

TECHNICAL GUIDE

Orchestra

DICKSON CONSTANT

9th January 2019



USES AND LIMITATIONS OF THIS GUIDE

This Technical Guide summarises the expertise developed by Dickson-Constant with input from other specialists in the textile sector. Its aim is to facilitate the use of our product.

The machines and tools mentioned in this guide as well as similar equipment and suggested settings can be used to manufacture solar protection devices using Orchestra fabric.

The information in this guide is based on tests made by our manufacturers in compliance with standard techniques. It may be revised in the future subject to technical advances in machinery.

It is the responsibility of each manufacturer to carry out their own tests (prototypes) to ensure proper use of the fabric and the smooth functioning of the whole system. They must provide their customers with all warranties for the finished product.

Dickson shall not be held responsible for quality-related complaints arising from manufacturing defects that may result from the use of the equipment and machines suggested in this guide.

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Appendix - summary sheet "Technical Sheet for Manufacturing"

Dickson Constant, SAS with a capital of 12,640,000€
 Z.I la Pilaterie, 10 rue des Châteaux, BP 109, 59443 Wasquehal Cedex - France
 +33(0)3.20.45.59.59 - contact@dickson-constant.com

1 -MAIN FEATURES

ORCHESTRA - DESCRIPTION

ORCHESTRA is a 100% acrylic dyed fabric; it therefore benefits from the remarkable resistance to aging of this fibre, both in regards to its mechanical strength over time, and the constancy of colours, whatever the climatic conditions (sun or rain).

It is available in more than 100 plain colours, around fifty stripes and ten jacquards. These colours are remarkably UV-resistant, making the fabric particularly suitable for outdoor applications.

SPECIFICATIONS

- **Composition:** 100% solution-dyed acrylic; Cleanguard treatment
- **Weight:** 290 g/m²
- **Width:** 120 - 165 - 200 - 250 cm
- **Warranty:** 10 years

For more information, please see the Technical Factsheet for this product.

CERTIFICATIONS AND LABELS

- ORCHESTRA is OEKOTEX certified. This label certifies that ORCHESTRA meets the requirements for human ecology, and that its constituent parts meet the requirements of the REACH legislation.
- The solar factors (thermal and light transmission) of ORCHESTRA fabric are mentioned in our technical-commercial brochures; ask Dickson if you would like technical support on this subject.

2 - DELIVERY

a) Packaging

The canvas is wrapped around a tube and protected by plastic packaging. At one end, the length of the part receives 2 labels, one being glued entirely on the long side, the other being "on horseback" on the long side and the side of the part, for better visibility at all angles.



b) Labelling - Traceability

Each piece is identified by 2 labels. The product's reference number, length, width and the position of any flaws are detailed on the label.

A unique serial number appears on the label: it identifies the part perfectly and allows its whole manufacturing process to be traced. It allows for an analysis of any potential faults. It is required in order to process any claim.



c) Handling

The fabric must be laid horizontally during transport. Do not drag the fabric on the floor, even in its cardboard box. Avoid accidental impacts (from lifting forks, for example) and any unnecessary pressure (pallet risers). Do not fold the fabric under any circumstances.

d) Storage

Store the fabric at a temperature of between 5°C and 40°C and away from sunlight. Position the roll horizontally and not vertically. Store the fabric in its cardboard packaging if possible. Do not fold the fabric under any circumstances.

3 - END USE

The ORCHESTRA fabric is mainly intended for the creation of canopy awnings, fixed blinds, awnings, projection blinds and veranda blinds.



It is also suitable for making roll-outs, sunshades, shade sails, pergola velum, pergola sides, vertical blinds, zipped blinds, and vertical strip blinds.



The manufacturer is responsible for ensuring that the fabric can be used for the selected application, by creating one or more prototypes, and, after verification, that it complies with the applications recommended by Dickson-Constant.

The fabric should never be folded, regardless of the application.

4 - PRE-CUTTING

a) Batch identification

For a given colour, the manufacturing process can create minute visual differences, barely detectable by a trained eye, and dependent on the angle of observation.

To avoid any visual differences, the panels intended for the same blind will have to be cut ideally from the same roll, and at least from the same batch.

In order to identify the batch, note that each part is identified by a label; the matriculation number of the part is in the top right corner; the batch number to which the part belongs is the first 5 alphanumeric characters.



In our example,

- the matriculation number is: L8582A016
- the batch number is: L8582.

b) Which side should face the sun and which towards the inside?

Each side of the ORCHESTRA fabric can face towards the sun or inwards. On the other hand, once the orientation is set, it is imperative to keep it that way for all panels manufactured. 2 contiguous panels should always face the same side towards the sun. They must be cut in the same direction relative to the unrolling of the piece.

c) Direction (warp or weft?)

For all winding awnings and solar protection uses, establish the maximum dimensions in relation to the guide system and roller tubes, which can affect tension (and need to be adjusted to optimise winding quality). Use a large-diameter roller tube to limit folds and faults.

The work table must be at least 325 cm wide since the product may be used in large dimensions. Before cutting the fabric, the manufacturer must determine the cutting direction (WARP or WEFT).

The ORCHESTRA warp is very resistant (140 daN/5cm) and extends 3% under constant load of 25kg/5cm

The ORCHESTRA frame is moderately resistant (90 daN/5cm) and extends 7% under constant load of 25kg/5cm

The conventional direction for ORCHESTRA manufacture is the warp direction; in other words, the ORCHESTRA warp is oriented in the direction of the advance of the blind; the weft is oriented in the cross direction (horizontal).

The other manufacturing direction is technically possible; however, it is not advisable because the main tension in the direction of the advance is then in the least resistant direction of the canvas. If the manufacturer requires this manufacturing direction, it is recommended that they test the manufacture beforehand on a prototype.

For this direction, Dickson recommends the INFINITY fabric.

Once the cutting direction has been selected, apply to all canvases used on the same site to prevent unsightly mismatching.

d) Dimensions

Our experience shows that large installations (above 600cm width x 300cm, for example) are possible with 2 arms. Beyond this, the creation of a prototype may be necessary to check the technical feasibility and the manufacture and assembly settings. In particular, a number of upper arms will be necessary. Dickson is at your service to help you with this process.

e) Guidance systems

The ORCHESTRA fabric is suitable for any type of system: blind with arms, but also vertical blinds with cable guide, profile or continuous side ("zip"). When creating a continuous lateral guide, it is important to pay special attention to the desired size of the final product and take it into account in the cutting plan. This requires highly precise measurements, down to the last millimetre.

5 - CUTTING

a) Procedure

Ultrasonic cutting is recommended for ORCHESTRA fabric to prevent fraying. This technique simultaneously cuts and cauterises the fabric.

A possible alternative is laser cutting, although particular care must be taken to prevent fraying.

Other hot cutting techniques can achieve acceptable cauterisation; it is up to the manufacturer to ensure the quality of their tools.

b) Suggestions for appropriate machines

Suggested ultrasonic-cutting machine manufacturers: SMRE (SM 300.TA or SM 400.TA), MILLER (CS-112), SINCLAIR (TRIAD), JENTSCHMANN (Weldsonic), ASCO, or MATIC (M1 Ultimate).



M1 ULTIMATE (ultrasonic cut and crush-cut in 2 directions, glass table up to 300x600 cm)

Suggested generator manufacturers: Suggested generator manufacturers: Calemard (G3-C), NOVUS (3,150W), DelphinUS; there are also many portable generators on the market.

Laser cutting can be implemented on the EUROLASER 3XL-3200.



3XL - 3200 EUROLASER

A portable hot-cutting machine, for example HSG-O (SODIFA-ESCA), is worth considering: it makes non-rectilinear cutting easier.

c) Parameters

Ultrasonic knife-cutting typically requires an ultrasound frequency of around 40 Hz; the product rolling rate is generally between 20 and 25 m/min.

The operator must ensure that the fabric is cut perfectly square. This is essential to avoid winding problems once the product has been installed.

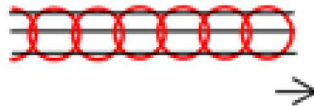
You will find the essential cutting technique information in the appended Product Manufacturers' Guide.

6 - PANEL ASSEMBLY; HEMS AND SLEEVES

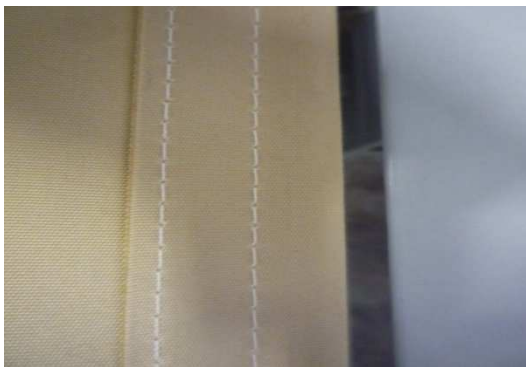
The assembly of the acrylic is traditionally done by sewing, or by bonding with thermo-reactive adhesive tapes; assembly by liquid glue is quite rare.

Attention, in the case of assembly by gluing, the WIDTH of the assembly is fundamental: 18 mm is a standard; 10mm may be insufficient (to be checked on the machine); 25 mm can be suggested for structures under the most stress.

a) Sewing



To make assemblies, hems, sleeves, sewing is suggested as a priority. A thread of type Serafil 30, Saba 35, Rasant 25, Serafil WR (Amann), or Gütermann 80 will be used. Needle may be SES or R (Schmetz).



Double stitch for hem



Dürkopp-Adler sewing machine

b) Hot-iron welding



Hot-iron welding can be used to assemble fabric without hot-melt adhesive tape, of type **GLUETEX AU110 or AU130**

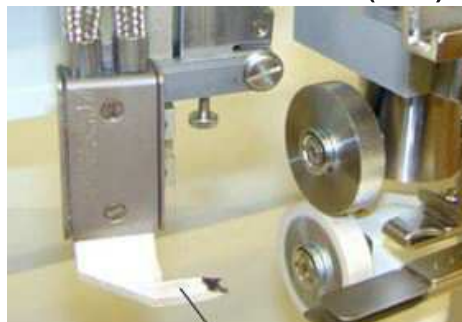
SINCLAIR machines (**TRIAD or SPEC**) may be used for this process. Overlap width is **22 mm** as standard (25 mm pressure cylinder), with linear speed of around **5 m/min**, a maximum iron temperature of **485°C**, and **2.5-3.5 bars** of pressure. Apply **101%** elongation to avoid folds.

The **CS-112 (MILLER)** can also be used for hot-iron welding. Tension/elongation must be **101%**.

The **T300 Flex machine (MILLER WELDMASTER)**, on the other hand, must be set to an overlap width of **22mm**. Linear velocity must be equal to **5 m/min**, with a temperature of **430°C**, 2 bars of pressure and **101%** tension.



MILLER hot-iron machine (Triad)



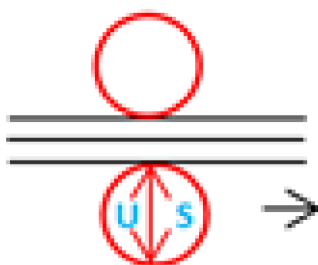
PFAFF hot-iron machine (8403)

c) Hot-air welding

Hot-air welding requires precision setting, but gives excellent results when assembling ORCHESTRA fabric: it requires the use of a hot-melt tape of type GLUETEX AU110 or AU130. The most frequently used widths are 18 mm and 22 mm.

The **CS-112 (MILLER)** machine may be used; the overlap width will generally be **25 mm**, the linear speed from **4 to 5 m/min**, an air flow rate of **8 L/min at the injector** (injector/cylinder distance **10 mm**, injector height **7 mm**) with a **temperature of 510 °C**, cylinder pressure of **2.5 - 3.5 bars**, and elongation of **0.1 cm / 100 cm (0.1%)**.

d) Ultrasound welding



Ultrasonic welding is another possible fabric welding method. Jentschmann offers the machines: **Weldsonic 2796-2-20** (1 head) and the **Ultrasonic Bonding System Weldsonic TWIN** (two heads: one ribbed and one smooth).

The use of GLUETEX AU110 or AU130 hot melt tape is required.

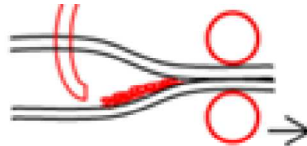
Settings:

	Speed	Pressure	Elongation (head)	Power rate
1 head	8 m/min	2.9 to 3.5 bar	1%	85%
2 heads	10 m/min	1 bar (head 1) 1.5 bars (head 2)	2.6% (head 1) 2.9% (head 2)	90%



Ultrasonic head of a Jentschmann Weldsonic machine 2796-2-20

e) Assembly by liquid glue



This technique is rarely used for ORCHESTRA; however, it gives good results. Contact your machine manufacturer. MILLER, SMRE (machine SM.210.SA), or DOREY, authorised distributor for France, can support the manufacturer.



MILLER Liquid glue machine

f) High-frequency Welding



This welding method is little used for ORCHESTRA fabric; a GLUETEX AU110 or AU130 hot melt adhesive tape is required.

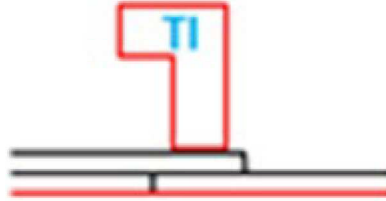
For 120/140 cm-long and 15 mm-wide welding, a FORSSTROM TX-TD 300-400 machine with 2.5 kg/cm² of pressure is optimal. Older FORSSTROM models give very good results. FIAB also offers excellent machines for high-frequency welding.



High frequency 22 kW MATRELEC machine

An "aluminium" electrode provides very significant benefits compared to a "brass" electrode, because its conductivity is higher. Forsstrom HF machines were previously equipped with a "brass" electrode as standard. Today, "aluminium" electrodes have become the Forsstrom standard.

g) Thermal-pulse welding



Thermal pulse welding is often the **optimal method**. For this method, the machines used (up to 600 cm) may be bought from **MATIC, TECHNO, or ASCO (IL315, 420, 580 ...)**

To weld ORCHESTRA fabric, **it is necessary to use a hot-melt adhesive tape:**

- FIXMATIC on MATIC machines
- AC100 on ASCO machine.

When using any of these machines, stay within a moderate temperature range (the more the product is heated, the more likely it is to be deformed). Maintain pressure at **3 to 8 bars**, with a welding time of **3-8 seconds**, and a cooling time often much higher than the welding time.

Some settings on the IL580 machine, defined in collaboration with ASCO:

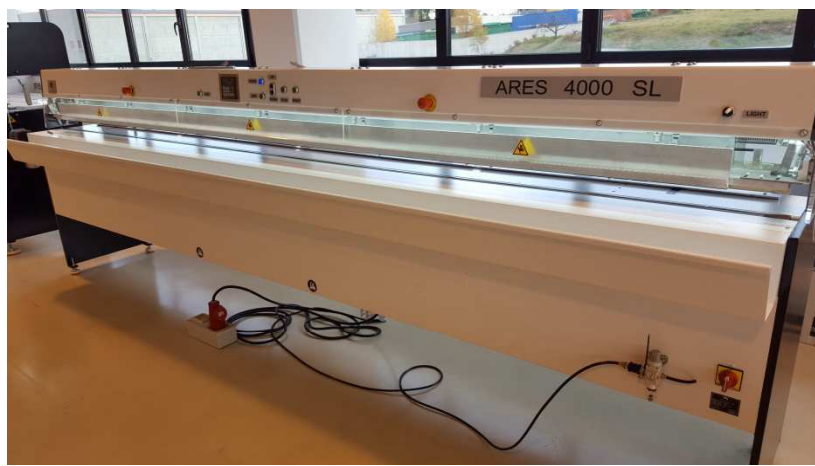
Machine	Electrode	Direction	Overlap	Heating temperature	Heating time	Cooling temperature	Cooling time
IL580	580x10	warp	10 mm	130°C	3 sec	60°C	15 sec



ASCO thermal pulse machine (IL 315)

Some settings on the ARES 4000 SL machine, defined in collaboration with MATIC:

Machine	Electrode	Direction	Overlap	Temperature	Heating time	Cooling time
4000 SL	4000x15	warp	15 mm	168°C	8 sec	20 sec



ARES thermal pulse machine (4000 SL)

Basic assembly technical information can be found in the Product Manufacturers' Guide (appendix).

7 - QUALITY CONTROL ON ASSEMBLY

The quality of the assembly must be evaluated as follows:

- Assembly of the product under the specific operating conditions established by the manufacturer: machine, width, temperature, pressure and speed; if applicable, the reference of the adhesive tape.
- Cutting of a sufficient number of test pieces, at least 30 cm-long and 50 mm-wide in a direction perpendicular to the assembly point.
- Traction on test pieces according to standard EN 13934 until breakage.



INSTRON "3000 series" dynamometer (Dickson Quality Laboratory)

- Examination of the test strip: if it breaks elsewhere than at the assembly point, or loses lamination in its thickness, this is important and often positive information.
- Recording of the strength and lengthening of the test strip up to breakage.
- Comparison of the breakage force with the table below:

➤ 50 daN/5cm	limit; requires optimisation
➤ 60 daN/5cm	acceptable in general
➤ 70 daN/5cm	satisfactory
➤ 80 daN/5cm	excellent

8 - PRINTING

Both sides of the ORCHESTRA fabric can be printed. The printer must check the quality of the printing ahead of time.

There are different techniques on the market:

PAINTING

This is a method that presents several levels of complexity, ranging from a simple painting of the frame based on previously drawn outlines, to screen printing by means of finely open frames, or the use of stencils based on the dimensions of the pattern to be affixed. This is the intermediate case that is most frequently implemented. In all cases, the following general instructions must be followed:

- Spread the acrylic canvas over a solid and flat support.
- Smooth the fabric to avoid creases.
- Carry out the drawing on the canvas using a chalk adapted to the textile, using a stencil, or a frame.
- Use a stiff brush of 12-15 mm
 - *Paint the outline of the drawing over the chalk line with the paint*
 - *Press any stencils onto the fabric, and work by going from the stencil to the canvas which will prevent drips under the stencil*
- Pressing firmly; run short and lateral strokes, to create a clean outer edge
- Fill the drawing with the paint. Press firmly to get the paint into the fabric.
- To avoid "piercing" with the paint, the first layer can be coloured a shade close to the acrylic fabric or be made of a transparent lacquer
- Allow the first layer to dry perfectly. While the first layer forms a seal at the edge of the drawing (or the meeting of the stencil and the canvas), apply the second layer using a less stiff brush.
- Apply as many layers of paint as needed until the colour of the canvas no longer appears. Allow the paint to dry between each coat.
- If using a stencil, remove it after the last application, and before the paint dries, to leave a clean edge. Otherwise, the paint applied at the edge of the stencil may stick to it
- Allow the final layer to dry for 24 hours before exposing it to the climate

Some recommendations relating to "painting":

- *The most used paints are of acrylic or acrylic-polyurethane type; these are offered by GUITTET www.guittet.fr*
- *Drying time can be accelerated by using a hair dryer*
- *The Orchestra fabrics have been treated to be water repellent. This treatment will tend to "repel" the paint, and to hold it to the surface of the fabric; it is therefore necessary to apply strong pressure to introduce the paint between the fibres*
- *It is recommended to test a sample of fabric before working on the item to be sold.*

HOT TRANSFER PRINTING

This process is similar to the removal of a hot decal by means of a press; it is suitable for acrylics; its adhesiveness over time is limited (in the order of 2 years); CHEMICA (www.chemica.fr) and SEF (www.sef-france.com) can be approached for further information and optimisation of aging resistance.

INKJET PRINTING

It is not recommended due to its very pale rendering on acrylic fabric.

The rendering of solvent inks on acrylic is mediocre (dull)

If the inkjet technique cannot be avoided, due to equipment reasons, we can try printing with "UV" or "latex" inks; the rendering remains average and the resistance to friction is limited.

We can improve the rendering by applying a first white layer "all-over" which will accentuate the rendering of the final print layer

In general, the resistance of inks to climatic aggressions (sun and rain) is limited over time.

An acrylic printing, even if acceptable initially, may change unfavourably over a few months.

Once the fabric is transformed, the original qualities of ORCHESTRA, especially the environmental factors (Oekotex certification), are no longer guaranteed by Dickson.

9 - INSTALLATION

a) Installation direction (oriented towards or away from the sun)

As stated in paragraph I, both sides of the ORCHESTRA fabric are similar. We can turn either side to the sun indifferently. It is the manufacturer's decision to control this step. However, if two ORCHESTRA fabrics of the same colour are to be installed in close proximity to one another, the manufacturer and the installer will ensure together that the two fabrics have been made in the same direction relative to the orientation of the fabric on the roll. This makes it possible to avoid any potential visual differences between the two blinds.

b) Contact with the other parts of the system

ORCHESTRA fabric must be protected from rubbing against the structure on which it is installed. Tension must be maintained to prevent any points of contact with the various parts of the structure.

This prevents premature deterioration of the fabric.

c) Roller tubes

If the finished product is a winding structure, the ORCHESTRA fabric should be manufactured and carefully fitted around the roller tube. This tube must be of a sufficient diameter and quality to prevent sag. A large diameter is preferable for fabric winding. The fabric's tension and "end stops" must be adjusted.

The end use (pergola, vertical awning, folding-arm awning, etc.) must of course be taken into account to establish the dimensions and quality of the tubes.

d) Guides

If a lateral guidance system (zipper) is used, tension on the product must be limited or eliminated during manufacture; cutting must be performed by ultrasound according to the cutting plan, or very carefully with a rotating knife. Experience shows that the following steps, performed in this order, optimise the product's final appearance:

- “upper”, “lower” (ultrasound) cut
- “upper” and “lower” welding (thermal pulse, or HF, for example)
- side cuts (ultrasound)
- “zip” welding (thermal pulse, or HF, for example).

e) Poles

If OCHESTRA fabric is affixed to one or more poles, or if tensioners are used, the creation of eyelets should be considered. The fabric will be reinforced by a hem (minimum of two folds); the diameter of eyelets will be 1 to 3 cm; particular attention should be paid to ensure that there is enough space between the eyelet and the edge of the fabric (minimum of 1 cm).

The eyelets used must be suitable for outdoor use (stainless steel) to prevent the formation of rust on the fabric; moreover, the eyelet watertightness must be guaranteed to avoid any risk of capillary rise in the water towards the fabric.

f) Profiles

To create a pergola, the manufacturer should assemble a PVC profile on one side of the OCHESTRA fabric.

This assembly can be done by ultrasound (JENTSCHMANN) using hot-melt adhesive strips (GLUETEX).

It can also be done using liquid glue (MILLER WELDMASTER machines)

g) Slope

A slight slope will be provided to clear water and to prevent it from stagnating on the canvas. For a folding-arm awning, the slope must not be less than 14° unless the manufacturer of the entire finished system specifically recommends otherwise.

In the event of rain, and if the system is windable or retractable, be sure that the fabric is dry before winding it. If you retract it while it is wet, for fear of damage from the wind for example, unwind it again as soon as possible so it can dry.

10 – MAINTENANCE

a) "Mechanical strength" and "Colourfastness"

ORCHESTRA is fully compliant with standard EN 13561, paragraph 4.14.2 for fabrics.

It has one of the highest breakage resistance levels on the market and remains above 100daN/5cm (warp) and 60 daN/5m (weft), even after several years of use. ORCHESTRA is therefore Class 4 (best in class) as defined by standard EN 13561 in terms of this criteria.

ORCHESTRA fabrics generally have Class 4 colourfastness, the highest according to standard EN 13561.

Other EN 13561 standard paragraphs concern the end product as a whole (fabric, frame, motor, mounting parts, etc.); only the manufacturer of the fully finished product can attest to its full compliance with standard EN 13561, but optimal conditions are achieved when ROCHESTRA fabric is used.

b) Recommendations for use

Based on the features detailed in the previous paragraph, Dickson fabrics are suitable for outdoor use. You should not encounter any particular problems if you follow the detailed recommendations set out in the **ORCHESTRA Maintenance and Warranty Guide**.

- The frame of your pergola (or awning) must be configured in such a way that the fabric is completely taut and does not rub against or have other contact with the structure.
- Do not leave the pergola (or awning) extended in high winds.
- You may keep the pergola (or awning) open in the rain but, if wet, do not retract it for long periods. If, for various reasons, you must roll it up wet, redeploy your awning or blind at the soonest opportunity in order to dry the fabric.

The fabric must be cleaned following the directions detailed in the **ORCHESTRA Maintenance and Warranty Guide**.

It is the installer's responsibility to ensure that the end user has received the Maintenance and Warranty Guide.

11 - WARRANTY

To be able to make a claim based on the Dickson warranty, you must have followed the detailed recommendations in this **technical guide** as well as the **ORCHESTRA Maintenance and Warranty Guide**. Please refer to this guide whenever necessary.

It is the installer's responsibility to ensure that the end user has received the **Maintenance and Warranty Guide**.

12 - QUESTIONS AND ANSWERS

Can I obtain CE marking for my complete finished product made with ORCHESTRA fabric?

YES, the use of ORCHESTRA fabric ensures compliance with chapter 4.14.2 of standard EN 13561 and with the conditions for CE marking of the finished awning.

Does ORCHESTRA fabric have the CE marking?

CE marking is not granted to fabrics. Only a finished awning can have CE marking, if it complies with standard EN 13561.

Is ORCHESTRA compliant with the wind resistance chapter of standard EN 13561?

ORCHESTRA is a fabric; fabrics are covered in chapter 4.14.2 of standard EN 13561 which concerns the intrinsic properties of the fabric. The other chapters, in particular “wind resistance”, apply only to complete finished awnings: fabric, frame, motor, mounting, etc.

How does standard EN 13561 apply to ORCHESTRA?

The standard applies to ORCHESTRA with regard to age-related alteration in terms of: “Breakage resistance” and “Colourfastness”; its elongation under a constant load is also checked.

Breakage resistance: ORCHESTRA has a high initial mechanical resistance (140 daN/5cm in warp, 90 daN/5cm in weft). The strength reduction of an acrylic fabric such as ORCHESTRA does not exceed 3% per year, unlike cheap polyester fabrics.

Colourfastness: colourfastness values range from 0 to 4; ORCHESTRA is graded level 4 colourfastness, meaning that no major fading is detected after four years of exposure in the south of France. The excellence of ORCHESTRA colours is due to the use of solution-dyed yarn.

What is the open weave coefficient of my ORCHESTRA fabric?

The open weave coefficient of ORCHESTRA is 0%, but the fabric remains resistant to water penetration, within the limit set out under “Water Column” (see Technical Data Sheets).

How can I find the g_{tot} of my ORCHESTRA fabric?

The g_{tot} is detailed in the leaflets supplied with the product. It is calculated by Dickson according to the following factors:

- spectrophotometric measurements made in an independent accredited laboratory.
- calculations in line with the recommendations of standards EN 410, EN 14500, EN 14501 and EN 13363-1, in combination with standardised “C” glazing.

For more details, contact Dickson.

Should I choose a light or dark colour to be protected from heat?

If your priority is to be protected from heat, for example if your terrace is located in a Mediterranean country, choose a dark colour instead

Should I choose a light or dark colour to continue to enjoy the light?

If you are concerned about maintaining enough light, for example if your facade is oriented either north or east, choose a light colour instead



This document is valid for ORCHESTRA product manufactured in technical conditions defined on 2019, January 1st

TECHNICAL ADVICES FOR BLIND MAKING - ORCHESTRA -

Following devices, or similar equipments, and following values of process parameters, may be used to make blinds with ORCHESTRA. For each type of awning, it is needed to define maximal dimensions, depending on roller tube and drive systems which may influence strenghts (these must be adjusted to get an optimized winding). Taking this information into account, it may be necessary in extrem cases to use the product in cross direction, to get the most satisfying results. Each maker must manage his own tests to assure right proceeding of systems, and final product guarantee.

APPLICATION	RECOMMENDED
PERGOLA	X
FOLDING ARM / SLIDE ARM AWNINGS	X

TABLE WIDTH	400 cm x 400 cm minimum
LAYING DIRECTION	WARP generally ; each part of one awning must be oriented the same way : same face lookin at the sun ; same direction (direction of unwinding roll) for each part and the part beside

CUTTING	SUGGESTION
CIRCULAR KNIFE	TO AVOID
ULTRASONIC CUTTING	Recommended : simultaneous cutting and cauterization
Machine	SM.300.TA (SMRE) SM.400.TA (SMRE) CS-112 (MILLER) TRIAD (SINCLAIR) 2796-2-20 (JENTSCH) ASCO
Linear speed	25 m/min
Frequency	40 kHz
Manual cutting	see Decoup+
Alternative generators	Calemar "G3-C" ; NOVUS "3.150W" ; DelphinUS ; portable generators
LASER CUTTING	Recommended for valances cutting
HOT CUTTING	
Machine	ENGEL-COUPÉ portable "hot iron"
Linear speed	+/- 10 m/min (manual)

SEWING	SUGGESTION
DOUBLE-LINE SEWING	
Machine	PFAFF 1420 Dürkopp ADLER SCHULTE - MARKISPEED 2000-867 2 needle Dürkopp-Adler 867-16 mm NE double lockstitch machine
Yarn	SERAFIL 30 (Amann Group) SABA 35 (Amann Group) TENARA M1000LTR-L-5 / M1000KTR-L-5 / M1000HKTR-L-5 100% oiled ePTFE / M1000XHTR (translucent yarns) TENARA M1000TR-(XX)-5 / M1000HTR-(XX)-5 (coloured yarns) SERAFIL WR (Amann Group) RASANT n°25WR polyester /cotton (Amann Group) COATS DIABOND = bonded polyester Tex 080 UV treated
Needles	134-35 CR (2134-35 CR / DPx35 CR) reference 49-044 635-02 3 std SES (Schmetz) R (Schmetz)
Needle size	90-110 to 120-140 depending on TENARA yarn choosen
Overlap width	22 mm
Gap between lines	15 mm
Speed	10 - 12 m/min

WELDING (ADHESIVE TAPE NEEDED)	SUGGESTION
Take care ! Width of the welding is important : 20 mm is a classical vlue ; 10 mm may be not enough (to validate or not on the machine) ; 40 mm may be suggested for structures with high strenght applied	
HIGH-FREQUENCY WELDING	
Machine	FORSTROM TX 800 or other devices of TX 200-800 range, or other ranges : DR 200-800 ; TR ...
Tape	reference PAF - 130 (Adhesive Fabrics Inc) or reference AU 130 SK (Glutex)
Power / Frequency	40% of 20 kW / 27 MHz
Overlap width	25 mm
Welding time	6 sec
ULTRASONIC WELDING	
Machine	Weldsonic 2796-2-20 (Jentschmann/Swiss-Sonic) 1 head
Linear speed	8 m/min
Pressure on lower roll	2,9 - 3,5 bars (lower roll)
Elongation	85%
Power (Sonotrode adjustment)	85%
Tape	AU 130 (Glutex)
Overlap width	25 mm
Temperature	90-130°C
HOT WEDGE WELDING	
Machine	TRIAD or SPEC (SINCLAIR) CS-112 (MILLER) T300 Flex (MILLER WELDMASTER)
Tape	AU 130 (Glutex) AF 115 (Glutex or WDN) 22 mm
Overlap width	25 mm
Linear speed	3 - 4 m/min
Temperature	485°C
Pressure	2,5-3,5 bars
Elongation	101%
HOT AIR WELDING (possible but depends of accurate parameters)	
Machine	CS-112 (MILLER)
Tape	AU 130 (Glutex)
Overlap width	25 mm
Linear speed	3 - 4 m/min
Temperature	510 °C

HOT-MELT GLUEING	SUGGESTION
Machine	SM.210.SA (SMRE) Markispeed 2003-1 (SCHULTE)
Total length	5 linear meters standard ; 2 to 18 lm if needed
Hot-melt glue	hot-melt polyamide under normal atmosphere
Overlap width	25 mm (10 to 30) ; glue layed on 14 mm (Schulte) or 22 mm (SMRE)
Linear speed	8 - 9 m/min ; 15 m/min maximum
To notice	SMRE = machine fitted with a hot-melt glueing system + (options) hot air welding + ultrasonic welding

EDGES	SUGGESTION
HEMS	(NOT NEEDED)
Width	3 cm overlap
Making	see above recommendations for welding

EYELETS	SUGGESTION
Size	3 cm
Minimal distance from edges	1 cm
Minimal number of layers	2

STORAGE	SUGGESTION
Roll position	horizontal - in cardboard packaging
Temperature	5 - 40 °C
Handling	with care - manual, or handling machines

NEVER FOLD A SOLAR PROTECTION FABRIC

GD 09/01/2019