

FLEXICON

FLEXIBLE CONDUIT SOLUTIONS

A PART OF **atkore**
INTERNATIONAL

Cable Protection for Hazardous Areas

THE POWER IN CABLE PROTECTION



2nd
edition




WWW.FLEXICON.UK.COM



Group Intro

Flexicon are focused on bringing customers the latest solutions and technologies for Cable Protection. We design, develop and manufacture flexible conduit systems from our headquarters in Birmingham, UK therefore you can be assured of our quality and engineering excellence.



At the forefront of material technologies and industrial design, our Engineering and Manufacturing teams deliver reliable solutions that work for the long term.

We drive innovation, developing tomorrow's solution for today.



Our design, testing and prototyping facility enables us to understand, interpret and respond to customer requirements quickly and easily. We use the latest design software & technology to create models and 3D prototypes to establish technical solutions.

Now as part of Atkore International our capability has been strengthened. We continue to invest in the development of our range.

With onsite manufacturing, we can respond quickly and fine tune our service levels to meet our customer requirements.

Flexicon's range of non-metallic and metallic products help to protect cables from end to end, in many diverse markets, from Construction, Rail & Transportation, Utilities, Machinery & Automation / OEM's and Hazardous Areas to Food Processing and Pharmaceutical.



Cable Protection Specialists

Flexicon are focused on bringing customers the latest solutions and technologies to solve their Cable Protection requirements.



Our knowledge, skills and expertise allows us to offer the ultimate solutions for technically demanding applications. We have been protecting performance and safety critical power and data cabling installations for many years across the world.

“We specialise in protecting your Cables from hazards now and for the future”

Quality Assurance, Testing & Manufacturing



We take testing seriously. Don't just take our word for it.

Flexicon have invested in and committed to extensive independent testing for our Products combined with Quality Audits for our Manufacturing Processes, giving you the confidence that our systems do what we say they do.

Certifications and quality approvals we have:



We extensively test our products to ensure that our product performance is as you would expect from a leading British Manufacturer. We understand the importance and potential consequences of product failure therefore we test our products far beyond the performance requirements of the certifications and approvals we have.

Other product testing



- Vibration and Shock Testing to EN 61373 Cat 2



- UV testing to UL 1660, 1,000 hour xenon arc
- Extended UV testing, 21,000 hour xenon arc



- 1,000 hours salt spray testing for corrosion



- Fire performance testing including flammability, smoke, toxicity, halogen content and fire load - see Page 36



- Electrical insulation testing to EN 61386 and ASTM D 495 and 3638



- Direct lightning strike of conduit and fixed fittings



- Low temperature impact testing



- EMC screening performance



- Anti-static testing



- Food contact testing to EU 10 2011

Why use flexible conduit?

What would happen if your Cabling failed? In today's modern world there is an underlying trend towards more intelligent and automated systems driven by safety, efficiency and functionality. Flexible Conduit is the ideal solution to protect People, Property and Processes for Hazardous Area applications.

Understanding all the hazards?

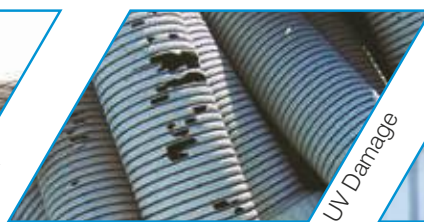
Risks and hazards to cabling can vary significantly based on application, operating environments and conditions, hence one system does not necessarily suit all.

We understand the performance properties of our products & solutions and can minimise your risk. We offer application guidance and expert advice whatever your challenges.

Incorrect Specification could lead to critical failures for your Cabling and Installation.



Don't take chances when it comes to your Cable Protection...



"whatever your application, we've got it covered..."

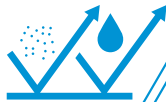
Potential Hazards to consider

When it comes to protecting Safety and Performance Critical Cabling, some of the potential hazards to consider are;



Ingress Protection

- Penetration of solid objects, dust, liquid or steam



Explosive Gases / Dust

- Substance that can be made to explode



Impact

- Sharp or blunt forces which could cause damage



Chemical resistance

- Reaction to different compounds or substances



Crush / Compression

- Forces applied to cause deformation



Vibration and Shock

- Shaking or sudden movement



Temperature

- Intensity of heat present - high or low. Rapid changes of temperature



UV

- Resistance to Ultra Violet Radiation



Fire

- Destructive burning, smoke and toxicity



Fatigue Life

- Weakness caused by repeated variations of stress or continuous and repeated movement



Corrosion

- Damage caused to materials based on chemical reaction



Micro-organisms & Bacteria

- Danger from build up of bacteria, virus and fungus



Lightning Strike

- Damaged caused by natural electrical discharge



Static charge

- Build up on objects that cannot conduct a current



EMC

- Electromagnetic Compatibility



Condensation

- Water which collects as droplets on a cold surface



Abrasion

- Process of scraping or wearing something away



Theft & Vandalism

- Stealing, unauthorised removal or deliberate damage



Tensile Strength

- Resistance to conduit being pulled from the fitting



Grazing animals / Vermin or pests

- Livestock
- Sharpening of teeth and searching for food



Benefits of using flexible conduit

Providing an inherent mechanical barrier for cabling, Flexible Conduit offers more than just protection for Cables and Installations. It allows users and specifiers to do things differently, challenging traditional installation practices and offers unrivalled product performance.

Flexible Conduit vs Cable Glands

Flexible Conduit Advantages:

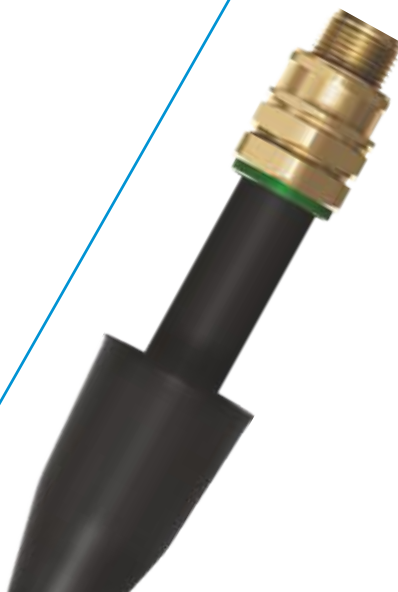
- Ability to group multiple cables in one system meaning less terminations
- Reduced physical glanding space required for termination of cables
- Reduced risk of system failure due to fewer points of entry
- Ability to replace faulty cables without replacing entire System
- Ability to upgrade and add circuits with ease
- Fitting does not have to compress the cable to ensure sealing
- Ability to retrofit with ease
- Suitable for use with multiple cable types
- Quicker to install
- Conduit fittings offering strain relief available
- No need for specialist cables



Flexible Conduit vs Armoured Cables

Flexible Conduit Advantages:

- Simple Cutting - easier assembly
- Ability to combine multiple cable types in one system using off the shelf products
- Ability to make quick changes / upgrades to circuits within existing system
- Easy routing of cables with different bend radius
- Ability to replace faulty cables without replacing entire system
- Suitable for Static and / or Dynamic Applications
- Ability to be retrofitted
- Swivel thread fittings available to ease Installation
- Mechanical protection provided by the Conduit - no need for specialist cables
- Easier termination of glands



Hazardous Area Applications

System integrity and safety are critical for these technically and physically demanding environments.



Using flexible conduit allows multiple cables to share the same space and hence reduce the number of entry points required into the control box and termination area.



- Simplified Termination



- Reduce installation times



- Cable is mechanically protected



- No need for specialist cables



- Can provide EMC screening



- Flameproof integrity



- Future proofing – easier to upgrade



Combining our flexible conduit system with our Flameproof EXD glands, Contractors and Operators can ensure they mechanically protect their cabling installation without compromising on safety to protect people and assets.

Our standard products facilitate specifiers, installers and operators to create tailored solutions, using off the shelf products, thus minimising any lead times.

Flexible conduit from Flexicon can:

- Enhance Safety and System Integrity
- Extend service life
- Offer Corrosion Resistance (harshest environments)
- Minimise downtime
- Reduce installation time
- Reduce cost and weight





Hazardous Area Products

We offer standard products, which facilitate tailored solutions, that are available off the shelf thus minimising lead times and downtimes.

Routing of cables, both power and / or data, in hazardous areas, can be a complex task requiring detailed planning.

Our range offers a choice of sixteen different conduits, depending on the operating environment and technical challenges faced, suitable for use with our Ex d, Ex e and Ex t fittings.

Presence of Gases & Vapours

- Upstream, Midstream and Downstream
- Refineries
- Chemical plants
- Loading and unloading areas in terminals
- Storage areas for tanks

Presence of Dust

- Mills
- Silos
- Combustion Plants
- Dust extraction
- Polymer Production
- Paint Shops

Oil & Gas Requirements



Upstream relates to Exploration and Production (E&P) typically consisting of drilling rigs and production platforms. Continuously exposed to the elements, products need to withstand potentially harsh weather and marine environments. Corrosion resistance, Ingress Protection and Chemical resistance are also key selection requirements.

Midstream relates to the processing, storage and transportation to the refining plants and operations. These operations require sophisticated equipment to process, measure and move the various commodities. Chemical resistance, Ingress Protection, ambient temperature performance are key selection requirements.

Downstream relates to Refining and Marketing (R&M) which includes oil refineries and petrochemical plants. Ambient temperature performance, Ingress Protection and Chemical resistance are key selection requirements.

Food & Beverage Requirements



Storage, transportation and processing often involve the presence of dust or vapours with the potential risk of explosion. Safety, hygiene and efficiency are all of paramount importance for Food & Beverage processing. Ambient temperatures, Ingress Protection & Corrosion are all performance considerations as well as ease of wash down and anti-microbial performance.



Petrochemical

Steel - Aluminium

Coal

Food & Beverage



Other Industrial Applications with potential risks of explosion



- Paint Shops
- Combustion plants
- Utilities - Water treatment plants
- Textiles
- Wood Working

Typical Applications

- | | | |
|-------------------------------|------------|-----------------------------|
| • Skids | • Motors | • Control & Instrumentation |
| • Control Boxes | • Lighting | • Detection & Measurement |
| • MCC (Motor Control Centres) | • CCTV | |

Local Support & Guidance

- Product applications and suitability
 - Experts advice on how to protect vulnerable cables in safety and performance critical installations
 - Flexicon are represented on EXL/31/(T/S UK Committee and international IEC.TC31) Technical Committees. Can offer guidance on applications and installations.
- Product support offered to;
- | | | |
|-------------|---------------|---------|
| - End Users | - EPC's | - OEM's |
| - Operators | - Consultants | |



Plastics



Chemicals & Pharma



OEM Machinery



Textiles

Hazardous Areas

Introduction

Hazardous Areas exist where a flammable mixture of gas and air, or dust and air, can exist in large enough quantities and for long enough periods to create a risk of explosion if an ignition source is present. Wherever possible it is important to minimise the risk of explosive mixtures forming and / or the risk of ignition. In the instances where this is impossible or impractical then means of providing a level of protection are required.

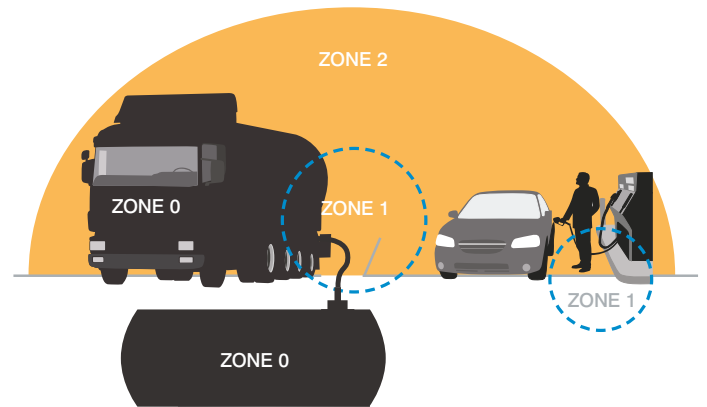
This guide will briefly explain how people and plant can be protected in hazardous areas. The guide is particularly focused towards applications for the Flexicon EXD Barrier cable gland and is not intended to be a full guide to hazardous areas. Users of this cable gland should be fully qualified, competent and conversant with hazardous area requirements.

Flammable Mixtures & Ignition Sources

Flammable gases when mixed with air can be explosive. Gases are categorised into 3 groups with Group A being the least explosive and Group C being the most explosive. Equipment can be classified from T1 to T6 according to maximum surface temperature of the equipment to prevent ignition of the gas/air mixture it is designed to work in.

Certain fine dusts dispersed in air can also be explosive.

Ignition sources include: sparking due to static discharge, electrical arcs, lightning, hot engine exhaust, hot equipment and heat from chemical reactions.



Hazardous Area Zones - Gas

The level of risk in hazardous areas is defined by a zoning system.



Zone 0

A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is present continuously or for long periods or frequently.



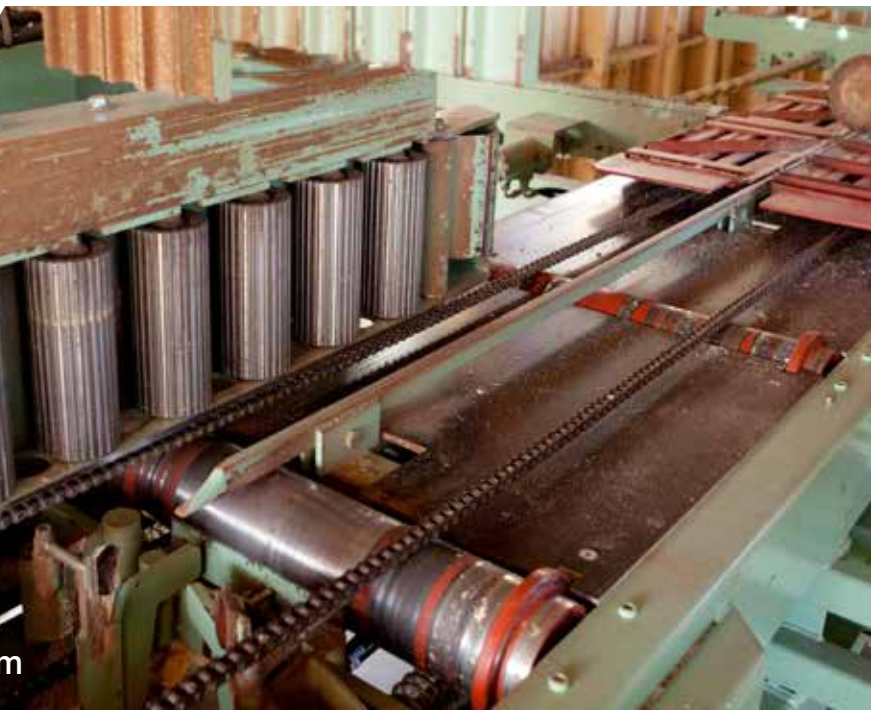
Zone 1

A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.



Zone 2

A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.





Combustible Dust Hazards

IEC 60079-31 - Electrical apparatus for use in the presence of combustible dust.



Zone 20

A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, or for long periods or frequently.



Zone 21

A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur in normal operation occasionally.



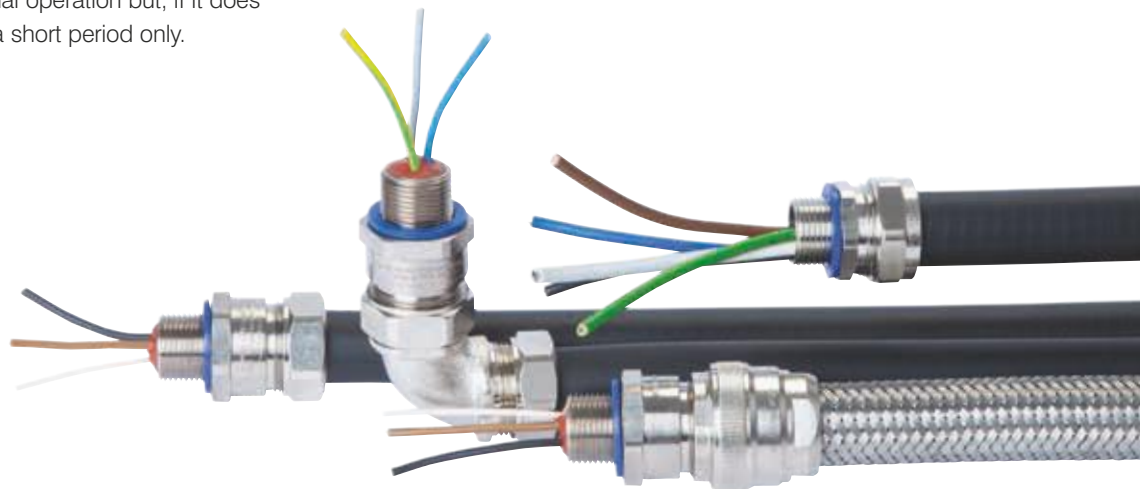
Zone 22

A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

Anti-Static Applications

Clause 7.4 of EN60079-0 refers to the avoidance of a build-up of electrostatic charge on Group I or Group II electrical equipment. Electrical equipment shall be so designed that under normal conditions of use, maintenance and cleaning, danger of ignition due to electrostatic charges shall be avoided. This requirement is satisfied by suitable selection of the material so that surface resistance complies with either of the limits given below when measured in accordance with 26.13;

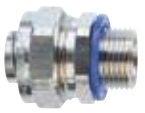








10^9 measured at (50 ± 5) % relative humidity; or
 10^{11} measured at (30 ± 5) % relative humidity.



Metallic conduit selection guide

Conduit System		LTP	LTPAS	LTPHC	LTPLFH	LTPUL	LTPPU	LTPPUAS	LTPSS	LTBRDP	LTBRDLFH	LTPBRD	LTP-FG	LTBRDP-FG	LTPSS-FG	FSS	FSSBRD
IP Rating	IP66	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	IP67	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	IP68	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	IP69	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●
Compression Strength (kg/100mm)		400	400	400	400	500	400	400	400	400	400	400	400	400	400	1000	1000
Pull Off Strength (kg) for 20mm size		130	130	130	130	160	130	130	130	130	130	350	130	130	130	100	150
Min Bend Radius (mm) for 20mm size		65	65	65	100	90	65	65	65	65	130	65	65	65	65	45	60
Colours		black, grey, orange	black, grey, orange	black	black	black	black, blue	black	black	black	black	stainless steel	white, blue	white, blue	blue	stainless steel, black	stainless steel
High Fatigue Life							●	●									
Temp	Max	105°C	105°C	150°C	90°C	75°C	100°C	100°C	105°C	105°C	90°C	150°C	105°C	105°C	105°C	400°C	400°C
	Min	-20°C	-20°C	-60°C	-25°C	-15°C	-40°C	-40°C	-20°C	-20°C	-25°C	-60°C	-20°C	-20°C	-20°C	-100°C	-100°C
Category	Flexible	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Pliable															●	●
Low Fire Hazard	*** Inherent ** Extra * Standard																
	Halogen Free			●	●		●	●			●	●				●	●
Fire Tests	Self Extinguishing	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	EN 45545-2				●						●					●	●
	NFPA-130				●						●					●	●
Abrasion Resistance							●	●									●
Resistance to solvents				●				●	●			●				●	●
UV Resistance		●	●	●	●	●	●	●	●	●	●	●				●	●
EMC Performance																	
Hazardous Locations		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Anti-Static																	
Approvals	UL Listed					●											
	Lloyds	●															
	London Underground				●						●					●	●
	Food Contact												●	●	●		
ROHS		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
REACH		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
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Metallic fittings & glands selection guide

Glanding & Fitting System Options		C-UL	EXE	EXD	EXD ELBOWS	BRAIDED EXD
						
Approvals	ATEX 		●	●	●	●
	IEC Ex 		●	●	●	●
	UL 	● - UL514B				
	EAC 			●	●	●
Protection	Ex ta - Dust Ignition Proof		●	●	●	●
	Ex e - Increased Safety		●	●	●	●
	Ex d - Flameproof			●	●	●
Group	Group I			●		●
	Group II		●	●	●	●
Zones	Zone 1		●	●	●	●
	Zone 2		●	●	●	●
	Zone 20			●	●	●
	Zone 21		●	●	●	●
	Zone 22		●	●	●	●
Class / Divisions	NEC Article 501 (B)(2) Class I Div 2	●				
	NEC Article 502 (A)(2) & (B)(2) Class II Div 1&2	●				
	NEC Article 503 (A)(3) & (B)(3) Class III Div 1&2	●				
IP Rating	IP66	●	●	●	●	●
	IP67	●	●*	●	●	●
	IP68 (5Bar)	●	●*	●	●	●
	IP69	●	●*	●		●
Temp Range	Min to Max °C	-50°C to +135°C	-20°C to +85°C (-50°C to +135°C for Industrial Applications)	-60°C to +85°C	-60°C to +85°C	-60°C to +85°C
Material		Nickel Plated Brass	Nickel Plated Brass	Nickel Plated Brass Stainless Steel (316L)	Nickel Plated Brass Stainless Steel (316L)	Nickel Plated Brass
Thread Options		Metric	Metric	Metric	Metric	Metric
		NPT	NPT PG	NPT	NPT	NPT
Vibration and shock tested - EN 61373 Cat 2		●	●			
Compatibility with Flexible conduits		All Liquidtight conduits made to American (UL360) sizes	All Liquidtight conduits made to American (UL360) sizes	LTP, LTPAS, LTPHC, LTPLFH, LTPPU, LTPPUAS, LTPSS, LTPUL, LTBRDP, LTBRDLFH, LTP-FG, LTPSS-FG, LTBRDP-FG FSS	LTP, LTPAS, LTPHC, LTPLFH, LTPPU, LTPPUAS, LTPSS, LTPUL, LTBRDP, LTBRDLFH, LTP-FG, LTPSS-FG, LTBRDP-FG FSS	LTPBRD FSSBRD
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* Industrial applications only

Liquid Tight Conduits range

Metallic Conduits

EN 45545-2 NFPA 130


LTP	LTPAS	LTPLFH
<p>Construction: Galvanised steel, helically wound, flexible conduit with smooth oil resistant and high temperature PVC cover.</p> <p>Colour: Black. Grey or Orange on request</p> <p>Typical Applications: High mechanical strength combined with extremely high IP rating (IP68 and IP69) suitable for external applications where fire performance is not a consideration.</p> <p>Special Characteristics: Oil resistant and self extinguishing.</p> <ul style="list-style-type: none"> • High mechanical strength • IP rating: IP66 + IP67 + IP68 (5 bar) + IP69 • Smooth, wipe clean outer cover • Cover does not wrinkle when bent • Temperature range -20°C to +105°C • Good flexibility • Lloyd's Register Type Approval • Resistant to oils and greases • Vibration and shock tested to EN61373 Cat 2 • Black, Grey and Orange are UV resistant and suitable for external use • Also available as a Hygienic version with a coating manufactured from FDA approved ingredients - see LTP-FG 	<p>Construction: Galvanised steel, helically wound, flexible conduit with smooth oil resistant high temperature anti-static PVC cover.</p> <p>Colour: Black. Grey on request</p> <p>Typical Applications: High mechanical strength combined with extremely high IP rating (IP68 and IP69) suitable for external applications where anti-static is a requirement.</p> <p>Special Characteristics: Oil resistant self extinguishing and anti-static performance coating.</p> <ul style="list-style-type: none"> • High mechanical strength • IP rating: IP66 + IP67 + IP68 (5 bar) + IP69 • Smooth, wipe clean outer cover • Cover does not wrinkle when bent • Temperature range -20°C to +105°C • Good flexibility • UV resistant (black) and suitable for external use • Anti-Static performance coating to EN60079-0 • Resistant to oils and greases • Vibration and shock tested to EN61373 Cat 2 	<p>Construction: Galvanised steel, helically wound, flexible conduit with smooth oil resistant Low Fire Hazard (LFH) cover.</p> <p>Colour: Black</p> <p>Typical Applications: High mechanical strength combined with extremely high IP rating (IP68 and IP69) suitable for internal and external applications where fire performance is a requirement. APR 2020.</p> <p>Special Characteristics: As per LTP but where Extra Low Fire Hazard performance is required.</p> <ul style="list-style-type: none"> • High mechanical strength • IP rating: IP66 + IP67 + IP68 (5 bar) + IP69 • Smooth, wipe clean outer cover • Cover does not wrinkle when bent • Temperature range -25°C to +90°C (LTPLFH) • Good flexibility • UV resistant (black) and suitable for external use • Resistant to oils and greases • EXTRA Low Fire Hazard UL94 V0 • Compliant to LUL Std S1085 (LTPLFH) Cert No. 2020 • EN 45545 to HL3 and NFPA130 compliant • Vibration and shock tested to EN61373 Cat 2

nominal size (mm)	US trade size (")	outside dia (mm)	inside dia (mm)	LTP			LTPAS			LTPLFH		
				part number	reel length (m)	min inside bend radius (mm)	part number	reel length (m)	min inside bend radius (mm)	part number	reel length (m)	min inside bend radius (mm)
16	3/8	17.8	12.6	LTP16B	10, 25, 50	45	LTPAS16B*	25	45	LTPLFH16B	25	60
20	1/2	21.1	16.0	LTP20B	10, 25, 50	65	LTPAS20B*	25	65	LTPLFH20B	25	100
25	3/4	26.4	21.0	LTP25B	10, 25, 50	100	LTPAS25B*	25	100	LTPLFH25B	25	130
32	1	33.1	26.5	LTP32B	10, 25, 50	135	LTPAS32B*	25	135	LTPLFH32B	10	180
40	1 1/4	41.8	35.4	LTP40B	10, 25	175	LTPAS40B*	10	175			
50	1 1/2	47.9	40.4	LTP50B+	10, 25	230	LTPAS50B**	10	230			
63	2	59.7	51.6	LTP63B+	10, 25	280	LTPAS63B**	10	280			

Ordering Notes

- Add reel length eg: LTP20B-25M for a 25m reel
- For LTP specify colour (B = Black, G = Grey)
- * Indicates parts made to order on request and may be subject to MOQ and lead time
- + Double interlock section
- **Available on request:**
 - longer lengths and bulk packaging
 - cut lengths and assemblies
 - other colours

Liquid Tight Conduits continued




LTPUL	LTPPU	LTPPUAS 
<p>Construction: Galvanised steel, helically wound, flexible steel conduit including copper bonding strip (up to 40mm) with smooth PVC cover.</p> <p>Colour: Black</p> <p>Typical Applications: As for LTP but where UL listing or CSA approval is required.</p> <p>Special Characteristics: UL listed and CSA approved.</p> <ul style="list-style-type: none"> • High mechanical strength • IP rating: IP66 + IP67 + IP68 (5 bar) + IP69 • Smooth, wipe clean outer cover • Cover does not wrinkle when bent • Temperature range -15°C to +75°C (LTPUL) • Good flexibility • UV resistant (Black) and suitable for external use • Resistant to oils and greases • For UL listed fittings see page 23 • Vibration and shock tested to EN61373 Cat 2 	<p>Construction: Galvanised steel, helically wound, flexible steel conduit with smooth halogen free polyurethane cover.</p> <p>Colour: Black (B) and Blue (BU) (RAL 5015)</p> <p>Typical Applications: High mechanical strength with low temperature and high abrasion resistance, combined with extremely high IP rating (IP68 and IP69) suitable for external applications where fire performance is not a requirement.</p> <p>Special Characteristics: Low temperature performance, high abrasion and high fatigue life.</p> <ul style="list-style-type: none"> • High mechanical strength • Good flexibility • IP rating: IP66 + IP67 + IP68 (5 bar) + IP69 • Smooth, wipe clean outer cover • Cover does not wrinkle when bent • Resistant to oils & greases • Temperature range: -40°C to +100°C • UV resistant and suitable for external use • High abrasion, high fatigue life • Vibration and shock tested to EN61373 Cat 2 	<p>Construction: Galvanised steel, helically wound, flexible steel conduit with smooth halogen free anti-static polyurethane cover.</p> <p>Colour: Black (B) and Blue (BU) (RAL 5015)</p> <p>Typical Applications: High mechanical strength with low temperature and high abrasion resistance, combined with extremely high IP rating (IP68 and IP69) suitable for external applications where anti-static is a requirement</p> <p>Special Characteristics: Low temperature performance, high abrasion, high fatigue life and anti-static performance coating.</p> <ul style="list-style-type: none"> • High mechanical strength • Good flexibility • IP rating: IP66 + IP67 + IP68 (5 bar) + IP69 • Smooth, wipe clean outer cover • Cover does not wrinkle when bent • Resistant to oils & greases • Temperature range: -40°C to +100°C • UV resistant and suitable for external use • Vibration and shock tested to EN61373 Cat 2 • Anti-Static performance coating to EN60079-0

nominal size (mm)	US trade size (")	outside dia (mm)	inside dia (mm)	LTPUL	part number	reel length (m)	min inside bend radius (mm)	LTPPU	part number	inside dia (mm)	min inside bend radius (mm)	LTPPUAS	part number	reel length (m)	min inside bend radius (mm)	nominal size (mm)
16	3/8	17.8	12.6	LTPUL16B		25	50	LTPPU16*		25	45	LTPPUAS16*		25	45	16
20	1/2	21.1	16.0	LTPUL20B		25	90	LTPPU20*		25	65	LTPPUAS20*		25	65	20
25	3/4	26.4	21.0	LTPUL25B		25	110	LTPPU25*		25	100	LTPPUAS25*		25	100	25
32	1	33.1	26.5	LTPUL32B		10, 25	140	LTPPU32*		25	135	LTPPUAS32*		25	135	32
40	1 1/4	41.8	35.4	LTPUL40B		15	180	LTPPU40*		10	175	LTPPUAS40*		10	175	40
50	1 1/2	47.9	40.4	LTPUL50B+		15	230	LTPPU50**		10	230	LTPPUAS50**		10	230	50
63	2	59.7	51.6	LTPUL63B+		15	280	LTPPU63**		10	280	LTPPUAS63**		10	280	63

Standards



Metallic Conduits

LTPHC	LTPSS	FCC	FCC-SS	E
<p>Construction: Galvanised steel, helically wound, flexible conduit with smooth thermoplastic elastomer (TPE) cover.</p> <p>Colour: Black</p> <p>Typical Applications: High mechanical strength combined with high and low temperature performance, combined with extremely high IP rating (IP68 and IP69) suitable for external applications where fire performance is not a consideration.</p> <p>Special Characteristics: Wide temperature range performance. Good flexibility at low and high temperatures.</p> <ul style="list-style-type: none"> • High mechanical strength • IP rating: IP66 + IP67 + IP68 (5 bar) + IP69 • Smooth, wipe clean outer cover • Cover does not wrinkle when bent • Temperature range -60°C to +150°C • Good flexibility • UV resistant (black) and suitable for external use • Resistant to oils and greases • Vibration and shock tested to EN61373 Cat 2 	<p>Construction: Stainless steel (316L), helically wound, flexible conduit with oil resistant and high temperature pvc smooth cover.</p> <p>Colour: Black</p> <p>Typical Applications: Machinery or outdoor applications where high corrosion resistance and liquid tight are a requirement.</p> <p>Special Characteristics: Enhanced corrosion resistance performance.</p> <ul style="list-style-type: none"> • High mechanical strength • Good flexibility • IP rating: IP66 + IP67 + IP68 (5 bar) + IP69 • Smooth, wipe clean outer cover • Cover does not wrinkle when bent • Resistant to oils & greases • Temperature range: -20°C to +105°C • UV resistant and suitable for external use • Vibration and shock tested to EN61373 Cat 2 • Also available as a Hygienic version with a coating manufactured from FDA approved ingredients - see LTPSS-FG 	<p>plated steel P clip with PVC liner</p> <p>P clip to support and secure conduit.</p> 	<p>stainless steel (316L) P clips</p> <p>P clip to support conduit.</p> 	<p>insert nickel plated brass</p> <p>Single part, machined insert to cap end of conduit.</p> 

nominal size (mm)	US trade size (")	outside dia (mm)	inside dia (mm)	LTPHC			LTPSS			plated steel part number	part number	part number
				part number	reel length (m)	min. inside bend radius (mm)	part number	reel length (m)	min. inside bend radius (mm)			
16	5/8	17.8	12.6	LTPHC16B	25	45	LTPSS16*	25	45	FCC16	FCC16-SS	LTP16-E
16										FCC16-SS	FCC16-SS	LTP16-E
20	3/4	21.1	16.0	LTPHC20B	25	65	LTPSS20	25	65	FCC20	FCC20-SS	LTP20-E
25	1	26.4	21.0	LTPHC25B	25	100	LTPSS25	25	100	FCC25	FCC25-SS	LTP25-E
32	1 1/4	33.1	26.5	LTPHC32B	25	135	LTPSS32	10	135	FCC32	FCC32-SS	LTP32-E
40	1 1/2	41.8	35.4	LTPHC40B	10	175	LTPSS40	10	180	FCC40	FCC40-SS	LTP40-E
50	2	47.9	40.4	LTPHC50B+	10	230	LTPSS50+	10	230	FCC50	FCC50-SS	LTP50-E
63	2 1/2	59.7	51.6	LTPHC63B**	10	280	LTPSS63**	10	280	FCC63	FCC63-SS*	LTP63-E

Ordering Notes

- Add reel length eg: LTPHC20B-25M for a 25m reel
- * Indicates parts made to order on request and may be subject to MOQ and lead time
- + Double interlock section

- **Available on request:**
 - longer lengths and bulk packaging
 - cut lengths and assemblies
 - other colours

Hygienic Conduits NEW

LTP-FG	LTBRDP-FG	LTPSS-FG
<p>Construction: Galvanised steel, helically wound, flexible conduit with smooth White or Blue PVC cover.</p> <p>Typical Applications: Suitable for repeat contact with all food types, excluding fatty foods, at full temperature.</p> <p>The flexible PVC is manufactured from FDA approved ingredients and has been independently tested to European Food regulation 10/2011.</p>	<p>Construction: Galvanised steel, helically wound, flexible conduit with galvanised steel braid and a White or Blue PVC smooth cover.</p> <p>Typical Applications: Suitable for applications where high corrosion resistance and liquid tight are a requirement combined with EMC screening.</p> <p>The flexible PVC is manufactured from FDA approved ingredients and has been independently tested to European Food regulation 10/2011.</p>	<p>Construction: Stainless steel (316L), helically wound, flexible PVC Blue smooth cover.</p> <p>Typical Applications: Suitable for repeat contact with all food types, excluding fatty foods at full temperature.</p> <p>The PVC is manufactured from FDA approved ingredients and has been independently tested to European Food regulation 10/2011.</p>
<div style="display: flex; justify-content: space-around;"> <div style="background-color: #0070C0; color: white; padding: 2px;">IP66</div> <div style="background-color: #0070C0; color: white; padding: 2px;">IP67</div> <div style="background-color: #0070C0; color: white; padding: 2px;">IP68</div> <div style="background-color: #0070C0; color: white; padding: 2px;">IP69</div> </div>	<div style="display: flex; justify-content: space-around;"> <div style="background-color: #0070C0; color: white; padding: 2px;">IP66</div> <div style="background-color: #0070C0; color: white; padding: 2px;">IP67</div> <div style="background-color: #0070C0; color: white; padding: 2px;">IP68</div> <div style="background-color: #0070C0; color: white; padding: 2px;">IP69</div> </div>	<div style="display: flex; justify-content: space-around;"> <div style="background-color: #0070C0; color: white; padding: 2px;">IP66</div> <div style="background-color: #0070C0; color: white; padding: 2px;">IP67</div> <div style="background-color: #0070C0; color: white; padding: 2px;">IP68</div> <div style="background-color: #0070C0; color: white; padding: 2px;">IP69</div> </div>

nominal size (mm)	LTP-FG				LTBRDP-FG				LTPSS-FG			
	part number	reel length (m)	outside dia (mm)	inside dia (mm)	part number	reel length (m)	outside dia (mm)	inside dia (mm)	part number	reel length (m)	outside dia (mm)	inside dia (mm)
16	LTPWFG16	25	17.8	12.6					LTPSSBUF16	25	17.8	12.6
20	LTPWFG20	10, 25	21.1	16.0	LTBRDPWFG20	10, 25	21.1	16.0	LTPSSBUF20	25	21.1	16.0
25	LTPWFG25	10, 25	26.4	21.0	LTBRDPWFG25	10, 25	26.4	21.0	LTPSSBUF25	25	26.4	21.0
32	LTPWFG32	10, 25	33.1	26.5	LTBRDPWFG32	10, 25	33.1	26.5	LTPSSBUF32	10	33.1	26.5
40	LTPWFG40	10	41.8	35.4	LTBRDPWFG40	10	41.8	35.4	LTPSSBUF40	10	41.8	35.4
50	LTPWFG50*	10	47.9	40.4	LTBRDPWFG50*	10	47.9	40.4	LTPSSBUF50*	10	47.9	40.4
63	LTPWFG63*	10	59.7	51.6								

Part number for White version shown above

Part number for White version shown above

Part number for Blue version shown above

Ordering Notes

- For Blue cover substitute W for BU eg. LTPBUF20 or LTBRDPBUF20 for 20mm size
- Add reel length eg: LTPWFG16-25M for 25m reel
- * Indicates parts made to order on request and may be subject to MOQ and lead time
- + Double interlock section
- **Available on request:**
 - longer lengths
 - cut lengths and assemblies
 - additional sizes

Standards



EN 1672-2



EU Regulation 10/2011

BS EN IEC 61386



EN ISO 14159



EN IEC 61373 Cat 2

Liquid Tight Conduits

FOLD PAGE OUT!

EN 45545-2 NFPA 130

LTBRDP	LTBRDLFH	FCC	FCC-SS	E
<p>Construction: Galvanised steel, helically wound, flexible conduit with galvanised steel braid and oil resistant and high temperature pvc smooth cover.</p> <p>Colour: Black</p> <p>Typical Applications: Machinery or outdoor applications where high corrosion resistance and liquid tight are a requirement combined with EMC screening</p> <p>Special Characteristics: Good flexibility and EMC screening.</p> <ul style="list-style-type: none"> • High mechanical strength • Good flexibility • IP rating: IP66 + IP67 + IP68 (5 bar) + IP69 • Smooth, wipe clean outer cover • Cover does not wrinkle when bent • Resistant to oils & greases • Temperature range: -20°C to +105°C • UV resistant and suitable for external use • Vibration and shock tested to EN61373 Cat 2 • Provides EMC screening • Also available as a Hygienic version with a coating manufactured from FDA approved ingredients - see LTBRDP-FG 	<p>Construction: Galvanised steel, helically wound, flexible conduit with smooth oil resistant Low Fire Hazard (LFH) cover.</p> <p>Colour: Black</p> <p>Typical Applications: Installations where liquid tight is a requirement and where low fire hazard properties and EMC screening are required.</p> <p>Special Characteristics: As per LTP but where Extra Low Fire Hazard performance is required.</p> <ul style="list-style-type: none"> • High mechanical strength • Good flexibility • IP rating: IP66 + IP67 + IP68 (5 bar) + IP69 • Smooth, wipe clean outer cover • Cover does not wrinkle when bent • Resistant to oils & greases • Temperature range: -20°C to +90°C • UV resistant and suitable for external use • Vibration and shock tested to EN61373 Cat 2 • Provides EMC screening • Extra Low Fire Hazard UL94 V0 (for LFH see page 36) • Compliant to LUL Std S1085 (Cert No. 658) • EN 45545 to HL3 and NFPA 130 compliant 	<p>plated steel P clip with PVC liner</p> <p>P clip to support and secure conduit.</p>	<p>stainless steel (316L) P clips</p> <p>P clip to support conduit.</p>	<p>insert nickel plated brass</p> <p>Single part, machined insert to cap end of conduit.</p>
				

nominal size (mm)	LTBRDP			LTBRDLFH			plated steel part number	part number	part number
	part number	inside dia (mm)	min inside bend radius (mm)	part number	reel length (m)	min inside bend radius (mm)			
16							FCC16	FCC16-SS	LTP16-E
16								FCC16-SS	LTP16-E
20	LTBRDP20B	25	65	LTBRDLFH20B	25	130	FCC20	FCC20-SS	LTP20-E
25	LTBRDP25B	25	100	LTBRDLFH25B	25	200	FCC25	FCC25-SS	LTP25-E
32	LTBRDP32B	25	120	LTBRDLFH32B*	25	270	FCC32	FCC32-SS	LTP32-E
40	LTBRDP40B	10	140				FCC40	FCC40-SS	LTP40-E
50	LTBRDP50B+	10	180				FCC50	FCC50-SS	LTP50-E
63	LTBRDP63B+	10	270				FCC63	FCC63-SS*	LTP63-E

Technical Drawing



LTPPU, LTPPUAS



LTBRDP & LTBRDLFH

Metallic Conduit Systems

To make your selection from our wide range of flexible conduits easier, we have devised a table (see below) which offers a one page summary to help you when you come to select your fittings. We have a wide selection of fittings that can be used with the conduits listed below.

EXD Conduit Glands
flameproof EXD barrier cable gland

Standards
CE, ENEC, ERE, RoHS, REACH

Hazardous Area Approvals

ATEX APPROVAL IN DIVISIONS 0, 1, 2, 3, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Used with the following conduits - as featured on pages 14, 15, 16, 17 & 18

Using this fold out page will illustrate the wide range of liquid tight metallic conduits we offer. There are 13 different metallic conduit families listed in this spread and these are detailed across Pages 14-18.

Ordering Notes

Once you have chosen your conduit from our wide range of products listed on Pages 14-18, simply use this fold out page as a guide to see which fittings correspond with your selected conduit.

The fold out conduit summary chart below lines up with the respective subsequent fittings pages to allow you to still see your selected conduit, whilst selecting your fittings.

nominal size (mm)	LTP/AS*	LTPHC	LTPLFH	LTPUL	LTPPU/AS*	LTPSS	LTBRDP	LTBRDLFH	LTP-FG	LTBRDP-FG	LTPSS-FG
	part number	part number	part number	part number	part number	part number	part number	part number	part number	part number	part number
16	LTP16B	LTPHC16B	LTPLFH16B	LTPUL16B	LTPPU16	LTPSS16			LTPBUG16		LTPSSBUG16
20	LTP20B	LTPHC20B	LTPLFH20B	LTPUL20B	LTPPU20	LTPSS20	LTBRDP20B	LTBRDLFH20B	LTPBUG20	LTBRDPBUG20	LTPSSBUG20
25	LTP25B	LTPHC25B	LTPLFH25B	LTPUL25B	LTPPU25	LTPSS25	LTBRDP25B	LTBRDLFH25B	LTPBUG25	LTBRDPBUG25	LTPSSBUG25
32	LTP32B	LTPHC32B	LTPLFH32B	LTPUL32B	LTPPU32	LTPSS32	LTBRDP32B	LTBRDLFH32B	LTPBUG32	LTBRDPBUG32	LTPSSBUG32
40	LTP40B	LTPHC40B		LTPUL40B	LTPPU40	LTPSS40	LTBRDP40B		LTPBUG40	LTBRDPBUG40	LTPSSBUG40
50	LTP50B	LTPHC50B		LTPUL50B	LTPPU50	LTPSS50	LTBRDP50B		LTPBUG50	LTBRDPBUG50	LTPSSBUG50+
63	LTP63B	LTPHC63B		LTPUL63B	LTPPU63	LTPSS63	LTBRDP63B		LTPBUG63	LTBRDPBUG63	LTPSSBUG63+

* For Anti Static (AS) part numbers. See page 14+15

Standards & Approvals



Hazardous area liquid tight conduit solutions



EXD Conduit Glands

flameproof EXD barrier cable gland

- properties**
- IP Rating: IP66 + IP67 + IP68 (5 bar) + IP69
 - Material: Nickel Plated Brass or Stainless Steel (316L)
 - Suitable for threaded entries or knockouts
 - Operating Temperature of gland -60°C to +85°C
 - High mechanical strength
 - Can be used in Zone 1, Zone 2, Zone 20, Zone 21 and Zone 22 Hazardous areas
 - ATEX and IECEx Ex d (Flameproof)
 - ATEX and IECEx Ex e (Increased Safety)
 - ATEX and IECEx Ex ta (Dust Ignition Protection) EAC CoC NO.- No TC RU C-GB.BH02.B.00386
 - Certified as Equipment

Glands

Standards



BS EN IEC 61386



Hazardous Area Approvals

Group I	ATEX APPROVAL to EN60079-0 2012	CML Certificate no:	CML 15ATEX1037X	Ex
	Ex d Flameproof	Ex d I Mb	EN 60079-1 2014	Ex
	Ex e Increased Safety	Ex e I Mb	EN 60079-7 2015	
	IECEx APPROVAL to IEC60079-0 2011	CML Certificate no:	CML 15.0020X	IEC IECEx
	Ex d Flameproof	Ex d I Mb	IEC 60079-1 2014-06	IEC IECEx
	Ex e Increased Safety	Ex e I Mb	IEC 60079-7 2006-7	
	EAC CoC No TCRU C-GB. BH02. B.00386			EAC
Group II	ATEX APPROVAL to EN60079-0 2012	CML Certificate no:	CML 15ATEX1037X	Ex
	Ex d Flameproof	Ex d II C Gb	EN 60079-1 2014	Ex
	Ex e Increased Safety	Ex e II C Gb	EN 60079-7 2015	
	Ex ta Dust Ignition Proof	Ex ta IIIC Da IP6X	EN 60079-31 2014	IEC IECEx
	IECEx APPROVAL to IEC60079-0 2011	CML Certificate no:	CML 15.0020X	
	Ex d Flameproof	Ex d II C Gb	IEC 60079-1 2014-06	IEC IECEx
	Ex e Increased Safety	Ex e II C Gb	IEC 60079-7 2006-7	
	Ex ta Dust Ignition Proof	Ex ta IIIC Da IP6X	IEC 60079-31 2013	EAC
	EAC CoC No TCRU C-GB. BH02. B.00386			

LTP - EXD

NEW

Construction: Nickel Plated Brass gland with a nylon and elastomeric seal and two part epoxy resin pack. Supplied in boxes of one, complete with instructions and gloves.

Typical Applications: Flameproof barrier gland offering a high specification, high quality solution for Ex d, Ex e and Ex ta applications. IP rating: IP66 + IP67 + IP68 (5 bar) + IP69



IP66 IP67 IP68 IP69

LTP - EXD - SS

NEW

Construction: Stainless steel (grade 316L) gland with a nylon and elastomeric seal and two part epoxy resin pack. Supplied in boxes of one, complete with instructions and gloves.

Typical Applications: Flameproof barrier gland offering a high specification, high quality solution for Ex d, Ex e and Ex ta applications where additional corrosion resistance is required. IP rating: IP66 + IP67 + IP68 (5 bar) + IP69



IP66 IP67 IP68 IP69

To fit nominal size (mm)	metric thread part number	NPT thread part number	To fit nominal size (mm)	metric thread part number	NPT thread part number
16	LTP16-M20-EXD	LTP16-050-EXD	16	LTP16-M20-EXD-SS	LTP16-050-EXD-SS
16			16		
20	LTP20-M20-EXD	LTP20-050-EXD	20	LTP20-M20-EXD-SS	LTP20-050-EXD-SS
25	LTP25-M25-EXD	LTP25-075-EXD	25	LTP25-M25-EXD-SS	LTP25-075-EXD-SS
32	LTP32-M32-EXD	LTP32-100-EXD	32	LTP32-M32-EXD-SS	LTP32-100-EXD-SS
40	LTP40-M40-EXD	LTP40-125-EXD	40	LTP40-M40-EXD-SS	LTP40-125-EXD-SS
50	LTP50-M50-EXD	LTP50-150-EXD	50	LTP50-M50-EXD-SS	LTP50-150-EXD-SS
63	LTP63-M63-EXD	LTP63-200-EXD	63	LTP63-M63-EXD-SS	LTP63-200-EXD-SS

Used with the following conduits:- as featured on pages 14, 15, 16, 17 & 18



LTP / LTPAS



LTPHC



LTPLFH



LTPPU / LTPPUAS



properties

- IP Rating: IP66 + IP67 + IP68 (5 bar)
- Material: Nickel Plated Brass
- Suitable for threaded entries
- Operating Temperature of gland -60°C to +85°C
- High mechanical strength
- Can be used in Zone 1, Zone 2, Zone 20, Zone 21 and Zone 22 Hazardous areas
- ATEX and IECEx Ex d (Flameproof)
- ATEX and IECEx Ex e (Increased Safety)
- ATEX and IECEx Ex ta (Dust Ignition Protection)
- Also available as Stainless Steel (316L) on request*
- Certified as Equipment



Hazardous Area Approvals

ATEX APPROVAL to EN60079-0 2012	CML Certificate no: CML 15ATEX1037X	
Ex d Flameproof	Ex d II C Gb	
Ex e Increased Safety	Ex e II C Gb	
Ex ta Dust Ignition Proof	Ex ta IIIC Da IP6X	

IECEx APPROVAL to IEC60079-0 2012	CML Certificate no: CML 15.0020X	
Ex d Flameproof	Ex d II C Gb	
Ex e Increased Safety	Ex e II C Gb	
Ex ta Dust Ignition Proof	Ex ta IIIC Da IP6X	



LTP - EXD - 90

NEW

Construction: 90° elbow, Nickel Plated Brass gland with a nylon and elastomeric seal and two part epoxy resin pack. Supplied in boxes of one complete with instructions and gloves.

Typical Applications: Flameproof barrier gland ideal for use when there is restricted space to terminate into an enclosure / equipment. IP rating: IP66 + IP67 + IP68 (5 bar)



IP66 IP67 IP68

To fit nominal size (mm)	metric thread part number
16	LTP16-M20-EXD-90
16	
20	LTP20-M20-EXD-90
25	LTP25-M25-EXD-90
32	LTP32-M32-EXD-90
40	LTP40-M40-EXD-90
50	LTP50-M50-EXD-90
63	LTP63-M63-EXD-90

LTP - EXD - 45

NEW

Construction: 45° elbow, nickel plated brass gland with a nylon and elastomeric seal and two part epoxy resin pack. Supplied in boxes of one complete with instructions and gloves.

Typical Applications: Flameproof barrier gland ideal for use when there is restricted space to terminate into an enclosure / equipment. IP rating: IP66 + IP67 + IP68 (5 bar)



IP66 IP67 IP68

To fit nominal size (mm)	metric thread part number
16	LTP16-M20-EXD-45
16	
20	LTP20-M20-EXD-45
25	LTP25-M25-EXD-45
32	LTP32-M32-EXD-45
40	LTP40-M40-EXD-45
50	LTP50-M50-EXD-45
63	LTP63-M63-EXD-45

* Indicates parts made to order on request and may be subject to MOQ and lead time.



LTPSS



LTPUL



LTBRDP

NEW
ENHANCED
EMC
SCREEN
**



LTBRDLFH

NEW
ENHANCED
EMC
SCREEN
**
EXTRA
LOW FIRE
HAZARD
**

Hazardous area liquid tight conduit solutions

EXE - Increased Safety and Dust Ignition Proof

properties

- IP Rating: IP66 for Ex e and Ex t applications
- IP Rating: IP67 + IP68 (5 bar) + IP69 for industrial applications
- Material: Nickel Plated Brass
- Suitable for knockouts or threaded entries
- Operating Temperature of fitting -20°C to +85°C for Ex e and Ex t applications
- High mechanical strength and electrical continuity
- Operating Temperature of fitting -50°C to +135°C for industrial applications
- Can be used in Zone 1, Zone 2, Zone 21 and Zone 22 Hazardous areas when used with Flexicon's Liquid Tight range of flexible conduits
- ATEX and IECEx Ex e (Increased Safety)
- ATEX and IECEx Ex t (Dust Ignition Protection)
- Vibration and shock resistant to EN61373 Cat 2

Hazardous Area Approvals

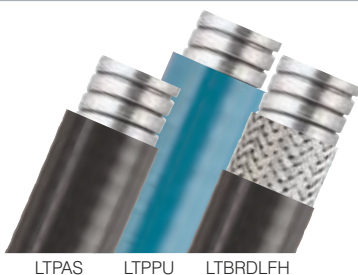
Group II	ATEX APPROVAL to EN60079-0 2009		Intertek Certificate no: ITS 14ATEX37958U	
	Ex e Increased Safety	Ex e II Gb	EN 60079-7 2007	
	Ex tb Dust Ignition Proof	Ex tb IIIC Da IP6X	EN 60079-31 2009	
	IECEx APPROVAL to IEC60079-0 2007		Intertek Certificate no: IECEx ITS 14.0005U	
	Ex e Increased Safety	Ex e II Gb	IEC 60079-7 2006	
	Ex tb Dust Ignition Proof	Ex tb IIIC Da IP6X	IEC 60079-31 2008	

Standards



LTP - EXE NEW					LTP - EXE - 90 NEW					LTP - EXE - 45 NEW				
external thread nickel plated brass					external thread nickel plated brass					external thread nickel plated brass				
Multipart compression fitting including elastomeric seal. Can be used for knockout or threaded entries as fitting rotates until tightened.					90° multipart compression fitting including elastomeric seal. Can be used for knockout.					90° multipart compression fitting including elastomeric seal. Can be used for knockout.				
IP66					IP66					IP66				
nominal size (mm)	metric thread part number	PG thread	NPT thread part number		metric thread part number					metric thread part number				
16	LTP16-M16-EXE	LTP16-PG11-EXE	LTP16-050-EXE (1/2")		LTP16-M16-EXE-90					LTP16-M20-EXE-45				
16	LTP16-M20-EXE	LTP16-PG13-EXE			LTP16-M20-EXE-90					LTP20-M20-EXE-45				
20	LTP20-M20-EXE	LTP20-PG16-EXE	LTP20-050-EXE (1/2")		LTP20-M20-EXE-90					LTP25-M25-EXE-45				
25	LTP25-M25-EXE	LTP25-PG21-EXE	LTP25-075-EXE (3/4")		LTP25-M25-EXE-90					LTP32-M32-EXE-45				
32	LTP32-M32-EXE	LTP32-PG29-EXE	LTP32-100-EXE (1")		LTP32-M32-EXE-90					LTP40-M40-EXE-45				
40	LTP40-M40-EXE	LTP40-PG36-EXE	LTP40-125-EXE (1 1/4")		LTP40-M40-EXE-90					LTP50-M50-EXE-45				
50	LTP50-M50-EXE	LTP50-PG42-EXE	LTP50-150-EXE (1 1/2")		LTP50-M50-EXE-90					LTP63-M63-EXE-45				
63	LTP63-M63-EXE	LTP63-PG48-EXE	LTP63-200-EXE (2")		LTP63-M63-EXE-90									

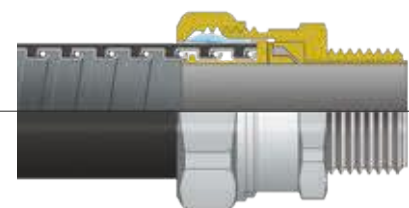
Used with



LTPAS LTPPU LTBRDLFH

or any of the LTP conduit types, see page 14, 15, 16, 17 + 18

Technical Drawing



LTP - EXE



Liquid Tight Conduit fittings

UL listed fittings

NEW




- IP66
- IP67
- IP68
- IP69



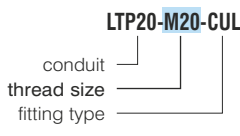
properties

- UL Listed fittings:**
- Nickel Plated Brass Fittings
 - C-UL fittings listed to UL514B
 - UL Listed for use in USA and Canada (file No. E247502). Suitable for use in hazardous locations as per NEC Article 501 (B)(2) Class I Div 2, Article 502 (A)(2) & (B)(2) Class II Div 1&2, Article 503 (A)(3) & (B)(3) Class III Div 1&2
 - Supplied with fibre washer face seal
 - Metric Threads supplied with NPB locknut

Fittings

		C-UL NEW		C-UL90 NEW		C-UL45 NEW	
		external thread nickel plated brass		external thread nickel plated brass		external thread nickel plated brass	
		Multipart compression fitting including nylon compression seal. Can be used for knockout or threaded entries as fitting rotates until tightened. UL Listed to UL514B.		90° multipart compression fitting including nylon compression seal. Can be used for knockouts. UL Listed to UL514B.		45° multipart compression fitting including nylon compression seal. Can be used for knockouts. UL Listed to UL514B.	
		<ul style="list-style-type: none"> <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP66 <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP67 <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP68 <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP69 		<ul style="list-style-type: none"> <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP66 <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP67 <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP68 <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP69 		<ul style="list-style-type: none"> <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP66 <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP67 <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP68 <li style="background-color: #0070C0; color: white; padding: 2px 5px;">IP69 	
							
nominal size (mm)	US trade size (")	outside dia (mm)	inside dia (mm)	metric thread part number	NPT thread size	metric thread part number	metric thread part number
16	5/8	17.8	12.6	LTP16-M20-CUL	LTP16-050-CUL (1/2")	LTP16-M20-CUL90	LTP16-M20-CUL45
20	3/4	21.1	16.0	LTP20-M20-CUL	LTP20-050-CUL (3/4")	LTP20-M20-CUL90	LTP20-M20-CUL45
25	1	26.4	21.0	LTP25-M25-CUL	LTP25-075-CUL (1")	LTP25-M25-CUL90	LTP25-M25-CUL45
32	1 1/4	33.1	26.5	LTP32-M32-CUL	LTP32-100-CUL (1 1/4")	LTP32-M32-CUL90	LTP32-M32-CUL45
40	1 1/2	41.8	35.4	LTP40-M40-CUL	LTP40-125-CUL (1 1/2")	LTP40-M40-CUL90	LTP40-M40-CUL45
50	2	47.9	40.4	LTP50-M50-CUL	LTP50-150-CUL (1 1/2")	LTP50-M50-CUL90	LTP50-M50-CUL45
63	2 1/2	59.7	51.6	LTP63-M63-CUL	LTP63-200-CUL (2")	LTP63-M63-CUL90	LTP63-M63-CUL45

How to read the fittings code





LTPBRD system

galvanised steel core,
thermoplastic elastomer coated
and stainless steel overbraid



- IP66
- IP67
- IP68
- IP69

Conduit

LTPBRD



Construction: Galvanised steel, helically wound, flexible conduit with thermoplastic elastomer cover (same as LTPHC) and stainless steel (grade 316) overbraid.

Typical Applications: Very arduous industrial environments such as steel works.

- High mechanical strength
- Good flexibility
- IP rating: IP66 + IP67 + IP68 (5 bar) + IP69
- Wide Temperature range -60°C to +150°C
- High abrasion resistance
- Very high tensile strength
- High corrosion performance
- Vibration and shock tested to EN61373 Cat 2
- Inherent Anti-Static performance properties
- EMC screening performance – Standard

nominal size (mm)	LTPBRD part number	reel length (m)	reel length (m)	outside dia (mm)	inside dia (mm)
20	LTPBRD20	25	22.6	16.0	65
25	LTPBRD25	25	27.9	21.0	100
32	LTPBRD32	25	34.6	26.5	135
40	LTPBRD40	10	43.3	35.4	175
50	LTPBRD50**	10	49.3	40.4	230

Fittings

LTPB - EXD



nickel plated brass with a nylon and elastomeric seal and two part epoxy resin pack

Flameproof barrier gland for external braided conduit systems where high mechanical protection and / or EMC screening is required.

Certified as Equipment



metric thread part number	NPT thread part number
LTPB20-M20-EXD	LTPB20-050-EXD
LTPB25-M25-EXD	LTPB25-075-EXD
LTPB32-M32-EXD	LTPB32-100-EXD
LTPB40-M40-EXD	LTPB40-125-EXD
LTPB50-M50-EXD*	LTPB50-150-EXD*

FCC

plated steel P clip with pvc liner, stainless steel P clips

P clip to support conduit.



plated steel part number	stainless steel part number	nominal size (mm)
FCC20	FCC20-SS	20
FCC25	FCC25-SS	25
FCC32	FCC32-SS	32
FCC40	FCC40-SS	40
FCC50	FCC50-SS	50

Ordering Notes

- Add reel length eg: LTPBRD20B-25M for 25m reel
- * Indicates parts made to order on request and may be subject to MOQ and lead time
- + Double interlock section
- **Available on request:**
 - longer lengths
 - 45° available in sizes 16-50mm
 - cut lengths and assemblies
 - additional sizes
 - full copies of independent test report confirming screening effectiveness

Hazardous Area Approvals

Group I	ATEX APPROVAL to EN60079-0 2012	CML Certificate no: CML 15ATEX1037X		
	Ex d Flameproof	Ex d I Mb		EN 60079-1 2014
	Ex e Increased Safety	Ex e I Mb		EN 60079-7 2015
	IECEx APPROVAL to IEC60079-0 2011	CML Certificate no: CML 15.0020X		
	Ex d Flameproof	Ex d I Mb	IEC 60079-1 2014-06	
	Ex e Increased Safety	Ex e I Mb	IEC 60079-7 2006-7	
	EAC CoC No TCRU C-GB. BH02. B.00386			
Group II	ATEX APPROVAL to EN60079-0 2012	CML Certificate no: CML 15ATEX1037X		
	Ex d Flameproof	Ex d II C Gb		EN 60079-1 2014
	Ex e Increased Safety	Ex e II C Gb		EN 60079-7 2015
	Ex ta Dust Ignition Proof	Ex ta IIIC Da IP6X		EN 60079-31 2014
	IECEx APPROVAL to IEC60079-0 2011	CML Certificate no: CML 15.0020X		
	Ex d Flameproof	Ex d II C Gb	IEC 60079-1 2014-06	
	Ex e Increased Safety	Ex e II C Gb	IEC 60079-7 2006-7	
	Ex ta Dust Ignition Proof	Ex ta IIIC Da IP6X	IEC 60079-31 2013	
	EAC CoC No TCRU C-GB. BH02. B.00386			

Flexicon EXD Accessories Range

properties

- ATEX Certification Detail
 - IECEx Certification Detail
 - Continuous Operating Temperature: -60°C to +200°C
 - Ingress Protection Rating: Up to IP68 when fitted with a suitable Sealing Washer
 - Materials: Nickel Plated Brass
 - Optional Accessories: Locknut, Serrated Washer, Earth Tag, Sealing Washer.
- See page 28

Designed to provide a permanent or temporary means of blanking unused cable entry holes in Flameproof enclosures enabling the equipment to be safely deployed in the Hazardous Area. Always inserted from the outside of the enclosure, we have a range of stopping plug options depending on the required installation method.

Accessories

Our range of thread converters and adaptors are designed for both Industrial and Hazardous Area applications with Ex "d", Ex "e" and Ex "ta" component approval.

Available with male to female connection threads these products can be used to increase, reduce or convert the thread type.

Thread convertor – converts a thread from one specification to another. i.e. Metric to NPT or Metric to PG

Thread adaptors – reduces a male thread to a smaller female thread. i.e. M20 to M16 or enlarges a male thread to a larger female thread. i.e. M16 up to M20.

Technical Data	
ATEX Directive Code	I M2/II 2 G D/II 1 D
ATEX & IECEx Protection concepts	Ex db I/IIC Mb/Gb; Ex eb I/IIC Mb Gb; Ex ta IIIC Da
Harmonized Standards	EN/IEC 60079-0; EN/IEC 60079-1; EN/IEC 60079-7; EN/IEC 60079-31

Note: Only one thread convertor or adaptor is allowed between the enclosure entry and the Flexicon gland or fitting

EXD Thread Converters and Adaptors

Our thread converters are Nickel Plated Brass as standard.

NEW

Internal Metric to External Metric

Female Thread - Internal

Internal Metric to External NPT

Female Thread - Internal

Male Thread - External	M16	M20	M25	M32	M40	M50
M16		B-M16-M20-EXD				
M20	B-M20-M16-EXD		B-M20-M25-EXD			
M25		B-M25-M20-EXD		B-M25-M32-EXD		
M32			B-M32-M25-EXD		B-M32-M40-EXD	
M40				B-M40-M32-EXD		
M50				B-M50-M32-EXD	B-M50-M40-EXD	
M63					B-M63-M40-EXD	B-M63-M50-EXD

Male Thread - External	M20	M25	M32
1/2"	B-050-M20-EXD		
3/4"	B-075-M20-EXD	B-075-M25-EXD	
1"			B-100-M32-EXD

To obtain Adaptor & Reducer nominal dimensions, follow the steps below:- **Step 1** - Select male thread by consulting the left hand column of the table. **Step 2** - Select the female thread size by consulting column headings at the top of tables, and by cross referencing this with the selection in step 1. Please note that the data in the tables above includes Adaptors and Reducers that are certified for use in Hazardous Areas.

EXD Stopping Plugs

NEW

Our stopping plugs are Nickel Plated Brass as standard.



Size Range

Standard Dome Head Hex Head

M16	B-M16-SP-EXD	B-M16-DSP-EXD	B-M16-HSP-EXD
M20	B-M20-SP-EXD	B-M20-DSP-EXD	B-M20-HSP-EXD
M25	B-M25-SP-EXD	B-M25-DSP-EXD	B-M25-HSP-EXD
M32	B-M32-SP-EXD	B-M32-DSP-EXD	B-M32-HSP-EXD
M40	B-M40-SP-EXD	B-M40-DSP-EXD	B-M40-HSP-EXD
M50	B-M50-SP-EXD	B-M50-DSP-EXD	B-M50-HSP-EXD
M63	B-M63-SP-EXD	B-M63-DSP-EXD	B-M63-HSP-EXD

Tamperproof

The tamperproof stopping plugs can be installed or removed using an allen key. We offer standard stopping plugs or Dome Head type allen key stopping plugs.

Technical Data - Dome Head and Tamperproof Stopping Plugs

ATEX Directive Code	I M2/II 2 G D/II 1 D
ATEX & IECEx Protection concepts	Ex db I/IIC Mb/Gb; Ex eb I/IIC Mb Gb; Ex ta IIIC Da
Harmonized Standards	EN/IEC 60079-0; EN/IEC 60079-1; EN/IEC 60079-7; EN/IEC 60079-31

Hex Head

The Hex head stopping plugs can be installed or removed with a standard open ended or ring type spanner or wrench.

Technical Data - Hexagon Head Stopping Plug

ATEX Directive Code	I M2/II 2GD
ATEX & IECEx Protection concepts	Ex e I Mb, Ex e IIC Gb; Ex tb IIIC Db
IEC Ex Code of Protection Category	Ex d I / Ex e I / Ex d IIC / Ex e II, Ex tD A21 IP6X
Harmonized Standards	EN/IEC 60079-0; EN/IEC 60079-1; EN/IEC 60079-7; EN/IEC 60079-31



FSS system

stainless steel annular
corrugated conduit



Conduit



Construction: Stainless steel (316L) annularly corrugated conduit. Inherent Low Fire hazard performance with superior Ingress Protection (IP68) and excellent corrosion resistance.

Typical Applications: Metro rail stations and tunnels.

Colour: Self colour, also available in Black* version on request

- IP rating: IP68
- Temperature range -100°C to +400°C
- High Mechanical Strength
- Pull off strength: 100kg (20mm)
- High compression strength 1000kg/100mm
- Inherent low fire hazard
- Compliant to LUL Std S1085 (Pending)
- EN 45545-2 to HL3 and NFPA 130 compliant
- Excellent Corrosion resistance
- Oil resistant
- UV resistant
- Offers Antistatic properties



nominal size (mm)	FSS part number	ree length (m)	outside dia (mm)	inside dia (mm)	min inside bend radius (mm)
20	FSS20	25	21.6	16.2	45
25	FSS25	25	26.8	20.2	55
32	FSS32*	25	32.5	25.4	65
40	FSS40*	10	41.3	34.1	105
50	FSS50*	10	50.0	40.0	130

Glands

IP68



Hazardous Area Approvals

Group I	ATEX APPROVAL to EN60079-0 2012	CML Certificate no:	CML 15ATEX1037X	Ex d Flameproof	Ex d I Mb	EN 60079-1 2014	Ex e Increased Safety	Ex e I Mb	EN 60079-7 2015	
Group I	IECEx APPROVAL to IEC60079-0 2011		CML Certificate no:	CML 15.0020X	Ex d Flameproof	Ex d I Mb	IEC 60079-1 2014-06	Ex e Increased Safety	Ex e I Mb	IEC 60079-7 2006-7
	EAC CoC No TCRU C-GB. BH02. B.00386									
	ATEX APPROVAL to EN60079-0 2012		CML Certificate no:	CML 15ATEX1037X	Ex d Flameproof	Ex d II C Gb	EN 60079-1 2014	Ex e Increased Safety	Ex e II C Gb	EN 60079-7 2015
Group II	IECEx APPROVAL to IEC60079-0 2011		CML Certificate no:	CML 15.0020X	Ex ta Dust Ignition Proof	Ex ta IIIC Da IP6X	IEC 60079-31 2014	Ex d Flameproof	Ex d II C Gb	IEC 60079-1 2014-06
	EAC CoC No TCRU C-GB. BH02. B.00386									
	ATEX APPROVAL to EN60079-0 2012		CML Certificate no:	CML 15ATEX1037X	Ex d Flameproof	Ex d II C Gb	EN 60079-1 2014	Ex e Increased Safety	Ex e II C Gb	EN 60079-7 2006-7
Ex ta Dust Ignition Proof		Ex ta IIIC Da IP6X	IEC 60079-31 2013							

FSS - EXD

NEW

Construction: Nickel Plated Brass gland with a nylon and elastomeric seal and two part epoxy resin pack. Supplied in boxes of one, complete with instructions and gloves.

Typical Applications: Flameproof barrier gland offering a high specification, high quality solution for Ex d, Ex e and Ex ta applications. IP rating: IP66 + IP67 + IP68 (5 bar)

Temp Range: -60°C to +85°C



Certified as Equipment IP68

To fit nominal size (mm)	metric thread part number
20	FSS20-M20-EXD
25	FSS25-M25-EXD
32	FSS32-M32-EXD
40	FSS40-M40-EXD*
50	FSS50-M50-EXD*

FCC

stainless steel
P clips
P clip to support
conduit.



FCC20-SS	20
FCC25-SS	25
FCC32-SS	32
FCC40-SS	40
FCC50-SS	50

Ordering Notes

* Indicates parts made to order on request and may be subject to MOQ and leadtime.



FSSBRD system

stainless steel annular
corrugated conduit with
overbraid



Conduit



FSSBRD

Construction: Stainless steel (316L) annularly corrugated conduit with stainless steel (316L) overbraid.

Typical Applications: Inherent Low Fire hazard performance with superior Ingress Protection (IP68), excellent corrosion resistance and enhanced EMC performance together with abrasion resistance. Metro rail stations and tunnels.

Colour: Self colour

- IP rating: IP68
- Temperature range -100°C to +400°C
- High Mechanical Strength
- High Abrasion resistance
- Pull off strength: 150kg (20mm)
- High compression strength 1000kg/100mm
- Inherent low fire hazard
- Compliant to LUL Std S1085 (Pending)
- EN 45545-2 to HL3 and NFPA 130 compliant
- Excellent Corrosion resistance
- Oil resistant
- UV resistant
- Provides EMC screening – Standard
- Offers Antistatic properties



nominal size (mm)	FSSBRD part number	reel length (m)	outside dia (mm)	inside dia (mm)	min inside bend radius (mm)
20	FSSBRD20	25	21.6	16.2	60
25	FSSBRD25	25	28.3	20.2	70
32	FSSBRD32*	25	33.8	25.4	80
40	FSSBRD40*	10	43.0	34.1	120
50	FSSBRD50*	10	51.2	40.0	145

Glands

IP68



Hazardous Area Approvals

Group I	ATEX APPROVAL to EN60079-0 2012	CML Certificate no:	CML 15ATEX1037X	Ex d Flameproof	Ex d I Mb	EN 60079-1 2014	Ex e Increased Safety	Ex e I Mb	EN 60079-7 2015
Group I	ATEX APPROVAL to IEC60079-0 2011	CML Certificate no:	CML 15.0020X	Ex d Flameproof	Ex d I Mb	IEC 60079-1 2014-06	Ex e Increased Safety	Ex e I Mb	IEC 60079-7 2006-7
	EAC CoC No TCRU C-GB. BH02. B.00386								
	ATEX APPROVAL to EN60079-0 2012	CML Certificate no:	CML 15ATEX1037X	Ex d Flameproof	Ex d II C Gb	EN 60079-1 2014	Ex e Increased Safety	Ex e II C Gb	EN 60079-7 2015
Group II	ATEX APPROVAL to EN60079-0 2012	CML Certificate no:	CML 15ATEX1037X	Ex ta Dust Ignition Proof	Ex ta IIIC Da IP6X	EN 60079-31 2014			
	ATEX APPROVAL to IEC60079-0 2011	CML Certificate no:	CML 15.0020X	Ex d Flameproof	Ex d II C Gb	IEC 60079-1 2014-06	Ex e Increased Safety	Ex e II C Gb	IEC 60079-7 2006-7
	EAC CoC No TCRU C-GB. BH02. B.00386								

FSSBRD - EXD

NEW

Construction: Nickel Plated Brass gland with a nylon and elastomeric seal and two part epoxy resin pack. Supplied in boxes of one, complete with instructions and gloves.

Typical Applications: Flameproof barrier gland offering a high specification, high quality solution for Ex d, Ex e and Ex ta applications where EMC screening is required.

IP rating: IP66 + IP67 + IP68 (5 bar)



Certified as Equipment IP68

To fit nominal size (mm)	metric thread part number
20	FSSBRD20-M20-EXD
25	FSSBRD25-M25-EXD
32	FSSBRD32-M32-EXD
40	FSSBRD40-M40-EXD
50	FSSBRD50-M50-EXD

FCC

stainless steel P clips
P clip to support conduit.

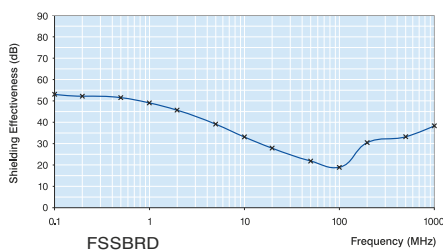


FCC20-SS	20
FCC25-SS	25
FCC32-SS	32
FCC40-SS	40
FCC50-SS	50

Ordering Notes

* Indicates parts made to order on request and may be subject to MOQ and leadtime.

EMC Screening Performance



Accessories

fixing clips

plated steel with black pvc liner or stainless steel.
LFH liner available on request



to fit conduit size
part number
part number

10	FCC10	FCC10-SS*
12	FCC12	FCC12-SS
16	FCC16	FCC16-SS
20	FCC20	FCC20-SS
25	FCC25	FCC25-SS
32	FCC32	FCC32-SS
40	FCC40	FCC40-SS
50	FCC50	FCC50-SS
63	FCC63	FCC63-SS*
75	FCC75	
80	FCC80	
106	FCC106	

conduit clip

nylon conduit clip with integral lid - black or grey



(For fixing rails & accessories see website)



to fit nominal conduit sizes
conduit clip for corrugated
conduit clip for plain or rigid

10	FCL10	
13	FCL13	
16	FCL16	FCL16B-P
18	FCL18	FCL18B-P
20	FCL20	FCL20B-P
21	FCL21	FCL21B-P
25	FCL25	FCL25B-P
28	FCL28	
32	FCL32	
34	FCL34	FCL33B-P
42	FCL42	
54	FCL54	
67		
80		

FCLAMP NEW

non-metallic, heavy duty conduit clamp
Nylon PA66, Nylon conduit fixing clamp for corrugated conduit.

clamp

	FCLAMP- 3-16	
	FCLAMP- 3-21	
	FCLAMP- 4-28	
	FCLAMP- 5-34	
	FCLAMP- 6-42	
	FCLAMP- 7-54	
	FCLAMP- 7-67	
	FCLAMP- 8-80	

EC

end cap

Nylon PA66 end cap to snap over end of conduit and provide a smooth entry bush to prevent snagging and sharp edges, and provide a neat finish when no connectors are used.



end cap

	EC16B	
	EC21B	
	EC28B	
	EC34B	
	EC42B	
	EC54B	

REC NEW

rubber end cap

Thermoplastic elastomer cap used to seal end of conduit. Can be cut to size depending on size of cable. Can be additionally secured using cable tie (not supplied).



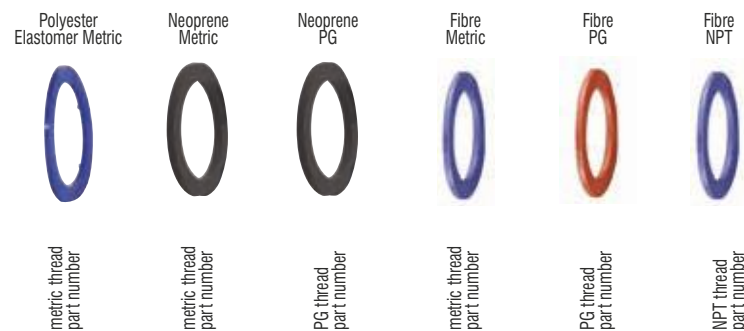
part number
to fit conduit size
outlet ID mm

REC10	10	0-7
REC13	13	0-7
REC16	16	0-11
REC21	21	0-15
REC28	28	0-21
REC34	34	0-25
REC42	42	0-34
REC54	54	0-46
REC67	67	0-52
REC80	80	0-62

* indicates parts made to order on request and may be subject to MOQ and lead time

sealing washers

Polyester Elastomer, Neoprene and fibre face sealing washers



	SW12	SWPG7	FW12	FWPG7	
RSW16	SW16	SWPG9	FW16	FWPG9	
RSW20	SW20	SWPG11	FW20	FWPG11	FW050*
RSW25	SW25	SWPG13	FW25	FWPG13	FW075*
RSW32	SW32	SWPG16	FW32	FWPG16	FW100*
RSW40	SW40	SWPG21	FW40	FWPG21	FW125*
RSW50	SW50	SWPG29	FW50	FWPG29	FW150*
RSW63	SW63	SWPG36	FW63	FWPG36	FW200*
		SWPG42			
		SWPG48		FWPG48	

earthing washers

shake proof washer



metric thread
part number

	SPW16
	SPW20
	SPW25
	SPW32

earth tag washer



metric thread
part number

	ET-M20
	ET-M25

Cutting Conduit

Liquidtight Metallic Conduits



Metallic conduits should be cut with a fine tooth (32 TPI) hacksaw or bandsaw. Ensure you make a straight vertical cut. Our clamping vice, part no. BSB makes the use of a hacksaw much easier.

Liquidtight Overbraided Conduits



Cutting of overbraided conduit is made much easier by tightly wrapping self adhesive tape around the conduit and sawing through the middle of the tape. The tape should be removed after cutting if EMC screening is required. Ensure you make a straight vertical cut.

FSS Annular Metallic Conduits



Metallic conduits should be cut with a fine tooth (32 TPI) hacksaw or bandsaw. Ensure you make a straight vertical cut. Our clamping vice, part no. BSB makes the use of a hacksaw much easier.

FSSBRD Annular Overbraided Conduits



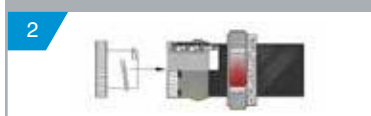
Cutting of overbraided conduit is made much easier by tightly wrapping self adhesive tape around the conduit and sawing through the middle of the tape. The tape should be removed after cutting if EMC screening is required. Ensure you make a straight vertical cut.

C-UL & EXE Fittings



Our fitting's components are supplied part assembled to illustrate how they go together. Our C-UL type and EXE fittings consist of a compression nut, an elastomeric seal, an insert and a body.

Type C Braided Fittings



Screw the insert into the end of the conduit until this gives a secure fit.

Compression Nut & Seal



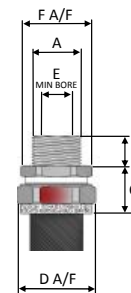
Pass the compression nut over the conduit and then slide the blue seal onto the conduit ensuring that the angled side is toward the compression nut as shown.

Type C Braided Fittings



Bring the body to mate with the compression back nut. Fittings should be tightened to the torques shown in the table to ensure security and IP rating.

Conduit Size	Part No.	Metric Thread	Dimensions (mm)					Compression nut Torque Nm
		A	B	C	D (A/F)	E	F (A/F)	
16	LTP16-M20-EXE	M20x1.5	12.0	21.2	26.0	10.7	24.0	12-15
20	LTP20-M20-EXE	M20x1.5	12.0	21.7	29.0	14.5	26.0	14-17
25	LTP25-M25-EXE	M25x1.5	14.0	26.7	35.0	18.0	33.0	17-22
32	LTP32-M32-EXE	M32x1.5	15.0	31.0	42.0	24.6	40.0	21-28
40	LTP40-M40-EXE	M40x1.5	16.0	31.7	52.0	32.7	50.0	43-53
50	LTP50-M50-EXE	M50x1.5	18.0	35.2	58.0	37.7	58.0	49-63
63	LTP63-M63-EXE	M63x1.5	20.0	39.0	70.0	49.0	70.0	50-65



FSSBRD Gland and fitting conduit



Our gland's components are supplied part assembled to illustrate how they go together. Our FSSBRD type glands consist of an outer compression nut, an inner compression nut, an elastomeric seal, an insert and a body.

Braided Gland Instructions



Our fitting's components are supplied part assembled to illustrate how they go together.

Insert being fitted



Pass the compression nut over the conduit and then slide the blue seal onto the conduit

Attaching the body



Fit the internal retaining clip and conduit seal to the internal corrugations. Bring the body to mate with the inner compression nut and secure.

Securing & Tightening

Visit our website for further information on cable insertion, mixing epoxy compound, and securing and tightening of the FSSBRD EXD gland.

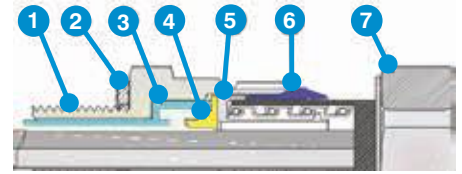
Refer to page 30/31 for EXD and FSS EXD Instructions.

Flexicon EXD Conduit Gland

Installation Guide & Instructions

Conduit Gland Components

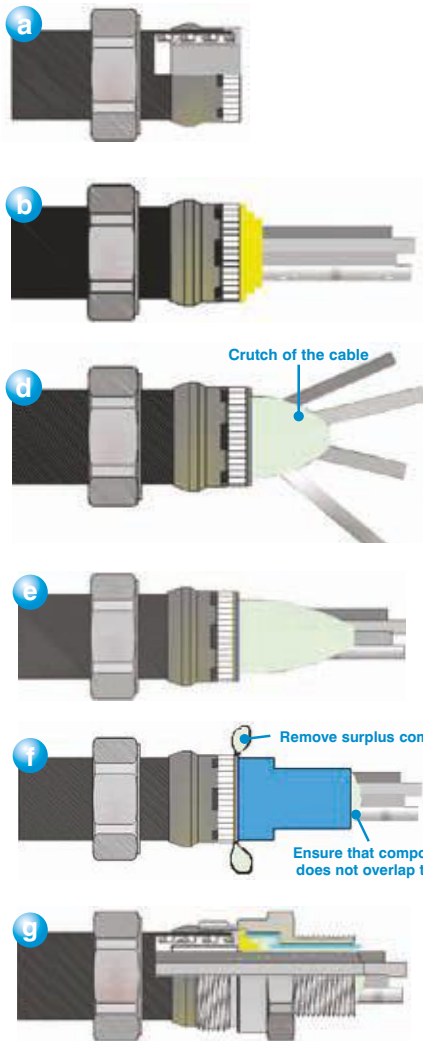
- | | |
|------------------|--------------------|
| 1. Gland Body | 5. Conduit Insert |
| 2. RSW Washer | 6. Conduit Seal |
| 3. Compound Tube | 7. Compression Nut |
| 4. Cap | |



NOTE: For LTPB-EXD and LTP-EXD-90 & 45 installation instructions visit our website for further information.

Installation instructions for Flexicon conduit gland type EXD

Please read all instructions carefully before beginning the installation



- a** Disconnect the Compression Nut(7) and remove the Conduit Seal (6) and Conduit Insert (5) from the gland. Slide the nut over the conduit, followed by the conduit seal (oriented as shown below) and screw the conduit insert into place.
- b** Remove the Compound Tube (3), and Cap (4) as an assembly from the Gland Body (1). Feed the prepared cable/cores through the flexible conduit and then pass the cap over the cores so that it rests on the conduit insert (5).
- c** If the installation involves a cable, remove any bedding or fillers from around the cable cores. If the cable cores have screens, these should be unravelling and then twisted together to form a single core. Wearing the protective gloves supplied, mix all of the two-part epoxy compound as supplied until it is pliable and an even colour is achieved. The minimum temperature when mixing is 10°C.
Note: Ensure compound is within use by date. If not please contact Flexicon for replacement.
- d** Separate the cable cores and apply the compound to the crutch of the cable for a distance of about 6mm and pack into place. If a drain wire is present then it should be sleeved with some heat shrink tubing which is pushed into the compound before shrinking with the application of some heat. Screens that have been twisted together should be treated as a drain wire.
- e** Bring the cores together again and pack more compound around them to a length and diameter sufficient to fill the compound tube, ending in a taper.
- f** Pass the compound tube (3) over the conductors until the stepped end is fully located with the cap (4). Pack more compound into place until the compound tube is fully filled and all conductors are fully surrounded with the compound. Ensure compound **does not** overlap tube. Remove **all** compound from surface of tube. Remove all excess compound when assembling.
- g** Re-install the conduit assembly into the entry item making sure the compound is not disturbed and loosely tighten the compression nut (7) onto the gland body (1). When the compound has cured the entry item should be removed from the assembly and fitted to the apparatus. The gland can then be retrofitted into it and the compression nut (7) finally tightened. Typical cure times are shown below.

Installation Instructions – additional information

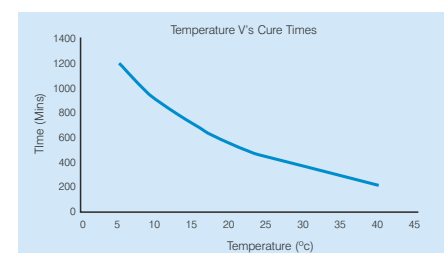
Installation should only be performed by a competent person using the correct tools. Read all instructions before beginning installation.

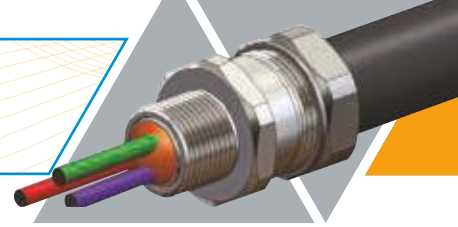
Special Conditions For Safe Use

- 1** The cable gland shall only be used where the temperature at the point of entry is in the range of -60°C to +85°C.
- 2** The female entry may need additional sealing to maintain the ingress protection rating as applicable to the associated equipment to which it is attached.

- 3** The cable gland is designed for use in Group I applications where the installed cable is compliant with the requirements of the local code of practice and conduit provides additional mechanical protection.
- 4** When installing the gland into a plain hole ensure that the diameter of the hole is no greater than 0.7mm larger than the diameter of the thread. An appropriate metal locking nut should also be used.
- 5** Ensure throughout the compound length at least 20% of the cross sectional area of the compound tube is filled with compound.

- 6** The fitting is only suitable for fixed installations. Ensure the conduit is effectively clamped to prevent twisting and pulling.

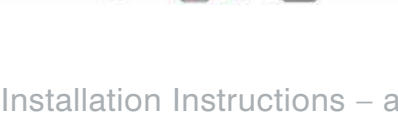
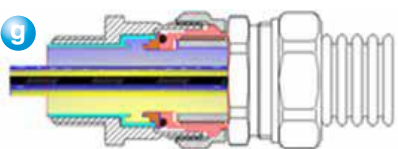
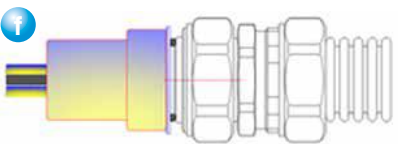
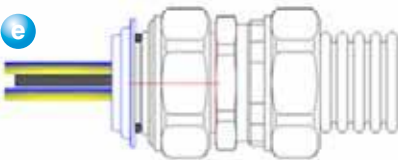
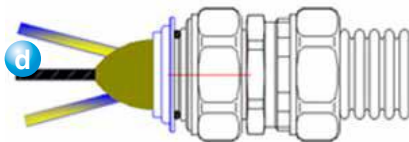
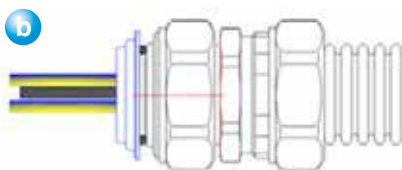
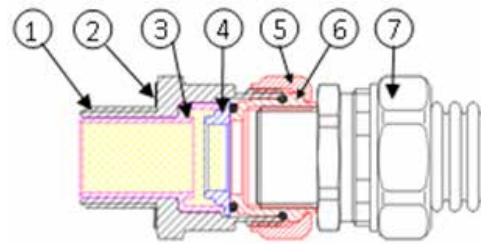




Installation Guide & Instructions

Conduit Gland Components

- | | |
|------------------|--------------------|
| 1. Gland Body | 5. EXD Locking Nut |
| 2. RSW Washer | 6. Conduit Seal |
| 3. Compound Tube | 7. Compression Nut |
| 4. Cap | |



NOTE: For FSSBRD-EXD installation instructions visit our website for further information.

Installation instructions for Flexicon conduit gland type EXD FSS

Please read all instructions carefully before beginning the installation

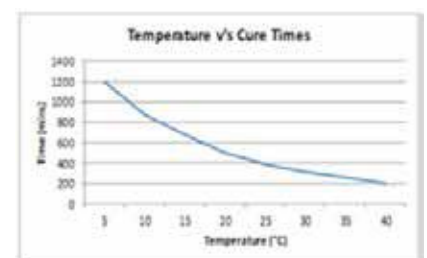
- Disconnect the EXD Locking Nut(5) and remove the EXD gland. The Nut and Swivel adaptor are fixed in place, do not remove.
- Feed the prepared cable/cores through the FSS conduit and then pass the cap over the cores so that it rests on the Swivel Adaptor (6).
- If the installation involves a cable, remove any bedding or fillers from around the cable cores. If the cable cores have screens, these should be unravalled and then twisted together to form a single core. Wearing the protective gloves supplied, mix all of the two-part epoxy compound as supplied until it is pliable and an even colour is achieved. The minimum temperature when mixing is 10°C. Note: Ensure compound is within use by date. If not please contact Flexicon for replacement.
- Separate the cable cores and apply the compound to the crutch of the cable for a distance of about 6mm and pack into place. If a drain wire is present then it should be sleeved with some heat shrink tubing which is pushed into the compound before shrinking with the application of some heat. Screens that have been twisted together should be treated as a drain wire.
- Bring the cores together again and pack more compound around them to a length and diameter sufficient to fill the compound tube, ending in a taper.
- Pass the compound tube (3) over the conductors until the stepped end is fully located with the cap (4). Pack more compound into place until the compound tube is fully filled and all conductors are fully surrounded with the compound. Ensure compound overlap tube. Remove compound from surface of tube. Remove all excess compound when assembling
- Re-install the conduit assembly into the entry item making sure the compound is not disturbed and loosely tighten the compression nut (5) onto the gland body (1). When the compound has cured the entry item should be removed from the assembly and fitted to the apparatus. The gland can then be retrofitted into it and the compression nut (5) finally tightened. Typical cure times are shown below.

Installation Instructions – additional information

Installation should only be performed by a competent person using the correct tools. Read all instructions before beginning installation.

Special Conditions For Safe Use

- The cable gland shall only be used where the temperature at the point of entry is in the range of -60°C to +85°C.
- The female entry may need additional sealing to maintain the ingress protection rating as applicable to the associated equipment to which it is attached.
- The cable gland is designed for use in Group I applications where the installed cable is compliant with the requirements of the local code of practice and conduit provides additional mechanical protection.
- When installing the gland into a plain hole ensure that the diameter of the hole is no greater than 0.7mm larger than the diameter of the thread. An appropriate metal locking nut should also be used.
- Ensure throughout the compound length at least 20% of the cross sectional area of the compound tube is filled with compound.
- The fitting is only suitable for fixed installations. Ensure the conduit is effectively clamped to prevent twisting and pulling.



Technical Data - Resistance to Chemicals

Page number	Conduit System	ASTM NO. 1	ASTM NO. 2	ASTM NO. 3	ACETIC ACID (10%)	ACETONE	ALUMINIUM CHLORIDE	BENZENE	CARBON TETRACHLORIDE	CHLOROFORM	CITRIC ACID	COPPER SULPHATE	CRESOL	DIESEL OIL	DIETHYLAMINE	ETHANOL	ETHER	ETHYLAMINE	ETHYLENE GLYCOL	FREON 32	HYDROCHLORIC ACID (10%)	HYDROCHLORIC ACID (30%)	
14	LTP	galv steel, pvc coated, liquid tight	L	L	L	✓	×	×	×	L	×	✓	✓	L	L	L	×	L	L	L	L	L	×
14	LTPAS	galv steel, pvc coated, liquid tight	L	L	L	✓	×	×	×	L	×	✓	✓	L	L	L	×	L	L	L	L	L	×
16	LTPHC	galv steel, thermoplastic rubber, liquid tight	✓	L	L	✓	✓	×	×	L	L	✓	✓	✓	✓	✓	✓	L	✓	×	✓	✓	✓
14	LTPLFH	galv steel, LFH coated, liquid tight	✓	✓	✓	✓	×	×	×	L	×	✓	✓	L	L	L	×	L	L	L	L	L	×
15	LTPUL	galv steel, PVC coated, liquid tight	✓	✓	✓	✓	×	×	×	L	×	✓	✓	L	L	L	×	L	L	L	L	L	×
15	LTPPU	galv steel, polyurethane coated, liquid tight	✓	✓	✓	×	L	L	L	L	×	✓	✓	×	✓	L	✓	L	×	✓	×	×	×
15	LTPPUAS	galv steel, polyurethane coated, liquid tight	✓	✓	✓	×	L	L	L	L	×	✓	✓	×	✓	L	✓	L	×	✓	×	×	×
16	LTPSS	stainless steel, pvc coated, liquid tight	✓	✓	✓	✓	×	×	×	L	×	✓	✓	L	L	L	×	L	L	L	L	L	×
18	LTBRDP	galv steel, braided core, pvc coated, liquid tight	✓	✓	✓	✓	×	×	×	L	×	✓	✓	L	L	L	×	L	L	L	L	L	×
18	LTBRDLFH	galv steel, braided core, LFH coated, liquid tight	L	L	L	✓	×	×	×	×	×	✓	✓	×	L	✓	×	×	×	✓	×	×	×
24	LTPBRD	galv steel, rubber coated, SS316 overbraid	✓	L	L	✓	✓	×	×	L	L	✓	✓	✓	✓	✓	✓	L	✓	×	✓	✓	✓
17	LTP-FG	galv steel, pvc coated, liquid tight	L	L	L	✓	×	×	×	L	×	✓	✓	L	L	L	×	L	L	L	L	L	×
17	LTBRDP-FG	galv steel, pvc coated, liquid tight	L	L	L	✓	×	×	×	L	×	✓	✓	L	L	L	×	L	L	L	L	L	×
17	LTPSS-FG	stainless steel, pvc coated, liquid tight	✓	✓	✓	✓	×	×	×	L	×	✓	✓	L	✓	L	×	L	L	L	L	L	×
26	FSS	stainless steel corrugated	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×
27	FSSBRD	stainless steel corrugated, overbraid	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×

key

✓ good resistance
L limited resistance

SS suitable with stainless steel fittings

× poor resistance



Metallic conduit systems

	HYDROGEN PEROXIDE (30%)	HYDROGEN PEROXIDE (60%)	LACTIC ACID	LUBRICATING OIL	METHANOL	METHYL BROMIDE	MEK	NITRIC ACID (10%)	NITRIC ACID (60%)	OXALIC ACID	OZONE (GAS)	PARAFFIN OIL	PETROL	PHENOL	SEA WATER	SILVER NITRATE	SKODROL	SODIUM CHLORIDE	SODIUM HYDROXIDE (10%)	SODIUM HYDROXIDE (60%)	SULPHUR DIOXIDE (GAS)	SULPHURIC ACID (10%)	TOLUENE	TRANSFORMER OIL	1,1,1-TRICHLOROETHANE	TRICHLOROETHYLENE	TURPENTINE	VEGETABLE OIL	VINYL ACETATE	WATER	WHITE SPIRIT	ZINC CHLORIDE	
L	X	L	✓	X	X	L	L	X	✓	L	X	L	L	SS	✓	X	SS	✓	✓	X	SS	X	L	X	X	L	✓	X	✓	L	X	LTP	
L	X	L	✓	X	X	L	L	X	✓	L	X	L	L	SS	✓	X	SS	✓	✓	X	SS	X	L	X	X	L	✓	X	✓	L	X	LTPAS	
L	X	L	L	✓	L	✓	✓	✓	✓	L	✓	✓	✓	SS	✓	✓	SS	✓	X	✓	SS	X	X	L	X	X	✓	✓	✓	X	✓	LTPHC	
L	X	L	L	X	X	X	L	X	✓	L	L	L	L	SS	✓	X	SS	✓	✓	X	SS	X	L	X	X	L	L	X	✓	L	X	LTPLFH	
L	X	L	✓	X	X	X	L	X	✓	L	✓	L	L	SS	✓	X	SS	✓	✓	X	SS	X	L	X	X	L	✓	X	✓	L	X	LTPUL	
L	X	L	L	L	X	L	X	X	L	L	L	✓	X	SS	L	X	✓	L	X	L	L	X	L	X	X	✓	X	✓	L	L	LTPPU		
L	X	L	L	L	X	L	X	X	L	L	L	✓	X	SS	L	X	✓	L	X	L	L	X	L	X	X	✓	X	✓	L	L	LTPPUAS		
L	X	L	✓	X	X	X	L	X	✓	L	✓	L	L	SS	✓	X	SS	✓	✓	X	SS	X	L	X	X	L	✓	X	✓	L	X	LTPSS	
L	X	L	✓	X	X	L	L	X	✓	L	✓	L	L	SS	✓	X	SS	✓	✓	X	SS	X	L	X	X	L	✓	X	✓	L	X	LTBRDP	
X	X	✓	L	X	X	X	✓	X	✓	✓	X	L	X	SS	✓	X	✓	✓	✓	X	X	L	L	L	L	X	L	X	✓	X	✓	LTBRDLFH	
L	X	L	L	✓	L	✓	✓	✓	✓	L	✓	✓	✓	L	✓	✓	SS	✓	X	✓	SS	X	X	L	X	X	✓	✓	✓	X	✓	LTPBRD	
L	X	L	✓	X	X	L	L	X	✓	L	X	L	L	SS	✓	X	SS	✓	✓	X	SS	X	L	X	X	L	✓	X	✓	L	X	LTP-FG	
L	X	L	✓	X	X	L	L	X	✓	L	X	L	L	SS	✓	X	SS	✓	✓	X	SS	X	L	X	X	L	✓	X	✓	L	X	LTBRDP-FG	
L	X	L	✓	X	X	X	L	X	✓	L	✓	✓	L	SS	✓	X	SS	✓	✓	X	SS	X	L	X	X	L	✓	X	✓	L	X	LTPSS-FG	
✓	✓	✓	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	SS	✓	✓	SS	✓	L	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FSS	
✓	✓	✓	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	SS	✓	✓	SS	✓	L	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FSSBRD

key

✓ good resistance
L limited resistance

SS suitable with stainless steel fittings

X poor resistance

The chart above is based on exposure to single chemicals at room temperature and should be used as a selection guide. For additional chemicals, higher concentrations, elevated temperatures or combinations of chemicals, please call +44 (0)1675 466900 for technical advice.

For more guidance on chemical resistance of conduits, please visit our technical section on our website.









IP Rating and Technical Guidance

IP ratings guide

(Ingress Protection to BS EN IEC 60529)











IP40

1st digit – protection against solid objects

	0 No protection
	1 Protected against objects greater than 50mm
	2 Protected against objects greater than 12mm
	3 Protected against objects greater than 2.5mm
	4 Protected against objects greater than 1.0mm
	5 Ingress of dust is not totally prevented but dust does not enter in harmful quantities
	6 No ingress of dust

IP40

2nd digit – protection against water

	0 No protection
	1 Protected against falling drops
	2 Protected against drops falling at 15°
	3 Low pressure spray – similar to shower head - up to 60° from vertical
	4 Low pressure spray – similar to shower head – from any angle for 5 minutes
	5 Medium pressure jet – similar to garden hose – from any angle for 3 minutes
	6 High pressure jet – similar to fire hose – from any angle for 3 minutes
	7 Submersion at 1 metre for 30 minutes
	8 Higher water pressure eg: 2 bar for 2 hours. Conduits are tested in-house at up to 10 bar. (equivalent to 100m underwater)
	9 Steam clean, high pressure high temp jet wash



Buyer Beware

IP tests are type tests of short duration and do not guarantee long term performance. EN 60529 states that equipment conforming to IP67 or IP68 cannot be assumed to meet IP66 and that the manufacturer shall declare the pressure and duration of the test, for example, FPAX 2 bar for 2 hours.

Technical guidance

Application advice

Flexicon can offer impartial advice on which of our wide range of conduit systems are most suited to your application. Factors which may be important include:-

Standards, performance and approvals

Flexicon conduits and fittings are manufactured by Flexicon to comply with the IEC and European conduit standard BS EN IEC 61386 - see classification table below.

Certain tests are carried out internally by Flexicon, other testing is carried out externally by accredited test laboratories. Specific test reports are available upon request.

Vibration and shock testing to EN61373 Cat 2.

Certain conduit systems have been tested and approved to the relevant parts of the Australian Standard AS/NZS 2053:3 2001. Where product performance data over and above the requirements of BS EN IEC 61386 is provided e.g: Low Fire Hazard testing and EMC screening, other appropriate standards have been used.

Cable glands are manufactured to EN 50262.

- Compression strength
- Tensile strength
- Impact strength
- Temperature range
- Flexibility
- Fatigue life
- Electrical insulation or continuity
- IP rating
- Chemical resistance
- Corrosion resistance
- Abrasion resistance
- UV resistance
- Anti vibration
- Fire performance
- EMC screening
- Dimensions
- Weight

Classification of conduit systems to BS EN IEC 61386

Level	1st digit Compression Strength N/50mm	2nd digit Impact Strength Joules at min temp	3rd digit Minimum Temp deg C	4th digit Maximum Temp deg C	5th digit Conduit Type	6th digit Electrical Properties	7th digit IP Rating Solids	8th digit IP Rating Water	9th digit Corrosion Resistance (water)	10th digit Tensile Strength N	11th digit Flame Propagation	12th digit Suspended Load N/48hr
0						None declared		0	None declared	None declared		
1	V. Light (125)	V. Light (0.5)	5	60	Rigid	Continuous		1	Low in & out	V. Light (100)	Non Flame Propagating	V. Light (20)
2	Light (320)	Light (1)	-5	90	Pliable	Insulating		2	Medium in & out	Light (250)	Flame Propagating	Light (30)
3	Medium (750)	Medium (2)	-15	105	Pliable self recovering	Continuous + Insulating	3	3	Medium in & high out	Medium (500)		Medium (150)
4	Heavy (1250)	Heavy (6)	-25	120	Flexible		4	4	High in & out	Heavy (1000)		Heavy (450)
5	V. Heavy (4000)	V. Heavy (20)	-45	150			5	5		V. Heavy (2500)		V. Heavy (850)
6				250			6	6				
7				400				7				

EMC Screening Performance



EMC Screening Using Flexible Conduit

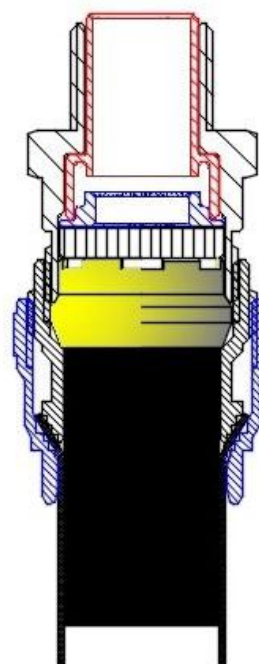
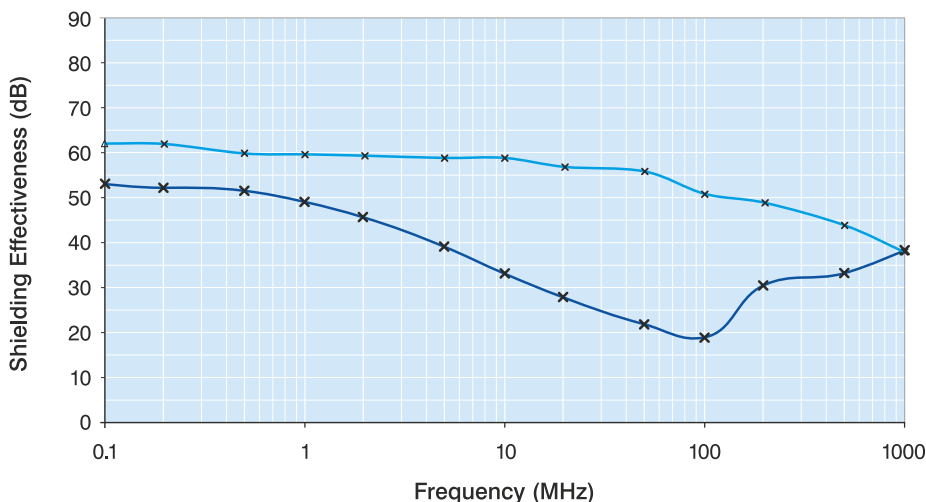


To obtain EMC screening on conduit, the outer plastic sheath must be trimmed back prior to assembly of the fitting to ensure good electrical contact with the tapered bore of the fitting body.

Flexicon has classified EMC screening of our products as follows;

STANDARD EMC SCREEN ★	ENHANCED EMC SCREEN ★★	SUPER EMC SCREEN ★★★
Standard 50dB @ 1MHz	Enhanced 60dB @ 1MHz	Super 70dB @ 1MHz

Braid Material		Part number
Galv Steel		LTBRDP, LTBRDP-FG, LTBRDLFH
Stainless Steel		LTPBRD, FSSBRD



Technical Data

The reaction of products in the event of a fire is critical when it comes to effective product specification. There are recognised national and international standards related to products performance and reaction to fire. Flexicon can offer a wide range of conduit systems which have been independently tested.

Low Fire Hazard systems are required to protect the public, personnel and property in the event of a fire and are demanded by specifiers, Industry Bodies, Train and Network Operators, fire services and even insurers.

At Flexicon we define a Low Fire Hazard product by having **all** of the following properties:

Highly Flame Retardant

to prevent a fire starting or limit its development if one does start.

Low Smoke

emission in the event of a fire to enable personnel to see their way to escape.

Low Toxicity

in the event of a fire to ensure personnel are not overcome during their escape.

Our product development programme involves extensive testing to the latest Rail Industry standards to ensure the safety of our products, thus providing confidence for specifiers and consultants when it comes to their reaction to fire.

EN 45545 - European Fire Safety

This new European standard is rapidly replacing national standards in Europe and consists of 7 parts.

Conduit performance is quoted to EN 45545-2. R22 is for interior parts and R23 is for exterior parts.

There are three defined levels of performance related to the reaction of fire, HL1, HL2 and HL3. HL3 is the highest level of performance when it comes to the reaction to fire, and will be specified for higher risk applications.

BS 6853

This UK standard relates to passenger rolling stock and are classified into two main categories depending on the operating environment.

Category I relates to Underground applications, which is then sub divided into 2 parts, depending on operating conditions.

Category II relates to Surface stock.

TFL S1085 - Transport for London

This standard is used by London Underground to control the materials used throughout their Underground and Crossrail System.

This standard considers flammability, smoke and toxic fume emissions and includes tests from BS 6853.

Products approved for use have APR numbers. Flexicon's range of conduit systems have 6 Certificates, covering 11 products as Authorised for use.

Certificate No. 296, conduit types FU, SSU and FUSB.

Certificate No. 297, conduit types LFHU, LFHUBRD & LFHP.

Certificate No. 298, conduit types FPR and FPRSS.

Certificate No. 658, conduit type LTBRDLFH.

Certificate No. 2020, conduit type LTPLFH.

Certificate No. 2624, EXD barrier glands.

Halogen Free

gives an indication of low smoke and low toxicity. It also rules out halogen acid gas emission - a fact that is of interest to insurers as acid smoke can destroy computer equipment and damage the structure of a building.

Halogens are Fluorine, Chlorine, Bromine and Iodine.

Flexicon products tested to;



NFPA 130 - North American Standard

This standard is used by US Rail authorities.

Tests called up by NFPA 130 are ASTM E 162 (for flammability) and ASTM E 662 (for smoke). Other North American standards are: ASTM E 1354 Heat Load, Boeing BSS 7239 Toxicity

NF F 16-101/2

This French rail standard consists of an Ignition rating (I) and a Fume Rating (F).

The lower the number the higher the level of performance when it comes to the reaction to fire. I2 F2 offers more protection than I3 F2.

DIN 5510

This German standard consists of three elements including Flame Spread, Smoke evolution and Flaming droplets. Products categorisation looks like this: S4 / SR2 / ST2.

AS/NZS 1530.3 - Australian Standard

This standard is used by Australian Rail.

CEI 11170 - Italian Standard

This standard is used by the Italian Rail. Products categorisation looks like this: LR4.

Russian Fire Safety Certificate - 1374363

Methods of Assessing Fire Performance



Flame Retardancy The minimum requirement is self-extinguishing according to the worldwide conduit system standard BS EN IEC 61386 where a vertical sample of conduit is exposed to a 1kW burner and must extinguish within 30 seconds of the removal of the flame. The char must not have travelled more than a certain distance up the sample and there must be no flaming droplets. Fittings are tested by means of a 750°C glow wire test.

To assess how flame retardant a material is, the normal test method is to measure the Limiting Oxygen Index (LOI) according to BS EN ISO 4589-2 which

determines the percentage of oxygen that needs to be present to support combustion. The higher the LOI percentage, the greater the flame retardancy of the material. Oxygen present in normal air is approx. 21%.

Another method is the glow wire test, BS EN IEC 60695-2, which applies a glow wire to a plaque of material at 750°C, 850°C or 960°C. UL94 is an Underwriters Laboratories standard that measures the rate of burning up a vertical test plaque, category V0 is the most flame retardant followed by V1 and V2. There is a category HB but this indicates that the material is flammable even along a horizontal test plaque.



Low Smoke emission There are a number of fire tests, mainly from the rail industry, where a specified sample of material is burnt under controlled conditions

in a given size smoke chamber and the smoke obscuration of a defined beam of light is measured. Although the different tests are similar, the results and the requirements are different.



Low Toxicity There are a number of fire tests, mainly from the rail industry, where a specified sample of material is burnt under controlled conditions in a given size smoke chamber and the fumes are analysed for various gases, the concentration of each

gas is then multiplied by its toxic potency to give a toxicity index. Although the different tests are similar, the results and the requirements are different.

If halogens, sulphur or phosphorus are present in a material, it is unlikely to pass the low toxicity tests.



Halogen Free The Halogens are fluorine, chlorine, bromine and iodine. Chlorine is the most common in PVC, fluorine is in fluoro-polymers and bromine appears in flame retardants. All of them give off highly toxic fumes and thick smoke. A material cannot be

considered as Low Fire Hazard if it contains halogen. However a halogen free material is not necessarily Low Fire hazard as it may not be low toxicity, low smoke and highly flame retardant.

Halogen content is assessed by various chemical tests and analytical techniques.

Classification of Low Fire Hazard performance (LFH)



Inherently Low Fire Hazard

These products are made entirely from metals so there is no non-metallic material to burn or create smoke or toxic fumes.

Inherently Low Fire Hazard products include; FU, SSU, FB, FUSBB, FTCB, FSS, FSSBRD and metal fittings.



Extra Low Fire Hazard

These products have a Limiting Oxygen Index of greater than 32% as well as being low smoke and low toxicity. Extra Low Fire Hazard products include; LFHU, LFHUBRD, LTPLFH, LTBRDLFH, LFHP, FPR, FPRSS, FPIHR, FPIHRSS and FPRTC.



Standard Low Fire Hazard

These products have a Limiting Oxygen Index of greater than 26% as well as being low smoke and low toxicity. Standard Low Fire Hazard products include; FPAS, FPAH, FPI, FPISS, FPIH, FPIHSS and PA66 fittings.

Product Testing & Approvals

Compliance with international standards

Our products have been designed to be compliant with international standards from EN, NFF, DIN, BS, ASTM and UL. We have extensive third party and in house testing to support product performance Flexicon's Hazardous area approvals are audited to EN/ISO 80079-34.



Tested to Extremes

Flexicon fittings and glands are tested to the required standards as specified in our certification. In all cases the requirements of IEC/EN 60079-0 General Requirements have to be met.



All components are tested; even the non-metallic items such as the seals and compound as used in the EXD gland, are subjected to thermal endurance testing. This comprises of 2 weeks at 95°C and 90% relative humidity. This is followed by 2 weeks at a temperature 20°C above our working temperature which in our case is 105°C. This is followed by a period of 24 hours at -60°C.

After this conditioning the glands are subjected to an impact test of 7 Joules and then ingress protection testing. EXD glands are also subjected to an internal water pressure test to ensure that the compound maintains its integrity following thermal endurance testing as required by IEC/EN 60079-1.



Machining of the glands are carried out in house by CNC machines which have been subjected to SPC (Statistical Process Control) capability studies to ensure that they have the ability to machine to the close tolerances required. In house quality procedures are in place to ensure all glands are manufactured to the highest standard. We also pride ourselves in the ability to provide a high quality gland by ensuring that handling of component parts is controlled from manufacture to assembly.

Products specified for use in Hazardous Areas have specific requirements. Directives are designed to protect employees, the public and the environment from accidents.

- Directive 1999/92/EC is aimed at the worker e.g. the person who is working in the potentially explosive atmosphere. The Directive lays down the minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres. This is based on Article 137 and is known as ATEX 137. For the UK this is covered by DSEAR (Dangerous Substances and Explosive Atmosphere Regulations).
- Directive 2014/34/EU is aimed at the manufacturer and gives Essential Health and Safety requirements (known as EHSR's) which must be met and is aimed at giving free movement to products within the EU. All products show a CE mark and are supplied with a Declaration of Conformity. All equipment manufactured is designed and tested by a Notified Body to one of the Protection Concepts covered in the IEC 60079 series of standards. Flexicon manufactures products according to IEC 60079-1 'Ex d Flameproof'; IEC 60079-7 'Ex e Increased Safety' and IEC 60079-31 'Ex t Dust Ignition Protection'.

Conduits are not required to be certified in an Ex d installation but that all aspects of the installation must meet the requirements of IEC 60079-14.

To conform to IEC 60079-14 conduits crossing between zones and/or safe areas must have a stopping box installed.

Training is available on hazardous areas and practical training for the installation of the EXD barrier cable gland. It is important that all installations are carried out by competent personnel.

Standards and Approvals

Information



FM58347

ISO 9001 - 2015

Flexicon is accredited to ISO 9001 2015 by the British Standards Institution (BSI) for the design and manufacture of conduit systems and accessories. Certificate No FM58347.



BS EN IEC 61386

BS EN IEC 61386 is the worldwide standard for conduit systems providing standardised tests and classifications of system performance.

Our Technical Director, Ian Gibson, is the chairman of both the IEC (worldwide) and CENELEC (European) committees that prepare conduit standards.



CE

Flexicon are marked with the CE mark to show that they comply with the essential requirements of the relevant European Directives.



RoHS

All Flexicon's products meet the requirements of the European RoHS Directive, Restriction of Hazardous substances. This precludes the use of certain toxic materials and heavy metals.



REACH

All Flexicon's products meet the requirements of the European RoHS Directive, Restriction of Hazardous substances. This precludes the use of certain toxic materials and heavy metals.



Hazardous Area Approvals

Flexicon's EXD glands have been independently tested and accredited for ATEX and IECEx Ex d, Ex e and Ex t applications. These glands also have CU-TR approvals.



IECEx factory approval for the manufacture of Ex d, Ex e and Ex t products by Intertek

IEC 60079-1, Ex d Flameproof glands

IEC 60079-7, Ex e Increased Safety glands and conduit fittings

IEC 60079-31, Ex t Dust Ignition Protection glands and conduit fittings



ATEX factory approval for the manufacture of Ex d and Ex e products by Intertek

- EN 60079-1, Ex d Flameproof glands

- EN 60079-7, Ex e Increased Safety glands and conduit fittings

- EN60079-31, Ex ta Dust Ingition Proof



Our LTP EXE range of fittings have been tested and accredited for both ATEX and IEC Ex.

Our LTP-CUL fittings have been UL listed and are suitable for use in Hazardous locations as per NEC Article 501(B)(2) Class I Div 2, Article 502 (A)(2) & (B)(2) Class II Div 1&2, Article 503 (A)(3) & (B)(3) Class III Div 1&2.



EU Regulation 10/2011
EN 1672-2 EN ISO 14159

Hygienic Applications

Flexicon's Hygienic products are manufactured from FDA approved ingredients and have been independently tested to European Food Regulation 10/2011.



Lloyds Register of Shipping Type Approval

Specific conduit systems from Flexicon have Lloyds Register of Shipping Type Approval having been assessed for suitability for marine and other arduous applications.

Non Hazardous Area Products

Innovation is at the centre of everything we do. This Hazardous Area Guide features 5 new conduit systems but our full range of Conduit Systems suitable for Non Hazardous Areas consists of 60 systems.



Metallic Conduit & Fittings Range

We work with a range of material types including Galvanised Steel and Stainless Steel, and have developed composite solutions to enhance performance properties to suit technically demanding applications. Our Metallic Offer features over 34 systems, in a range of sizes from 10mm to 75mm.

Flexicon manufacture a range of helically wound conduits, with and without coatings, liquid tight conduits, pliable galvanised steel corrugated conduits and annularly corrugated conduits. Metallic systems can also be combined with overbraids to create composite solutions when required.

- High Compression Strength
- High Pull Off Strength
- Wide Temperature Tolerances
- High Impact Strength
- EMC Screening Performance
- High IP Rating – up to IP69
- Inherent Fire Performance Properties
- High Abrasion Resistance



Non Metallic Conduit & Fittings

Advances in material technologies and manufacturing techniques have created solutions that offer combinations of properties previously not associated with non metallic systems. We work with a range of non metallic material types, from Polyamide (PA6, PA12, PA66), Polypropylene (PP) and PVC and can offer over 26 systems in a range of sizes from 7mm to 106mm.

Flexicon manufacture both corrugated conduits and smooth bore spiral helically reinforced conduits, offering you the choice depending on your application.

- Wide range of sizes
- Light Weight
- High Strength to Weight ratio
- Easy to cut
- High Fatigue life
- Superior IP ratings - up to IP69
- Non Corrosive
- Highly Flexible



Product Focus – Flexicon Ultra™

NEW

The Power of One – Designed for use with Flexicon's Nylon Conduit range (either fine or coarse pitch), this true one piece Flexible Conduit Fitting features Integrated Sealing Technology to offer the ultimate in Strength, Integrity & Assurance for Cable Protection.

Ultra FLEXICON
THE POWER OF ONE

The World's Best Conduit Fitting - The Power of One

Flexicon Ultra™ provides a true one piece solution, engineered to provide unrivalled performance with both fine and coarse pitch conduits.

With all round teeth to secure the conduit, Flexicon Ultra™ offers superior dynamic performance providing Integrity, Strength & Assurance in one package.

Integrity • Strength • Assurance

Integrated
Sealing
Technology

Features and Benefits

Offering Integrity, Strength and Assurance, Flexicon Ultra™ is the best solution for Performance & Safety Critical applications.

Integrity.

- One Piece - Integrated Sealing Technology
- IP68, IP69 performance
- Simple push and twist connection

Strength.

- 360° Strength- All round teeth
- 70kg Tensile Strength
- Anti-tamper, Dynamic & Vibration performance

Assurance.

- Lifetime sealing & reliability
- Independently tested to extremes
- UK Manufacturer





Tailored Solutions

Flexicon can offer true engineering support when it comes to your Cable Protection requirements. When you talk to us, you know you are talking to the people that design, engineer and manufacture the products you are buying.

We are the experts when it comes to understanding product capabilities and can engineer solutions to help you save time and money when it comes to your protection requirements.

“one size does not necessarily fit all”

When it comes to Cable Protection, “one size does not necessarily fit all”. This is why we have over 60 different conduit systems, but occasionally even this is not enough. Given the diversity of applications for our products we are constantly developing bespoke solutions to meet our Customers needs.

Non standard lengths

- **Long lengths** – Typically when 50m is not long enough we have provided extended lengths such as in special containers and cages up to 1,700m.
- **Short lengths** – 10m is our smallest standard coil length but we can offer shorter lengths if necessary.
- **Pre cut lengths** – Pre-cut to defined dimensions we can offer conduit pre-cut to your requirements ready to use saving you time.

Assemblies

- Ideal for use for wiring harnesses or for OEM's who are integrating products into their finished equipment. Consisting of pre-cut lengths of conduit, with fittings pre-terminated ready for assembly and wiring.

Different Polymer formulations

- We offer a range of different Polymer formulations to change the performance characteristics and properties of our Flexible Conduits. This could be to modify any of the following:
 - Colours
 - UV resistance
 - Flame retardancy
 - Fire performance properties
 - Anti-static

Bespoke thread sizes

- We can offer various thread sizes and types. Our Non metallic fittings utilise barb design allowing us to create a variety of thread sizes across our FPA, FPAX and FPAU conduit fittings with metallic threads. Our manufacturing capability enables us to create various thread types, lengths, size and form.

Bespoke thread types

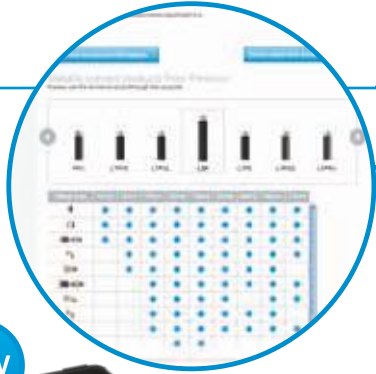
- We can offer various termination options to interface with our Conduits. We have developed time and labour saving solutions to interface with equipment such as:
 - Push Fit termination - no thread
 - Pulling eye - assist with product handling
 - Integrated Cable Strain Relief

Metal finishes

- We can offer different material finishes for metal systems. Often the self colour of Galvanised Steel, Stainless Steel or Aluminium does not match the required aesthetics. We can chemically blacken Stainless Steel conduits and fittings so they are not visible. We can also offer anodising of aluminium components to suit required aesthetics.

Flexicon make it simple

Flexicon are all about innovation, not only in our products, but also in the ways that we deliver product information to our customers.



NEW



www.flexicon.uk.com

flexiapp – find-a-conduit

Try our new smart phone app and find the perfect conduit for your requirements!



NEW

Flexicon 3D CAD Models

Powered by Cadenas, our Parts Community provides technical information on all of our conduits, fittings and accessories. From CAD models, dimensional diagrams and 3D PDFs to part numbers, sizes and downloadable datasheets - all available in one place.



Visit <http://flexicon.partcommunity.com> for further information, or follow the link on the Flexicon website.

Latest Literature

Contact us for your copy now at sales@flexicon.uk.com or visit our website to view online.



Errors, omissions and amendments excepted

Information given in this catalogue is for guidance only as our policy is one of continuous development and specifications may change. Flexicon is not liable for claims arising from product misuse.

Terms and Conditions of Sale

Products are supplied subject to Flexicon terms and conditions of sale. These can be viewed on our website www.flexicon.uk.com



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