



TECHNICAL DATA

This compilation of technical data is intended to supply essential information relating to cable tray systems and to aid in the selection of the correct Vantrunk cable tray system. This will ensure that the specified cable tray installation is adequately protected against corrosion and has suitable strength & rigidity to provide reliable support at minimum installed cost.

Our Design Team is available to answer any questions relating to particular site requirements which may not be answered in the following sections.

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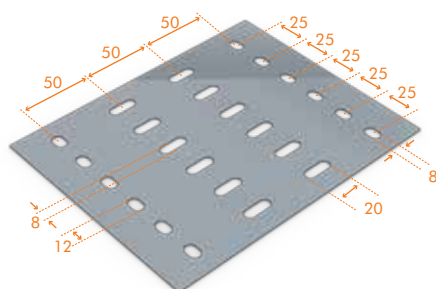
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1. GENERAL INFORMATION

1.1 Slot Patterns

Details of the slot patterns for the Vantrunk cable tray system are given in the following diagram. These slot patterns are common for each Vantrunk cable tray type, irrespective of material gauge and finish.



1.2 Profiles

Heavy Duty Return Flange



Medium Duty Return Flange



1.3 Side Wall Heights

The Vantrunk cable tray range is available with the following side wall heights.

Side Wall Heights for Vantrunk Cable Tray

Tray & Fitting Type	Width mm	Side Wall Height mm
Medium Duty Return Flange	50 to 900	25
		30
		35
		40
		45
		50
		55
		60
		65
		70
Heavy Duty Return Flange	50 to 900	75
		80
		85
		90
		95
		100
		105
		110
		115
		120
		125
		130
		135
		140
		145
		150

1.4 Cable Tray Fitting Radius

Vantrunk cable tray fittings are available with the following standard radii.

Standard Radius For Cable Tray Fittings

Tray Width (mm)	Flat Elbows, Tees & Crosses (mm)	Inside & Outside Risers (mm)	
		MR	HR
50	75	150	300
75			
100			
150			
200	150	300	
225			
300			
450			
600			
750			
900			

All Vantrunk cable tray fittings are available to order with radii of 300mm, 450mm & 600mm. Those cable tray fittings which have a standard radius of 75mm are also available to order with a radius of 150mm. Consult our Sales Team for details.

> 1.5 Material Gauges

The standard range of material gauges for the Vantrunk cable tray & fittings have been determined by providing the most cost effective and efficient gauge for each material type to suit the designed application of each of Vantrunk cable tray system types.

The following table shows the standard material gauges for each width and type of Vantrunk cable tray system in a number of finishes. Consult our Design Team for gauge details for other materials & finishes.

Material Gauges

Tray Type	Width	Hot Dip Galvanized Mild Steel (GA)	Stainless Steel (SS)	Hot Dip Galvanized Silicon Rich Steel (GX)	
MR	50	0.9	0.9	1.5	
	75				
	100				
	150				
	200				
	225	1.2			
	300				
	450	1.5	1.2		
	600		1.5		
	750				
900	1.5				
Covers	50	0.9	0.9	1.5	
	75				
	100				
	150				
	200				
	225	1.2	1.2		
	300				
	450	1.5	1.2		
	600		1.5		
	750				
900	1.5				
HR	50	0.9	0.9	1.5	
	75				
	100				
	150				
	200				
	225	1.2	1.0		
	300	1.5	1.2		
	450				
	600				
	750	2.0	1.5		
900					

Tray Type	Width	Hot Dip Galvanized Mild Steel (GA)	Stainless Steel (SS)	Hot Dip Galvanized Silicon Rich Steel (GX)
Covers	50	0.9	0.9	1.5
	75			
	100			
	150			
	200			
	225	1.2	1.2	
	300			
	450	1.5	1.5	
	600			
	750			
900				

The standard material gauges are supplied for each tray and fitting type & width unless otherwise specified. To order a non-standard gauge, suffix the part number with the required gauge in millimeters.

Consult our Design Team for guidance on the appropriate selection of non-standard material gauge combinations. Weights, where quoted in the catalogue, are for the standard gauge mild steel/hot dip galvanized item. The following correction factor should be used to determine the weight for the corresponding item in an alternative gauge and finish.

As an example:

A heavy duty return flange cable 90° flat bend, 600mm wide, hot dip galvanized finish in standard 2.0mm gauge weights 9.56kg. Equivalent weight of the stainless steel item in 2.0mm gauge = $9.56\text{kg} \times 0.96 = 9.18\text{kg}$.

Material & Gauge Correction Factor



Standard Gauge	Required Gauge	Hot Dip Galvanized Mild Steel (GA)	Stainless Steel (SS)	Hot Dip Galvanized Silicon Rich Steel (GX)
0.9	0.9	0.92	0.94	1.08
	1.0	1.02	1.04	1.20
	1.2	1.24	1.26	1.42
	1.5	1.58	1.60	1.76
	2.0	2.10	2.13	2.35
1.0	0.9	0.83	0.84	1.08
	1.0	0.92	0.94	1.20
	1.2	1.12	1.14	1.42
	1.5	1.42	1.44	1.76
	2.0	1.89	1.92	2.35
1.2	0.9	0.69	0.70	0.81
	1.0	0.77	0.78	0.90
	1.2	0.93	0.95	1.07
	1.5	1.18	1.20	1.32
	2.0	1.57	1.60	1.76
1.5	0.9	0.55	0.56	0.65
	1.0	0.61	0.62	0.72
	1.2	0.75	0.76	0.85
	1.5	0.95	0.96	1.05
	2.0	1.26	1.28	1.41
2.0	0.9	0.41	0.42	0.49
	1.0	0.46	0.47	0.54
	1.2	0.56	0.57	0.64
	1.5	0.71	0.72	0.79
	2.0	0.94	0.96	1.06

Consult our Technical Team for other material & gauge combinations.

> 1.6 Recommended number of fixings of cable tray fittings

Vantrunk cable tray fittings have integral jointing strips for connecting to straight lengths and for connecting cable tray fittings to cable tray fittings. The cable tray fixing set comprises of an M6 x 12 screw and an M6 nut (plus an M6 flat washer for stainless steel fixings).

Cable Tray Fixing Sets

Part Number	Description	
Hot Dip Galvanized Cable Tray		
M6x12RNB	M6 x 12 Mushroom Head Bolt M6 Square Nut	
Stainless Steel		
SSM6x12PNW	M6 x 12 Pan Head Screw M6 Flat Washer M6 Hex Nut	

The following table gives the recommended number of fixings for each type of cable tray straight length, fish plate coupler & cable tray fitting.

Recommended Number of Fixings for Cable Tray

Item	Width mm	Tray Type	
		Medium Duty Return Flange	Heavy Duty Return Flange
Straight Lengths	50 to 150	Fixings included with couplers	Fixings included with couplers
	200		
	225		
	300		
	450		
	600		
	750		
	900		
Fish Plate Couplers	50 to 150	4	4
	200	6	6
	225	6	6
	300	6	6
	450	8	8
	600	10	10
	750	12	12
	900	16	16
Flat Elbows Variable Risers Inside/Outside	50	4	4
	200	5	5
	225	5	5
	300	5	5
	450	6	6
	600	7	7
	750	8	8
	900	10	10
Equal Tees Unequal* Tees	50 to 150	8	8
	225	10	10
	225	10	10
	300	10	10
	450	12	12
	600	14	14
	750	16	16
	900	20	20
Crosses	50 to 150	12	12
	200	15	15
	225	15	15
	300	15	15
	450	18	18
	600	21	21
	750	24	24
	900	30	30
Reducers*	75 to 150	4	4
	200	5	5
	225	5	5
	300	5	5
	450	6	6
	600	7	7
	750	8	8
	900	10	10

*Use largest width to determine the required number of fixings

> 1.7 Perforation Base Area

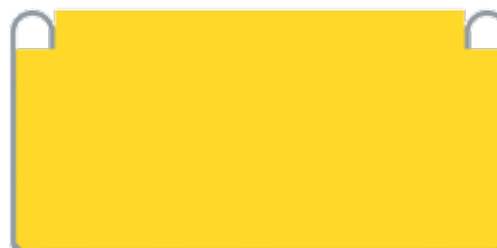
Vantrunk straight cable tray has the following perforation base area:

Perforation Base Area for Vantrunk Cable Tray

Tray Type	Perforation Base Area	Classification to BS EN 61537
Medium Duty Return Flange	9.14%	B
Heavy Duty Return Flange	9.14%	B

Consult our Design Team for perforation base area classifications for Vantrunk cable tray fittings.

The cross sectional areas given in the table above exclude return flanges where appropriate – see the following illustration for the cross section which is included as part of the area calculation.



Consult our Design Team for cross-sectional area information for Vantrunk cable tray fittings.

> 1.8 Cross-sectional Area

The Vantrunk cable tray has the following cross-sectional areas (CSA):

Cross-sectional Area for Vantrunk Cable Tray

Tray Type	Width	CSA mm ²
Medium Duty Return Flange	50	1040
	75	1628
	100	2215
	150	3390
	200	4565
	225	5153
	300	6915
	450	10440
	600	13965
	750	17490
Heavy Duty Return Flange	900	21015
	50	2290
	75	3503
	100	4715
	150	7140
	200	9565
	225	10778
	300	14415
	450	21690
	600	28965
	750	36240
	900	43515

CSA information is based on standard gauges in a hot dip galvanized finish. Consult our Design Team for other gauges and materials.

> 1.9 Vantrunk Cable Tray Specification

The following is a typical specification for a cable tray system which incorporates the key features of the Vantrunk cable tray system.

- 1 The cable tray system shall comprise a perforated base with longitudinal upward facing side walls. Medium duty and heavy duty cable tray shall have returned flanges on the side walls for improved strength.
- 2 The profile of the cable tray straight lengths shall remain constant for the straight cable tray and shall be compatible with that of the matching cable tray fittings.
- 3 The inside of the cable tray shall present a smooth surface to allow for easier cable pulling and to minimise the opportunities for damage to the cable insulation.
- 4 The cable tray side walls shall have an overall height of:

For medium duty return flange cable tray:
25mm for all tray widths.

For heavy duty return flange cable tray:
50mm (or required side wall height) for all tray widths.

- 5 The cable tray shall have a width of 50mm, 75mm, 100mm, 150mm, 225mm, 300mm, 450mm, 600mm, 750mm and 900mm as required. The width shall be measured internally between the side walls.

- 6 The cable tray shall have a minimum thickness as follows for hot dip galvanized finish, other finishes consult our sales team:

For medium duty return flange cable tray:

0.9mm for tray of widths 50mm to 225mm,
1.2mm for tray of width 300mm (1.0mm for pre-galvanized and stainless steel)
1.5mm for tray of widths 450mm to 900mm.

For heavy duty return flange cable tray:

0.9mm for tray of widths 50mm to 150mm,
1.2mm for tray of widths 225mm and 300mm
1.5mm for tray of width 450mm
2.0mm for tray of widths 600mm to 900mm (1.5mm for width of 600mm in pre-galvanized and stainless steel).

For silicon rich, deep galvanized tray – all types:

1.5mm for tray of width 50mm to 450mm
2.0mm for tray of widths 600mm to 900mm.

- 7 Straight cable tray shall be fully slotted with longitudinal slots of size 20mm x 8mm and transverse slots of size 12mm x 8mm. The slots shall be pitched at 25mm centres across the width of the cable tray and at 50mm centres along the length of the cable tray.
- 8 Straight cable tray shall have a length of 3000mm.
- 9 Cable tray fittings shall be suitable slotted to match the slot pattern in the straight cable tray and shall have integral joints to facilitate connection to straight tray lengths and to other cable tray fittings.
- 10 Cable tray flat bends shall have fixed angles of 90°, 60°, 45° and 30°.
- 11 Cable tray fittings (except risers) shall have a radius of 75mm for widths up to & including 150mm, & a radius of 150mm for widths of 225mm and above. Cable tray risers shall have a radius of 150mm for widths up to & including 150mm, & a radius of 300mm for widths of 225mm & above.
- 12 Cable tray risers shall be of a variable angle type to facilitate on-site adjustment from 0° to a minimum of 90° for widths up to & including 600mm, and shall be pre-formed to fixed angles of 90°, 60°, 45° and 30° for widths of 750mm and above.
- 13 The cable tray system shall be manufactured using:

For mild steel, hot dip galvanized finish:

mild steel grade DD11 to BS EN 10111 and shall be hot dip galvanized after manufacture to BS EN ISO 1461.

For stainless steel :

stainless steel grade
1.4404 (316 marine grade)
to BS EN 10088.

For silicon rich, deep galvanized finish:

silicon-rich steel and shall be deep galvanized after manufacture to twice the coating thickness specified by BS EN ISO 1461.

- 14 Couplers for the cable tray system shall be either of flat bar type or profiled to match the profile of the cable tray. Couplers shall be secured using M6 x 12 fixings with smooth heads to minimise possible damage to cables.

2. INSTALLATION RECOMMENDATIONS

2.1 Loads

A correctly designed and specified cable tray installation should take into account the nature and extent of the loads which will be imposed on the cable tray system. These loads comprise of dead loads including the self-weight of the cable tray system, the weight of the cables and secondary equipment attached to the cable tray, imposed loads which occur during installation of the cable tray system and during cable pulling operations, and external loads such as wind, snow & ice.

Cable trays are often employed in locations where the wind speeds may cause considerable lateral loading and careful consideration must be given to design to ensure a satisfactory installation. An awareness of the worst possible climate conditions is necessary when specifying the correct Vantrunk cable tray system.

The load-deflection information given in 3.4 is based on static loading of the Vantrunk cable tray installation. This information does not take into account dynamic effects such as vibration, earthquake loading, etc.

In designing a cable tray installation it is good practice to allow at least a 20% excess capacity in a new installation for future expansion. Such a provision is of great economic advantage when there is a later need for additional cables.

2.2 Support Spacing

The space between the supports of a cable tray installation is referred to as the span. Supports for cable tray should, as far as practicable, be spaced so as to create the most economical load/span ratio to suit the capacity of the cable tray system.

This will give the most advantageous solution when considering procurement and installation costs. As a general rule of thumb, the load-carrying capability of the Vantrunk cable tray system increases as the span decreases, so a lighter duty cable tray system can be specified for shorter spans. Conversely, a heavier duty Vantrunk cable tray system will need to be specified as the span increases.

Vantrunk cable tray can provide cost-effective support for cable loads at spans of 0.5m to 3m depending on the type of cable tray system selected. For longer spans, or for carrying significantly increased cable loads, the Speedway cable ladder system should be used. When considering support positions it should be

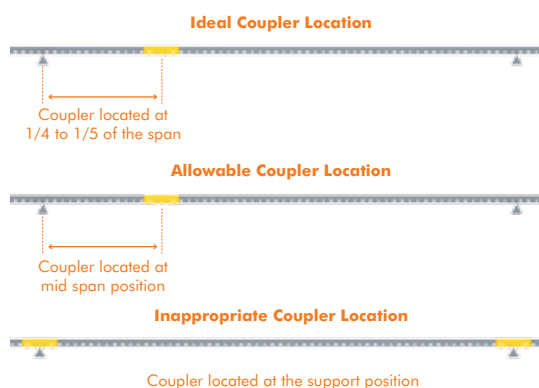
remembered that it is necessary to support accessories when a change of direction takes place i.e. bends, tees, risers etc. This is to ensure that undue 'corner' cantilever reaction is minimised.

Recommendations for the location of supports for Vantrunk cable tray fittings are given in section 2.4.

2.3 Location of Couplers

The maximum bending moments acting on a cable tray run occur in the cable tray at the supports and at the mid span position. For this reason it is good practice to avoid locating couplers in a cable tray run either directly on supports or at the mid span position. It is also good practice to avoid locating couplers in the end span of a continuous beam installation as the bending moments in the end span are, for simple end support installations, much higher than those found in the intermediate spans. These limitations cannot always be achieved in a cable tray installation and are not a mandatory requirement for the Vantrunk cable tray coupling system where the loading information given in 3.3 is valid irrespective of the location of the couplers.

The ideal positions to locate the connections in a cable tray run are at approximately one fifth to one quarter of a span from the supports where the bending moments, and hence the stresses, are minimal. Positioning the couplers at the one fifth to one quarter span positions is of benefit during installation, assisting in alignment of the cable trays and allowing unhindered securing of the cable tray to the supports.



> 2.4 Support Locations for Cable Tray Fittings

It is also important to consider support locations for cable tray fittings which are used as part of a cable tray installation to change direction, change width or create intersections.

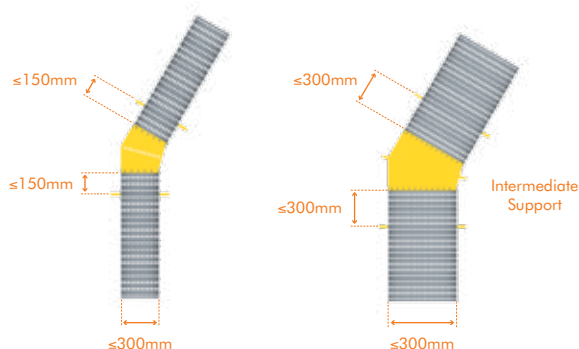
Vantrunk cable tray fittings are designed to carry loads comparable to that for the straight cable tray but will require local support to avoid undue stresses being applied to the fittings.

The following illustrations show the recommended support positions when installing Vantrunk cable tray fittings. The supports should be fully fixed to provide maximum support for the Vantrunk cable tray fitting.

> 2.4.1 Flat Elbows

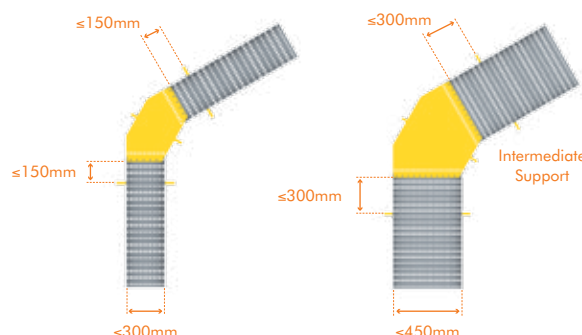
30° Flat Elbow

For 30° flat elbows, supports should be placed within 150mm of the fitting for widths up to 300mm. For fittings of width 450mm and above, supports should be placed within 300mm of the fitting and an intermediate support should be located radially at 15° across the centre of the fitting.



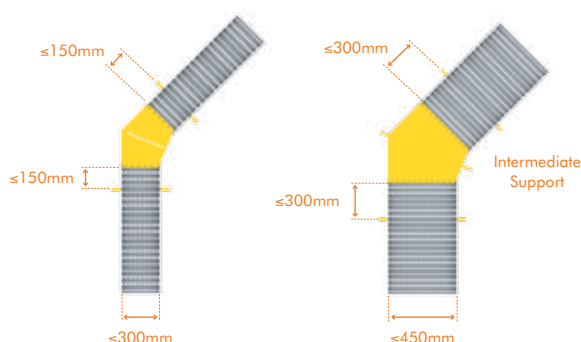
60° Flat Elbow

For 60° flat elbows, supports should be placed within 150mm of the fitting for widths up to 300mm. For fittings of width 450mm and above, supports should be placed within 300mm of the fitting and an intermediate support should be located radially at 30° across the centre of the fitting.



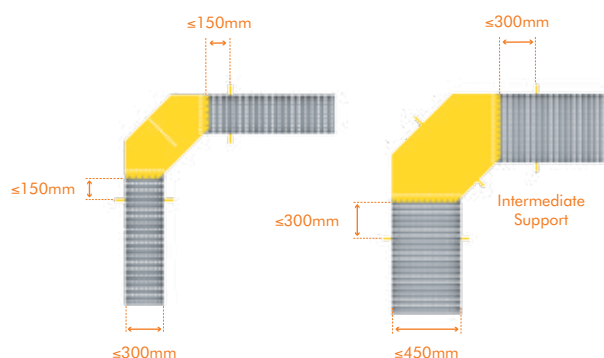
45° Flat Elbow

For 45° flat elbows, supports should be placed within 150mm of the fitting for widths up to 300mm. For fittings of width 450mm and above, supports should be placed within 300mm of the fitting and an intermediate support should be located radially at 22.5° across the centre of the fitting.



90° Flat Elbow

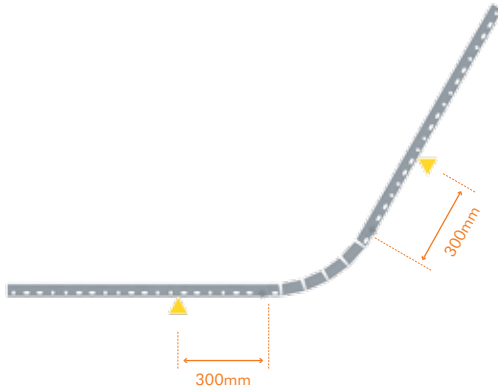
For 90° flat elbows, supports should be placed within 150mm of the fitting for widths up to 300mm. For fittings of width 450mm and above, supports should be placed within 300mm of the fitting and an intermediate support should be located radially at 45° across the centre of the fitting.



➤ 2.4.2 Internal & External Risers

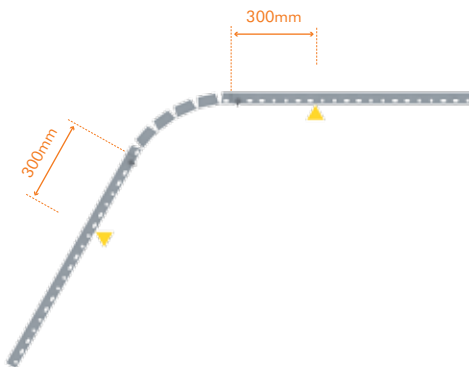
Internal Risers

For all widths of internal risers, supports should be placed within 300mm of the fitting.



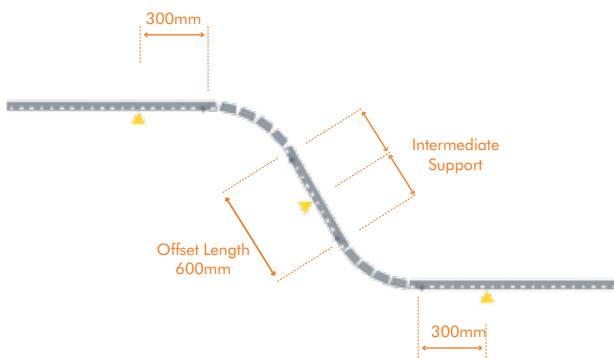
External Risers

For all widths of external risers, supports should be placed within 300mm of the fitting.

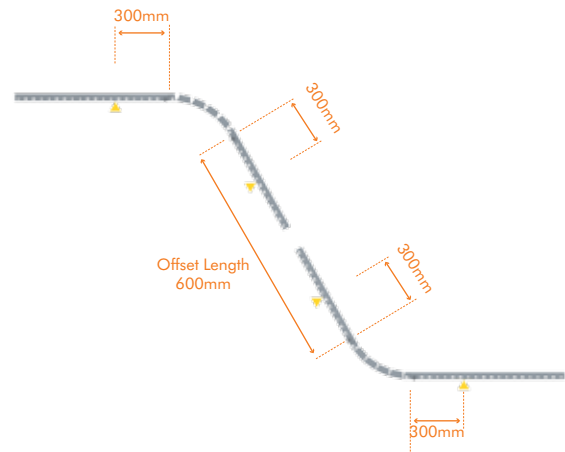


Internal & External Risers Used In Offset Arrangement

For internal & external risers used in an offset arrangement of length up to 600mm, supports should be located within 300mm of each end of the offset and centrally on the inclined cable tray.

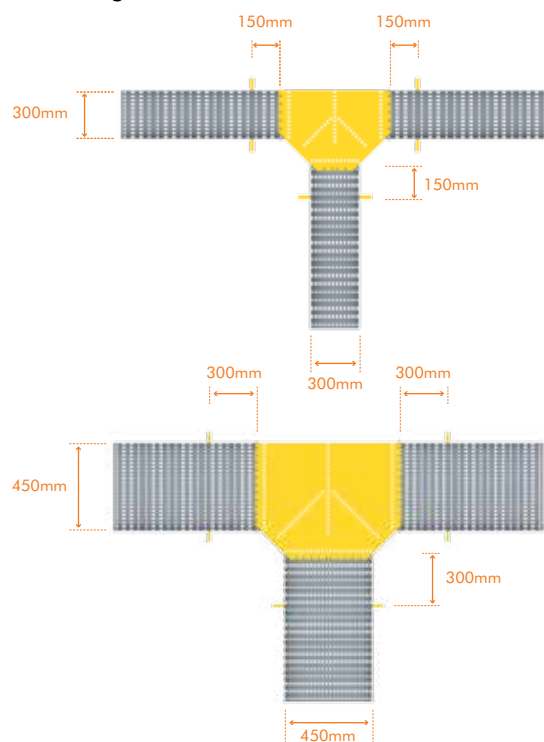


For internal & external risers used in an offset arrangement of length over 600mm, supports should be located within 300mm of each end of the internal & external risers. The inclined cable tray should be supported in accordance with the support recommendations for the straight cable tray run.



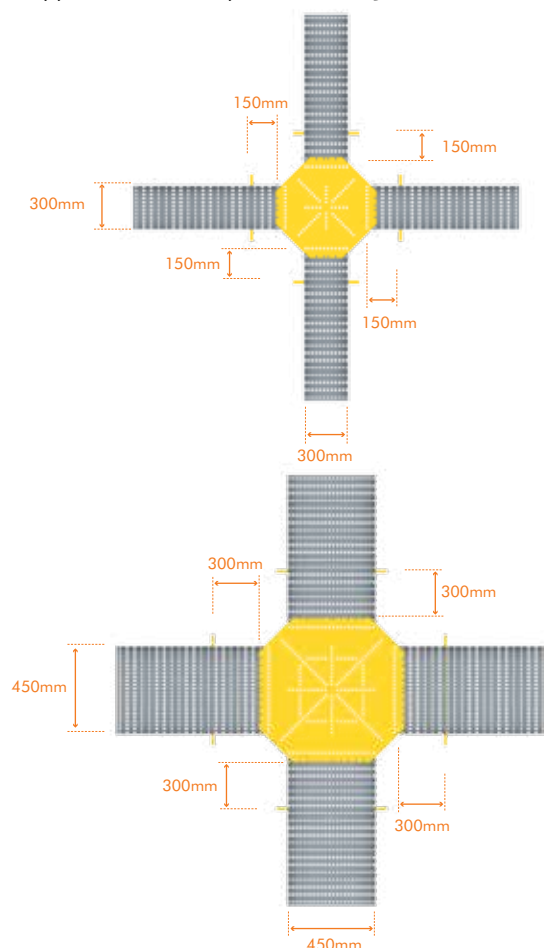
➤ 2.4.3 Equal & Unequal Tees

For equal and unequal tees, supports should be placed within 150mm of the fitting for main or branch widths up to 300mm. For fittings of main or branch width 450mm and above, supports should be placed within 300mm of the fitting.



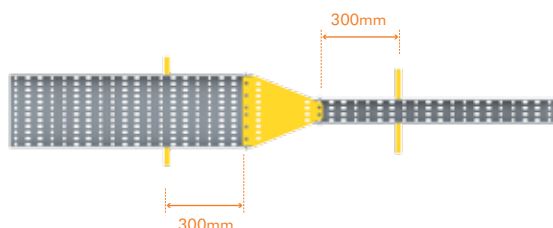
> 2.4.4 Crosses

For crosses, supports should be placed within 150mm of the fitting for main or branch widths up to 300mm. For fittings of main or branch width 450mm and above, supports should be placed within 300mm of the fitting.



> 2.4.5 Reducers

For all widths of reducers (straight, left & right), supports should be placed within 300mm of the fitting.

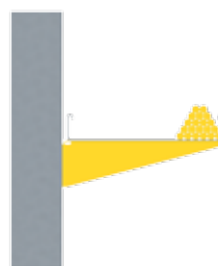


> 2.5 Loading of Vantrunk Cable Tray & Supports

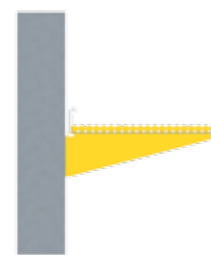
It is important that cable tray and cable tray supports are loaded in a symmetrical manner such that undue stresses in both the cable tray and the supports are kept to a minimum.

The safe working load figures for the Vantrunk cable tray and support accessories are based on a uniform loading within the Vantrunk cable tray and on the assumption that the correct length of support is used in each case.

Wherever possible, cable tray should be loaded in a uniform manner across the full width of the cable tray, particularly when the cable tray is loaded to the recommended load carrying capacity.

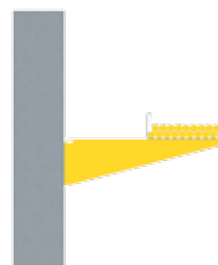


Avoid non-uniform loading

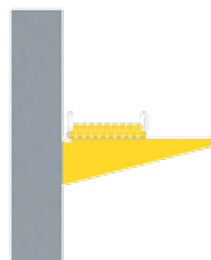


Load uniformly across the width of the cable tray

Where cantilever supports of additional length are used to support cable tray, care should be taken to position the cable tray as close to the backplate of the cantilever as the installation routing will allow.



Avoid unsymmetrical loading on cantilevers



Load cantilevers close to the backplate

Safe working load information for cable tray supports is given in the 'Supports' section of this catalogue.

For further information and guidance on the design and loading of supports please contact our Design Team.

› 2.6 Electrical Continuity

In tests conducted to verify the electrical continuity characteristics of the Vantrunk cable tray it has been established that the standard coupling system provides adequate electrical continuity, ensuring equipotential bonding and connection to earth.

The Vantrunk cable tray system has been tested for electrical continuity to BS EN 61537 (Section 11.1).

Details are given in the following table:

Material & Finish	Impedance across joint	Impedance per metre length
Hot Dip Galvanized (0.9mm)	2mΩ	2mΩ
Hot Dip Galvanized (1.5mm)	2mΩ	2mΩ
Stainless Steel (1.2mm)	2mΩ	2mΩ

BS EN 61357 requires a maximum impedance of 50mΩ across the coupled joint and a 5mΩ per metre length without a joint.

Earth continuity bonding straps (part number EBS/05) of cross sectional area 4 mm² are available for use with Vantrunk cable tray where a non-conductive surface finish i.e. epoxy coated etc, has been specified or where the installation requires an additional means of bonding. Consult our Technical Team for more details.

› 2.7 Electromagnetic Compatibility (EMC)

In normal use Vantrunk cable tray can be considered to be passive in respect of electromagnetic influences, emission and immunity. When Vantrunk cable tray is installed as part of a wiring installation, the installation may emit or may be influenced by electromagnetic signals. The degree of influence will depend on the nature of the installation within its operating environment and the electrical equipment connected by the wiring. As a minimum precaution to minimise the occurrence of electromagnetic influences, power and data/signal cables should be run on separate cable routings or at least separated by means of dividers.

Our Design Team should be consulted for further information on electromagnetic compatibility issues.

› 2.8 Assembly Recommendations

Instructions for the correct assembly of Vantrunk cable tray straight lengths and fittings are given below.

Cable tray couplers are supplied with the correct number of fixing sets, each comprising of an M6 x 12 screw and an M6 nut (plus an M6 flat washer for stainless steel fixings). Refer to section 1.6 for details on the recommended number of fixings for cable tray fittings.

When utilising the standard flat bar coupler as an expansion coupler it will be necessary to order additional M6 nuts (4 per coupler).

› 2.8.1 Straight Cable Tray to Straight Cable Tray

1. Position the two straight cable trays onto the supporting structure.
2. For flat bar couplers, locate the cable tray flat bar coupler on the inside of the two abutting straight cable trays. For wrap over couplers, position the coupler on the outside of the two abutting straight cable trays.
3. Position the coupler across the joint between the two straight lengths. For flat bar couplers, align the slots in the coupler with those in the side wall of the cable tray. For wrap over couplers, align the slots in the coupler with those in the base of the cable tray.
4. From the inside of the cable tray insert the threaded portion of an M6 x 12 screw through one of the aligned slots.
5. Fit an M6 flat washer (where provided) and an M6 hex nut onto the protruding thread of the M6 x 12 screw.
6. Tighten the fixing assembly by hand.
7. Repeat for the remaining fixing sets.
8. Repeat the assembly procedure for the second coupler.
9. Fully secure the straight cable tray lengths to the supporting structure.
10. Check the alignment of the coupler and the abutting straight cable trays. Adjust as necessary to give a fair and true alignment.
11. Tighten the M6 hex nuts to a torque of 12Nm.
12. Where required, fit a fish plate coupler to the underside of the joint between the two straight cable trays.

› 2.8.2 Cable Tray Fitting to Straight Cable Tray

1. Position the straight cable tray and cable tray fitting onto the supporting structure and interlock the cable tray fitting into the straight cable tray.
2. Align the slots on the interlocked straight cable tray and cable tray fitting.
3. From the inside of the cable tray, insert the threaded portion of an M6 x 12 screw through one of the aligned slots.
4. Fit an M6 flat washer (where provided) and an M6 hex nut onto the protruding thread of the M6 x 12 screw.
5. Tighten the fixing assembly by hand.
6. Repeat for the remaining fixing sets.
7. Fully secure the straight cable tray and cable tray fitting to the supporting structure.
8. Check the alignment of the interlocked straight cable tray and cable tray fitting. Adjust as necessary to give a fair and true alignment.
9. Tighten the M6 hex nuts to a torque of 12Nm.

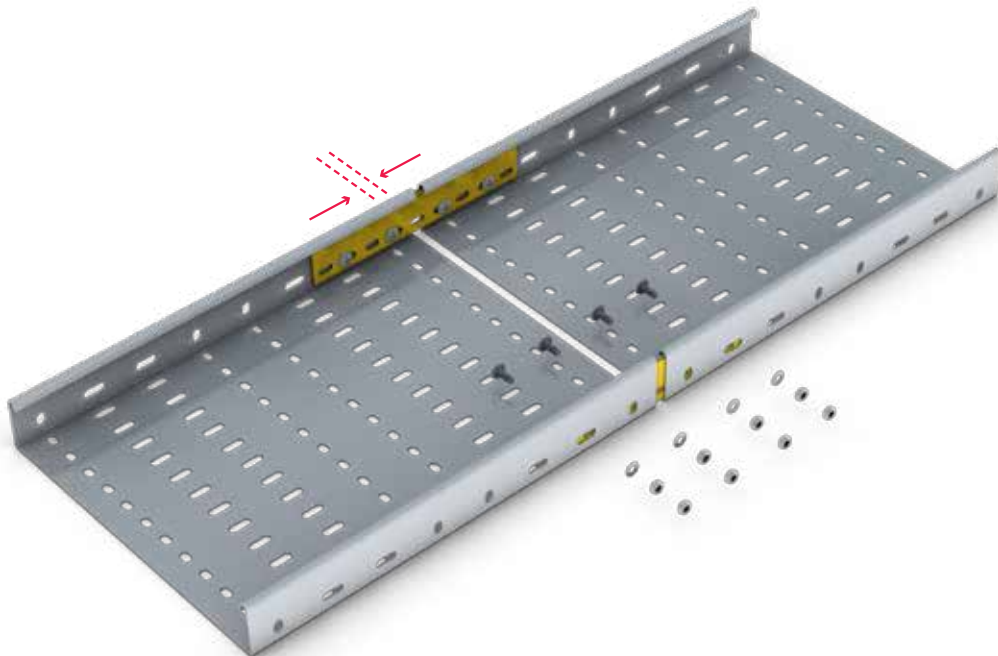
› 2.8.3 Cable Tray Fitting to Cable Tray Fitting

1. Position the two cable tray fittings onto the supporting structure, offsetting and interlocking the integral base & side wall coupling tabs.
2. Align the slots on the two cable tray fittings.
3. From the inside of the cable tray, insert the threaded portion of an M6 x 12 screw through one of the aligned slots.
4. Fit an M6 flat washer (where provided) and an M6 hex nut onto the protruding thread of the M6 x 12 screw.
5. Tighten the fixing assembly by hand.
6. Repeat for the remaining fixing sets.
7. Fully secure the cable tray fittings to the supporting structure.
8. Check the alignment of the abutting components. Adjust as necessary to give a fair and true alignment.
9. Tighten the M6 hex nuts to a torque of 12Nm.

› 2.9 Cable Tray Expansion Joint:

Refer to pg 247 for details on the spacing between expansion couplers and the required gap setting procedure at the time of installation.

1. Position the two straight cable trays onto the supporting structure.
2. Locate the cable tray flat bar coupler on the inside of the two abutting straight cable trays.
3. Position the coupler across the joint between the two straight lengths. Align the slots in the coupler with those in the side wall of the cable tray.
4. From the inside of the cable tray insert the threaded portion of an M6 x 16 screw through one of the aligned slots.
5. Fit an M6 flat washer (where provided) and an M6 hex nut onto the protruding thread of the M6 x 16 screw.
6. Tighten the fixing assembly by hand such that the fixing assembly is free to move within the slots (some light resistance to movement is preferable).
7. Repeat for the remaining fixing sets.
8. Repeat the assembly procedure for the second coupler.
9. Check the alignment of the coupler and the abutting straight cable trays. Adjust as necessary to give a fair and true alignment.
10. Check the setting gap between the straight cable trays and adjust as necessary.
11. Secure the straight cable trays to the supporting structure using nylon spacer pads and hold down brackets to permit movement relative to the structure.
12. Fit the second M6 nut onto the fixing assemblies. Lock the second M6 nut onto the first M6 nut. Check that the completed fixing assembly remains free to move within the aligned slots.
13. Tighten the 2nd M6 hex nut onto the 1st M6 hex nut to a torque of 12Nm.
14. Ensure that the fixing assembly remains free to move within the slots, otherwise re-assembly as necessary.



» 3 LOADING INFORMATION

To enable the selection of the most appropriate Vantrunk cable tray for a particular installation it is necessary to consider the loads which must be supported and the distance between supports (the span). These loads are broadly classed as dead loads, imposed loads and point loads.

3.1 Dead Loads

Dead loads include the weight of any cables, pipes and secondary equipment carried on or installed on the cable tray plus the self weight of the cable tray and any component of the cable tray (covers, connectors, accessories, etc.).

Weight data for cables is readily available from the cable manufacturer or supplier and is usually quoted in terms of kilograms per metre (kg/m). The weight per metre from the cables (or pipes, etc) is the sum of the individual cable (or pipe, etc) weights.

Weight data for secondary equipment should also be readily available from the equipment manufacturer or supplier and is usually quoted in terms of kilograms (kg). The unit weight for the secondary equipment can be converted into an equivalent weight per metre by using the following formula:

$$\text{Equivalent weight per metre } W_m = \frac{2 \times \text{unit weight of equipment (kg)}}{\text{Span (m)}} \text{ kg/m}$$

For example, a secondary item of equipment with a weight of 12kg has an equivalent weight per metre W_m of 16kg/m for a span of 1.5m. This figure should be added to the sum of the individual cable weights (or pipe, etc). When determining the location of secondary items of equipment, care should be taken to either mount these items centrally across the cable tray or place these items adjacent to, or directly onto, the cable tray side walls and as close to the cable tray supports as the installation will allow.

The allowable loading figures given in the tables below include the self weight of the Vantrunk cable tray. The weight data for additional installed components (covers, mounting accessories, etc) for the Vantrunk cable tray system can be provided on request by our Design Team.

3.2 Point Loads

Point loads are often applied inadvertently to the cable tray during installation and during in-service inspection. Care should be exercised to avoid these undue point loads, particularly on light duty & medium duty cable trays which are not designed for this type of loading.

In situations where point loads are applied to heavy duty cable trays, an allowance can be made for the influence of point loads at the design stage when determining the total load to be carried by the Vantrunk cable tray system. When specifying a point load requirement at the design stage it should be noted that the value of the point load should be kept to a minimum as incorporating the point load will reduce the allowable cable load for the Vantrunk cable tray. Loading graphs which include the influence of a mid span point load are available on request.

Vantrunk cable tray is not intended to be used as a walkway and on no account should localised point loads be applied onto the bed of the cable tray. On those occasions where it is necessary to apply a point load care should be taken to apply the load evenly onto both side walls of the cable tray, preferably using a board or similar support to distribute the load over as long a section of the cable tray as possible.

Where doubt exists, further guidance should be sought from our Design Team.

3.3 Loading Graphs

When correctly mounted and secured, cable tray can be considered to be a 'continuous beam'. This implies that the cable tray run is regularly supported and that the cable trays at the extremities of the run are firmly anchored. The following tables are used to calculate the safe working load and have been verified by testing in accordance to BS EN 61537.

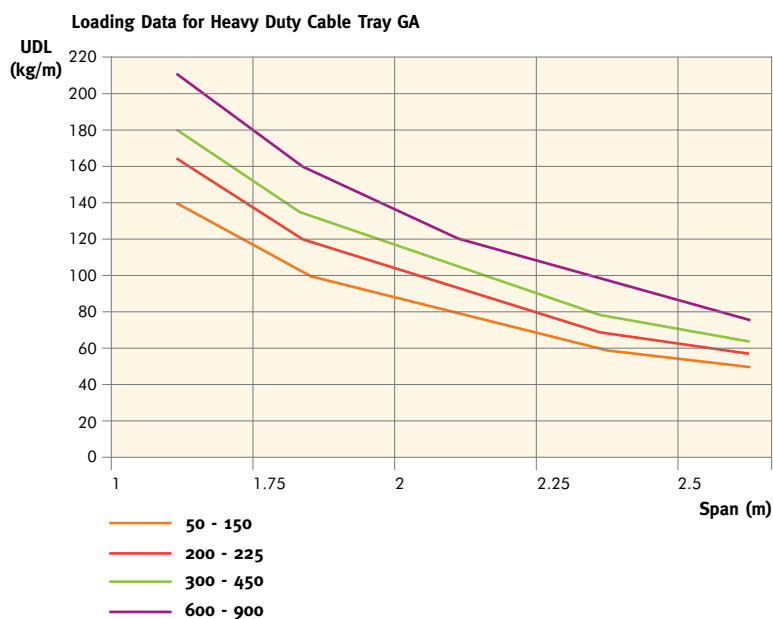
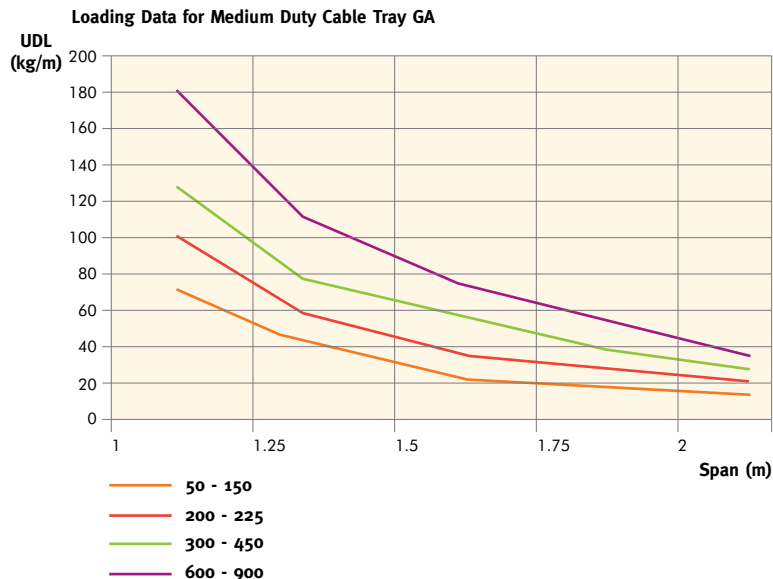
The load bearing capacity of a cable tray is limited by the lesser of the maximum allowable stress induced in the tray section or the maximum deflection acceptable between the supports. The maximum allowable stress is usually limited by the materials lower yield stress; this gives a safety factor of 1.7 against the ultimate tensile strength. Maximum deflection, (in the absence of a particular customer need) is not allowed to exceed 1/360th of the distance between supports (span).

Although unusual, there may be occasions when it is difficult or indeed impossible to anchor the cable tray securely in position. Under these circumstances the tray is 'simply supported' and its load bearing ability is substantially reduced. As a rough guide maximum loads should be limited to two thirds of those shown in the loading tables and increased deflection values should be accepted for each span. The data given in the graphs is for tray installed as a continuous beam and allows for the weight of the tray itself.

Loading information is available for other gauges and for heavy duty cable trays with increased side wall heights – contact our Design Team for details

The Vantrunk cable tray system, components and accessories have been tested to BS EN ISO 61537:2002.

Further details can be provided by our Design Team.



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