

# GRP LADDER AND TRAY SYSTEMS

GRP ladder and tray support systems provide robust yet lightweight cable management for industrial and commercial applications.

GRP LADDER AND TRAY SYSTEMS

# GLASS REINFORCED POLYESTER (GRP)

Glass reinforced polyester (GRP) cable management systems are vitally important for use in the transport, petrochemical and construction industries where it is used to provide lightweight yet mechanically strong materials which replace heavier, more energy consuming materials such as aluminium, steel and concrete. It is a highly competent engineering material, capable of being specified for a large number of construction applications.

GRP cable management systems are well suited to aggressive environments where there might be extreme weather or high temperatures. They are extremely robust, considerably lighter than aluminium or steel, and have excellent resistance against fire and corrosion resulting in a very long life span. GRP systems have a large cable capacity, and offer fast and flexible installation solutions, with the ability of on-site assembly and configuration.

Marshall-Tufflex can offer a wide range of GRP systems including trays, ladders, ground ducts, troughing, accessories and fittings, fixings and supports.

## What is RISQS?

RISQS, formerly known as Achilles Link-up, has been developed to provide a service for the qualification of suppliers for all products and services that are procured by the industry. RISQS supports Network Rail, LUL/Transport for London, train operators and other rail products and services providers in the management of supply chain risk. RISQS is an independent, third party qualification assessment of a supplier's capability to supply products and services.



**Marshall-Tufflex is registered with the RISQS Railway Industry Supplier Qualification scheme**

## Approvals

### Mechanical Behaviour

- Breaking point to NEMA FG1
- Tensile strength at break point to ISO 527-5
- Modulus of elasticity to ISO 527-5
- Accelerated aging to ISO 4892-2 & ISO 9227
- IEC 61537

### Electrical behaviour

- Surface resistivity to IEC 6079-0
- Breakage voltage to IEC 60243-1
- Comparative tracking index IEC 60112
- IEC 60093

### Fire resistance to DIN 4102 part 12

### Linear Thermal Expansion to DIN 53752

### Water Absorption to ISO 62



### Environmental

- Analysis shows GRP to have one of the best environmental impact profiles of any strong building material.
- Use of acetone has been eliminated.
- Light weight and easy handling can result in considerable fuel savings.
- Reduction in the need for motorised cranes and platform lift vehicles.
- Buildings using GRP within their infrastructure are lighter and require less energy to heat.



### Recycling and sustainability

- GRP is easily dismantled and cut up to use in road metalling.
- Recycling trials for composite parts are progressing satisfactorily in several European programmes, using GRP as a source of heat energy and the resultant residue as raw material in cement manufacture.
- GRP can be re-used in other buildings.
- Building performance life of 40 to 50 years.



### EMI protection

- Not applicable for this material.



### Fire performance

- Excellent fire performance, GRP is a self-extinguishing composition, halogen-free and with low smoke and fume properties.

### Fire Behaviour

- Inflamability to IEC 60695-2-12/ UL94
- Spread of flame to BS 476 part 7 class 2 / ASTM E84 (Up to Class 1 on request)
- Fire propagation to BS 476 Part 6
- Smoke emissions to BS 6853App B53
- Fire standard to DIN 4102 part 12
- UL 723

## GRP ladder and tray systems

Marshall-Tufflex LSOH GRP systems are very robust and particularly suitable for interior and exterior areas where resistance to corrosion is a requirement. They are considerably lighter than aluminium or steel and have excellent fire performance.

**Pressed tray****50 x 50mm to 400 x 80mm**

A complete range of pressed GRP trays for extended support span up to 3metres.



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**Pultruded ladder****200 x 53mm to 900 x 150mm**

A pultruded ladder system for installation into tunnels, bridges, railways, underground, offshore and marine environments.



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**GRP industrial support systems****for supporting large power cables**

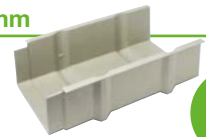
Brackets, bolts and rails for use with other GRP systems.



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**Ground ducts****250 x 140mm to 450 x 176mm**

Self-supporting systems ideal for railway applications.



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**Cable troughing****150 to 250 x 150mm**

Suited to railway applications where cable ducts cannot be buried.



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**Note:** you may use the rule on the left of this page to check profile sizes.

GRP cable management systems incorporate non-conductive and self-extinguishing properties, as well as stability, wherever they are subjected to high levels of UV and extreme temperatures. GRP systems are ideal solutions for installation in tunnels, bridges, railways, underground, offshore and marine environments.

## Rail:

### Optimum safety:

- Self-extinguishing UL94 - V0
- In the event of fire, no halogen toxic fumes (fire classification: M1, i0, F0; ASTM E84, Class 2 or Class 1; BS 476 Part 7, Class 2 or 1)
- No sharp edges or burrs, from cutting or drilling

### Flexibility and easy mounting:

- Reduces installation costs with unique self coupling mechanism
- No earthing required
- Very strong mechanical resistance, even with high temperature variation
- 10 times lighter than concrete
- Excellent vibration resistance



## Sea:

### Resists corrosion: atmospheric, UV, saline

### Save installation time and costs:

- Reduces use of bolts with clip-on splice plates and fixings
- No expensive protection accessories or coatings necessary
- No sharp edges or burrs, from cutting or drilling
- Ensures strong mechanical resistance with a lighter weight than metal
- Excellent vibration resistance



## Road:

### Resists corrosion: combustion gas, salt

### Optimum safety:

- Self-extinguishing UL94 - V0
- Does not emit halogen or smoke (fire classification: M1, i0, F0; ASTM E84, Class 2 or Class 1; BS 476 Part 7, Class 2 or 1)
- No sharp edges or burrs, from cutting or drilling

### Flexibility and easy mounting:

- Reduces installation costs with unique self coupling mechanism
- Save time and money as no earthing is required
- Ensures strong mechanical resistance with a lighter weight than metal
- No expensive protection accessories or coatings necessary
- Excellent vibration resistance



## Petrochemical and Process Plant Industries:

### Cut down corrosion and maintenance costs

### Reduce installation costs

- No earthing required
- No expensive protection accessories or coating
- No sharp edges or burrs, from cutting or drilling

### Ensures strong mechanical resistance and a lighter weight

### Reduces weight of structure

- Saves 40% against stainless steel
- Saves 15% against aluminium



## Energy Distribution:

### Very strong mechanical resistance, even with high temperature variation

### No expensive protection accessories or coating necessary

### Optimum safety:

- Self-extinguishing UL94 - V0
- No toxic fumes or halogen in case of fire (fire classification: M1, i0, F0; ASTM E84, Class 2 or Class 1; BS 476 Part 7, Class 2 or 1)
- No sharp edges or burrs, from cutting or drilling



GRP standard span cable tray and fittings are pressed from glass reinforced polyester resin, using hot moulding technology and facilitating the manufacture of smooth intricate shapes. The system is ideal for installation into tunnels, bridges, railways, underground, offshore and marine environments.

#### Product information

- A variety of sizes from 50 x 50mm to 400 x 80mm
- 2.5 times lighter than steel
- Completely corrosion resistant against salt spray, H2S, acid build up from exhaust gases and brake dust along roads and railways
- No need for painting or protective coating
- Classified LS0H material
- Self-extinguishing
- Low conductivity
- Earthing not required
- Antimagnetic and resistant to electromagnetic pulses
- Effective at temperatures between -80°C to +130°C
- Lower life cycle cost
- Fast installation with fewer fasteners
- Easy to cut and drill
- Load characteristics in accordance with IEC 61537 (for load or other calculations and values, please refer to the technical section)



Reduced use of bolts

GRP is a non-conductive material with excellent fire performance and high corrosion resistance

#### Basic components



##### Non-perforated pressed tray – 3 metres

code	size	pack
KK5050	50 x 50mm	1 x 3m
KK10050	100 x 50mm	1 x 3m
KK15050	150 x 50mm	1 x 3m
KK20050	200 x 50mm	1 x 3m
KK30050	300 x 50mm	1 x 3m
KK10080	100 x 80mm	1 x 3m
KK15080	150 x 80mm	1 x 3m
KK20080	200 x 80mm	1 x 3m
KK30080	300 x 80mm	1 x 3m
KK40080	400 x 80mm	1 x 3m

##### Perforated pressed tray – 3 metres

code	size	pack
KKL5050	50 x 50mm	1 x 3m
KKL10050	100 x 50mm	1 x 3m
KKL15050	150 x 50mm	1 x 3m
KKL20050	200 x 50mm	1 x 3m
KKL30050	300 x 50mm	1 x 3m
KKL10080	100 x 80mm	1 x 3m
KKL15080	150 x 80mm	1 x 3m
KKL20080	200 x 80mm	1 x 3m
KKL30080	300 x 80mm	1 x 3m
KKL40080	400 x 80mm	1 x 3m

##### Tray cover – 3 metres

code	to fit	pack
KKD50	50 x 50mm	1 x 3m
KKD100	100 x 50/80mm	1 x 3m
KKD150	150 x 50/80mm	1 x 3m
KKD200	200 x 50/80mm	1 x 3m
KKD300	300 x 50/80mm	1 x 3m
KKD400	400 x 80mm	1 x 3m

See page 54 for quick reference chart

#### Fittings



##### Tray cover clip

code	size	pack
DF50	50mm	1
DF80	80mm	1

##### Tray end cap

code	to fit	pack
KKKE5050	50 x 50mm	1
KKKE10050	100 x 50mm	1
KKKE15050	150 x 50mm	1
KKKE20050	200 x 50mm	1
KKKE30050	300 x 50mm	1
KKKE10080	100 x 80mm	1
KKKE15080	150 x 80mm	1
KKKE20080	200 x 80mm	1
KKKE30080	300 x 80mm	1
KKKE40080	400 x 80mm	1

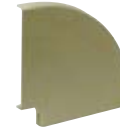
##### Tray internal bend base

code	to fit	pack
KKBI5050	50 x 50mm	1
KKBI10050	100 x 50mm	1
KKBI15050	150 x 50mm	1
KKBI20050	200 x 50mm	1
KKBI30050	300 x 50mm	1
KKBI10080	100 x 80mm	1
KKBI15080	150 x 80mm	1
KKBI20080	200 x 80mm	1
KKBI30080	300 x 80mm	1
KKBI40080	400 x 80mm	1

##### Tray internal bend cover

code	to fit	pack
KKBID5050	50 x 50mm	1
KKBID10050	100 x 50mm	1
KKBID15050	150 x 50mm	1
KKBID20050	200 x 50mm	1
KKBID30050	300 x 50mm	1
KKBID10080	100 x 80mm	1
KKBID15080	150 x 80mm	1
KKBID20080	200 x 80mm	1
KKBID30080	300 x 80mm	1
KKBID40080	400 x 80mm	1



**Tray external bend base**

code	to fit	pack
KKBA5050	50 x 50mm	1
KKBA10050	100 x 50mm	1
KKBA15050	150 x 50mm	1
KKBA20050	200 x 50mm	1
KKBA30050	300 x 50mm	1
KKBA10080	100 x 80mm	1
KKBA15080	150 x 80mm	1
KKBA20080	200 x 80mm	1
KKBA30080	300 x 80mm	1
KKBA40080	400 x 80mm	1

**Tray external bend cover**

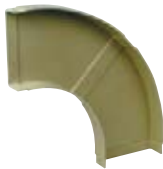
code	to fit	pack
KKBAD5050	50 x 50mm	1
KKBAD10050	100 x 50mm	1
KKBAD15050	150 x 50mm	1
KKBAD20050	200 x 50mm	1
KKBAD30050	300 x 50mm	1
KKBAD10080	100 x 80mm	1
KKBAD15080	150 x 80mm	1
KKBAD20080	200 x 80mm	1
KKBAD30080	300 x 80mm	1
KKBAD40080	400 x 80mm	1

**Tray flat angle base (small radius)**

code	to fit	pack
KKW5050	50 x 50mm	1
KKW10050	100 x 50mm	1
KKW15050	150 x 50mm	1
KKW20050	200 x 50mm	1
KKW30050	300 x 50mm	1
KKW10080	100 x 80mm	1
KKW15080	150 x 80mm	1
KKW20080	200 x 80mm	1
KKW30080	300 x 80mm	1
KKW40080	400 x 80mm	1

**Tray flat angle cover (small radius)**

code	to fit	pack
KKWD50	50 x 50mm	1
KKWD100	100 x 50/80mm	1
KKWD150	150 x 50/80mm	1
KKWD200	200 x 50/80mm	1
KKWD300	300 x 50/80mm	1
KKWD400	400 x 80mm	1

**Tray flat angle base (large radius)**

code	to fit	pack
KKB15050	150 x 50mm	1
KKB20050	200 x 50mm	1
KKB30050	300 x 50mm	1
KKB10080	100 x 80mm	1
KKB15080	150 x 80mm	1
KKB20080	200 x 80mm	1
KKB30080	300 x 80mm	1
KKB40080	400 x 80mm	1

**Tray flat angle cover (large radius)**

code	to fit	pack
KKBD150	150 x 50/80mm	1
KKBD200	200 x 50/80mm	1
KKBD300	300 x 50/80mm	1
KKBD100	100 x 80mm	1
KKBD400	400 x 80mm	1

**Tray flat angle 135° base (large radius)**

code	to fit	pack
KKC10080	100 x 80mm	1
KKC15080	150 x 80mm	1
KKC20080	200 x 80mm	1
KKC30080	300 x 80mm	1
KKC40080	400 x 80mm	1

**Tray flat angle 135° cover (large radius)**

code	to fit	pack
KKCD100	100 x 80mm	1
KKCD150	150 x 80mm	1
KKCD200	200 x 80mm	1
KKCD300	300 x 80mm	1
KKCD400	400 x 80mm	1

**Tray flat tee base (small radius)**

code	to fit	pack
KKSS5050	50 x 50mm	1
KKSS10050	100 x 50mm	1
KKSS15050	150 x 50mm	1
KKSS20050	200 x 50mm	1
KKSS30050	300 x 50mm	1
KKSS10080	100 x 80mm	1
KKSS15080	150 x 80mm	1
KKSS20080	200 x 80mm	1
KKSS30080	300 x 80mm	1

**Tray flat tee cover (small radius)**

code	to fit	pack
KKSSD50	50 x 50mm	1
KKSSD100	100 x 50mm	1
KKSSD150	150 x 50mm	1
KKSSD200	200 x 50mm	1
KKSSD300	300 x 50mm	1
KKSSD100	100 x 80mm	1
KKSSD150	150 x 80mm	1
KKSSD200	200 x 80mm	1
KKSSD300	300 x 80mm	1

**Tray flat tee base (large radius)**

code	to fit	pack
KKST10050	100 x 50mm	1
KKST15050	150 x 50mm	1
KKST20050	200 x 50mm	1
KKST30050	300 x 50mm	1
KKST10080	100 x 80mm	1
KKST15080	150 x 80mm	1
KKST20080	200 x 80mm	1
KKST30080	300 x 80mm	1
KKST40080	400 x 80mm	1

**Tray flat tee cover (large radius)**

code	to fit	pack
KKSTD100	100 x 50/80mm	1
KKSTD150	150 x 50/80mm	1
KKSTD200	200 x 50/80mm	1
KKSTD300	300 x 50/80mm	1
KKSTD400	400 x 80mm	1

## Fittings

**Tray offset base set**

code	to fit	pack
KKET10080	100 x 80mm	1
KKET15080	150 x 80mm	1
KKET20080	200 x 80mm	1
KKET30080	300 x 80mm	1
KKET40080	400 x 80mm	1

**Tray offset cover set**

code	to fit	pack
KKETD10080	100 x 80mm	1
KKETD15080	150 x 80mm	1
KKETD20080	200 x 80mm	1
KKETD30080	300 x 80mm	1
KKETD40080	400 x 80mm	1

**Tray reducer LH base**

code	reduction	pack
KKRL20080	200 to 100	1
KKRL30080	300 to 200	1
KKRL40080	400 to 300	1

**Tray reducer LH cover**

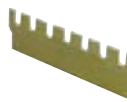
code	reduction	pack
KKRLD200	200 to 100	1
KKRLD300	300 to 200	1
KKRLD400	400 to 300	1

**Tray reducer RH base**

code	reduction	pack
KKRR20080	200 to 100	1
KKRR30080	300 to 200	1
KKRR40080	400 to 300	1

**Tray reducer RH cover**

code	reduction	pack
KKRRD200	200 to 100	1
KKRRD300	300 to 200	1
KKRRD400	400 to 300	1

**Tray pin rack**

code	to fit	pack
KR100	100 x 50/80mm	1
KR150	150 x 50/80mm	1
KR200	200 x 50/80mm	1
KR300	300 x 50/80mm	1
KR400	400 x 80mm	1

## Components

**Tray divider – 3 metres**

code	to fit	pack
KKT50	100 x 50mm	1
KKT80	100 x 80mm	1

## Cover clips

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Because GRP expands in heat these unique clips have been developed to ensure the lid remains firmly in place, even when subjected to extreme heat expansion. The clips are for use with the GRP tray and ladder systems and will prevent the lid from being displaced.

**GRP cover clips**

code	pack
DF50	1
DF80	1

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Technical  
Information

Quick reference  
chartStandard span  
pressed tray

## Tray/trunking component chart



Length: 3 metres

Pack 1

50 x 50mm tray

Non-perforated pressed GRP Tray	Perforated pressed GRP tray	Cover	Cover clip	Divider	End cap	Internal bend Base	Internal bend Cover
KK5050	KKL5050	KKD50	DF50	KKT50	KKKE5050	KKBI5050	KKBID5050

100 x 50mm tray

KK10050	KKL10050	KKD100	DF50	KKT50	KKKE10050	KKBI10050	KKBID10050
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150 x 50mm tray

KK15050	KKL15050	KKD150	DF50	KKT50	KKKE15050	KKBI15050	KKBID15050
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200 x 50mm tray

KK20050	KKL20050	KKD200	DF50	KKT50	KKKE20050	KKBI20050	KKBID20050
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300 x 50mm tray

KK30050	KKL30050	KKD300	DF50	KKT50	KKKE30050	KKBI30050	KKBID30050
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100 x 80mm tray

KK10080	KKL10080	KKD100	DF80	KKT80	KKKE10080	KKBI10080	KKBID10080
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150 x 80mm tray

KK15080	KKL15080	KKD150	DF80	KKT80	KKKE15080	KKBI15080	KKBID15080
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200 x 80mm tray

KK20080	KKL20080	KKD200	DF80	KKT80	KKKE20080	KKBI20080	KKBID20080
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300 x 80mm tray

KK30080	KKL30080	KKD300	DF80	KKT80	KKKE30080	KKBI30080	KKBID30080
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400 x 80mm tray

KK40080	KKL40080	KKD400	DF80	KKT80	KKKE40080	KKBI40080	KKBID40080
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## Product Information

All products are supplied in pack quantities of one.

A range of Pressed GRP Trays with 110mm wall height is also available on request.

Complete range of Pultruded Trays for extended support span up to 3 metres in 50mm and 80mm wall heights are also available on request.

Please contact us on +44 (0)1424 856600 for a lead time.



Tray/trunking component chart



External bend		Flat angle (small radius)		Flat angle (large radius)		Flat angle 135° (large radius)		Offset	
Base	Cover	Base	Cover	Base	Cover	Base	Cover	Base set	Cover set
KKBA5050	KKBAD5050	KKW5050	KKWD50	—	—	—	—	—	—
KKBA10050	KKBAD10050	KKW10050	KKWD100	—	—	—	—	—	—
KKBA15050	KKBAD15050	KKW15050	KKWD150	KKB15050	KKBD150	—	—	—	—
KKBA20050	KKBAD20050	KKW20050	KKWD200	KKB20050	KKBD200	—	—	—	—
KKBA30050	KKBAD30050	KKW30050	KKWD300	KKB30050	KKBD300	—	—	—	—
KKBA10080	KKBAD10080	KKW10080	KKWD100	KKB10080	KKBD100	KKC10080	KKCD100	KKET10080	KKETD10080
KKBA15080	KKBAD15080	KKW15080	KKWD150	KKB15080	KKBD150	KKC15080	KKCD150	KKET15080	KKETD15080
KKBA20080	KKBAD20080	KKW20080	KKWD200	KKB20080	KKBD200	KKC20080	KKCD200	KKET20080	KKETD20080
KKBA30080	KKBAD30080	KKW30080	KKWD300	KKB30080	KKBD300	KKC30080	KKCD300	KKET30080	KKETD30080
KKBA40080	KKBAD40080	KKW40080	KKWD400	KKB40080	KKBD400	KKC40080	KKCD400	KKET40080	KKETD40080

Quick reference  
chartStandard span  
pressed tray

Tray/trunking component chart



Length: 3 metres

Pack 1

50 x 50mm tray

Flat tee (small radius)		Flat tee (large radius)		Reducer left hand		Reducer right hand		Pin rack
Base	Cover	Base	Cover	Base	Cover	Base	Cover	

KKSS5050	KKSSD50	-	-	-	-	-	-	-
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100 x 50mm tray

KKSS10050	KKSSD100	KKST10050	KKSTD100	-	-	-	-	KR100
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150 x 50mm tray

KKSS15050	KKSSD150	KKST15050	KKSTD150	-	-	-	-	KR150
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200 x 50mm tray

KKSS20050	KKSSD200	KKST20050	KKSTD200	-	-	-	-	KR200
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300 x 50mm tray

KKSS30050	KKSSD300	KKST30050	KKSTD300	-	-	-	-	KR300
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100 x 80mm tray

KKSS10080	KKSSD100	KKST10080	KKSTD100	-	-	-	-	KR100
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150 x 80mm tray

KKSS15080	KKSSD150	KKST15080	KKSTD150	-	-	-	-	KR150
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200 x 80mm tray

KKSS20080	KKSSD200	KKST20080	KKSTD200	KKRL20080 200 to 100mm	KKRLD200	KKRR20080 200 to 100mm	KKRRD200	KR200
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300 x 80mm tray

KKSS30080	KKSSD300	KKST30080	KKSTD300	KKRL30080 300 to 200mm	KKRLD300	KKRR30080 300 to 200mm	KKRRD300	KR300
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400 x 80mm tray

-	-	KKST40080	KKSTD400	KKRL40080 400 to 300mm	KKRLD400	KKRR40080 400 to 300mm	KKRRD400	KR400
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## Product Information

All products are supplied in pack quantities of one.

A range of Pressed GRP Trays with 110mm wall height is also available on request.

Complete range of Pultruded Trays for extended support span up to 3 metres in 50mm and 80mm wall heights are also available on request.

Please contact us on +44 (0)1424 856600 for a lead time.

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Technical  
Information

GRP pultruded ladders are manufactured by pultrusion, a process using layers of mats and rovings injected with resin and pulled through a die in a continuous operation. The system is ideal for installation into tunnels, bridges, railways, underground, offshore and marine environments.

#### Product information

- A variety of sizes from 200 x 53mm to 900 x 150mm
- 2.5 times lighter than steel
- Completely corrosion resistant against salt spray, H2S, acid build up from exhaust gases and brake dust along roads and railways
- No need for painting or protective coating
- Classified LSOH material
- Self-extinguishing
- Low conductivity
- Earthing not required
- Antimagnetic and resistant to electromagnetic pulses
- Effective at temperatures between -80°C to +130°C
- Lower life cycle cost
- Fast installation with fewer fasteners
- Easy to cut and drill
- Load characteristics in accordance with IEC 61537  
(for load or other calculations and values, please refer to the technical section)



## Basic components



#### Ladder

code	size	pack
UL20053	200 x 53mm	1x3m
UL20080	200 x 80mm	1x3m
UL150100	150 x 100mm	1x3m
UL300100	300 x 100mm	1x3m
UL400100	400 x 100mm	1x3m
UL600100	600 x 100mm	1x3m
UL900100	900 x 100mm	1x3m
UL150150	150 x 150mm	1x3m
UL300150	300 x 150mm	1x3m
UL400150	400 x 150mm	1x3m
UL600150	600 x 150mm	1x3m
UL900150	900 x 150mm	1x3m

#### Ladder cover

code	to fit	pack
KKD200	200 x 53mm	1x3m
KKD200	200 x 80mm	1x3m
KKD150	150 x 100mm	1x3m
KKD300	300 x 100mm	1x3m
KKD400	400 x 100mm	1x3m
KKD600	600 x 100mm	1x3m
KKD900	900 x 100mm	1x3m
KKD150	150 x 150mm	1x3m
KKD300	300 x 150mm	1x3m
KKD400	400 x 150mm	1x3m
KKD600	600 x 150mm	1x3m
KKD900	900 x 150mm	1x3m

See  
page 59  
for quick  
reference  
chart

## Fittings



#### Ladder cover clip

code	pack
DF50	1
DF80	1
DF100	1
DF150	1

#### Ladder horizontal coupler\* (Set of 2 pieces)

code	pack
ULIH53	1
ULIH80	1
ULIH100	1
ULIH150	1

\* Foldable splice plate requires  
4 x M616V4ADOM

#### Ladder int/ext angle base

code	to fit	pack
ULBA20053	200 x 53mm	1
ULBA20080	200 x 80mm	1
ULBA150100	150 x 100mm	1
ULBA300100	300 x 100mm	1
ULBA400100	400 x 100mm	1
ULBA600100	600 x 100mm	1
ULBA900100	900 x 100mm	1
ULBA150150	150 x 150mm	1
ULBA300150	300 x 150mm	1
ULBA400150	400 x 150mm	1
ULBA600150	600 x 150mm	1
ULBA900150	900 x 150mm	1

#### Ladder int/ext angle cover

code	to fit	pack
ULBAD20053	200 x 53mm	1
ULBAD20080	200 x 80mm	1
ULBAD150100	150 x 100mm	1
ULBAD300100	300 x 100mm	1
ULBAD400100	400 x 100mm	1
ULBAD600100	600 x 100mm	1
ULBAD900100	900 x 100mm	1
ULBAD150150	150 x 150mm	1
ULBAD300150	300 x 150mm	1
ULBAD400150	400 x 150mm	1
ULBAD600150	600 x 150mm	1
ULBAD900150	900 x 150mm	1

## Fittings

**Ladder flat angle 90° base**

code	to fit	pack
ULB20053	200 x 53mm	1
ULB20080	200 x 80mm	1
ULB150100	150 x 100mm	1
ULB300100	300 x 100mm	1
ULB400100	400 x 100mm	1
ULB600100	600 x 100mm	1
ULB900100	900 x 100mm	1
ULB150150	150 x 150mm	1
ULB300150	300 x 150mm	1
ULB400150	400 x 150mm	1
ULB600150	600 x 150mm	1
ULB900150	900 x 150mm	1

**Ladder flat angle 90° cover**

code	to fit	pack
ULBD200	200 x 53/80mm	1
ULBD150	150 x 100/150mm	1
ULBD300	300 x 100/150mm	1
ULBD400	400 x 100/150mm	1
ULBD600	600 x 100/150mm	1
ULBD900	900 x 100/150mm	1

**Ladder flat tee base**

code	to fit	pack
ULTE20053	200 x 53mm	1
ULTE20080	200 x 80mm	1
ULTE150100	150 x 100mm	1
ULTE300100	300 x 100mm	1
ULTE400100	400 x 100mm	1
ULTE600100	600 x 100mm	1
ULTE900100	900 x 100mm	1
ULTE150150	150 x 150mm	1
ULTE300150	300 x 150mm	1
ULTE400150	400 x 150mm	1
ULTE600150	600 x 150mm	1
ULTE900150	900 x 150mm	1

**Ladder flat tee cover**

code	to fit	pack
ULTED200	200 x 53/80mm	1
ULTED150	150 x 100/150mm	1
ULTED300	300 x 100/150mm	1
ULTED400	400 x 100/150mm	1
ULTED600	600 x 100/150mm	1
ULTED900	900 x 100/150mm	1

**Ladder flat crossover base**

code	to fit	pack
ULX20053	200 x 53mm	1
ULX20080	200 x 80mm	1
ULX150100	150 x 100mm	1
ULX300100	300 x 100mm	1
ULX400100	400 x 100mm	1
ULX600100	600 x 100mm	1
ULX900100	900 x 100mm	1
ULX150150	150 x 150mm	1
ULX300150	300 x 150mm	1
ULX400150	400 x 150mm	1
ULX600150	600 x 150mm	1
ULX900150	900 x 150mm	1

**Ladder flat crossover cover**

code	to fit	pack
ULXD200	200 x 53/80mm	1
ULXD150	150 x 100/150mm	1
ULXD300	300 x 100/150mm	1
ULXD400	400 x 100/150mm	1
ULXD600	600 x 100/150mm	1
ULXD900	900 x 100/150mm	1

**Ladder reducer**

code	to fit	Reduction achieved	pack
ULR15053	200 x 53mm	150mm	1
ULR15080	200 x 80mm	150mm	1
ULR100100	150 x 100mm	100mm	1
ULR200100	300 x 100mm	200mm	1
ULR300100	400 x 100mm	300mm	1
ULR300100	600 x 100mm	500mm	1
ULR200150	150 x 150mm	100mm	1
ULR200150	300 x 150mm	200mm	1
ULR300150	400 x 150mm	300mm	1
ULR500150	600 x 150mm	500mm	1

**Vertical variable angle plate (Set of 2 pieces)**

code	size	pack
ULIV53	53mm	1
ULIV80	80mm	1
ULIV100	100mm	1
ULIV150	150mm	1

**Ladder Clamp To Support\***

code	pack
ULKG	1

\* ULKG requires 1 x M1040V4AHEX

## Components

## Quick reference chart

### Pultruded ladder

Length: 3 metres

Pack 1

(width x height)

200 x 53mm

200 x 80mm

150 x 100mm

300 x 100mm

400 x 100mm

600 x 100mm

900 x 100mm

150 x 150mm

300 x 150mm

400 x 150mm

600 x 150mm

900 x 150mm

## Ladder component chart



Ladder	Cover	Cover clip	Flat 90° angle		Int/Ext angle Base	Int/Ext 90° angle Cover
UL20053	KKD200	DF50	ULB20053	ULBD200	ULBA20053	ULBAD20053
UL20080	KKD200	DF80	ULB20080	ULBD200	ULBA20080	ULBAD20080
UL150100	KKD150	DF100	ULB150100	ULBD150	ULBA150100	ULBAD150100
UL300100	KKD300	DF100	ULB300100	ULBD300	ULBA300100	ULBAD300100
UL400100	KKD400	DF100	ULB400100	ULBD400	ULBA400100	ULBAD400100
UL600100	KKD600	DF100	ULB600100	ULBD600	ULBA600100	ULBAD600100
UL900100	KKD900	DF100	ULB900100	ULBD900	ULBA900100	ULBAD900100
UL150150	KKD150	DF150	ULB150150	ULBD150	ULBA150150	ULBAD150150
UL300150	KKD300	DF150	ULB300150	ULBD300	ULBA300150	ULBAD300150
UL400150	KKD400	DF150	ULB400150	ULBD400	ULBA400150	ULBAD400150
UL600150	KKD600	DF150	ULB600150	ULBD600	ULBA600150	ULBAD600150
UL900150	KKD900	DF150	ULB900150	ULBD900	ULBA900150	ULBAD900150

### Product Information

All products are supplied in pack quantities of one.  
Additional ladder widths in wall heights 53mm, 80mm, 100mm and 150mm are available on request.  
6 metre lengths are available on request.  
Please contact us on +44 (0)1424 856600 for a lead time.

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Information

Quick reference  
chart

Pultruded ladder

## Ladder component chart



Length: 3 metres

Pack 1

200 x 53mm

Flat tee	Flat crossover	Reducer	Horizontal coupler (Set of 2 pieces)	Vertical variable angle plate (Set of 2 pieces)	Ladder clamp to support
Base	Cover	Base	Cover		
ULTE20053	ULTED200	ULX20053	ULXD200	ULR15053 § 150mm	*ULIH53 ULIV53 +ULKG
ULTE20080	ULTED200	ULX20080	ULXD200	ULR15080 § 150mm	*ULIH80 ULIV80 +ULKG
ULTE150100	ULTED150	ULX150100	ULXD150	ULR100100 § 100mm	*ULIH100 ULIV100 +ULKG
ULTE300100	ULTED300	ULX300100	ULXD300	ULR200100 § 200mm	*ULIH100 ULIV100 +ULKG
ULTE400100	ULTED400	ULX400100	ULXD400	ULR300100 § 300mm	*ULIH100 ULIV100 +ULKG
ULTE600100	ULTED600	ULX600100	ULXD600	ULR300100 § 500mm	*ULIH100 ULIV100 +ULKG
ULTE900100	ULTED900	ULX900100	ULXD900	–	*ULIH100 ULIV100 +ULKG
ULTE150150	ULTED150	ULX150150	ULXD150	ULR100150 § 100mm	*ULIH150 ULIV150 +ULKG
ULTE300150	ULTED300	ULX300150	ULXD300	ULR200150 § 200mm	*ULIH150 ULIV150 +ULKG
ULTE400150	ULTED400	ULX400150	ULXD400	ULR300150 § 300mm	*ULIH150 ULIV150 +ULKG
ULTE600150	ULTED600	ULX600150	ULXD600	ULR500150 § 500mm	*ULIH150 ULIV150 +ULKG
ULTE900150	ULTED900	ULX900150	ULXD900	–	*ULIH150 ULIV150 +ULKG

ULTE20053

ULTED200

ULX20053

ULXD200

ULR15053

\*ULIH53

ULIV53

+ULKG

200 x 80mm

ULTE20080

ULTED200

ULX20080

ULXD200

ULR15080

\*ULIH80

ULIV80

+ULKG

150 x 100mm

ULTE150100

ULTED150

ULX150100

ULXD150

ULR100100

\*ULIH100

ULIV100

+ULKG

300 x 100mm

ULTE300100

ULTED300

ULX300100

ULXD300

ULR200100

\*ULIH100

ULIV100

+ULKG

400 x 100mm

ULTE400100

ULTED400

ULX400100

ULXD400

ULR300100

\*ULIH100

ULIV100

+ULKG

600 x 100mm

ULTE600100

ULTED600

ULX600100

ULXD600

ULR300100

\*ULIH100

ULIV100

+ULKG

900 x 100mm

ULTE900100

ULTED900

ULX900100

ULXD900

–

\*ULIH100

ULIV100

+ULKG

150 x 150mm

ULTE150150

ULTED150

ULX150150

ULXD150

ULR100150

\*ULIH150

ULIV150

+ULKG

300 x 150mm

ULTE300150

ULTED300

ULX300150

ULXD300

ULR200150

\*ULIH150

ULIV150

+ULKG

400 x 150mm

ULTE400150

ULTED400

ULX400150

ULXD400

ULR300150

\*ULIH150

ULIV150

+ULKG

600 x 150mm

ULTE600150

ULTED600

ULX600150

ULXD600

ULR500150

\*ULIH150

ULIV150

+ULKG

900 x 150mm

ULTE900150

ULTED900

ULX900150

ULXD900

–

\*ULIH150

ULIV150

+ULKG

## Product Information

§ Reduction achieved

\* Foldable splice plate requires 4 x M616V4ADOM

+ ULKG requires 1 x M1040V4AHEX

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## Quick reference chart

### Support systems

#### Support system component chart

##### GRP Systems

##### Stainless steel 316



Pack 1

100mm

FPAM100

FPAP100AC

FPAR2000AC

FPBGV10/V4A

–

ASSV2000

BGSV

150mm

–

FPAP150AC

FPAR2000AC

FPBGV10/V4A

–

ASSV2000

BGSV

200mm

FPAM200

FPAP200AC

FPAR2000AC

FPBGV10/V4A

AV200S

ASSV2000

BGSV

250mm

FPAM250

FPAP250AC

FPAR2000AC

FPBGV10/V4A

AV250S

ASSV2000

BGSV

300mm

FPAM300

FPAP300AC

FPAR2000AC

FPBGV10/V4A

AV300S

ASSV2000

BGSV

400mm

–

FPAP400AC

FPAR2000AC

FPBGV10/V4A

AV400S

ASSV2000

BGSV

500mm

–

FPAP500AC

FPAR2000AC

FPBGV10/V4A

AV500S

ASSV2000

BGSV

600mm

–

FPAP600AC

FPAR2000AC

FPBGV10/V4A

AV600S

ASSV2000

BGSV

#### Product Information

All products are supplied in pack quantities of one.  
Other brackets and supports available on request.  
Please contact us on +44 (0)1424 856600 for a lead time.

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### Technical Information

GRP ground ducts and profiles are ideal for railway applications wherever below ground installations are required.

### Product information

#### Ducts

- 250 x 140mm to 450 x 176mm
- Rigid and self-supporting
- 3 times lighter than GRC (Glass fibre Reinforced Concrete)
- 10 times lighter than concrete
- 2.5 times lighter than steel
- Impact and frost resistant
- Easy to handle and load

#### Profile

- 36 x 35mm to 143 x 53mm
- Avoids ballast falling into ducts
- Ensures perfect positioning of ground duct covers
- Increases capacity of existing concrete ground ducts
- High mechanical and corrosion performance

For information on other available dimensions, please call our Technical Team on +44 (0)1424 856688



GRP is a non-conductive material with excellent fire performance and high corrosion resistance.

### Ground ducts and profiles

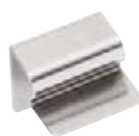


#### Duct base 2500mm

code	size	pack
<b>BK200140</b>	250 x 140mm	1
<b>BK300176</b>	350 x 176mm	1
<b>BK400176</b>	450 x 176mm	1

#### Cover 1250mm

code	to fit	pack
<b>BKDR200</b>	250 x 140mm	1
<b>BKDR300</b>	350 x 176mm	1
<b>BKDR400</b>	450 x 176mm	1

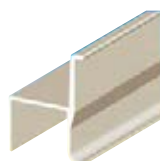


#### Clip for cover mounting

code	to fit	pack
<b>DF94/4</b>	250 x 140mm	1
<b>DF94/4</b>	350 x 176mm	1
<b>DF94/4</b>	450 x 176mm	1

#### Set of clips and hinge for articulate cover mounting

code	to fit	pack
<b>DF94/C</b>	250 x 140mm	1
<b>DF94/C</b>	350 x 176mm	1
<b>DF94/C</b>	450 x 176mm	1



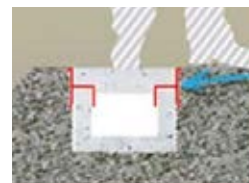
#### Ground duct profile

code	to fit	pack
<b>PR3635</b>	36 x 35mm	1
<b>PR5045</b>	50 x 45mm	1
<b>PR5555</b>	55 x 55mm	1

#### Ground duct A profile

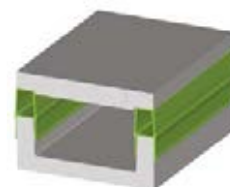
code	to fit	pack
<b>PR5080</b>	143 x 53mm	1

### Ground duct profile



### Ground duct A profile

- Increases cable capacity of existing concrete ground ducts
- High mechanical and corrosion performance
- Highly effective at minimum cost



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Technical  
Information

GRP cable troughing is ideally suited to railway applications where cable ducts cannot be buried.

#### Product information

- 150 and 250 x 150mm
- Self-supporting base
- High mechanical loading capacity
- One post every 6m
- Lightweight product
- Only one person required for installation

For further information please call our Technical Team on +44 (0)1424 856688



GRP is a non-conductive material with excellent fire performance and high corrosion resistance

#### Basic components



##### Base and pre-mounted connector 6M

code	size	pack
SP150150	150 x 150mm	1
SP250150	250 x 150mm	1



##### U-Shaped connector

code	to fit	pack
SPIH150150	150 x 150mm	1
SPIH250150	250 x 150mm	1



##### Splice plate

code	to fit	pack
KKIH50	150 x 150mm	1



##### Cable trough covers

code	to fit	pack
KKDL150	150 x 150mm	1
KKDL250	250 x 150mm	1

#### Fittings



##### Internal vertical elbow 15°

code	size	pack
SPBI150	150 x 150mm	1
SPBI250	250 x 150mm	1



##### Cover for internal vertical elbow 15°

code	to fit	pack
SPBID150	150 x 150mm	1
SPBID250	250 x 150mm	1



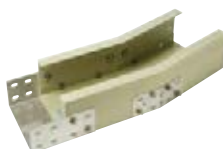
##### External vertical elbow 15°

code	size	pack
SPBA150	150 x 150mm	1
SPBA250	250 x 150mm	1



##### Cover for external vertical elbow 15°

code	to fit	pack
SPBAD150	250 x 150mm	1
SPBAD250	250 x 150mm	1



##### Horizontal elbow 15°

code	size	pack
SPBH150	150 x 150mm	1
SPBH250	250 x 150mm	1



##### Cover for horizontal elbow 15°

code	to fit	pack
SPBD150	150 x 150mm	1
SPBD250	250 x 150mm	1

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## Fittings

**Steel post 1500mm**

code	to fit	pack
<b>SPP100150</b>	150/250 x 150mm	1

**Steel post 2000mm**

code	to fit	pack
<b>SPP100200</b>	150/250 x 150mm	1

**Steel post 2500mm**

code	to fit	pack
<b>SPP100250</b>	150/250 x 150mm	1

**Steel mounting plate**

code	to fit	pack
<b>SPC100150</b>	150 x 150mm	1
<b>SPC100250</b>	250 x 150mm	1

**HDG steel cable out fitting with bolts**

code	to fit	pack
<b>SPKA</b>	150/250 x 150mm	1

**316 SS bolts and nuts for SPIH/KKIH**

code	to fit	pack
<b>SPM1025</b>	for 150/250 x 150mm	1

**HDG steel bolts, nuts and U-shaped washers**

code	to fit	pack
<b>SPM1025/HDG</b>	150/250 x 150mm	1

## Case Study

**GRP cable management proves perfect solution for Jersey's historic rail tunnels**

**High humidity levels and potential fire risks posed a cable management specification challenge during work at Jersey's famous St Aubin's war-time tunnels.**

Corroded casing needed replacing within the tunnels because it was considered a fire risk and required frequent repair due to high humidity levels. GRP cable management proved the perfect solution thanks to its corrosion resistance and excellent fire safety credentials.

For this project GRP tray was suspended from ceilings to carry a wide range of cables, including PVC/SWA sub main, lighting SY sub-circuit, fire alarm and low voltage signal cables. Light fittings have also been fixed to the trunking's underside.

Specifier, Dave Atkinson from States of Jersey, explained why GRP was ideal for this challenging environment: "The humidity level in the tunnels at certain times of the year is very high due to water permeating through the hillside and concrete structure. Because of this moisture, the existing electrical installation had corroded.

"We chose GRP tray for the upgrade as it's resistant to humidity and fire. Apart from putting an end to the corrosion issues, St Aubin's needed a solution that would improve safety for tunnel users while also allowing maintenance teams to reduce testing regimes – something that was taking up a lot of time. Thanks its fire resistant credentials, the use of GRP has meant that periodic testing is now sufficient, in-line with BS 5839," concluded Mr Atkinson.

