

GRP ladder and tray

Overview

GRP (Glass Reinforced Polyester) has, good stability to UV, great mechanical strength and is 40% lighter than steel. GRP is a non-conductive insulating material, resistant to temperatures from -80°C to +130°C and has excellent resistance to fire and corrosion being self-extinguishing and zero halogen.

Standards and Approvals

- IET Wiring Regulations BS 7671
- (LVD) 2014/35/EU
- Low Voltage Directive

Mechanical Behaviour

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

Electrical Behaviour

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

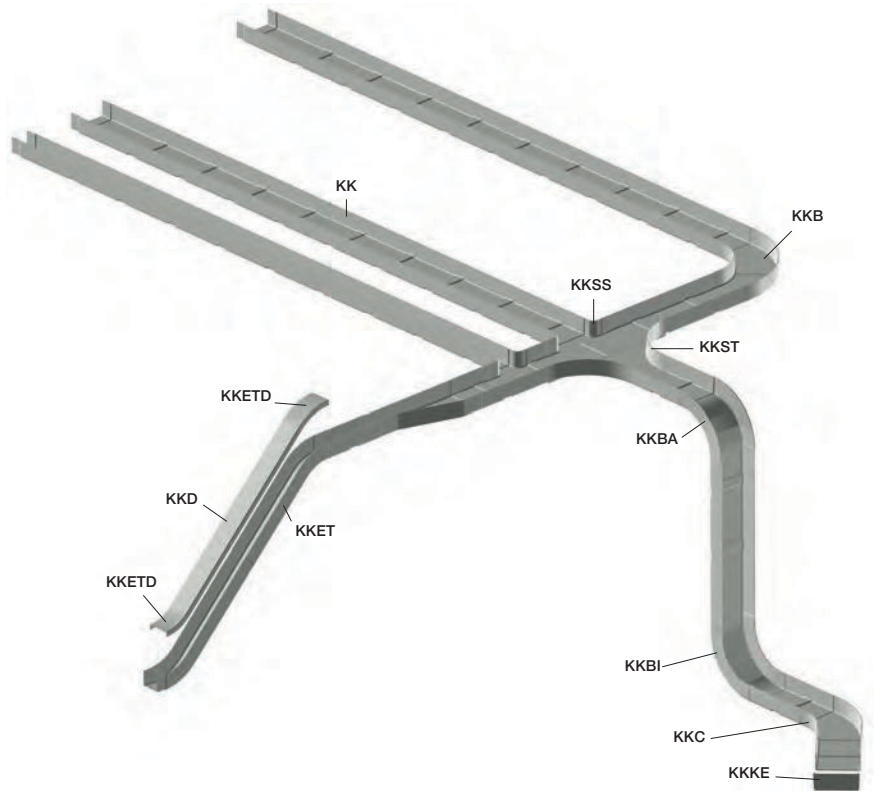
Density to DIN 53479

- Linear Thermal Dilatation to DIN 53752
- Water Absorption to ISO 62

Fire Behaviour

- Inflammability to IEC 60695-2-12/UL94
- UL 723
- DIN 5510-2
- NF-F-16101
- 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 6853 App B53
- Fire standard to DIN 4102 part 12
- Reaction to fire classification: M1

GRP tray



KKB

During installation care must be taken to position a support at each end of the cable tray fitting. It is also recommended that the large radius fitting is fixed laterally to each end of adjoining cable tray.

KK

Each length of tray comes complete with built in, self adjusting coupler. An expansion gap of 8mm must be considered for thermal movement.

KKSS

During installation care must be taken to position a support at each end of the cable tray fitting.

KKST

During installation care must be taken to position a support at each end of the cable tray entry.

KKRR

During installation every reducer must be supported at each end. It is also recommended that the reducer fitting is fixed laterally to each end of adjoining cable tray.

KKBA

During installation care must be taken to position a support at each end of the cable tray entry. It is also recommended that the outside elbow fitting is fixed laterally to each end of adjoining cable tray.

KKETD

Covers are attached using either DF50/DF80 stainless steel cover clips. In strong winds the quantity of clips should be increased.

KKD

For a stronger assembly, covers with a width greater than 400mm are strengthened. Strengthening ribs are visible on the outside of the cover. Covers are attached using either DF50/DF80 stainless steel cover clips. Under normal conditions use 3 clips alternatively on each side per 3 metres of ladders/trays. Under extreme conditions (strong winds >60km/h) use 7 clips per 3 metres of ladder/tray.

KKET

During installation all fittings must be supported at every cable entry, and central support for all fittings with a radius greater than 250mm, and/or with width greater than 400mm. It is also recommended that the change in elevation fitting is fixed laterally to each end of adjoining cable tray.

KKBI

During installation care must be taken to position a support at each end of the cable tray entry. It is also recommended that the inside elbow fitting is fixed laterally to each end of adjoining cable tray.

KKC

To ensure correct installation, the horizontal elbow must be fixed laterally to each end of the adjoining cable tray.

KKKE

Mounting accessories required for this fitting – 2 x M6x16 Bolts (to be ordered separately).

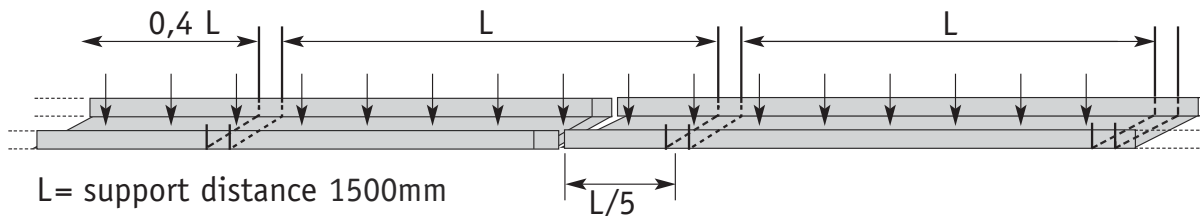
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Product Information

Standard span pressed tray

Load characteristics

Coefficient of safety > 1.7 (in accordance with IEC 61537) this data is given for ladders coupled with splice plates and bolts.



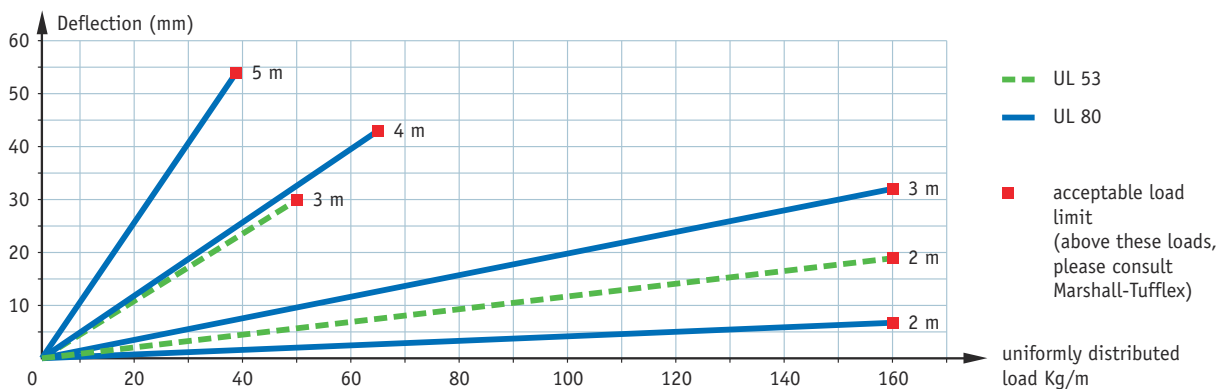
L = support distance 1500mm

The deflection values are measured with the position of the junction between 2 ladders at a distance $L/5$ from a support. If this distance is not respected, it is necessary to raise the deflection values by about 30% when fully loaded.

	Useful area (mm ²)	Weight of cables kg/m	Maximum admissible load kg/m according to the distance between supports				
			2m	3m	4m	5m	6m
UL...53	150 – 300	4420 – 9520 = 250					
	400 – 600	12920 – 19720 = 550	160	50			
UL...80	150 – 300	7690 – 16840 = 450					
	400 – 600	22940 – 35140 = 1000	160	160	60	30	

Optimal conditions, for cost reduction on your installation.

Series UL load diagram: supporting distances from 2 to 5m. For 100mm and 150mm wall height refer to Marshall-Tufflex.



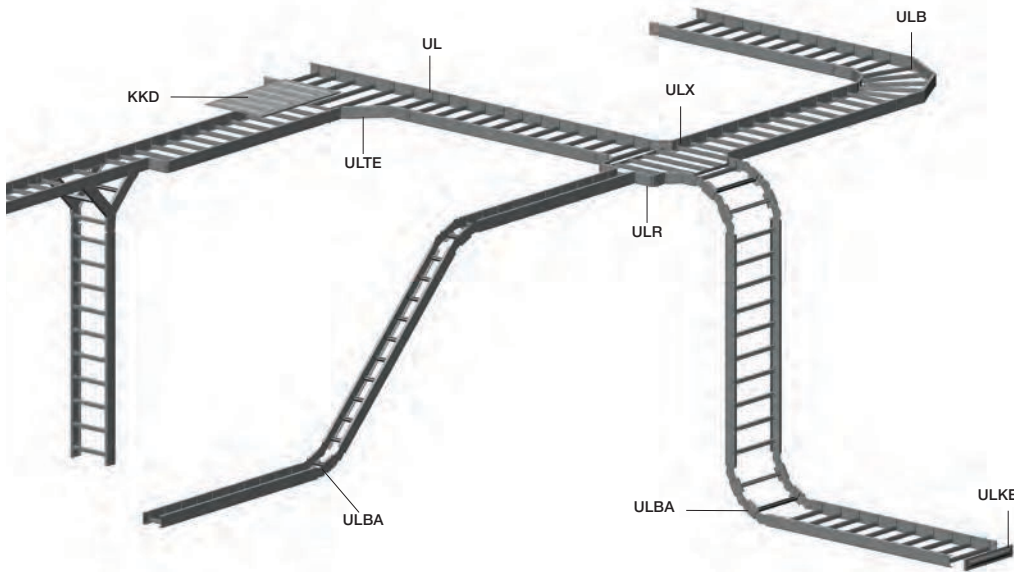
Localised loads

To be able to compare this to a uniformly distributed load it is necessary to double the value of the localised load. Example: A 60kg local load at the centre of a ladder with 3m of support distance. Equivalent load: $60 \times 2 = 120\text{kg}$ uniformly distributed along 3m (ie 40kg/m).

Loading characteristics

- Deflection <5mm (1/300).
- Coefficient of safety >1.7 (in accordance with IEC 61537) using the interlocking and self-adjustable coupling without fasteners.
- Loading diagram details (below) in accordance with IEC 61537, at an ambient temperature of 25°C.

GRP pultruded ladder



ULB

During installation you must take care to position a support under each elbow at each cable ladder end. If the bending radius is greater than 250mm and/or the width greater than 400mm, an additional intermediary support is necessary.

UL

Cable ladders are supplied with non-perforated rungs. Should you require perforated ladder rungs please contact a member of the technical team who will be happy to assist in your enquiry.

ULX

During installation all fittings must be supported at every cable entry. A central support is required for all fittings with a bend radius greater than 250mm and/or the width greater than 400mm

ULR

During installation the stainless steel splice plates must be fixed on each cable ladder end using 8 x M6 x 16 bolts. (to be ordered separately)

KKD

For a stronger assembly, covers with a width greater than 400mm are strengthened. Strengthening ribs are visible on the outside of the cover. Covers are attached using either DF50/DF80 stainless steel cover clips. In strong winds the quantity of clips should be increased.

ULTE

During installation all fittings must be supported at every cable entry. A central support is required for all fittings with a bend radius greater than 250mm and/or the width greater than 400mm

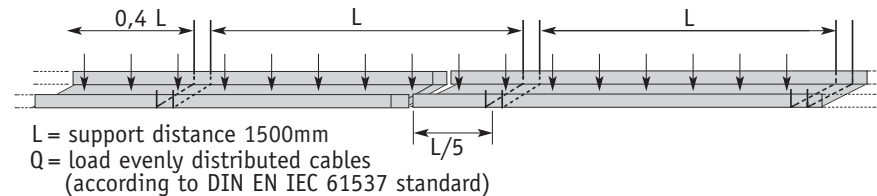
ULBA

During installation the metallic splice plates must be fixed at each cable ladder end using 4 x M6 x 16 bolts. (to be ordered separately). If the bending radius is greater than 250mm and/or the width greater than 400mm, an additional intermediary support is necessary.

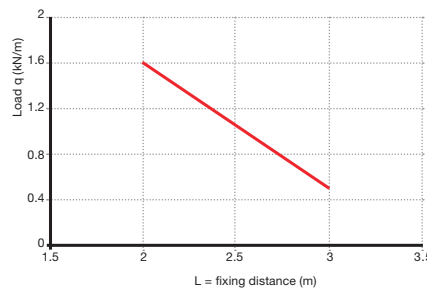
ULKE

Mounting this accessory requires 2 x M6 x 16 bolts. (to be ordered separately)

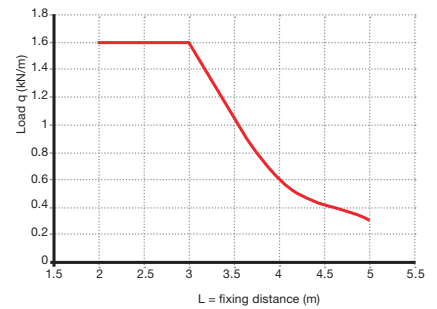
Load characteristics



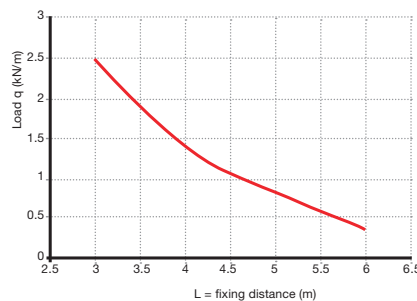
53mm High Cable Ladder



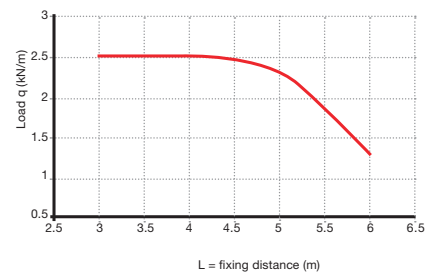
80mm High Cable Ladder



100mm High Cable Ladder



150mm High Cable Ladder



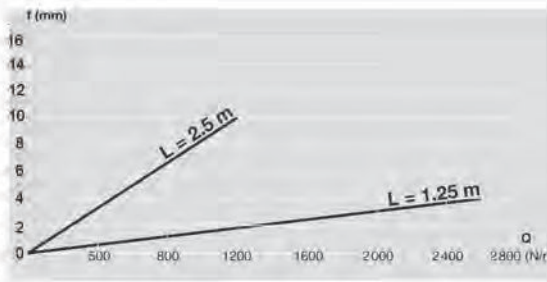
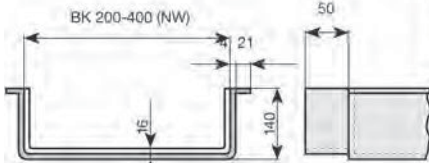
Warning: the deflection is measured with a junction position between 2 cable trays at a distance of L/5 from the support. If this distance is not respected, it is necessary to raise the deflection values by approx 30%.

GRP ground ducts

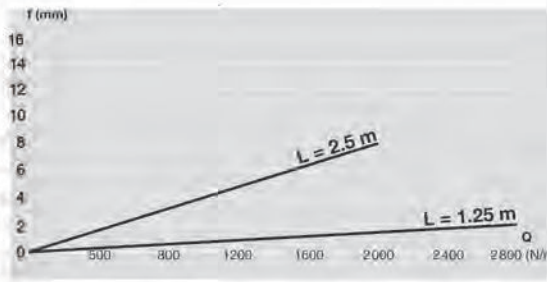
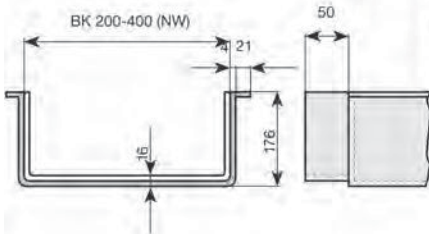
Load characteristics of ground duct

BK Height 140 mm

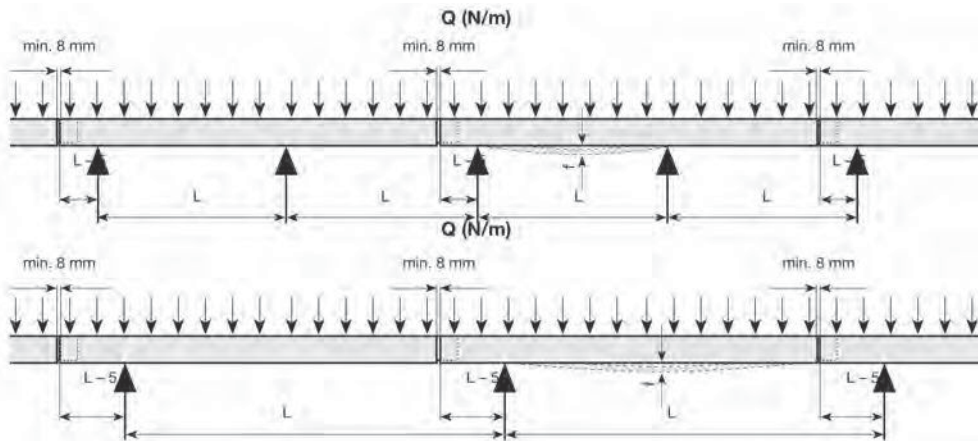
F = Deflection
L = Support Distance
Q = Distributed Load



BK Height 176 mm

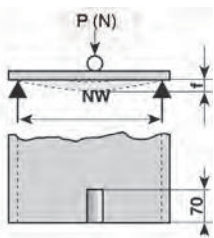


Tested in normal conditions of use



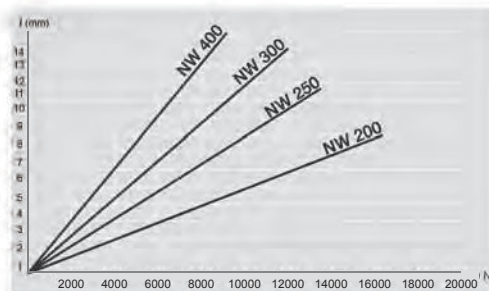
Load diagrams of plate covers

P = Load in N
f = Deflection
NW = Nominal width BK



Load at edge of piece

BKDR 5mm



BKDR 8mm

