SIMPLE TO ASSEMBLE, ROBUST, TWO SIDED EXCAVATION SUPPORT SYSTEM DESIGNED TO BE INSTALLED BY A MIN. 40T - 45T EXCAVATOR UTILISING THE DIG AND PUSH OR EXCAVATE AND LOWER IN PLACE TECHNIQUES.

Normally selected for installing utility pipes where ground movement is not critical, with the size of systems specified dependent upon max. depth requirements and size of individual pipe sections and bedding. The system is generally suitable for trench depths of up to 5.0m, widths of up to 5.4m, pipe lengths of up to 6.0m and a pipe OD of up to 3.0m.

Fabricated from fully welded, Grade S355 200x150mm steel box sections to form 150mm thick panels, the system comprises trench box bases to which up to 1 No. trench box top may be added to achieve additional depth. The panels are propped off each other by robust high clearance 400 Series steel struts available in a variety of lengths to suit the required width. Alternatively if a high clearance is not required, and a top is not to be added, lighter MGF 200 Series struts can be connected to the panel using adaptors. All high clearance and 200 Series struts are connected to each other using bolts and nuts, and connected to the panels using simple pin and clip assemblies. The top panel can also use 200 Series struts or 150 Series telescopic struts, which are connected together using pins and r-clips. For all strut configurations see pages 2.4.5 – 2.4.8.

MGF can supply high clearance trench boxes with a full range of suitable lifting and extraction chains, Edgesafe edge protection panels, Laddersafe access platforms and GRP or wooden pole ladders, Davitsafe retrieval / fall arrest systems, trench road plates and confined spaces regime equipment. Manufactured and designed in accordance with BS EN 13331 : 2002 Parts 1 and 2 trench lining systems and BS 5975 (2008) code of practice for temporary works procedures and the permissible stress design of falsework.

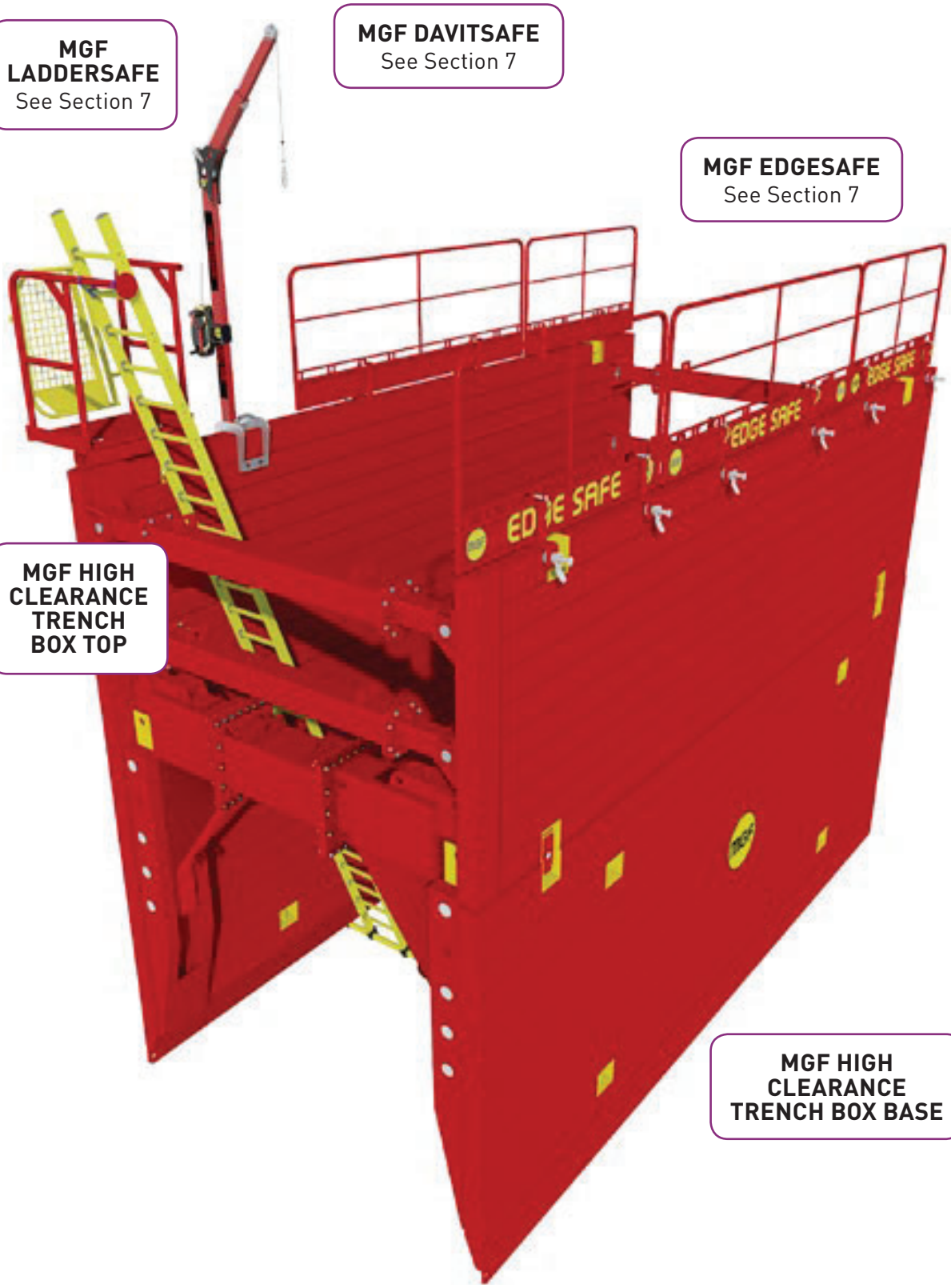
PRODUCT NOTES

1. Boxes should only be used in the configurations shown by competent persons following MGF installation guidelines.
2. Boxes should not be used in very weak ground (especially very soft clays and peats) or where significant groundwater is present.
3. Boxes are not normally suitable for usage where ground movement is an issue and are therefore not recommended for use in live carriageway situations or adjacent existing buildings or structures.
4. Flying of the box above the base of the excavation is not recommended.
5. Box systems are extremely heavy and great care must be taken in selecting a suitable excavator for handling, installing and extracting these systems. If stacking panels on site, timber packers must be used to separate the panels.
6. Boxes should not be left in-situ for extended periods within cohesive or very weak soils as earth pressures / adhesion on the panel surfaces may increase significantly with time requiring additional extraction forces to release the panels.
7. Always use MGF specified extraction chains to release an in-situ box from the ground prior to any attempt to lift the box out of the trench. Always use MGF specified lifting chains when lifting and handling the boxes or components. NB If a box becomes stuck extraction forces of up to 500kN (50t) can be required to release each corner.
8. Prior to every lifting operation all lifting points must be carefully inspected by a competent person for evidence of damage.
9. Where possible always enter trench box via a ladder located within the trench box.
10. During lifting or extraction operations ensure personnel are well clear of the equipment.
11. Ends of trench runs should always be battered back at a safe angle.

MGF LADDERSAFE
See Section 7

MGF DAVITSAFE
See Section 7

MGF EDGESAFE
See Section 7



MGF HIGH CLEARANCE TRENCH BOX TOP

MGF HIGH CLEARANCE TRENCH BOX BASE

FOR SAFE SYSTEM OF WORKS GUIDANCE FOR MGF HIGH CLEARANCE TRENCH BOXES:

mgf.ltd.uk/installation-guidance

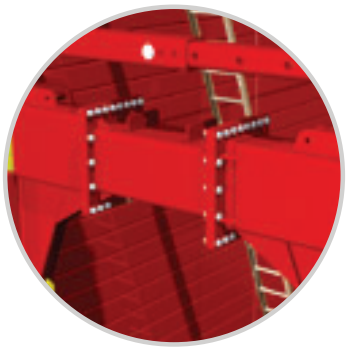
TOP PANEL 150 SERIES STRUT POCKET PIN DETAIL
Top panel struts are connected to the panel pockets using a pin and r-clip detail.

TOP PANEL TELESCOPIC STRUT DETAIL
Telescopic strut inners and outers are connected using a pin and r-clip detail.

BASE TO TOP PANEL CONNECTOR
The high clearance trench box base and top are connected to each other using a connector that hooks around the handling point, it is secured in place using an M30 screw bolt.

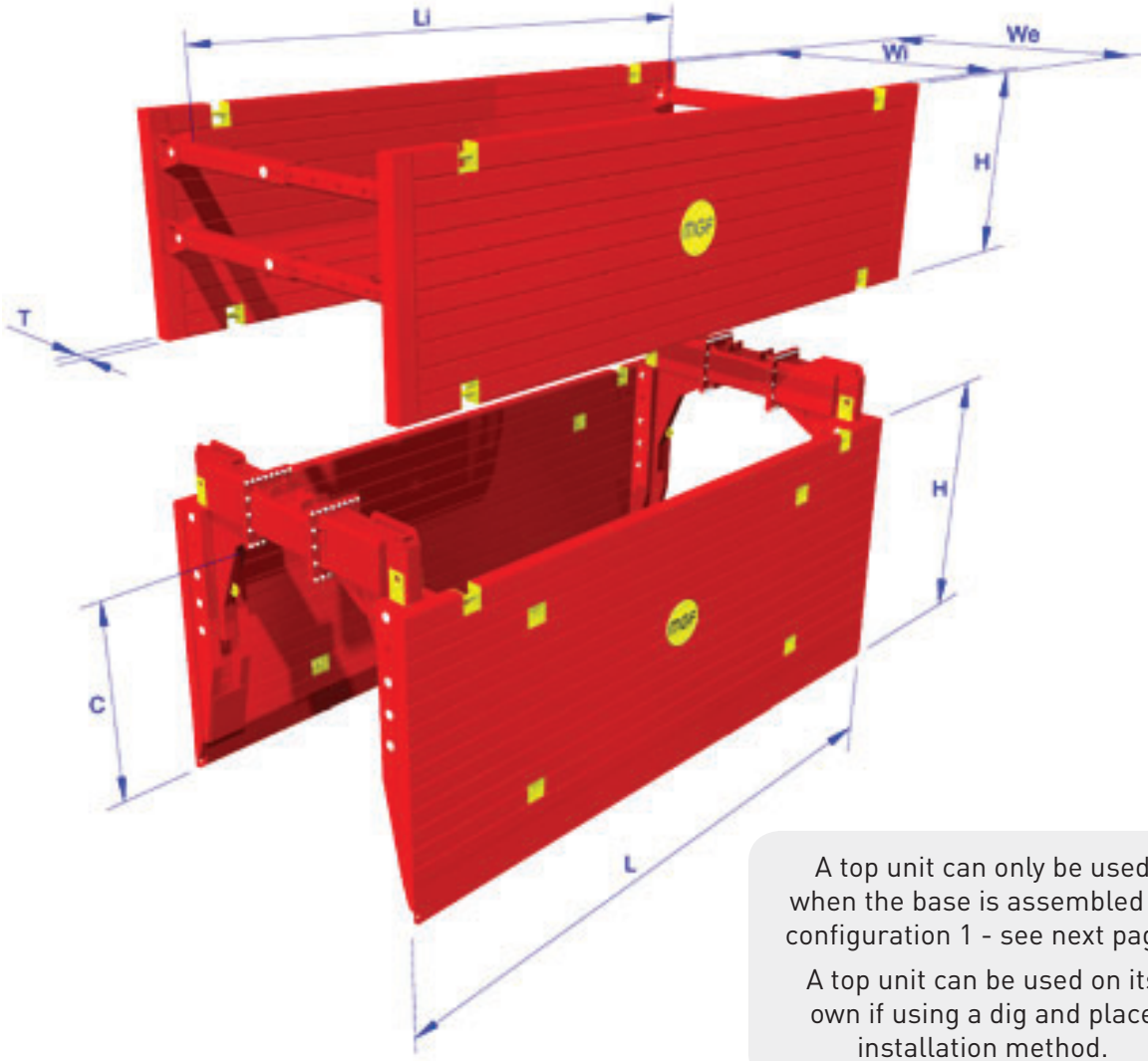
HANDLING POINT
The high clearance trench box base and top are lifted and handled by attaching MGF lifting chains to the handling points as shown.

BASE PANEL HIGH CLEARANCE 400 SERIES STRUT SOLDIER PIN DETAIL
Base panel struts are connected to the panel soldier using pins and r-clips. Each high clearance strut requires 4 No. pins each side and the strut can be slid down and locked in position to assist transport / handling / storage.



BASE PANEL HIGH CLEARANCE 400 SERIES STRUT DETAIL
The base struts and extensions are connected using 20 No. M24 bolts and nuts.

200 SERIES STRUT DETAIL
The 200 Series strut extensions are connected to the relevant base or top panel adaptors using 8 No. M20 bolts and nuts. Each 200 Series base panel strut adaptor requires 2 pins either side, the top panel adaptor requires 1 pin either side.



A top unit can only be used when the base is assembled to configuration 1 - see next page.

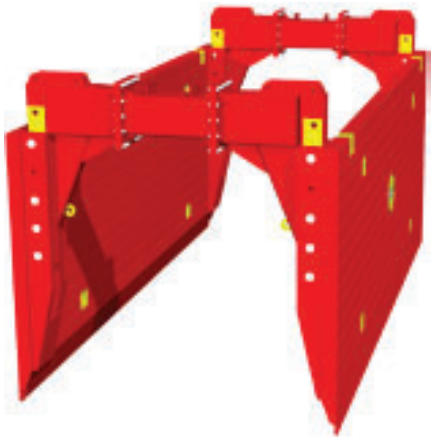
A top unit can be used on its own if using a dig and place installation method.

Product ID	Description L x H	Max Depth (m)	Panel Resistance SWL (kN/m²)	Panel Thick / Weight T(mm)/(kg)	Approx Assembled Weight* (kg)	Internal Trench Width* Wi(mm)	Trench Width We(mm)	Max. Clearance Below Bottom Struts C(mm)	Min. Clearance Between Struts Li(mm)	Strut Type
4.199	7000 x 3000 Base	5.0	40	150 / 3500	9720-11350	2100-5100	2400-5400	3000	5960	High Clearance / 200 Series
4.1995	7000 x 2000 Top	2.0	40	150 / 2250	4826-5373	2100-5100	2400-5400	800	6200	150 telescopic / 200 Series

** These weights correspond to strut configuration 1 as detailed on pg 2.4.5 and strut configuration 5 on pg 2.4.7.*

BASE PANEL STRUTS

1

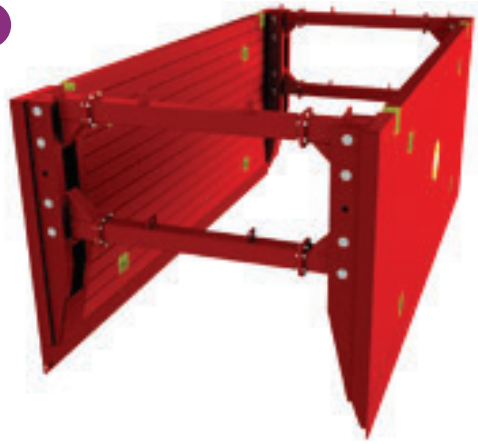


Suitable for trench widths 2.4m - 5.4m.

2

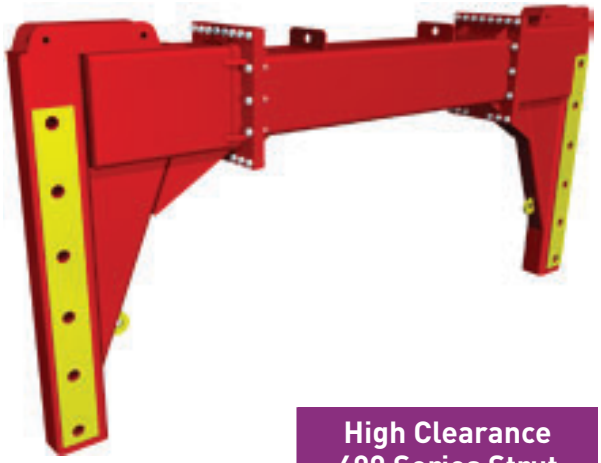
Suitable for trench widths 2.4m - 5.4m cannot be used with top unit.

3



Suitable for trench widths 2.4m - 5.4m cannot be used with top unit.

HIGH CLEARANCE STEEL STRUTS



Component	High Clearance 400 Series Strut
Specification	**400x400x16 SHS**
Material Grade	**S355**
Axial SWL	**2500kN**
Moment SWL	**703kNm**
Bolting Details	**20 No. M24 bolts**
Unit Mass	**191kg/m**

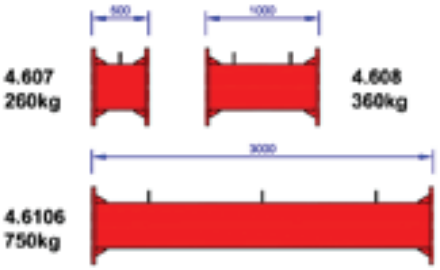
200 SERIES STEEL STRUTS C/W ADAPTORS

Component	200 Series Strut
Specification	**200x200x8 SHS**
Material Grade	**S355**
Axial SWL	**600kN**
Moment SWL	**100kNm**
Bolting Details	**8 No. M20 bolts**
Unit Mass	**47.7kg/m**

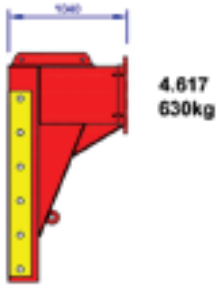
BASE PANEL STRUT COMBINATIONS

HIGH CLEARANCE 400 SERIES STRUT

HIGH CLEARANCE 400 SERIES STRUT EXTENSIONS (400x400x16 SHS)



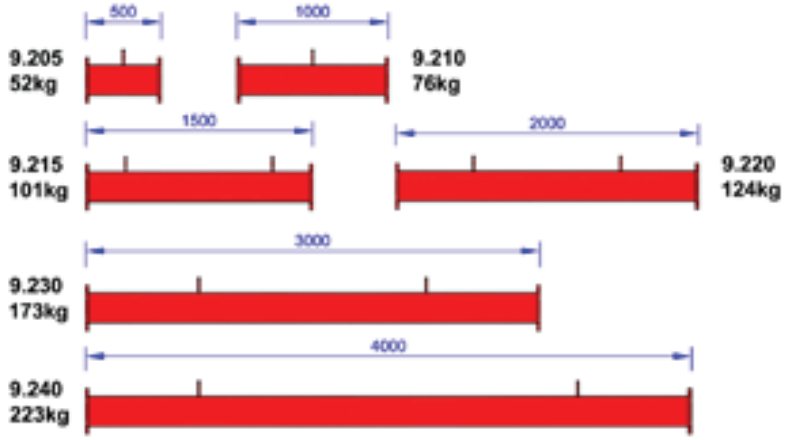
HIGH CLEARANCE STRUT END (500x300x8 RHS)



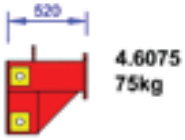
	Trench Width	Strut Extension	Assembled Weight
	(mm)	Product ID	(kg)
Strut End 4.617	2400	NONE	1260
Strut End 4.617	2900	4.607	1520
Strut End 4.617	3400	4.608	1620
Strut End 4.617	3900	4.607 & 4.608	1880
Strut End 4.617	4400	4.610	1815
Strut End 4.617	4900	4.610 & 4.607	2075
Strut End 4.617	5400	4.6106	2010

BASE PANEL 200 SERIES STRUTS

200 SERIES STRUT EXTENSIONS (200x200x8 SHS)



200 SERIES BASE PANEL STRUT ADAPTOR



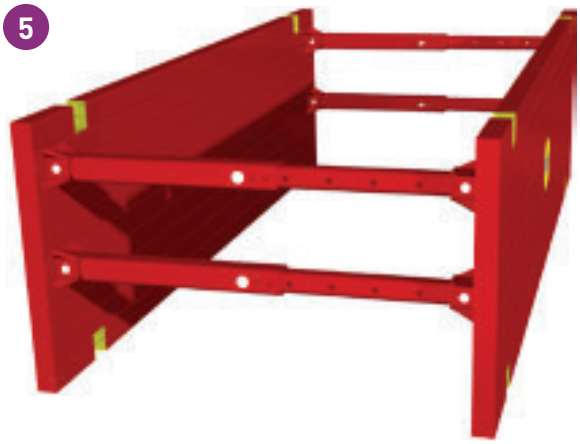
	Trench Width	Strut Extension	Assembled Weight
	(mm)	Product ID	(kg)
Strut End 4.6075	2400	9.210	226
Strut End 4.6075	2900	9.215	251
Strut End 4.6075	3400	9.220	274
Strut End 4.6075	3900	9.220 & 9.205	326
Strut End 4.6075	4400	9.230	323
Strut End 4.6075	4900	9.230 & 9.205	375
Strut End 4.6075	5400	9.240	373

TOP PANEL STRUTS

4

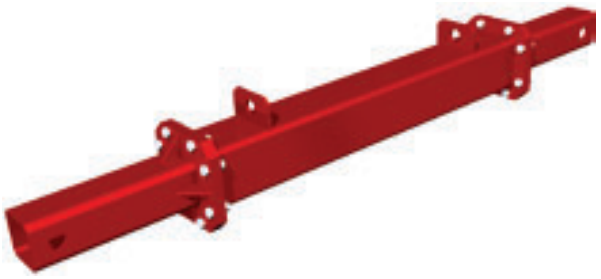
Suitable for trench widths 2.4m - 5.4m

5



Suitable for trench widths 2.4m - 3.9m

200 SERIES STRUTS C/W ADAPTOR



Component	Strut Outer
Specification	**200x200x8 SHS**
Material Grade	**S355**
Axial SWL	**600kN**
Moment SWL	**100kNm**
Bolting Details	**8 No. M20 bolts**
Unit Mass	**47.7kg/m**

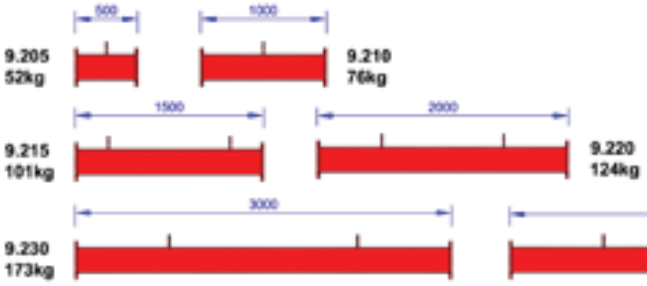
150 SERIES TELESCOPIC STEEL STRUTS

Component	Strut Inner	Strut Outer
Specification	**150x150x12.5 SHS**	**180x180x10 SHS**
Material Grade	**S355**	**S355**
Axial SWL	**492kN**	**492kN**
Moment SWL	**38.9kNm**	**38.9kNm**
Hole Details	**Φ48mm holes**	**Φ48mm holes**
Unit Mass	**52.7kg/m**	**50.7kg/m**

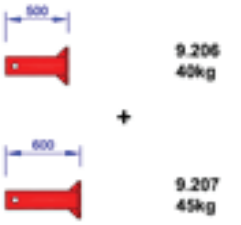
TOP PANEL STRUT COMBINATIONS

200 SERIES STRUTS

200 SERIES STRUT EXTENSIONS (200x200x8 SHS)



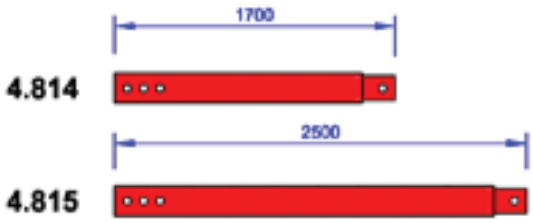
200 SERIES TOP PANEL STRUT ADAPTOR



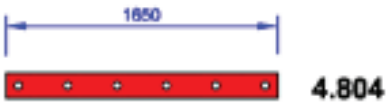
		Trench Width	Strut Extension	Assembled Weight
		(mm)	Product ID	(kg)
Strut End	9.206 & 9.207	**2400**	**9.210**	**162**
	9.206 & 9.207	**2900**	**9.215**	**187**
	9.206 & 9.207	**3400**	**9.220**	**210**
	9.206 & 9.207	**3900**	**9.220 & 9.205**	**262**
	9.206 & 9.207	**4400**	**9.230**	**259**
	9.206 & 9.207	**4900**	**9.230 & 9.205**	**311**
	9.206 & 9.207	**5400**	**9.240**	**309**

150 TELESCOPIC STRUT COMBINATIONS

150 SERIES TELESCOPIC STRUT INNERS (150x150x12.5 SHS)



150 SERIES TELESCOPIC STRUT OUTER (180x180x10 SHS)



Trench Width	Inner Type	Outer Type	Assembled Weight
(mm)	Product ID	Product ID	(kg)
2400 - 2900	**4.804**	**4.814**	**176**
3400 - 3900	**4.804**	**4.815**	**218**

If the above 150 telescopic strut combinations cannot be achieved a minimum overlap of at least 250mm must be provided between the inner and outer. Struts should only be assembled using 1 inner and 1 outer.

STRUT CONNECTING PINS AND RETAINING CLIPS

Component		Base Panel Strut Connecting Pin	Top Panel Strut Connecting Pin
	Specification	**Ø50mm round bar, 350mm long**	**Ø45mm round bar, 220mm long**
	Material Grade	**708M40 (EN19A)**	**080M40 (EN8)**
	Shear SWL	**500kN**	**492kN**
	Weight	**6kg**	**3kg**

PANEL BASE TO TOP CONNECTOR

Component		Base to Top Connector
	Product ID	**4.1026**
	Material Grade	**S355**
	Hole Details	**Φ32mm hole**
	Weight	**20kg**
	Shear SWL	**500kN**