

## INSTALLATION INSTRUCTIONS FOR MULTITRAK CONDUCTOR BAR SYSTEMS

APPLICABLE FOR THE FOLLOWING CONDUCTOR BAR TYPES:

[Standard sizes highlighted in bold]

- ENCLOSED - Up to 5 x **COPPER CONDUCTORS** ⇒ 70 Amp rated
- ENCLOSED - Up to 5 x **COPPER CONDUCTORS** ⇒ 100 Amp rated
- ENCLOSED - Up to 5 x **COPPER CONDUCTORS** ⇒ 140 Amp rated

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## 1. RECOMMENDED TOOLS

### 1.1 TOOLS RECOMMENDED FOR INSTALLATION OF MULTITRAK SYSTEM

- Pliers
- Hacksaw
- Linoleum knife
- Tape measure
- Thermometer with probe
- Power drill, with a 6mm drillbit
- Phillips Head Screwdriver
- Spanners to suit 5mm, 6mm, 8mm nuts

## 2. HANDLING INSTRUCTIONS

### 2.1 UNLOADING AND HANDLING OF MULTITRAK COMPONENTS

- 2.1.1 Multittrak housings are usually shipped in 4m long cardboard boxes and must be handled with care. Stack boxes horizontally only and support them in at least three places.
- 2.1.2 Do not use the conductor system as a support in any way. The system is not designed to withstand heavy loads, such as ladders.
- 2.1.3 Should it be necessary to clean the conductor system, use only good quality biodegradable detergent/soap and warm water. Do not use solvents, acids or alkalis and avoid contact with oils and grease.
- 2.1.4 Prior to installation, check quantities of parts supplied against the delivery docket and/or drawings, and check that no damage has occurred in transit.
- 2.1.5 Please read this installation manual in its entirety prior to commencing installation.

## 3. INSTALLATION INSTRUCTIONS

### 3.1 SUPPORT BRACKETS

- 3.1.1 Mounting bracket (PartNo. TR8537) consists of a 300mm long straight length of 25mm x 25mm x 3mm angle iron, with a single hole to accept the M8 mounting stud on the Multtrak hanger bracket. These brackets may be bolted or welded to the runway beam.
- 3.1.2 Support brackets are generally spaced at 2.0 metre centres.
- 3.1.3 Note that installation of the Multtrak system commences from the power feed position. Attach support brackets in positions to accept the Track Anchor Clamp and Hanger Clamps. For End Feed Systems, refer to Section 3.3.2 for description of Track Anchor and Hanger Clamps locations. For Line Feed Systems, refer to Section 3.3.3 for description of Track Anchor and Hanger Clamps locations.
- 3.1.4 A tall attention should be taken to ensure that the support brackets do not coincide with the Multtrak joints. Ensure a minimum clearance of 200mm between conductor joints, power feeds and expansion assemblies and any mounting bracket.

### 3.2 HANGER CLAMPS

- 3.2.1 The support brackets do not have the hanger brackets fitted, so these must be fitted on site. This can be done either before or after the support brackets are mounted at runway level.
- 3.2.2 Hanger clamps are fixed to the support brackets via two nuts on the M8 stud at the top of the hanger. Fasten hanger clamps to the mounting brackets parallel with the runway and ensure horizontal and vertical alignment, prior to securing nuts. Ensure second nut is locked onto first nut.
- 3.2.3 See Section 3.4 (below) for description on installing Multtrak housing in hanger clamps.

### 3.3 ANCHOR CLAMPS

- 3.3.1 Track Anchor Clamps are available in GRP (PartNo. TR8523) and alternatively in Metal (PartNo. TR8536). They are a two-part assembly essentially the same as a Track Joiner, but have an M8 stud at the top to facilitate connection to a support bracket. Like a Track Joiner, the Track Anchor Clamp has moulded nodes to locate in semi-circular cut-outs on the PVC housing.
- 3.3.2 For End Feed Systems, the Track Anchor Clamp is fastened to the first mounting bracket, which is positioned 200mm from the End Feed Box. Then the first Hanger Clamp is located 1500mm from the Track Anchor Clamp with subsequent Hanger Clamps located at 2000mm centres along the system.
- 3.3.3 For Line Feed Systems, two Track Anchor Clamps must be used, one each side of the Line Feed Box, 600mm apart (ie, 300mm either side of the centre of the Line Feed Box). The first Hanger Clamps are located 1500mm from the Track Anchor Clamps with subsequent Hanger Clamps located at 2000mm centres along the system.

- 3.3.4 To facilitate the installation of the Track Anchor Clamp to the housing, use a knife to create two semicircular cut-outs, 70mm apart, on each side of the lower edge of the PVC housing. (The cut-outs need to be similar to the cut-outs on the ends of the housing).

#### 3.4 MULTITRAK HOUSING

- 3.4.1 The PVC Multitrak housing comes in 4m lengths. The housing for the entire length of system is installed prior to fitting the (continuous) copper conductor strips.
- 3.4.2 The installation of the housing commences from the power feed position (End Feed Box position or Line Feed Box position). Note that the power feed boxes are installed last, after the copper conductor strips are fitted.
- 3.4.3 Push the Multitrak housing upwards into the hanger clamps, until it locks into position. Ensure that the housing locks firmly into both lips of the hanger clamps. Note that the hanger clamps are referred to as "Sliding Hangers", as the Multitrak housing is designed to slide freely in the hangers, facilitating longitudinal expansion of the conductor system.
- 3.4.4 Note that the Multitrak housing has a dotted green line along one side of the housing, which is used to identify which of the 5 conductors is the earth conductor. Ensure that Multitrak housing is installed so that this earth line is always on the same side (i.e., so that the earth line is continuous over the full length of the system). Note that inside the housing there is an anti-phasing rib, which ensures that the collector can be entered into the track one way only. Installing the Multitrak housing with the earth line on the same side will also ensure that anti-phasing rib inside the housing is on the same side over the full length.

#### 3.5 JOINING MULTITRAK HOUSING

- 3.5.1 The PVC Multitrak housing is joined using Track Joiners (Part No. TR 8501). The Track Joiner is made of G.R.P., and is a two-part assembly, which incorporates moulded nodes that locate in the semicircular cut-outs on the ends of the lengths of Multitrak housing. Note that the Track Joiner is essentially the same as the Track Anchor Clamp, but it does not have a bolt protruding from the top (as it does not connect to the support brackets).
- 3.5.2 Note that for outdoor or dusty and humid installations, tape joints with an adhesive tape prior to fitting the Track Joiner.

#### 3.6 COPPER CONDUCTOR STRIPS

- 3.6.1 There are 3 versions of copper conductor strip that can be installed in the Multitrak housing. A 16mm x 1mm thick, 70A rated strip (Part No. RM 70), a 16mm x 1.5mm thick 100A rated strip (Part No. RM 100), and a 16mm x 2mm thick 140A rated strip (part No. RM 140).
- 3.6.2 Copper strips are supplied coiled. The strips are installed into the Multitrak housing by feeding into the internal grooves and pulling the strips through using an installation carrier tool.

- 3.6.3 The copper coil must payout as the copper strip is pulled into the PVC housing. It is important to ensure that the copper strip is kept vertical whilst being pulled to prevent twisting. To hold the copper coil during installation, we recommend the use of the tape dispenser supplied. The tape dispenser may be held in position by a person or fastened to the runway girder adjacent to the end of the Multtrak housing. Align with the recesses in the PVC housing.
- 3.6.4 Drill a 6mm hole at the end of the copper strip and attach to the installation carrier. The carrier may be pushed or pulled through the PVC housing to insert the copper strip. Note that a cord may be tied to the installation carrier to simplify the task of pulling it through the PVC housing. The copper strips should be pulled at least 100mm past the end of the housing to allow for expansion of the PVC housing.
- 3.6.5 Repeat the procedure detailed in 3.6.4 until all the copper strips are inserted. After all the strips are installed, insert the collector fitted with the appropriate tow strip. Test run the collector over the whole length to ensure free running.
- 3.6.6 For End Feed systems, the copper strips are fed in from the end where the End Feed Box will be installed. For Line Feed systems the copper strips are fed in from each end of the housing toward the location where the Line Feed Box will be mounted. It is necessary to push the housings apart at the line feed joint, to create a working gap in the system.

### 3.7 POWER FEED ASSEMBLIES

- 3.7.1 To install End Feed Box (Part No. TR 8503), slide the main body of the box onto the PVC Housing, then bend the copper strips through 90° and drill a 6mm hole to effect termination of the copper. Slide the copper strips onto the existing studs moulded into the End Feed housing. Feed power supply cable through the entry gland and terminate power cores (via ring terminals) onto the studs prior to firmly tightening the locking nuts. Fit End Feed Box end cover.
- 3.7.2 To install Line Feed Box (Part No. TR 8504), you first must achieve a perfect butt-joint in the two lengths of track meeting at that point. Cut out the PVC housing at the appropriate recesses then bend the copper strips through 90° and drill 6mm holes to effect the termination of the copper. Feed power supply cable through the entry gland and terminate power cores with ring terminals. Copper strips and power supply cores are joined using the joining clamps provided. At this point insert the collector and test run it through the whole length of the system, to ensure free running. Fit the Line Feed Box ensuring that the nodes locate with the semi-circular cut-outs in the housing.

### 3.8 EXPANSION JOINTS

- 3.8.1 Expansion joints are required in systems greater than 80m long. For long systems, the expansion joints should be located at 80m centres. The expansion joint (Part No. TR 8507) is a factory assembled 400mm long assembly. The expansion joint assembly incorporates track joiners, and is installed in the same way as joining lengths of Multtrak housing.

### 3.9 END CAPS

- 3.9.1 End caps are used to insulate the exposed copper strips at the end(s) of the runway. Trim the copper strips such that they extend approximately 100mm past the end of the Multtrak housing. Attach End Cap (PartNo. 8506) to the housing using a track joiner. [Install the track joiner ensuring that the moulded nodes locate with the semi-circular cut-outs on the housing].

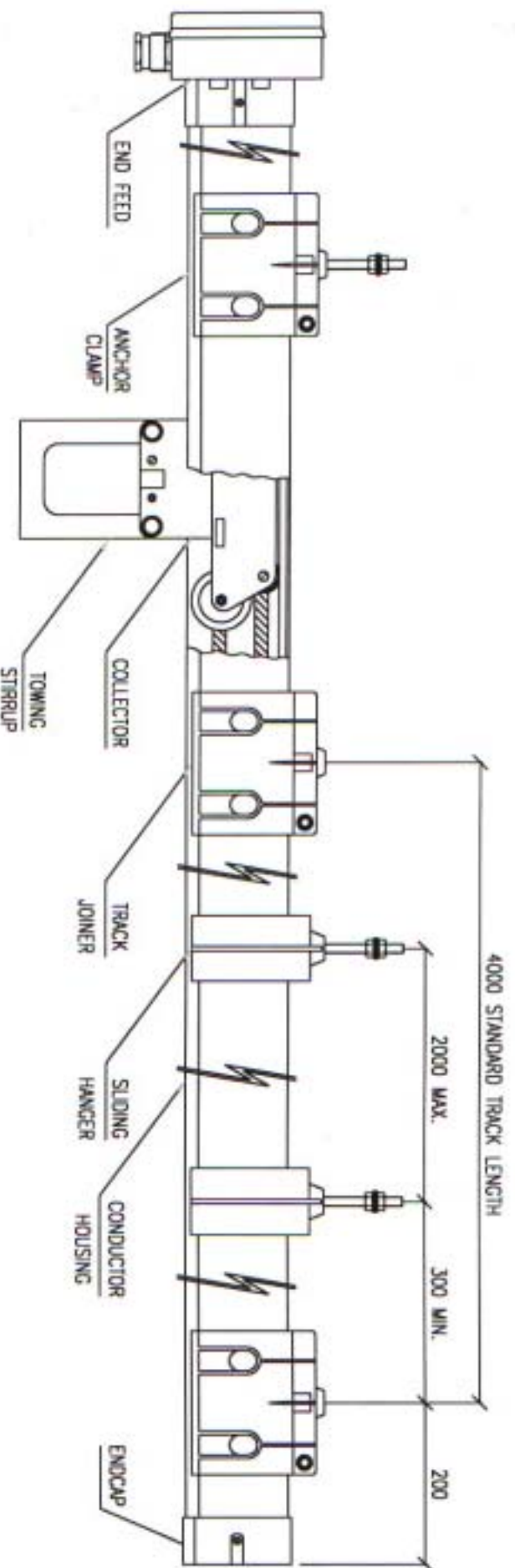
### 3.10 COLLECTORS

- 3.9.1 Various collectors are available for 3 pole, 4 pole and 5 pole versions systems, in 35Amp rated and 70 Amp rated versions.
- 3.9.2 A single tow strip (PartNo. TR8509) can be fitted to a single 35A or 70A collector. Alternatively a tandem tow strip complete with connection box (PartNo. TR8509 for 35A collectors or PartNo. TR8523 for 70A collectors) can be fitted to two collectors.
- 3.9.3 Tow Arm (PartNo. TR8510) is fitted to the moving machine at a distance of 70mm below the underside of the housing. Note that the tow arm fork fits to the outside of the collector strip.

### 3.10 SYSTEMS WITH SEALING STRIPS

- 3.10.1 A PVC sealing strip is available to assist in keeping dust and moisture from entering the housing. Sealing strips may be supplied continuous length for the whole system (i.e., supplied 500mm longer than the system length itself), or can alternatively be supplied in shorter lengths. The sealing strips are inserted in the slots on the bottom of the housing, either by hand, or using the copper strip installation carrier.
- 3.10.2 To install the sealing strip will require at least two persons. The strip is guided, and or pushed into the slots at the starting end and pulled towards the opposite end of the system.
- 3.10.3 If installed by hand, it is a push-pull operation to get the strip along the slot in the bottom of the housing. If installed with the copper installation carrier, attach the sealing strip to the carrier utilising the nylon screw. (The strips are pre-drilled at one end). Insert the strip into the selected slot and slowly push or pull the carrier through the housing. Install one strip at a time. For long systems it may be necessary to install the strip from each end and pull towards the centre of the system. When the installation is complete, trim the strip to suit, allowing sufficient length to be inserted into the end cap.
- 3.10.4 A cable-pulling lubricant may be used on the sealing strip to assist with the sliding action.





NOTE  
 THE ANCHOR CLAMP IS LOCATED AT THE P.V.C.  
 HOUSING JOINT CLOSEST TO THE FEED POINT.

REV.



**INSUL 8**

CONDUCTIVE DIVISION  
 a BEAUFRAIT GROUP

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SUBJECT TYPICAL MULTITRAK SYSTEM WITH END FEED.

CLIENT

DRAWN MU

DATE 14.12.00

REV.

TOLERANCES ±0.25 ±1°

DEC. ANG.

SCALE NTS.

ZD-044