Hi-Flex®

Flexible Conduit Systems

Thomas&Betts

Complies to Australian & New Zealand Standards

WHEN SAFETY MATTERS – THERE'S ONLY ONE CHOICE

The Hi-Flex® range of flexible conduit & fittings includes products tested to comply with the rigorous requirements of AS/NZS 2053.1:2001 Conduit & fittings for electrical installations – General requirements & AS/NZS 2053.8:1995 Conduit & fittings for electrical installations – Flexible conduits & fittings of metal or composite material. That means that Hi-Flex® provides peace of mind when it comes to worker safety and asset protection!

Just look at what Hi-Flex® can bring to your installation:

- The only flexible metallic conduit tested to comply with relevant AS/NZS standards
- The most user friendly, high performance range
- Peace of mind with regard to operator safety
- Lifetime cost savings with reduced maintenance
- Maximum asset & infrastructure protection.

WHEREVER YOU FIND ELECTRICITY YOU WILL FIND THOMAS & BETTS

Thomas & Betts is a world leader in the manufacture and supply of electrical accessories for commercial and industrial construction, maintenance and repair markets.

The majority of the range is dedicated to the management, protection and connection of electrical cable. This means that ranges such as cable ties and fastening systems, heatshrink, flexible conduit systems and cable glands are core to the line up. With well known and trusted brands including Ty-Rap®, Hi-Flex® and Nicote®, Thomas & Betts is well positioned to supply both your day to day needs and to provide specifiable products with specific performance criteria.

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QUICK SELECTION GUIDE

CONDUIT TYPE	LIQUID TIGHT	TEMP RATING (C)	METAL	PLASTIC	UV STABLE	HALOGEN FREE	FIRE HAZARD	GENERAL CHEMICAL RESISTANCE	TIGHT BENDS	MOVEMENT	GROUNDED	STD COLOURS	PAGE
JACKETED METALLIC													
HLT	✓	-10 to 105	Steel	PVC	✓		Low	Oils & Acids	✓	✓	✓	G, B, O	5
HTX	✓	-60 to 150	Steel	TPR	✓	✓	Low	Oils	✓	✓	✓	B	6
HSS	✓	-10 to 105	S/Steel	PVC	✓		Low	Oils & Acids	✓	✓	✓	B	6
EXTRA FLEXIBLE METALLIC													
HFU		-20 to 250	Steel		✓	✓	Low	Oils & Acids	✓	✓			10
HFSU		-20 to 70	Steel	PVC	✓		Low	Oils & Acids	✓	✓		B	10
NON–METALLIC													
LTC	✓	-18 to 105		PVC	✓		Low	Oils & Acids		✓		B, O, G	12
EFC	✓	-18 to 60		PVC	✓		Low	Oils & Acids	✓	✓		B, O	12
HF	✓	-40 to 115		Nylon	✓	✓	Low	Oils & Acids	✓	✓		B	14
HFX	✓	-40 to 115		Nylon	✓	✓	Extra Low	Oils & Acids	✓	✓		B	14
FC	✓	-5 to 60		PVC	✓		Low	Petroleum	✓	✓		O	18

Colours: G = Grey, B = Black, O = Orange

AUSTRALIAN & NEW ZEALAND STANDARDS

The AS/NZS2053 series of standards outlines a range of strict criteria that conduits and fittings for electrical applications need to meet in order to claim standards compliance and provide the specifier and end user with a high level of confidence that the product is fit for purpose. Testing to the standard should only be relied upon when carried out by an independent and accredited third party.

The Thomas & Betts Hi-Flex® liquidtight metallic conduits & fittings have been independently tested and comply with:

AS/NZS 2053.1:2001
Conduits & fittings for electrical installations – General requirements

AS/NZS 2053.8:1995
Conduits & fittings for electrical installations – Flexible conduits and fittings of metal or composite material

The combination of these two standards ensures that:

- The internal diameter of the conduit provides the expected carrying capacity.
- The construction is free from burrs, defects or sharp edges that could damage a cable.
- The conduit has sufficient resistance to compression to ensure a Heavy Duty rating.
- The combination of conduit & fitting demonstrates excellent pull-out strength to ensure a safe installation.
- The conduit shows no signs of damage despite 5000 flexings at a rate of 40 per minute.
- The conduit can maintain its Heavy Duty rating at the maximum heat stress of 105ºC.
- The conduit is non-flame propagating.

ARE YOU CONFIDENT THAT THE CONDUIT SYSTEM YOU USE MEETS ALL OF THESE CRITERIA?

HI-FLEX® LIQUIDTIGHT FLEXIBLE HEAVY DUTY METAL CONDUIT SYSTEMS

Hi-Flex® Liquidtight Flexible Metal Conduits are compliant with Australian & New Zealand Standards, designed to provide excellent mechanical and environmental protection in all types of industrial and commercial applications.

These conduits are typically used in installations where there are motion, vibration and bending requirements such as in manufacturing or processing plants or where a high level of mechanical protection is required for an indoor or outdoor cable installation. Three grades of liquidtight jacketed metallic conduit are available to suit different types of environments.

Type HLT

- General Purpose
- Moisture & Oil resistant
- Superior temperature range

EXCELLENT TEMP RANGE | HEAVY DUTY | NOW ON REELS

CAT No.*	NOMINAL SIZE (MM)	TRADE SIZE (INCH)	ID (MM)	OD (MM)	MIN BEND RADIUS (MM)	LENGTH (M)	COLOUR
HLT016	16	⅜	12.6	17.8	50	10, 25, 50, 150	G, B, O
HLT020	20	½	16.1	21.1	65	10, 25, 50, 150	G, B, O
HLT025	25	¾	21.0	26.5	75	10, 25, 50, 150	G, B, O
HLT032	32	1	26.5	33.1	100	10, 25, 50, 120	G, B, O
HLT040	40	1¼	35.1	41.8	120	10, 25, 50	G, B, O
HLT050	50	1½	40.4	47.9	140	10, 25	G, B, O
HLT063	63	2	51.6	59.9	180	10, 25	G, B, O
HLT080	80	3	78.4	88.4	300	10	G, B, O
HLT100	100	4	102.1	113.8	350	10	G, B, O

*Catalogue Number Construction
Catalogue Number = Base Code + Colour + Length
Colours – Grey (G), Black (B), Orange (O)
Example – 20mm Grey 25mm roll = HLT020-G-25

Type HSS

- Stainless Steel core
- Moisture & Oil resistant
- Marine & Coastal applications

CAT No*	NOMINAL SIZE (MM)	TRADE SIZE (INCH)	ID (MM)	OD (MM)	MIN BEND RADIUS (MM)	LENGTH (M)	COLOUR
HSS020-B	20	½	16	21.1	65	10, 25, 50, 150	Black
HSS025-B	25	¾	21	26.5	75	10, 25, 50, 150	Black
HSS032-B	32	1	26.7	33.1	100	10, 25, 50	Black

Characteristics of HLT & HSS

- HLT is tested to AS/NZS 2053.1:2001 & AS/NZS 2053.8:1995
- HSS is made to the same exactly standards as Type HLT but with a stainless steel core
- Flexible with excelent mechanical strength
- UV Resistance
- Temperature rating -10 to 105ºC (intermittent to 150ºC)
- HLT has a spiral wound, electrogalvanised, interlocked, steel core for superior strength
- HSS has a spiral wound, interlocked, stainless steel core for harsh environments
- Durable PVC jacket creates a liquidtight conduit resistant to most oils, acids and vapours
- IP 66 when used with HI-Flex® liquidtight fittings
- Non-flame propagating
- Grounded due to the continuous metal core.

Type HTX

- Extra high temperature resistance
- Steel core
- Moisture & Oil resistant
- RoHS Compliant

CAT No*	NOMINAL SIZE (MM)	TRADE SIZE (INCH)	ID (MM)	OD (MM)	MIN BEND RADIUS (MM)	LENGTH (M)	COLOUR
HTX016	16	⅜	12.5	17.8	50	25, 50, 150	Black
HTX020	20	½	16	21.1	65	25, 50, 150	Black
HTX025	25	¾	21	26.5	75	25, 50, 150	Black
HTX032	32	1	26.7	33.1	100	10, 25	Black
HTX040	40	1¼	35.4	41.8	120	10, 25	Black
HTX050	50	1½	40.3	47.8	140	10, 25	Black
HTX063	63	2	51.6	59.9	180	10, 25	Black

Characteristics of HTX

- Made to the same exactly standards as Type HLT but for extra high temperatures
- Flexible with excellent mechanical strength
- Excellent UV Resistance
- Temperature rating -60 to 150ºC (intermittent to 165ºC)
- Spiral wound, interlocked galvanised steel core for superior strength
- High performance thermoplastic vulcanizate (TPV) jacket creates a liquidtight conduit almost unaffeacted by temperature extremes and with exceptional resistant to most oils and chemicals
- IP 66 when used with HI-Flex® liquidtight fittings
- Flammability rating of UL 94-HB
- Grounded due to the continuous metal core.

HI-FLEX® LIQUIDTIGHT FITTINGS

Hi-Flex® Liquidtight conduit fittings are designed to safely and securely attach Hi-Flex® conduits to enclosures, machinery or bulkheads.

The comprehensive range of Hi-Flex® fittings are the only range made to comply with Australian/New Zealand standards. Hi-Flex® fittings ensure that the complete system is liquidtight to an IP66 rating and are available in three materials for different applications. The popular Hi-Flex® steel fittings have become the market standard and provide superior strength in industrial applications.

Metric Thread Fittings

Straight

90 Degree

45 Degree

		Zinc Plated Steel			Nickel Plated Brass			Stainless Steel		
CONDUIT SIZE (MM)	THREAD SIZE	Straight	90 Deg.	45 Deg.	Straight	90 Deg.	45 Deg.	Straight	90 Deg.	45 Deg.
16	M16 X 1.5	9360	9350	9340	9360-B	9350-B	9340-B	9360-SS	9350-SS	9340-SS
16	M20 X 1.5	9361	9351	9341	9361-B	9351-B	9341-B	9361-SS	9351-SS	9341-SS
20	M20 X 1.5	9362	9352	9342	9362-B	9352-B	9342-B	9362-SS	9352-SS	9342-SS
25	M25 X 1.5	9363	9353	9343	9363-B	9353-B	9343-B	9363-SS	9353-SS	9343-SS
32	M32 X 1.5	9364	9354	9344	9364-B	9354-B	9344-B	9364-SS	9354-SS	9344-SS
40	M40 X 1.5	9365	9355	9345	9365-B	9355-B	9345-B	9365-SS	9355-SS	9345-SS
50	M50 X 1.5	9366	9356	9346	9366-B	9356-B	9346-B	9366-SS	9356-SS	9346-SS
63	M63 X 1.5	9367	9357	9347	9367-B	9357-B	9347-B	9367-SS	9357-SS	9347-SS
80	3"	5339*	5359*	5349*						
100	4"	5340*	5360*	5350*						

*NPT thread – NPT locknut included with fitting.

NPT Thread Fittings

		STEEL		
CONDUIT SIZE (MM)	THREAD SIZE	STRAIGHT	90 Deg.	45 Deg.
16	⅜	5331	5351	5341
20	½	5332	5352	5342
25	¾	5333	5353	5343
32	1	5334	5354	5344
40	1¼	5335	5355	5345
50	1½	5336	5356	5346
63	2½	5337	5357	5347
70	2	5338	5358	5348
80	3	5339	5359	5349
100	4	5340	5360	5350

*Note – NPT fittings include locknuts.

PG Thread Fittings

		STEEL		
CONDUIT SIZE (MM)	THREAD SIZE	STRAIGHT	90 Deg.	45 Deg.
16	PG11	7361	7351	7341
16	PG13.5	7362		7342
20	PG16	7363	7353	7343
25	PG21	7364	7354	7344
32	PG29	7365		7345
40	PG36	7366		

Characteristics

- IP66 liquidtight rating
- Rated for use in Class II (DIP) environments
- Supplied complete with grounding cone and sealing ring
- Fitting will swivel on conduit until tightened, for ease of installation.
- External threaded male fittings for threaded entries and knockouts
- Flanged grounding cones for excellent pull out strength
- High quality nickel & zinc plating for superior durability
- Insulated throat to protect conductors.

EXPLOSION PROOF
SEALSAFE FITTINGS

Characteristics

- For use with flexible metallic liquidtight conduits
- Can be used in Class I (Explosive Gas) environments
- Type of protection – Exd IIB Class I Zone I, DIP Class II
- Nickel plated brass for strength and durability
- IP65 protection for a liquidtight installation
- Multi-part fitting with the ease of installation of a union
- Co-extruded epoxy used to block flame path around conductors
- Simply insert the conduit into the gland nut and attach to the back body
- Free turning gland nut locks the front and back bodies together
- Inspection hole in nut to ensure correct position after assembly.

CLASS 1 BARRIER FITTING

Male Barrier Fittings

CONDUIT SIZE (MM)	THREAD SIZE	CAT NO.
20	M20 X 1.5	FLC-20
25	M25 X 1.5	FLC-25

CLASS 1 BARRIER FITTING

Female Barrier Fittings

CONDUIT SIZE (MM)	THREAD SIZE (IN)	CAT NO.
20	¾“ BSP	FLC-075
25	1“ BSP	FLC-100

Metric Female Hub Fittings

Female hub fittings are used to connect conduit to a male thread. This would normally occur when connecting to threaded rigid conduit or a male threaded fitting. The combination of a female hub fitting and a standard straight fitting enables the operator to securely join two lengths of conduit.

CONDUIT SIZE (MM)	CONNECTOR THREAD SIZE	STEEL CAT NO.	BRASS CAT NO.
16	M16	9270	
16	M20	9271	9271-B
20	M20	9272	9272-B
25	M25	9273	9273-B
32	M32	9274	9274-B
40	M40	9275	
50	M50	9276	
63	M63	9277	

Metric Locknuts

THREAD SIZE	NICKEL PLATED BRASS	UNPLATED BRASS	STAINLESS STEEL
M12 X 1.5	LNB-12		
M16 X 1.5	LNB-16		
M20 X 1.5	LNB-20	LNBU-20	LNSS-20
M25 X 1.5	LNB-25	LNBU-25	LNSS-25
M32 X 1.5	LNB-32	LNBU-32	LNSS-32
M40 X 1.5	LNB-40	LNBU-40	
M50 X 1.5	LNB-50	LNBU-50	
M63 X 1.5	LNB-63		

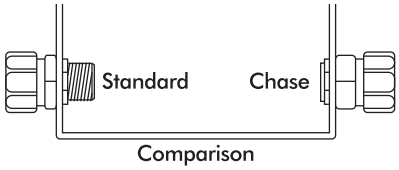
NPT Female Hub Fittings

CONDUIT SIZE (IN)	CONNECTOR THREAD SIZE (IN)	CAT NO.
⅜	⅜	5271
½	½	5272
1¼	1¼	5275
1½	1½	5276

Metric Space Saver (Chase) Fittings

Special compact version of a fitting enables space-saving assembly thanks to the male nipple (supplied with fitting) that can be screwed into the female thread of the body.

CONDUIT SIZE (MM)	STR.	90 DEG.
16	5361	5371
20	5362	5372
25	5363	5373
32	5364	5374



Comparison

Metric Sealing “O” Ring

THREAD SIZE (MM)	CAT NO.
M16	SOR-16
M20	SOR-20
M25	SOR-25
M32	SOR-32
M40	SOR-40
M50	SOR-50
M63	SOR-63

Imperial Sealing “O” Ring

THREAD SIZE (IN)	CAT NO.
⅜	5261
½	5262
¾	5263
1	5264
1¼	5265
1½	5266

Conduit Ferrules (Grounding Cones)

FLANGED FOR EXCELLENT PULLOUT STRENGTH

CONDUIT SIZE (MM)	CAT NO.
16	02-9360-04
20	02-9362-04
25	02-9363-04
32	02-9364-04
40	02-9365-04
50	02-9366-04
63	02-9367-04

Metric Enlargers & Reducers

Provides for the installation of a fitting to an enclosure with a smaller or larger opening. Constructed from durable nickel plated brass.

CAT NO.	OUTER THREAD (MALE)	INNER THREAD (FEMALE)
ENLARGER		
MEM-M16/M20	M16	M20
MEM-M20/M25	M20	M25
MEM-M25/M32	M25	M32
REDUCERS		
MRM-M20/M16	M20	M16
MRM-M25/M20	M25	M20
MRM-M32/M25	M32	M25
MRM-M40/M32	M40	M32
MRM-M50/M40	M50	M40

Adaptors

Provides for the installation of a fitting to an enclosure with a different type of thread. Constructed from durable nickel plated brass.

CAT NO.	OUTER THREAD (MALE)	INNER THREAD (FEMALE)
PG TO METRIC ADAPTORS		
MAPG-PG9/M16	PG9	M16
MAPG-PG11/M20	PG11	M20
MAPG-PG13/M20	PG13.5	M20
MAPG-PG16/M20	PG16	M20
MAPG-PG21/M25	PG21	M25
MAPG-PG21/M32	PG21	M32
MAPG-PG29/M32	PG29	M32
MAPG-PG29/M40	PG29	M40
MAPG-PG36/M40	PG36	M40
NPT TO METRIC ADAPTORS		
MANPT-NPT1/2–M16	½”	M16
MANPT-NPT1/2–M20	½”	M20
MANPT-NPT1/2–M25	½”	M25
MANPT-NPT3/4–M25	¾”	M25
MANPT–NPT1–M32	1”	M32
MANPT–NPT1.25–M32	1¼”	M32

Conduit Cutting Vice

Take the hassle out of making fast and clean conduit cuts with this robust cutting vice that can be hand held or bench mounted. Fantastic tool for use in the field or the workshop.

CAT NO.	VICE

HI-FLEX® EXTRA FLEXIBLE METALLIC CONDUIT SYSTEMS

Hi-Flex® Extra Flexible Metal Conduits are designed to provide excellent protection in tight-spot and dynamic installations.

As the name suggest, this class of conduit is used in tight-spot installations, most commonly in commercial and industrial applications. The inherent flame resistance of the unjacketed product makes it suitable for a range of uses where high mechanical strength yet extreme flexibility is required eg building fire systems. The vacuum jacketed HFSU is also suitable for static, tight bend or dynamic installations such as machinery centres and robotics but adds increased protection from moisture ingress.

Type HFU

- Extra Flexible
- Low Fire Hazard

EXTRA FLEXIBLE

CAT NO.	NOMINAL SIZE (MM)	TRADE SIZE (IN)	ID (MM)	OD (MM)	MIN. BEND RADIUS	LENGTH (M)	COLOUR
HFU010-25	10	¼	7	9	23	25	Galvanised
HFU012-25	12	5⁄16	10	13	35	25	Galvanised
HFU016-25	16	⅜	13	16	41	25	Galvanised
HFU020-25	20	½	17	20	51	25	Galvanised
HFU025-25	25	¾	21	25	63	25	Galvanised
HFU032-25	32	1	29	32	70	25	Galvanised
HFU040-10	40	1¼	38	42	92	10	Galvanised
HFU050-10	50	1½	49	55	118	10	Galvanised

Type HFSU

MOISTURE & OIL RESISTANT

- Extra Flexible
- Galvanised steel core
- Moisture & oil resistant

CAT NO.	NOMINAL SIZE (MM)	TRADE SIZE (IN)	ID (MM)	OD (MM)	MIN. BEND RADIUS	LENGTH (M)	COLOUR
HFSU010-25	10	¼	7	10	35	25	Black
HFSU012-25	12	5⁄16	10	14	43	25	Black
HFSU016-25	16	⅜	13	17	45	25	Black
HFSU020-25	20	½	17	21	58	25	Black
HFSU025-25	25	¾	21	26	71	25	Black
HFSU032-25	32	1	29	34	95	25	Black
HFSU040-10	40	1¼	38	44	122	10	Black
HFSU050-10	50	1½	49	57	140	10	Black

Characteristics of HFU & HFSU

- Extra flexible with excellent mechanical strength
- Thin, vacuum extruded jacket of HFSU has minimal effect on the core flexibility
- PVC jacket of HFSU is UV Resistant
- Temperature rating -20 to 250ºC for HFU and -20 to 70ºC for HFSU
- Helically wound, electrogalvanised, interlocked, steel core for superior strength
- Non-flame propagating.

FITTINGS

HFU/HFSU Fittings

These fittings are designed to fit both the HFU & HFSU series.

CONDUIT SIZE (MM)	THREAD SIZE	MALE	SWIVEL
10	M10 X 1.0	M-FSU10-M10	
12	M12 X 1.5	M-FSU12-M	S-FSU12-M
12	M16 X 1.5	M-FSU12-M16	
16	M16 X 1.5	M-FSU16-M	S-FSU16-M
16	M20 X 1.5	M-FSU16-M20	S-FSU16-M20
20	M20 X 1.5	M-FSU20-M	S-FSU20-M
25	M25 X 1.5	M-FSU25M	S-FSU25M
32	M32 X 1.5	M-FSU32-M	S-FSU32-M
40	M40 X 1.5	M-FSU40-M	S-FSU40-M
50	M50 X 1.5	M-FSU50-M	S-FSU50-M
63	M63 X 1.5	M-FSU63-M	S-FSU63-M

Characteristics

- Nickel plated brass for professional quality finish and durability
- High crush resistance with excellent pull out strength
- Excellent vibration resistance
- IP40 system using HFU and IP54 using HFSU.

DUST IGNITION PROOF

DIP System

Did you know – you can use standard Hi-Flex® liquidtight fittings (see page 7) in conjunction with HFSU conduit and create a DIP rated system?

All you need to do is change the gland ring with the suitable one below and you now have a hazardous dust area system.

Nylon Gland Ring

CONDUIT SIZE (MM)	CAT NO.
16	VJ-0G
20	VJ-1G
25	VJ-2G
32	VJ-3G

FLANGED FOR EXCELLENT PULLOUT STRENGTH

Conduit Ferrules (Grounding Cones)

CONDUIT SIZE (MM)	CAT NO.
16	02-9360-04
20	02-9362-04
25	02-9363-04
32	02-9364-04

XTRA-FLEX® LIQUIDTIGHT FLEXIBLE NON-METALLIC CONDUIT SYSTEMS

The Xtra-Flex® Flexible Non-Metallic Conduit systems offer a lightweight, liquidtight flexible conduit solution for demanding applications. The Xtra-Flex® system ensures fast, easy installations and long-lasting, high performance in a variety of environments.

These conduits are manufactured from a range of advanced technology resins and utilise the latest processing methods to produce a comprehensive selection including two styles and a wide selection of fittings. They are recommended for machine tools, motor hook-ups, food processing equipment, extensions from wireways, sensor and microswitch wiring in control consoles.

Type LTC

- Heavy duty
- Liquid tight
- PVC

CAT NO.*	NOMINAL SIZE (MM)	TRADE SIZE (IN)	ID (MM)	OD (MM)	LENGTH (M)	COLOUR
LTC-016	16	3/8	12.3	17.8	30	B, G, O
LTC-020	20	½	15.8	21.1	30	B, G, O
LTC-025	25	¾	20.8	26.4	30	B, G, O
LTC-032	32	1	26.4	33.08	30	B, G, O

*Catalogue Number Construction
Catalogue Number = Base Code + Colour + Length
Colours – Standard - Black (B), By special order - Grey (G), Orange (O)
Example – 20mm Black 30m roll = LTC020-B-30

Characteristics of LTC

- Liquidtight, lightweight, non-metallic Type B Conduit
- Working temperature -18ºC to 105ºC
- IP68 system when used with Bullet® fittings
- Tested to UL and CSA requirements
- Fast installation, even in tight, cramped spaces
- Smooth inner diameter allows easy wire pulling
- Smooth outer jacket is UV and oil resistant
- Flammability rating UL1660
- Good tensile strength for excellent pullout protection.

Type EFC

- Light duty
- Liquidtight
- PVC

CAT NO.*	NOMINAL SIZE (MM)	TRADE SIZE (IN)	ID (MM)	OD (MM)	LENGTH (M)	COLOUR
EFC016	16	3/8	12.4	17.8	30	B, O
EFC020	20	½	15.8	21.1	30	B, O
EFC025	25	¾	20.8	26.4	30	B, O

*Catalogue Number Construction
Catalogue Number = Base Code + Colour + Length
Colours – Standard - Black (B), By special order - Orange (O)
Example – 20mm Black 30m roll = EFC020-B-30

Characteristics of EFC

- Liquidtight when used with Bullet fittings
- Working temperature 18degC to 60degC
- UL recognized
- Fast installation even in tight, cramped spaces
- Smooth inner diameter allows easy wire pulling
- Good tensile strength for excellent pull out protection
- Flammability rating VW-1 UL224.

BULLET® NON-METALLIC LIQUIDTIGHT FITTINGS

Bullet® fittings are designed for use with both Type LTC and Type EFC non-metallic conduits. Bullet® fittings are easy to use and built to take it!

This engineering breakthrough meets the demand for a tough, reusable, non-metallic liquidtight fitting that provides a reliable seal with high pull-out resistance. Bullet® fittings are used to terminate LTC or EFC conduit to an enclosure with knock-out opening or threaded hub. Installations can be performed quickly and easily because Bullet liquidtight fittings can be installed without disassembly.

Metric Bullet® Fittings

- Liquidtight
- Corrosion resistant

EASY TO USE

UL CSA APPROVED

CONDUIT SIZE (MM)	THREAD SIZE	STRAIGHT	90 Deg.
16	M20 X 1.5	LT16P-ISO20	LT916P-ISO20
20	M20 X 1.5	LT20P-ISO20	LT920P-ISO20
25	M25 X 1.5	LT25P-ISO20	LT916P-ISO25
32	1" NPT	LT100P	LT9100P

STRAIGHT FITTING

Characteristics of Bullet® Fittings

- Ferrule designed to accept variations in conduit sizes and field conduit cuts
- Friction reducing ridges and teeth provide a true double seal and high pull-out resistance
- Elongated gland nut offers additional strain relief for 90º pull and easy hand grip
- Rugged low profile construction provides space savings
- Captivated nitrile (blue) sealing O-ring features pre-determined compression to provide a reliable seal every time at the enclosure
- Steel/electro plated zinc locknut firmly secures fitting to the box or enclosure
- Meets watertight requirements of NEMA Type 4 and Type 6 enclosures and conform to UL and CSA specifications
- Suitable for indoor and outdoor corrosive environments
- Resistant to detergents, cleaners, oils, sanitizers, paints, cutting fluids paints, cutting fluids and wire pulling compounds
- Body gland – weather stabilised thermoplastic (black) rated -40ºC to 105ºC
- Suitable for hazardous locations Class I Div 2; Class II Div 1 & 2; Groups E,F & G; Class III per NEC; Article 501-4, 502-4 and 503-3.

90 DEGREE FITTING

HI-FLEX® NYLON CONDUIT SYSTEMS

The Hi-Flex® Nylon conduits are made from Halogen Free Polyamide 6 (PA6) and are recommended for the insulation and mechanical protection of electrical cables.

Two grades of conduit are available to suit different types of applications:

- Standard Low Fire Hazard and Extra Low Fire Hazard.
- Typical applications include general wiring, machine tools, industrial equipment, automotive, air-conditioning equipment and railway rolling stock.

CAT NO	NOMINAL SIZE (MM)	ID (MM)	OD (MM)	MIN BEND RADIUS (MM)	LENGTH (M)
STD LOW FIRE HAZARD					
HF010-B-50	10	6.5	10	13	50
HF012-B-50	12	10	13	15	50
HF016-B-25	16	12	15.8	22	25
HF016-B-50	16	12	15.8	22	50
HF020-B-25	20	16.5	21.2	35	25
HF020-B-50	20	16.5	21.2	35	50
HF025-B-25	25	23	28.5	45	25
HF025-B-50	25	23	28.5	45	50
HF032-B-25	32	29	34.5	50	25
HF032-B-50	32	29	34.5	50	50
HF040-B-10	40	36	42.5	80	10
HF040-B-25	40	36	42.5	80	25
HF050-B-10	50	48	54.5	100	10
HF050-B-25	50	48	54.5	100	25
EXTRA LOW FIRE HAZARD					
HFX012-B-50	12	10	13	15	50
HFX016-B-50	16	12	15.8	22	50
HFX020-B-50	20	16.5	21.2	35	50
HFX025-B-50	25	23	28.5	45	50
HFX032-B-50	32	29	34.5	50	50
HFX040-B-25	40	36	42.5	80	25
HFX050-B-25	50	48	54.5	100	25

Conduits

Characteristics

- Flexible with excellent mechanical strength
- Halogen, phosphor and cadmium free
- RoHS compliant
- UV resistant
- Resistant to oils, acid and solvents
- Temperature rating -40˚C to 115˚C (Intermittent to 150˚C)
- Flame Retardant :
  Self extinguishing
  Std Low Fire Hazard – V2 (UL94)
  Extra Low Fire Hazard – V0 (UL94)
- Medium wall thickness
- IP 68
- Anti-static for underground use.

HI-FLEX® NYLON FITTINGS

A range of high performance fittings with a unique self locking mechanism, for a quick and secure installation offering watertight protection and outstanding pull-off strength.

Metric Fittings

CONDUIT SIZE (MM)	THREAD SIZE	STRAIGHT	90˚	45˚
10	M10 X 1.5	HFM1-10B	HFM2-10B	
12	M12 X 1.5	HFM1-12B	HFM2-12B	
16	M16 X 1.5	HFM1-16B	HFM2-16B	
20	M20 X 1.5	HFM1-20B	HFM2-20B	HFM3-20B
25	M25 X 1.5	HFM1-25B	HFM2-25B	HFM3-25B
32	M32 X 1.5	HFM1-32B	HFM2-32B	HFM3-32B
40	M40 X 1.5	HFM1-40B	HFM2-40B	HFM3-40B
50	M50 X 1.5	HFM1-50B	HFM2-50B	HFM3-50B

PG Fittings

CONDUIT SIZE (MM)	THREAD SIZE	STRAIGHT	90˚	45˚
10	PG7	HFPG1-07B	HFPG2-07B	
12	PG9	HFPG1-09B	HFPG2-09B	
16	PG11	HFPG1-11B	HFPG2-11B	
20	PG16	HFPG1-16B	HFPG2-16B	HFPG3-16B
25	PG21	HFPG1-21B	HFPG2-21B	HFPG3-21B
32	PG29	HFPG1-29B	HFPG2-29B	HFPG3-29B
40	PG36	HFPG1-36B	HFPG2-36B	HFPG3-36B
50	PG48	HFPG1-48B	HFPG2-48B	HFPG3-48B

Characteristics

- Made of high quality Polyamide 66 (PA66)
- Halogen, phosphor and cadmium free
- Self extinguishing
- UV resistant
- Self locking, push fit installation onto conduit
- Easy to remove, no tool required
- Complete with locknut
- IP66 rating as standard, increased to IP68 with sealing washer
- Temperature rating -40˚C to 115˚C (Intermittent to 150˚C).

IP68 Fittings

CONDUIT SIZE (MM)	COUPLING	T-DIST	Y-DIST
10	HFC-68-10B		
12	HFC-68-12B		HFY-M12
16	HFC-68-16B		HFY-M16
20	HFC-68-20B	HFT-M20	HFY-M20
25	HFC-68-25B	HFT-M25	HFY-M25
32	HFC-68-32B	HFT-M32	
40	HFC-68-40B		
50	HFC-68-50B		

ACCESSORIES

Spin Couplings

The spin coupling turns a standard fitting into a swivel fitting. The coupler accepts both 45˚ and 90˚ screwed fittings and allows easy rotation of the fitting during and after installation.

CONDUIT SIZE (MM)	METRIC THREAD SIZE	CAT. NO.	PG THREAD SIZE	CAT. NO
16	M16 X 1.5	HFMS-16	PG11	HFPGS-11
20	M20 X 1.5	HFMS-20	PG16	HFPGS-16
25	M25 X 1.5	HFMS-25	PG21	HFPGS-21
32	M32 X 1.5	HFMS-32	PG29	HFPGS-29
40	M40 X 1.5	HFMS-40	PG36	HFPGS-36
50	M50 X 1.5	HFMS-50	PG48	HFPGS-45

Characteristics

- Made from high quality nickel plated brass
- Metric and PG threads
- IP66 as standard, IP68 with sealing washer.

Mounting Brackets

A range of mounting brackets for quickly and easily attaching Hi-Flex® conduit to equipment and structures.

CONDUIT SIZE (MM)	CAT. NO.	MOUNTING HOLE (MM)
10	HFMC-10B	4.2
12	HFMC-12B	4.2
16	HFMC-16B	4.2
20	HFMC-20B	4.2
25	HFMC-25B	4.2
32	HFMC-32B	4.2
40	HFMC-40B	4.2
50	HFMC-50B	4.2

Characteristics

- Made from Polyamide 66
- Feature an inbuilt snap cover, easily releasable and reusable
- Screw mounted for secure installation
- Temperature rating -40˚C to 115˚C
- Halogen free
- UV resistant
- Flame retardant - self extinguishing.

P Clamps

P Clamps are used to mount conduit on equipment or structures.

CONDUIT SIZE (MM)	CAT. NO.	FIXING SCREW
10	HFCM-10	M4
12	HFCM-12	M4
16	HFCM-16	M4
20	HFCM-20	M4
25	HFCM-25	M5
32	HFCM-32	M5
40	HFCM-40	M6
50	HFCM-50	M6

Characteristics

- Made from plated steel with UV resistant PVC cover
- Screw fixed for a secure installation.

Locknuts

THREAD SIZE	CAT. NO.	PG THREAD SIZE	CAT. NO.
M10 X 1.5	HFML-10B	PG7	HFPGL-07B
M12 X 1.5	HFML-12B	PG9	HFPGL-09B
M16 X 1.5	HFML-16B	PG11	HFPGL-11B
M20 X 1.5	HFML-20B	PG16	HFPGL-16B
M25 X 1.5	HFML-25B	PG21	HFPGL-21B
M32 X 1.5	HFML-32B	PG29	HFPGL-29B
M40 X 1.5	HFML-40B	PG36	HFPGL-36B
M50 X 1.5	HFML-50B	PG48	HFPGL-48B

Characteristics

- Made from Polyamide 66
- Temperature rating -40˚C to 100˚C
- Metric or PG Threads.

Sealing Washers

Sealing washers are used on the fitting thread to seal between the fitting and the enclosure and provide an IP68 seal.

METRIC THREAD SIZE	CAT. NO.	PG THREAD SIZE	CAT. NO.
M12 X 1.0	HFSRM-10	PG7	HFSRPG-07
M12 X 1.5	HFSRM-12	PG9	HFSRPG-09
M16 X 1.5	HFSRM-16	PG11	HFSRPG-11
M20 X 1.5	HFSRM-20	PG16	HFSRPG-16
M25 X 1.5	HFSRM-25	PG21	HFSRPG-21
M32 X 1.5	HFSRM-32	PG29	HFSRPG-29
M40 X 1.5	HFSRM-40	PG36	HFSRPG-36
M50 X 1.5	HFSRM-50	PG48	HFSRPG-48

Characteristics

- Made from Tesnit high performance fibre
- Temperature Rating -40˚C to 200˚C
- IP68
- Metric or PG Threads.

End Sleeves

End sleeves are used to transition from conduit to a cable. The sleeve seals and protects the cable passing through the end of the tubing.

CONDUIT SIZE (MM)	CAT. NO.
10	HFES-M10
12	HFES-M12
16	HFES-M16
20	HFES-M20
25	HFES-M25
32	HFES-M32
40	HFES-M40
50	HFES-M50

Characteristics

- Made from Thermoplastic Elastomer (TPE)
- Temperature rating -40ºC to 100ºC (Intermittent to 150ºC).

Flanges

The HiFlex® flange can be combined with a straight or elbow connector to create a complete flange connector for mounting on enclosures or equipment.

METRIC THREAD SIZE	CAT. NO.
M25 X 1.5	HFF-M25
M32 X 1.5	HFF-M32
M40 X 1.5	HFF-M40
M50 X 1.5	HFF-M50

Characteristics

- Made of high quality Polyamide 66 (PA66)
- Halogen, phosphor and cadmium free
- Self extinguishing
- UV Resistant
- IP67 rating
- Temperature rating -40ºC to 115ºC (Intermittent to 150ºC).

SEALSAFE HAZARDOUS AREA CONDUIT SYSTEM

The Sealsafe conduit system is rated for use in Class I hazardous (explosive gas) and Class II (explosive dust) environments.

Not only does the Sealsafe system provide superior protection but is exceptionally fast and simple to install in the field, eliminating the need for pre-assembly and providing ultimate flexibility during installation. No mess, no fuss, Sealsafe is the easiest way to produce a safe connection!

Type FC

- Fibre braid reinforced PVC

FLAME RETARDANT

AS2053.4 COMPLIANT

CAT NO.*	NOMINAL SIZE (MM)	ID (MM)	LENGTH (MM)	COLOUR
FC-16	20	16	30	Orange
FC-19	25	19	30	Orange

NEW & IMPROVED FORMULA

- greater resistance to bio-fuels

Characteristics of FC Conduit

- Suitable for use in Class I and Class II flameproof installations when used with Sealsafe fittings
- Operating temperature of -5 to 60ºC
- Tough, resilient and flexible
- Anti static PVC with 30% nitrile blend for improved chemical resistance
- Flame retardant jacket compliant with AS2053 flammability test
- Tested to AS/NZS 2053.4:1995.

SEALSAFE FITTINGS

All Sealsafe fittings can be easily attached to the conduit in the field, eliminating the need for pre-assembled fixed length conduits. Sealsafe fittings can be used with flexible metallic, liquidtight conduit (as detailed on page 8) or with the FC braided conduit as detailed below.

Using a simple co-extruded epoxy putty packed into a conventional style fitting makes installation at any angle a possibility.

BARRIER FITTINGS

IP65 CLASS I & CLASS II

General Purpose

CONDUIT SIZE (MM)	CAT NO.	THREAD SIZE	BORE
20	FHC-2002	M20 X 1.5	13.5
25	FHC-2502	M25 X 1.5	18.0

Characteristics

- Can be used in Class II (DIP) environments
- Nickel plated brass for strength and durability
- IP65 protection for a liquidtight installation
- Swivelling action to facilitate installation
- Inspection hole in nut to ensure correct position after assembly.

Male Barrier

CONDUIT SIZE (MM)	CAT NO.	THREAD SIZE	BORE
20	FHC-2003	M20 X 1.5	13.5
25	FHC-2503	M25 X 1.5	18.0

Characteristics

- Can be used in Class I (Explosive Gas) environments
- Type of protection – Exd IIB Class I Zone I, DIP Class II
- Nickel plated brass for strength and durability
- IP65 protection for a liquidtight installation
- Multi-part fitting with the ease of installation of a union
- Co-extruded epoxy used to block flame path around conductors
- Simply insert the conduit into the gland nut and attach to the back body
- Free turning gland nut locks the front and back bodies together
- Inspection hole in nut to ensure correct position after assembly.

Female Barrier

CONDUIT SIZE (MM)	CAT NO.	ENTRY SIZE	BORE
20	FHC-075	¾" BSP	13.5
25	FHC-100	1" BSP	18.0

Universal Barrier

CONDUIT SIZE (MM)	CAT NO.	MALE ENTRY SIZE	FEMALE ENTRY SIZE	BORE
20	FB-20	M20 X 1.5	M20 X 1.5	13.5
25	FB-25	M25 X 1.5	M25 X 1.5	18.0

Characteristics

- Can be used in Class I (Explosive Gas) environments
- Type of protection – Exd IIB Class I Zone I, DIP Class II
- Nickel plated brass for strength and durability
- IP65 protection for a liquidtight installation
- Co-extruded epoxy used to block flame path around conductors
- Ease installed due to swivel action – union style.

TECHNICAL INFORMATION & GUIDANCE

Thomas & Betts conduits are tested to rigorous Australian and International standards to ensure performance and safety.

STANDARDS & DIRECTIVES

Standards Australia (AS) – Standards Australia is Australia's peak Standards body. It co-ordinates standardisation activities, develops internationally aligned Australian Standards and facilitates the accreditation of other Standards Development Organisations.

It should be well noted that conduit can be tested to the AS/NZS standard however there is no "certification" process. In all cases it is the performance of the entire system, conduit and fittings, that should be considered and in fact the fittings are more important in assessing the safety, integrity and performance of a system.

Underwriters Laboratory (UL) – Based in the United States, Underwriters Laboratories® is an independent product safety certification organization that has been testing products and writing safety standards for more than a century. There are two UL marks that are commonly found related to product certification:

UL Listing Mark – this indicates that a representative samples of products has been found to meet UL's safety requirements and is therefore considered free of reasonably foreseeable risk of fire, electric shock and related hazards.

UL Recognised Component Mark – this indicates that the product has been certified as a part of a finished product. Just because a finished product contains UL recognised parts however does not mean the final product is UL certified.

Canadian Standards Association (CSA) – has several arms one of which is involved in developing standards designed to enhance public health and safety and another one involved in product testing and certification to Canadian and international standards.

CSA Mark – a product bearing this mark is certified primarily to applicable Canadian standards. Customers can be confident that the product has been evaluated through a formal process involving examination, testing and follow-up inspection and that it complies with applicable standards for safety and performance.

National Electrical Manufacturers Association (NEMA) – in addition to roles in policy and industry data, NEMA provides a forum for the development of technical standards in the interest of industry and users.

Restriction of Hazardous Substances (RoHS) Directive – came into force in EU member states in 2006 and restricts the use of six hazardous substances in the manufacture of electrical and electronic equipment. The directive stipulates agreed levels of lead, cadmium, mercury, hexavalent chromium and the flame retardants PBB and PBDE. It is closely related to the Waste Electrical and Electronic Directive (WEEE). Other jurisdictions including China, USA and Australia have since been evaluating and implementing similar legislation.

CONDUIT IN HAZARDOUS AREAS

Australia is still in a transition stage between the old series of hazardous area standards and the new ones that are harmonised with the IEC standards. Currently there are over 10 series including more than 50 individual standards that deal with classification, equipment design and manufacture, testing, inspection & maintenance, selection, installation and safe work practises in relation to electrical equipment in hazardous areas.

All electrical equipment installed in hazardous areas must be explosion protected. The specifier must consider not only the Zone Classification but also the Temperature Classification, the Gas Group (where appropriate) and the IP rating for outdoor use and/or corrosion protection.

ANZEx Scheme – Certification of Equipment for Explosive Atmospheres (Formerly AUSEx)

In Australia and New Zealand the installation standards for electrical equipment to be installed in a hazardous area requires "Proof of Compliance." Either a Certificate of Conformity within the ANZEx scheme or an IECEx Certificate of Conformity is deemed to comply with this requirement. IECEx is the first international certification scheme and certificates issued under this scheme will be recognised in all member countries including Australia, UK, France, Germany, Canada and the USA.

IP RATING

The IP rating indicates the degree of Ingress Protection provided by enclosures for electrical equipment and is defined in Australian Standard AS60529:2004 – Degrees of protection provided by enclosures (IP Code).

The first numeral refers to the protection against the ingress of solid objects and the second refers to the protection against the ingress of water.

PROTECTION AGAINST SOLID OBJECTS	
0	No protection
1	Protection against objects >50mm^2 and against accidental access to hazardous parts by the back of the hand
2	Protection against objects larger than 12.5mm^2 and against access of fingers to hazardous parts
3	Protection against the access of tools, wires or other solid objects other solid objects larger than 2.5mm^2
4	Protected against the access of solid foreign bodies larger than 1mm^2
5	Protected against the entry of dust in sufficient quantity to interfere with the operation of equipment
6	Completely protected from the entry of dust

PROTECTION AGAINST WATER	
0	No protection
1	Protected against drops of water falling vertically
2	Protection against drops of water falling at up to 15ºdeg from vertical
3	Protection against drops of water sprayed at angles at up to 60ºdeg from vertical
4	Protected against spraying or splashing water from all practicable angles
5	Protected from low pressure jets of water from all practicable angles
6	Protected against strong jets of water from all practicable angles, equivalent to the force of heavy seas
7	Protected against temporary immersion at a specified depth for a specified time
8	Protected against continuous immersion at a specified depth and pressure

CHEMICAL RESISTANCE

The information in this table is provided as a guide only.
Testing should be done for individual situations with the relevant conduit system.
Results shown are for chemicals at room temperature.

R = Resistant, LR = Limited Resistance, NR = Non-resistant, ND = No data

CHEMICAL	PVC	TPR	PA6	GAL STEEL
Acetic Acid 40%	LR	LR	NR	NR
Acetic Acid 10%	R	R	LR	NR
Acetone	NR	R	R	R
Aluminium Chloride	R	R	LR	NR
Ammonium Chloride	R	R	R	NR
Benzaldehyde	NR	R	LR	R
Benzene	NR	R	R	R
Bromine	NR	NR	NR	ND
Butyl Alcohol	R	R	R	ND
Calcium Chloride 20%	R	R	NR	LR
Carbon Tetrachloride	NR	NR	R	R
Chlorine (water solution) <5%	LR	LR	NR	NR
Chloroform	NR	NR	NR	R
Citric Acid	R	R	R	R
Copper Sulphate	R	R	LR	R
Cresol	NR	NR	NR	R
Dimethyl Formamide	NR	NR	R	ND
Diesel Oils	LR	LR	R	R
Diethylene Glycol	LR	LR	R	R
Ethanol	LR	R	R	R
Ether	NR	NR	R	R
Ethyl Acetate	NR	R	R	ND
Ethylene Glycol	R	R	R	NR
Ferrous Chloride	R	R	LR	NR
Formic Acid 10%	R	R	NR	ND
Freon 32	LR	LR	R	NR
Hydrochloric Acid 40%	LR	R	NR	NR
Hydrochloric Acid 10%	R	R	NR	NR
Hydrogen Peroxide 10%	R	R	LR	NR
Kerosene	LR	NR	R	R
Lactic Acid	R	R	LR	NR
Lubricating Oils, Greases & Soaps	R	R	R	R
Magnesium Chloride	R	R	R	NR

CHEMICAL	PVC	TPR	PA6	GAL STEEL
Magnesium Sulphate	R	R	R	ND
Methanol	NR	R	LR	R
Methyl Acetate	NR	NR	R	ND
Methyl Bromide	NR	NR	NR	R
Methyl Ethyl Ketone	NR	R	R	R
Mineral Oil	R	NR	R	R
Nitric Acid 10%	R	R	NR	NR
Nitric Acid 35%	LR	NR	NR	NR
Nitric Acid 70%	NR	NR	NR	NR
Oxalic Acid 10%	R	R	LR	NR
Ozone	LR	LR	NR	NR
Petroleum	R	R	R	R
Phenol	LR	R	NR	R
Phosphoric Acid 10%	R	R	NR	ND
Phosphoric Acid 85%	R	R	NR	ND
Potassium Hydroxide	R	R	LR	ND
Seawater	R	R	R	NR
Silver Nitrate	R	R	R	NR
Sodium Chloride	R	R	R	NR
Sodium Hydroxide 10%	R	R	R	NR
Sulphur Dioxide <5%	NR	R	NR	NR
Sulphur Dioxide (Liquid)	NR	R	NR	NR
Sulphuric Acid 50%	R	R	NR	NR
Sulphuric Acid 98%	NR	NR	NR	NR
Toluene	NR	NR	R	R
Transformer Oil	R	R	R	R
Trichlorethane	NR	NR	R	NR
Trichlorethylene	NR	NR	R	NR
Turpentine	LR	NR	R	R
Vegetable Oils & juices	R	R	R	R
Water	R	R	R	NR
Zinc Chloride 10%	R	R	NR	NR

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www.tnbaust.com
For further information, contact
Thomas & Betts National Support Centre
Phone 1300 666 595 Fax 1300 666 594
Email austsales@tnb.com
Thomas & Betts Australasia Pty Ltd
Head Office Suite 3, Level 7
3 Rider Boulevard Rhodes, NSW 2138
ABN 62 074 810 898

Thomas&Betts