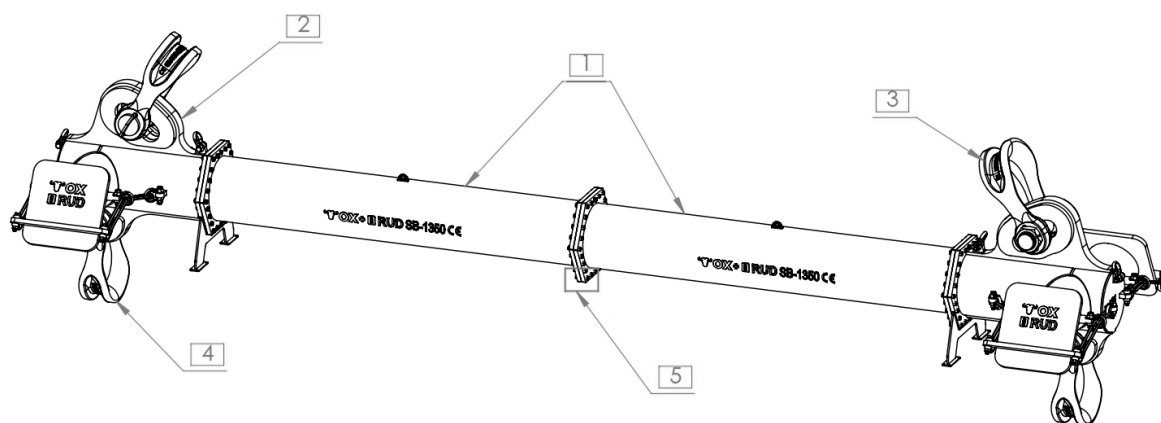


## INTRODUCTION

The OX-DTML-1350 Trunnion End Unit is an end unit that can be assembled to the OX-SB-1350 sections, to form a modular spreader beam for lifting loads from the Spreader Beam OX & RUD modular spreader range. It is capable of lifting configurations of up to 1350t (1,350,000 kg) in different length configurations and top link angles. Never exceed the maximum load or use in an unintended lifting configuration.

## ASSEMBLY

The spreader beam assembly is made up of different elements that can be assembled by means of bolts to form a determined length, finished at the ends by the Trunnion End Unit OX-DTML-1350 and with the intermediate sections assembled in the central part.



| COMPONENT TABLE OX-SB-1350 |              |  |                     |                           |             |
|----------------------------|--------------|--|---------------------|---------------------------|-------------|
| Part                       | Code         | Description                              | Nominal length (mm) | Dimensions L x W x H (mm) | Weight (kg) |
| 1                          | 80221350S050 | Section OX-SB-1350 500mm                 | 500                 | 500 x 1207 x 1048         | 974,8       |
|                            | 80221350S100 | Section OX-SB-1350 1000mm                | 1000                | 1000 x 1207 x 1048        | 1189,3      |
|                            | 80221350S200 | Section OX-SB-1350 2000mm                | 2000                | 2000 x 1207 x 1048        | 1618,4      |
|                            | 80221350S300 | Section OX-SB-1350 3000mm                | 3000                | 3000 x 1207 x 1048        | 2047,4      |
|                            | 80221350S400 | Section OX-SB-1350 4000mm                | 4000                | 4000 x 1207 x 1048        | 2476,5      |
|                            | 80221350S500 | Section OX-SB-1350 5000mm                | 5000                | 5000 x 1207 x 1048        | 2905,5      |
|                            | 80221350S600 | Section OX-SB-1350 6000mm                | 6000                | 6000 x 1207 x 1048        | 3334,6      |
| 2                          | 80221350N    | Trunnion End Unit OX-DTML-1350 1500mm    | 1500                | 2150 x 3200 x 2130        | 8750        |
| 3                          |              | 800t Wide body shackle (top) (A) (B)     | Variable*           | -                         | -           |
| 4                          |              | 700t Wide body shackle (bottom) (A) (B)  | Variable*           | -                         | -           |
| 5                          |              | SCREWS 14399 HV HOT DIP GALV. - 10.9 (C) |                     | M27 x 150                 | -           |


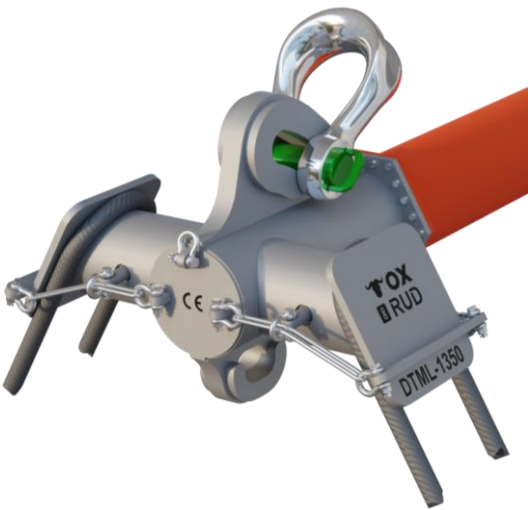

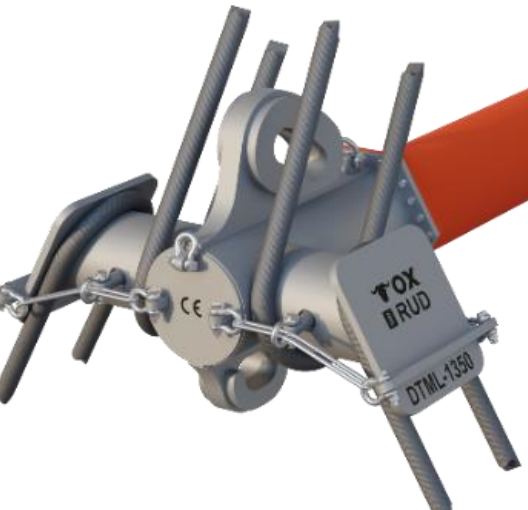


(A) OX & RUD RECOMMENDS BOW SAFETY PIN SHACKLES. (OR WIDE BODY WHEN INDICATED)  
 (B) ALWAYS CONSIDER A POSSIBLE (BENDING) LOSS OF CAPACITY BETWEEN THE SLINGS AND SHACKLES, EVEN IF THEY'RE WIDE BODY SHACKLES.  
 (C) TIGHTENING TORQUE FOR SCREWS: 300 NM. NEVER EXCEED THAT TIGHTENING TORQUE. SPANNER SIZE 46MM  
 \* VARIABLE LENGTH ACCORDING TO THE CHOSEN BRAND AND MODEL.

## GENERAL DESCRIPTION

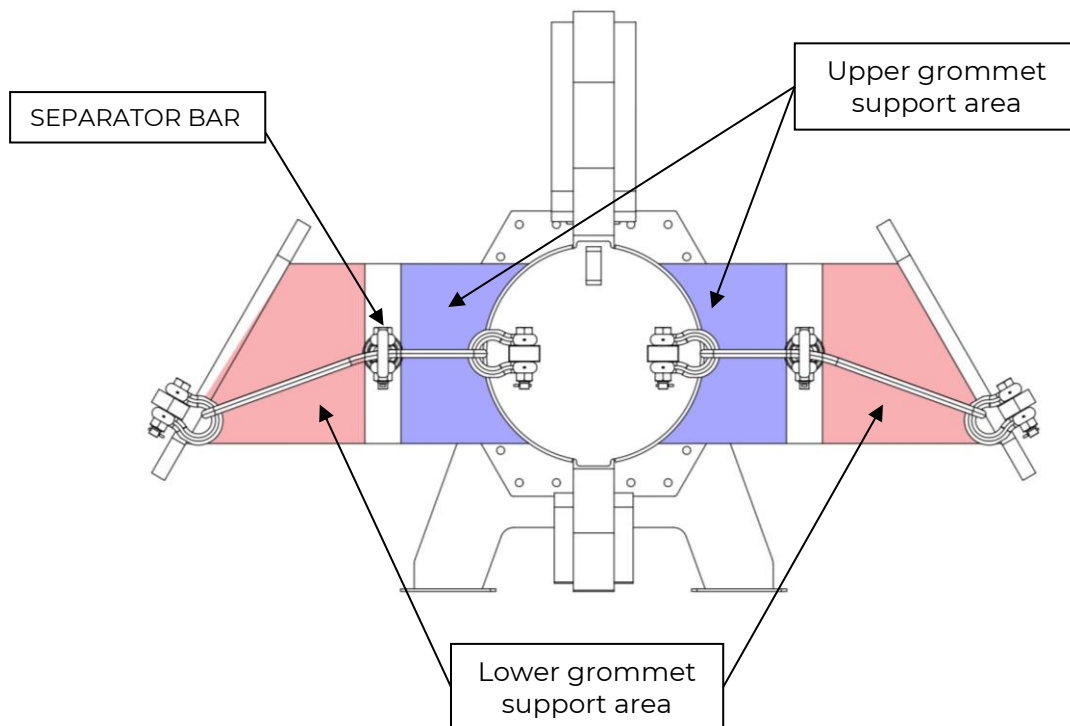
The Trunnion End Unit DTML is a bi-modal attachment system, i.e. it can be used both with shackles and with lifting slings or grommets, both in the upper and in the lower attachment.

Lifting by means of Trunnion End Unit DTML can be carried out in the following ways:

| SHACKLE AT THE TOP &<br>AND SHACKLE AT THE BOTTOM                                   | SHACKLE AT THE TOP &<br>AND GROMMETS AT THE BOTTOM                                   |
|---|--|
|   |   |
| GROMMETS AT THE TOP &<br>AND SHACKLE AT THE BOTTOM                                  | GROMMETS AT THE TOP &<br>AND GROMMETS AT THE BOTTOM                                  |
|  |  |

## SPECIFIC DESCRIPTION:

The DTML Trunnion End Unit has a transversal TRUNNION TUBE where the grommets are placed to lift the assembly. On each side of the TRUNNION BAR, there is a SEPARATOR BAR that limits the working position of the grommets and separates the support areas of the upper grommet from the support area of the lower grommet. This prevents the slipping of the grommets and the overlapping of one over the other.



**NOTE: IF THE LIFTING PROCESS IS CARRIED OUT THROUGH THE USE OF GROMMETS, IT IS ESSENTIAL THAT, IN THE GROMMETS' PRE-TENSIONING PROCESS, THE GROMMETS MUST BE PLACED AGAINST THE STOP POSITION, WHETHER THAT STOP POSITION IS THE SEPARATOR BAR OR THE SIDE COVER OR THE CENTRAL BODY OF THE TRUNNION END UNIT DTML.**



**IMPORTANT NOTE: BEFORE LIFTING, A PRE-TENSIONING PROCESS MUST BE MADE (RAISING THE ASSEMBLY ONLY A FEW CENTIMETRES OFF THE GROUND) SO THAT THE ACCESSORIES CAN BE CORRECTLY ALIGNED BEFORE THE LOAD IS LIFTED.**

In addition, an ENDLESS SAFETY SLING is incorporated (accessories supplied separately), attached to the SEPARATOR BAR, the MAIN BODY and the SIDE COVER by means of shackles (accessories supplied separately), on both sides of the TRUNNION TUBE, i.e. four equal sets of SAFETY SLINGS. This element prevents the grommet from accidentally slipping out of the TRUNNION TUBE, performing the function of a safety latch on a lifting hook.



**IMPORTANT NOTE: ALWAYS USE THE SEPARATOR BAR TOGETHER WITH THE SHACKLES AND ENDLESS SAFETY SLING. ALWAYS MAKE SURE BEFORE EACH LIFT THAT THE SHACKLES OF THE SAFETY SYSTEM ARE CORRECTLY TIGHTENED AND THAT THE SAFETY SLINGS ARE CORRECTLY POSITIONED.**



**IMPORTANT NOTE: IT IS RECOMMENDED TO USE THE SAME TYPE OF MATERIAL FOR LIFTING GROMMETS AND ENDLESS SAFETY SLINGS. FOR EXAMPLE, IF THE LIFTING GROMMETS ARE MADE OF STEEL, THE SAFETY ENDLESS SLINGS ARE ALSO MADE OF STEEL. IF THE LIFTING GROMMETS ARE TEXTILE SLINGS, THE ENDLESS SAFETY SLINGS ARE ALSO TEXTILE.**

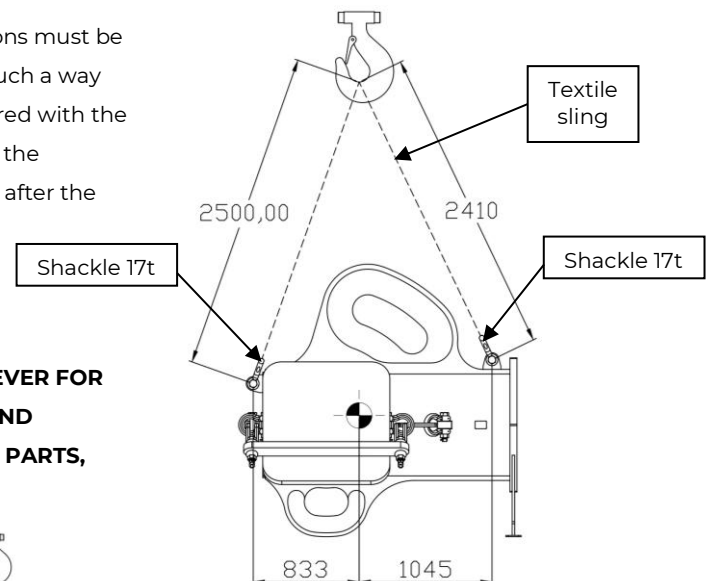
## TRANSPORTING AND STORAGE

When leaving the factory, the device is usually supplied disassembled (unless otherwise expressly indicated) in a stable position and duly packaged and protected in units that can be handled by crane and, preferably, it must be transported in vehicles or containers with removable roofs and unloaded by crane.

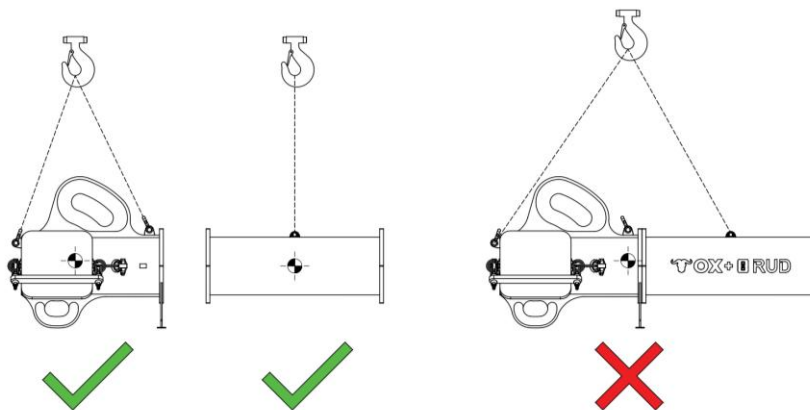
The Trunnion DTML End Unit has integrated support legs which are designed only to facilitate assembly, not to support the loads of lashing and transport. A specific transport cradle must be used to transport the Trunnion DTML End Unit.

In the case of individual handling by crane, the individual parts should preferably be lifted by the lifting points provided for lifting so that they can be handled in a horizontal position. Textile slings must always be used to avoid damaging painted areas. For this reason, the Trunnion End Unit DTML has two lifting points using 17t shackles (the same shackles as those used on the Safety Slings), so that it can be handled by means of two-leg textile slings.

The DTML Trunnion End Unit and OX-SB Spreader Beams Sections must be lifted correctly in compliance with all safety regulations and in such a way that the centre of gravity of the DTML Trunnion End Unit is centred with the crane hook. In addition, the load must be completely horizontal: the maximum permissible angle of inclination is 6° to the horizontal after the load has been lifted. If the angle is greater than this, the lifting configuration must be changed.



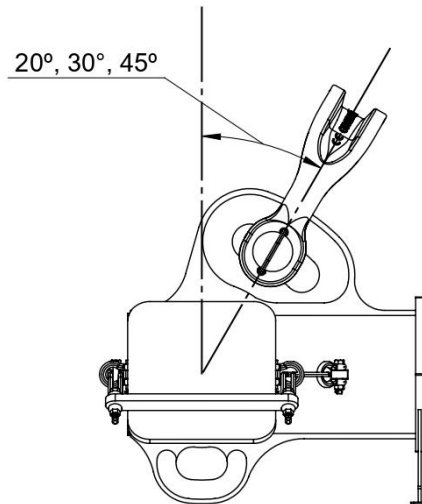
**NOTE: LIFTING POINTS ARE ONLY FOR HANDLING, NEVER FOR LOADING. THE ATTACHMENTS OF THE TRUNNIONS AND SECTIONS ARE FOR INDIVIDUAL HANDLING OF EACH OF THE PARTS, NEVER FOR LIFTING AS AN ASSEMBLED UNIT.**



## LIFTING CONFIGURATION

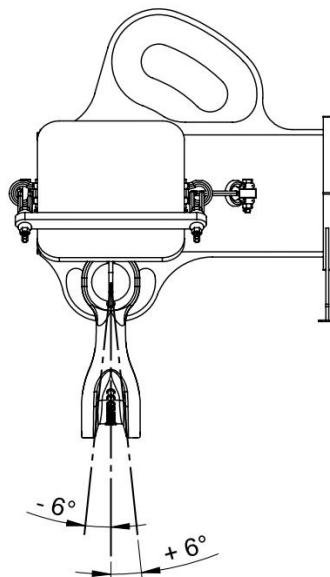
The maximum capacity of the Spreader Beam depends on the length of the assembly and the working angle of the top slings. The top slings can work at 20°, 30° or 45° to the vertical. Under no circumstances is it permitted to work at an angle greater than 45° to the vertical.

### SHACKLE AT THE TOP



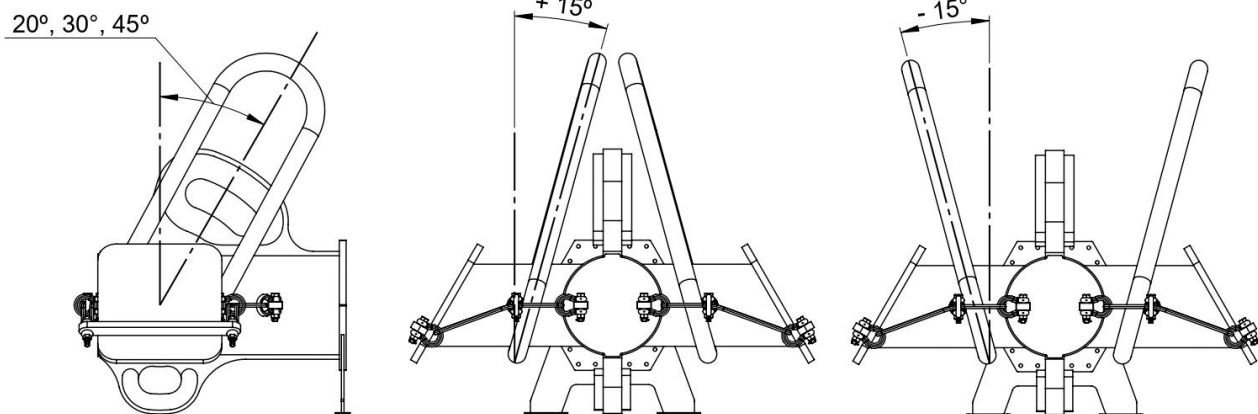
If a shackle is used at the top of the OX-DTML, the upper sling-leg can work at an angle of 20°, 30° or 45°.

### SHACKLE AT THE BOTTOM



If a shackle is used at the bottom of the OX-DTML, the lower sling-leg may not be offset by more than +/- 6° from the vertical.

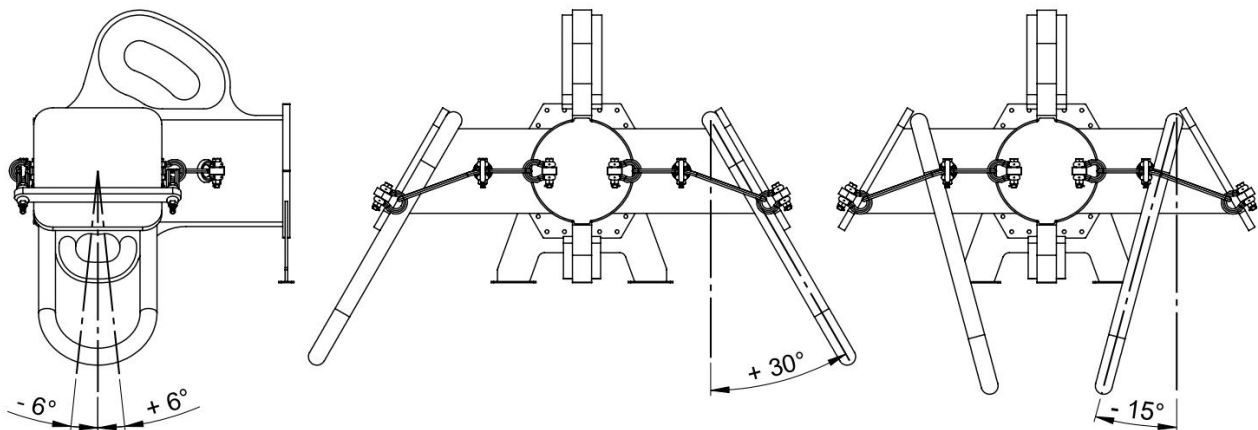
### GROMMETS AT THE TOP



If the top grommet is used on the OX-DTML Trunnion Tube:

- In the longitudinal axis, the grommet can work at an angle of 20°, 30° or 45°.
- In the transverse axis, the grommet may not be offset by more than  $\pm 15^\circ$  from the vertical.

### GROMMETS AT THE BOTTOM



If a bottom grommet is used on the OX-DTML Trunnion Tube:

- In the longitudinal axis, the grommet may not be offset by more than  $\pm 6^\circ$  from the vertical.
- In the transverse axis, the grommet may not be deviated by more than  $+30^\circ/-15^\circ$  from the vertical.



## IMPORTANT NOTES

1. There is a table to determine the maximum capacity at a certain length and at a working angle of **20, 30 or 45°**. In no case is it allowed to work with angles greater than 45° with respect to the vertical.
2. The **bottom slings** may not deviate +/- 6° from the vertical or what is equivalent to 96°/84° with respect to the axis of the spreader.
3. The centre of mass or centre of gravity of the load must be aligned with respect to the crane hook, being able to lift loads horizontally.
4. In the case of handling loads with an offset centre of gravity, the **spreader is used asymmetrically**, i.e. the terminals on both sides receive different loads. In this case, the described working angles may not be exceeded, and the spreader may not be used with the maximum rated load. The load on the individual terminals must be calculated according to the lever law: *Length right side x Load right = Length left side x Load left*, whereby the total load is the sum of both sides. The result of the highest load must not exceed half the rated load of the model in any case, or the angle of the lifting configuration or even the section model must be changed.
5. It is very important to **maintain a clearance between the sling and the End Unit**, as well as to leave space between the modular lifting beam and the load, since under load they can suffer elastic deformation and reach and rub against each other, crush or even collapse.

## GENERAL CONDITIONS

- The longest sections should be placed in the centre of the set.
- **A maximum of 7 intermediate sections can be placed for each set (without considering the End Units).**
- Trunnion End Unit OX-DTML (Not DNV certified).
- The lower slings can work up to a maximum of 6° from the vertical in both directions
- Check that there is always space between the end of the sling and the Trunnion End Unit DTML. (Clearance)
- Leave space between the Spreader Beam and the load.

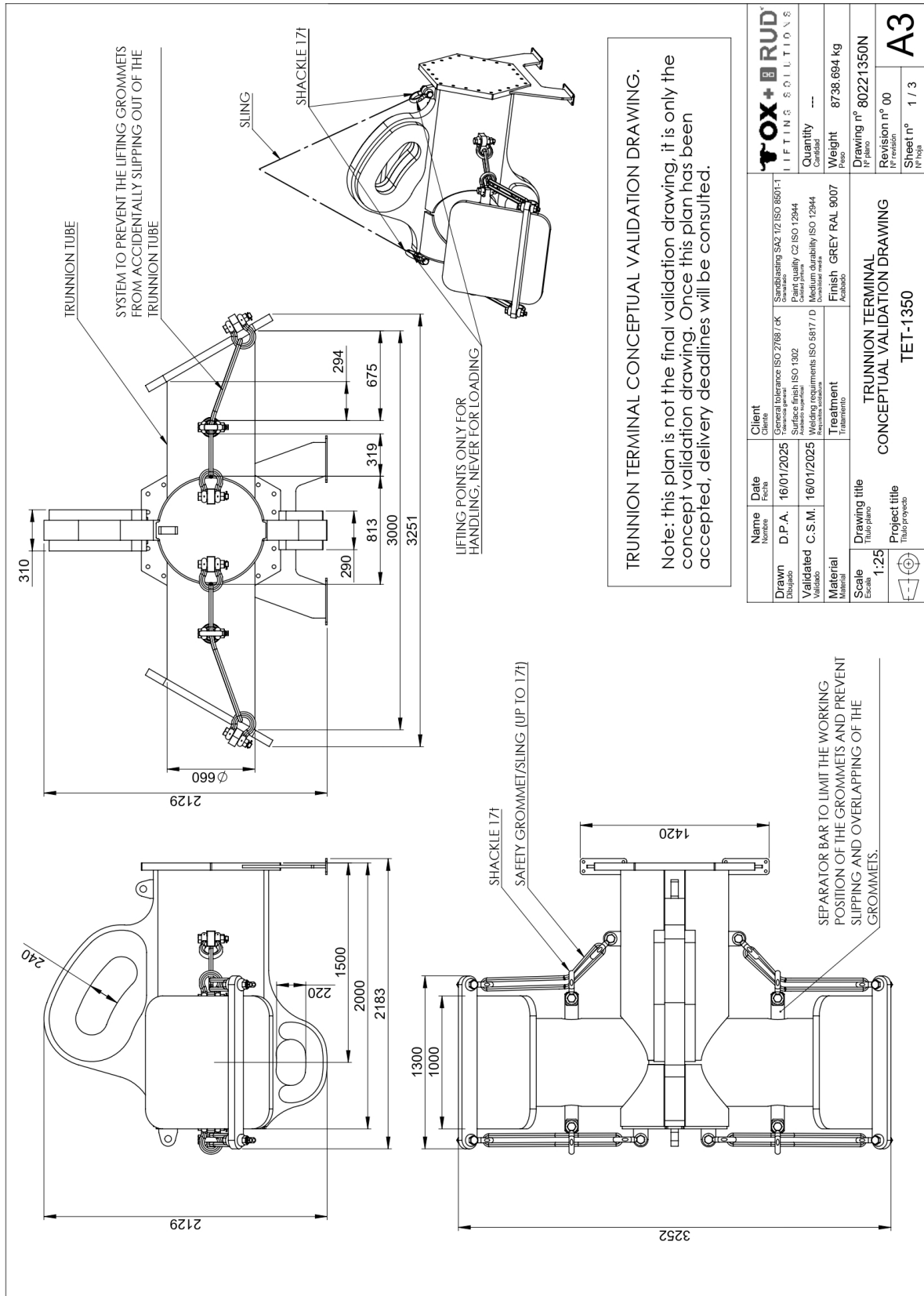
## CAPACITY TABLE

### OX-SB-1350

| SPAN (m)    | 3-18 | 19   | 20   | 21   | 22   | 23   | 24   | 25   | 26   | 27   | 28   | 29   | 30   | 31   | 32   | 33  | 34  | 35  | 36  |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|
| 45° WLL (t) | 1120 | 1050 | 1000 | 940  | 870  | 820  | 760  | 710  | 660  | 610  | 570  | 530  | 485  | 440  | 395  | 360 | 320 | 300 | 270 |
| 30° WLL (t) | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1310 | 1220 | 1140 | 1050 | 985  | 915  | 835  | 760  | 680  | 620 | 550 | 510 | 465 |
| 20° WLL (t) | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1320 | 1205 | 1080 | 980 | 870 | 820 | 740 |



## MAIN DIMENSIONS





## ACCESSORIES

The DTML-1350 End Unit must be fitted with a set of accessories essential for its correct use and handling.

The shackles and endless slings that make up the safety set to prevent the grommets from accidentally slipping out, are mandatory and must be supplied by the customer (accessories not included).

The slings for handling the DTML-1350 End Unit must be supplied by the customer (accessories not included). The use of textile slings is recommended so as not to damage the paint finish of the assembly.

You can contact the OX&RUD sales team to request a quotation for the supply of these accessories.

| Accessory N°. | Description   | Qty.     |
|---------------|---|----------|
| 1             | Standard Shackle 17t  | 14 units |
| 2             | Safety Endless sling Length=1200mm  | 4 units  |
| 3             | Two-strand textile sling with:<br>- Length of the first strand = 2500mm<br>- Length of the second strand = 2410mm | 1 unit   |

