Maham tajhiz sepand

Product Catalogue

M.T.S

CABLE MANAGMENT SYSTEM

SUPPORTS AND ACCESSORIES

About us:

Maham Tajhiz Sepand Company has benefited from the experiences and advice of experienced managers and experts in the Iranian electricity industry and has been able to work closely with French, Italian and German companies in the field of marketing, distribution and sale of electrical equipment.

MTS after ensuring high quality products, and according to domestic needs, purchasing power, market growth as well as the following:

- Reputation and popularity of the mentioned products,
- Production of a wide range of required products,
- Equipped laboratory facilities,
- Fast planning, fast decision making and accurate execution,
- Significant attention to the issue of product quality and therefore customer satisfaction,
- Support and fast delivery services,
- Provide excellent after-sales service,
- Ease of maintenance,

In order to develop communication, expand technical cooperation from the mentioned companies, established a factory in Yazd Special Economic Zone.

It is hoped that MTS will be able to take small smart steps toward achieving constructive goals and combining the technical aspects of the technology transfer and employment process. Obviously, the purpose of these measures is to deliver competitive and high quality products within international standards and to satisfy the customer through timely delivery and faster after-sales service to gain more market share.

We believe that the electricity market will develop soon by providing high quality equipment, providing timely services and customer satisfaction.

Industries

Oil and Gas

In terms of quality, weight, safety and corrosion resistance, no industry has higher requirements than the oil and gas industry. Our long history of close cooperation with this industry has given us first-hand experience in the most difficult conditions imaginable for the development of our products.

Ships

Many of the special vessels we offer with our solutions are FPSOs, LNG carriers, oil tankers and supply boats. This special range includes a complete system of cable ladders and accessories made for ships. All equipment is designed to make maximum use of very narrow spaces and bypass any obstacles on ships.

Wind energy

We provide cable support and management systems for wind energy, both abroad and on land. For over 20 years it has developed and offered multidisciplinary support solutions for major international oil and gas projects abroad. Since 2007, we have carefully developed our proven technology for wind energy facilities, both offshore and onshore, including solutions in composite materials.

Infrastructure

We are proud to design and offer solutions for the world's longest and deepest tunnels. Our 20 years of close cooperation with this industry has provided us with first-hand experience in testing and developing our products, to meet challenges and resist corrosive environments in both underground and underground tunnels.

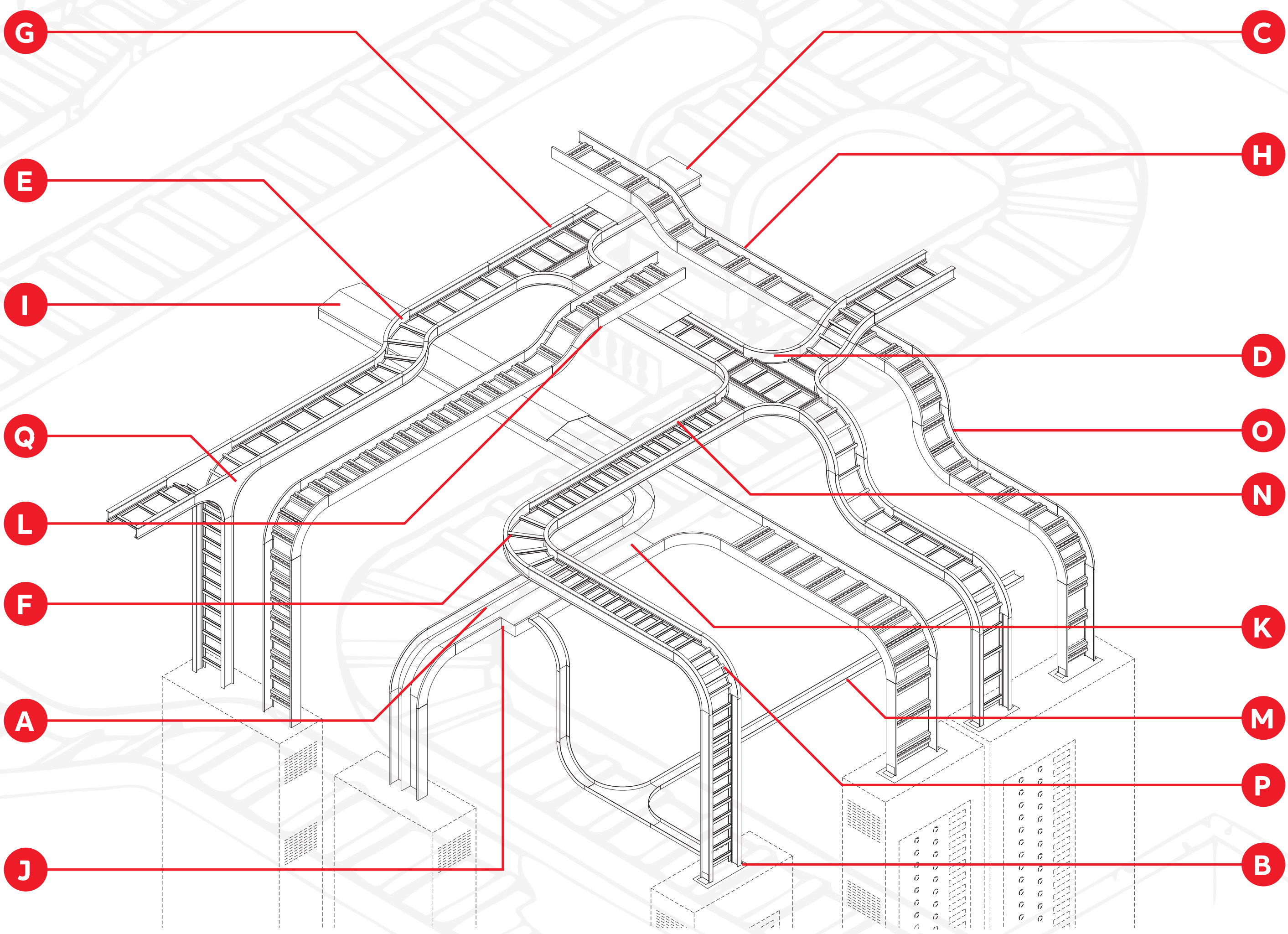
Other industries

Multidisciplinary support systems are exceptionally suitable for many industrial applications and are available in a wide range of materials and designs tailored to environmental and environmental needs.

Our systems for plants have been used for water treatment, industrial water treatment, chemical plants and fertilizers, overseas agriculture, drinking water supply, room cleaning and clean areas, to name just a few.

Effective area design, combined with modular design and a wide range of accessories, makes our multidisciplinary support systems ideal for these and many other applications.

Please do not hesitate to contact us to discuss your needs.



Application

Commercial:

- Schools
- Hospitals
- Office buildings
- Airports
- Casinos
- Stadiums

Industrial:

- Petrochemical plants
- Automotive plants
- Paper plants
- Food processing
- Power plants
- Refineries
- Manufacturing
- Mining

Legend

A – Barrier strip
B – Box connector
C – Flat cover
D – Horizontal cross
E – Horizontal 45˚
F – Horizontal 90˚
G – Horizontal tee
H – Ladder tray
I – Peaked cover
J – Right reducer
K – Solid tray
L – Splice connector
M – Solid channel tray
N – Ventilated tray
O – Vertical 90˚ inside
P – Vertical 90˚ outside
Q – Vertical tee

THE BENEFITS OF CABLE TRAY

Cable tray wiring systems offer significant advantages over conduit pipe and other wiring systems. Cable tray is less expensive, more reliable, more adaptable to changing needs and easier to maintain. In addition, its design does not contribute to potential safety problems associated with other wiring systems.

An evaluation of the costs and benefits of various wiring systems should be done in the design phase. Unfortunately, many engineers who are unfamiliar with wiring systems avoid the system selection process or defer it until construction—often resulting in higher costs, scheduling delays and a system that will not meet future needs.

Selection of a wiring system that is not the most suitable for a particular application in terms of cost, potential corrosion and electrical considerations can lead to numerous problems, including excessive initial cost, poor design, faulty installation, extra maintenance, future power outages and unnecessary safety concerns.

Cost

Extensive experience has shown that the initial cost of a cable tray installation (including conductor, material and installation labor costs) may be as much as 60% less than a comparable conduit wiring system.

Cable tray systems, including trays, supports, fittings and other materials, are generally much less expensive than conduit wiring systems. In addition, major cost savings are generated by the relative ease of installation. Labor costs of installing a cable tray system can run up to 50 percent less. Total cost savings will vary with the complexity and size of the installation.

Direct cost savings are easy to calculate during the design phase of an installation, but the enormous advantages of cable tray may accrue only over time. The system’s reliability, adaptability, ease of maintenance and inherent safety features result in many other types of cost savings, including:

- lower engineering and maintenance costs
- less need to reconfigure system as needs change
- less down time for electrical and data handling systems
- fewer environmental problems resulting from loss of power to essential equipment.

Reliability

Cable tray systems offer unsurpassed reliability, resulting in less need for maintenance and less down time—important considerations for all installations but especially for such industries as data communications and financial services.

In addition, since cable tray is not a closed system, moisture build up problems are eliminated and damage to cable insulation during installation is also greatly reduced.

Adaptability

A major advantage of cable tray systems derives from their adaptability to new needs and technology. The pace of change in the economy, constantly shifting competitive pressures and rapid introduction of innovative technologies are all accelerating. More than ever before, businesses must be prepared to quickly expand facilities, change products or introduce new processes. The flexibility of the wiring system is a key consideration.

Modifying a cable tray system or adding cables to meet new needs is relatively easy because cables can enter or exit a tray at any point. And initial design considerations can build-in extra capacity as part of the planning process. Cable tray's inherent adaptability allows rewiring for future expansion, building redesign or new technologies without disruption or need to replace the entire wiring system.

Maintenance

Cable tray wiring systems require less maintenance than conduit systems. When maintenance is necessary, it is easier, less time-consuming and less labor intensive.

The physical condition and status of both the cable tray and the tray cables can be inspected visually, something that is not possible with conduit systems. In addition, it is also easy to see if there is sufficient capacity in the trays for additional cables. As was noted above, changing or adding cables can also be accomplished without difficulty.

Another comparative benefit of cable tray systems is that they do not act as channels of moisture paths, as conduit wiring systems do. Conduit systems tend to collect condensation resulting from changes in temperature and then channel the moisture to electrical equipment, where it can lead to corrosion and failure.

Cable tray and tray cable are also less susceptible to fire loss than conduit. An external fire usually results in damage to only a few feet of a cable tray system, while wire insulation inside a conduit suffers significant damage and thermoplastic insulation may actually fuse to the conduit.

Safety

Cable tray wiring systems lack the inherent safety concerns of conduit systems.

By its nature, a conduit wiring system can serve as a flow-through for corrosive, explosive and toxic gases in the same way that it channels moisture.

The conduit installation process can also present a safety issue for electricians. The process requires that a conduit system be installed from one enclosure to another before pulling in the conductors, leaving the electricians exposed to any live, energized equipment that may be in the enclosures. In contrast, installers can pull tray cables from near one termination enclosure to the next before they are inserted into the enclosures and then terminated.

Finally, in installations where cable tray can be used as the equipment grounding conductor (per IEC standards), it is easy to visually check the system components as well as conduct checks for electrical continuity.

CABLE TRAY SELECTION PROCESS

A number of basic decisions must be made before a cable tray system can be specified. M.T.S has developed a simple six-step process to guide you in the process:

1. **Select Material and Finish**
2. **Select the Tray Load Class**
3. **Select the Tray Type**
4. **Select the Tray Size**
5. **Select the Fittings**
6. **Consider Deflection**

Each step is described in detail below. For many applications, however, you may also have to take the following into account:

- Weight of the installation, which affects the cost of the support structure and the ease of installation.
- Corrosion resistance of the material is one of the most important selection criteria. Cable tray materials may not respond the same way in different environments. Chemicals or combinations of chemicals have corrosion effects on some materials that can be compounded by temperature or even the speed at which the corrosive elements contact the cable tray. For example, some grades of stainless steel may be resistant to salt water at high flow rates (perfect for heat exchangers), while exhibiting some corrosion pitting in standing salt water. Only the designer can quantify the various elements that affect the corrosion resistance of the cable tray system in a specific application. While M.T.S can provide guidance, the designer is responsible for the final selection. For more information, see “Corrosion” section.
- Galvanic effect can cause corrosion even if the cable tray material is resistant to its chemical environment. Dissimilar metals in contact (e.g., aluminum tray on steel supports or bare copper bonding conductor in aluminum tray) in the presence of an electrolyte are susceptible to galvanic effect. If there is a hazard of galvanic corrosion, it may be possible to isolate the tray system from other metals instead of using a more expensive type of tray that would resist corrosion in a given application.
- Melting point and flammability rating are primarily concerns for non-metallic tray. Local building codes may restrict the use of a given product if certain performance levels are not met. Check with the appropriate inspection authorities before specifying the product.
- Relative cost varies dramatically, including material costs that float with the commodity index. For example, stainless steel prices may vary significantly according to daily changes in the nickel index. Tray-Pro™ software simplifies the task of cost comparison by generating multiple bills for different materials.
- Thermal expansion must also be taken into account on a long cable run, especially in areas where temperature variation is extreme. Expansion connectors may be required if the temperature differential is 25° F or greater. Refer to Tables 1 and 2 for expansion plate spacing and gap settings. Two bonding jumpers are required for every pair of splice plates for grounding continuity.

SELECTION STEPS

1. Select Material and Finish

The most suitable material and finish for your application will depend on cost, the potential for corrosion, and electrical considerations. M.T.S offers cable tray systems fabricated from galvanized steel, stainless steel and hot dip galvanized steel,. Special paint is also available.

2. Select the Tray Class

NEMA standard VE-1 defines 12 load classes. (See Figure 1.0.). The classes are designated by a number (8, 12, 16, and 20), specifying maximum span in feet and a letter (A, B, and C), specifying the maximum load (A = 50 lbs./ft., B = 75 lbs./ft., and C = 100 lbs./ft.). The load rating must include the weight of the cables plus any applicable wind or snow loads. The load capacity available for cable is therefore reduced for outdoor applications.

Costs vary between different load classes. Since labor and coupling costs are similar for a given length of tray, the heavier classes are more cost-effective on a load length basis. The

NEMA LOAD/SPAN DESIGNATIONS

Class Designation	Support Span (Feet)	Working Load (lbs./linear foot)
8A	8	50
8B	8	75
8C	8	100
12A	12	50
12B	12	75
12C	12	100
16A	16	50
16B	16	75
16C	16	100
20A	20	50
20B	20	75
20C	20	100

Figure 1.0

CSA STANDARD LOAD CLASSES

Class	Design load at varying support spacings in kg/meter						
	1.5M	2.0M	2.5M	3.0M	4.0M	5.0M	6.0M
A	99	62	45	37	N/A	N/A	N/A
C1	259	164	119	97	N/A	N/A	N/A
D1	N/A	N/A	N/A	179	113	82	67
E	N/A	N/A	N/A	299	189	137	112

designer should therefore specify the lightest class of tray compatible with the weight requirements of the cable tray.

Tray-Pro™ software provides quick and easy cost comparison of different tray series by generating multiple bills of material.

3. Select the Tray Type

Cable tray is available with three styles of bottom:

Ladder Cable Tray is a prefabricated structure consisting of two longitudinal siderails connected by individual transverse members.

Ventilated Cable Tray is a prefabricated structure consisting of a ventilated bottom within integral or separate longitudinal siderails, with no openings exceeding 4 in. in a longitudinal direction.

Solid Bottom Cable Tray is a prefabricated structure without openings in the bottom.

Ladder tray is most often used because of its cost-effectiveness. The designer has a choice of four nominal rung spacings: 6, 9, 12, and 18 inches. The greatest rung spacing compatible with an adequate cable bearing surface area should be selected. Heavy power cables often require greater cable bearing area due to the possibility of creep in the jacket material of the cable. If this is a concern, consult the cable manufacturer. This condition may require the use of ventilated tray, which also offers additional mechanical protection for the cables.

Local building codes may require totally enclosed cable tray systems under certain conditions. The designer should verify these before specifying the type of tray to be used.

Electromagnetic shielded tray may be used in areas where control or data cables need to be protected from RFI interference. For more information, see the “Electromagnetic Shielded” section of this manual.

4. Select the Tray Size

The width or height of a cable tray is a function of the number, size, spacing and weight of the cables in the tray. Available nominal widths are 6, 9, 12, 18, 24, 30, 36 and 42 inches.

When specifying width, it is important to remember that the load rating does not change as the width increases. Even with six times the volume, a 36 in. wide tray cannot hold any more weight than a 6 in. wide tray. If the load rating of the tray permits, cable can be piled deeper in the tray. Most tray classes are available in a nominal 3½, 4, 5, 6 and 7 inch height. Cable ties or other spacing devices may be used to maintain the required air space between cables.

5. Select the Fittings

Fittings are used to change the size or direction of the cable tray. The most important decision to be made in fitting design concerns radius. The radius of the bend, whether horizontal or vertical, can be 12, 24, 36 or 48 in., or even greater on a custom basis. The selection requires a compromise with the considerations being available space, minimum bending radius of cables, ease of cable pulling, and cost. The typical radius is 24 in.

Fittings are also available for 30°, 45°, 60°, and 90° angles. When a standard angle will not work, field fittings or adjustable elbows can be used. It may be necessary to add supports to the tray at these points.

6. Consider Deflection

Deflection of the cable tray affects the appearance of an installation, but it is not a structural issue. In the case of non-metallic cable tray, deflection may be affected by elevated temperatures.

NEMA Load Test. The NEMA load test is a simple beam, uniformly distributed load test. (See Figure 1.2.) This type of test was initially selected because:

- It was easiest to test.
- It represents the worst case beam condition compared to continuous or fixed configurations. When consulting the manufacturer's catalog for deflection information, the designer must verify whether the data shown represents simple or continuous beam deflection. If continuous beam deflection is shown, the calculation factor should be given.

NEMA has one criterion for acceptance under their load test: the ability to support 150% of the rated load.

NEMA LOAD TEST

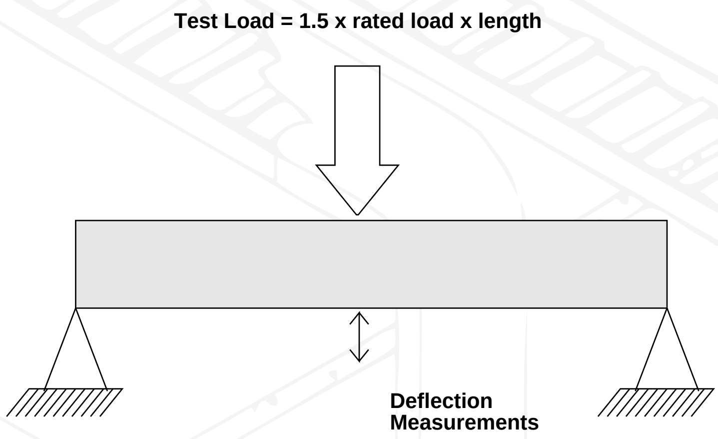


Figure 1.2

Simple vs. Continuous Beam Deflection. (See Figure 1.3.) Theoretical maximum deflection for a simple beam, uniformly distributed load may be calculated as:

$$.0130 \frac{w L^4}{E I}$$

Where: w = Load in lbs./ft.
L = Length in inches
E = Modulus of Elasticity
I = Moment of Inertia

The maximum deflection calculation for a continuous beam of two spans with a uniformly distributed load is:

$$.00541 \frac{w L^4}{E I}$$

A continuous beam of two spans therefore has a theoretical maximum deflection of only 42% of its simple beam deflection. As the number of spans increases, the beam behaves increasingly like a fixed beam, and the maximum deflection continues to decrease. As this occurs, the system's load carrying capability increases.

SIMPLE VERSUS CONTINUOUS BEAM DEFLECTION

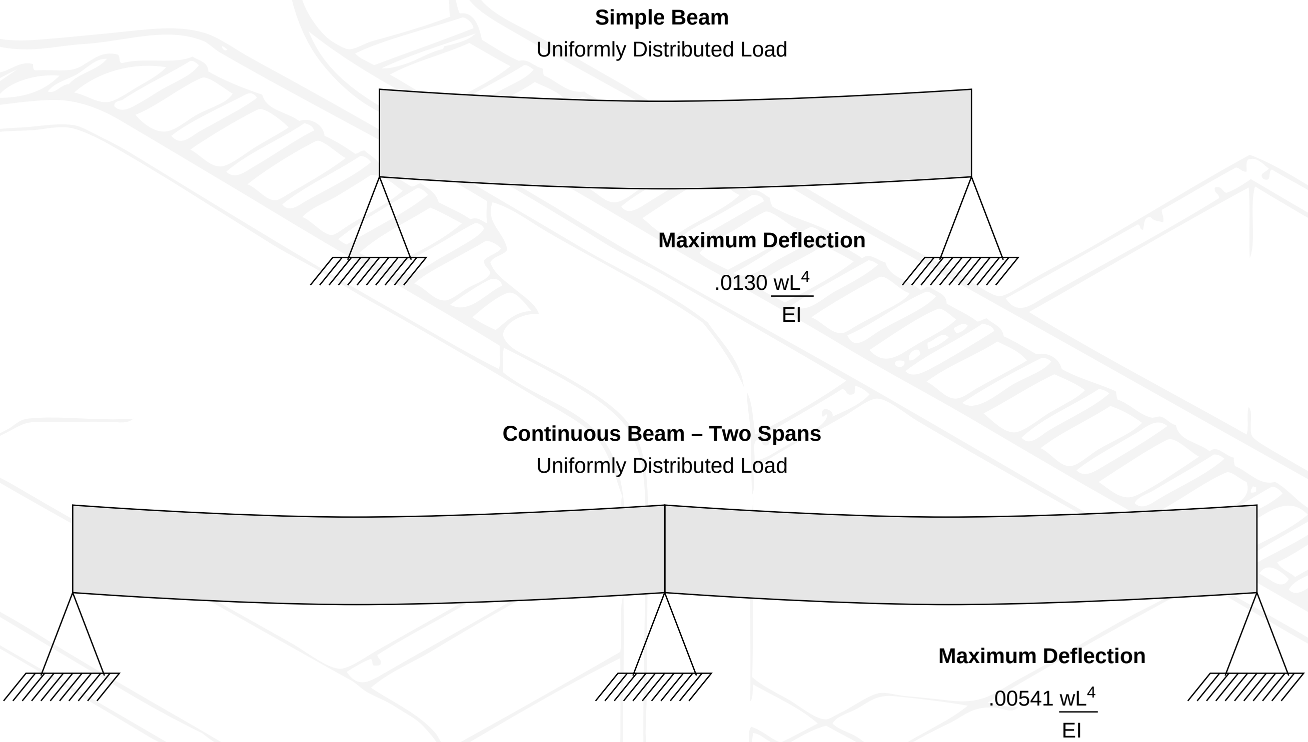
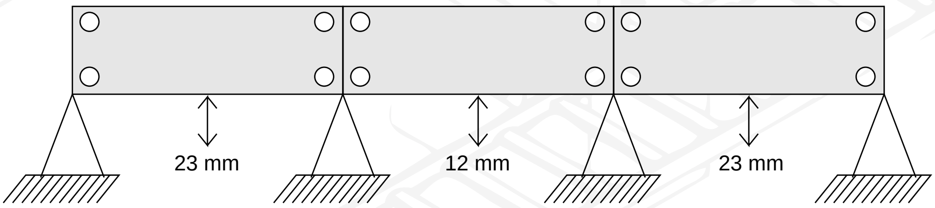


Figure 1.3

Since different bending moments are created in each span, there is no simple factor to approximate deflection as the number of spans increases. It is possible to calculate these deflections at any given point by using second integration of the basic differential equation for beams. Testing shows that the center span of a three-tray continuous beam can deflect less than 10% of its simple beam deflection.

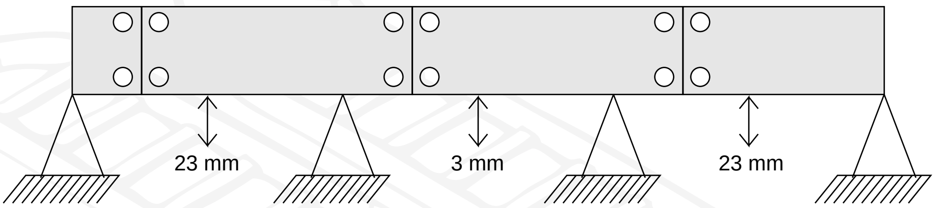
LOCATION OF COUPLINGS

Couplers at Supports



Typical Deflection at Rated Load

Couplers at ¼ Span From Supports



Typical Deflection at Rated Load

Figure 1.4

Location of Couplers. (See Figure 1.4.) The location of the coupler dramatically affects the deflection of a cable tray system under equal loading conditions. Testing indicates that the maximum deflection of the center span of a three-span cable tray run can increase four times if the couplers are moved from one-quarter span to above the supports. This can be a major concern for designers considering modular systems for tray and pipe racks.

THERMAL EXPANSION AND CONTRACTION

A cable tray system may be affected by thermal expansion and contraction, which must be taken into account during installation.

To determine the number of expansion splice plates you need, decide the length of the straight cable tray runs and the total difference between the minimum winter and maximum summer temperatures.

To function properly, expansion splice plates require accurate gap settings between trays. To find the gap (see Table 1):

- Enter the lowest metal temperature on the minimum temperature line.
- Enter the highest metal temperature on the maximum temperature line.
- Draw a line between the two points.
- Enter the metal temperature at the time of installation.

The support nearest the midpoint between expansion splice plates should be anchored, allowing the tray longitudinal movement in both directions. All other support location should be secured by expansion guides. (See Table 2.)

When a cable tray system is used as an equipment grounding conductor, it is important to use bonding jumpers at all expansion connections to keep the electrical circuit continuous.

PLOT YOUR GAP SETTING

a. Locate the lowest metal temperature on low temperature line.

b. Locate the highest metal temperature on high temperature line.

c. Connect these two points.

d. Locate installation temperature and plot to high/low line. Drop plot to gap setting.

GAP SETTING OF EXPANSION SPLICE PLATE
(1" Gap Maximum)

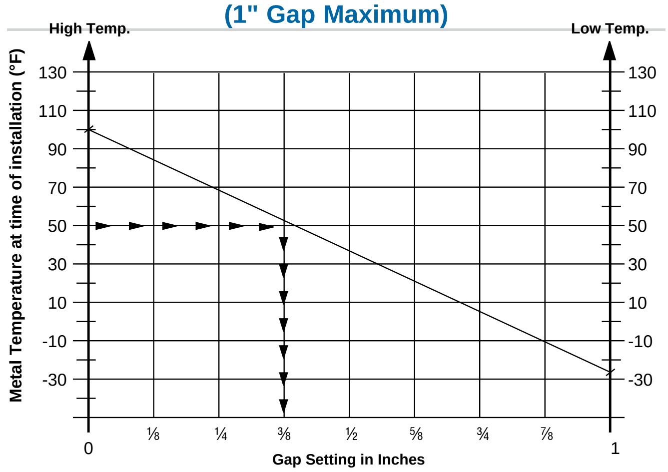


Table 1

MAXIMUM DISTANCE BETWEEN EXPANSION JOINTS (For 1" Movement)

Temperature Differential (°F)	Steel (Feet)	Aluminum (Feet)
25	512	260
50	256	130
75	171	87
100	128	65
125	102	52
150	85	43
175	73	37

Note: Every pair of expansion splice plates requires two bonding jumpers for grounding continuity.

TYPICAL CABLE TRAY INSTALLATION

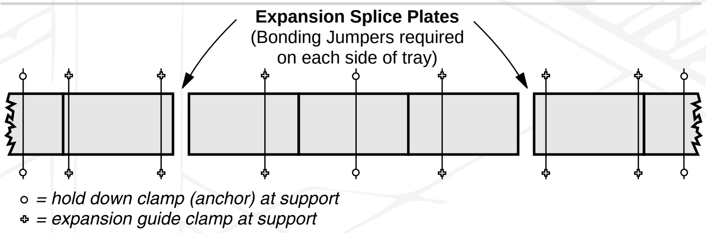


Table 2

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STRUCTURAL DESIGN

An installed cable tray system functions as a beam under a uniformly distributed load. The four basic beam configurations found in cable installations are simple, continuous, cantilever and fixed. Each is attached to the cable tray support in a different way.

Continuous Beam

Cable tray sections forming spans constitute a continuous beam configuration, the most common found in cable tray installations.

This configuration exhibits characteristics of the simple beam and the fixed beam. For example, with loads applied to all spans at the same time, the ends spans function like simple beams, while the counterbalancing loads on either side of a support function like a fixed beam.

As the number of spans increases, the continuous beam behaves increasingly like a fixed beam, and the maximum deflection continues to decrease. As this occurs, the system's load carrying capability increases.

Simple Beam

A straight section of cable tray supported at both ends but not fastened functions as a simple beam. Under a load, the tray will exhibit deflection. The load carrying capacity of a cable tray unit should be based on simple beam loading, since this type of loading occurs at run ends, offsets, etc., in any tray system.

The NEMA Load Test is a simple beam, uniformly distributed load test, used primarily because it is easy to test and represents the worst case beam condition compared to continuous or fixed configurations. The only criterion for NEMA acceptance is the ability to support 150% of the rated load.

Fixed Beam

Like the cantilever beam, a fixed beam applies more to the cable tray supports than the tray itself, because both ends of a fixed beam are firmly attached to the supports. The rigid attachment prevents movement and increases load bearing ability.

Factors of safety

Since a low value for the factor of safety results in economy of material, the designer seeks to establish a value as low as is practical, based on sound engineering judgment and experience. In making the determination, consideration of the following factors are highly important:

1. ***The accuracy with which the loads to represent service conditions are selected and assumed.*** If there is much doubt concerning these loads, the basic design stress will have to be more conservative than under conditions where the loads are known with considerable accuracy.

2. ***The accuracy with which the stresses in the members of a structure are calculated.*** Many approximations are used in structural design to estimate stress distribution. The choice of a factor of safety should be consistent with how accurate the analysis is. The more precise the method, the greater the allowable unit stress may be.

3. ***The significance of the structure being designed.*** The designer must keep in mind the relative importance of the structure and appraise the possibility of its failure causing significant property damage or loss of life. In this respect, the significance of the design will govern the choice of a factor of safety to a considerable extent.

The factors of safety used in designing most common types of structures are an outgrowth of the experience gained from many applications and tests—even failures. The trend in recent years has been to reduce the factors of safety in line with improved quality of material and increasing knowledge of stress distribution. Further reductions may be made in the future as greater accuracy in determinations becomes possible and practicable.

Application of design stresses to cable tray systems

A cable tray manufacturer must design standard products to accommodate the great variations encountered in applications. The factors affecting the selection of a suitable basic design stress necessarily result in more conservative stresses than might otherwise be required.

An engineer, who is in a position to determine specific stress requirements with a far greater degree of accuracy, may consider that the manufacturer’s basic design stresses are too conservative for a particular project. Using individual experience and judgment, he or she would establish a new set of basic design stresses, selecting those safety factors that would result in a cable tray system best suited to meet the projected service conditions. With these stresses, the engineer can easily calculate an increase or decrease in the manufacturer’s loading data, since the load is always in direct proportion to the stress.

Seismic Loads

It is now known that cable tray systems can withstand stronger earthquakes than previously thought. The tray itself and the support material are highly ductile, and the cables moving within the tray tend to dissipate energy.

LOAD DIAGRAMS FOR BEAMS

CANTILEVER BEAMS

Uniform Load

w PER UNIT OF LENGTH: TOTAL LOAD W

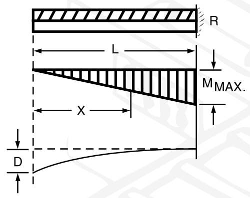
REACTION R = wL = W

MOMENT AT ANY POINT: $M = \frac{WX^2}{2} = \frac{WX^2}{2L}$

MAXIMUM MOMENT $M_{MAX} = \frac{wL^2}{2} = \frac{WL}{2}$

MAXIMUM DEFLECTION, $D = \frac{wL^4}{BEI} = \frac{WL^3}{BEI}$

MAXIMUM SHEAR, V = wL



Concentrated Load at Free End

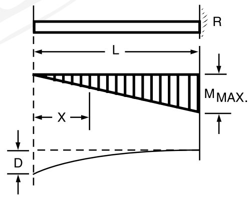
REACTION; R = P

MOMENT AT ANY POINT: M = Px

MAXIMUM MOMENT, M_{MAX} = PL

MAXIMUM DEFLECTION, $D = \frac{PL^3}{3EI}$

MAXIMUM SHEAR, V = P



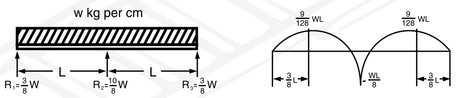
CONTINUOUS BEAMS

Two Span

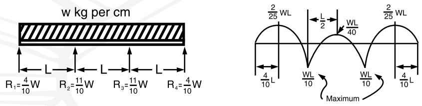
W = wL

R = Reaction, kg

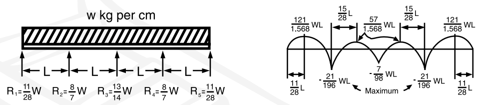
L = Span Length, cm $R_1 = \frac{3}{8}w$



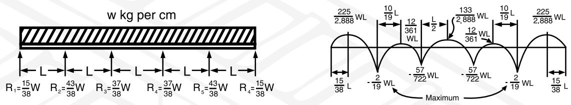
Three Span



Four Span



Five Span



SIMPLE BEAMS

Uniform Load

w PER UNIT OF LENGTH, TOTAL LOAD W

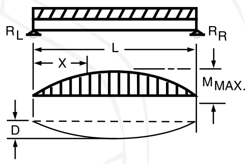
REACTIONS: $R_L = R_R = \frac{WL}{2} = \frac{W}{2}$

MOMENT AT ANY POINT: $M = \frac{wX(L-X)}{2} = \frac{WX(L-X)}{2L}$

MAXIMUM MOMENT, AT CENTRE $M_{MAX} = \frac{wL^2}{8} = \frac{WL}{8}$

MAXIMUM DEFLECTION: $D = \frac{5wL^4}{384EI} = \frac{5WL^3}{384EI}$

MAXIMUM SHEAR: $V = \frac{WL}{2}$



Concentrated Load at any Point

REACTION: $RL = \frac{Pb}{L}$, $R_R = \frac{Pa}{L}$

MOMENT AT ANY POINT: $X <= a, M = R_L X = \frac{PbX}{L}$

$X >= a, M = R_R (L-X) = Pa\frac{(L-X)}{L}$

MAXIMUM MOMENT, AT X = a, $M_{MAX} = \frac{Pab}{L}$

MAXIMUM DEFLECTION, $D = \frac{Pab(L+b)3a(L+b)}{27EIL}$

MAXIMUM SHEAR, $V = \frac{Pa}{L}$, WHEN a > b

Concentrated Load at Center

REACTION $RL = R_R = \frac{P}{2}$

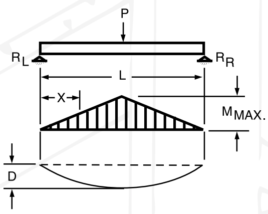
MOMENT AT ANY POINT: $X <= \frac{L}{2}, M = \frac{PX}{2}$

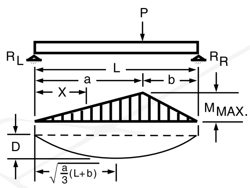
$X >= \frac{L}{2}, M = P\frac{(L-X)}{2}$

MAXIMUM MOMENT, AT CENTER, $M_{MAX} = \frac{PL}{4}$

MAXIMUM DEFLECTION, $D = \frac{PL^3}{384EI}$

MAXIMUM SHEAR, $V = \frac{P}{2}$





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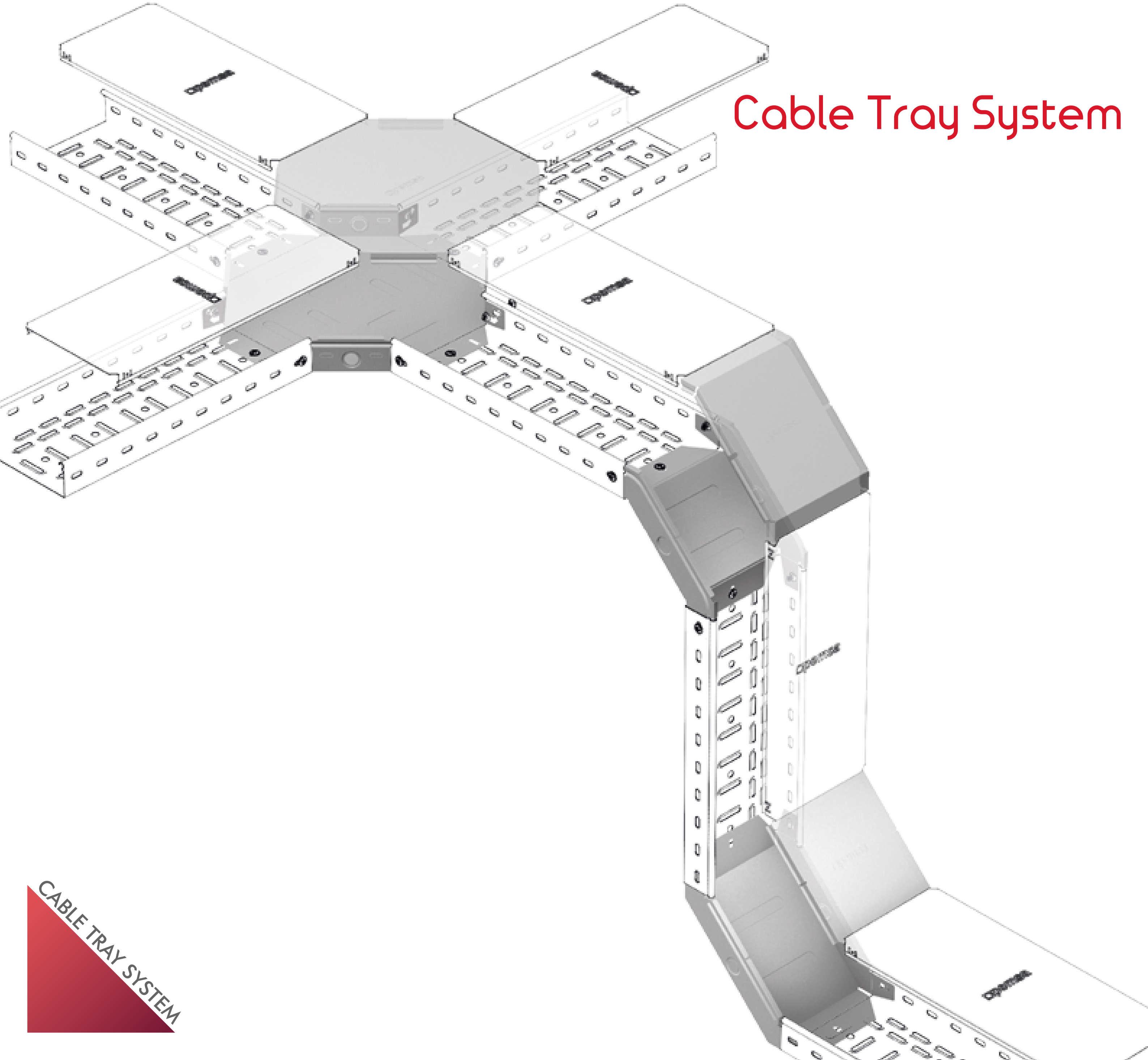
Cable Tray System



CABLE TRAY SYSTEM

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Straight Section Part Numbering - 100mm Height

Example: **M 100 V C P 15 SS - 200 - 3000**

Tray Type	Height	Bottom Type	Return Flange Type	Material	Thickness	Type	Width	Length
M = Maham	**100** = 100mm	**S** = Solid **V** = Perforated	**R** = 180° **C** = 90°	**P** = Pre-Galv **G** = HDGAF **SS6** = Stainless Type 316	**10** * = 1.0mm **15** = 1.5mm **20** = 2.0mm	**SS** = Straight Section	**100** = 100mm **150** = 150mm **200** = 200mm **300** = 300mm **400** = 400mm **500** = 500mm **600** = 600mm **900** = 900mm	**3000** = 3000mm

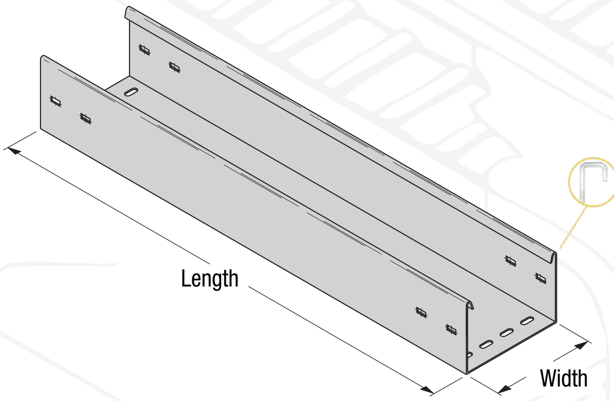
* 1.0mm thickness is only available in widths up to and including 300 (300mm).

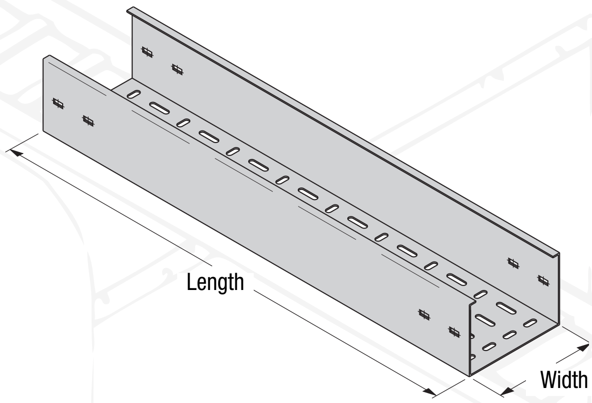
Splice plates not supplied with straight sections. Order standard splice.
One (1) pair required to connect to system.

180° Return Flange (R) with Solid Bottom (S)

90° Return Flange (C) with Perforated Bottom (V)

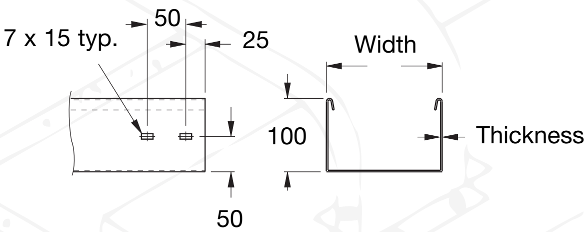
Note:
Perforated slot dimensions and patterns may vary depending on tray size and type.



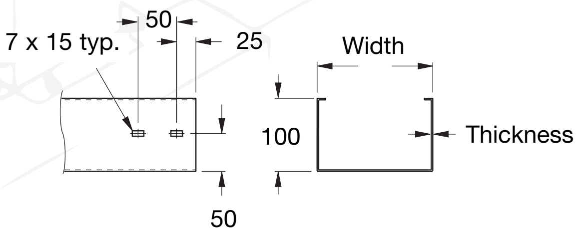


Perforated & Solid Cable Tray Dimensional Drawing - Side Rail Height 100mm

180° Return Flange (R)



90° Return Flange (C)



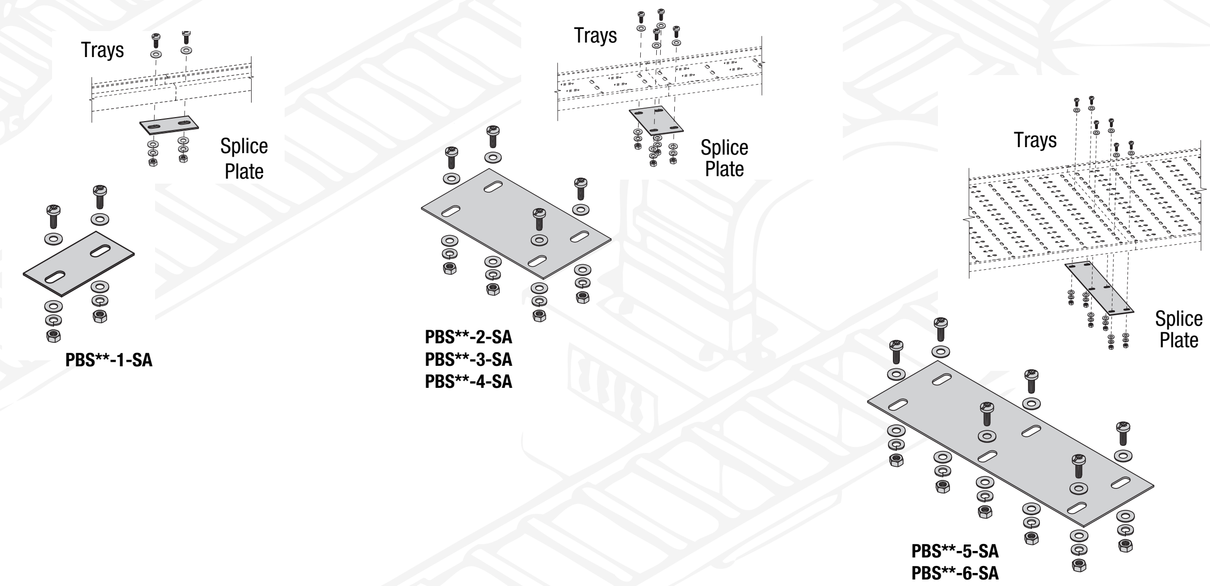
All dimensions are in millimeters unless otherwise specified.

CABLE TRAY SYSTEM

Bottom Splice Plates (Mounted on bottom of 025 height trays as splice plates and can also be used to stabilize tray connections on other heights)

(Sold Individually With Hardware)

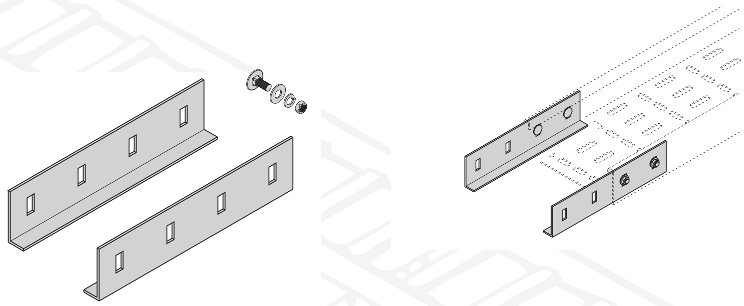
- ** Insert P for Pre-Galvanized, G for Hot Dip Galvanized, SS6 for Stainless Steel 316



Side Splice Plates (Mounted inside of tray)

(Sold in Pairs With Hardware)

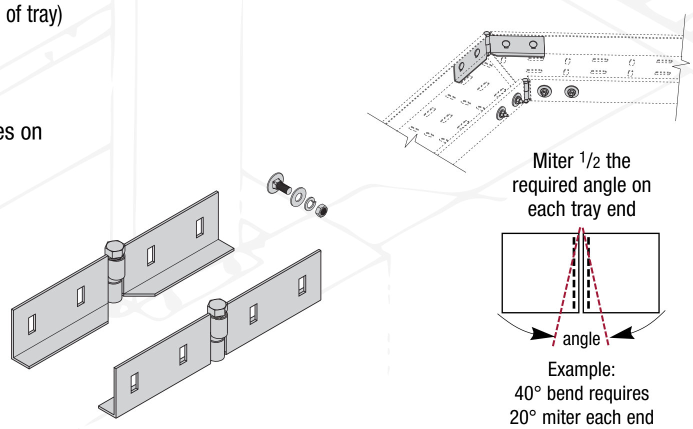
- ** Insert P for Pre-Galvanized, G for Hot Dip Galvanized, SS6 for Stainless Steel 316



Horizontal Adjustable Splice Plates (Mounted inside of tray)

(Sold in Pairs With Hardware)

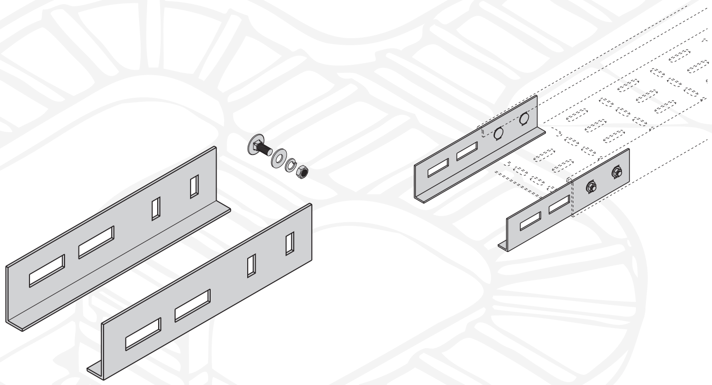
- ** Insert P for Pre-Galvanized, G for Hot Dip Galvanized, SS6 for Stainless Steel 316
- Requires mitering of trays and drilling new splice plate holes on inside angle



Expansion Splice Plates (Mounted inside of tray)

(Sold in Pairs With Hardware)

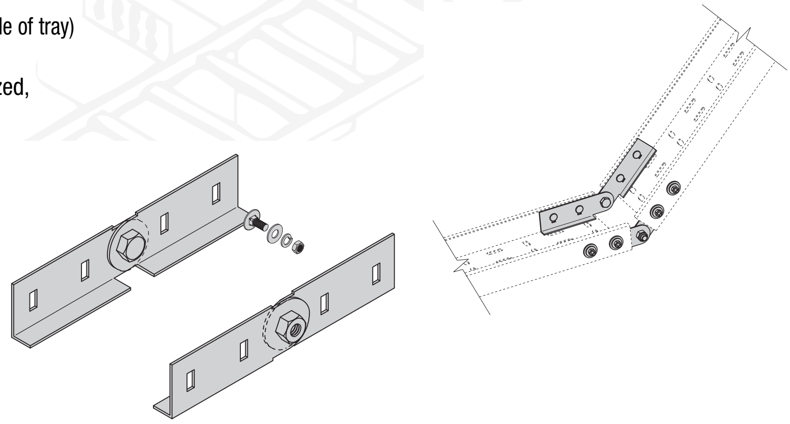
- ** Insert P for Pre-Galvanized, G for Hot Dip Galvanized, SS6 for Stainless Steel 316



Vertical Adjustable Splice Plates (Mounted inside of tray)

(Sold in Pairs With Hardware)

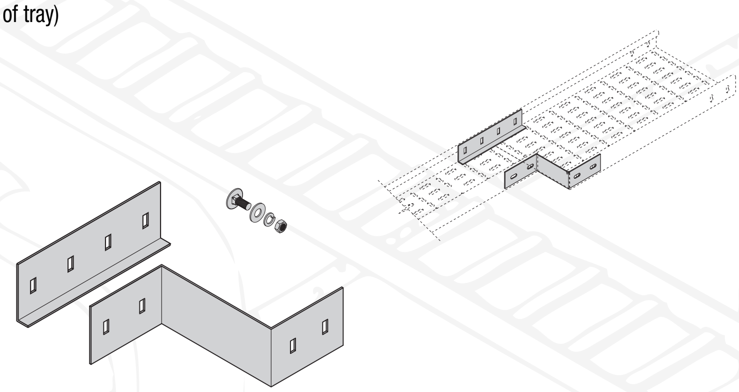
- ** Insert P for Pre-Galvanized, G for Hot Dip Galvanized, SS6 for Stainless Steel 316



Right/Left Reducer Splice Plates (Mounted inside of tray)

(Sold as a Set With Hardware)

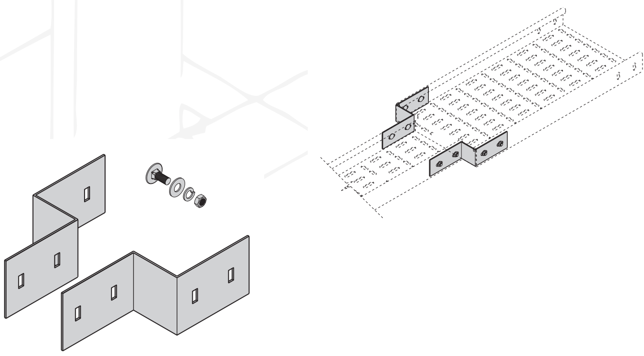
- ** Insert P for Pre-Galvanized, G for Hot Dip Galvanized, SS6 for Stainless Steel 316
- __ Width: Insert width difference between the two trays



Straight Reducer Splice Plates (Mounted inside of tray)

(Sold as a Set With Hardware)

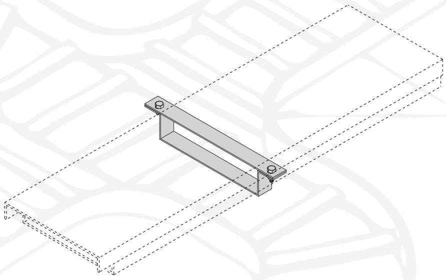
- ** Insert P for Pre-Galvanized, G for Hot Dip Galvanized, SS6 for Stainless Steel 316
- __ Width: Insert one half the width difference between the two trays

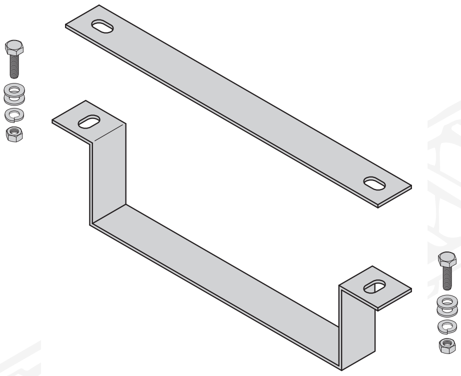


Wrap-Around Cover Clamps

(Sold Individually With Hardware)

- ** Insert P for Pre-Galvanized, G for Hot Dip Galvanized,
  SS6 for Stainless Steel 316
- __ Insert Tray Width of
  050 = 50mm, 100 = 100mm, 150 = 150mm,
  200 = 200mm, 300 = 300mm, 400 = 400mm,
  500 = 500mm, 600 = 600mm, 900 = 900mm

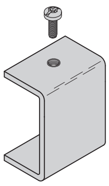


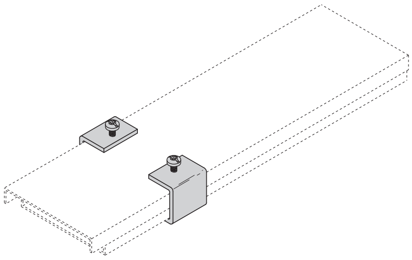


C-Shape Cover Clamps

(Sold in Pairs With Hardware)

- ** Insert G for Hot Dip Galvanized, SS6 for Stainless Steel 316

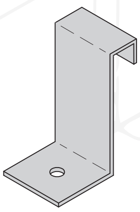


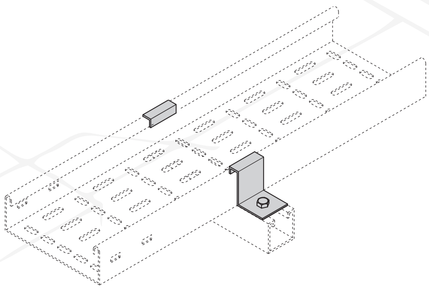


Hold Downs - For (R) & (C) Flanges

(Sold in Pairs Without Hardware)

- ** Insert P for Pre-Galvanized, G for Hot Dip Galvanized,
  SS6 for Stainless Steel 316
- Not recommended for use with covers





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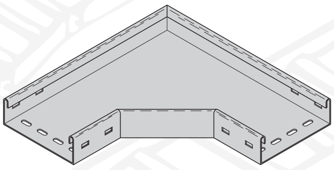
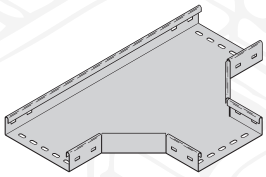
Cable Tray Fittings are designed to support cables as they transition directions.

Note: Perforated slot dimensions and patterns may vary depending on tray size and type.
All fitting bottom are shown as solid bottoms. Perforated bottoms are available.

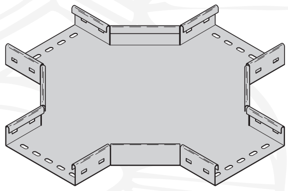
HB
Horizontal Bend

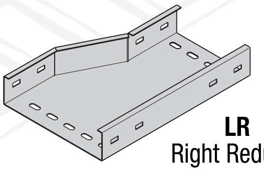


HT
Horizontal Tee

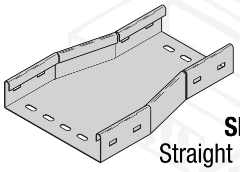


HX
Horizontal Cross

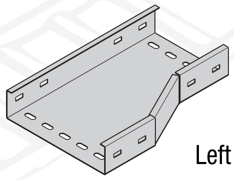




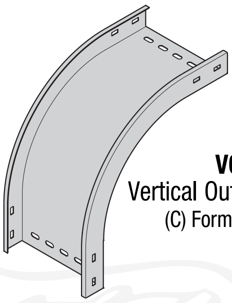
LR
Right Reducer



SR
Straight Reducer

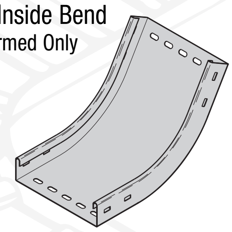


RR
Left Reducer



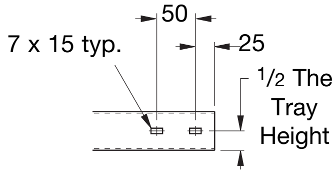
VO
Vertical Outside Bend
(C) Formed Only

VI
Vertical Inside Bend
(R) Formed Only



Splice Plate Holes

Fittings engineered with 100mm tangents for splicing integrity.



Note:
Fittings with 25mm tray heights do not have splice plate holes in the rails.

Fittings Part Numbering

Prefix

Example: M F 050 V R SS6 10 HB - 200 - 60 R600

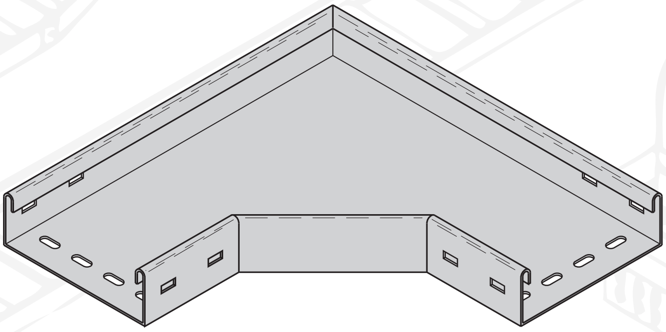
Tray Type	Radius Detail	Height	Bottom Type	Return Flange Type	Material	Thickness	Type	Width	Angle † (°)	Radius
M = Maham	F = Formed	025 = 25mm	S = Solid	R = 180° †††	P = Pre-Galv	10 * = 1.0mm	HB	050 = 50mm Δ	30	R300 = 300mm
	M = Mitered	050 = 50mm	V = Perforated	C = 90°	G = HDGAF	15 = 1.5mm	HT †	100 = 100mm	45	R600 = 600mm
		075 = 75mm			SS6 = Stainless Type 316	20 = 2.0mm	HX †	150 = 150mm	60	R900 = 900mm
		100 = 100mm					VO ***	200 = 200mm	90	
							VI ***	300 = 300mm		
							RR †	400 = 400mm		
							LR †	500 = 500mm		
							SR †	600 = 600mm		
								900 = 900mm †††		

* 1.0mm thickness is only available in widths up to and including 300 (300mm).
† No angle designation required on these fittings. See fitting page when creating part numbers.
*** Not available in mitered style
††† Not available on 025 tray heights
Δ Only available on 025 and 050 tray heights

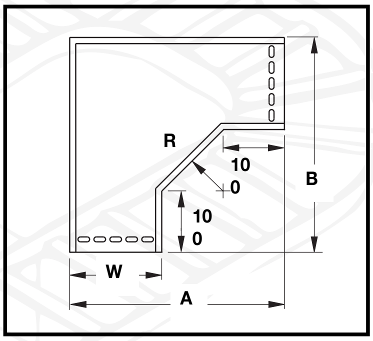
CABLE TRAY SYSTEM

Horizontal Bends 90° (HB)

Splice plates not supplied with fittings.
One (1) pair required to connect to system.

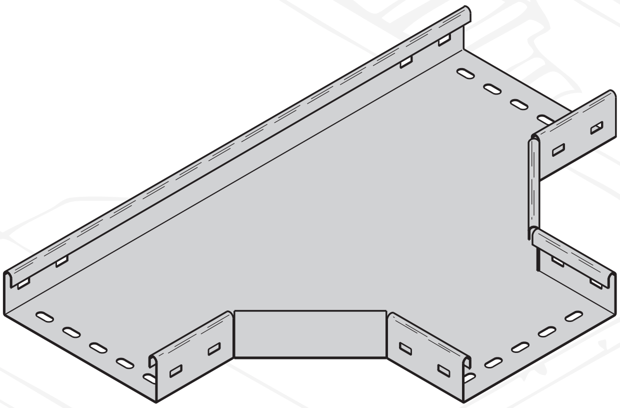


90° Horizontal Bend Mitered (R)
Rail Shown

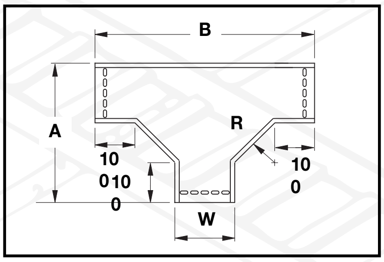


Horizontal Tee (HT)

Splice plates not supplied with fittings.
Two (2) pair required to connect to system.



Horizontal Tee



Note:

All dimensions R, W, A, B will change according to the customer's order.

Perforated slot dimensions and patterns
may vary depending on tray size and type.
(R) 180° return flange not available on 025 tray heights.

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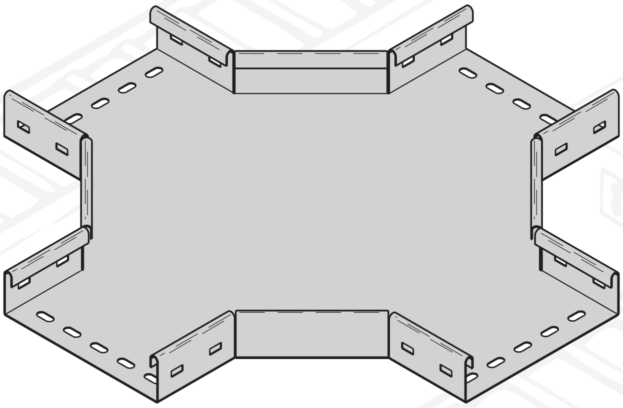
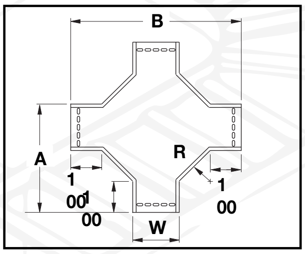
Horizontal Cross (HX)

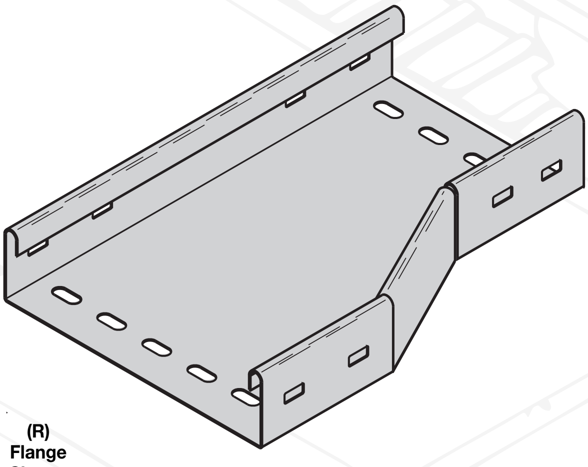
Splice plates not supplied with fittings.
Three (3) pair required to connect to system.

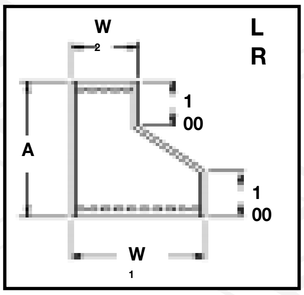


Horizontal Cross



Left Reducer (RL)





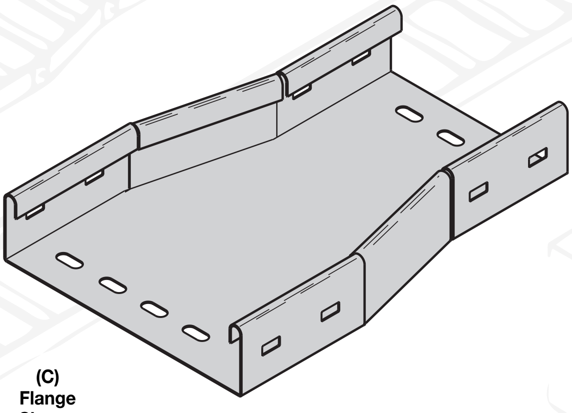
Note:

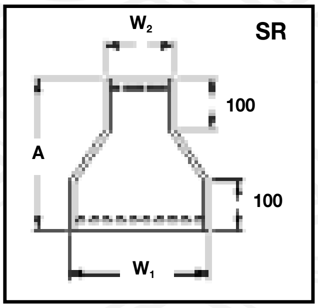
All dimensions R, W, A, B will change according to the customer's order.

Perforated slot dimensions and patterns
may vary depending on tray size and type.
(R) 180° return flange not available on 025 tray heights.

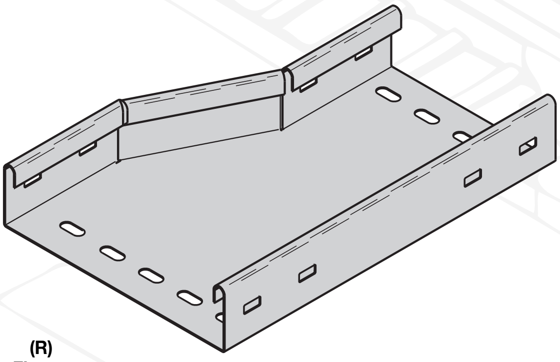
CABLE TRAY SYSTEM

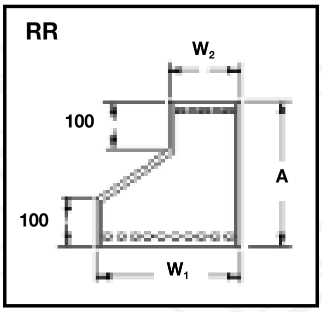
Straight Reducer (SR)





Right Reducer (RR)



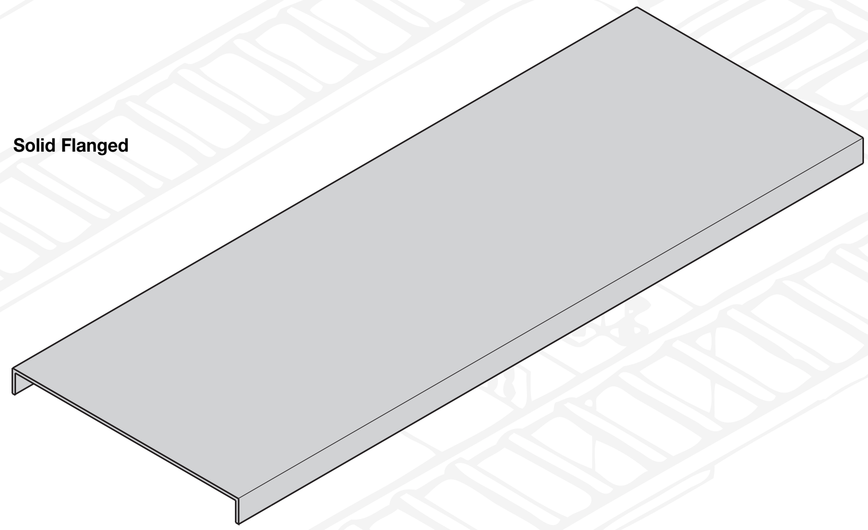


Note:

All dimensions R, W, A, B will change according to the customer's order.

Perforated slot dimensions and patterns
may vary depending on tray size and type.
(R) 180° return flange not available on 025 tray heights.

Straight Section Covers

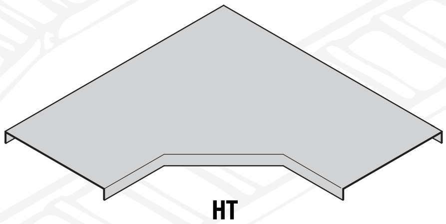


A full range of covers is available for straight sections.

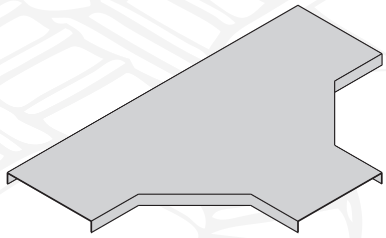
Solid flanged covers should be used when maximum enclosure of the cable is desired and no accumulation of heat is expected.

Flanged covers have a 15mm flange.
Cover clamps are not included with the cover and must be ordered separately.

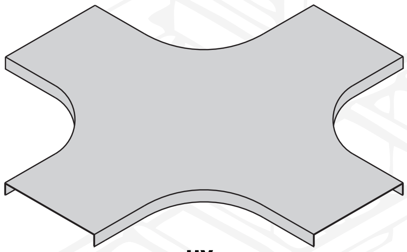
Fitting Covers



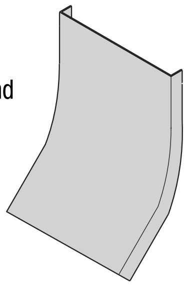
HT
Horizontal Bend
Mitered Shown



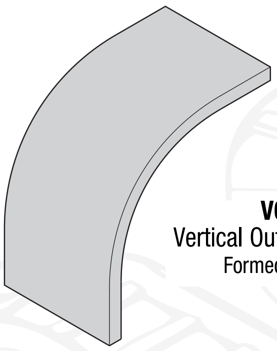
HT
Horizontal Tee
Mitered Shown



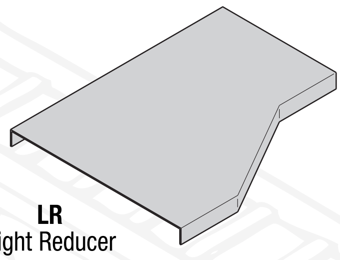
HX
Horizontal Cross
Formed Shown



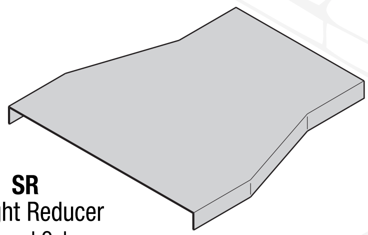
VI
Vertical Inside Bend
Formed Only



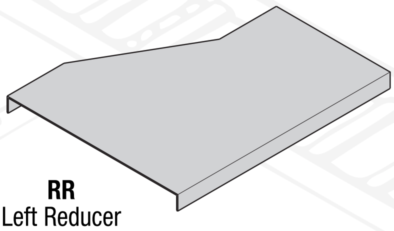
VO
Vertical Outside Bend
Formed Only



LR
Right Reducer
Mitered Only



SR
Straight Reducer
Mitered Only



RR
Left Reducer
Mitered Only

A full range of covers are available for fittings.

Solid flanged covers should be used when maximum enclosure of the cable is desired and no accumulation of heat is expected.

Flanged covers have a 15mm flange. Cover clamps are not included with the cover and must be ordered separately.

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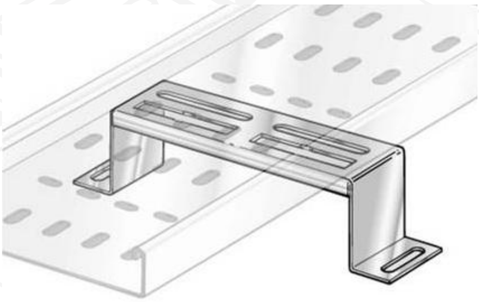
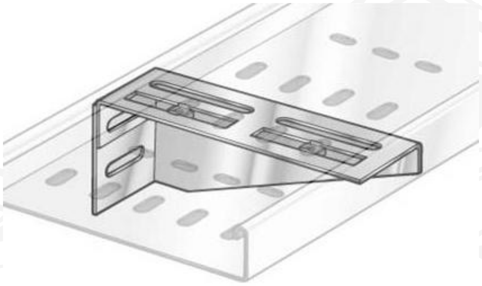
M.T.S

Fish Plate Coupler

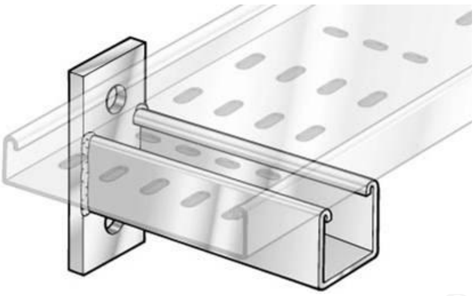
Standoff Bracket



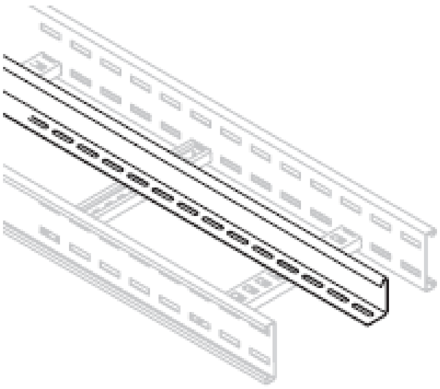
Cantilever Bracket



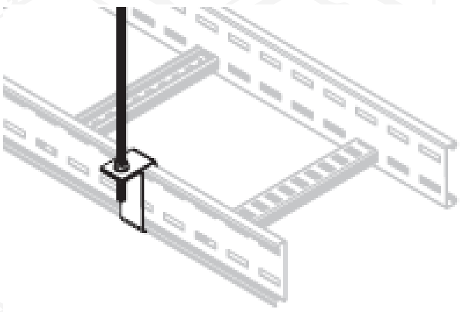
Cantilever Bracket (Heavy)



Cable Tray Divider



Suspension Clip



CABLE TRAY SYSTEM

WE PROVIDE CREATIVITY

Maham Tajhiz Sepand.co

Our mission is to controll and access all the ways thatcaild up success roads and beautifully resonablly presented in the main ora of business world can build up success roads and beautifully resonablly presented in.

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