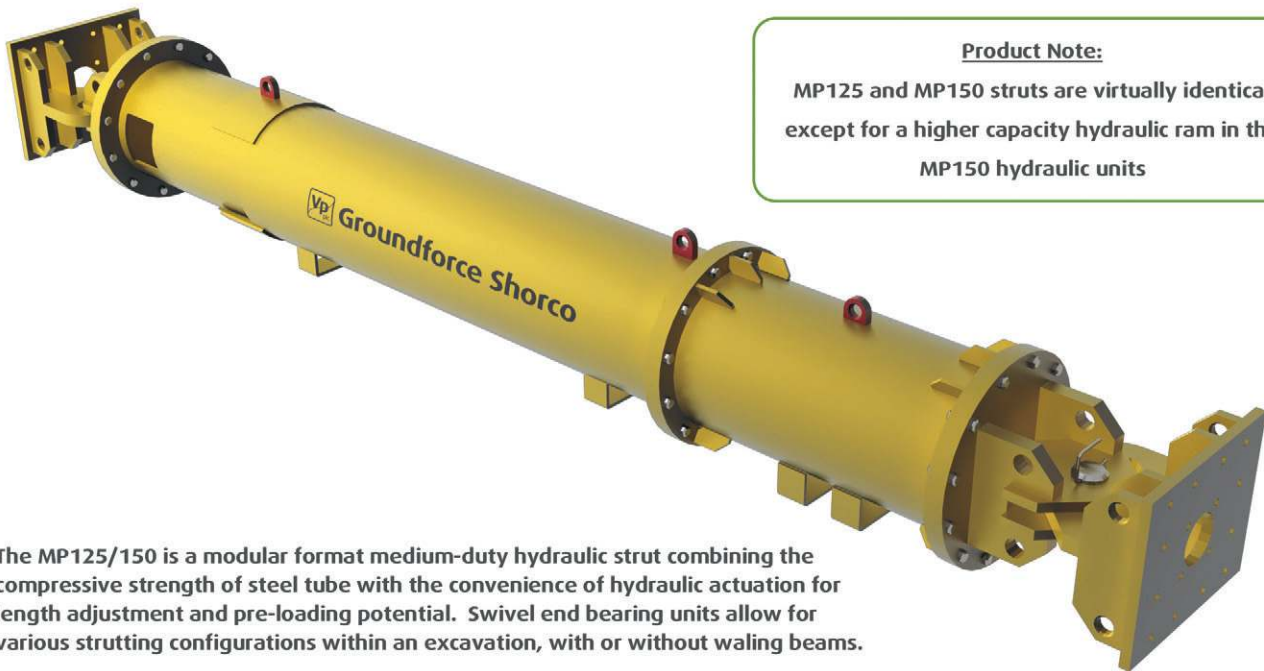


MP125 & 150 Hydraulic Struts

5.2.1



Product Note:

MP125 and MP150 struts are virtually identical except for a higher capacity hydraulic ram in the MP150 hydraulic units

The MP125/150 is a modular format medium-duty hydraulic strut combining the compressive strength of steel tube with the convenience of hydraulic actuation for length adjustment and pre-loading potential. Swivel end bearing units allow for various strutting configurations within an excavation, with or without waling beams.

Both MP125 and MP150 struts use nominally 500mm diameter tubular sections as the main structural member. At shorter spans, the hydraulic capacity limits the axial load and at longer spans, the potential for flexural buckling of the extension sections dictates overall axial capacity.

MP125 / 150 struts can be configured to work within an operating range of 3.6m to 20.0m without the need for intermediate support and are able to withstand working axial loads at shorter spans up to 125 / 150 tonnes respectively.

Where greater axial capacity is required over longer spans the strut can utilise heavy duty, thicker walled extension pieces - see design chart on page 5.2.4.

Typical Applications

- Can be used in combination with Groundforce proprietary waling systems such as the Mega Brace and Maxi Brace as an intermediate strut, knee brace or raking prop (using appropriate adapters), or with single/twin welded beams and non-standard applications such as propping capping beams plain walls, slabs, soldiers and temporary roof propping.

Features and Benefits

- Swivel end bearing plates provide a zero moment end connection and can articulate laterally up to 45° for knee brace and raking applications.
- Two alternative swivel pin holes are provided to ensure the "line of action" is carried through the back face of the end bearing plate at all strut angles (see photo opposite).
- MP 125/150 struts combines the strength of steel tubes with the convenience of hydraulic adjustment.
- Provides 1.2m of double acting hydraulic adjustment with integral lock-off valve for simple zero fluid loss installation and removal techniques.
- Individual struts can be fitted with the Groundforce wireless, fully automated, load monitoring system.*
- The MP150 hydraulic units can be fitted with a mechanical lock-off system - special order only*

* please contact Groundforce Technical Services Department for more details if required.



Product Link

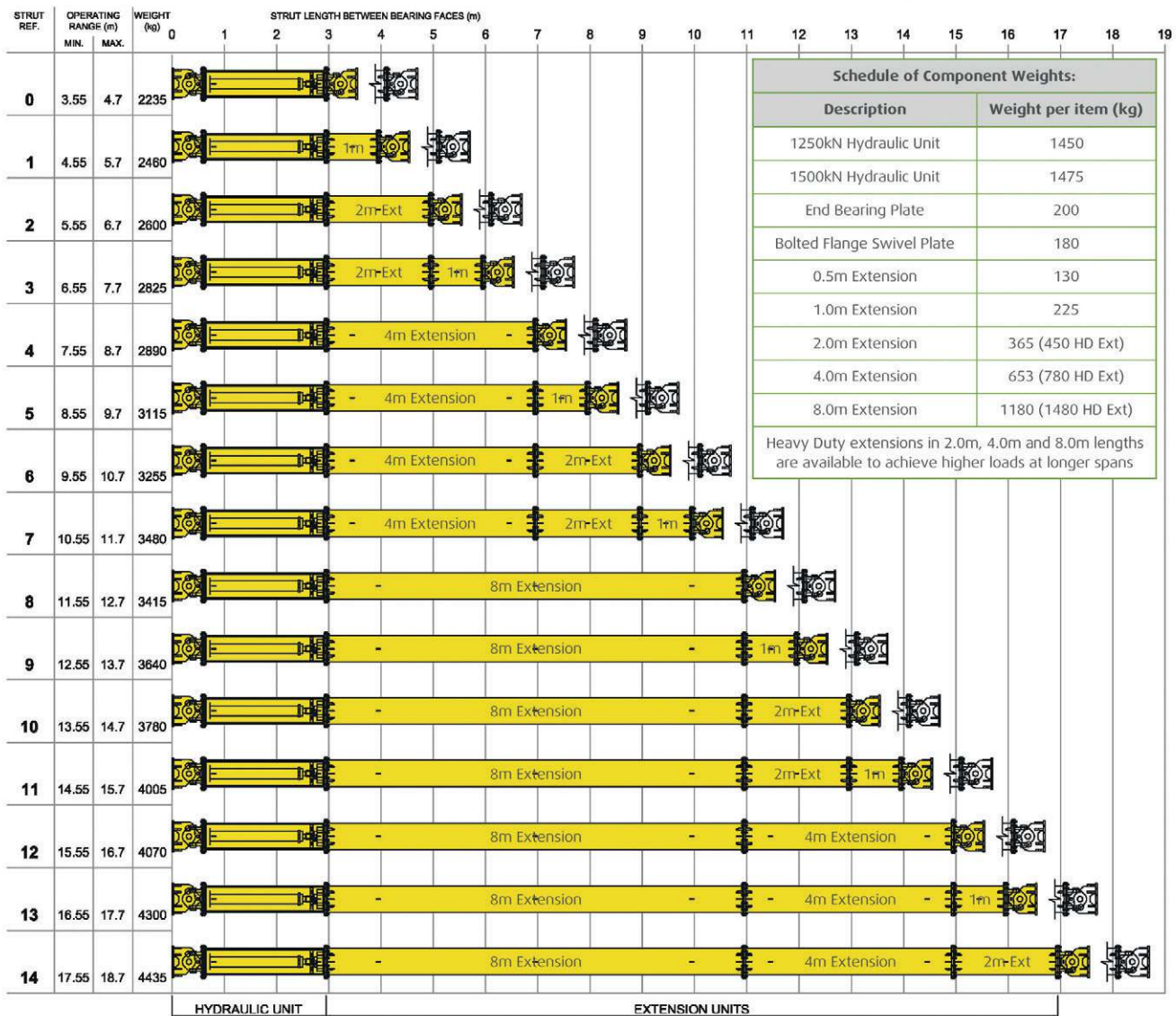
Strut Ancillaries - Section 5.4

MP125 & 150 Hydraulic Struts

Technical Specification - refer to section 'I' for the definition of terms

- Operating range: 3.55m - 20.0m unsupported clear span.
- Ram Construction: Steel, Double acting incorporating a mechanical lock-off valve on the full bore side.
- Ram specification: Bore - 200mm, Piston rod diameter 140mm, stroke 1150mm, full bore area 314cm², annulus area 160.2cm², fluid volume required to achieve 50% stroke = 8.9 litres.
Pressure/load ratio - 21.6 tonnes per 1000psi (69 bar) induced pressure.
Max working axial load capacity - 1250kN (MP125)/ 1500kN (MP150) .
- Extension Construction: 508Ø x 11.1mm thick (standard) or 14.3 mm thick (heavy duty) CHS grade S355 .
- Extension lengths: 0.5m , 1.0m , 2.0m#, 4.0m# and 8.0m# - # available in heavy duty format.
- Flange details: 640mm Ø / 30mm thick; connected with 12No. M24 grade 8.8 bolts - min tightening torque 550Nm
Working bending moment capacity of flange under zero axial load = 240kNm.
- Swivel Pin details: 108mm Ø (EN19T) - optional load pin can be used in lieu.
- Bearing Plate Articulation: +/- 45° from the normal.

MP125 / 150 Operating Range/Weight Chart (Note : MP125 strut assemblies weigh 25kg less than weights shown in the chart below)



The MP 125 / 150 struts have a modular format comprising a hydraulic unit and a series of bolt together fixed length extension units to obtain the desired length. The table above shows standard configurations of the strut. The list is not exhaustive as other permutations are possible and valid, however the strut should not use more than three extension pieces in a single assembly.

Heavy duty extensions pieces or additional mid-span vertical support can be used to extend the range of maximum performance. This and requests for non-standard configurations other than those shown above must be verified by the Groundforce Technical Services Department.

MP125 & 150 Hydraulic Struts

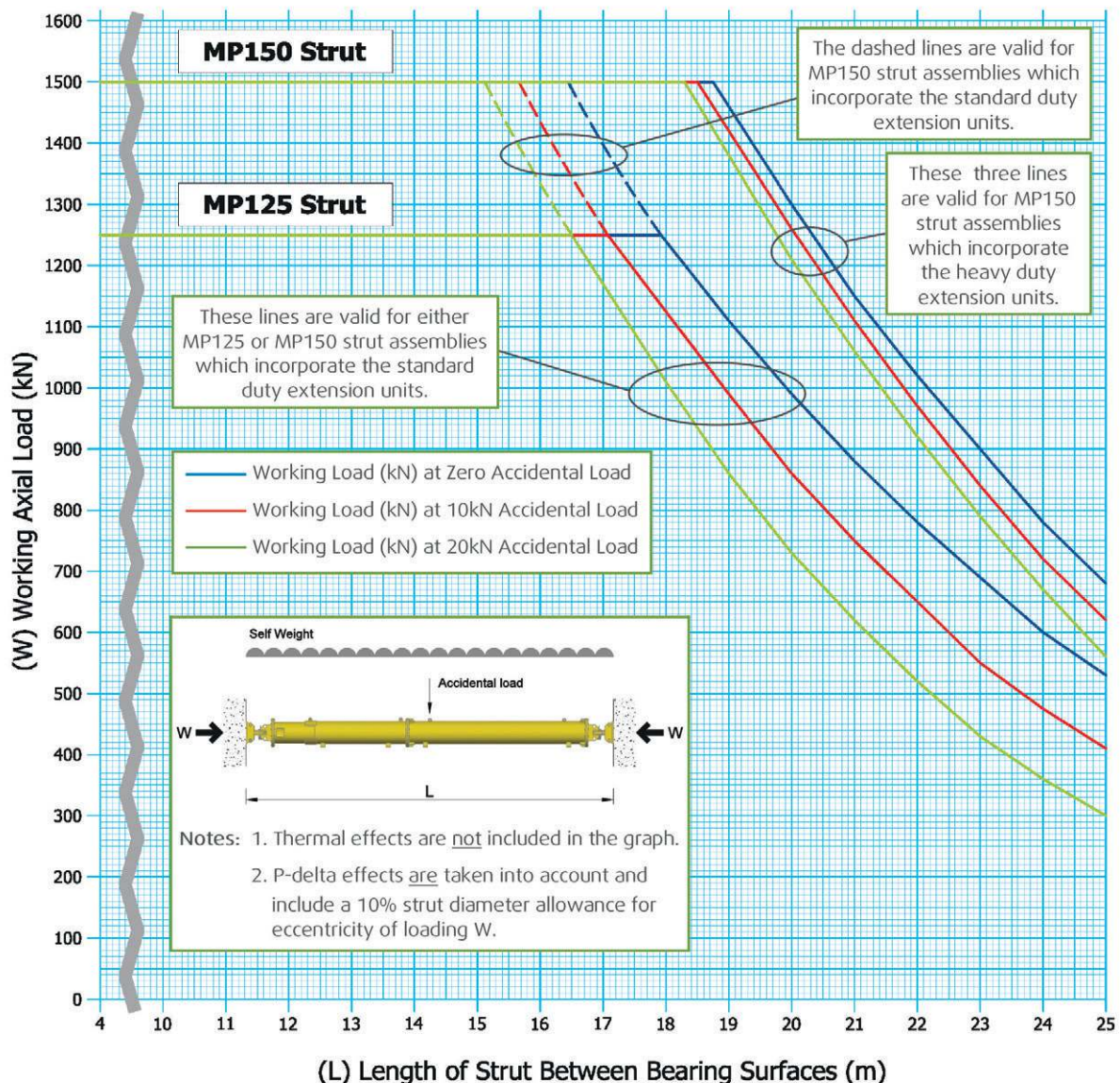
MP125 / 150 Hydraulic Strut - Working Load Chart - refer to section 'i' for more information

The lines on the chart below indicate the maximum working axial strut loading at various spans and includes an allowance for either 0kN, 10kN or 20kN accidental load applied at mid-span (see load effect diagram below). The area under the lines indicate the envelope for a safe solution. It is not considered necessary to account for thermal effects in MP125 / 150 struts when used in the UK and therefore this is not included in this chart. Please refer to section 'i' for more information on load effects on struts.

Explanation: The horizontal Green portion of the lines on the chart indicates the working axial capacity of the strut assembly as limited by the capacity of the hydraulic unit i.e. either 1250kN / 1500kN. The sloping lines indicate a load reduction from this value due to the potential for buckling of the steel tubular extension members. The sloping Green Line represents the working load after taking into account a 20kN mid-span accidental load. The Red Line represents the working load after taking into account a 10kN accidental load. The Blue Line represents the working load without allowing for any accidental loading effects. The blue line must be used with caution and after a full risk analysis.

Notes on applied factors of safety:

The lines on the graph below are expressed in terms of working load limit. These values represent the remaining structural capacity or resistance once allowances have been made for the bending effects induced by self weight, accidental loading, eccentricity and secondary moments (see diagram below and also notes in section 'i'). A minimum global factor of safety of 2.0 has been applied to all hydraulic components in order to determine the overall working axial capacity of the hydraulic ram. Regarding steelwork, structural resistances have been calculated in accordance with BS5950: 2000. A global factor of 1.6 has been applied to ULS values to reduce them to working values.

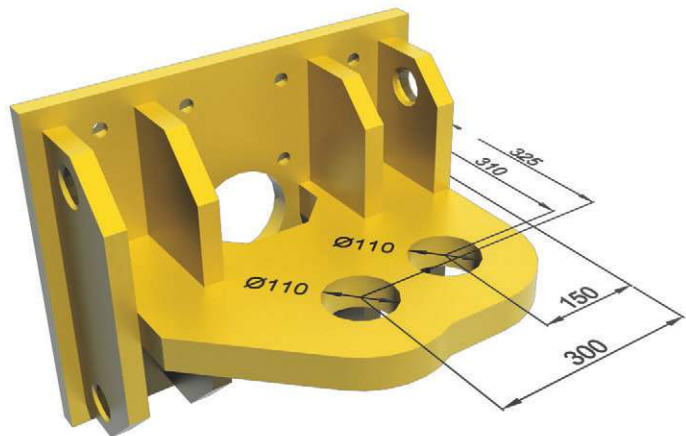
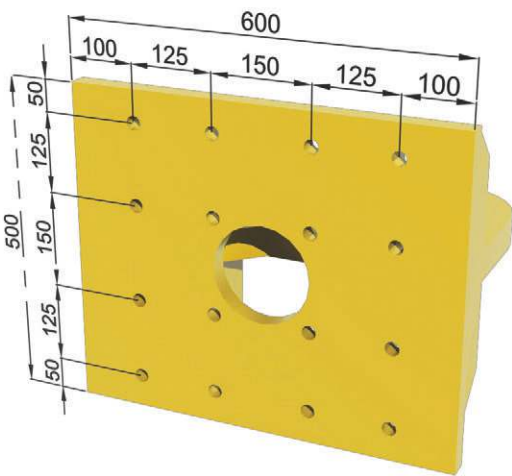


MP125 & 150 Hydraulic Struts

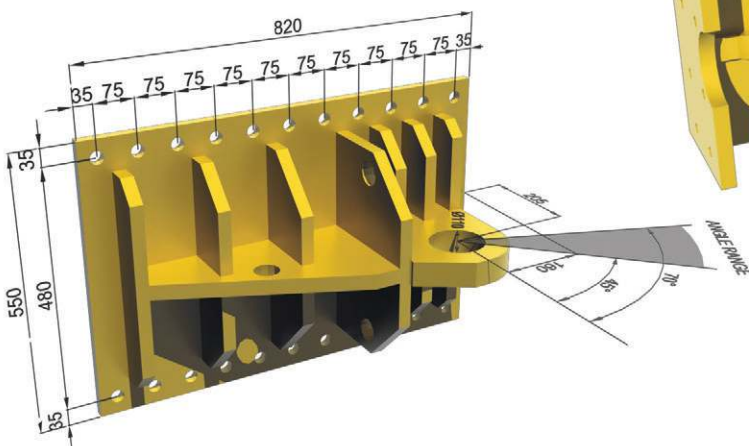
Ancillary Components

End Bearing Plate: The bearing plate has been designed to efficiently distribute load into the waling beam or structure over a stiff bearing length of 600mm up to a maximum inclined thrust angle of 45° to the normal. Up to 25° the central pinhole can be used (depending on direction of the angle) from 25°, up to 45° the offset pinhole is used to ensure that the line of action of the thrust remains through the bearing plate.

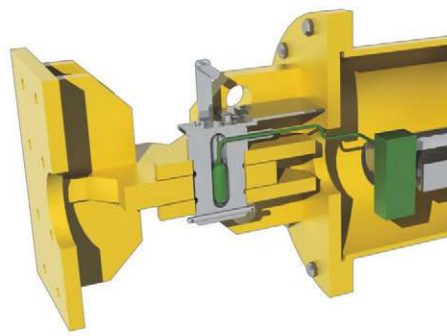
The effective capacity of the strut is also dependant on the local bearing strength of the waling member and/or the shear capacity of the web if a UC section waling beam is used for example. This should be checked as a matter of course. The bearing plate includes several 22mm diameter pre-drilled holes to enable bolted connections to waling members or to attach a cleat attachment plate.



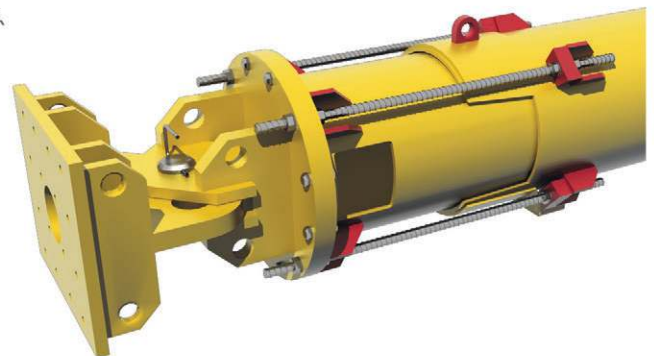
Note: MP125 Bearing Plate has Ø102 holes for Swivel Pin



Multi-Angle End Bearing Plate: For thrust angles greater than 30° to the normal, up to 70°. Or when a raking strut (at an angle shallower than 45°) is bearing onto an existing slab.



Load Pin: Can be used in lieu of the standard swivel pin to monitor real time loads in individual struts. See 5.4.3 or contact the Technical Services Department for more information.



Mechanical isolation (special order only). It is possible to equip certain ram units with locking rods to provide full hydraulic isolation. Contact the Technical Services department for more information.