



# Technical Manual

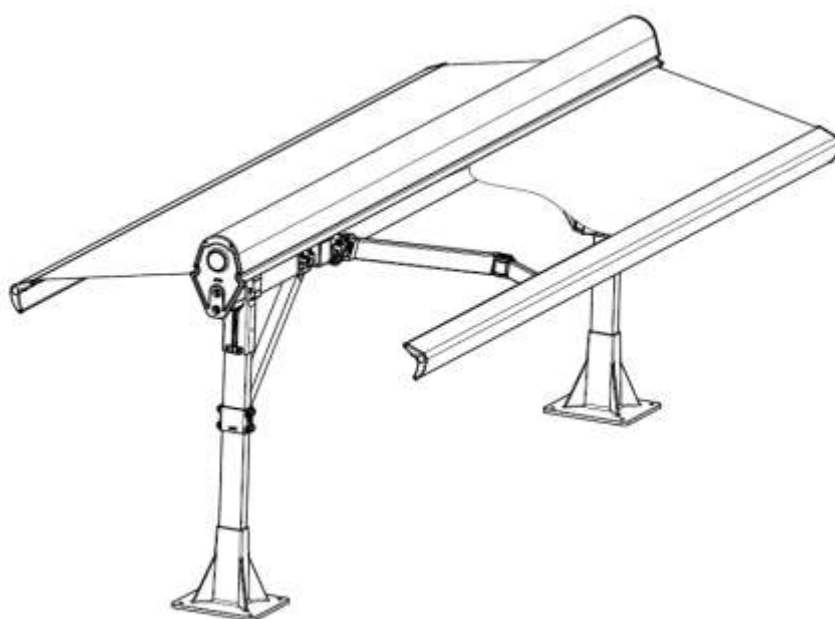
# **DUOX**





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## Descriptive specifications

### 1. GENERAL CHARACTERISTICS

The DUOX double awning brings together a variety of characteristics that make it ideal for use in areas where there are no walls, ceilings, or other surfaces available to support it.

This need usually arises when a customer would like to install a sun protection system in an area free of any buildings (gardens, terraces, parks, paved areas, etc).

The system consists of a structure that sustains an articulated sun protection assembly, which extends to both sides in unison.

The fabric that serves as the screening element is rolled onto a single tube.

The system consists of a unique self-bearing component, with three distinct suspension systems.

### 2. DESCRIPTION OF THE SYSTEM

The "DUOX" system is based on the conjunction and adaptation of a set of profiles, assembly pieces, articulated arms with internal elongation springs, and the options available for generating rotational movement (gearbox or motor). All of these components, together with acrylic or high-tech fabric, are required for the installation and operation of the system.

This product has been designed considering the requirements and demands it will be subjected to while being used for its intended purpose.

In order to create a product that will best meet the needs of the most customers, two intrinsic requirements must be taken into account when designing a system like this:

- ◆ Dimensions
- ◆ Exposure to the elements (sun, wind, rain)

These needs must take precedence when choosing a system.

The relationship between these factors, and the need to compete with other awning models, means the materials chosen in the manufacture of this product have taken on vital importance.

The set of profiles which hold up the support components of the sun protection system are made of treated, cold-formed steel, with a lacquer finish.

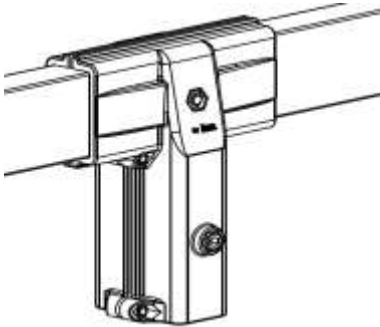
The components of the structure that holds the sun protection system itself are made of lacquer-finished aluminium.

The bases for the support posts and the rest of the pieces that make up the structure and the system are also made from lacquered aluminium.

Other materials have been selected for pieces that have a purpose other than for structure and support, such as the decorative caps and covers for the profiles, etc. High-tech plastics have been chosen for these components, which feature levels of strength and technical inalterability that exceed the values required by current applicable standards.

## Descriptive specifications

### 3. DESCRIPTION OF THE PARTS THAT MAKE UP THE DUOX AWNING



Cold-formed steel has been selected for the posts in the support structure. These are quadrangular bars measuring 80x40x2 millimetres.

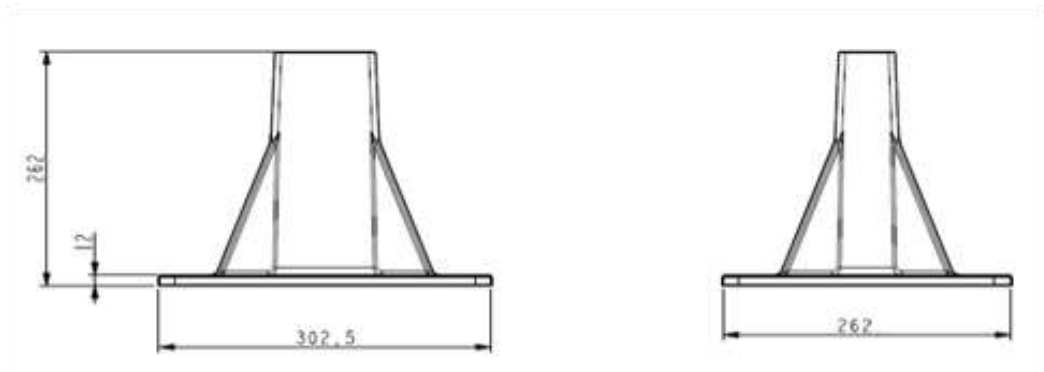
The crossbar located on the top, which has the cassette support side brackets attached to its ends, is positioned in a distinctive manner (see drawing).

This system achieves the best results in terms of resistance to traction and sagging.

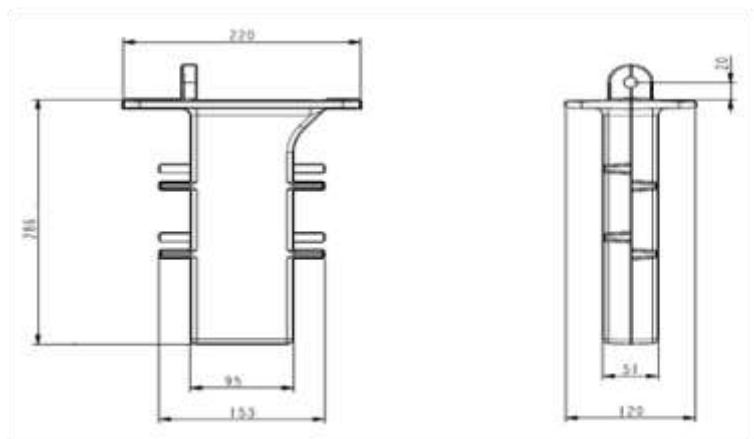
The joining piece for these components is made of aluminium and positioned like a T joint, with both profiles then drilled all the way through to allow pass-through bolts to keep this connection completely immobile despite any forces acting directly upon the system.

There are three options for the bases that sustain the structure, which are manufactured in aluminium by the casting or gravity system:

Square base bolted to the ground:

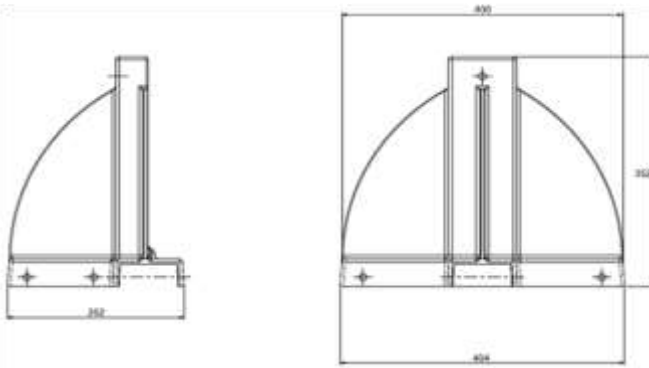


Base set into the ground:



## Descriptive specifications

On-the-surface base for an independent structure:



The use of **this last type** of base requires the complementary use of two tubes as extensions, made with the same materials and dimensions as those used for the structure, in order to obtain a base that is a total of 2 metres long in the direction perpendicular to the awning, and 6 metres long in the parallel direction. A 110-kg counterweight must be placed on each of these extensions, with a total of 4 of these units per awning (weight calculated based on the maximum admissible measurements for the DUOX model awning).

The acrylic or high-tech fabric offers superior sun protection, and extends and retracts by rolling on a steel tube.

This tube is anchored on two side brackets that attach to the ends of the upper horizontal support tube for the structure. It is attached using an internal clamp that prevents the need to drill into the profile.

The rotational motion applied to the rolling tube when extending or retracting the fabric is activated by means of a gearbox with a 1:5 ratio, which is accompanied by a tubular compensation spring. Motion is applied by either a manual crank or an electric motor located inside one end of the rolling tube.

The other end of the rolling tube turns on a ball-bearing system that ensures technically calculated support so the system operates smoothly and perfectly every time.

The extension of the fabric relies on structures attached to both sides, consisting of articulated ART-System arms and the corresponding drop bar profiles.

The ART-System arms themselves consist of profiles with an internal tensioning system that uses an elongation mechanism, with transmission of the longitudinal difference by means of a patented flexible tape system. This ensures that the product performs well above the applicable European EN 13561 standard.

When used properly, the ART-System arms will exceed 60,000 operational cycles. Also, the appropriate angular calculations for their components prevent them from rubbing against the fabric during the entire extension-retraction process.



The arms are attached to the front structural profile using a double monobloc-type bracket. The way it is attached to this bar allows the position of the arms to be varied anywhere along the bar's length, without any need for drilling.

Careful design of its adjustment components allows the system to be inclined between 0° and 20°, with this angle being completely locked in. This prevents the sun protection system from being lifted upwards by convective wind forces.

## Descriptive specifications

The maximum dimensions for the installation with motorised operation can be up to 6 metres in width by 3 metres of projection on each side of the unit (36 m<sup>2</sup> total). For systems using the gearbox and crank, the maximum width is 5 metres and the maximum projection is 2.5 metres on each side of the unit (25 m<sup>2</sup> total).

## 4. FINAL CONSIDERATIONS

- Our manufacturing processes and corresponding management controls have allowed us to be granted ISO 9001 certification for design and manufacturing.
- Our compliance with the requirements of the European EN 13561 standard allows us to issue the Statement of Conformity for the CE marking.
- Application of the conditions required by EAA/Qualicoat standards allow us to offer a 3-year guarantee on lacquer finishes.

## 5. COMPONENT SPECIFICATIONS

GEOMETRIC PROPERTIES			
	Geometry	Section (mm <sup>2</sup> )	Mt (cm <sup>4</sup> )
<b>Structure</b>			
<b>Structural components</b>	-	-	-
<b>Bases</b>	-	-	-
<b>Structural profile</b>	80x40x2	454	lxx = 37.4 lyy = 12.7
<b>Fabric cassette gate profile</b>	-	1460,6	lxx = 371.4 lyy = 551.6
<b>Front drop bar profile</b>	-	506	lxx = 40.87 lyy = 37.62
<b>ART-350 model arms</b>			
<b>Structural components</b>	-	-	-
<b>Front aluminium profile</b>	-	305	lxx = 3.85 lyy = 10.44
<b>Rear aluminium profile</b>	-	514	lxx = 9.86 lyy = 27.04

MECHANICAL CHARACTERISTICS						
	Process	Desig. Material	A	B	C	D
<b>Structure</b>						
<b>Components</b>	Pressure moulding	Aluminium	180	90	2.5	55
<b>Bases</b>	Sand moulding	Aluminium	80	140	2	55
<b>Structural profile</b>	Cold-formed tube	Steel	470	355	20	-
<b>Cassette fabric gate profile</b>	Extrusion	Aluminium	175	130	6	-
<b>Front drop bar profile</b>	Extrusion	Aluminium	175	130	6	-
<b>ART-350 model arms</b>						
<b>Components</b>	Pressure moulding	Aluminium	180	90	2.5	55
<b>Front aluminium profile</b>	Extrusion	Aluminium	175	130	6	-
<b>Rear aluminium profile</b>	Extrusion	Aluminium	270	225	6	-



## Descriptive specifications

DESCRIPTION		
<b>A</b>	Resistance to traction	Rm (Mpa)
<b>B</b>	Elastic limit	Rp 0.2 (Mpa)
<b>C</b>	Elongation	A50 mm (%)
<b>D</b>	Brinell Hardness	HBS

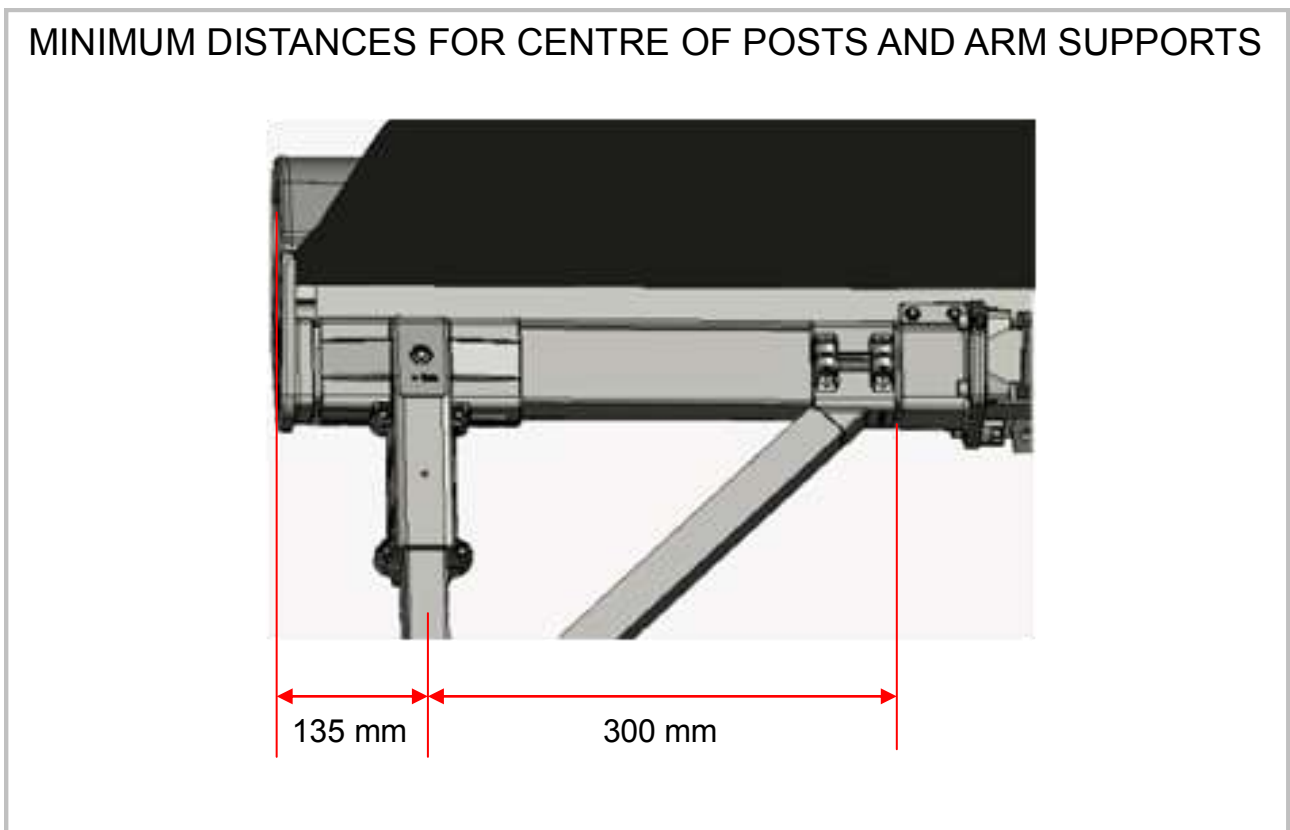
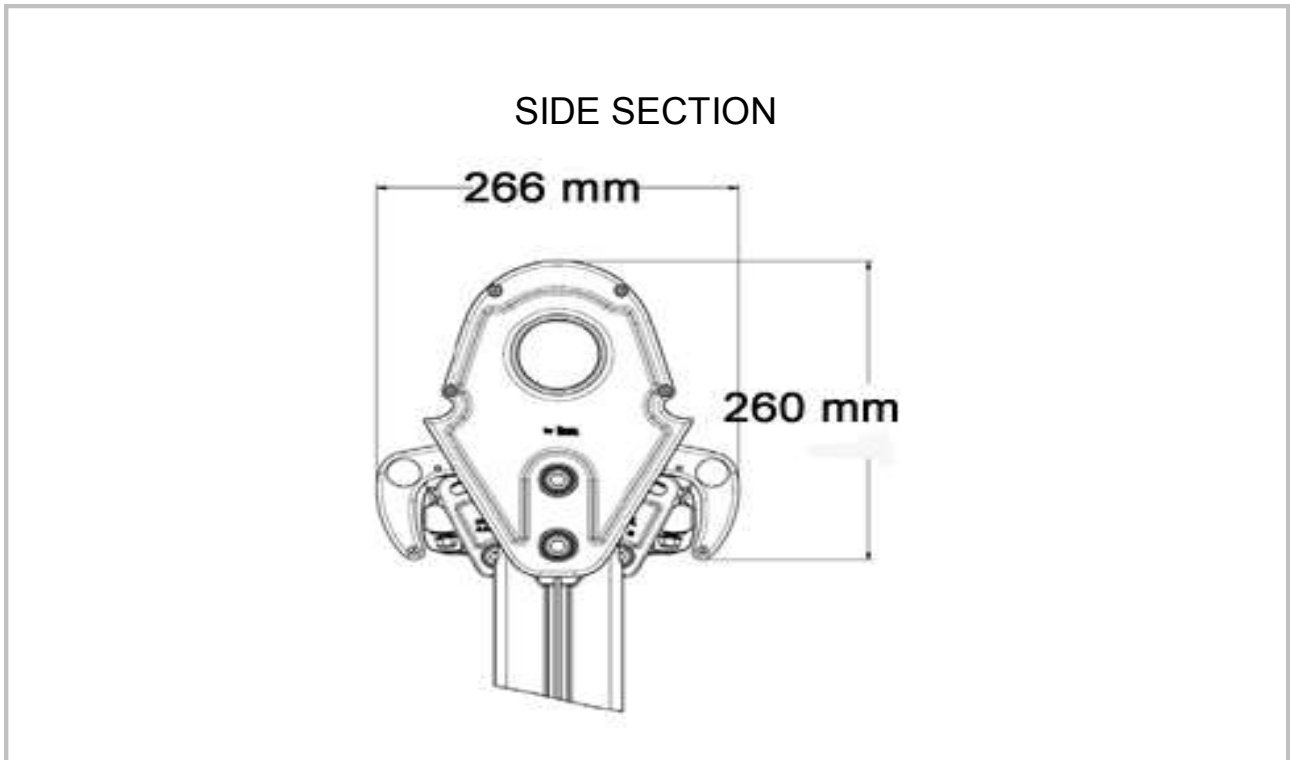
## Cutting, selection, and classification tables

ASSEMBLY ALLOWANCES				
	TEXPRO		Without TEXPRO	
	SOMFY MOT.	MR-5 GEAR-BOX	SOMFY MOT.	MR-5 GEAR-BOX
<b>TUBE Fe 80x40</b>	W-60	W-60	W-60	W-60
<b>CASSETTE HOUSING</b>	W-36	W-36	-----	-----
<b>ROLLING TUBE, Ø80</b>	W-82	W-98	W-82	W-98
<b>FRONT PROFILE</b>	W-92	W-98	W-92	W-98
<b>FABRIC</b>	W-107	W-113	W-107	W-113
<b>Tube for 40x40 diagonal brace</b>	Profile cutting, minimum 270 mm (cut at 90°)			

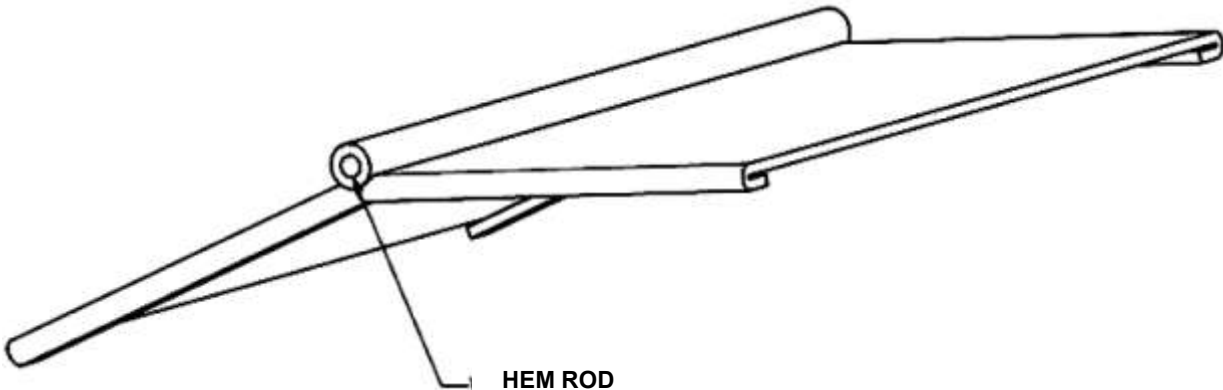
MOTOR SELECTION TABLE							
	ARM PROJECTION						
	150	175	200	225	250	275	300
<b>80 mm TUBE and 4 ARMS</b>	85 Nm / 17 r.p.m.			100 Nm / 12 r.p.m.			

MINIMUM WIDTHS FOR DOUBLE AWNING	
PROJECTION	Number of arms 2
<b>125</b>	255
<b>150</b>	280
<b>175</b>	305
<b>200</b>	330
<b>225</b>	355
<b>250</b>	388
<b>275</b>	405
<b>300</b>	430

Annotated cross-sectional diagrams



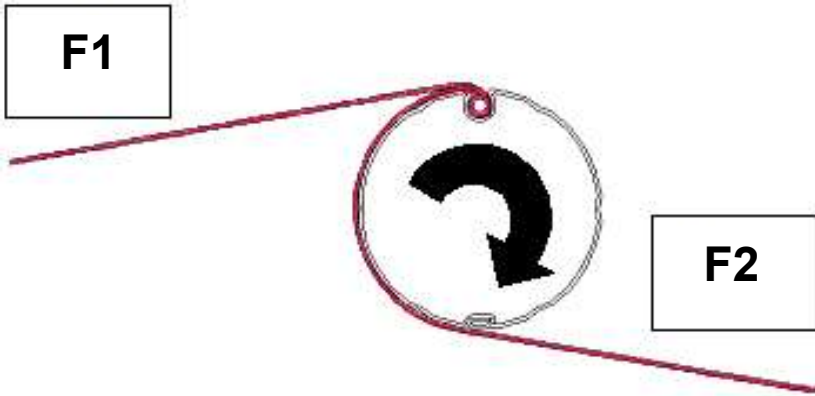

## Cutting and preparation of the fabric



**HEM ROD**

The opening for the hem rod must be made on the upper side of the fabric, and the side folds must be made towards the bottom (the part visible from below the awning).

Ensure that the motor's direction of rotation coincides with that in the drawing.



**F1**

**F2**

The F1 fabric corresponds to the side with the shorter projection. It rolls on top of the F2 fabric, which has the longer projection and rolls underneath the F1.

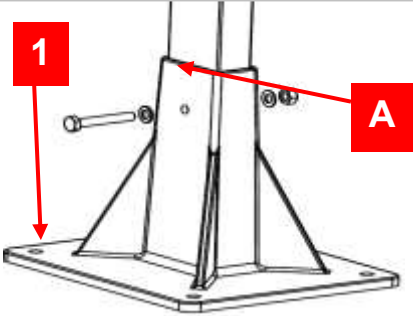
When the awning is installed with the TEXPRO profile, the difference in length for the projections is between 60 and 70 millimetres, depending on the thickness of the fabric used.

When the awning is installed without the TEXPRO profile, the difference in projection lengths is more variable, and depends on the projection of the arm used and the inclination of the system.

**SYMMETRY**  
The length and inclination of the arms must be equal on both sides.

## Assembly instructions

### 1. ASSEMBLING THE STRUCTURE

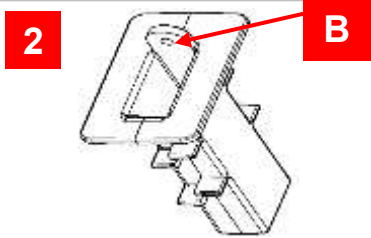


**1**

**A**

Insert the 80x40 steel posts into the bases, and attach them by putting the M10 pass-through bolts **(A)** through the holes drilled in the bases for this purpose.

Anchor the base to the ground with appropriate bolts through the holes **(1)** provided for this purpose in this model of base.

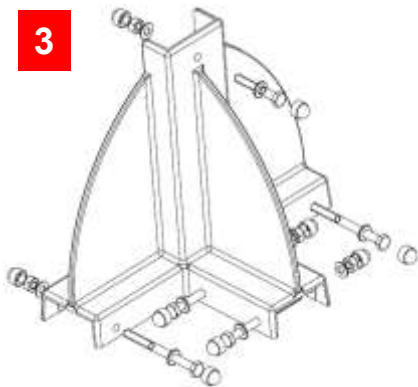


**2**

**B**

Bases set into the ground **(2)** can also be used, with the posts being attached to the tab **(B)** that projects from the base.

**It is important to attach the post to the base in this way, in order to prevent the entire structure from being lifted up by the wind.**

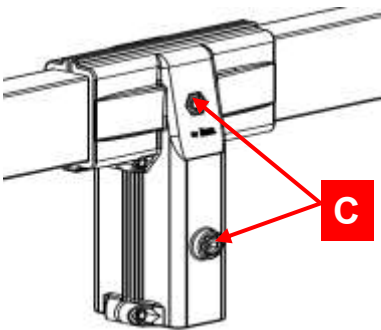


**3**

There is also a third option **(3)**. This is an on-the-surface base that allows the awning to be installed in an entirely free-standing manner.

This base has attachment points where extensions of the contact surface must be attached. These are long 80x40 tubes that must extend a minimum of 1 metre to each side, and with one transversely oriented tube of 600 millimetres.

It is recommended that for the maximum awning measurements of 6,000x3,000+3,000 mm, a weight of 110 kilos be placed on each tube (440 kilos total for the structure).



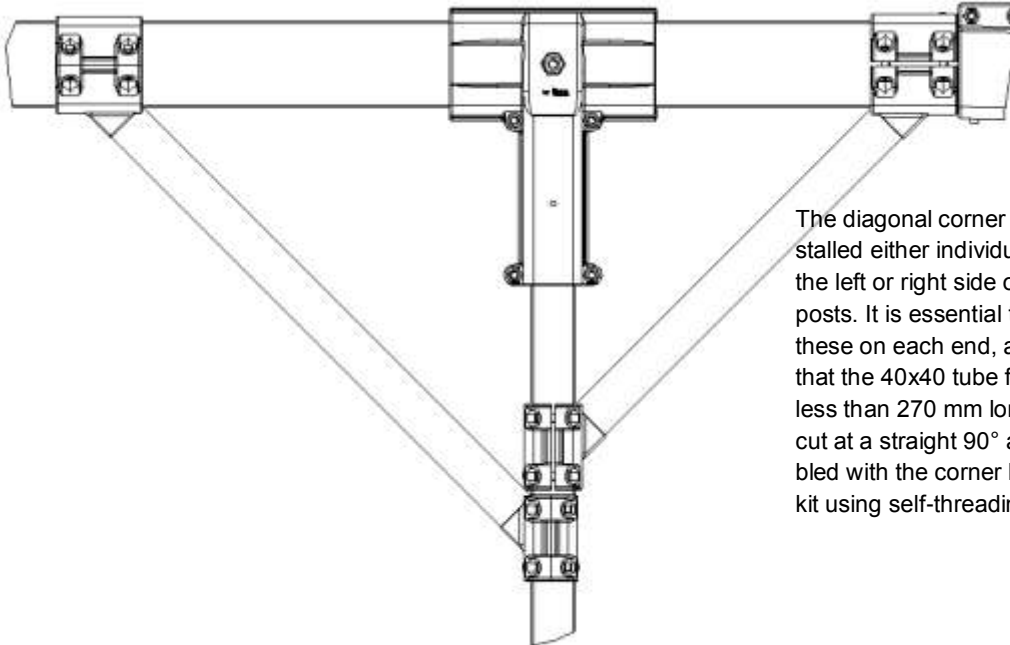
**C**

Place the T joint bracket on the upper end of each post and use a 5-mm drill bit to make a mark through each of the holes **(C)**.

Then remove the T joint bracket and drill a hole at both marked points using a 15-mm drill bit. This allows for precise location of both anchorage points.

Next, position the structure's upper horizontal crossbar, and attach the two sides of the T joint piece using the bolts supplied for this purpose **(M8x25)**. Once attached, insert the pass-through bolts **(M10x60)** through the holes **(C)** and tighten them.

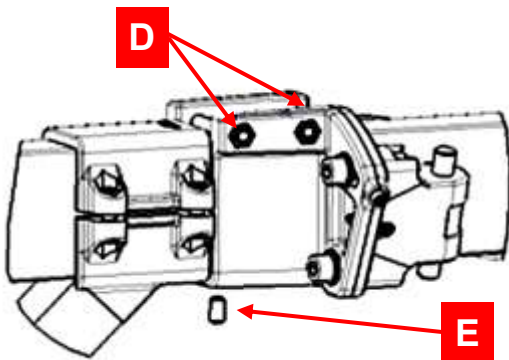
## Assembly instructions



The diagonal corner braces can be installed either individually or together on the left or right side of the structure's posts. It is essential to install one of these on each end, and to make sure that the 40x40 tube for these is never less than 270 mm long. These tubes are cut at a straight 90° angle, and assembled with the corner brace attachment kit using self-threading bolts or rivets.

The pieces that make up the kit have different shapes to adapt to the position of the structure's tubes, as they both (posts and crossbars) are positioned with different orientations. To attach the assembly, use the bolts provided for this purpose (M8x25).

## 2. ASSEMBLY OF THE ARM BRACKETS



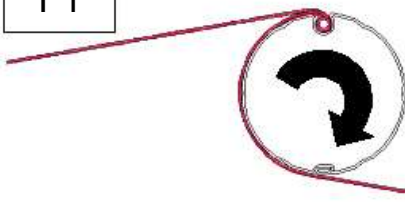
Attach the arm brackets for both sides on each end to the inside of the diagonal braces. These arm brackets must never be outside of the diagonal brace or the T joint, as these would cause the arm to jam when closing.

At first, do not tighten the (M8x70) bolts **(D)**. First, adjust the bracket using the lower stud **(E)** (M8x15), which allows for initial adjustment of the level of the arm joint once the arm is positioned. Then tighten the bolts **(D)** well.

## Assembly instructions

### 3. ASSEMBLY OF THE ROLLING TUBE, FABRIC, AND SUPPORTS

F1

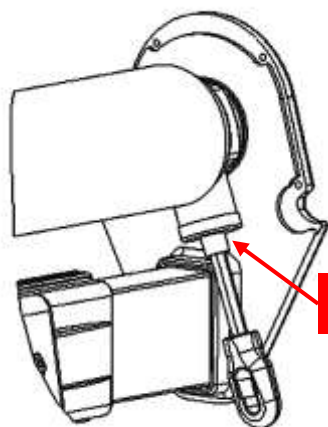
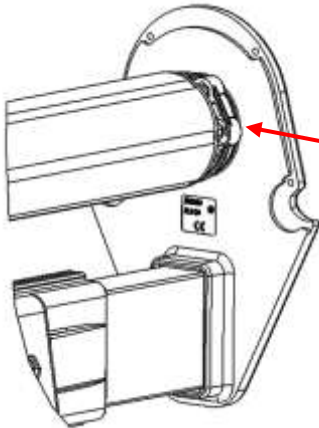


F2

Attach the fabric to the rolling tube, ensuring that the fabric with the greater extension corresponds to position F2, and the shorter fabric to position F1.

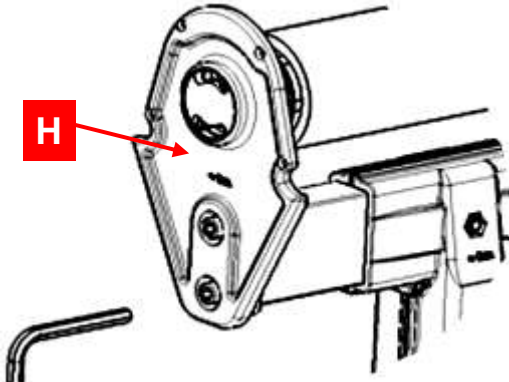
For the proper preparation of these fabrics, please refer to point 1 in these instructions

**F1=upper fabric    F2=lower fabric**

If the unit has an electric motor for operation, attach the HiPro head (F) to the support as shown in the illustration, using the bolts with reference number 11002041000 (M6x25).

If the unit is operated mechanically using the MR-5 (G) with compensation spring, use the long-axis gearbox and place it as shown in the image using the bolt set with reference number 11002042000 (M6x30).



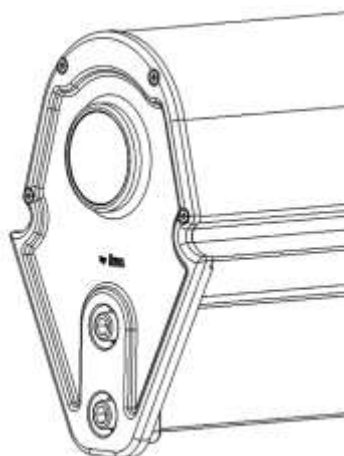
Insert the brackets (for Texpro or without the Texpro option) into the ends of the 80x40 lacquered crossbar. Do not loosen the (M12x80) bolts which have already been installed in the piece (H).

Note that in order to insert the rolling tube with the fabric, one of these brackets must be moved to insert the bearing end into the bearing, and this must also be done when the Texpro profile is installed.

Therefore, one of these brackets should not be attached securely yet.

## Assembly instructions

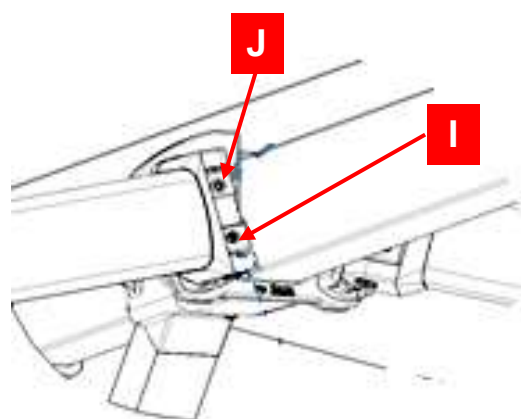
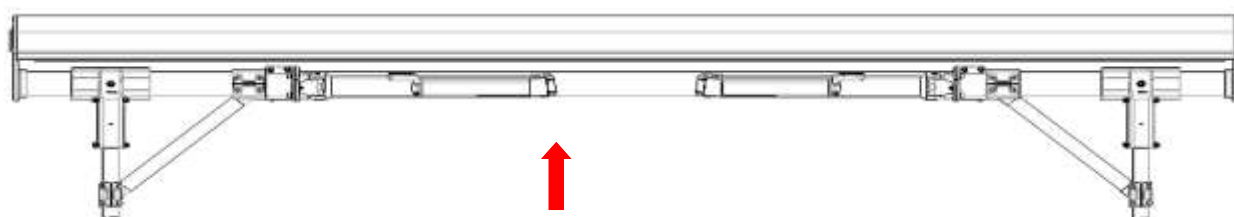
### 4. ASSEMBLY OF THE TEXPRO PROFILE



Position the Texpro profile and attach it to the support using the accompanying screws (DIN7982 4.2x50). Decorative covers are included to hide the bolts from view, as well as a Llaza brand sticker for the rolling tube part of the bracket.

Once it is in its final position, alternately tighten the bracket stud bolts so that the nuts slide along the internal channel, until they lock completely. This allows the bracket to remain firmly attached.

### 5. MOUNTING AND ALIGNING THE ARMS

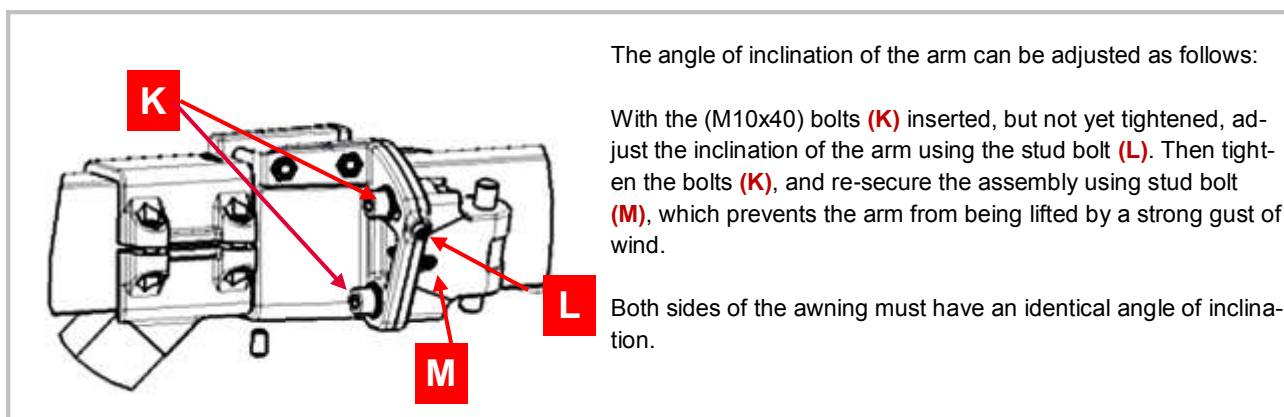


Attach the arm fork to the arm bracket and insert the pin. Align the pin by rotating it using the lower slot, until the levelling stud bolt (**I**) can be inserted in the lower threads. Then insert threaded stud (**J**) only as a means of support.

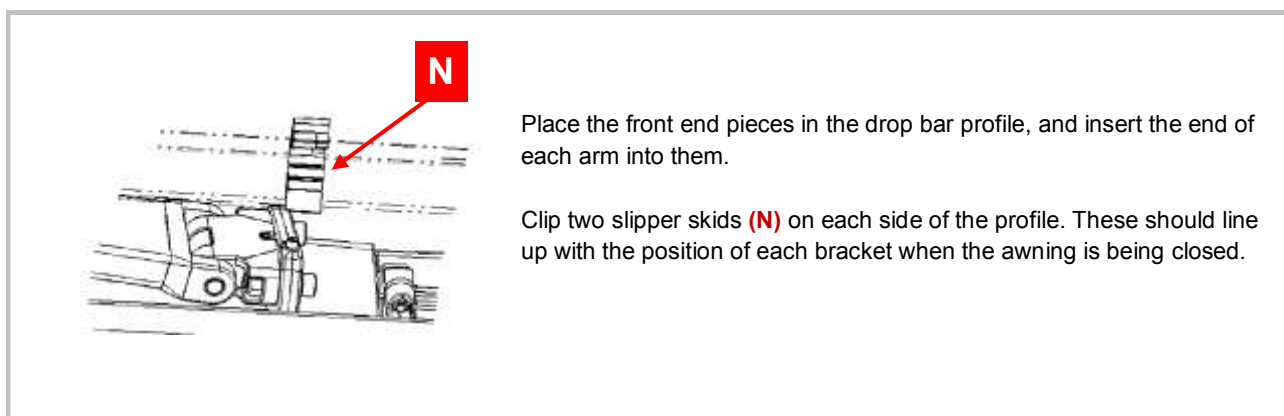
The threaded stud (**J**) must remain loose at this stage in order to allow the pin to move vertically. Once the elbow joints have been levelled in relation to the cross-bar, stud (**J**) can be tightened.

## Assembly instructions

### 6. LEVELLING THE AWNING INCLINATION



### 7. FINAL ASSEMBLY





## DUOX awning



Photos

### 8. EXAMPLES OF INSTALLATIONS



# DUOX awning



## Photos



## DUOX awning



### Photos



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