / 22 / ¾	91.0	67.0	10.0	13.0	13.0
YPS282808	–	28 / 23 / ¾	28 / 23 / ¾	08 / 7.5 / ¼	67.0	56.0	10.0	13.0	10.0
YPS282812	–	28 / 23 / ¾	28 / 23 / ¾	12 / 10 / 5/16	67.0	56.0	10.0	13.0	10.0
YPS282816	–	28 / 23 / ¾	28 / 23 / ¾	16 / 13 / ⅜	67.0	56.0	10.0	13.0	10.0
YPS282820	–	28 / 23 / ¾	28 / 23 / ¾	20 / 17 / ½	77.0	60.0	10.0	13.0	12.0
YPS282825	–	28 / 23 / ¾	28 / 23 / ¾	25 / 22 / ¾	91.0	67.0	12.0	13.0	13.0
YPS282828	–	28 / 23 / ¾	28 / 23 / ¾	28 / 23 / ¾	91.0	67.0	12.0	13.0	13.0
YPS322516	–	32 / 29 / 1	25 / 22 / ¾	16 / 13 / ⅜	100.0	75.0	12.0	13.0	10.0
YPS322520	–	32 / 29 / 1	25 / 22 / ¾	20 / 17 / ½	100.0	76.0	12.0	13.0	12.0
YPS322525	–	32 / 29 / 1	25 / 22 / ¾	25 / 22 / ¾	100.0	79.0	12.0	13.0	13.0
YPS322532	–	32 / 29 / 1	25 / 22 / ¾	32 / 29 / 1	100.0	82.0	12.0	13.0	13.0
YPS323216	–	32 / 29 / 1	32 / 29 / 1	16 / 13 / ⅜	100.0	75.0	12.0	13.0	10.0
YPS323220	–	32 / 29 / 1	32 / 29 / 1	20 / 17 / ½	100.0	76.0	12.0	13.0	12.0
YPS323225	–	32 / 29 / 1	32 / 29 / 1	25 / 22 / ¾	100.0	79.0	12.0	13.0	13.0
YPS323232	–	32 / 29 / 1	32 / 29 / 1	32 / 29 / 1	100.0	82.0	13.0	13.0	13.0
YPS403212	–	40 / 36 / 1 ¼	32 / 29 / 1	12 / 10 / 5/16	133.0	91.0	15.0	12.0	10.0
YPS403216	–	40 / 36 / 1 ¼	32 / 29 / 1	16 / 13 / ⅜	133.0	92.0	15.0	12.0	10.0
YPS403225	–	40 / 36 / 1 ¼	32 / 29 / 1	25 / 22 / ¾	133.0	92.0	15.0	12.0	12.0
YPS403228	–	40 / 36 / 1 ¼	32 / 29 / 1	28 / 23 / ¾	133.0	92.0	15.0	12.0	12.0
YPS404012	–	40 / 36 / 1 ¼	40 / 36 / 1 ¼	12 / 10 / 5/16	135.0	93.0	15.0	15.0	10.0
YPS404016	–	40 / 36 / 1 ¼	40 / 36 / 1 ¼	16 / 13 / ⅜	135.0	9.03	15.0	15.0	10.0
YPS404025	–	40 / 36 / 1 ¼	40 / 36 / 1 ¼	25 / 22 / ¾	135.0	93.0	15.0	15.0	12.0
YPS404028	–	40 / 36 / 1 ¼	40 / 36 / 1 ¼	28 / 23 / ¾	135.0	93.0	15.0	15.0	12.0
YPS404032	–	40 / 36 / 1 ¼	40 / 36 / 1 ¼	32 / 29 / 1	135.0	96.0	15.0	15.0	12.0
YPS404040	–	40 / 36 / 1 ¼	40 / 36 / 1 ¼	40 / 36 / 1 ¼	135.0	100.0	15.0	15.0	15.0

*Item supplied as kit with x3 insertable reducer / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

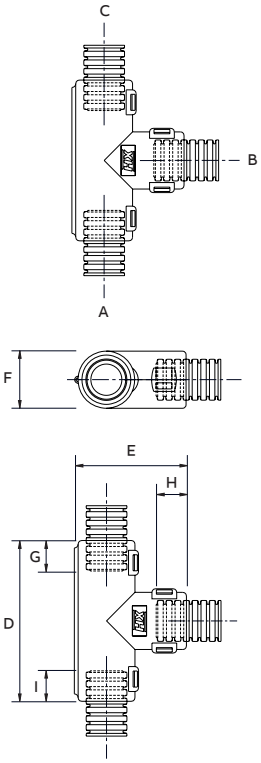
TPS / TPH T-piece

External conduit fitting

External T-piece
3 junction fittings allow a variety of conduit size variations. These fittings are designed to snap together over all types of slit and unslit conduit, maintaining maximum conduit bore.

Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

TPS / TPH External T-piece

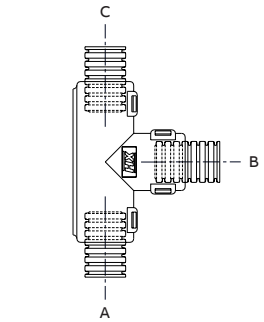


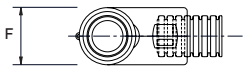
Part No.	X-Temp™ Part No.	Conduit size (NC / NW / US) A	B	C	Nominal dimensions (mm) D	E	F	G	H	I
TPS060606*	–	06 / 4.5 / 3/16	06 / 4.5 / 3/16	06 / 4.5 / 3/16	45.2	31.1	17.0	10.0	10.0	10.0
TPS080808	TPH080808	08 / 7.5 / 1/4	08 / 7.5 / 1/4	08 / 7.5 / 1/4	45.2	31.1	17.0	10.0	10.0	10.0
TPS081208	TPH081208	08 / 7.5 / 1/4	12 / 10 / 5/16	08 / 7.5 / 1/4	45.2	31.1	17.0	10.0	10.0	10.0
TPS081612	TPH081612	08 / 7.5 / 1/4	16 / 13 / 3/8	12 / 10 / 5/16	45.2	31.1	17.0	10.0	10.0	10.0
TPS100808	TPH100808	10 / 8.5 / 5/16	08 / 7.5 / 1/4	08 / 7.5 / 1/4	45.2	31.1	17.0	10.0	10.0	10.0
TPS100810	TPH100810	10 / 8.5 / 5/16	08 / 7.5 / 1/4	10 / 8.5 / 5/16	45.2	31.1	17.0	10.0	10.0	10.0
TPS101010	TPH101010	10 / 8.5 / 5/16	10 / 8.5 / 5/16	10 / 8.5 / 5/16	45.2	31.1	17.0	10.0	10.0	10.0
TPS101012	TPH101012	10 / 8.5 / 5/16	10 / 8.5 / 5/16	12 / 10 / 5/16	45.2	31.1	17.0	10.0	10.0	10.0
TPS120808	TPH120808	12 / 10 / 5/16	08 / 7.5 / 1/4	08 / 7.5 / 1/4	45.2	31.1	17.0	10.0	10.0	10.0
TPS120812	TPH120812	12 / 10 / 5/16	08 / 7.5 / 1/4	12 / 10 / 5/16	45.2	31.1	17.0	10.0	10.0	10.0
TPS121010	TPH121210	12 / 10 / 5/16	10 / 8.5 / 5/16	10 / 8.5 / 5/16	45.2	31.1	17.0	10.0	10.0	10.0
TPS121012	TPH121012	12 / 10 / 5/16	10 / 8.5 / 5/16	12 / 10 / 5/16	45.2	31.1	17.0	10.0	10.0	10.0
TPS121208	TPH121208	12 / 10 / 5/16	12 / 10 / 5/16	08 / 7.5 / 1/4	45.2	31.1	17.0	10.0	10.0	10.0
TPS121210	TPH121210	12 / 10 / 5/16	12 / 10 / 5/16	10 / 8.5 / 5/16	45.2	31.1	17.0	10.0	10.0	10.0
TPS121212	TPH121212	12 / 10 / 5/16	12 / 10 / 5/16	12 / 10 / 5/16	45.2	31.1	17.0	10.0	10.0	10.0
TPS121612	TPH121612	12 / 10 / 5/16	16 / 13 / 3/8	12 / 10 / 5/16	45.2	31.1	21.0	10.0	10.0	10.0
TPS160808	TPH160808	16 / 13 / 3/8	08 / 7.5 / 1/4	08 / 7.5 / 1/4	49.1	34.8	21.0	10.0	10.0	10.0
TPS160812	TPH160812	16 / 13 / 3/8	08 / 7.5 / 1/4	12 / 10 / 5/16	49.1	34.8	21.0	10.0	10.0	10.0
TPS160816	TPH160816	16 / 13 / 3/8	08 / 7.5 / 1/4	16 / 13 / 3/8	49.1	34.8	21.0	10.0	10.0	10.0
TPS161012	TPH161012	16 / 13 / 3/8	10 / 8.5 / 5/16	12 / 10 / 5/16	49.1	34.8	21.0	10.0	10.0	10.0
TPS161016	TPH161016	16 / 13 / 3/8	10 / 8.5 / 5/16	16 / 13 / 3/8	49.1	34.8	21.0	10.0	10.0	10.0
TPS161212	TPH161212	16 / 13 / 3/8	12 / 10 / 5/16	12 / 10 / 5/16	49.1	34.8	21.0	10.0	10.0	10.0
TPS161216	TPH161216	16 / 13 / 3/8	12 / 10 / 5/16	16 / 13 / 3/8	49.1	34.8	21.0	10.0	10.0	10.0
TPS161608	TPH161608	16 / 13 / 3/8	16 / 13 / 3/8	08 / 7.5 / 1/4	49.1	34.8	21.0	10.0	10.0	10.0
TPS161612	TPH161612	16 / 13 / 3/8	16 / 13 / 3/8	12 / 10 / 5/16	49.1	34.8	21.0	10.0	10.0	10.0
TPS161616	TPH161616	16 / 13 / 3/8	16 / 13 / 3/8	16 / 13 / 3/8	49.1	34.8	21.0	10.0	10.0	10.0
TPS162012	TPH162012	16 / 13 / 3/8	20 / 17 / 1/2	12 / 10 / 5/16	49.1	34.8	21.0	10.0	10.0	10.0
TPS162016	TPH162016	16 / 13 / 3/8	20 / 17 / 1/2	16 / 13 / 3/8	49.1	34.8	21.0	10.0	10.0	10.0
TPS200816	TPH200816	20 / 17 / 1/2	08 / 7.5 / 1/4	16 / 13 / 3/8	56.5	41.0	26.0	12.0	10.0	10.0
TPS200820	TPH200820	20 / 17 / 1/2	08 / 7.5 / 1/4	20 / 17 / 1/2	56.5	41.0	26.0	12.0	10.0	12.0
TPS201016	TPH201016	20 / 17 / 1/2	10 / 8.5 / 5/16	16 / 13 / 3/8	56.5	41.0	26.0	12.0	10.0	10.0
TPS201020	TPH201020	20 / 17 / 1/2	10 / 8.5 / 5/16	20 / 17 / 1/2	56.5	41.0	26.0	12.0	10.0	12.0
TPS201216	TPH201216	20 / 17 / 1/2	12 / 10 / 5/16	16 / 13 / 3/8	56.5	41.0	26.0	12.0	10.0	10.0
TPS201220	TPH201220	20 / 17 / 1/2	12 / 10 / 5/16	20 / 17 / 1/2	56.5	41.0	26.0	12.0	10.0	12.0
TPS201612	TPH201612	20 / 17 / 1/2	16 / 13 / 3/8	12 / 10 / 5/16	56.5	41.0	26.0	12.0	10.0	10.0
TPS201616	TPH201616	20 / 17 / 1/2	16 / 13 / 3/8	16 / 13 / 3/8	56.5	41.0	26.0	12.0	10.0	10.0
TPS201620	TPH201620	20 / 17 / 1/2	16 / 13 / 3/8	20 / 17 / 1/2	56.5	41.0	26.0	12.0	10.0	12.0

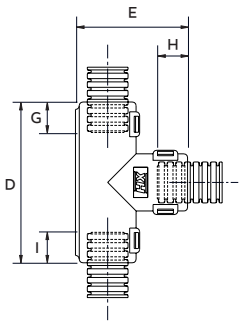
*Item supplied as kit with x3 insertable reducer / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

TPS / TPH T-piece

External conduit fitting (continued)





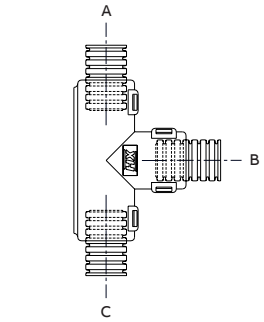


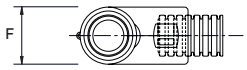
Part No.	X-Temp™ Part No.	Conduit size (NC / NW / US) A	B	C	D	E	F	G	H	I
					Nominal dimensions (mm)					
TPS202012	TPH202012	20 / 17 / ½	20 / 17 / ½	12 / 10 / 5⁄16	56.5	41.0	26.0	12.0	12.0	10.0
TPS202016	TPH202016	20 / 17 / ½	20 / 17 / ½	16 / 13 / ⅜	56.5	41.0	26.0	12.0	12.0	10.0
TPS202020	TPH202020	20 / 17 / ½	20 / 17 / ½	20 / 17 / ½	56.5	41.0	26.0	12.0	12.0	12.0
TPS202516	TPH202516	20 / 17 / ½	25 / 22 / ¾	16 / 13 / ⅜	64.5	48.5	33.0	12.0	13.0	10.0
TPS250820	–	25 / 22 / ¾	08 / 7.5 / ¼	20 / 17 / ½	64.5	48.5	33.0	13.0	10.0	12.0
TPS250825	–	25 / 22 / ¾	08 / 7.5 / ¼	25 / 22 / ¾	64.5	48.5	33.0	13.0	10.0	13.0
TPS251025	–	25 / 22 / ¾	10 / 8.5 / 5⁄16	25 / 22 / ¾	64.5	48.5	33.0	13.0	10.0	13.0
TPS251220	–	25 / 22 / ¾	12 / 10 / 5⁄16	20 / 17 / ½	64.5	48.5	33.0	13.0	10.0	12.0
TPS251225	–	25 / 22 / ¾	12 / 10 / 5⁄16	25 / 22 / ¾	64.5	48.5	33.0	13.0	10.0	13.0
TPS251620	–	25 / 22 / ¾	16 / 13 / ⅜	20 / 17 / ½	64.5	48.5	33.0	13.0	12.0	12.0
TPS251625	–	25 / 22 / ¾	16 / 13 / ⅜	25 / 22 / ¾	64.5	48.5	33.0	13.0	12.0	13.0
TPS252020	–	25 / 22 / ¾	20 / 17 / ½	20 / 17 / ½	64.5	48.5	33.0	13.0	13.0	12.0
TPS252025	–	25 / 22 / ¾	20 / 17 / ½	25 / 22 / ¾	64.5	48.5	33.0	13.0	13.0	13.0
TPS252520	–	25 / 22 / ¾	25 / 22 / ¾	20 / 17 / ½	64.5	48.5	33.0	13.0	10.0	12.0
TPS252525	–	25 / 22 / ¾	25 / 22 / ¾	25 / 22 / ¾	64.5	48.5	33.0	13.0	10.0	13.0
TPS280820	–	28 / 23 / ¾	08 / 7.5 / ¼	20 / 17 / ½	64.5	48.5	33.0	13.0	10.0	12.0
TPS280828	–	28 / 23 / ¾	08 / 7.5 / ¼	28 / 23 / ¾	64.5	48.5	33.0	13.0	10.0	13.0
TPS281020	–	28 / 23 / ¾	10 / 8.5 / 5⁄16	20 / 17 / ½	64.5	48.5	33.0	13.0	10.0	12.0
TPS281028	–	28 / 23 / ¾	10 / 8.5 / 5⁄16	28 / 23 / ¾	64.5	48.5	33.0	13.0	10.0	13.0
TPS281220	–	28 / 23 / ¾	12 / 10 / 5⁄16	20 / 17 / ½	64.5	48.5	33.0	13.0	10.0	13.0
TPS281225	–	28 / 23 / ¾	12 / 10 / 5⁄16	25 / 22 / ¾	64.5	48.5	33.0	13.0	10.0	12.0
TPS281228	–	28 / 23 / ¾	12 / 10 / 5⁄16	28 / 23 / ¾	64.5	48.5	33.0	13.0	10.0	13.0
TPS281620	–	28 / 23 / ¾	16 / 13 / ⅜	20 / 17 / ½	64.5	48.5	33.0	13.0	10.0	12.0
TPS281625	–	28 / 23 / ¾	16 / 13 / ⅜	25 / 22 / ¾	64.5	48.5	33.0	13.0	10.0	13.0
TPS281628	–	28 / 23 / ¾	16 / 13 / ⅜	28 / 23 / ¾	64.5	48.5	33.0	13.0	10.0	13.0
TPS282020	–	28 / 23 / ¾	20 / 17 / ½	20 / 17 / ½	64.5	48.5	33.0	13.0	12.0	12.0
TPS282025	–	28 / 23 / ¾	20 / 17 / ½	25 / 22 / ¾	64.5	48.5	33.0	13.0	12.0	13.0
TPS282028	–	28 / 23 / ¾	20 / 17 / ½	28 / 23 / ¾	64.5	48.5	33.0	13.0	12.0	13.0
TPS282525	–	28 / 23 / ¾	25 / 22 / ¾	25 / 22 / ¾	64.5	48.5	33.0	13.0	13.0	13.0
TPS282528	–	28 / 23 / ¾	25 / 22 / ¾	28 / 23 / ¾	64.5	48.5	33.0	13.0	13.0	13.0

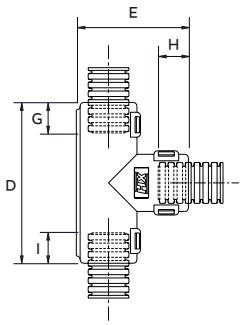
Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

TPS / TPH T-piece

External conduit fitting (continued)







Part No.	X-Temp™ Part No.	Conduit size (NC / NW / US) A	B	C	Nominal dimensions (mm) D	E	F	G	H	I
TPS300830	TPH300830	30 / 28 / 1	08 / 7.5 / ¼	30 / 28 / 1	72.0	55.3	39.0	12.0	10.0	12.0
TPS301230	TPH301230	30 / 28 / 1	12 / 10 / 5⁄16	30 / 28 / 1	72.0	55.3	39.0	12.0	10.0	12.0
TPS301625	TPH301625	30 / 28 / 1	16 / 13 / ⅜	25 / 22 / ¾	72.0	55.3	39.0	12.0	10.0	12.0
TPS301630	TPH301630	30 / 28 / 1	16 / 13 / ⅜	30 / 28 / 1	72.0	55.3	39.0	12.0	10.0	12.0
TPS302020	TPH302020	30 / 28 / 1	20 / 17 / ½	20 / 17 / ½	72.0	55.3	39.0	12.0	12.0	12.0
TPS302025	TPH302025	30 / 28 / 1	20 / 17 / ½	25 / 22 / ¾	72.0	55.3	39.0	12.0	12.0	12.0
TPS302030	TPH302030	30 / 28 / 1	20 / 17 / ½	30 / 28 / 1	72.0	55.3	39.0	12.0	12.0	12.0
TPS302525	TPH302525	30 / 28 / 1	25 / 22 / ¾	25 / 22 / ¾	72.0	55.3	39.0	12.0	12.0	12.0
TPS303025	TPH303025	30 / 28 / 1	30 / 28 / 1	25 / 22 / ¾	72.0	55.3	39.0	12.0	12.0	12.0
TPS303030	TPH303030	30 / 28 / 1	30 / 28 / 1	30 / 28 / 1	72.0	55.3	39.0	12.0	12.0	12.0
TPS321625	TPH321625	32 / 29 / 1	16 / 13 / ⅜	25 / 22 / ¾	72.0	55.3	39.0	13.0	10.0	13.0
TPS321632	TPH321632	32 / 29 / 1	16 / 13 / ⅜	32 / 29 / 1	72.0	55.3	39.0	13.0	10.0	13.0
TPS322532	TPH322532	32 / 29 / 1	25 / 22 / ¾	32 / 29 / 1	72.0	55.3	39.0	13.0	10.0	13.0
TPS322025	TPH322025	32 / 29 / 1	20 / 17 / ½	25 / 22 / ¾	72.0	55.3	39.0	13.0	12.0	13.0
TPS322028	TPH322028	32 / 29 / 1	20 / 17 / ½	28 / 23 / ¾	72.0	55.3	39.0	13.0	12.0	13.0
TPS322032	TPH322032	32 / 29 / 1	20 / 17 / ½	32 / 29 / 1	72.0	55.3	39.0	13.0	12.0	13.0
TPS322525	TPH322525	32 / 29 / 1	25 / 22 / ¾	25 / 22 / ¾	72.0	55.3	39.0	13.0	13.0	13.0
TPS322532	TPH322532	32 / 29 / 1	25 / 22 / ¾	32 / 29 / 1	72.0	55.3	39.0	13.0	13.0	13.0
TPS323225	TPH323225	32 / 29 / 1	32 / 29 / 1	25 / 22 / ¾	72.0	55.3	39.0	13.0	13.0	13.0
TPS323232	TPH323232	32 / 29 / 1	32 / 29 / 1	32 / 29 / 1	72.0	55.3	39.0	13.0	13.0	13.0
TPS401232	TPH401232	40 / 36 / 1 ¼	12 / 10 / 5⁄16	32 / 29 / 1	85.0	65.0	47.0	15.0	10.0	12.0
TPS401240	TPH401240	40 / 36 / 1 ¼	12 / 10 / 5⁄16	40 / 36 / 1 ¼	87.0	65.0	47.0	15.0	10.0	15.0
TPS401632	TPH401632	40 / 36 / 1 ¼	16 / 13 / ⅜	32 / 29 / 1	85.0	65.0	47.0	15.0	10.0	12.0
TPS401640	TPH401640	40 / 36 / 1 ¼	16 / 13 / ⅜	40 / 36 / 1 ¼	87.0	65.0	47.0	15.0	10.0	15.0
TPS402040	TPH402040	40 / 36 / 1 ¼	20 / 17 / ½	40 / 36 / 1 ¼	87.0	65.0	47.0	15.0	12.0	15.0
TPS402540	TPH402540	40 / 36 / 1 ¼	25 / 22 / ¾	40 / 36 / 1 ¼	87.0	65.0	47.0	15.0	12.0	15.0
TPS402840	TPH402840	40 / 36 / 1 ¼	28 / 23 / ¾	40 / 36 / 1 ¼	87.0	65.0	47.0	15.0	12.0	15.0
TPS404016	TPH404016	40 / 36 / 1 ¼	40 / 36 / 1 ¼	16 / 13 / ⅜	85.0	70.0	47.0	15.0	15.0	12.0
TPS404032	TPH404032	40 / 36 / 1 ¼	40 / 36 / 1 ¼	32 / 29 / 1	85.0	70.0	47.0	15.0	15.0	12.0
TPS404040	TPH404040	40 / 36 / 1 ¼	40 / 36 / 1 ¼	40 / 36 / 1 ¼	87.0	70.0	47.0	15.0	15.0	15.0

Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

XPS / XPH X-piece

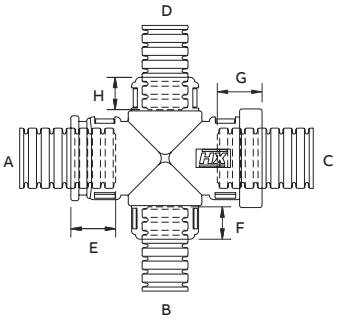
External conduit fitting

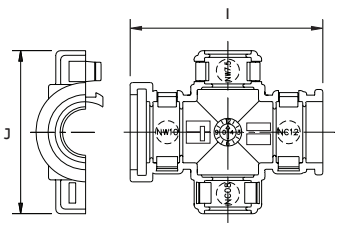
X configuration fitting
X configuration fitting designed to snap together to create closely packed conduit breakouts, allowing conduit to self level as the fitting rotates.

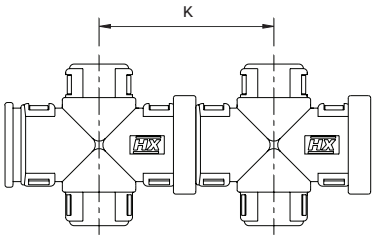
Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

XPS External X-piece

Part No.	X-Temp™ Part No.	Conduit size (NC / NW / US) A	B	C	D	Conduit engagement (mm) E	F	G	H	Nominal dimensions (mm) I	J	K
XPS1208	XPH1208	12 / 10 / 5/16	08 / 7.5 / 1/4	12 / 10 / 5/16	08 / 7.5 / 1/4	9.5	7.0	9.5	7.0	42.3	5.5	38.0







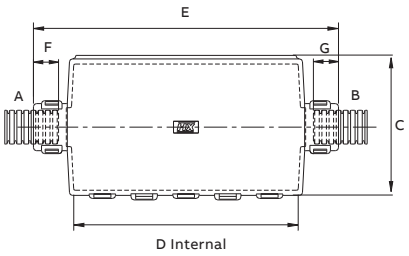
Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

CPS Protective shroud

Inline splicing, fuse and connector cover

External protective shroud
Inline cover providing protection for connectors, fuse links, circuit breakers and splicing areas. The CPS shrouds can be used as a harness datum, due to the integrated cable tie/fir tree facility. The strong construction allows for the protection of delicate connections, or as an alternative when an interface / backshell isn't available. These fittings are designed to snap together over all types of Harnessflex slit and unslit conduit, maintaining maximum conduit bore.

CPS Protective shroud



Part No.	Internal diameter (mm)	Conduit size (NC / NW / US) A	Conduit size (NC / NW / US) B	Nominal dimensions (mm) C	D	E	F	G
CPS341212	35	12 / 10 / 5/16	12 / 10 / 5/16	38.0	73.0	100.0	10.0	10.0
CPS421212	43	12 / 10 / 5/16	12 / 10 / 5/16	47.0	77.0	104.0	10.0	10.0
CPS421616	43	16 / 13 / 3/8	16 / 13 / 3/8	47.0	77.0	104.0	10.0	10.0
CPS422020	43	20 / 17 / 1/2	20 / 17 / 1/2	47.0	77.0	104.0	12.0	12.0

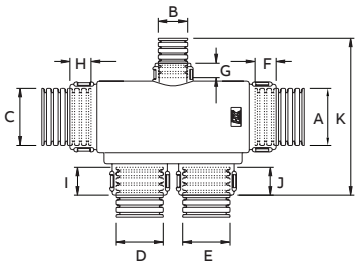
MPS Custom fittings

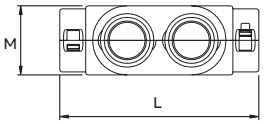
Multiple breakout conduit fitting

Custom multiple breakout fitting
Designed to suit specific project or application requirements. Custom configurations available on request, (volume dependant).

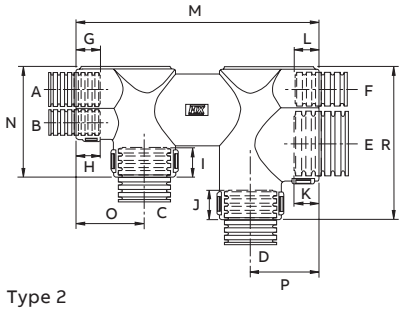
MPS Custom multiple breakouts

				Conduit size (NC / NW / US)								Nominal dimensions (mm)
Part No.	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
MPS121212-2020	12 / 10 / 5/16	12 / 10 / 5/16	12 / 10 / 5/16	20 / 17 / ½	20 / 17 / ½	10.0	7.0	10.0	10.0	10.0	59.0	92.0	32.0
MPS122812-2020	12 / 10 / 5/16	28 / 23 / ¾	12 / 10 / 5/16	20 / 17 / ½	20 / 17 / ½	10.0	12.0	10.0	10.0	10.0	67.0	92.0	32.0
MPS201220-2020	20 / 17 / ½	12 / 10 / 5/16	20 / 17 / ½	20 / 17 / ½	20 / 17 / ½	12.0	7.0	12.0	10.0	10.0	59.0	92.0	32.0
MPS202820-2020	20 / 17 / ½	28 / 23 / ¾	20 / 17 / ½	20 / 17 / ½	20 / 17 / ½	12.0	12.0	12.0	10.0	10.0	67.0	92.0	32.0
MPS251225-2020	25 / 22 / ¾	12 / 10 / 5/16	25 / 22 / ¾	20 / 17 / ½	20 / 17 / ½	11.0	7.0	11.0	10.0	10.0	59.0	92.0	32.0
MPS252825-2020	25 / 22 / ¾	28 / 23 / ¾	25 / 22 / ¾	20 / 17 / ½	20 / 17 / ½	11.0	12.0	11.0	10.0	10.0	67.0	92.0	32.0

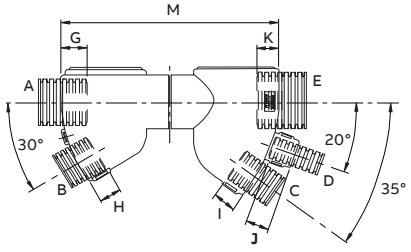




Type 1



Type 2



					Conduit size (NC / NW / US)		
Part No.	**Type**	**A**	**B**	**C**	**D**	**E**	**F**
MPS100	1	12 / 10 / 5/16	08 / 7.5 / ¼	20 / 17 / ½	20 / 17 / ½	25 / 22 / ¾	12 / 10 / 5/16
MPS102	2	16 / 13 / ⅜	08 / 7.5 / ¼	16 / 13 / ⅜	08 / 7.5 / ¼	25 / 22 / ¾	–

						Conduit engagement						Nominal dimensions (mm)			
Part No.	**Type**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**R**
MPS100	1	10.0	10.0	12.0	12.0	13.0	12.0	98.0	43.0	28.0	28.0	59.0
MPS102	2	10.0	10.0	10.0	10.0	13.0	–	97.0	–	–	–	–

At Harnessflex®, we work closely alongside OEMs and harness makers to deliver bespoke design systems that are built for purpose.

Standard voltage connector interfaces
Providing high integrity connections

Harnessflex® works closely with many OEMs to develop protection for electrical connectors (a critical area of an engine harness).

External connector interfaces offer a compact and high integrity connection between automotive connectors and Harnessflex® conduit systems. These interfaces provide complete cable protection right up to the connector. They also provide strain relief and protection from high pressure washing, helping to maintain the sealing integrity of the connector.

Products include:

- **External hinged connector interfaces** - Tough and durable protection for OEM connectors against high pressure wash-down, excessive cable strain and mechanical abrasion.
- **External split connector interfaces** - Split type customised interfaces providing high integrity connections to the Molex SRC series of connectors and Harnessflex® conduit systems.
- **Special customised products** - Special hinged interfaces and blanking products.

Features & benefits include:

1. High pull-off strength
Internal conduit backstop provide insertion guide ensuring system integrity and high pull off strength.

2. Conduit size labels
Each junction indicates nominal conduit size to aid installation.

3. Straight or 90° elbow versions
Compact design ideal for use where space is limited. Allowing 360 degree rotation for ease of routing.

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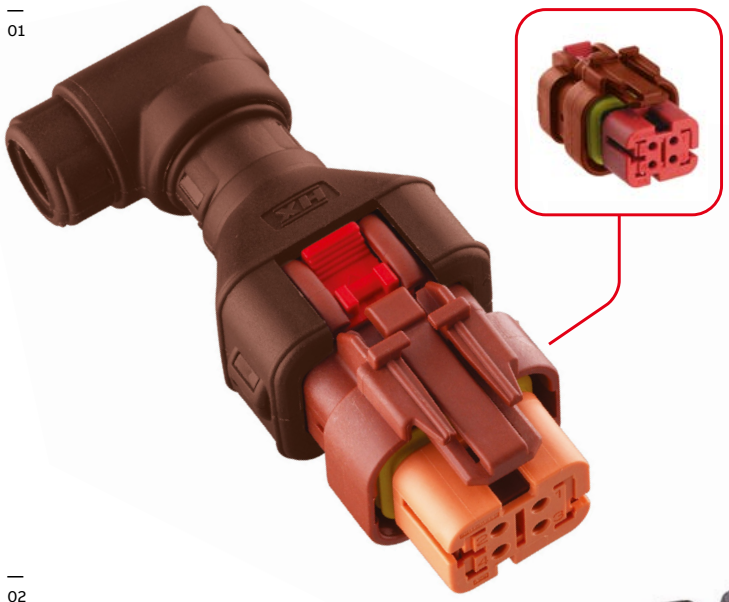
01



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02

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03

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01 **TE Ampseal 16** & Harnessflex® X-Temp™ external connector interface.

—
02 **HDSCS Heavy Duty Series** plug and socket backshell interface.

—
03 **TE AMP Superseal 90°** & Harnessflex® external connector interface.

Connector interfaces
Quick reference chart








Type			TE AMP Superseal				TE AMP Superseal 90°				TE AMP Junior & Mini timer				TE AMP Junior & Mini timer 90°			
Part no.	X-Temp™ Part no.	Interface	1 Connector		Part no.	X-Temp™ Part no.	Interface	2 Connector		Part no.	X-Temp™ Part no.	Interface	3 Connector		Part no.	X-Temp™ Part no.	Interface	4 Connector
CI08-AS1	CIH08-AS1	1 way	282079-2*		CI08-90-AS1	CIH08-90-AS1	1 way	282079-2*		CI08-AM2	CIH08-AM2	2 way	347887-3*		CI08-90-AM2	CIH08-90-AM2	2 way	347887-3*
CI08-AS2	CIH08-AS2	2 way	282104-2*		CI08-90-AS2	CIH08-90-AS2	2 way	282104-2*		CI08-AM3	CIH08-AM3	3 way	1-827578-1*		CI08-90-AM3	CIH08-90-AM3	3 way	1-827578-1*
CI08-AS3	CIH08-AS3	3 way	282087-1*		CI08-90-AS3	CIH08-90-AS3	3 way	282087-1*		CI08-AM4	CIH08-AM4	4 way	281804-1*		CI08-90-AM4	CIH08-90-AM4	4 way	281804-1*
CI08-AS4	CIH08-AS4	4 way	282088-1*		CI08-90-AS4	CIH08-90-AS4	4 way	282088-1*		CI10-AM2	CIH10-AM2	2 way	347887-3*		CI10-90-AM2	CIH10-90-AM2	2 way	347887-3*
CI10-AS2	CIH10-AS2	2 way	282104-2*		CI10-90-AS2	CIH10-90-AS2	2 way	282104-2*		CI10-AM3	–	3 way	1-827578-1*		CI10-90-AM3	–	3 way	1-827578-1*
CI10-AS3	CIH10-AS3	3 way	282087-1*		CI10-90-AS3	CIH10-90-AS3	3 way	282087-1*		CI10-AM4	–	4 way	281804-1*		CI10-90-AM4	–	4 way	281804-1*
CI10-AS4	CIH10-AS4	4 way	282088-1*		CI10-90-AS4	CIH10-90-AS4	4 way	282088-1*		CI12-AM2	CIH12-AM2	2 way	347887-3*		CI12-90-AM2	–	2 way	347887-3*
CI12-AS1	CIH12-AS1	1 way	282079-2*		CI12-90-AS2	CIH12-90-AS2	2 way	282104-2*		CI12-AM3	CIH12-AM3	3 way	1-827578-1*		CI12-90-AM3	CIH12-90-AM3	3 way	1-827578-1*
CI12-AS2	CIH12-AS2	2 way	282104-2*		CI12-90-AS3	CIH12-90-AS3	3 way	282087-1*		CI12-AM4	CIH12-AM4	4 way	281804-1*		CI12-90-AM4	CIH12-90-AM4	4 way	281804-1*
CI12-AS3	CIH12-AS3	3 way	282087-1*		CI12-90-AS4	CIH12-90-AS4	4 way	282088-1*										
CI12-AS4	CIH12-AS4	4 way	282088-1*															






Type			TE Econoseal				TE Econoseal Series 90°				Amphenol AT			
Part no.	X-Temp™ Part no.	Interface	8 Connector		Part no.	X-Temp™ Part no.	Interface	9 Connector		Part no.	X-Temp™ Part no.	Interface	10 Connector	
CI08-ES2P	–	2 way	174354-2		CI08-90-ES2P	–	2 way	174352-2		CI10-90-ES4P	–	4 way	174259-2	
CI08-ES3P	–	3 way	174359-2		CI10-90-ES2P	–	2 way	174352-2		CI12-90-ES4P	–	4 way	174259-2	
CI10-ES4P	–	4 way	174259-1		CI12-90-ES2P	–	2 way	174352-2		CI16-90-ES4P	–	4 way	174259-2	
CI08-ES2R	–	2 way	174354-2		CI08-90-ES3P	–	3 way	174359-2		CI08-90-ES2R	–	2 way	174354-2	
CI08-ES3R	–	3 way	368523-3		CI10-90-ES3P	–	3 way	174359-2		CI10-90-ES2R	–	2 way	174354-2	
CI10-ES4R	–	4 way	174257-2		CI12-90-ES3P	–	3 way	174359-2		CI12-90-ES2R	–	2 way	174354-2	
										CI08-90-ES3R	–	3 way	2822390-1	
										CI10-90-ES3R	–	3 way	2822390-1	
										CI12-90-ES3R	–	3 way	2822390-1	
										CI10-90-ES4R	–	4 way	174259-2	
										CI12-90-ES4R	–	4 way	174259-2	
										CI16-90-ES4R	–	4 way	174259-2	




			TE MCon				TE Levyseal		
Part no.	X-Temp™ Part no.		Connector		Part no.	X-Temp™ Part no.		Connector	
CI12-MLK10	–		1-2282337-5		28-TY62	–		1-1718324-1	

			FCI Automotive Apex 2.8		Type		FCI Automotive				Bosch Compact			
Part no.	X-Temp™ Part no.	Interface	14 Connector		Part no.	X-Temp™ Part no.	Interface	15 Connector		Part no.	X-Temp™ Part no.	Interface	16 Connector	
CI08-FCI02	CIH08-FCI02	2 way	10757671		CI08-90-FCI02	CIH08-90-FCI02	2 way	10757671		CI08-BC2	CIH08-BC2	2 Way	1 928 403 137	
CI08-FCI03	CIH08-FCI03	3 way	15394689		CI08-90-FCI03	CIH08-90-FCI03	3 way	15394689		CI08-BC3	CIH08-BC3	3 Way	1 928 403 110	
CI08-FCI04	CIH08-FCI04	4 way	15425692		CI08-90-FCI04	CIH08-90-FCI04	4 way	15425692		CI08-BC4	CIH08-BC4	4 Way	1 928 403 112	
CI12-FCI02	CIH12-FCI02	2 way	10757671		CI12-90-FCI02	CIH12-90-FCI02	2 way	10757671		CI12-BC2	CIH12-BC2	2 Way	1 928 403 137	
CI12-FCI03	CIH12-FCI03	3 way	15394689		CI12-90-FCI03	CIH12-90-FCI03	3 way	15394689		CI12-BC3	CIH12-BC3	3 Way	1 928 403 110	
CI12-FCI04	CIH12-FCI04	4 way	15425692		CI12-90-FCI04	CIH12-90-FCI04	4 way	15425692		CI12-BC4	CIH12-BC4	4 Way	1 928 403 112	
CI12-FCI14	CIH12-FCI14	14 way	10757674		CI08-90-FCI14	CIH08-90-FCI14	14 way	10757674		CI28-BC40	CIH28-BC40	40 Way	1 928 404 777	
CI16-FCI14	CIH16-FCI14	14 way	10757674		CI12-90-FCI14	CIH12-90-FCI14	14 way	10757674					**Bosch Compact 90°**	
16-FCI14	H16-FC14	14 way	54201415		CI16-90-FCI14	CIH16-90-FCI14	14 way	10757674		CI08-90-BC2	CIH08-90-BC2	2 Way	1 928 403 137	
CI16-FCI06	CIH16-FCI06	6 way	15430633		CI20-90-FCI14	CIH20-90-FCI14	14 way	10757674		CI08-90-BC3	CIH08-90-BC3	3 Way	1 928 403 110	
CI17-FCI10	CIH17-FCI10	10 way	15425612							CI08-90-BC4	CIH08-90-BC4	4 Way	1 928 403 112	
CI25-FCI50	–	50 way	10867079							CI12-90-BC2	CIH12-90-BC2	2 Way	1 928 403 137	
										CI12-90-BC3	CIH12-90-BC3	3 Way	1 928 403 110	
										CI12-90-BC4	CIH12-90-BC4	4 Way	1 928 403 112	








			Aptiv Series	
Part no.	X-Temp™ Part no.	Interface	17 Connector	
CI08-DE001	–	3 way	–	
CI08-MP2	–	2 way	12162194	
CI08-MP3	–	3 way	12129615/12110293*	
C108-MMP2	–	2 way	12162852	
CI08-WP2	–	2 way	12052613/12065863*	
CI08-PTD2	–	2 way	15397337	
CI08-GT153	–	3 way	15336121	
16-GT284	–	4 way	13521459	
CI08-GT150SF-2		2 way	13520101	
CI08-90-GT150SF-2		2 way	13520101	


CONNECTOR KEY:

1. TE Amp Superseal
2. TE AMP Superseal 90°
3. TE AMP Junior & Mini timer
4. TE AMP Junior & Mini timer 90°
5. TE AMPSEAL 16
6. 7 TE AMPSEAL 16 90°
8. TE Econoseal
9. TE Econoseal 90°
10. TE/Deutsch - DT Series
11. TE/Deutsch - DT Series 90°
12. TE/Deutsch - DRC50 Series
13. Heavy Duty Series
14. FCI Automotive Apex 2.8
15. FCI Automotive Apex 2.8 90°
15. Bosch Compact
16. Bosch Compact 90°
17. Aptiv Series
18. Aptiv Series 90°
18. Kostal
19. Kostal 90°
20. Kostal SLK Series 90°
21. Sumitomo

* All colour and wire variants - for full list of connector references, please visit the main part pages.






TE AMPSEAL 16

Part no.	X-Temp™ Part no.	Interface	5 Connector
CI08-AT2PL	CIH08-AT2PL	2 way	776428-3*
CI08-AT3PL	CIH08-AT3PL	3 way	776523-1*
CI08-AT4PL	CIH08-AT4PL	4 way	776487-1*
CI12-AT4PL	CIH12-AT4PL	4 way	776487-1*
CI12-AT6PL	CIH12-AT6PL	6 way	776434-3*
CI12-AT8PL	CIH12-AT8PL	8 way	776494-3*
CI12-AT12PL	CIH12-AT12PL	12 way	776437-4*
CI16-AT8PL	CIH16-AT8PL	8 way	776494-1*
CI16-AT12PL	CIH16-AT12PL	12 way	776533-1*

Part no.	X-Temp™ Part no.	Interface	6 Connector
CI08-90-AT2PL	CIH08-90-AT2PL	2 way	776428-3*
CI08-90-AT3PL	CIH08-90-AT3PL	3 way	776523-1*
CI08-90-AT4PL	CIH08-90-AT4PL	4 way	776487-1*
CI12-90-AT2PL	CIH12-90-AT2PL	2 way	776428-3*
CI12-90-AT3PL	CIH12-90-AT3PL	3 way	776523-1*
CI12-90-AT4PL	CIH12-90-AT4PL	4 way	776487-1*

Part no.	X-Temp™ Part no.	Interface	7 Connector
CI08-90-AT2LP	CIH08-90-AT2LP	2 way	776427-1*
CI08-90-AT2LR	CIH08-90-AT2LR	2 way	776428-1*
CI08-90-AT3LP	CIH08-90-AT3LP	3 way	776523-1*
CI08-90-AT3LR	CIH08-90-AT3LR	3 way	776430-1*
CI08-90-AT4LP	CIH08-90-AT4LP	4 way	776524-3*
CI08-90-AT4LR	CIH08-90-AT4LR	4 way	776488-1*
CI08-90-AT6LP	CIH08-90-AT6LP	6 way	776433-1*
CI08-90-AT6LR	CIH08-90-AT6LR	6 way	776434-1*

TE AMPSEAL 16 90°

Part no.	X-Temp™ Part no.	Interface	7 Connector
CI12-90-AT2LP	CIH12-90-AT2LP	2 way	776427-1*
CI12-90-AT2LR	–	2 way	776428-1*
CI12-90-AT3LP	CIH12-90-AT3LP	3 way	776523-1*
CI12-90-AT3LR	CIH12-90-AT3LR	3 way	776430-1*
CI12-90-AT4LP	–	4 way	776524-3*
CI12-90-AT4LR	–	4 way	776488-1*
CI12-90-AT6LP	CIH12-90-AT6LP	6 way	776433-1*
CI12-90-AT6LR	–	6 way	776434-1*
CI16-90-AT4LP	–	4 way	776524-3*
CI16-90-AT4LR	–	4 way	776488-1*
CI16-90-AT6LP	–	6 way	776433-1*
CI16-90-AT6LR	–	6 way	776434-1*








TE/Deutsch - DT Series

Part no.	X-Temp™ Part no.	Interface	10 Connector
CI08-DT2	CIH08-DT2	2 way	DT06-2S-E005
CI08-DT3	CIH08-DT3	3 way	DT06-3S-E005
CI08-DT4	CIH08-DT4	4 way	DT06-4S-E005
CI08-DT6	CIH08-DT6	6 way	DT06-6S-E005
CI12-DT2	CIH12-DT2	2 way	DT06-2S-E005
CI12-DT3	CIH12-DT3	3 way	DT06-3S-E005
CI12-DT4	CIH12-DT4	4 way	DT06-4S-E005
CI12-DT6	CIH12-DT6	6 way	DT06-6S-E005
CI12-DT8	CIH12-DT8	8 way	DT06-8SA-E005
CI16-DT12	CIH16-DT12	12 way	DT06-12SA-E005

TE/Deutsch - DT Series 90°

Part no.	X-Temp™ Part no.	Interface	11 Connector
CI08-90-DT2	CIH08-90-DT2	2 way	DT06-2S-E005
CI08-90-DT3	CIH08-90-DT3	3 way	DT06-3S-E005
CI08-90-DT4	CIH08-90-DT4	4 way	DT06-4S-E005
CI08-90-DT6	CIH08-90-DT6	6 way	DT06-6S-E005
CI12-90-DT2	CHI12-90-DT2	2 way	DT06-2S-E005
CI12-90-DT3	CIH12-90-DT3	3 way	DT06-3S-E005
CI12-90-DT4	CIH12-90-DT4	4 way	DT06-4S-E005
CI12-90-DT6	CIH12-90-DT6	6 way	DT06-6S-E005
CI12-90-DT8	CIH12-90-DT8	8 way	DT06-8SA-E005
CI12-90-DT12	CIH12-90-DT12	12 way	DT06-12SA-E005
CI16-90-DT8	CIH16-90-DT8	8 way	DT06-8SA-E005
CI16-90-DT12	CIH16-90-DT12	12 way	DT06-12SA-E005

TE/Deutsch - DRC50 Series

Part no.	X-Temp™ Part no.	Interface	12 Connector
CI122812-DRC50	–	–	DRC26-50S0*
CI201220-DRC50	–	–	DRC26-50S0*
CI202820-DRC50	–	–	DRC26-50S0*
CI251225-DRC50	–	–	DRC26-50S0*
CI252825-DRC50	–	–	DRC26-50S0*

TE/Deutsch - DTP04 Series 90°

Part no.	X-Temp™ Part no.	Interface	Connector
CI12-90-DTP04	–	–	DTP06-4S-CE02
16-90-DTP04	–	–	DTP06-4S-E004

* Both PNs fit the following connector references: DTP06-4S, DTP06-4S-C015, DTP06-4S-CE02 and DTP06-4S-E004.

Heavy Duty Series

Part no.	Interface	13 Connector
CI08-HDSCS-B	–	1-1418469-1
CI12-HDSCS-B	–	1-1418469-1
CI20-HDSCS-E	–	1-1563759-1/1-1564337-1
CI20-F90-HDSCS-E	–	1-1563759-1/1-1564337-1








Aptiv Series 90°

Part no.	X-Temp™ Part no.	Interface	18 Connector
CI08-90-DE001	–	3 way	–
CI08-90-MP2	–	2 way	12162194
CI08-90-MP3	–	3 way	12129615/12110293*
CI08-90-MMP2	–	2 way	12162852
CI12-90-MP2	–	2 way	12162194
CI12-90-MP3	–	3 way	12129615/12110293*
CI12-90-MMP2	–	2 way	12162852
CI08-90-WP2	–	2 way	12052613/12065863*
CI12-90-WP2	–	2 way	12052613/12065863*
CI08-90-PTD2	–	2 way	15397337
CI12-90-PTD2	–	2 way	15397337
CI08-90-GT153	–	3 way	15336121
CI12-90-GT153	–	3 way	15336121
CI12-90-GT284	–	3 way	15326631
CI16-90-GT284	–	3 way	15326631

* Both connectors need to be fitted with TPA 1205 2845.

Kostal

Part no.	X-Temp™ Part no.	Interface	19 Connector
CI16-LK20	–	20 way	09432001
PG21-LK20	–	20 way	09432001
CI08-SLK28-2	–	2 way	–
CI08-SLK28-3	–	3 way	9441391
–	CIH12-MLK04	4 way	10092979
			Kostal 90°
CI08-90-K2C	–	2 way	9442291
CI08-90-K3C	–	3 way	9302231
CI12-90-K2C	–	2 way	9442291
CI12-90-K3C	–	3 way	9302231
CI12-90-K10C	–	10 way	9331031

Kostal Series 90°

Part no.	X-Temp™ Part no.	Interface	20 Connector
CI08-90-SLK28-2	–	2 way	–
CI08-90-SLK28-3	–	3 way	9441391
CI12-90-SLK28-4	–	4 way	–
–	CIH12-90-MLK04	4 way	10092979

DIN 72585

Part no.	X-Temp™ Part no.	Interface	Connector
CI08-72585	–	4 way	1-967325-1

Sumitomo

Part no.	X-Temp™ Part no.	Interface	21 Connector
CI08-SU4	–	4 way	6098-0144-B*
CI08-90-SU4	–	4 way	6098-0144-B*
CI08-X2SU4	–	4 way	6195-0030**
CI08-90-X2SU4	–	4 way	6195-0030**
CI12-SU10	–	10 way	6189-1134

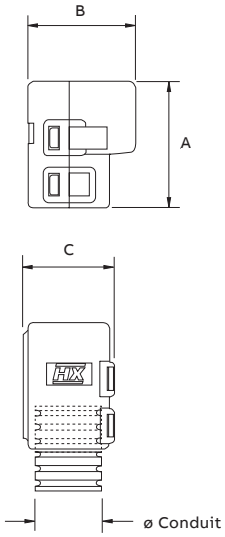
* Original connector.
**New version of connector.

TE AMP Superseal

Connector interface

Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

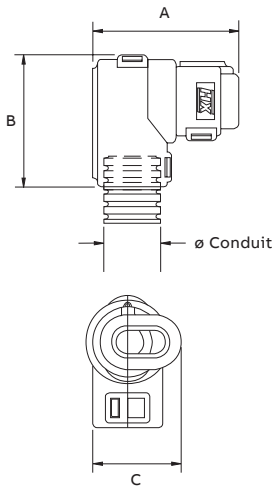
TE AMP Superseal straight interface



Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	B	C
282079-2*	1 way	CI06-AS1	CIH06-AS1	06	4.5	3/16	23.6	16.1	18.0
		CI08-AS1	CIH08-AS1	08	7.5	1/4	23.6	16.1	18.0
		CI12-AS1	CIH12-AS1	12	10	5/16	23.6	16.1	18.0
282104-2*	2 way	CI06-AS2	CIH06-AS2	06	4.5	3/16	22.4	20.5	18.0
		CI08-AS2	CIH08-AS2	08	7.5	1/4	22.4	20.5	18.0
		CI10-AS2	CIH10-AS2	10	8.5	5/16	34.0	21.0	20.0
		CI12-AS2	CIH12-AS2	12	10	5/16	22.4	20.5	18.0
282105-1*	3 way	CI08-AS3	CIH08-AS3	08	7.5	1/4	22.4	26.5	18.0
		CI10-AS3	CIH10-AS3	10	8.5	5/16	34.0	27.0	20.0
		CI12-AS3	CIH12-AS3	12	10	5/16	22.4	26.5	18.0
282106-1*	4 way	CI08-AS4	CIH08-AS4	08	7.5	1/4	34.0	33.0	18.0
		CI10-AS4	CIH10-AS4	10	8.5	5/16	34.0	33.0	20.0
		CI12-AS4	CIH12-AS4	12	10	5/16	34.0	33.0	19.0

*All Colour and Wire variants / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

TE AMP Superseal 90° elbow swivel interface



Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	B	C
282079-2*	1 way	CI06-90-AS1	CIH06-90-AS1	06	4.5	3/16	37.5	30.3	18.0
		CI08-90-AS1	CIH08-90-AS1	08	7.5	1/4	37.5	30.3	18.0
282104-2*	2 way	CI06-90-AS2	CIH06-90-AS2	06	4.5	3/16	33.3	30.3	18.0
		CI08-90-AS2	CIH08-90-AS2	08	7.5	1/4	33.3	30.3	18.0
		CI10-90-AS2	CIH10-90-AS2	10	8.5	5/16	35.0	38.0	19.0
		CI12-90-AS2	CIH12-90-AS2	12	10	5/16	33.3	30.3	20.5
282105-1*	3 way	CI08-90-AS3	CIH08-90-AS3	08	7.5	1/4	22.4	26.5	18.0
		CI10-90-AS3	CIH10-90-AS3	10	8.5	5/16	35.0	38.0	19.0
		CI12-90-AS3	CIH12-90-AS3	12	10	5/16	33.3	30.3	26.7
282106-1*	4 way	CI08-90-AS4	CIH08-90-AS4	08	7.5	1/4	33.3	30.3	18.0
		CI10-90-AS4	CIH10-90-AS4	10	8.5	5/16	41.2	38.0	19.0
		CI12-90-AS4	CIH12-90-AS4	12	10	5/16	37.0	30.3	33.0

*All Colour and Wire variants / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

TE AMP Junior & Mini timer

Connector interface

Harnessflex® X-Temp™

Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

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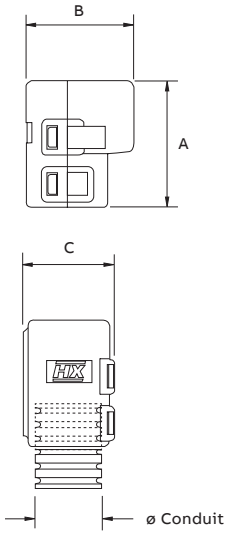
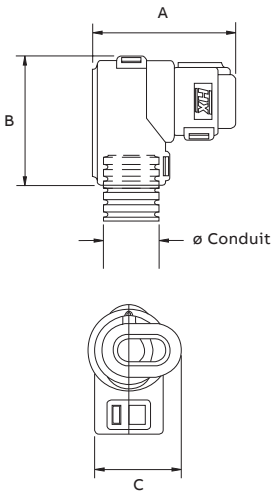
TE AMP Junior & Mini timer straight interface



Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	Nominal dimensions (mm) B	Nominal dimensions (mm) C
347887-3*	2 way	CI06-AM2	CIH06-AM2	06	4.5	3/16	24.9	21.3	18.0
		CI08-AM2	CIH08-AM2	08	7.5	1/4	24.9	21.3	18.0
		CI10-AM2	CIH10-AM2	10	8.5	5/16	37.0	21.0	19.0
		CI12-AM2	CIH12-AM2	12	10	5/16	24.9	21.3	18.0
1-827578-1*	3 way	CI08-AM3	CIH08-AM3	08	7.5	1/4	24.9	27.2	18.0
		CI10-AM3	–	10	8.5	5/16	37.0	27.0	19.0
		CI12-AM3	CIH12-AM3	12	10	5/16	24.9	27.2	18.0
281804-1*	4 way	CI08-AM4	CIH08-AM4	08	7.5	1/4	37.0	32	19.0
		CI10-AM4	–	10	8.5	5/16	37.0	32.0	19.0
		CI12-AM4	CIH12-AM4	12	10	5/16	37.0	32.0	19.0

*All Colour and Wire variants / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

TE AMP Superseal 90° elbow swivel interface



Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	Nominal dimensions (mm) B	Nominal dimensions (mm) C
347887-3*	2 way	CI06-90-AM2	CIH06-90-AM2	06	4.5	3/16	35.7	30.3	21.3
		CI08-90-AM2	CIH08-90-AM2	08	7.5	1/4	35.7	30.3	21.3
		CI10-90-AM2	CIH10-90-AM2	10	8.5	5/16	37.5	38.0	21.3
		CI12-90-AM2	CIH12-90-AM2	12	10	5/16	35.7	30.3	21.3
1-827578-1*	3 way	CI08-90-AM3	CIH08-90-AM3	08	7.5	1/4	35.7	30.3	27.2
		CI10-90-AM3	CIH10-90-AM3	10	8.5	5/16	37.5	38.0	27.2
		CI12-90-AM3	CIH12-90-AM3	12	10	5/16	35.7	30.3	27.2
281804-1*	4 way	CI08-90-AM4	CIH08-90-AM4	08	7.5	1/4	39.5	30.3	32.0
		CI10-90-AM4	CIH10-90-AM4	10	8.5	5/16	41.2	38.0	32.0
		CI12-90-AM4	CIH12-90-AM4	12	10	5/16	39.5	30.3	32.0

*All Colour and Wire variants / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

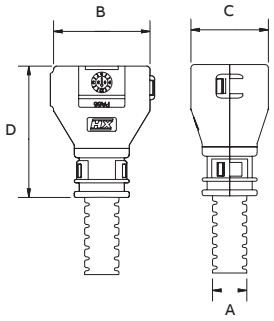
TE Ampseal 16

Connector interface

TE Ampseal 16 straight interface

Harnessflex® X-Temp™

Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.



Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size (A) NC	Conduit size (A) NW	Conduit size (A) US	Nominal dimensions (mm) B	Nominal dimensions (mm) C	Nominal dimensions (mm) D
776428-3*	2 Way	CI06-AT2PL	CIH06-AT2PL	06	4.5	3/16	23.0	18.0	34.0
		CI08-AT2PL	CIH08-AT2PL	08	7.5	¼	23.0	18.0	34.0
776523-1*	3 Way	CI08-AT3PL	CIH08-AT3PL	08	7.5	¼	28.0	18.0	33.0
776487-1*	4 Way	CI08-AT4PL	CIH08-AT4PL	08	7.5	¼	29.0	23.0	39.0
		CI12-AT4PL	CIH12-AT4PL	12	10	5/16	29.0	23.0	37.0
776434-3*	6 Way	CI12-AT6PL	CIH12-AT6PL	12	10	5/16	29.0	23.0	37.0
776494-3* 776495-1*	8 Way	CI12-AT8PL	CIH12-AT8PL	12	10	5/16	32.0	23.0	37.0
		CI16-AT8PL	CIH16-AT8PL	16	13	3/8	32.0	23.0	37.0
776437-4* 776533-4*	12 Way	CI12-AT12PL	CIH12-AT12PL	12	10	5/16	41.0	23.0	37.0
		CI16-AT12PL	CIH16-AT12PL	16	13	3/8	41.0	23.0	37.0
		CI20-AT12PL	CIH20-AT12PL	20	17	½	41.0	23.0	48.0

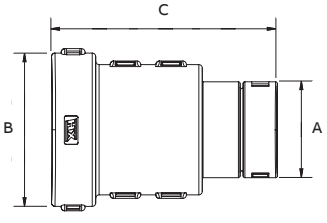
*All Colour and Wire variants / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

TE MCon straight interface

Part no.	X-Temp™ Part no.	Connector
CI12-MLK10	–	1-2282337-5

TE Levyseal straight interface

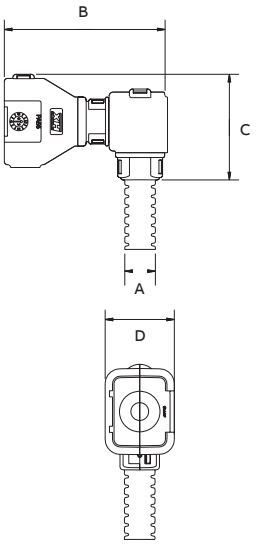
Part no.	X-Temp™ Part no.	Connector	Nominal dimensions (mm) A	B	C
28-TY62	–	1-1718324-1	28.2	44.2	66.9



TE Ampseal 16

Connector interface (continued)

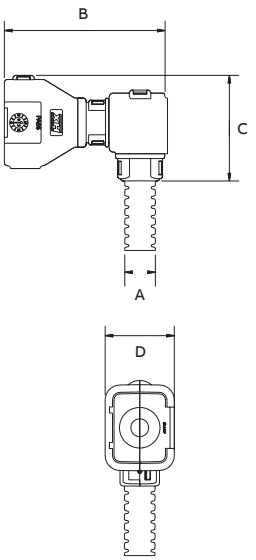
TE Ampseal 16 90° elbow interface - Standard profile plugs



Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size (A) NC	NW	US	Nominal dimensions (mm) B	C	D
776427-1*	2 Way	CI08-90-AT2PL	CIH08-90-AT2PL	08	7.5	¼	49.0	32.0	20.0
		CI12-90-AT2PL	CIH12-90-AT2PL	12	10	5/16	49.0	32.0	20.0
776427-1*	3 Way	CI08-90-AT3PL	CIH08-90-AT3PL	08	7.5	¼	49.0	34.0	20.0
		CI12-90-AT3PL	CIH12-90-AT3PL	12	10	5/16	49.0	34.0	20.0
776487-1*	4 Way	CI08-90-AT4PL	CIH08-90-AT4PL	08	7.5	¼	53.0	34.0	23.0
		CI12-90-AT4PL	CIH12-90-AT4PL	12	10	5/16	53.0	35.0	23.0

*All Colour and Wire variants / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

TE Ampseal 16 90° elbow interface - Standard profile plugs & caps



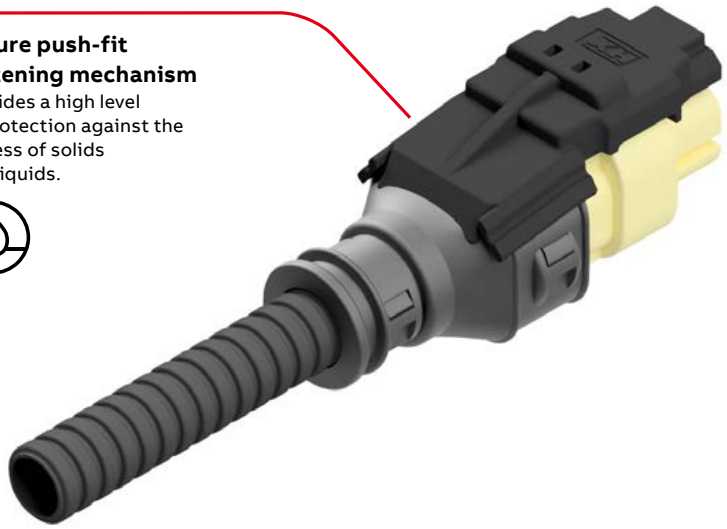
Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size (A) NC	NW	US	Nominal dimensions (mm) B	C	D
Standard profile plugsC									
776427-1* 776522-1* 2320920-1* 2320932-1*	2 way	CI06-90-AT2LP	–	06	4.5	3/16	37.3	25.0	17.0
		CI08-90-AT2LP	CIH08-90-AT2LP	08	7.5	¼	37.3	25.0	17.0
		CI12-90-AT2LP	CIH12-90-AT2LP	12	10	5/16	38.0	23.0	20.0
776523-1* 776429-1*	3 way	CI08-90-AT3LP	CIH08-90-AT3LP	08	7.5	¼	39.8	29.0	17.1
		CI12-90-AT3LP	CIH12-90-AT3LP	12	10		40.2	27.1	17.1
776524-3* 2320922-1*	4 way	CI08-90-AT4LP	CIH08-90-AT4LP	08	7.5	¼	40.8	29.4	20.6
		CI12-90-AT4LP	–	12	10	5/16	41.1	27.5	20.6
		CI16-90-AT4LP	–	16	12	3/8	–	–	–
776433-1* 776531-1* 2320923-1*	6 way	CI08-90-AT6LP	CIH08-90-AT6LP	08	7.5	¼	42.8	29.4	22.5
		CI12-90-AT6LP	CIH12-90-AT6LP	12	10	5/16	43.1	27.5	22.5
		CI16-90-AT6LP	–	16	13	3/8	–	–	–
Standard profile caps									
776428-1* 776534-1* 939556-5*	2 way	CI06-90-AT2LR	–	06	4.5	3/16	37.3	25.0	20.0
		CI08-90-AT2LR	CIH08-90-AT2LR	08	7.5	¼	37.3	25.0	20.0
		CI12-90-AT2LR	–	12	10	5/16	38.0	23.0	20.0
776430-1* 776535-1*	3 way	CI08-90-AT3LR	CIH08-90-AT3LR	08	7.5	¼	39.8	29.0	17.1
		CI12-90-AT3LR	CIH12-90-AT3LR	12	10	5/16	40.2	27.1	17.1
776488-1* 776536-1* 1717674-1*	4 way	CI08-90-AT4LR	CIH08-90-AT4LR	08	7.5	¼	40.8	29.4	20.6
		CI12-90-AT4LR	–	12	10	5/16	41.1	27.5	20.6
		CI16-90-AT4LR	–	16	13	3/8	41.1	27.5	20.6
776434-1* 776537-1* 1717675-1*	6 way	CI08-90-AT6LR	CIH08-90-AT6LR	08	7.5	¼	42.8	29.4	22.5
		CI12-90-AT6LR	–	12	10	5/16	43.1	27.5	22.5
		CI16-90-AT6LR	–	16	13	3/8	43.1	27.5	22.5

NOTE: LP = Plug, LR = Receptacle. *All Colour and Wire variants / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

Connector Shield

Protective cover for AMPSEAL 16 CPA mechanism

Secure push-fit fastening mechanism
provides a high level of protection against the ingress of solids and liquids.



Connector Shield

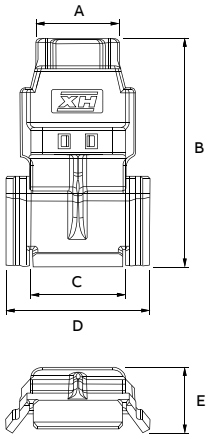
The Harnessflex® Connector Shield provides a high level of protection against the ingress of solids and liquids into the AMPSEAL 16 connector CPA mechanism, helping to maintain continuous vehicle operation even in the toughest conditions.

The universal design will fit securely to the CPA mechanism of the complete range of AMPSEAL 16 connectors when used with Harnessflex AT (AMPSEAL 16) backshells.

Features & benefits:

- Single piece covering to fit all AMPSEAL 16 connectors
- Secure push-fit fastening mechanism (patent pending)
- Maintains free operation of the CPA mechanism
- Provides continuation of protection between connector and backshell
- Provides ingress protection against solids and liquids
- Protects CPA mechanism against painting processes
- Suitable for retrofit / aftermarket

Connector shield (for AMPSEAL 16 CPA mechanism)



CPA Shield Part no.	Connector reference	Connector arrangement	Connector Interface	X-Temp™ connector interface	Nominal dimensions (mm) A	B	C	D	E
ATUPL	776428-1*	2 way	CI06-AT2PL	–	13.9	41.9	15.8	24.0	12.0
			CI08-AT2PL	CIH08-AT2PL					
			CI08-90-AT2PL	CIH08-90-AT2PL					
			CI12-90-AT2PL	CIH12-90-AT2PL					
ATUPL	776523-1*	3 way	CI08-AT3PL	CIH08-AT3PL	13.9	41.9	15.8	24.0	12.0
			CI08-90-AT3PL	CIH08-90-AT3PL					
			CI12-90-AT3PL	CIH12-90-AT3PL					
ATUPL	776487-1*	4 way	CI08-AT4PL	CIH08-AT4PL	13.9	41.9	15.8	24.0	12.0
			CI12-AT4PL	CIH12-AT4PL					
			CI08-90-AT4PL	CIH08-90-AT4PL					
			CI12-90-AT4PL	CIH12-90-AT4PL					
ATUPL	776494-1* 776495-1*	6 way	CI08-AT6PL	–	13.9	41.9	15.8	24.0	12.0
			CI12-AT6PL	CIH12-AT6PL					
ATUPL	776494-1* 776495-1*	8 way	CI12-AT8PL	CIH12-AT8PL	13.9	41.9	15.8	24.0	12.0
			CI16-AT8PL	CIH16-AT8PL					
			CI16-90-AT8PL	–					
ATUPL	776533-1*	12 way	CI12-AT12PL	CIH12-AT12PL	13.9	41.9	15.8	24.0	12.0
			CI16-AT12PL	CIH16-AT12PL					
			CI20-AT12PL	–					

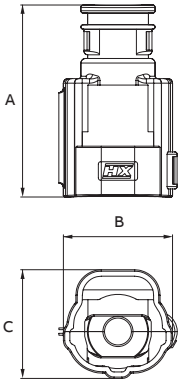
*All Colour variants.

TE Econoseal Series

Backshell series for Econoseal J MK2 connectors

Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

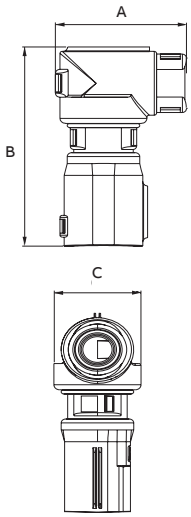
TE Econoseal Series straight interface



Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	B	C
Plug									
174354-2 881772-1	2 Way	CI06-ES2P	CIH06-ES2P	06	4.5	3/16	35.1	17.4	14.7
		CI08-ES2P	CIH08-ES2P	08	7.5	1/4	35.1	17.4	14.7
174359-2 881772-1	3 Way	CI08-ES3P	CIH08-ES3P	08	7.5	1/4	34.9	22.9	14.7
174259-1 174259-2 881776-1	4 Way	CI10-ES4P	CIH10-ES4P	10	8.5	5/16	33.8	17.4	21.9
Receptacle									
6-178449-6 174352-2	2 Way	CI06-ES2R	CIH06-ES2R	06	4.5	3/16	41.5	23.6	23.4
		CI08-ES2R	CIH08-ES2R	08	7.5	1/4	41.5	23.6	23.4
368523-3 881775-1	3 Way	CI08-ES3R	CIH08-ES3R	08	7.5	1/4	47.2	27.4	24.0
174257-2 881777-1	4 Way	CI10-ES4R	CIH10-ES4R	10	8.5	5/16	42.3	23.6	30.0

Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

TE Econoseal Series 90° elbow interface series



Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	B	C
Plug									
174354-2 881772-1	2 Way	CI06-90-ES2P	CIH06-90-ES2P	06	4.5	3/16	28.7	50.2	19.3
		CI08-90-ES2P	CIH08-90-ES2P	08	7.5	1/4	28.7	50.2	19.3
		CI10-90-ES2P	CIH10-90-ES2P	10	8.5	5/16	38.5	50.3	19.3
		CI12-90-ES2P	CIH12-90-ES2P	12	10	5/16	29.3	56.5	19.3
174359-2 881772-1	3 Way	CI08-90-ES3P	CIH08-90-ES3P	08	7.5	1/4	28.7	50.0	19.3
		CI10-90-ES3P	CIH10-90-ES3P	10	8.5	5/16	38.5	50.0	19.3
		CI12-90-ES3P	CIH12-90-ES3P	12	10	5/16	29.3	50.0	19.3
174259-1 174259-2 881776-1	4 Way	CI10-90-ES4P	CIH10-90-ES4P	10	8.5	5/16	38.5	49.3	21.9
		CI12-90-ES4P	CIH12-90-ES4P	12	10	5/16	29.3	49.2	21.9
		CI16-90-ES4P	CIH16-90-ES4P	16	13	3/8	33.6	50.2	21.9
Receptacle									
174352-2 6-178449-6	2 Way	CI06-90-ES2R	CIH06-90-ES2R	06	4.5	3/16	28.7	56.5	23.4
		CI08-90-ES2R	CIH08-90-ES2R	08	7.5	1/4	28.7	56.5	23.4
		CI10-90-ES2R	CIH10-90-ES2R	08	7.5	1/4	38.5	56.5	23.4
		CI12-90-ES2R	CIH12-90-ES2R	12	10	5/16	29.3	56.5	23.4
368523-3 881775-1	3 Way	CI08-90-ES3R	CIH08-90-ES3R	08	7.5	1/4	28.7	61.0	24.0
		CI10-90-ES3R	CIH10-90-ES3R	10	8.5	5/16	38.5	61.0	24.0
		CI12-90-ES3R	CIH12-90-ES3R	12	10	5/16	29.3	61.0	24.0
174257-2 881777-1	4 Way	CI10-90-ES4R	CIH10-90-ES4R	10	8.5	5/16	38.5	56.4	30.0
		CI12-90-ES4R	CIH12-90-ES4R	12	10	5/16	29.3	56.3	30.0
		CI16-90-ES4R	CIH16-90-ES4R	16	13	3/8	33.6	58.3	30.0

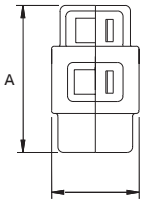
Colour: Black as standard.

Amphenol AT & Deutsch DT Series

Connector interface

Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

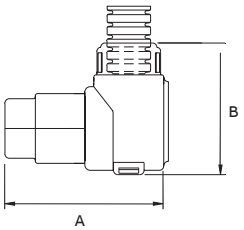
Amphenol AT/Deutsch DT Series straight interface

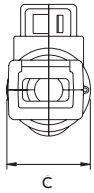


Amphenol AT connector reference	Deutsch DT connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size			Nominal dimensions (mm)		
					NC	NW	US	A	B	C
AT04-2P*	DT06-2**	2 way	CI06-DT2	CIH06-DT2	06	4.5	3/16	26.0	16.0	18.0
			CI08-DT2	CIH08-DT2	08	7.5	1/4	26.0	16.0	18.0
			CI12-DT2	CIH12-DT2	12	10	5/16	26.0	16.0	18.0
–	DT06-3S**	3 way	CI08-DT3	CIH08-DT3	08	7.5	1/4	30.0	22.0	24.0
			CI12-DT3	CIH12-DT3	12	10	5/16	29.0	22.0	24.0
AT04-4P* / AT06-4S*	DT06-4**	4 way	CI08-DT4	CIH08-DT4	08	7.5	1/4	42.0	18.0	27.0
			CI12-DT4	CIH12-DT4	12	10	5/16	40.0	18.0	27.0
AT04-6P* / AT06-6S*	DT06-6**	6 way	CI08-DT6	CIH08-DT6	08	7.5	1/4	42.0	22.0	27.0
			CI12-DT6	CIH12-DT6	12	10	5/16	40.0	22.0	27.0
AT04-08P*	DT06-8SA**	8 way	CI12-DT8	CIH12-DT8	12	10	5/16	40.0	25.0	30.0
–	DT06-12SA**	12 way	CI16-DT12	CIH16-DT12	16	13	3/8	44.0	24.0	40.0

*(Amphenol AT) AT04-#P is the male connector and AT06-#S is the female connector. Compatible with part number suffix: EC**, MM** (except MM03**).
**(Deutsch DT) DT04-#P is the male connector and DT06-#S is the female connector. Compatible with part number suffix: EP04, EP06, EP08, E005, CE01, CE03, CE05, CE11.

Amphenol AT/Deutsch DT elbow swivel interface





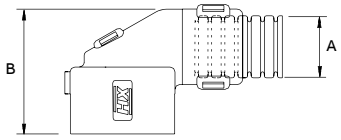
Amphenol AT connector reference	Deutsch DT connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size			Nominal dimensions (mm)		
					NC	NW	US	A	B	C
AT04-2P*	DT06-2**	2 Way	CI06-90-DT2	CIH06-90-DT2	06	4.5	3/16	36.0	30.0	19.0
			CI08-90-DT2	CIH08-90-DT2	08	7.5	1/4	36.0	30.0	19.0
			CI12-90-DT2	CI12-90-DT2	12	10	5/16	36.0	30.0	19.0
–	DT06-3S**	3 Way	CI08-90-DT3	CIH08-90-DT3	08	7.5	1/4	44.0	30.0	23.0
			CI12-90-DT3	CIH12-90-DT3	12	10	5/16	44.0	30.0	23.0
AT04-4P* / AT06-4S*	DT06-4**	4 Way	CI08-90-DT4	CIH08-90-DT4	08	7.5	1/4	48.0	30.0	25.0
			CI12-90-DT4	CIH12-90-DT4	12	10	5/16	48.0	30.0	25.0
AT04-6P* / AT06-6S*	DT06-6**	6 Way	CI08-90-DT6	CIH08-90-DT6	08	7.5	1/4	48.0	34.0	25.0
			CI12-90-DT6	CIH12-90-DT6	12	10	5/16	48.0	34.0	25.0
AT04-08P*	DT06-8SA**	8 Way	CI12-90-DT8	CIH12-90-DT8	12	10	5/16	63.0	37.0	30.0
			CI16-90-DT8	CIH16-90-DT8	16	13	3/8	63.0	37.0	30.0
–	DT06-12SA**	12 Way	CI12-90-DT12	CIH12-90-DT12	12	10	5/16	68.0	36.0	38.0
			CI16-90-DT12	CIH16-90-DT12	16	13	3/8	68.0	36.0	38.0

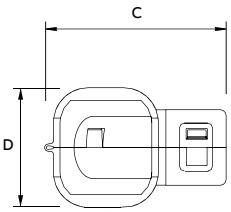
*(Amphenol AT) Compatible with part number suffix: EC**, MM** (except MM03**).
**(Deutsch DT) Compatible with part number suffix: EP04, EP06, EP08, E005, CE01, CE03, CE05, CE11.

TE/Deutsch - DTP04 & DRC50 Series

Connector interface

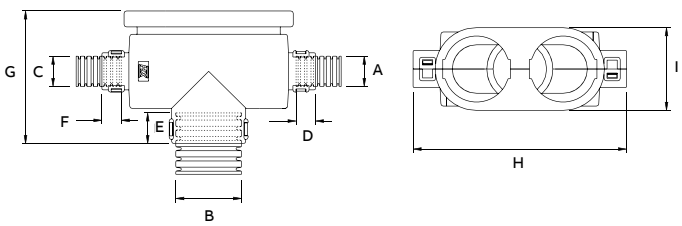
TE/Deutsch - DTP04 Series 90° elbow interface

	Connector reference	Part No.	Conduit size (A) NC	NW	US	Nominal dimensions (mm) B	C	D
	DTP06-4S DTP06-4S-C015 DTP06-4S-CE02 DTP06-4S-E004	CI12-90-DTP04	12	10	5/16	27.0	37.0	25.0
	DTP06-4S DTP06-4S-C015 DTP06-4S-CE02 DTP06-4S-E004	16-90-DTP04	–	–	–	27.0	37.0	25.0



TE/Deutsch - DRC50 Series interface

	Connector reference	Part No.	Conduit size (NC / NW / US) A	B	C	Nominal dimensions (mm G	H	I
	DRC26-50S0*	CI122812-DRC50	12 / 10 / 5/16	28 / 23 / 3/4	12 / 10 / 5/16	58.0	92.0	36.0
	DRC26-50S0*	CI201220-DRC50	20 / 17 / 1/2	12 / 10 / 5/16	20 / 17 / 1/2	50.0	92.0	36.0
	DRC26-50S0*	CI202820-DRC50	20 / 17 / 1/2	28 / 23 / 3/4	20 / 17 / 1/2	58.0	92.0	36.0
	DRC26-50S0*	CI251225-DRC50	25 / 22 / 3/4	12 / 10 / 5/16	25 / 22 / 3/4	50.0	92.0	36.0
	DRC26-50S0*	CI252825-DRC50	25 / 22 / 3/4	28 / 23 / 3/4	25 / 22 / 3/4	58.0	92.0	36.0



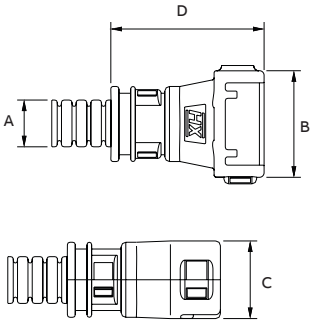
* Original connector.

FCI Automotive Apex 2.8

Connector interface

Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

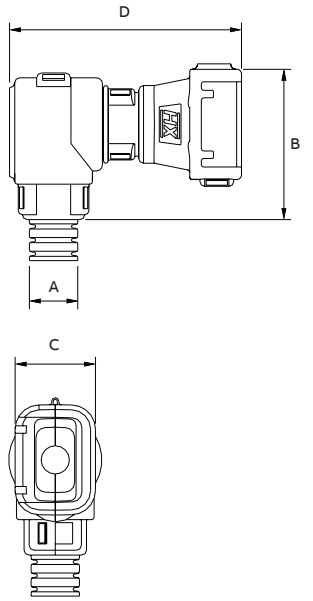
FCI Automotive Apex 2.8 straight interface



Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size (A) NC	NW	US	Nominal dimensions (mm) B	C	D
54200210	2 Way	CI06-FCI02	CIH06-FCI02	08	7.5	¼	25.0	17.0	33.0
		CI08-FCI02	CIH08-FCI02	08	7.5	¼	25.0	17.0	33.0
		CI12-FCI02	CIH12-FCI02	12	10	5/16	25.0	17.0	27.0
54200312	3 Way	CI08-FCI03	CIH08-FCI03	08	7.5	¼	34.0	17.0	34.0
		CI12-FCI03	CIH12-FCI03	12	10	5/16	35.0	17.0	29.0
54200413	4 Way	CI08-FCI04	CIH08-FCI04	08	7.5	¼	39.0	17.0	34.0
		CI12-FCI04	CIH12-FCI04	12	10	5/16	38.0	17.0	29.0
54201415	14 Way	CI12-FCI14	CIH12-FCI14	12	10	5/16	53.0	26.0	34.0
		CI16-FCI14	CIH16-FCI14	16	13	3/8	53.0	26.0	59.0
		16-FCI14	H16-FC14	16	13	3/8	53.0	26.0	33.0
10867079	50 Way	CI25-FCI50	–	25	22	¾	56.0	37.0	50.7

Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

FCI Automotive Apex 2.8 90° elbow swivel interface



Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size (A) NC	NW	US	Nominal dimensions (mm) B	C	D
–	2 Way	CI06-90-FCS02	CIH06-90-FCS02	06	4.5	3/16	30.0	19.0	33.0
		CI08-90-FCS02	CIH08-90-FCS02	08	7.5	¼	30.0	19.0	33.0
54200210		CI06-90-FCI02	CIH06-90-FCI02	06	4.5	3/16	31.0	19.0	48.0
		CI08-90-FCI02	CIH08-90-FCI02	08	7.5	¼	31.0	19.0	48.0
		CI12-90-FCI02	CIH12-90-FCI02	12	10	5/16	32.0	19.0	48.0
54200312	3 Way	CI08-90-FCI03	CIH08-90-FCI03	08	7.5	¼	35.0	19.0	49.0
		CI12-90-FCI03	CIH12-90-FCI03	12	10	5/16	37.0	19.0	49.0
54200413	4 Way	CI08-90-FCI04	CIH08-90-FCI04	08	7.5	¼	38.0	19.0	49.0
		CI12-90-FCI04	CIH12-90-FCI04	12	10	5/16	38.0	19.0	49.0
54201415	14 Way	CI08-90-FCI14	CIH08-90-FCI14	08	7.5	¼	38.0	24.0	57.0
		CI12-90-FCI14	CIH12-90-FCI14	12	10	5/16	38.0	24.0	57.0
		CI16-90-FCI14	CIH16-90-FCI14	16	13	3/8	38.0	24.0	57.0
		CI20-90-FCI14	CIH20-90-FCI14	20	17	½	32.9	23.5	63.7

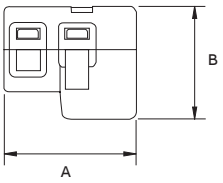
Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

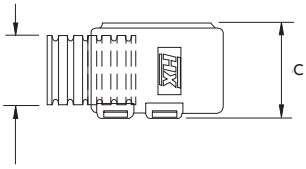
Bosch Compact
Connector interface



Harnessflex® X-Temp™
Protection at temperatures between 200°C to -50°C with high vibration, dynamic conditions.

Bosch Compact straight interface



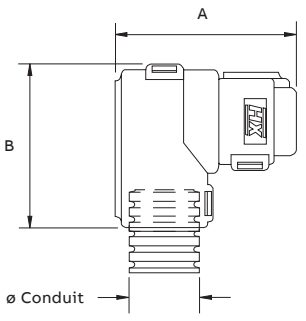


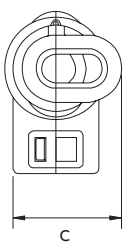
ø Conduit

Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	Nominal dimensions (mm) B	Nominal dimensions (mm) C
1 928 403 137* 1 928 403 126* 1 928 403 698* 1 928 403 722* 1 928 403 920* 1 928 404 476* 1 928 404 707*	2 Way	CI06-BC2	CIH06-BC2	06	7.5	3/16	25.0	21.3	18.0
		CI08-BC2	CIH08-BC2	08	7.5	¼	25.0	21.3	18.0
		CI12-BC2	CIH12-BC2	12	10	5/16	25.0	21.3	18.0
1 928 403 110* 1 928 403 870* 1 928 403 915*	3 Way	CI08-BC3	CIH08-BC3	08	7.5	¼	25.0	26.7	18.0
		CI12-BC3	CIH12-BC3	12	10	5/16	25.0	26.7	18.0
1 928 403 112* 1 928 403 913* 1 928 404 627* 1 928 404 691* 1 928 405 184*	4 Way	CI08-BC4	CIH08-BC4	08	7.5	¼	25.0	29.0	18.0
		CI12-BC4	CIH12-BC4	12	10	5/16	25.0	29.0	18.0
–	40 Way	CI28-BC40	CIH28-BC40	28	23	¾	44.4	40.0	–

*All Bosch Kompact variants / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

Bosch Compact 90° elbow swivel interface





Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	Nominal dimensions (mm) B	Nominal dimensions (mm) C
1 928 403 137* 1 928 403 126* 1 928 403 698* 1 928 403 722* 1 928 403 920* 1 928 404 476* 1 928 404 707*	2 Way	CI06-90-BC2	CIH06-90-BC2	06	7.5	3/16	33.3	30.3	20.5
		CI08-90-BC2	CIH08-90-BC2	08	7.5	¼	33.3	30.3	20.5
		CI12-90-BC2	CIH12-90-BC2	12	10	5/16	33.3	30.3	20.5
1 928 403 110* 1 928 403 870* 1 928 403 915*	3 Way	CI08-90-BC3	CIH08-90-BC3	08	7.5	¼	33.3	30.3	26.7
		CI12-90-BC3	CIH12-90-BC3	12	10	5/16	33.3	30.3	26.7
1 928 403 112* 1 928 403 913* 1 928 404 627* 1 928 404 691* 1 928 405 184*	4 Way	CI08-90-BC4	CIH08-90-BC4	08	7.5	¼	37.0	30.3	33.0
		CI12-90-BC4	CIH12-90-BC4	12	13	5/16	37.0	30.3	33.0

*All Bosch Kompact variants / Colours available: Black ● RAL 9005 (Standard) / Brown ● RAL 8016 (X-Temp™).

Kostal

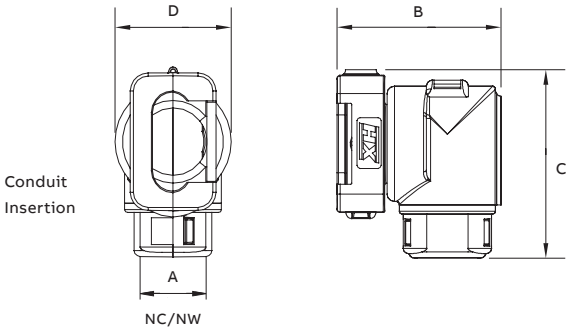
Kostal 90° elbow swivel interface, straight interface & PG thread LK20

Kostal hinged interface
Clip-on elbow interface for Kostal in-line connector.

Kostal 90° elbow swivel interface

Connector reference	Interface reference	Part No.	Conduit size (A) NC	NW	US	Nominal dimensions (mm) B	C	D
9442291	2 way	CI08-90-K2C	08	7.5	¼	27.4	30.0	19.5
		CI12-90-K2C	12	10	5/16	27.4	31.0	19.5
9302231	3 way	CI08-90-K3C	08	7.5	¼	27.4	31.4	19.5
		CI12-90-K3C	12	10	5/16	27.4	32.4	19.5
9331031	10 way	CI12-90-K10C	12	10	5/16	38.4	37.7	19.5

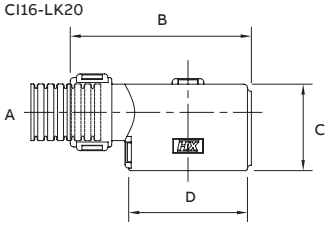
CI08-90-K2C



Kostal straight interface

Connector reference	Interface reference	Part No.	Conduit size (A) NC	NW	US	Nominal dimensions (mm) B	C	D
09432001	20 Way	CI16-LK20	16	13	⅜	51.0	28.0	34.0
9441391	28 Way	CI08-SLK28-3	08	7.5	¼	51.0	28.0	34.0

CI16-LK20



PG thread LK20

Part No.	Thread type	Thread length (mm)	A/F (mm)	I.D (mm)
PG21-LK20	PG21	12.2	37.8	22.6

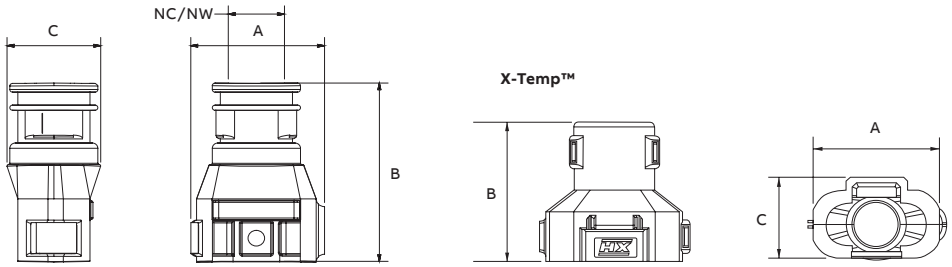
Kostal Series

Backshell series for Kostal series connectors

Compatible with conduit types:
Kostal 2,8 Series

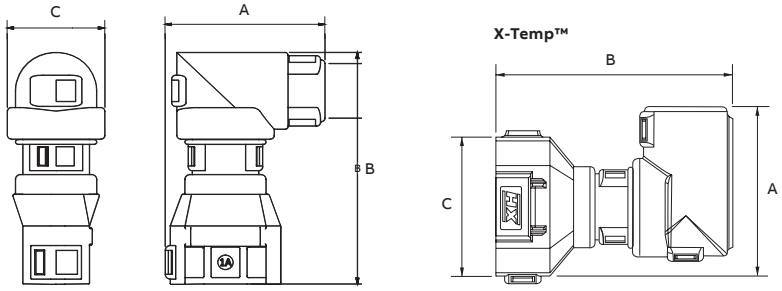
Kostal Series 180° straight interface

Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size NC	NW	US	Nominal dimensions (mm) A	B	C
09-4440-2*	2 Way	CI06-SLK28-2	–	06	4.5	3/16	23.8	34.5	16.5
		CI08-SLK28-2	–	08	7.5	1/4	23.8	34.5	16.5
09-4440-3*	3 Way	CI08-SLK28-3	–	08	7.5	1/4	30.2	36.1	16.5
10092979	4 Way	–	CIH12-MLK04	12	10	5/16	27.3	29.2	18.4



Kostal Series 90° elbow interface - 2 part swivel

Connector reference	Interface reference	Part No.	X-Temp™ Part No.	Conduit size NC	NW	US	Nominal dimensions (mm) A	B	C
09-4440-2*	2 Way	CI06-90-SLK28-2	–	06	4.5	3/16	30.0	48.5	19.5
		CI08-90-SLK28-2	–	08	7.5	1/4	30.0	48.5	19.5
09-4440-3*	3 Way	CI08-90-SLK28-3	–	08	7.5	1/4	33.2	50.0	19.5
09-4440-3*	4 Way	CI12-90-SLK28-4	–	12	10	5/16	36.3	38.7	19.5
10092979	4 Way	–	CIH12-90-MLK04	12	10	5/16	34.7	45.8	19.5



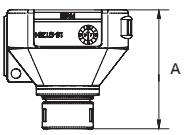
Aptiv Series

External connector interface

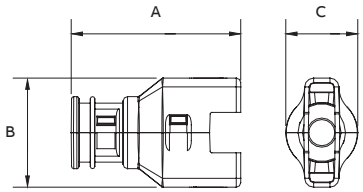


Aptiv Series straight interface

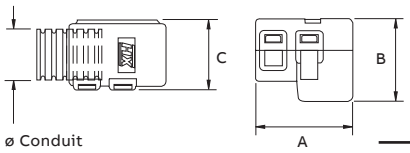
GT284 straight connector interface



GT153 straight connector interface

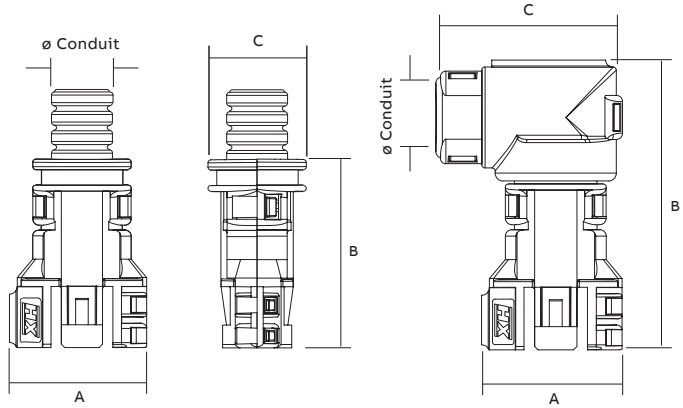


External straight connector interface



Connector reference	Interface reference	Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	Nominal dimensions (mm) B	Nominal dimensions (mm) C
12162194	2 way	CI08-MP2	08	7.5	¼	20.0	16.0	28.9
12162852		CI08-MMP2	08	7.5	¼	30.0	17.0	18.0
12052613/12065863*		CI08-WP2	08	7.5	¼	31.3	16.1	28.3
15397337		CI08-PTD2	08	7.5	¼	20.2	20.5	18.0
13532244	3 way	CI06-DE001	08	7.5	¼	18.0	17.0	17.0
		CI06-MP2	08	7.5	¼	20.0	16.0	28.9
		CI06-MMP2	08	7.5	¼	30.0	17.0	18.0
		CI06-WP2	08	7.5	¼	31.3	16.1	28.3
		CI06-PTD2	08	7.5	¼	20.2	20.5	18.0
		CI08-DE001	08	7.5	¼	18.0	17.0	17.0
15300003		CI08-MP3	08	7.5	¼	43.0	20.0	28.0
15336121		CI08-GT153	08	7.5	¼	38.0	24.0	16.0
13521459		16-GT284	16	13	⅜	37.3	21.3	40.0

Connector reference	Interface reference	Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	Nominal dimensions (mm) B	Nominal dimensions (mm) C
3520101	2 way	CI08-GT150SF-2	08	7.5	¼	21.1	30.7	16.1
13520104		CI08-90-GT150SF-2	08	7.5	¼	21.1	45.0	29.6



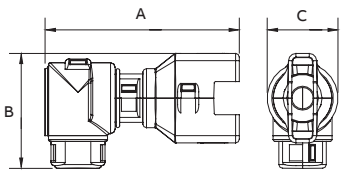
* Both connectors need to be fitted with TPA 1205 2845.

Aptiv Series

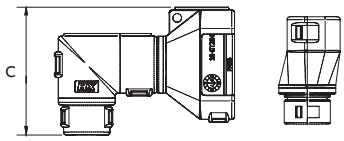
External connector interface (continued)

Aptiv Series 90° elbow swivel interface

GT153 elbow connector interface

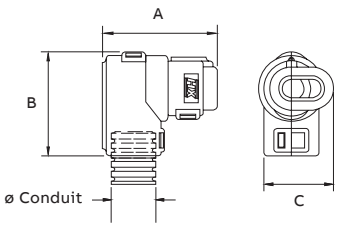


GT284 elbow connector interface



Connector reference	Interface reference	Part No.	Conduit size NC	Conduit size NW	Conduit size US	Nominal dimensions (mm) A	Nominal dimensions (mm) B	Nominal dimensions (mm) C
12162194	2 way	CI08-90-MP2	08	7.5	¼	35.0	42.0	29.5
12162852		CI08-90-MMP2	08	7.5	¼	45.0	30.0	19.0
12162194		CI12-90-MP2	12	10	5/16	20.0	42.0	30.5
12162852		CI12-90-MMP2	12	10	5/16	–	–	–
12052613/ 12065863*		CI08-90-WP2	08	7.5	¼	45.2	33.3	19.5
		CI12-90-WP2	12	10	5/16	45.2	34.3	19.5
15397337		CI08-90-PTD2	08	7.5	¼	33.8	30.0	22.0
		CI12-90-PTD2	12	10	5/16	33.8	21.0	22.0
13532244	3 way	CI06-90-MP2	08	7.5	¼	35.0	42.0	29.5
		CI06-90-MMP2	08	7.5	¼	45.0	30.0	19.0
		CI06-90-WP2	08	7.5	¼	45.2	33.3	19.5
		CI08-90-DE001	08	7.5	¼	32.0	30.0	17.5
12129615/ 12110293*		CI08-90-MP3	08	7.5	¼	56.9	30.0	20.0
		CI12-90-MP3	12	10	5/16	56.9	31.0	20.0
15336121		CI08-90-GT153	08	7.5	¼	53.0	31.0	19.0
		CI12-90-GT153	12	10	5/16	53.0	32.0	19.0
15326631		CI12-90-GT284	12	10	5/16	62.6	44.4	–
		CI16-90-GT284	16	13	3/8	62.6	44.4	–

External elbow connector interface



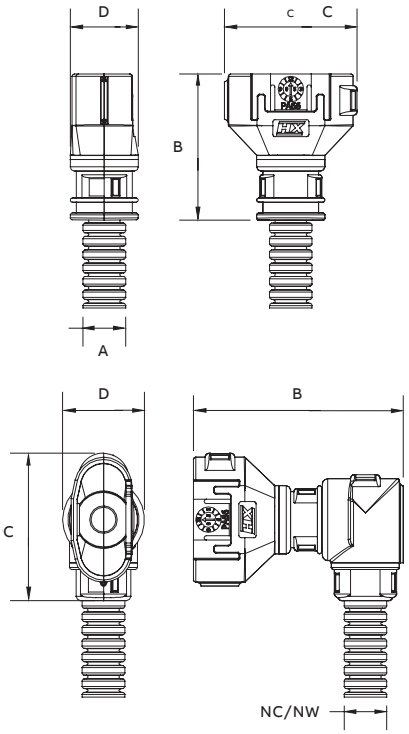
Part reference	Connector system	
MP	Delphi Metri-Pack	To suit Metripack
MMP	Delphi Metri-Pack	To suit Metripack
WP	Delphi Weatherpack	To suit Weatherpack
PTD	Power Timer	
GT	Delphi GT Series 150 and 180	

* Both connectors need to be fitted with TPA 1205 2845.

Sumitomo

4 Way hinged interface

Sumitomo 4 way hinged interface



Connector reference	Interface reference	Part No.	Conduit size (A) NC	NW	US	Nominal dimensions (mm) B	C	D
6098-0144-B*	4 way	CI08-SU4	08	7.5	¼	34.4	31.5	16.1
6189-7469-B*		CI08-90-SU4	08	7.5	¼	48.2	34.8	19.3
6195-0030**		CI08-X2SU4	08	7.5	¼	34.0	29.2	16.1
		CI08-90-X2SU4	08	7.5	¼	48.9	34.7	19.3
6189-1134	10 way	CI12-SU10	12	10	5/16	30.8	26.9	16.1

NOTE: 180° versions are available.
* Original connector.
**New version of connector.

Heavy Duty Series

Plug and socket backshell interface for HDSCS & CTCS XP Connector Series

TE HDSCS Connector Series plug and socket backshell interface

Harnessflex® Heavy Duty Series
Safe and secure cable protection for TE HDSCS and Aptiv CTCS XP Type B & E connectors, helping to maintain continuous vehicle operation even in the toughest conditions.

Part No.	Type	Dimensions (mm) A	B	C	Weight (g)	Conduit size NC	NW	US
Straight Interface Series								
CI08-HDSCS-B	B	33.5	Ø23.9	12.9	3.4	08	7.5	¼
CI12-HDSCS-B	B	33.5	Ø23.9	16	3.5	12	10	5/16
CI20-HDSCS-E	E	41.8	48.9	24.8	7.8	20	17	½
90° Elbow Interface Series (2 Part Swivel Elbows)								
CI20-F90-HDSCS-E	E	67.9	39	24.8	10	20	17	½

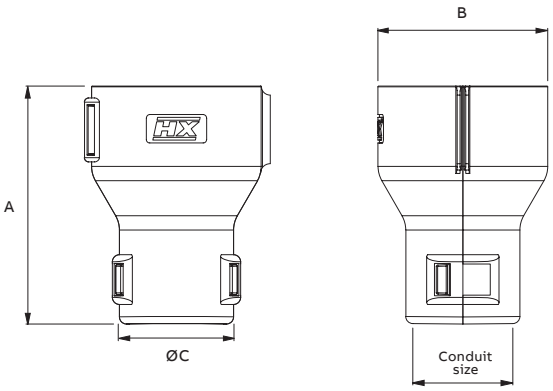
Colour: Black as standard.

Harnessflex Heavy Duty Series connectors compatible with:

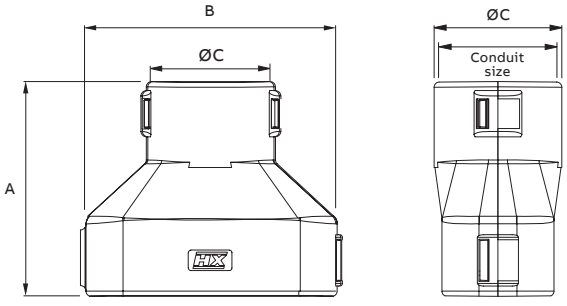
Type B		
TE	*-1703773-1	*-1418469-1
	*-1703808-1	*-1703818-1
	*-1703820-1	*-1418390-1
Aptiv	33308731	33346867
	33308912	33347886
	33308961	33346852
	33308974	33346865
	33308978	33346866
	33308982	33347865

Type E		
TE	*-1564337-1	*-1563759-1
	*-1564526-1	*-1564412-1
	*-1564337-1	*-1564407-1
	*-1564528-1	*-1563878-1
	*-1564532-1	*-1564530-1
	*-1670901-1	*-1564330-1
	*-1564534-1	–
Aptiv	33285171	33347859
	33285172	33347875
	33342234	33347874
	33342243	33347860
	33342277	33347876
	33342293	33347872
	33343701	33349151
	33344005	33347873

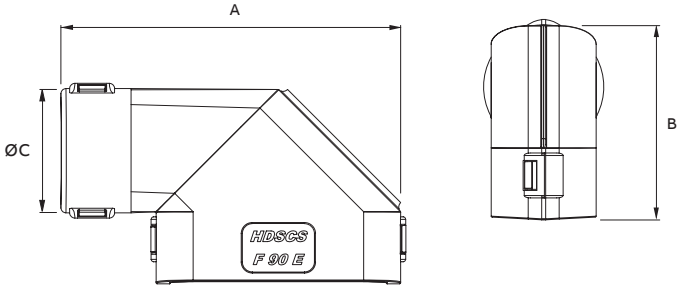
CI08-HDSCS-B & CI12-HDSCS-B Dimensions



CI20-HDSCS-E Dimensions



CI20-F90-HDSCS-E Dimensions

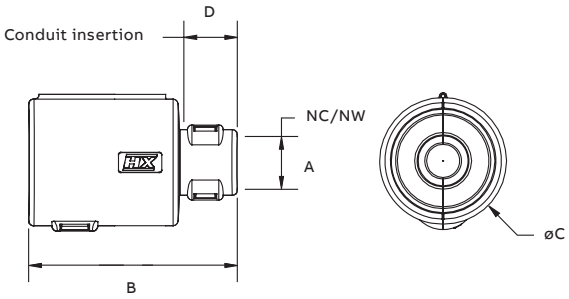


DIN 72585 & Millflex ABS

Hinged interfaces

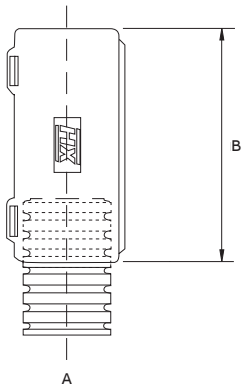
DIN 72585 hinged interface

		Conduit size (A)			Nominal dimensions (mm)		
	Part No.	NC	NW	US	B	C	D
	CI08-72585	08	7.5	¼	40.9	24.9	10.0



Millflex hinged ABS interface

	Part No.	Conduit size (A) NC	NW	US	Nominal dimensions (mm) B
	CI06-MF2	08	7.5	¼	35.6
	CI08-MF2	08	7.5	¼	35.6
	CI10-MF2	10	8.5	5/16	35.6
	CI12-MF2	12	10	5/16	35.6

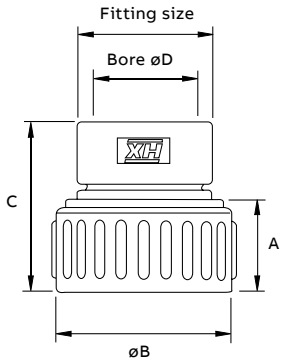


Special customised products

Interfaces for circular connectors

Interfaces for circular connectors
Interface provides connection between electrical circular connectors and hinged conduit system. Due to the innovative design, the interface can freely rotate without any harness movement. US

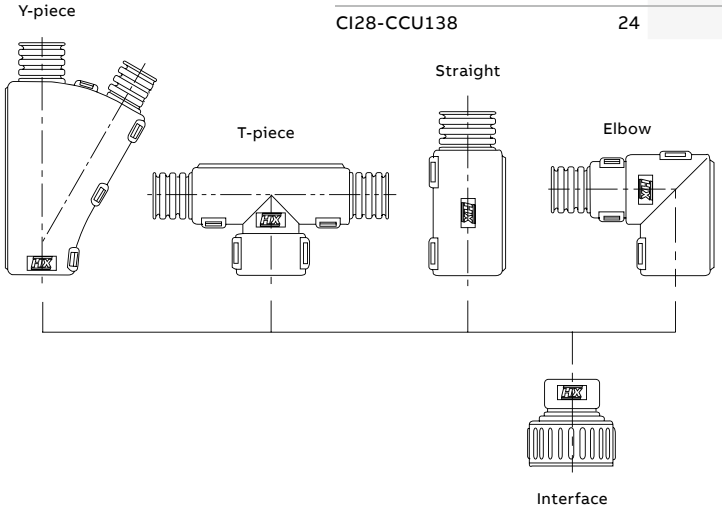
Hinged fitting



Part No.	Shell size (mm)	Conduit size NC	Conduit size NW	Conduit size NW	Thread size
NEPA14-16	14	16	13	⅜	13/16''-20 UNEF
NEPA16-20	16	20	17	½	15/16''-20 UNEF
NEPA24-28	24	28	23	¾	17/16'' -18 UNEF
CI20-CCU100	18/16	20	17	½	1''-20 UNEF
CI20-CCU119	18/16	20	17	½	13/16''-18 UNEF
CI28-CCU138	24	28	23	¾	13/8''-18 UNEF

Interface for circular connector

Part No.	Shell size (mm)	Conduit size NC	Conduit size NW	Conduit size NW	Nominal dimensions (mm) A	B	C	D
NEPA14-16	14	16	13	⅜	14.4	25.3	25.0	12.5
NEPA16-20	16	20	17	½	14.4	30.0	26.3	16.4
NEPA24-28	24	28	23	¾	17.0	42.0	29.8	22.8
CI20-CCU100	18/16	20	17	½	11.0	30.0	26.0	16.4
CI20-CCU119	18/16	20	17	½	11.0	33.0	26.0	16.5
CI28-CCU138	24	28	23	¾	13.0	41.5	30.0	22.8



HDP20 Series conduit adapter - Sealing ring & cap nut

Part No.	Seal ring	Cap nut	Shell size	Conduit size NW
L015	14.4	25.0	24	22

Harnessflex® EVO™
(Electric Vehicle Orange) specialist range for full EV (electric vehicle) industry compliance.

Harnessflex® EVO™
(Electric Vehicle Orange) conduit systems

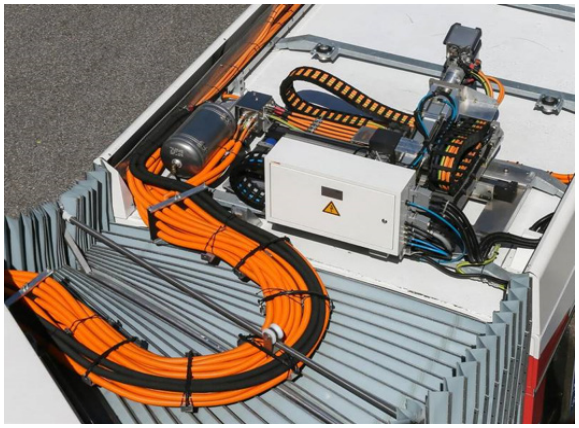
Electric Vehicle Orange (EVO™) conduit systems for safeguarding critical wiring in heavy-duty electric vehicles.

Harnessflex EVO™ (Electric Vehicle Orange) conduit is flexible nylon (PA6) conduit suitable for electric vehicle applications.

Heavy automotive cable protection systems
Protection from damage by mechanical abrasion, excessive cable strain, corrosive salts and liquid ingress.

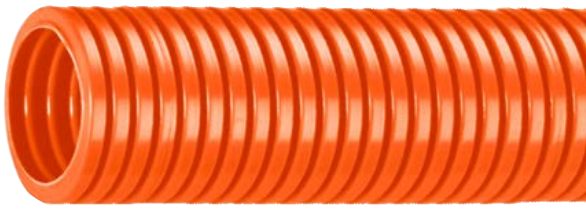
Built for use in a wide range of EV applications Including electric cars, buses, trucks, lorries, trams and trains.

High voltage connectors
Connectors that easily integrate into high and low voltage wiring and are proven to withstand abrasion, stress, vibration, corrosive conditions and higher vehicle running temperatures.
Testing – Form, Fit and Function.



— 01 FR co-polyester Dynamic conduit.
— 02 Nylon (PA6 - NC and CTPA) Co-Polyester (CPC).

— 01



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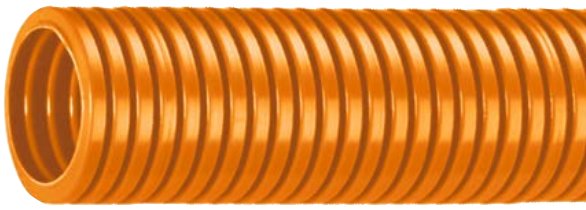


Reliable complete system integration for EV wiring protection
Featuring our signature vibration friendly profile (VFP) as standard, as well as UV and heat stabilisation as standard, Harnessflex EVO™ conduit systems minimise the risk of electrical failure whilst also protecting crucial HV connectors.

Product selection guide

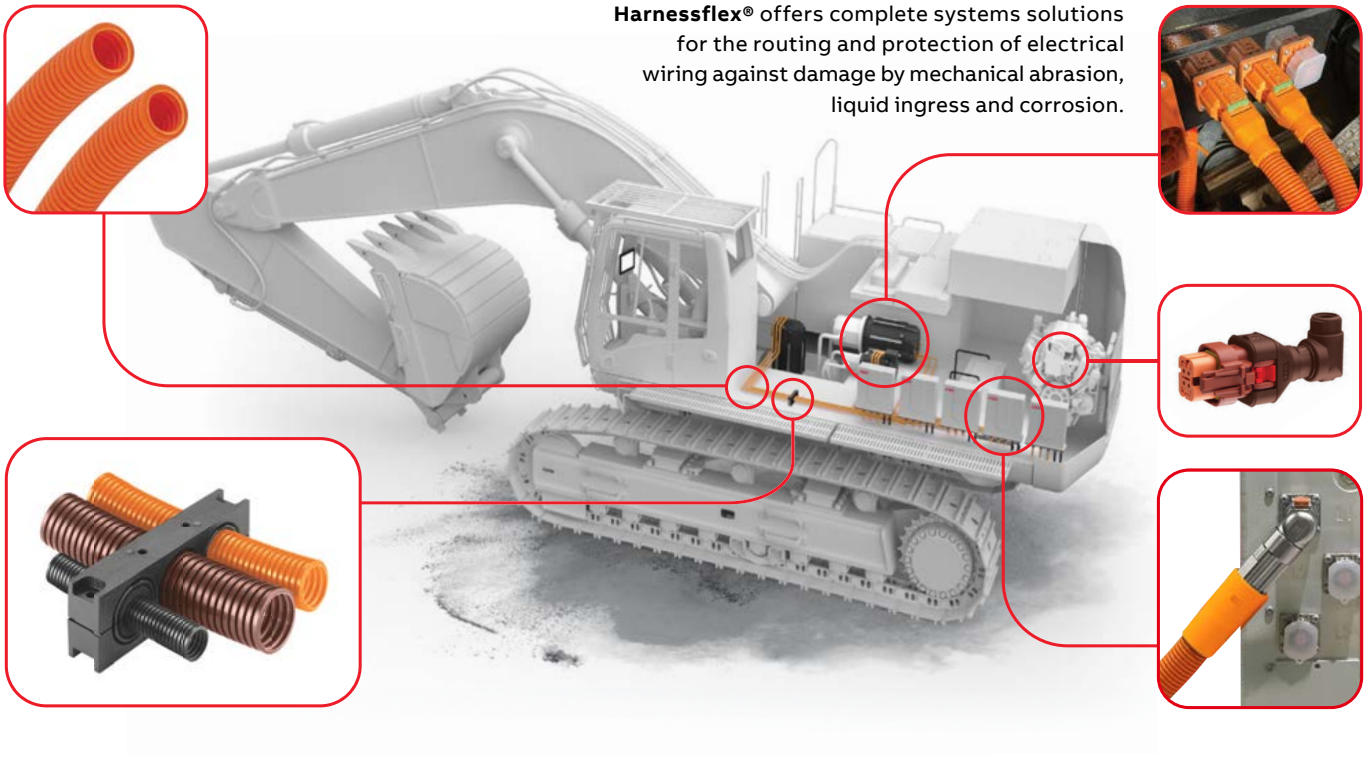
EVO™ conduit systems



Product selection guide

Type	NC	CTPA	CPC
Conduit material	Polyamide 6	Polyamide 6	Co-Polyester
Conduit weight	Standard	Light	Medium
Slit version available	•	•	–
Temperature range			
Long term static min.	-40°C	-40°C	-50°C
Long term static max.	+120°C	+120°C	+135°C
Short term (3000 hrs)	+150°C	+135°C	+150°C
Short term (200 hrs)	+175°C	+150°C	+175°C
Characteristics			
UV resistance	■■■■	■■■■	■■■■
Flexibility	■■■□	■■■■	■■■■
Fatigue life	■■■■	■■■□	■■■■
Ext. wear resistance	■■■■	■■■■	■■■□
Fire performance			
Self extinguishing	•	•	•
Halogen free	•	•	•
Low smoke toxicity	•	•	•
UL94 V0	–	–	–
UL94 V2	–	–	•
UL94 HB	•	•	–
R118	•	–	–
Approvals			
CE	•	•	•
RoHS Compliant	•	•	•
ADR Approved	•	–	–
(ELV) EU200/53/EC	•	•	•
Chemical resistance*			
IRM 903 (ASTM Oil No.2)	S	S	S
Diesel Oil	S	S	S
Ethylene Glycol (Anti-freeze)	S	S	S
Lubricating Oil	S	S	S
Methyl Alcohol	L	L	S
Parafin Oil	S	S	S
Petrol	S	S	S
Sodium Chloride	S	S	S
Sodium Hydroxide (10%)	S	S	S
Transformer Oil	S	S	S
Urea	S	S	NT
Vegetable Oil	S	S	S
Sea (Water)	S	S	S
Page No.	16	17	19

Key: S = Suitable / L = Limited Suitability / U = Unsustainable / NT = Not Tested
Maximum Performance = ■■■■
*All chemicals tested for resistance at 23°C.



Harnessflex® offers complete systems solutions for the routing and protection of electrical wiring against damage by mechanical abrasion, liquid ingress and corrosion.

ABB products for construction equipment electrification:

Mobile controllers X90
B&R continues to open up new possibilities in mobile automation with its innovative X90 mobile controllers. The comprehensive set of standardised components is perfect for implementing flexible automation concepts. The heart of the X90 mobile control system is a powerful ARM processor and multi-function I/O channels. Basic features include interfaces for CAN, Ethernet and the real-time POWERLINK bus system.

The B&R Hypervisor can turn your PC into a high-end embedded controller with processor speeds up to 2.8 GHz.

Harnessflex EVO™ Conduit
Suitable for electric vehicle applications, Harnessflex Electric Vehicle Orange Conduit (EVO™) is flexible nylon that is able to withstand extremes of temperatures and resistant to automotive oils and solvents.

AMXE Motors
Compact, permanent magnet synchronous motors for high efficiency propulsion and auxiliary usage:
- Power levels from 20 to 520 kW.
- Speed range up to 8000 rpm.
- Four different frame sizes
- Shaft and flange dimensions in wide range available

As a further advantage, the motor shaft and the flange can be selected to fit already existing interfaces.

BORDLINE® ESS
- Designed according to ABB's long experience in the transportation business
- Based on Lithium-Titanate (LTO) battery cells
- Best in class in safety, lifetime,power and performance
- Compact and lightweight solution
- Easy connectivity and ready-to-install
- Suitable for multi-string systems with paralleling
- Efficient thermal management based on liquid cooling

NextGen Drive
The next generation drive using a 3-level IGBT topology is most efficient, most universal and motor friendliest topology today:
- 3-level topology reduces harmonic motor losses (-75%) at the same switching frequency and reduces voltage stress on motor winding
- Flexibility to separate the drive and motor with cables and full flexibility for different motor types
- Inherent fault tolerance
- Reduces risk of motor bearing currents through reduced common mode voltage

HES880 mobile drive
Compact and rugged, features and benefits of the HES880 include:
- Inverter for traction motor and generator up to 510 kW continuous and up to 760 kW peak electrical power
- Three different frame sizes with voltage from 320 to 750 VDC – 350, 600 and 900 A as maximum currents
- Bi-directional line converter for grid connectivity
- DC/DC converter for battery, super capacitor or fuel cell, up to 620 kW
- The same module can be used as a line converter, motor inverter or DC/DC converter
- Easy to install, only plug connectors

Harnessflex® EVO™ Connector interfaces

Quick reference chart

Type	Amphenol PL18-G2 (Straight)
Part no.	**Connector**
CI25-PL18-G2	PL18T-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18U-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18V-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18W-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18X-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18Y-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18T-300-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18U-300-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18V-300-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18W-300-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18X-300-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL18Y-300-50-2.5
CI28-PL18-G2	
CI28-PL18-G2	PL18T-301-70-2.5
CI28-PL18-G2	PL18U-301-70-2.5
CI28-PL18-G2	PL18V-301-70-2.5
CI28-PL18-G2	PL18W-301-70-2.5
CI28-PL18-G2	PL18X-301-70-2.5
CI28-PL18-G2	PL18Y-301-70-2.5
CI28-PL18-G2	PL18T-300-70-2.5
CI28-PL18-G2	PL18U-300-70-2.5
CI28-PL18-G2	PL18V-300-70-2.5
CI28-PL18-G2	PL18W-300-70-2.5
CI28-PL18-G2	PL18X-300-70-2.5
CI28-PL18-G2	PL18Y-300-70-2.5

Type	Amphenol PL28-G2 (90°)
Part no.	**Connector**
CI25-PL18-G2	PL28T-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28U-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28V-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28W-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28X-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28Y-301-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28T-300-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28U-300-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28V-300-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28W-300-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28X-300-50-2.5
CI28-PL18-G2	
CI25-PL18-G2	PL28Y-300-50-2.5
CI28-PL18-G2	
CI28-PL18-G2	PL28T-301-70-2.5
CI28-PL18-G2	PL28U-301-70-2.5
CI28-PL18-G2	PL28V-301-70-2.5
CI28-PL18-G2	PL28W-301-70-2.5
CI28-PL18-G2	PL28X-301-70-2.5
CI28-PL18-G2	PL28Y-301-70-2.5
CI28-PL18-G2	PL28T-300-70-2.5
CI28-PL18-G2	PL28U-300-70-2.5
CI28-PL18-G2	PL28V-300-70-2.5
CI28-PL18-G2	PL28W-300-70-2.5
CI28-PL18-G2	PL28X-300-70-2.5
CI28-PL18-G2	PL28Y-300-70-2.5

Type	Amphenol PL300 PL282
Part no.	**Connector**
CI25-PL282-PL300	PL282X-301-35
CI28-PL282-PL300	
CI25-PL282-PL300	PL282Y-301-35
CI28-PL282-PL300	
CI25-PL282-PL300	PL282X-301-50
CI28-PL282-PL300	
CI25-PL282-PL300	PL282Y-301-50
CI28-PL282-PL300	
CI28-PL282-PL300	PL282X-301-70
CI28-PL282-PL300	PL282Y-301-70
CI25-PL282-PL300	PL282X-300-35
CI28-PL282-PL300	
CI25-PL282-PL300	PL282Y-300-35
CI28-PL282-PL300	
CI25-PL282-PL300	PL282X-300-50
CI28-PL282-PL300	
CI25-PL282-PL300	PL282Y-300-50
CI28-PL282-PL300	
CI28-PL282-PL300	PL282X-300-70
CI28-PL282-PL300	PL282Y-300-70

Type	Amphenol PL182-G2
Part no.	**Connector**
CI25-PL182-G2	PL182X-301-50-2-5
CI28-PL182-G2	
CI25-PL182-G2	PL182Y-301-50-2-5
CI28-PL182-G2	
CI25-PL182-G2	PL182U-301-50-2-5
CI28-PL182-G2	
CI25-PL182-G2	PL182V-301-50-2-5
CI28-PL182-G2	
CI25-PL182-G2	PL182X-300-50-2-5
CI28-PL182-G2	
CI25-PL182-G2	PL182Y-300-50-2-5
CI28-PL182-G2	
CI25-PL182-G2	PL182U-300-50-2-5
CI28-PL182-G2	
CI25-PL182-G2	PL182V-300-50-2-5
CI28-PL182-G2	
CI28-PL182-G2	PL182X-301-70-2-5
CI28-PL182-G2	PL182Y-301-70-2-5
CI28-PL182-G2	PL182U-301-70-2-5
CI28-PL182-G2	PL182V-301-70-2-5
CI28-PL182-G2	PL182X-300-70-2-5
CI28-PL182-G2	PL182Y-300-70-2-5
CI28-PL182-G2	PL182U-300-70-2-5
CI28-PL182-G2	PL182V-300-70-2-5

Type
Part no.
CI25-PL300
CI28-PL300
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CI25-PL300

CONNECTOR KEY:

1. Amphenol PL18-G2 (Straight)
2. Amphenol PL28-G2 (90°)
3. Amphenol PL300 PL282
4. Amphenol PL182-G2
5. Amphenol PL300 (Straight)
6. Amphenol PL300 (90°)
7. TE HVA280 3P

Amphenol PL300 (Straight)
Connector
PL18X-300-35-5
PL18Y-300-35-5
PL18U-300-35-5
PL18V-300-35-5
PL18W-300-35-5
PL18T-300-35-5
PL18X-301-35-5
PL18Y-301-35-5
PL18U-301-35-5
PL18V-301-35-5
PL18W-301-35-5
PL18T-301-35-5
PL18X-300-50-5
PL18Y-300-50-5
PL18U-300-50-5
PL18V-300-50-5
PL18W-300-50-5
PL18T-300-50-5

Type	Amphenol PL300 (Straight) Continued
Part no.	Connector
CI28-PL300	PL18X-301-50-5
CI25-PL300	
CI28-PL300	PL18Y-301-50-5
CI25-PL300	
CI28-PL300	PL18U-301-50-5
CI25-PL300	
CI28-PL300	PL18V-301-50-5
CI25-PL300	
CI28-PL300	PL18W-301-50-5
CI25-PL300	
CI28-PL300	PL18T-301-50-5
CI25-PL300	
CI28-PL300	PL18X-300-50-5
CI25-PL300	
CI28-PL300	PL18Y-300-70-5
CI28-PL300	PL18U-300-70-5
CI28-PL300	PL18V-300-70-5
CI28-PL300	PL18W-300-70-5
CI28-PL300	PL18T-300-70-5
CI28-PL300	PL18X-301-70-5
CI28-PL300	PL18Y-301-70-5
CI28-PL300	PL18U-301-70-5
CI28-PL300	PL18V-301-70-5
CI28-PL300	PL18W-301-70-5
CI28-PL300	PL18T-301-70-5

Type	Amphenol PL300 (90°)
Part no.	Connector
CI25-PL300	PL28X-300-35-5
CI28-PL300	
CI25-PL300	PL28Y-300-35-5
CI28-PL300	
CI25-PL300	PL28U-300-35-5
CI28-PL300	
CI25-PL300	PL28V-300-35-5
CI28-PL300	
CI25-PL300	PL28W-300-35-5
CI28-PL300	
CI25-PL300	PL28T-300-35-5
CI28-PL300	
CI25-PL300	PL28X-301-35-5
CI28-PL300	
CI25-PL300	PL28Y-301-35-5
CI28-PL300	
CI25-PL300	PL28U-301-35-5
CI28-PL300	
CI25-PL300	PL28V-301-35-5
CI28-PL300	
CI25-PL300	PL28W-301-35-5
CI28-PL300	
CI25-PL300	PL28T-301-35-5
CI28-PL300	
CI25-PL300	PL28X-300-50-5
CI28-PL300	
CI25-PL300	PL28Y-300-50-5
CI28-PL300	
CI25-PL300	PL28U-300-50-5
CI28-PL300	
CI25-PL300	PL28V-300-50-5
CI28-PL300	
CI25-PL300	PL28W-300-50-5
CI28-PL300	
CI25-PL300	PL28T-300-50-5
CI28-PL300	

Type	Amphenol PL300 (90°) Continued
Part no.	Connector
CI25-PL300	PL28X-301-50-5
CI28-PL300	
CI25-PL300	PL28Y-301-50-5
CI28-PL300	
CI25-PL300	PL28U-301-50-5
CI28-PL300	
CI25-PL300	PL28V-301-50-5
CI28-PL300	
CI25-PL300	PL28W-301-50-5
CI28-PL300	
CI25-PL300	PL28T-301-50-5
CI28-PL300	
CI28-PL300	PL28X-300-70-5
CI28-PL300	PL28Y-300-70-5
CI28-PL300	PL28U-300-70-5
CI28-PL300	PL28V-300-70-5
CI28-PL300	PL28W-300-70-5
CI28-PL300	PL28T-300-70-5
CI28-PL300	PL28X-301-70-5
CI28-PL300	PL28Y-301-70-5
CI28-PL300	PL28U-301-70-5
CI28-PL300	PL28V-301-70-5
CI28-PL300	PL28W-301-70-5
CI28-PL300	PL28T-301-70-5

Type		TE HVA280 3P
Part no.	Connector	Compatible Connector Cap
CI16-HVA280-3	4-2103015-1	2103013-1
		2103013-2
		2103013-3
CI16-HVA280-3	4-2103015-2	2103013-1
		2103013-2
		2103013-3
CI16-HVA280-3	4-2103015-3	2103013-1
		2103013-2
		2103013-3
CI16-HVA280-3	4-2103015-4	2103013-1
		2103013-2
		2103013-3
CI16-HVA280-3	4-2103015-5	2103013-1
		2103013-2
		2103013-3
CI16-HVA280-3	4-2103015-6	2103013-1
		2103013-2
		2103013-3

Harnessflex® EVO™
Talking about EV connector risks

With countries across the globe looking to tackle climate change through less carbon emissions and greater sustainability, the shift towards electric modes of transport is ever-growing.

—
01 No strain relief present.
—
02 Extra engineering required.
—
03 Compromise of connector seals.
—
04 Exposed HV cable.
—
05 Debris intrusion hotspot.
—
06 Management of bulky cables.

With the electric vehicle (EV) industry projected to see compounded annual growth (CAGR) of 21.1% over the next 10 years, we can soon expect to see more electric cars, buses, trucks, trams and trains in our cities.

With electric vehicles soon to become the norm, it is important that their reputation for reliability is maintained. Electric vehicles contain significant critical wiring that facilitates their operation. Therefore, the optimum level of cable protection is absolutely crucial in order to maintain the vehicle's productivity.

Without the right cable protection system in place, electric vehicles may become prone to critical electrical failure which will cause them to breakdown, resulting in timetable disruptions and repair costs.

One of the key areas at risk is the vital link between cable and connector. Without robust backshell protection, cables running into connectors are often left exposed, leaving them open to intrusion, excessive strain and impact damage - all of which can lead to electrical faults and vehicle failure.

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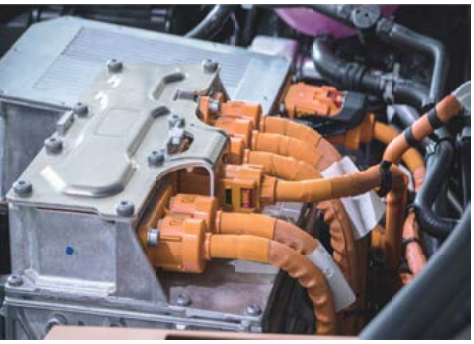
01



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EVO™ High voltage connectors

HV Connector interfaces

Features & benefits:

- Supports connector Ingress Protection (IP) performance
- Isolates and reduces cable movement
- Provides cable-connector interface with high mechanical protection
- Provides connector to cable strain relief
- High pull-off strength - conduit corrugations sit tightly into joiner junctions
- Enhanced abrasion and vibration protection
- External fit for unrestricted bore and quick assembly
- Tamperproof, integrated clip system as standard
- Safe for use with 1000V AC and 1500V DC

Applications:

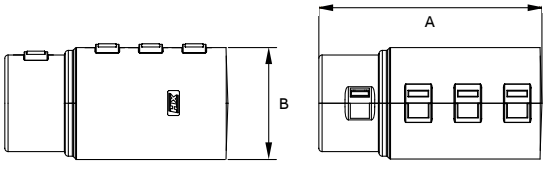
- For use with high voltage connectors
- Power Distribution Units (PDU)
- Motor Control Units (MCU)
- Invertors
- DC Drive Motors
- In-wheel Motors
- E-Axles
- High Voltage Battery Packs
- Hybrid Systems
- Static Power Systems
- Marine

01 **EVO™ High voltage connectors** HV Connector interfaces.

01

EVO™ high voltage connectors for use with Amphenol Powerlok high voltage connectors

		Connector Series				Dimensions (mm)	
	Part No.	NC	NW	US	Connector Series	A	B
	CI25-PL300	25	22	¾	Amphenol Powerlok 300 (1 Pos)	67.7	33.8
	CI28-PL300	28	23	¾	Amphenol Powerlok 300 (1 Pos)	68.5	33.8

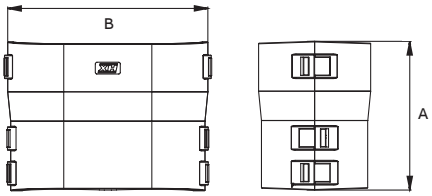


Product selection guide

EVO™ conduit systems

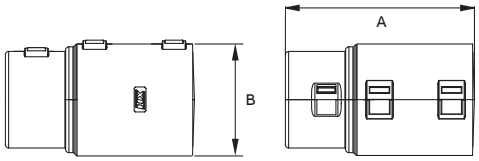
EVO™ high voltage connectors for use with Amphenol Powerlok high voltage connectors

	Connector Series				Dimensions (mm)	
Part No.	NC	NW	US	Connector Series	A	B
CI25-PL282-PL300	25	22	¾	Amphenol Powerlok 300 (2 Pos)	50.7	38.2
CI28-PL282-PL300	28	23	¾	Amphenol Powerlok 300 (2 Pos)	50.7	38.2



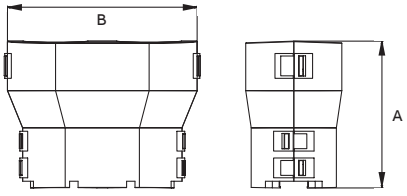
EVO™ high voltage connectors for use with Amphenol Powerlok high voltage connectors

	Connector Series				Dimensions (mm)	
Part No.	NC	NW	US	Connector Series	A	B
CI25-PL18-G2	25	22	¾	Amphenol Powerlok 300 G2 (1 Pos)	59.5	34.2
CI28-PL18-G2	28	23	¾	Amphenol Powerlok 300 G2 (1 Pos)	59.5	34.2



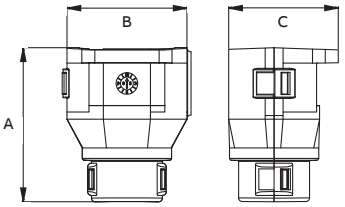
EVO™ high voltage connectors for use with Amphenol Powerlok high voltage connectors

	Connector Series				Dimensions (mm)	
Part No.	NC	NW	US	Connector Series	A	B
CI25-PL182-G2	25	22	¾	Amphenol Powerlok 300 G2 (2 Pos)	59.7	76.6
CI28-PL182-G2	28	23	¾	Amphenol Powerlok 300 G2 (2 Pos)	59.7	76.6



EVO™ high voltage connectors for use with TE HVA280-3 high voltage connectors

	Connector Series				Dimensions (mm)		
Part No.	NC	NW	US	Connector Series	A	B	C
CI16-HVA280-3	16	13	⅜	TE HVA280	42.9	33.4	30.6



Harnessflex®
Interconnect system

The Harnessflex Interconnect System enables easy linking between Harnessflex® fittings and connector interfaces to conduit braiding, sleeving and heat shrink.

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01

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01 **Harnessflex®** Interconnect system (example).

Ty-Fast®

—
Harnessflex® Interconnect system

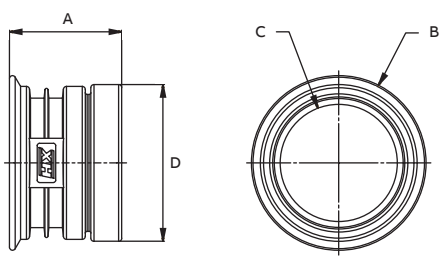
Compatible with Harnessflex Multi-Function Clips or Ty-Rap® cable ties, the **Harnessflex Interconnect System** is available for all conduit outlet sizes NC08 to NC40 (excluding NC10).

Without the right cable protection system in place, electric vehicles may become prone to critical electrical failure which will cause them to breakdown, resulting in timetable disruptions and repair costs.

One of the **key areas at risk** is the vital link between cable and connector. Without robust backshell protection, cables running into connectors are often left exposed, leaving them open to intrusion, excessive strain and impact damage - all of which can lead to electrical faults and vehicle failure.

Materials:
- MSA parts - Nylon (PA66)
- MSAR parts - Rubber (Sarlink)

Features & benefits:
- Compatible with all Harnessflex® hinged fittings
- Compatible with all Harnessflex connector interfaces
- Can be easily secured with either Ty-Fast® cable ties or Harnessflex Multi-Function clips (see compatible parts below)
- Smooth cable entry & bore
- Easy assembly
- -40C to +120C
- CE Mark to the low voltage directive
- RoHS Compliant to 2015/863/EU
- Conforms with end of life vehicle directive (ELV) EU200/53/EC



Part No. Nylon	Part No. Rubber	Compatible with	Nominal dimensions (mm) A	B	C	For conduit (NC / NW / US) D
MSA08	MSAR08	CCSB08	17.0	13.5	5.7	08 / 7.5 / ¼
MSA10	MSAR10	CCSB10	19.5	14.3	6.3	10 / 8.5 / 5⁄16
MSA12	MSAR12	CCSB12	17.8	15.7	7.6	12 / 10 / 5⁄16
MSA16	MSAR16	CCSB16	17.7	18.8	10.9	16 / 13 / ⅜
MSA20	MSAR20	CCSB20	17.5	23.9	14.5	20 / 17 / ½
MSA25	MSAR25	CCSB25	18.2	28.3	19.0	25 / 22 / ¾
MSA28	MSAR28	CCSB28	18.1	30.9	21.6	28 / 23 / ¾
MSA32	MSAR32	CCSB32	19.0	36.8	27.5	32 / 29 / 1
MSA40	MSAR40	CCSB40	21.6	44.8	33.8	40 / 36 / 1 ¼

Multi-function conduit clips
Reducing closure clips for slit conduit

3-in-1 circular clips for slit conduit that offer up to 50% greater resistance to compression and mechanical strain.




Strain relief enhancing

Size	Average plain Y/T	Average Y/T with CCSB
NC12	88	97 (+10%)
NC16	51	72 (+41%)
NC20	62	64 (+3%)
NC25	160	175 (+9%)
NC32	147	193 (+31%)
NC40	72	100 (+38%)

Results: Average performance benefit +22%.

Multi-function conduit clips are designed to securely close slit conduit, preventing cable exposure. This reduces the risk of cable damage, improves crush strength of slit conduits and offers greater strain relief on all Harnessflex hinged fitting and conduit systems.

Multi-Function conduit clips are made from resilient PA66 material and provide additional compression strength to slit conduits.
When applied, multi-function clips also help to maintain conduit integrity when strained, greatly reducing associated risks of gapping and severe damage to cables.

Multi-function conduit clips also provide a reducing function for hinged fittings, allowing smaller conduits to be installed securely into larger conduit outlets. Some clips can be clipped together to offer further reducing options, allowing inventory to be maximised and providing greater product installation flexibility for global harness-makers.

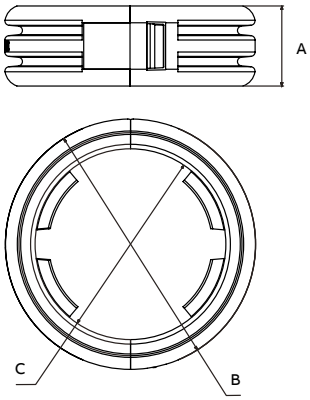
Features & benefits

- **Average strain relief increase by 22%**
  - for all hinged fittings on conduit / interface junction outlet
- **Average tensile strength (pull off) increase by 21%**
  - for all hinged fittings on conduit / interface junction outlet
- **3-in-1 multi-functional capabilities:**
  - Strengthens conduit - up to 50% greater resistance to compression
  - Provides greater strain relief - increases snap out performance of all backshells and hinged fittings
  - Facilitates numerous reducing options - enables size of conduit used within a standard fitting or backshell to be stepped down when needed
- External grooves to allow attachment of single piece fixing clips for ease of installation
- Securely closes slit conduit to prevent cable exposure
- Can be easily stacked to enable further reduction in conduit size
- Suitable for all Harnessflex slit and un-slit conduits

Multi-function conduit clips

Reducing closure clips for slit conduit

Multi-function conduit clips



Part No.	For conduit NC	NW	US	Fits Outlet / CCSB Reducer	Nominal dimensions (mm) A	B	C
CCSB08	08	7.5	¼	NC16 / NW13 CCSB16	8.1	16.0	10.5
CCSB10	10	8.5	5/16	–	9.5	19.4	12.1
CCSB12	12	10	5/16	NC20 / NW17 CCSB20	9.5	20.8	13.6
CCSB16	16	13	⅜	NC20 / NW17 CCSB20	9.3	20.9	16.8
CCSB20	20	17	½	NC28 / NW23 CCSB28	9.0	27.8	21.7
CCSB25	25	22	¾	NC32 / NW29 CCSB32	10.2	34.2	26.4
CCSB28	28	23	¾	–	10.2	36.0	29.0
CCSB32	32	29	1	–	11.5	42.2	35.1
CCSB40	40	36	1 ¼	–	11.5	53.8	43.1
CCSB50	50	48	1 ½	–	11.5	62.3	55.4

Colour: Black as standard.

T-Piece + CCSB

Conduit + Fitting

= System + CCSB

= Advance performance system

CCSB reduction options - Single clip outlet assembly

Harnessflex®
Fast-Fit™ sealed systems

Harnessflex® Fast-Fit™ represents a unique and innovative solution in flexible conduit systems - designed and recommended for use with NC Conduit. Until now, manufacturers have produced fittings and seals separately, and assembled them together, or had the customer assemble them.
This increases assembly time and introduces the possibility for errors.

Harnessflex® Fast-Fit™ uses a sophisticated moulding process to mould an internal conduit seal and a face seal washer. This makes installation times very fast, and extremely reliable, because the seals cannot be left out. The conduit system also benefits from the highest IP rating possible.

Additional key features:
- Nylon 66 body
- Lighter in weight
- Quicker to install (cut & assemble fittings)
- Wide variety of sizes
- Better fatigue life
- Return to shape

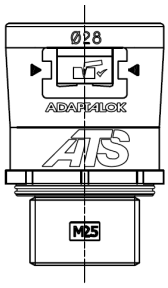
Harnessflex® Fast-Fit™ sealed fittings

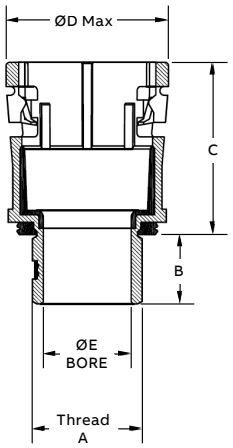
Type A fittings (blue elastomer)

Fast-Fit™ Type A fittings (blue elastomer)
90° Elbow fitting with a fixed external male thread (Metric or NPT)

Materials: Polyamide (nylon) 66/TPE
Colour: Black (BL) / Blue (B) Elastomer

Type A fitting (blue elastomer)





Part No. (Metric)	Metric thread A	Nominal dimensions (mm) B	C	D	E
HTS12/M16/A	M16 x 1.5	11.8	34.2	21.2	11.2
HTS16/M16/A	M16 x 1.5	11.8	36.0	23.2	11.2
HTS16/M20/A	M20 x 1.5	11.8	36.0	23.2	15.2
HTS20/M20/A	M20 x 1.5	11.8	39.5	30.2	15.2
HTS28/M25/A	M25 x 1.5	15.8	39.5	37.2	20.0
HTS32/M32/A	M32 x 1.5	15.8	41.0	44.2	26.7
HTS40/M40/A	M40 x 1.5	15.8	50.8	54.2	34.0
HTS50/M50/A	M50 x 1.5	15.8	56.3	65.0	44.0

For insertion into knockouts using a locknut. Locknut supplied with METRIC thread.

Approvals
CE LOW VOLTAGE DIRECTIVE, RoHS COMPLIANT

IP rating	Appropriate conduit
For use with: Type NC solid	
IP40	Yes
IP65	Yes
IP68	Yes 2 bar 30mins with Solid NC conduits
IP69	Yes

Temperature range
Static applications: -50°C to +120°C
Moving applications: -45°C to +120°C

Harnessflex® Fast-Fit™ sealed fittings

Type C90 fittings (blue elastomer)

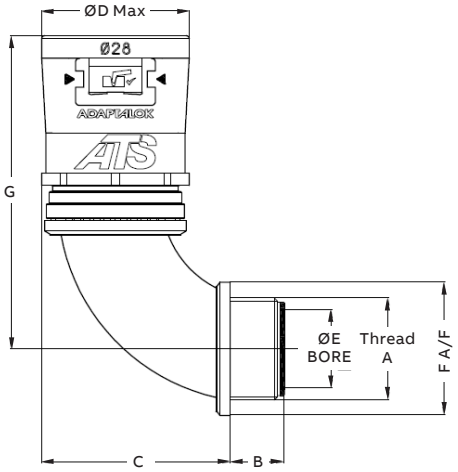
Type C90 fitting (blue elastomer)

Fast-Fit™ Type A fittings (blue elastomer)
90° Elbow fitting with a fixed external male thread (Metric or NPT)

Materials: Polyamide (nylon) 66/TPE
Colour: Black (BL) / Blue (B) Elastomer

Part No. (Metric)	Metric thread A	Nominal dimensions (mm) B	C	D	E	F	G
HTS12/M16/C90	M16 x 1.5	11.5	31.5	21.2	11.0	22.0	65.2
HTS16/M16/C90	M16 x 1.5	11.5	33.1	23.2	11.0	22.0	65.2
HTS16/M20/C90	M20 x 1.5	13.0	34.2	23.3	11.0	27.0	70.0
HTS20/M20/C90	M20 x 1.5	13.0	36.1	30.2	15.4	27.0	72.0
HTS28/M25/C90	M25 x 1.5	15.0	45.1	37.2	19.0	32.1	76.4
HTS32/M32/C90	M32 x 1.5	16.0	57.0	44.2	25.9	38.9	86.4
HTS40/M40/C90	M40 x 1.5	16.0	73.5	54.2	33.3	57.4	104.7
HTS50/M50/C90	M50 x 1.5	16.0	94.5	65.0	43.8	59.0	127.6

For insertion into knockouts using a locknut. Locknut supplied with METRIC thread.



Approvals	IP rating	Appropriate conduit	Temperature range
	For use with: Type NC solid		Static applications: -50°C to +120°C
	IP40	Yes	Moving applications: -45°C to +120°C
	IP65	Yes	
	IP68	Yes 2 bar 30mins with Solid NC conduits	
	IP69	Yes	

Harnessflex® Fast-Fit™ sealed fittings

Removal tool

Fast removal of fittings

01

01 Harnessflex® Fast-Fit removal tool.

The Harnessflex® Fast-Fit™ Removal tool for simple, safe removal of Fast-Fit™ fittings.

Instructions:

1. Slide removal tool over condui
2. Align tabs with retention clips on fitting
3. Slide removal tool into fitting, pushing the tabs underneath the clips
4. Remove fitting from conduit

Features & benefits:

- Safe and simple removal and of Harnessflex Fast-Fit™ fittings

Material:

- Polyamide 6
- Black

Harnessflex® Fast-Fit™ removal tool

Part No.	Harnessflex Fast-Fit fitting size (mm)
HTS12/RT	12
HTS16/RT	16
HTS20/RT	20
HTS28/RT	28
HTS32/RT	32
HTS40/RT	40
HTS50/RT	50

Sealed fittings

Straight & 90° Elbow threaded fittings (Metric versions)

Threaded fittings (Metric versions)
Straight and 90° Elbow compression type fittings incorporating fixed or swivel male threads to provide connection to knockouts and threaded entries. These fittings are designed for use with all types of unslit Harnessflex conduit, maintaining maximum conduit bore.

Threaded fittings (Metric versions)

	Conduit size							
Metric thread	**NC**	**NW**	**US**	**Straight**	**90° Elbow**	**Seal**	**Capnut**	**Configuration**
M16	08	7.5	¼	AB12-M16	–	RSB12-08	CN09-08	B
				AB16-M16	AB16-M16-90	RSB16-08	CN11-08	B
	10	8.5	5/16	AB12-M16	–	SRN07	CN07	A
	12	10	5/16	AB12-M16	–	SRN09	CN09	A
				AB16-M16	AB16-M16-90	RSB16-12	CN11-12	B
	16	12	⅜	AB16-M16	AB16-M16-90	SRN11	CN11	A
M20	08	7.5	¼	AB12-M20	–	RSB12-08	CN09-08	B
				AB16-M20	AB16-M20-90	RSB16-08	CN11-08	B
				AB20-M20	AB20-M20-90	RSB20-08	CN16-08	B
	10	8.5	5/16	AB12-M20	–	SRN07	CN07	A
	12	10	5/16	AB12-M20	–	SRN09	CN09	A
				AB16-M20	AB16-M20-90	RSB16-12	CN11-12	B
				AB20-M20	AB20-M20-90	RSB20-12	CN16-12	B
	16	12	⅜	AB16-M20	AB16-M20-90	SRN11	CN11	A
				AB20-M20	AB20-M20-90	RSB20-16	CN16-16-HF	B
	20	17	½	AB20-M20	AB20-M20-90	SRN16	CN16	A
M25	12	10	5/16	AB25-M25	AB25-M25-90	RSB28-12	CN21-12	B
	16	12	⅜	AB25-M25	AB25-M25-90	RSB28-16	CN21-16	B
	20	17	½	AB25-M25	AB25-M25-90	RSB28-20	CN21-20	B
	25	22	¾	AB25-M25	AB25-M25-90	SRN21	CN21	A
	28	23	¾	AB25-M25	AB25-M25-90	SRN28	CN28-HF	A
M32	20	17	½	AB32-M32	AB32-M32-90	RSB32-20	CN32-20	B
	25	22	¾	AB32-M32	AB32-M32-90	RSB32-25	CN32-25	B
	28	23	¾	AB32-M32	AB32-M32-90	RSB32-28	CN32-28	B
	32	29	1	AB32-M32	AB32-M32-90	SRN29	CN32	A
M40	40	36	1 ¼	AB40-M40	AB40-M40-90	SRN36	CN36-HF	A
M50	50	48	1 ½	AB50-M50	AB50-M50-90	SRN48	CN47	A

NOTE: Order fitting bodies, cap nuts, sealing bushes separately.

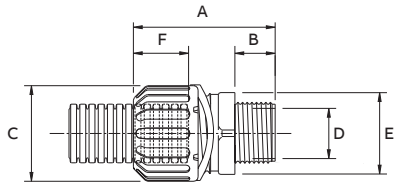
Configuration diagram

Sealed fittings

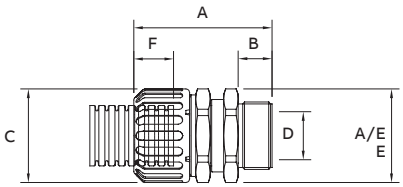
Straight & 90° Elbow threaded fittings (Metric versions)

Straight (Metric versions)

Straight fitting



Straight swivel fitting

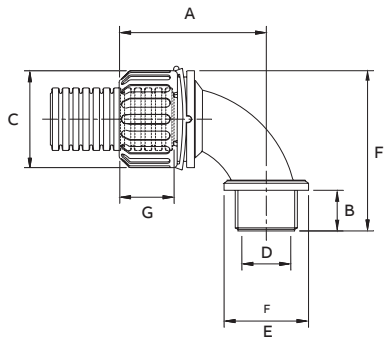


		Nominal dimensions (mm)					
	Straight body Part No.	A	B	C	Min bore D	A/F size E	F
	AB12-M16	34.0	12.0	23.0	11.0	22.0	17.0
	AB12-M20	37.0	14.0	23.0	15.0	27.0	17.0
	AB12-M16	34.0	12.0	26.0	11.0	22.0	17.0
	AB12-M20	37.0	14.0	26.0	15.0	27.0	17.0
	AB16-M16	35.0	12.0	26.0	11.0	27.0	17.0
	AB16-M20	37.0	14.0	26.0	15.0	27.0	11.0
	AB20-M20	39.0	14.0	31.0	15.0	30.0	20.0
	AB25-M25	43.0	15.0	39.0	19.0	38.0	21.0
	AB25-M25	43.0	15.0	39.0	19.0	38.0	21.0
	AB32-M32	49.0	16.0	46.0	26.0	46.0	27.0
	AB40-M40	59.0	16.0	58.0	31.0	59.0	35.0
	AB50-M50	59.0	16.0	72.0	41.0	73.0	35.0

NOTE: Dimensions refer to an overall assembly.

90° Elbow (Metric versions)

90° elbow fitting



		Nominal dimensions (mm)						
	90° Elbow body Part No.	A	B	C	Min bore D	A/F size E	F	G
	AB16-M16-90	46.0	12.0	26.0	15.0	22.0	48.0	17.0
	AB16-M20-90	46.0	13.0	26.0	15.0	27.0	49.0	17.0
	AB20-M20-90	47.0	13.0	31.0	15.0	27.0	51.0	20.0
	AB25-M25-90	56.0	15.0	39.0	20.0	33.0	62.0	21.0
	AB25-M25-90	56.0	15.0	39.0	20.0	33.0	62.0	21.0
	AB32-M32-90	66.0	16.0	46.0	26.0	40.0	76.0	27.0
	AB40-M40-90	77.0	16.0	59.0	34.0	48.0	93.0	35.0
	AB50-M50-90	94.0	16.0	72.0	40.0	59.0	114.0	35.0

NOTE: Dimensions refer to an overall assembly.

Sealed fittings

Straight & 90° Elbow threaded fittings (PG versions)

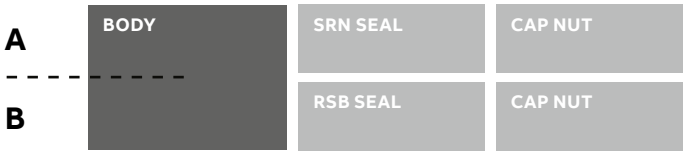
Threaded fittings (PG versions)
Straight and 90° Elbow compression type fittings incorporating fixed or swivel male threads to provide connection to knockouts and threaded entries. These fittings are designed for use with all types of unslit Harnessflex conduit, maintaining maximum conduit bore.

Threaded fittings (PG versions)

	Conduit size							
PG thread	**NC**	**NW**	**US**	**Straight**	**90° Elbow**	**Seal**	**Capnut**	**Configuration**
PG09	08	7.5	¼	AB12-PG09	AB12-PG09-90	RSB12-08	CN09-08	B
				AB16-PG09	–	RSB16-08	CN11-08	B
	10	8.5	5/16	AB12-PG09	AB12-PG09-90	SRN07	CN07	A
	12	10	5/16	AB12-PG09	AB12-PG09-90	SRN09	CN09	A
				AB16-PG09	–	RSB16-12	CN11-12	B
	16	12	⅜	AB16-PG09	–	SRN11	CN11	A
PG11	08	7.5	¼	AB12-PG11	–	RSB12-08	CN09-08	B
				AB16-PG11	AB16-PG11-90	RSB16-08	CN11-08	B
	10	8.5	5/16	AB12-PG11	–	SRN07	CN07	A
	12	10	5/16	AB12-PG11	–	SRN09	CN09	A
				AB16-PG11	AB16-PG11-90	RSB16-12	CN11-12	B
	16	12	⅜	AB16-PG11	AB16-PG11-90	SRN11	CN11	A
PG13	08	7.5	¼	AB12-PG13	–	RSB12-08	CN09-08	B
				AB16-PG13	–	RSB16-08	CN11-08	B
	10	8.5	5/16	AB12-PG13	–	SRN07	CN07	A
	12	10	5/16	AB12-PG13	–	SRN09	CN09	A
				AB16-PG13	–	RSB16-12	CN11-12	B
	16	12	⅜	AB16-PG13	–	SRN11	CN11	A
PG16	08	7.5	¼	AB20-PG16	AB20-PG16-90	RSB20-08	CN16-08	B
	12	10	5/16	AB20-PG16	AB20-PG16-90	RSB20-12	CN16-12	B
	16	12	⅜	AB20-PG16	AB20-PG16-90	RSB20-16	CN16-16-HF	B
	20	17	½	AB20-PG16	AB20-PG16-90	SRN16	CN16	A
PG21	12	10	5/16	AB25-PG21	AB25-PG21-90	RSB28-12	CN21-12	B
	16	12	⅜	AB25-PG21	AB25-PG21-90	RSB28-16	CN21-16	B
	20	17	½	AB25-PG21	AB25-PG21-90	RSB28-20	CN21-20	B
	25	22	¾	AB25-PG21	AB25-PG21-90	SRN21	CN21	A
	28	23	¾	AB25-PG21	AB25-PG21-90	SRN28	CN28-HF	A
PG29	20	17	½	AB32-PG29	AB32-PG29-90	RSB32-20	CN32-20	B
	25	22	¾	AB32-PG29	AB32-PG29-90	RSB32-25	CN32-25	B
	28	23	¾	AB32-PG29	AB32-PG29-90	RSB32-28	CN32-28	B
	32	29	1	AB32-PG29	AB32-PG29-90	SRN29	CN32	A
PG36	40	36	1 ¼	AB40-PG36	–	SRN36	CN36-HF	A
PG48	50	48	1 ½	AB50-PG48	–	SRN48	CN47	A

NOTE: Order fitting bodies, cap nuts, sealing bushes separately.

Configuration diagram

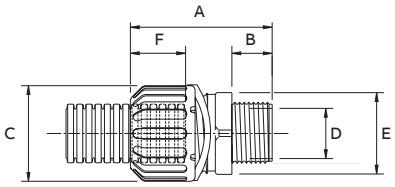


Sealed fittings

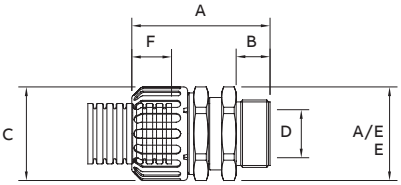
Straight & 90° Elbow threaded fittings (PG versions)

Straight (PG versions)

Straight fitting



Straight swivel fitting

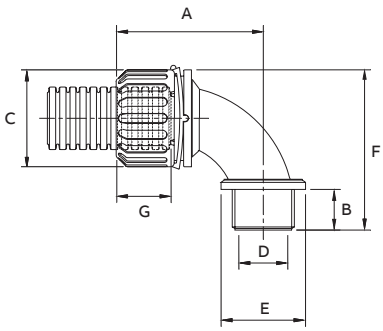


	Nominal dimensions(mm)					
Straight body Part No.	A	B	C	Min bore D	A/F size E	F
AB12-PG09	32.0	10.0	23.0	10.0	22.0	17.0
AB12-PG11	32.0	10.0	23.0	14.0	22.0	17.0
AB12-PG13	32.0	10.0	23.0	16.0	22.0	17.0
AB12-PG09	32.0	10.0	23.0	10.0	22.0	17.0
AB12-PG11	32.0	10.0	23.0	14.0	22.0	17.0
AB12-PG13	32.0	10.0	26.0	16.0	27.0	17.0
AB16-PG09	32.0	10.0	26.0	10.0	27.0	17.0
AB16-PG11	32.0	10.0	26.0	14.0	27.0	17.0
AB16-PG13	32.0	10.0	26.0	16.0	27.0	17.0
AB20-PG16	35.0	11.0	31.0	18.0	30.0	20.0
AB25-PG21	40.0	12.0	39.0	23.0	38.0	21.0
AB25-PG21	40.0	12.0	39.0	23.0	38.0	21.0
AB32-PG29	45.0	12.0	46.0	31.0	46.0	27.0
AB40-PG36	55.0	12.0	58.0	38.0	59.0	35.0
AB50-PG48	55.0	12.0	72.0	50.0	73.0	35.0

NOTE: Dimensions refer to an overall assembly.

90° Elbow (PG versions)

90° elbow fitting



	Nominal dimensions (mm)						
90° Elbow body Part No.	A	B	C	Min bore D	A/F size E	F	G
AB12-PG09-90	46.0	10.0	23.0	11.0	22.0	44.0	17.0
AB12-PG09-90	46.0	10.0	23.0	11.0	22.0	44.0	17.0
AB16-PG11-90	46.0	10.0	26.0	14.0	25.0	46.0	17.0
AB20-PG16-90	46.0	12.0	31.0	15.0	28.0	50.0	20.0
AB25-PG21-90	56.0	12.0	39.0	22.0	36.0	59.0	21.0
AB25-PG21-90	56.0	12.0	39.0	22.0	36.0	59.0	21.0
AB32-PG29-90	66.0	12.0	46.0	29.0	44.0	72.0	27.0

NOTE: Dimensions refer to an overall assembly.

Sealed fittings

Circular UNEF connector

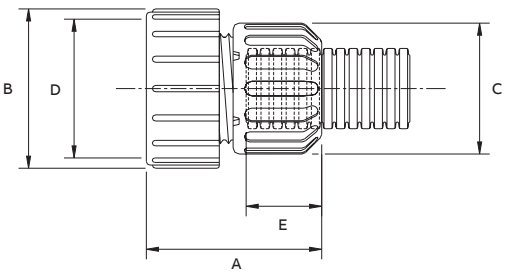
Circular UNEF connector
Straight compression type fittings providing connection between UNEF style circular connections and conduit systems. These fittings are designed for use with all types of unslit Harnessflex conduit, maintaining maximum conduit bore.

Threaded fittings (UNEF versions)

	Conduit size							
UNEF thread	**NC**	**NW**	**US**	**Body**	**Seal**	**Capnut**	**Face seal**	**Configuration**
5/8”-24 UNEF	08	7.5	¼	MPA01	RSB12-08	CN09-08	SWPG07	B
	10	8.5	5/16	MPA01	SRN07	CN07	SWPG07	A
	12	10	5/16	MPA01	SRN09	CN09	SWPG07	A
3/4”-20 UNEF	08	7.5	¼	MPA08	RSB12-08	CN09-08	SWPG09	B
	10	8.5	5/16	MPA08	SRN07	CN07	SWPG09	A
	12	10	5/16	MPA08	SRN09	CN09	SWPG09	A
13/16”-18 UNEF	08	7.5	¼	MPA03	RSB20-08	CN16-08	SWPG16	B
	12	10	5/16	MPA03	RSB20-12	CN16-12	SWPG16	B
	16	12	⅜	MPA03	RSB20-16	CN16-16-HF	SWPG16	B
	20	17	½	MPA03	SRN16	CN16	SWPG16	A
1”-20 UNEF	08	7.5	¼	MPA04	RSB20-08	CN16-08	SWM20	B
	12	10	5/16	MPA04	RSB20-12	CN16-12	SWM20	B
	16	12	⅜	MPA04	RSB20-16	CN16-16-HF	SWM20	B
	20	17	½	MPA04	SRN16	CN16	SWM20	A

NOTE: Order connector interface bodies, cap nuts, sealing bushes and sealing washers separately.

Circular UNEF connector interfaces



	Nominal dimensions (mm)				
Interface body Part No.	**A**	**B**	**C**	**UNEF Thread D**	**E**
MPA01	30.0	24.0	23.0	5/8”-24 UNEF	17.0
MPA03	33.0	36.0	31.0	1”-20 UNEF	20.0
MPA04	32.0	37.0	31.0	13/16”-18 UNEF	20.0
MPA08	30.0	32.0	23.0	3/4”-20 UNEF	17.0

NOTE: Dimensions refer to overall assembly.

Configuration diagram

Sealed fittings

90° Flange

90° Flange

90° Flange

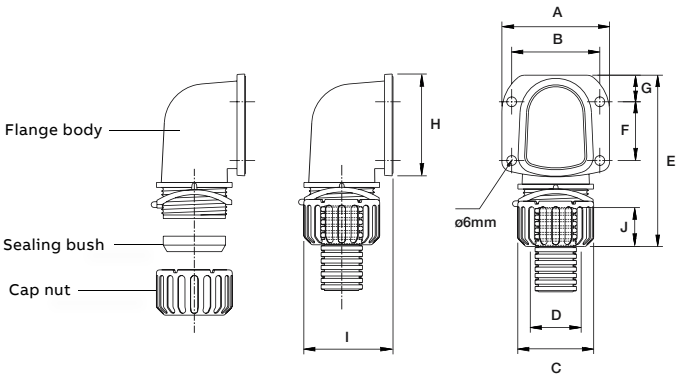
90° elbow compression type fitting providing a 4 hole panel mounting facility. These fittings are designed for use with all types of unslit Harnessflex conduit, maintaining maximum conduit bore.

90° Flange Part No.	Conduit Size NC	NW	US	Seal	Capnut	Configuration
AB32-F90	20	20	½	RSB32-20	CN32-20	B
	25	25	¾	RSB32-25	CN32-25	B
	28	28	¾	RSB32-28	CN32-28	B
	32	32	1	SRN29	CN32	A
AB40-F90	40	40	1 ¼	SRN36	CN36-HF	A
AB50-F90	50	50	1 ½	SRN48	CN47	A

NOTE: Order flange bodies, cap nuts and sealing bushes separately.

Flange body

Flange body Part No.	Nominal dimensions (mm) A	B	C	D	E	F	G	H	I	J
AB32-F90	66.0	54.0	46.0	36.0	95.0	36.0	17.0	63.0	53.0	27.0
AB40-F90	86.0	73.0	63.0	46.0	115.0	30.0	27.0	77.0	64.0	35.0
AB50-F90	86.0	73.0	73.0	59.0	125.0	30.0	30.0	86.0	77.0	35.0



NOTE: Dimensions refer to overall assembly.

Configuration diagram

Sealed fittings

T-Piece, X-piece & Multiway outlet manifolds

T-piece
Symmetrical, 3 junction compression type fittings providing a variety of conduit size configurations.

X-piece
Symmetrical 4 junction compression type fitting providing a variety of conduit size configurations.

Multi-way fitting
Asymmetrical 4 junction compression fitting.

These fittings are designed for use with all types of unslit Harnessflex conduit, maintaining maximum conduit bore.

Manifolds

Conduit size								
NC	**NW**	**US**	**T-Body**	**X-Body**	**TPM-Body**	**Seal**	**Capnut**	**Configuration**
08	7.5	¼	TP12	–	TPM2512	RSB12-08	CN09-08	B
10	8.5	5/16		–		SRN07	CN07	A
12	10	5/16		–		SRN09	CN09	A
08	7.5	¼	TP16	–	–	RSB16-08	CN11-08	B
12	12	5/16		–	–	RSB16-12	CN11-12	B
16	16	5/16		–	–	SRN11	CN11	A
08	08	¼	TP20	XP20	–	RSB20-08	CN16-08	B
12	12	5/16			–	RSB20-12	CN16-12	B
16	16	5/16			–	RSB20-16	CN16-16-HF	B
20	20	½			–	SRN16	CN16	A
12	12	5/16	TP28	–	TPM2512	RSB25-12	CN21-12	B
16	16	5/16		–		RSB25-16	CN21-16	B
20	20	½		–		RSB25-20	CN21-20	B
25	25	¾		–		SRN21	CN21	A
28	28	¾		–		SRN28	CN28-HF	A
20	20	½	TP32	–	–	RSB32-20	CN32-20	B
25	25	¾		–	–	RSB32-25	CN32-25	B
28	28	¾		–	–	RSB32-28	CN32-28	B
32	32	1		–	–	SRN29	CN32	A

NOTE: Order manifold bodies, cap nuts and sealing bushes separately.

Configuration diagram

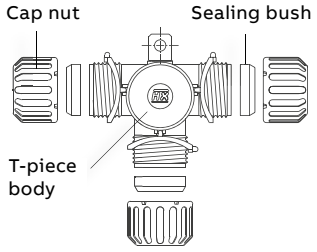
Sealed fittings

T-Piece, X-piece & Multiway outlet manifolds

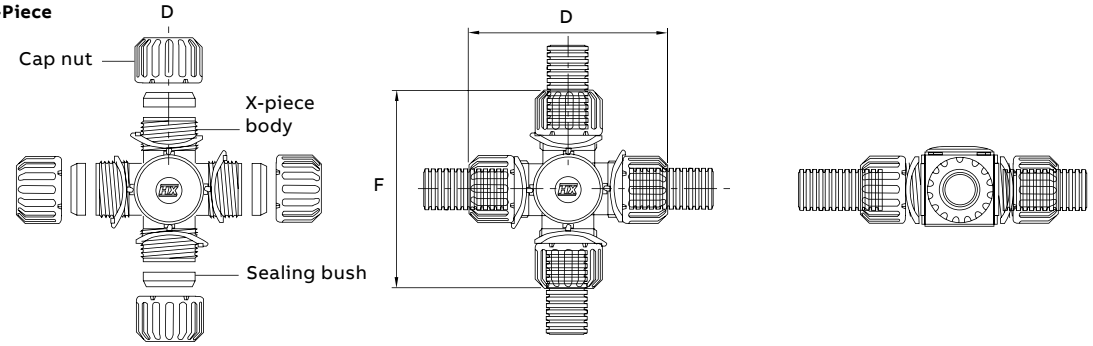
T-piece, X-piece & Mutiway manifolds

Manifold	With bracket Part No.	With no bracket	Nominal dimensions (mm)					
			A	B	C	D	E	F
T-Piece	–	TP12	–	68.0	50.0	39.0	27.0	17.0
	–	TP12	–	68.0	50.0	39.0	27.0	17.0
	–	TP16	–	69.0	51.0	38.0	31.0	17.0
	TPB20	TP20	–	80.0	58.0	43.0	35.0	20.0
	TPB28	TP28	–	95.0	71.0	52.0	43.0	21.0
	TPB28	TP28	–	95.0	71.0	52.0	43.0	21.0
	TPB32	–	–	109.0	84.0	61.0	51.0	27.0
X-Piece	XP20	–	–	80.0	–	80.0	35.0	20.0
Multiway	TPM2512	–	105	74.0	55.0	40.0	21.0	17.0

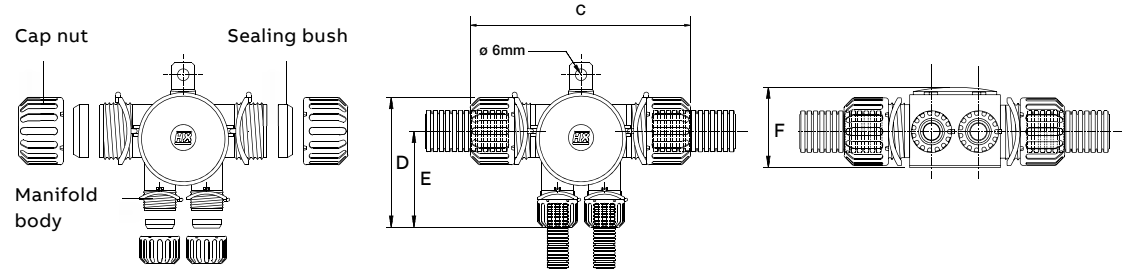
T-Piece



X-Piece



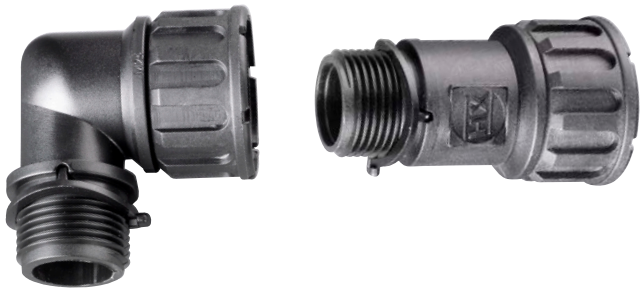
Multiway manifold



NOTE: Dimensions refer to overall assembly.

Sealed fittings

Solenoid connector



Solenoid connector

Screw-thread straight and elbow connectable interfaces for circular solenoids, sensors and switches. These fittings are designed for use with all types of unslit Harnessflex conduit, maintaining maximum conduit bore.

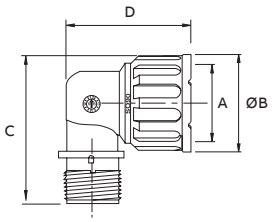
Solenoid connector

Solenoid connector Part No.	Conduit Size NC	NW	US	Body	Seal	Capnut	Configuration
SC-M24-S	08	7.5	¼	SC-M24-90	RSB12-08	CN09-08	B
	10	8.5	5/16	SC-M24-90	SRN07	CN07	A
	12	10	5/16	SC-M24-90	SRN09	CN09	A
SC-M27-S	08	7.5	¼	SC-M27-90	RSB12-08	CN09-08	B
	10	8.5	5/16	SC-M27-90	SRN07	CN07	A
	12	10	5/16	SC-M27-90	SRN09	CN09	A

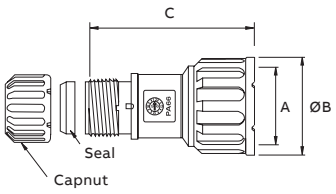
NOTE: Order solenoid bodies, cap nuts and sealing bushes separately.

Solenoid connector interfaces

Elbow fitting Part No.	Thread	Nominal dimensions (mm) A	B	C	D	Nut colour
SC-M24-90	M24 x 1.0mm	31.3	8.5	40.5		Black
SC-M27-90	M27 x 1.0mm	34.0	40.4	0.5		Grey



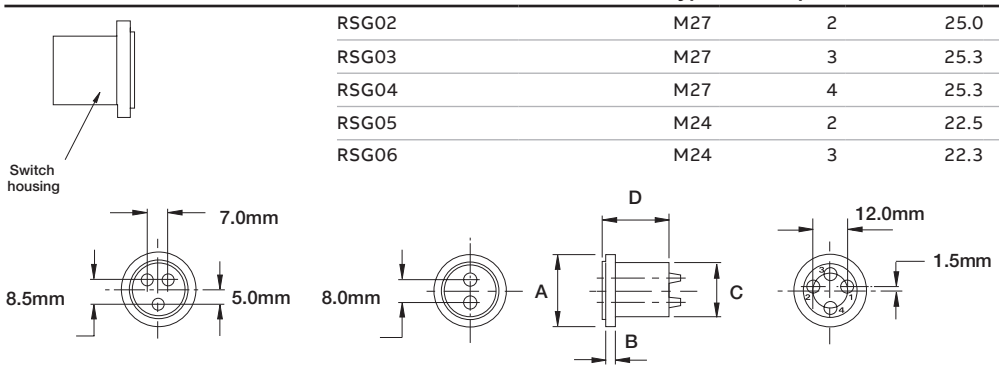
Straight fitting Part No.	Thread	Nominal dimensions (mm) A	B	C	D	Nut colour
SC-M24-S	M24 x 1.0mm	31.0	53.0	–		Black
SC-M27-S	M27 x 1.0mm	34.0	54.0	–		Grey



NOTE: Dimensions refer to overall assembly.

RSG Housing - Sealed fittings

Part No.	Suitable for connector type	Number of pins	Nominal dimensions (mm) A	B	C	D
RSG02	M27	2	25.0	3.5	18.7	23
RSG03	M27	3	25.3	3.5	18.0	21
RSG04	M27	4	25.3	3.5	18.7	23
RSG05	M24	2	22.5	3.5	18.0	23
RSG06	M24	3	22.3	3.5	18.0	21



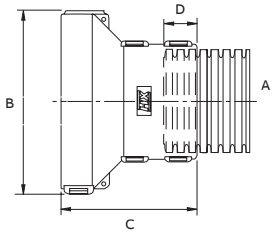
Harnessflex® sealed fittings are designed to protect against high pressure washing, excessive cable strain and mechanical abrasion.

Accessories

In-line circular fitting
One-piece straight fittings providing in-line 'customised' combinations of multiple conduit breakouts. ST break out disk configuration can be made to order, for more details see website for specification and ordering sheet. NC08 outlets can be blanked off using BPST08.

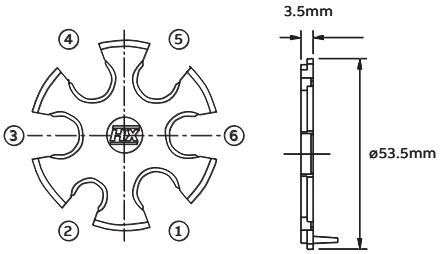
In-line hinged circular fitting

Part No.	Conduit size (A) NC	NW	US	Nominal dimensions B	C	D
CI20-A31	20	17	¾	62	45	12
CI25-A31	25	22	1	62	45	13
CI32-A31	32	29	1	62	45	13



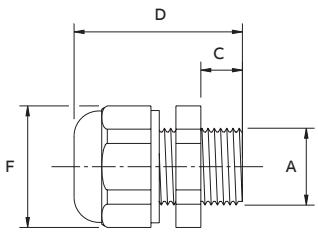
Circular breakout fitting

Part No.	Beakout type 1	2	3	4	5	6
ST31-100	NC08	NC08	NC08	BLANK	NC08	NC08
ST31-101	NC12	NC12	NC08	BLANK	BLANK	NC12
ST31-102	NC08	NC08	NC08	NC08	NC08	NC08
ST31-103	NC12	NC12	NC12	NC12	NC12	NC12

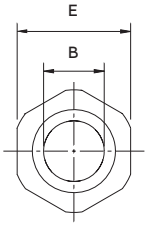


Cable glands - Sealed fittings
Straight compression type cable glands incorporating fixed male threads to provide secure cable connections through knockouts and threaded entries.

Cable glands - Sealed fittings



Metric Part No.	Metric thread A	Cable OD range B (mm)	Nominal dimensions (mm) C	D	E	F
CGS-M16	M16 x 1.5mm	4.0 - 10.0	9	34.5	21	23.5
CGS-M20	M20 x 1.5mm	6.0 - 12.0	10	37.0	24	27.0
CGS-M25	M25 x 1.5mm	13.0 - 18.0	11	40.0	30	33.0
CGS-M32	M32 x 1.5mm	17.0 - 25.0	12	49.0	41	45.5
CGS-M40	M40 x 1.5mm	24.0 - 32.0	13	55.0	50	55.5



PG Part No.	PG thread A	Cable OD range B (mm)	Nominal dimensions (mm) C	D	E	F
CGS-PG07	PG7	2.0 - 6.5	8	31.0	17	19.0
CGS-PG09	PG9	4.0 - 10.0	8	33.5	21	23.5
CGS-PG11	PG11	6.0 - 12.0	8	35.0	24	27.0
CGS-PG13	PG13.5	6.0 - 12.0	9	36.0	24	27.0
CGS-PG16	PG16	10.0 - 14.0	10	38.5	27	30.0
CGS-PG21	PG21	13.0 - 18.0	11	40.0	30	33.0
CGS-PG29	PG29	17.0 - 25.0	11	48.0	41	45.5

ST / STH Fitting accessories

Multi-way reducers

Multi-way reducers
One-piece, multi-way breakout inserts providing reducing options to a variety of conduit sizes from a single fitting junction. These reducers can accommodate all types of Harnessflex slit and unslit conduit and may be used with all Harnessflex fittings.

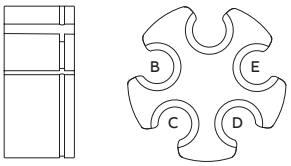
1. Split external design
Unrestricted bore and quick assembly - no tools required.

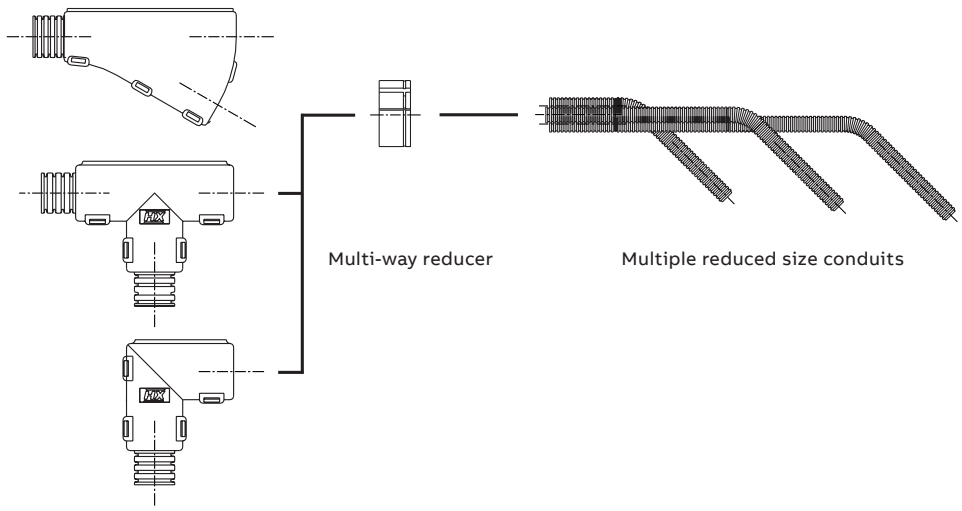
2. Multiple configuration options
Provides the right conduit and outlet position option.

Multi-way reducers

		From conduit size			To conduit size (NC)					To conduit size (NW)				
	Part No.	NC	NW	US	A	B	C	D	E	A	B	C	D	E
	ST20-2x08	20	17	½	08	08	–	–	–	7.5	7.5	–	–	–
	ST20-12	20	17	½	12	–	–	–	–	10	–	–	–	–
	STN25-3x08	25	22	¾	08	08	08	–	–	7.5	7.5	7.5	–	–
	ST25-12	25	22	¾	12	08	–	–	–	10	–	–	–	–
	ST25-1208	25	22	¾	12	08	–	–	–	10	7.5	–	–	–
	ST28-4x08	28	23	¾	08	08	08	08	–	7.5	7.5	7.5	7.5	–
	ST30-4x08	30	26	1	08	08	08	–	–	7.5	7.5	7.5	7.5	–
	ST32-12-4x08	32	29	1	12	08	08	08	08	7.5	7.5	7.5	7.5	7.5

Multi-way reducer configurations
Hinged fittings





Fitting accessories
06 Reducer

06 Reducer
The 06 Reducer has been designed to seat in the conduit outlet of any 08 (NW 7.5) Harnessflex fitting. This enables the use of 06 (NW 4.5) conduit with fittings and makes possible, a full 06 size conduit cable protection system to include conduit, fittings and connector interfaces.

06 Reducer - Part number listings

Part No.	Part No.	90° elbow Part No.	T & Y-Piece Part No.
CI06-AM2	RPS08-06	CI06-90-AM2	TPS060606
CI06-AS1		CI06-90-AS1	YPS060606
CI06-AS2		CI06-90-AS2	
CI06-AT2PL		CI06-90-AT2PL	
CI06-BC2		CI06-90-BC2	
CI06-DE001		CI06-90-DE001	
CI06-DT2		CI06-90-DT2	
CI06-DTX2		CI06-90-DTX2	
CI06-ES2P		CI06-90-ES2P	
CI06-ES2R		CI06-90-ES2R	
CI06-FCI02		CI06-90-FCI02	
CI06-MF2		CI06-90-MF2	
CI06-MMP2		CI06-90-MMP2	
CI06-MP2		CI06-90-MP2	
CI06-PTD2		CI06-90-PTD2	
CI06-SLK28-2		CI06-90-SLK28-2	
CI06-WP2		CI06-90-WP2	
CI06-WS2		CI06-90-WS2	



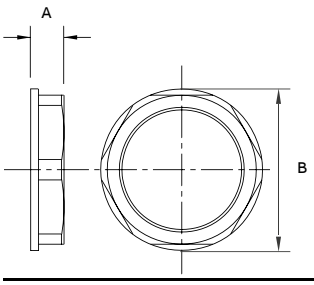



Sealed fitting accessories

Locknuts & Face sealing washers

1. Protects cables from damage during installation
With twin location points to assist fixing to conduit or connector.
2. Internal location lip
Provides internal protection during cable installation.
3. Multiple cable carrying capacity
Provides cable breakout facility in situations where sealing is not required.

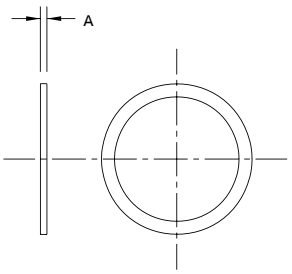
Locknut



Part No.	Thread size	A (mm)	B (A/F) (mm)
LNP-M16	M16 x 1.5mm	7	19
LNP-M20	M20 x 1.5mm	8	23
LNP-M25	M25 x 1.5mm	9	28
LNP-M32	M32 x 1.5mm	9	36
LNP-M40	M40 x 1.5mm	10	46
LNP-M50	M50 x 1.5mm	10	60

Part No.	Colour	Thread size	A (mm)	B (A/F) (mm)
LNP-PG07	●	PG07	5	19
LNP-PG09	●	PG09	5	22
LNP-PG11	●	PG11	5	24
LNP-PG13	●	PG13.5	6	27
LNP-PG16	●	PG16	6	30
LNP-PG21	●	PG21	7	36
LNP-PG29	●	PG29	7	46
LNP-PG36	●	PG36	9	56
LNP-PG48	●	PG48	9	59

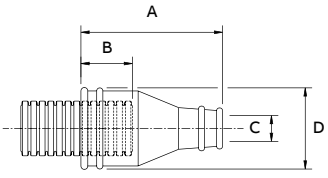
Face sealing washer



Part No.	Thread	A (mm)
SWM16	M16	1.5
SWM20	M20	1.5
SWM25	M25	1.5
SWM32	M32	1.5
SWM40	M40	1.5
SWM50	M50	1.5

Part No.	Thread size	A (mm)
SWPG07	PG07	1.2
SWPG09	PG09	1.2
SWPG11	PG11	1.2
SWPG13	PG13.5	1.2
SWPG16	PG16	1.2
SWPG21	PG21	1.2
SWPG29	PG29	1.2
SWPG36	PG36	1.2
SWPG48	PG48	1.2

End sleeve



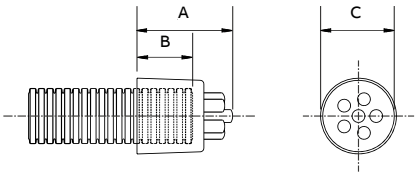
Part No.	From conduit size NC	From conduit size NW	Outlet dia. range (C) (mm)	Nominal dimensions (mm) A	B	D
ESN12	12	10	4 - 8	28	17	19
ESN16	16	13	5 - 9	35	17	23
ESN20	20	17	7 - 14	42	20	28
ESN25	25	22	9 - 17	50	21	31
ESN28	28	23	14 - 22	50	21	34
ESN32	32	29	16 - 32	53	27	40
ESN40	40	36	16 - 30	56	35	50

Sealed fitting accessories

Locknuts & Face sealing washers

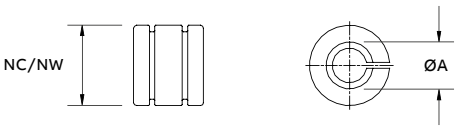
1. Swivel capability
Converts sealed fittings into freely rotating IP40 fittings for dynamic applications.
2. High pull-off strength
Split C ring design sits tightly into conduit corrugations.

End cap



Part No.	From conduit size NC	NW	US	Outlet dia. range (mm)	Nominal dimensions (mm) A	B	C
EK03-08	08	7.5	¼	3	19	13	14
EK03	08	7.5	¼	3	19	13	14
EK05	12	10	5/16	5	22	14	17

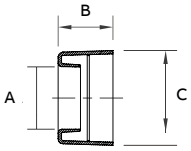
Smooth entry grommet



Part No.	From conduit size NC	NW	US	A (mm)
SEG12	12	10	5/16	8
SEG20	20	17	½	16
GROM08	08	7.5	¼	8
GROM12	12	10	5/16	12

NOTE: Smoothbore. One piece slit insert providing abrasion protection for cables passing through a hinged junction where conduit is not used.

Smooth end cap



Part No.	From conduit size NC	NW	US	Nominal dimensions (mm) A	B	C
CES12	12	10	5/16	8.0	15	16
CES16	16	13	⅜	9.5	15	18
CES20	20	17	½	13.5	18	25
CES28	28	23	¾	20.5	20	32
CES32	32	29	1	25.7	20	38

NOTE: Push in one piece fitting leaving a smooth exit from conduit when fittings not used.

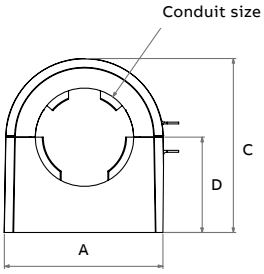
General accessories

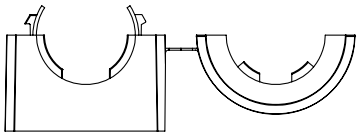
Conduit clip & Metallic P-clip

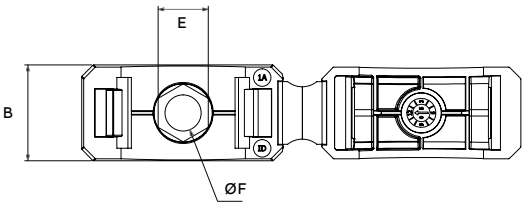
Conduit clip

Conduit clip

One piece non-metallic conduit clips providing secure mounting points for Harnessflex conduit systems. These fittings are designed to snap together over all types of Harnessflex slit and unslit conduit.





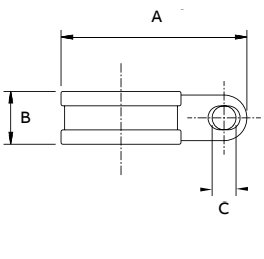


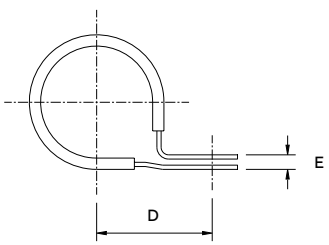
Part No.	Conduit size A (mm) NC	NW	US	Nominal dimensions (mm) A	B	C	D	E	F
HCB08	08	7.5	¼	19.8	11.9	21.2	11.4	5.7	5.1
HCB12	12	10	5/16	21.6	11.9	22.9	12.2	7.4	5.1
HCB16	16	12	⅜	28.6	16.4	28.1	13.6	7.4	5.1
HCB20	20	17	½	34.9	16.7	37.9	20.6	8.7	6.2
HCB28	28	23	¾	39.5	15.5	44.1	24.3	8.7	6.2
HCB32	32	29	1	49.6	16.5	52.3	27.5	8.7	6.2
HCB40	40	36	1 ¼	59.5	16.5	61.6	31.5	8.7	6.2
HCB50	50	48	1 ½	71.9	17.2	73.4	37.5	8.7	6.2

Metallic P-clip

Metallic P-clip

One-piece, metallic P-clips providing secure mounting points for conduit systems within a harness installation. These clips are designed to accomodate all Harnessflex slit and unslit conduits.





Part No.	Conduit size (mm) NC	NW	US	Fixing hole size (mm) A	B	C	D	E
PCS10	10	8.5	5/16	31	13	5	16	1.5
PCS12	12	10	5/16	33	13	5	17	1.5
PCS16	16	13	⅜	36	13	5	19	1.5
PCS20	20	17	½	41	13	5	21	1.5
PCS25	25	22	¾	45	13	5	23	1.5
PCS32	32	29	1	53	13	5	27	1.5

Materials: Galvanised steel with rubberised insert.

General accessories
Cutting tools

HFX Removal Tool
Suitable for all HFX Hinged fitting systems. Safe to use with touch friendly material and anti-slip design. Ergonomic and sustainable.

HFX removal tool

Part no.	Description
HFX-RT	HFX Removal tool

Kwikcut
Kwikcut is the ideal cutting tool for non-metallic conduits (NC, CTPA, HTC, CPC, NCV, HNC & GPA) up to 32mm.

Kwikcut cutting tool

Part no.	Description
HFX-CUT	Kwikcut cutting tool

Harnessflex® conduit systems and accessories perform in the toughest conditions.

Technical section

Storage recommendation for polyamide products

Polyamide is widely and successfully used for products in the electrical and electronics industries. Thanks to its excellent mechanical and physical properties over a wide range of application temperatures and its very good weather resistance, polyamide can be used to make products for interior and external use that meet the most stringent of demands.

As a hydroscopic material, polyamide has the ability to absorb moisture in molecular form into the plastic matrix. As the moisture content goes up, product properties may change slightly. Absorbed water acts as a plasticiser reducing strengths and moduli and increasing the toughness of the polyamide.

Although at room temperature the stiffness and strength of PA6 is more reduced by the moisture uptake than those of PA66, this difference can be considered to be non-significant. PA6 absorbs more water than PA66, especially under high humidity conditions. But the resulting dimensional change is still of a similar order.

Figure 1 shows how the moisture content of polyamides comes into balance with the ambient air in a normal climate of 50% relative humidity and 23°C:

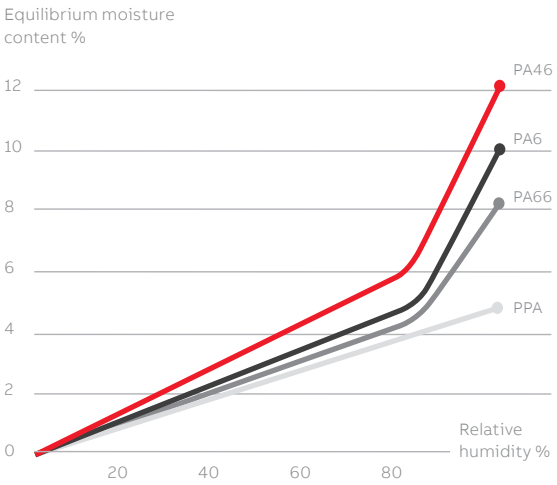
Material	**In air (23°C / 50% rh)**
Polyamide 6	3.0-3.5% by weight
Polyamide 66	2.5-3.0% by weight

To maintain balanced moisture content, Harnessflex recommends storing products under the following conditions:

Storage temp	**Processing temp.**	**Rel. humidity**
18°C to 30°C	>18°C	>30%

At lower processing temperatures and in particular when subjected to unnatural drying, corrugated pipes display increased flexural rigidity.

Figure 1: Moisture content of polyamides



In the very dry winter months the moisture balance may go down slightly as the material releases moisture to the environment (owing to lower relative humidity). Compared to natural outdoor conditions* at around 0°C (40... 80% rh), the humidity in heated rooms may drop by half to below 20% rh if no humidification is present. (Even extremely dry regions such as the Sahara Desert record average humidity of 20% to 60% rh) (*Central European climate).

If products from an outside environment are brought into a heated processing area, the change in climate may suddenly cause temporary de-moisturisation around the edges. After one or two days in the processing area a natural balance will be restored.

Observing this storage recommendation ensures optimum processability and material properties.

Ingress protection

IEC 60529 IP Rating & NEMA 250 / UL50E Enclosures

IP suitability ratings are a system for classifying the degree of protection provided by enclosures of electrical equipment.

Protection against Solid Bodies
Degree of protection for persons against access to hazardous parts inside the enclosure and/or against the ingress of solid foreign objects.

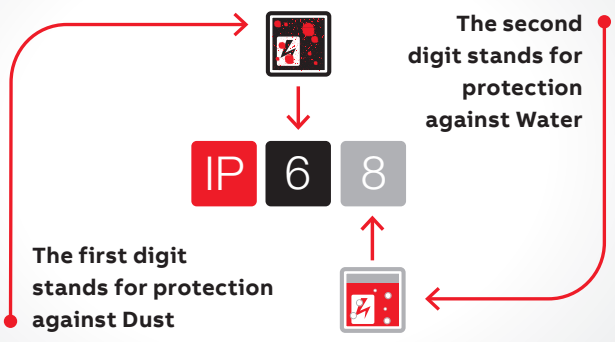
0	No protection
1	Objects greater than 50 mm, accidental touch by hands
2	Objects greater than 12 mm, accidental touch by fingers
3	Objects greater than 2.5 mm, e.g. tools/wires
4	Objects greater than 1 mm, e.g. tools/wires/small wires
5	Protected against dust - limited ingress (no harmful deposits)
6	Totally protected against dust (Dust-tight)

Protection against Water
Degree of protection of equipment inside enclosures against damage from the ingress of water.

0	No protection
1	Protected against vertically falling drops of water
2	Protected against direct sprays of water 15° from vertical
3	Protected against sprays of water to 60° from vertical
4	Protected against water sprayed from all directions - limited ingress permitted
5	Protected against low pressure jets of water from all directions - limited ingress permitted
6	Protected against strong pressure jets of water, heavy seas - limited ingress permitted
7	Protection against the effects of immersion between 15cm - 1 m
8	Protection against long periods of immersion under a quoted pressure, e.g. 2 bar at 24 hours
9	IP69 Automotive standard DIN40050 and signifies resistance to high pressure jets of water (up to 80bar) from any angle

IP Ratings

The higher the number, the greater the degree of protection; they apply ONLY to properly installed equipment.



Technical section

Nylon (PA) 6

Nylon (PA) 6 - Material data sheet

Properties	Test method	Value	Unit
General			
Density	ISO 1183	1.13	g/cm^3
Melting point	ISO 11357-1/-3	220	°C
Mechanical			
Tensile strength	ISO 527	55 (con)	MPa
Elongation at break	ISO 527	>50 (con)	%
Youngs modulus	ISO 527	3100 (Dry)	MPa
Charpy impact strength	ISO 179	DNB (Dry)	kJ/m^2
Charpy notched impact strength	–	11 (Dry)	kJ/m^2
IZOD impact strength	ISO 180C	DNB (Dry)	kJ/m^2
IZOD notched impact strength	ISO 180A	4 (Dry)	kJ/m^2
Thermal			
Heat distortion temperature-A	ISO 75	100	°C
Heat distortion temperature-B	ISO 75	>200	°C
Flammability			
Flammability	UL94	HB	N/A
Electrical			
Dielectric strength	IEC 243	14 (Dry)	MV/m
Surface resistivity	IEC 93	15 (Dry)	log10Ω
Volume resistivity	IEC 93	15 (Dry)	log10Ω
Comparative tracking index	IEC 112	>600	V

Used on: All Harnessflex NC and CTPA nylon conduits.
NOTE: All tests undertaken at 23°C where applicable.

Notes

- DNB = Did not break
- Dry = Dry as moulded
- Con = Conditioned 168hrs @ 23°C, 50% RH

Chemical resistance

Nylon 6 Harnessflex conduits are resistant to all underbonnet oils, greases, fuels, cleaning fluids and synthetic fluids. Like all Nylons they are resistant to weak acids but not resistant to strong or oxidizing acids.

Technical section

Nylon (PA) 66 - Heat stabilised

Nylon (PA) 66 - Heat Stabilised - Material data sheet

Properties		Test method	Value	Unit
General				
Density		ISO 1183	1.14	g/cm^3
Melting point		ISO 1218	263	°C
Mechanical				
Tensile strength		ISO 527	95 (Dry)	MPa
Elongation at break		ISO 527	23 (Dry)	%
Youngs modulus		ISO 527	3400 (Dry)	MPa
Flexural modulus		ISO 178	2850 (Dry)	MPa
Charpy impact strength		ISO 179	DNB (Dry)	kJ/m^2
Charpy notched impact strength		–	6 (Dry)	kJ/m^2
IZOD impact strength		ISO 180C	DNB (Dry)	kJ/m^2
IZOD notched impact strength		ISO 180A	5 (Dry)	kJ/m^2
Thermal				
Heat distortion temperature-A	@1.8Mpa	ISO 75-2	85	°C
Heat distortion temperature-B	@ 0.45MPa	ISO 75-2	230	°C
Flammability				
Flammability		ISO 527	95 (Dry)	MPa
Glow wire flammability	@ 1.5mm	IEC 695-2-1/2	850 (Con)	°C
Electrical				
Dielectric strength		IEC 243	60 (Dry)	MV/m
Surface resistivity		IEC 60093	1E+15	Ω
Volume resistivity		IEC 60093	1E+15	Ω.cm
Comparative tracking index		IEC 60112	600	V

All Harnessflex un-reinforced nylon fittings.
NOTE: All tests undertaken at 23°C where applicable.

Technical section

Nylon (PA) 66 - 30% Glass fibre filled

Nylon (PA) 66 - 30% Glass Fibre Filled - Material data sheet

Properties		Test method	Value	Unit
General				
Density		ISO 1183	1.36	g/cm^3
Moisture absorption (1)		Sim to ISO 62	1.6	%
Mechanical (2)				
Tensile stress at yield/break (3)		ISO 527	195	N/mm^2
Elongation at break ISO 527 3% Modulus of elasticity (4)		ISO 527	10000	N/mm^2
IZOD notched impact strength	– @ +23°C – @ -30°C 10 kJ/m^2	ISO 180/1A	13	kJ/m^2
Thermal				
Heat deflection temperature (HDT)		ISO 75/A	250	°C
Ball pressure test		IEC 60695-10-2	> 200	°C
Flammability				
Flammability (1.6mm thickness)		UL94	HB	
Oxygen index		ISO4589	24	%
Glow wire test extinguishing time (5)		IEC60695-2-1/1	<15	s
Hot wire ignition (HWI) (1.5mm thickness)		IEC60695-2-20	>15	s
High current arc ignition (HAI) (0.7mm thickness)		IEC60947	>120	No of arcs
Electrical (2)				
Dielectric strength		IEC 60243-1	>30	kV/mm
Specific surface resistivity		IEC 60093	10^{15}	Ω
Specific volume resistivity		IEC 60093	10^{15}	Ω.cm
Dielectric constant	– @ 100Hz – @ 1MHz	IEC60250	3.8 3.5	
Dissipation factor	– @ 100Hz – @ 1MHz	IEC60250	90 160	x10^{-4} x10^{-4}
Comparative tracking index		IEC 60112	600	V
168h/100°C ref fuel B		–	+91	%

Used on: SC-M27 and SC-M24 Swivel nuts.
NOTE: All tests undertaken at 23°C where applicable.
(1) Moisture absorption, saturation at +23°C and 50% RH (ref. DIN53495).
(2) Dry as moulded.
(3) Test speed 5mm/min.
(4) Test speed 1mm/min.
(5) Glow wire applied during 30secs, temperature 750°C, thickness 1.6mm.

Notes

- DNB = Did not break
- Dry = Dry as moulded
- Con = Conditioned 168hrs @ 23°C, 50% RH

Chemical resistance

Polyamide (Nylon) 66 Harnessflex fittings are resistant to all underbonnet oils, greases, fuels, cleaning and synthetic fluids. Like all Nylons they are resistant to weak acids but not resistant to strong or oxidizing acids.

Technical section

Polyamide 46 (Nylon)

Polyamide 46 (Nylon) – Heat and UV stabilised, Lubricated Used on: All Harnessflex TempGuard fittings.

Properties	Test method	Value	Unit
General			
Density	ISO 1183	1140	kg/m3
Melting Point	ISO 11357	295	YC
Mechanical	**Dry/cond**		
Yield Stress	ISO 527-1/-2	100 / 55	MPa
Yield Stress (120°C)	ISO 527-1/-2	50	MPa
Yield Stress (160°C)	ISO 527-1/-2	40	MPa
Yield Stress (180°C)	ISO 527-1/-2	35	MPa
Yield Stress (200°C)	ISO 527-1/-2	30	MPa
Nominal strain at break	ISO 527-1/-2	40 / >50	%
Nominal strain at break (120°C)	ISO 527-1/-2	>50	%
Nominal strain at break (160°C)	ISO 527-1/-2	>50	%
Nominal strain at break (180°C)	ISO 527-1/-2	>50	%
Nominal strain at break (200°C)	ISO 527-1/-2	>50	%
Tensile Modulus	ISO 527-1/-2	3300 / 1000	MPa
Tensile Modulus (120°C)	ISO 527-1/-2	800	MPa
Tensile Modulus (160°C)	ISO 527-1/-2	650	MPa
Tensile Modulus (180°C)	ISO 527-1/-2	600	MPa
Tensile Modulus (200°C)	ISO 527-1/-2	500	MPa
Flexural Modulus	ISO 178	300 / 900	MPa
Flexural Modulus (120°C)	ISO 178	800	MPa
Flexural Modulus (160°C)	ISO 178	600	MPa
Charpy impact strength (+23°C)	ISO 179/1eU	DNB / DNB	MPa
Charpy impact strength (-30°C)	ISO 179/1eU	DNB / DNB	MPa
Charpy notched impact strength (+23°C)	ISO 179/1eA	10 / 35	kJ/m2
Charpy notched impact strength (-30°C)	ISO 179/1eA	4 / 4	kJ/m2
Izod notched impact strength (+23°C)	ISO 180/1A	10 / 35	kJ/m2
Izod notched impact strength (-30°C)	ISO 180/1A	4 / 4	kJ/m2
Thermal			
Temp of deflection under load (1.80 Mpa)	ISO 75-1/-2	190	°C
Temp of deflection under load (0.45 Mpa)	ISO 75-1/-2	280	°C
Flammability			
Flammability (@1.5mm)	IEC60695-11-10	V2	N/A
Flammability (@0.75mm)	IEC60695-11-10	V2	N/A
Electrical			
Dielectric strength	IEC 60243-1	25 / 25	kV/mm
Volume Resistivity	IEC 60093	1^{13} / 1^{7}	Ω*m
Comparative Tracking Index	IEC 60112	400	V
Relative permittivity (100Hz)	IEC60250	3.9 / 22	-
Relative permittivity (1MHz)	IEC60250	3.6 / 4.5	-

NOTE:
DNB = Did not break.
dry = Dry as moulded.
cond = Conditioned 168hrs @ 23°C, 50 % RH.
All tests undertaken at 23°C where applicable.
Information source see page 77*.

Chemical resistance

PA46 Harnessflex TempGuard fittings are resistant to all under bonnet oils, greases, fuels, cleaning fluids and synthetic fluids. Like all Nylons they are resistant to weak acids but not resistant tostrong or oxidizing acids.

Product Temperature Range @1.5mm material thickness:

Minimum -40°C
Maximum Permanent 30,000+ hours +160°C
Maximum short term 3,000 hours +200°C

Mechanical Protection	High
UV Resistance	High
Abrasion resistance	High

Low smoke toxicity and halogen free
Self-Extinguishing

Technical section

Co-Polyester-ester

Co-Polyester-ester – Flame Retardant (halogen free), heat and UV stabilised. Used on: Harnessflex HTC conduits.

Properties	Test method	Value	Unit
General			
Density	ISO 1183	1320	kg/m3
Melting Point	ISO 11357	208	°C
Mechanical	**Dry/cond**		
Stress at break	ISO 527-1/-2	20.5	MPa
Nominal Strain at break	ISO 527-1/-2	250	%
Tensile Modulus	ISO 527-1/-2	540	MPa
Izod notched impact strength (+23°C)	ISO 179/1eU	11	kJ/m2
Izod notched impact strength (-30°C)	ISO 179/1eU	3.2	kJ/m2
Charpy notched impact strength (+23°C)	ISO 179/1eA	11	kJ/m2
Charpy notched impact strength (-30°C)	ISO 179/1eA	3	kJ/m2
Flammability			
Flammability (@1.5mm)	FMVSS302	0	mm/min
Flammability (@0.75mm)	IEC60695-11-10	V-2	N/A
Electrical			
Dielectric strength	IEC 60243-1	18.7	kV/mm
Volume Resistivity	IEC 60093	$>1E^{13}$	Ω*m
Comparative Tracking Index	IEC 60112	600	V
Relative permittivity (100Hz)	IEC60250	4.2	-
Relative permittivity (1MHz)	IEC60250	3.7	-
Dissipation factor (100Hz)	IEC60250	157	E-4
Dissipation factor (1MHz)	IEC60250	385	E-4

NOTE: All tests undertaken at 23°C where applicable.
* Information Source - Polymer supplier published information.

Chemical resistance
Co-Polyester Harnessflex conduits are resistant to under bonnet oils, greases, fuels, cleaning fluids and acids. They are not resistant to transformer oils or brake fluids (DOT 3/4)

Product Temperature Range @1.5mm material thickness:
Minimum Static 30,000 hours -50°C
Minimum dynamic 5000 operations -45°C
Maximum static long term 30,000 hours +175°C
Maximum short term 3,000 hours +190°C

Technical section

Polyamide 12 (Nylon)

Polyamide 12 (Nylon) – Plasticized, impact modified, heat and UV stabilised. Used on: All Harnessflex unreinforced nylon fittings.

Properties	Test method	Value	Unit
General			
Density	ISO 1183	1.030	kg/m3
Melting Point	ISO 11357	173	°C
Mechanical	**Dry/cond**		
Yield Stress	ISO 527-1/-2	25	MPa
Yield Strain	ISO 527-1/-2	20	%
Charpy impact strength (+23°C)	ISO 527-1/-2	400	MPa
Charpy impact strength (-30°C)	ISO 179/1eU	DNB	kJ/m2
Charpy notched impact strength (+23°C)	ISO 179/1eU	DNB	kJ/m2
Charpy notched impact strength (-30°C)	ISO 179/1eA	DNB	kJ/m2
Thermal			
Temp of deflection under load (1.80 Mpa)	ISO 75-1/-2	45	°C
Temp of deflection under load (0.45 Mpa) ISO 75-1/-2	ISO 75-1/-2	95	°C
Flammability			
Flammability (@0.8mm)	IEC60695-11-10	HB	N/A
Electrical			
Dielectric strength	IEC 60243-1	32	kV/mm
Surface Resistivity	IEC 60093	1E11	Ω
Volume Resistivity	IEC 60093	1E11	Ω*m
Comparative Tracking Index	IEC 60112	600	V

NOTE:
DNB = Did not break
dry = Dry as moulded
cond = Conditioned 168hrs @ 23°C, 50 % RH
All tests undertaken at 23°C where applicable.
* Information Source - Polymer supplier published information.
The data given is typical data and does not represent minimum values. Variations within normal tolerances are possible for different colours.

Chemical resistance
PA12 Harnessflex conduits are resistant to all under bonnet oils, greases, fuels, cleaning fluids and synthetic fluids. Like all Nylons they are resistant to weak /medium acids but not resistant to strong or oxidizing acids.

Product Temperature Range @1.5mm material thickness:
Minimum Static 30,000 hours -50°C
Minimum dynamic 5000 operations -45°C
Maximum static long term 30,000 hours +105°C
Maximum short term 3,000 hours +120°C

Technical section

Thermoplastic elastometer TPV

SRN

SWM

SEG

ESN

EK

Thermoplastic Elastometer TPV - Material data sheet

Properties	Test method	Value	Unit
General			
Density	ISO 1183	0.96	g/cm³
Hardness shore A (5 sec)	ISO 868	56	–
Brittleness temperature	ISO 812	-62	°C
Flammability	UL94	HB	–
Stress/strain properties	ISO 37 (II)	–	–
Flow Direction			
Tensile strength	–	3.8	MPa
Modulus 100%	–	2.7	MPa
Elongation at break cross direction	–	280	%
Tensile strength	–	5.1	MPa
Modulus 100%	–	1.9	MPa
Elongation at break	–	470	%
Tear Strength (cross direction)			
Trouser	ISO 34 A	7	kN/m
Un-nicked angle	ISO 34 B (a)	22	kN/m
Compression set	ISO 815	–	–
72h/23°C	–	22	%
72h/70°C	–	26	%
72h/100°C	–	34	%
Hot Air Ageing			
1000h/125°C - Change in hardness	–	2	pts
Retention tensile strength	–	90	%
Retention - elongation at break	–	96	%
336h/150°C - Change in hardness	–	0	pts
Retention tensile strength	–	90	%
Retention elongation at break	–	87	%
Volume Swell			
72h/100°C water	–	+3	%
168h/100°C ASTM oil 1	–	+43	%
168h/100°C ref fuel B	–	+91	%

Used on: Sealing products.
A polypropylene based elastomer designed primarily for demanding automotive applications.
This material exhibits excellent compression set, flex fatigue and high and low temperature performance.
NOTE: Tests are conducted on injection moulded plaques. All tests undertaken at 23°C where applicable.

Chemical resistance

TPV fittings are resistant to: Water, acids, ethanol, glycerol, methanol and propanol, hydraulic brake fluid and antifreeze. Large volume swell (>60%) is experienced with certain oils and fuels.

Approvals

Individual parts are approved to different standards including NFR 13-903. Others are manufacturer specific or are new developments and may not be approved to certain standards. Please contact the technical office for specific enquiries.

Harnessflex® products are intensively tested under the most extreme conditions, we can guarantee the durability of the systems we provide.

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Additional information
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