

Egatube Conduit Technical

Conduit and fittings

TECHNICAL SPECIFICATION

MATERIALS

PVCu materials used in the manufacture of MK products are self extinguishing non-flame propagating in accordance with BS 4678 Part 4.

Extrusion material has been tested by a UKAS accredited laboratory in accordance with the requirements of BS 476 Part 7 and has achieved a Class 1Y.

Moulding material has been tested by a UKAS accredited laboratory and conforms with IEC 695-2-1 at a severity of 650°C

IET WIRING REGULATIONS

Designed and manufactured to comply in all respects with BS 7671:2008 (IET Wiring Regulations 17th Edition: 2008)

QUALITY ASSURANCE

The system is manufactured to BS EN ISO 9001

Classifications to BS EN 61389-1:2008 and BS EN 61386-21:2004 available on request

521.11.201 WIRING SYSTEMS IN ESCAPE ROUTES

Conduit systems – MK recommends the usage of standard metallic saddles and bars when using conduit in escape routes

Trunking systems – MK recommends the use of existing metallic cable retention systems when using trunking in escape routes

FEATURES

- Wide range of sections and sizes
- Oval, round and corrugated sections are compatible
- Simple and fast installation
- Very wide range of components maximises versatility of application
- Very durable and impact resistant
- 2 grades of round conduit to suit various site conditions
- All extrusions manufactured from 100% recycled material*



Description

Egatube high impact PVCu conduit offers a cost effective solution for both new and refurbishment contracts.

The conduit is available in oval sections (6 sizes), in 2 grades of round section (6 sizes of each) and as a flexible corrugated version (3 sizes).

The wide range of fittings and ancillary products means that almost any installation can be specified for with confidence.

Egatube conduits are light in weight, the smaller sizes can be bent cold and they can easily be cut using a hacksaw or Egasnips. This means that installation can be 50% quicker than using steel. Repairs and alterations are also simpler and quicker to make.

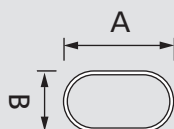
* Based on 2014 consumption

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Dimensions (mm)

OVAL SECTION CONDUIT (REF EOC)



Oval conduit is mainly used for switch drops and general domestic installations in both buried and surface installations. Manufactured in accordance with requirements of BS 4607 Part 5 and BS EN 50085 Part 1 and Part 2-1.

LIST. NO.	SIZE mm		WALL THICKNESS mm	WEIGHT KG/M	CROSS SECTION AREA mm ²
	A	B			
EOC1	13	8	0.9	0.036	60
EOC2	16	10	0.9	0.049	103
EOC3	22.5	11	0.9	0.084	172
EOC4	29	11	1.0	0.097	225
EOC5	29	16	1.0	0.125	336
EOC6	23	14	0.8	0.081	238

Standard length 3 metres.

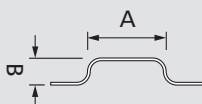
FLEXIBLE CONDUIT (REF EF)

Suitable for connection of vibrating equipment or to provide tight bends for interconnecting conduits. Can be surface mounted or cast in concrete and can be used with standard conduit fittings. Manufactured in accordance with BS EN 61386-1.

LIST. NO.	DIAMETER mm	WEIGHT KG/M	CROSS SECTION AREA mm ²
EF1	16	0.05	107
EF2	20	0.064	189
EF3	25	0.094	308

Standard lengths 50 metre coils.

RECTANGULAR CHANNELLING (REF REC)

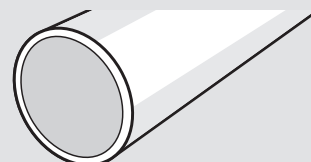


Used for switch drops and general domestic installations mainly in carcass situations.

LIST. NO.	SIZE mm		WALL THICKNESS mm	WEIGHT KG/M
	A	B		
REC1	12.5	8	0.9	0.047
REC2	25	8	0.9	0.051
REC3	38	9.5	0.9	0.069

Standard length 2 metres.

ROUND SECTION HEAVY GAUGE HIGH IMPACT CONDUIT (REF. HIP)



This is acknowledged to be the finest PVCu conduit available and is designed to withstand the most arduous site conditions and extremes of weather.

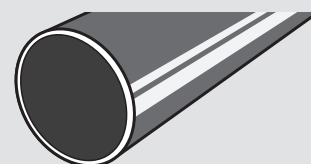
Temperature range -5°C to $+60^{\circ}\text{C}$.

Complies with BS EN 61386 Part 1 Heavy Impact.

LIST. NO.	OUTSIDE DIAMETER mm	WALL THICKNESS mm	WEIGHT KG/M	CROSS SECTION AREA mm ²
HIP1	16	1.7	0.102	121
HIP2	20	1.8	0.150	209
HIP3	25	1.9	0.205	350
HIP4	32	2.5	0.322	573
HIP5	38	2.5	0.394	859
HIP6	50	3.1	0.684	1506

Standard length 3 metres.

ROUND SECTION LIGHT GAUGE HIGH IMPACT CONDUIT (REF. HLG)



Suitable for applications where heavy compressive strength is not required. The high impact characteristic combined with the lighter gauge provides excellent physical properties for flush and surface applications.

Temperature range -5°C to $+60^{\circ}\text{C}$.

Complies with BS EN 61386 Part 1 Medium Impact.

LIST. NO.	OUTSIDE DIAMETER mm	WALL THICKNESS mm	WEIGHT KG/M	CROSS SECTION AREA mm ²
HLG1	16	1.1	0.076	143
HLG2	20	1.3	0.102	237
HLG3	25	1.5	0.170	376
HLG4	32	1.5	0.214	654
HLG5	38	1.5	0.259	954
HLG6	50	1.9	0.417	1676

Standard length 3 metres.

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Cable Capacities of Conduit

17th Edition of the IET Wiring Regulations Selection and Erection of Wiring Systems

The 17th Edition of the Wiring Regulations, Chapter 52 'Selection and Erection of Wiring Systems', describes methods to provide a means of compliance with Regulation 522-8.

The number of cables drawn into or laid in an enclosure of a wiring system shall be such that no damage is caused to the cables or to the enclosure during their installation.

The method employs a unit system, each cable size being allocated a factor. The sum of all factors for the cables intended to be run in the same enclosure is compared against the factors given for conduit in order to determine the size of the conduit necessary to accommodate those cables.

Types of run

It has been found necessary, for conduit, to distinguish between:-

1. Straight runs not exceeding 3 metres in length, and
2. Straight runs exceeding 3 metres, or runs of any length incorporating bends or sets

The term "bend" signifies a British Standard 90° bend, and one double set is equivalent to one bend.

For case 1, each conduit size is represented by only one factor. For case 2, each conduit size has a variable factor which is dependent on the length of run and the number of bends or sets. For a particular size of cable the factor allocated to it for case 1 is not the same as for case 2.

Variable factors

A number of variable factors affect any attempt to arrive at a standard method of assessing the capacity of conduit.

Some of these are:

- reasonable care (of drawing-in)
- acceptable use of the space available
- tolerance in cable sizes
- tolerance in conduit

The following tables can only give guidance as to the maximum number of cables which should be drawn in. The sizes should ensure an easy pull with low risk of damage to the cables.

Only the ease of drawing-in is taken into account. The electrical effects of grouping is not. As the number of circuits increases the current carrying capacity of the cable decreases. Cable sizes have to be increased with consequent increase in cost of cable and conduit.

Single-core PVC insulated cables in straight runs of conduit not exceeding 3 metres in length.

- For each cable it is intended to use, obtain the term from Table A1.
- Add the cable terms together and compare the total with the conduit terms given in Table A2.
- The conduit size which will satisfactorily accommodate the cables is that size having a factor equal to or exceeding the sum of the cable factors

Single-core PVC insulated cables in straight runs of conduit exceeding 3 metres in length or in runs of any length incorporating bends or sets.

- For each cable it is intended to use, obtain the appropriate terms from Table A3.
- Add all the cable terms so obtained and compare with the conduit terms given in Table A4, taking into account the length of run it is intended to use and the number of bends and sets in that run.
- The conduit size which will satisfactorily accommodate the cables is that size having a terms equal to or exceeding the sum of the cable terms.

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TABLE A1 CABLE TERMS FOR SHORT STRAIGHT RUNS		
TYPE OF CONDUCTOR	CONDUCTOR CROSS-SECTIONAL AREA (mm ²)	TERM
Solid	1	22
	1.5	27
	2.5	39
Stranded	1.5	31
	2.5	43
	4	58
	6	88
	10	146
	16	202
	25	385

TABLE A2 CONDUIT TERMS FOR SHORT STRAIGHT RUNS	
CONDUIT DIA (mm)	TERM
16	290
20	460
25	800
32	1400
38	1900
50	3500

TABLE A3 CABLE TERMS FOR LONG STRAIGHT RUNS, OR RUNS INCORPORATE BENDS		
TYPE OF CONDUCTOR	CONDUCTOR CROSS-SECTIONAL AREA (mm ²)	TERM
Solid or Stranded Conductor	1	16
Solid or Stranded Conductor	1.5	22
Solid or Stranded Conductor	2.5	30
Solid or Stranded Conductor	4	43
Solid or Stranded Conductor	6	58
Solid or Stranded Conductor	10	105
Solid or Stranded Conductor	16	145
Solid or Stranded Conductor	25	217

CAPACITY EXAMPLE
NUMBER OF CABLES FOR A 3.0 METRE RUN WITH THREE BENDS

CONDUIT 20mm dia.
(Term 182) Table A4

CABLE SOLID 2.5mm² (3 qty)
(Term 30) Table A3

CABLE STRANDED 4.0mm² (2 qty)
(Term 43) Table A3

Term total – (30+30+30)+(43+43) = **176**

The conduit size is satisfactory (Term 182) to accommodate the cables shown (Term 176).

TABLE A4 CONDUIT TERMS FOR LONG STRAIGHT RUNS, OR RUNS INCORPORATING BENDS																				
LENGTH OF RUN (M)	CONDUIT DIA mm																			
	16	20	25	32	16	20	25	32	16	20	25	32	16	20	25	32	16	20	25	32
	STRAIGHT				ONE BEND				TWO BENDS				THREE BENDS				FOUR BENDS			
1	COVERED BY TABLES A1 AND A2				188	303	543	947	177	286	514	900	158	256	463	818	130	213	388	692
1.5					182	294	528	923	167	270	487	857	143	233	422	750	111	182	333	600
2					177	286	514	900	158	256	463	818	130	213	388	692	97	159	292	529
2.5					171	278	500	878	150	244	442	783	120	196	358	643	86	141	260	474
3					167	270	487	857	143	233	422	750	111	182	333	600				
3.5	179	290	521	911	162	263	475	837	136	222	404	720	103	169	311	563				
4	177	286	514	900	158	256	463	818	130	213	388	692	97	159	292	529				
4.5	174	282	507	889	154	250	452	800	125	204	373	667	91	149	275	500				
5	171	278	500	878	150	244	442	783	120	196	358	643	86	141	260	474				
6	167	270	487	857	143	233	422	750	111	182	333	600								
7	162	263	475	837	136	222	404	720	103	169	311	563								
8	158	256	463	818	130	213	388	692	97	159	292	529								
9	154	250	452	800	125	204	373	667	91	149	275	500								
10	150	244	442	783	120	196	358	643	86	141	260	474								

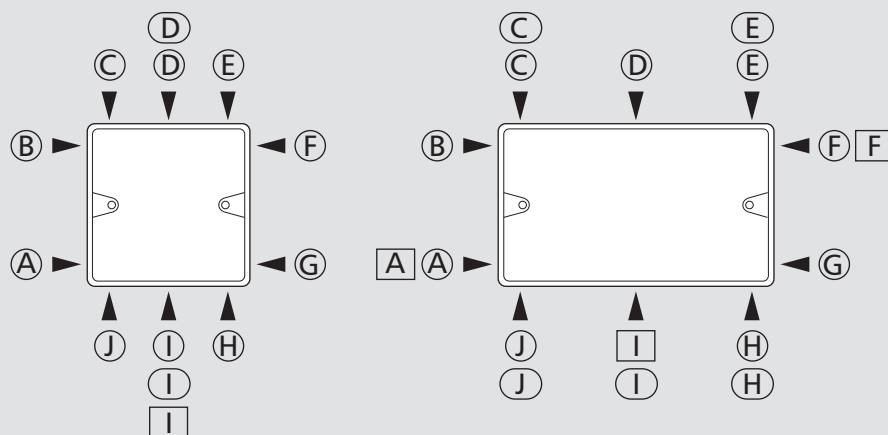
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Boxes

This table breaks down box specifications showing gang, entry points, cut outs and corner types.

LIST NO.	MOUNTING	GANG	ENTRY TYPE RECTANGULAR	ROUND	OVAL	CUT-OUTS IN BACK	CORNER
ESU61	flush	1	-	-	DI	1	-
ESU81	flush	1	-	ABCEFGHJ	-	-	-
ESU8ML	flush	1	-	ABCEFGHJ	-	1	-
ESU82ML	flush	2	-	ABCDEFGHIJ	I	2	-
ESU92ML	flush	2	-	BCDEGHJ	I	2	-
ESU9ML	flush	1	-	BCEGHJ	-	1	-
ESU241	surface	1	I	D	-	2	round
ESU242	surface	2	AFI	D	-	2	round
ESU261	surface	1	-	D	-	1	square
ESU262	surface	2	-	D	-	-	square
ESU281	surface	1	-	I	-	1	square
ESU282	surface	2	I	D	-	1	square



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Fixing

Egatube round conduit is fixed in the normal way with saddles or clips. (Various types of saddles are available). The distance between saddles should not exceed that stated in the following table, or less in hot temperatures.

NOMINAL CONDUIT SIZE (mm)	MAXIMUM DISTANCE BETWEEN SUPPORTS (M)	
	HORIZONTAL	VERTICAL
Not exceeding 16	0.75	1.00
Exceeding 16 but not exceeding 25	1.5	1.75
Exceeding 25 but not exceeding 40	1.75	2.00
Exceeding 40	2.00	2.00

It is recommended that all boxes be fixed first wherever practicable, using the two fixing holes provided in circular boxes. Lines may then be struck for the saddle run and the saddles should be fixed 225mm on either side of bend or boxes. The tubing may then be 'sprung' into the box spouts. It will be noted that the saddles are designed to be a sliding fit on the conduit and it is important to see that all fixings should be sliding fits (see Expansion).

Expansion

A rise in temperature of 25°C would cause an increase of 5mm in a 3 metre length of conduit. This may be ignored in flush work where the tube is bonded to the concrete or plaster.

In surface work, however, precautions must be taken or expansion will cause the tube to bow, although where bends and sets are close together these take up any expansion. Where long straight runs occur in conditions of varying temperatures, care must be taken to overcome problems by using expansion couplers. These are couplers of double normal length with a shoulder formed 19mm from one end. Conduit is secured into this end of about 75mm long which is a sliding fit over the other conduit. The other conduit is inserted about 50mm into the coupler leaving it free to move 25mm in either direction, which is ample for even the greatest extremes of temperature. For straight runs it is advisable to use an expansion coupling every 6 metres.

Adhesives

Egaweld Plus

Waterproof for making watertight joints between PVC conduit, trunking and fittings.

A statement regarding COSHH regulations is available on the MK website – www.mkelectric.co.uk

Light fittings

When considering the use of totally enclosed lighting fittings, remember that the IET Wiring Regulations restrict the use of PVCu boxes to loads of 3 kg and a temperature of 60°C. When conditions in excess of these figures are anticipated, the use of either the heat resistant boxes or conduit boxes suffixed 'EL' are recommended.

The "EL" conduit boxes will support a load of up to 10 kgs at 60°C.

Fittings

A wide range of fittings are available, see Product Selector for details.

Bending

To bend circular conduit, insert the appropriate spring. The spring has an "eye" formed on one end, to which a cord should be attached in order to withdraw the spring. The bend is then made by hand. Twice the angle required should be bent and the tube then allowed to ease back to the desired position. Do not attempt to force the bend back with the spring inserted, as this action will damage the spring. When withdrawing the spring it is suggested that it be twisted in an anti-clockwise direction thus reducing the diameter of the spring and providing easy withdrawal. It is important to use the correct size spring. In cold weather it may be necessary to warm the tube slightly at the point where the bend is to be made. Always saddle the tubing as quickly as possible after bending.

