

ENG
2012 - 2016

velthec[®]

Venetian Blinds Technical Specifications

Velthec® Venetian blinds represent the best solution to control sunlight.

Hermetically sealed inside the insulating glass (with 20mm or 27mm spacer bars), they ensure total protection against dirt, dust or weather conditions, and therefore do not require any maintenance. They can be used both for static and moving applications (windows and sliding doors).

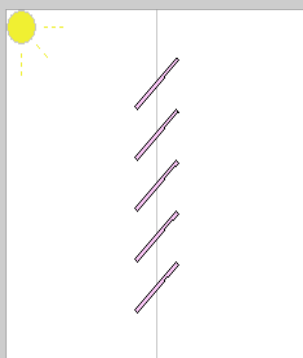
Velthec® Venetian blinds can have a manual or an electronic control and are all in line with **UNI EN 1279** regulations. All materials used comply with high quality standards, are **anti-fog** and **UV resistant**.

Velthec® Venetian blinds can be installed wherever total light control is required or to ensure privacy. Ideal for:

- offices and conference rooms
- hospitals, clinics, laboratories
- private houses or apartments
- partitions

Velthec® Venetian blinds ensure:

- optimal sunlight control
- energy conservation
- hygiene
- comfort
- good investment
- privacy



VS20 SLIDING

It is the ideal blind for offices and all places where privacy and hygiene must be ensured at a fair price. It has a manual control with a magnetic transmission to fix horizontally (top or bottom). Special rollers make the slider independent and handling easy, and prevent any glass scratches. Tilt-only blind with **20mm spacer bars**.

VC20 MODULAR CHAIN

It is commonly used in residential applications. The manual control by the modular chain activates a magnetic device, which ensures the total tightness of the insulating glass. A locking device guarantees child safety preventing an improper use of the modular chain. Tilting and lifting blind with **20mm spacer bars**.

VC27

It works like VC20, but covers wider areas up to 3,5 sqm. Side spacer projection on both sides to control light. Tilting and lifting blind with **27mm spacer bars**.

VM27 MOTOR

It is the first motorized Venetian blind installed inside double-glazed units equipped with a long-life brushless motor. Tilting and lifting occur by a gear motor with integrated sensors located in the head rail and controlled by a special drive device that by self-learning acquires the blind mapping starting from zero point.

The latter, which is the absolute point of reference for the Venetian blind movements, is determined by the sensor feeling the bottom rail by the magnet set in its end cap.

The system allows speed synchrony among blinds no matter their dimensions or weight. Besides, it compensates for possible length variations of the lifting cords, thus making sure that the virtual end stops are kept unchanged in the course of time.

Tilting and lifting blind with **27mm spacer bars**. Other sizes of spacer bars are available.

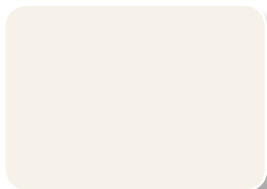
Large variety of external controls: push-button switches, remote controls, power supply units or PC thanks to a user-friendly graphical user interface.

The network, light type, enables to use just one data connecting cable up to maximum 32 blinds.

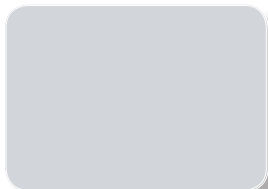
FINISHES

There are three standard slat finishes* and the other accessories are matching. On demand, three other colour schemes are available.

K001



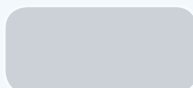
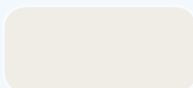
K006



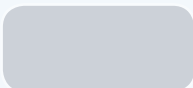
K010



Slat



Control



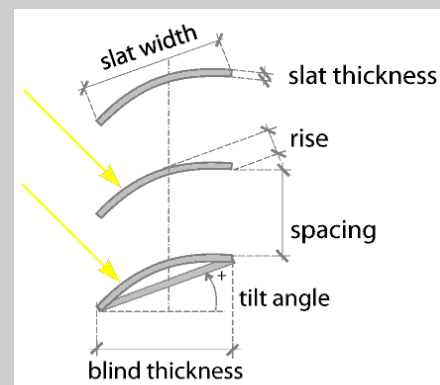
* They are purely indicative.

SLAT FINISHES

Made of extruded aluminium powder-coated with high mechanical strength, UV resistant, anti-fogging polyester powders, expressly made for accessories to set inside IG units. Available in 3 standard colours.

| STANDARD SLAT FINISHES | Cream K001 | Grey K006 | White K010 |
|------------------------|---------------|--------------|---------------|
| Solar Reflection % | 57 | 65 | 70 |
| Light Reflection% | 63 | 62 | 78 |
| Solar Absorption% | 43 | 35 | 30 |

| SLAT PARAMETERS | 12 | 16 |
|-----------------|-----------|-----------|
| Width | 12.5mm | 16.0mm |
| Thickness | 0.20mm | 0.20mm |
| Rise | 1.0mm | 1.2mm |
| Spacing | 10mm | 12mm |
| Overlap | 2mm | 4mm |
| Tilt angle | -75° +75° | -75° +75° |



Velthec® VS20 is a tilt-only Venetian blind installed within two glass panes in a 20 mm double-glazed unit in line with EU regulation EN 1279.

Velthec® VS20 is a tilt-only Venetian blind designed for 20mm insulating glass units. Slat tilting occurs by means of a magnetic slider next to head or bottom rail.

The external magnetic slider has a support applied to the glass with a highly resistant adhesive tape and is perfectly interfaced with a similar internal magnet located in the rail.

The internal cursor, strictly connected to the transmission devices, allows the slats to tilt.

The specially designed rollers of the external slider make sliding easy, so preventing glass scratches and consequent damages to the magnets, held by special plates fixed to the sliders (internal and external).

The ladder tape is bound to the head and bottom rails, which ensures that the blind slats close well and allows not to use any bottom bar.

Velthec® VS20 blind is highly recommended if to be tilted from the top or bottom without any chains, cords or rods outside the insulating glass.

MAGNETIC DEVICES

Bodies

Nylon 66 with fiberglass

Magnets

Neodymium-Iron-Boron with magnetic energy $B_h = 33-35 \text{ Mg.Oe}$

Maximum working temperature 120°C

HEAD & BOTTOM RAILS

Extruded aluminium, powder-coated matching slat colour. Colour stability to UV rays.

| | |
|--------|---------|
| Width | 18,5 mm |
| Height | 41 mm |

SLATS

Extruded aluminium, powder-coated with high mechanical strength, UV resistant, anti-fogging polyester powders.

Available in 3 standard colours.

| | |
|-----------|---------|
| Width | 12,5 mm |
| Thickness | 0,2 mm |

LADDERS

100% Polyether. Excellent dimensional stability. UV resistance. Matching slat colours.

| | |
|------|-------|
| Step | 10 mm |
|------|-------|

CORDS

100% Polyether. Excellent dimensional stability and high mechanical resistance. White or grey.

| | |
|----------|------|
| Diameter | 1 mm |
|----------|------|

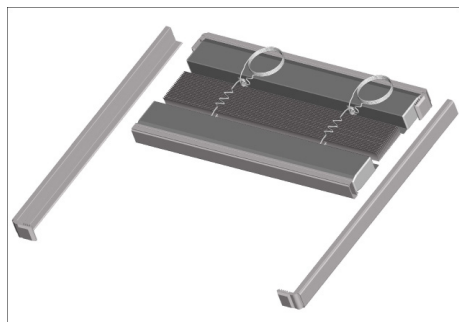
SPACERS

Extruded aluminium. The side spacers have a 8mm pelmet to prevent the light from entering sideways.

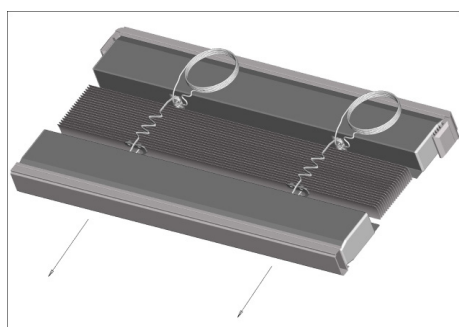
| | |
|------------|----------|
| Dimensions | 20x6,5mm |
|------------|----------|

ASSEMBLY INSTRUCTIONS

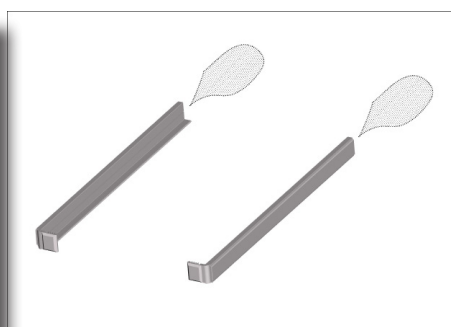
1.- The blind as it is



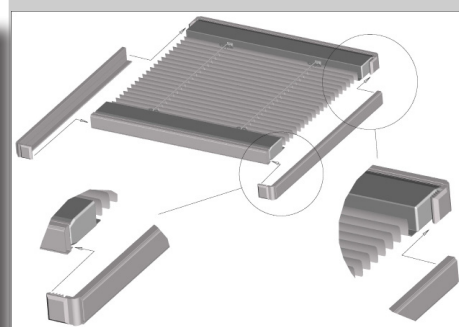
2.- Unwind the blind



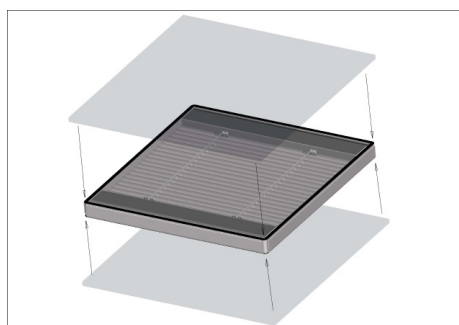
3.- Fill the molecular sieves into the spacers



4.- Assemble the blind into spacer frame



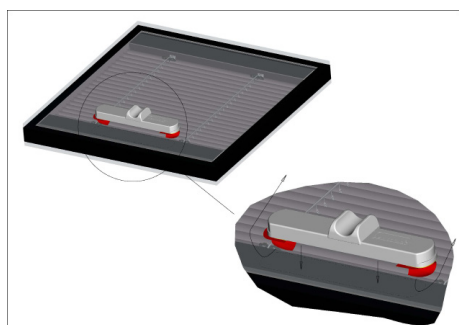
5.- Seal by butyl and assemble glass panes

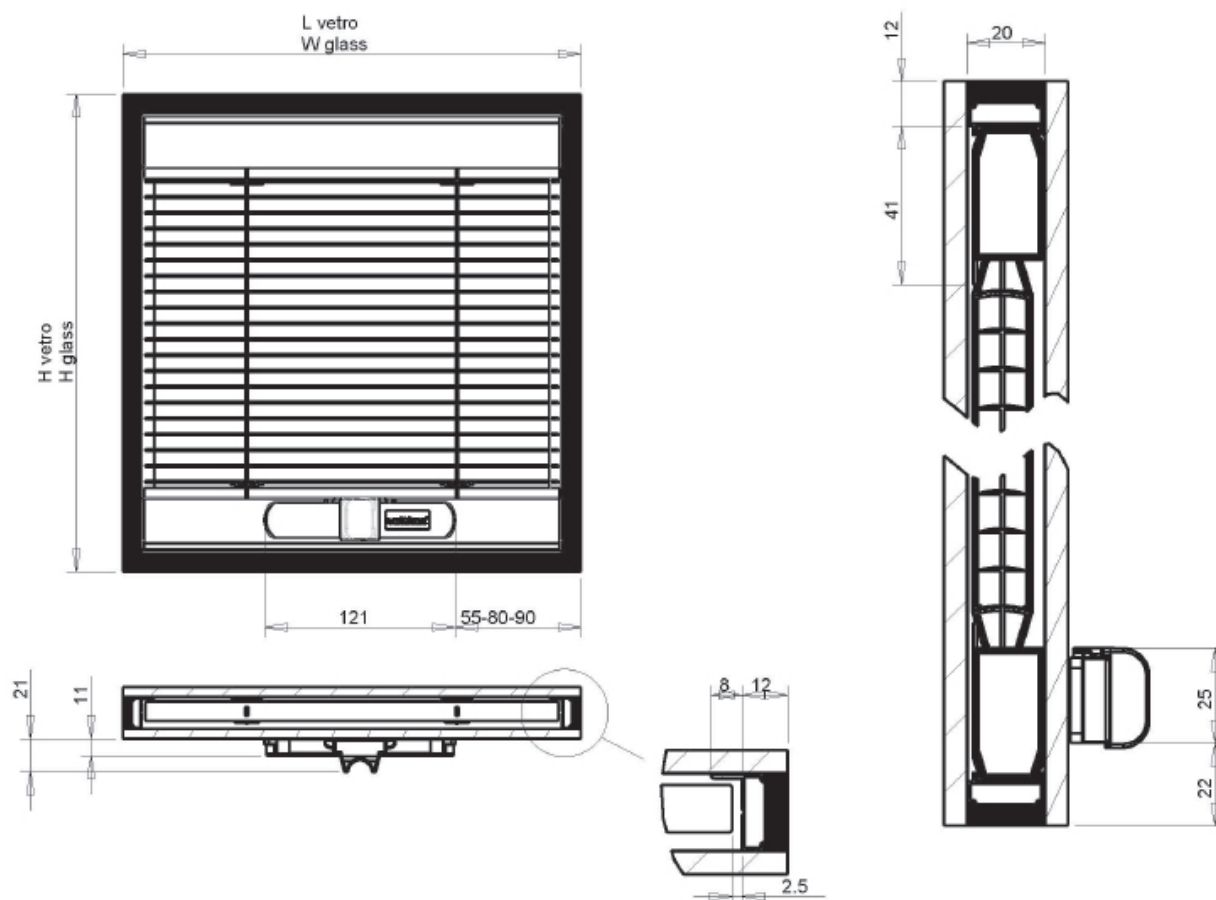


6.- Secondary seal



7.- Position the control device





FEASIBILITY

| | |
|--------------|--|
| Width | 250~1.500 mm |
| Height | 300~2.000 mm |
| Maximum area | ~3m ² up to 33.1 internal glass thickness |

For larger thicknesses, please contact our Engineering Department.

MAGNETIC DEVICES**Bodies**

Nylon 66 with fiberglass

Gears

Machined hardened steel; supported by ball bearings

Magnets

Neodymium-Iron-Boron with magnetic energy $B_h = 33-35 \text{ Mg.Oe}$

Maximum working temperature 120°C

HEAD RAIL

Extruded aluminium, powder-coated matching slat colour. Colour stability to UV rays.

Width 18 mm

Height 41 mm

SLATS

Extruded aluminium, powder-coated with high mechanical strength, UV resistant, anti-fogging polyester powders.

Available in 3 standard colours.

Width 12,5 mm

Thickness 0,2 mm

LADDER TAPE

100% Polyether. Excellent dimensional stability. UV resistance. Matching slat colours.

Step 10 mm

CORDS

100% Polyether. Excellent dimensional stability and high mechanical resistance. White or grey.

Diameter 1 mm

BOTTOM RAIL

Extruded aluminium powder-coated matching slat colour.

Width 14 mm

Height 11 mm

MODULAR CHAIN

Nickel-plated brass. Black or grey.

Length 500, 100, 1500 mm

Diameter 4,5 mm

SPACERS

Extruded aluminium. The side spacers have a 8mm pelmet to prevent the light from entering sideways.

Dimensions 20x6,5 mm

Velthec® VC20 is a manually controlled Venetian blind installed within two glass panes in a 20 mm double-glazed unit in line with **EU regulation EN 1279**.

Velthec® VC20 is a Venetian blind specially designed for **20mm** insulating glass units.

The blind movement occurs by an external magnetic device stuck on glass pane and controlled by a modular chain closed like a ring. This modular chain has a diameter such as to get the maximum ergonomics.

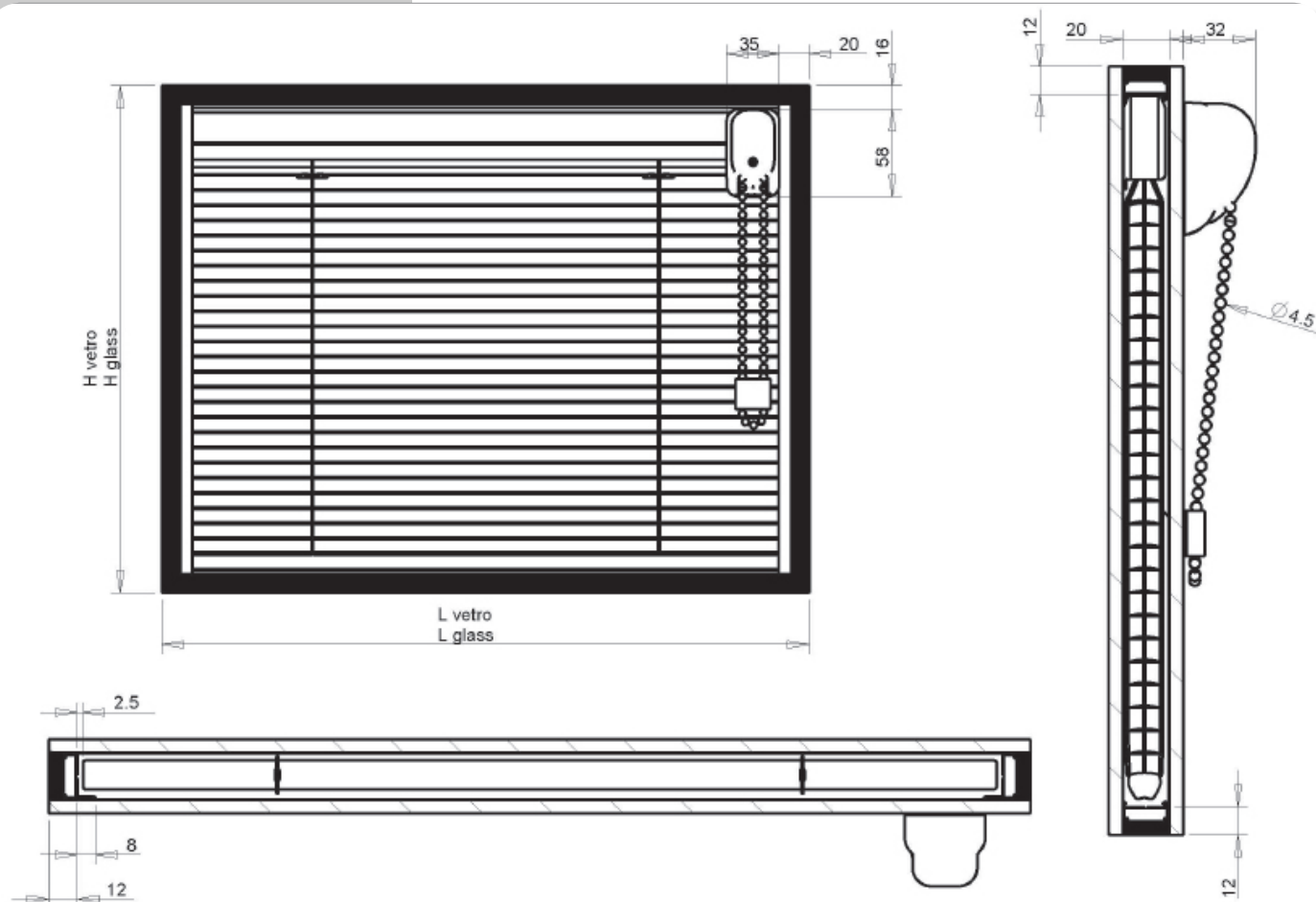
Movements (lifting and tilting) are transmitted to the Venetian blind from the external control device to the internal one by a couple of magnets perfectly interfaced one to the other and parted just by the single glass pane.

This magnetic system ensures the total tightness of the insulating glass. The modular chain allows to tilt slats or to lift the Venetian blind.

The magnetic transmission system is frictioned and consequently, when releasing the modular chain, motion is blocked by the force of inertia of the blind weight.

Besides, the friction system ensures longer lasting internal components of the blind and avoids unnecessary stress to the same.

The chain can be fixed to the double-glazed unit by a special guide (one or two), so as to avoid an improper use of the guide tubes and to protect children from choking hazards
(SAFETY CHILDREN).



FEASIBILITY

| | | | |
|--|---|----------|----------|
| Width | 250~2.600 mm | | |
| Height | 300~2.000 mm | | |
| Up to | 350 mm | 400 mm | 450 mm |
| Maximum height | 1.100 mm | 1.800 mm | 2.100 mm |
| Maximum area | 2m² up to 33.1 internal glass thickness | | |
| For larger thicknesses, please contact our Engineering Department. | | | |
| Blind pack height | 4% blind height + 45 mm | | |

MAGNETIC DEVICES

Bodies

Nylon 66 with fiberglass

Gears

Machined hardened steel; supported by ball bearings

Magnets

Neodymium-Iron-Boron with magnetic energy $B_h = 33-35 \text{ Mg.Oe}$

Maximum working temperature 120°C

HEAD RAIL

Extruded aluminium, powder-coated matching slat colour. Colour stability to UV rays.

Width 27 mm

Height 36 mm

SLATS

Extruded aluminium, powder-coated with high mechanical strength, UV resistant, anti-fogging polyester powders.

Available in 3 standard colours.

Width 16 mm

Thickness 0,2 mm

LADDER TAPE

100% Polyether. Excellent dimensional stability. UV resistance. Matching slat colours.

Step 12 mm

CORDS

100% Polyether. Excellent dimensional stability and high mechanical resistance. White or grey.

Diameter 1 mm

BOTTOM RAIL

Extruded aluminium powder-coated matching slat colour.

Width 14 mm

Height 11 mm

MODULAR CHAIN

Nickel-plated brass. Black or grey.

Length 500, 100, 1500 mm

Diameter 4,5 mm

SPACERS

Extruded aluminium. The side spacers have a 12mm pelmet to prevent the light from entering sideways.

Dimensions 27x8,5 mm

Velthec® VC27 is a manually controlled Venetian blind installed within two glass panes in a 27 mm double-glazed unit in line with **EU regulation EN 1279**.

Velthec® VC27 is a Venetian blind specially designed for **27mm** insulating glass units.

The blind movement occurs by an external magnetic device stuck on glass pane and controlled by a modular chain closed like a ring. This modular chain has a diameter such as to get the maximum ergonomics.

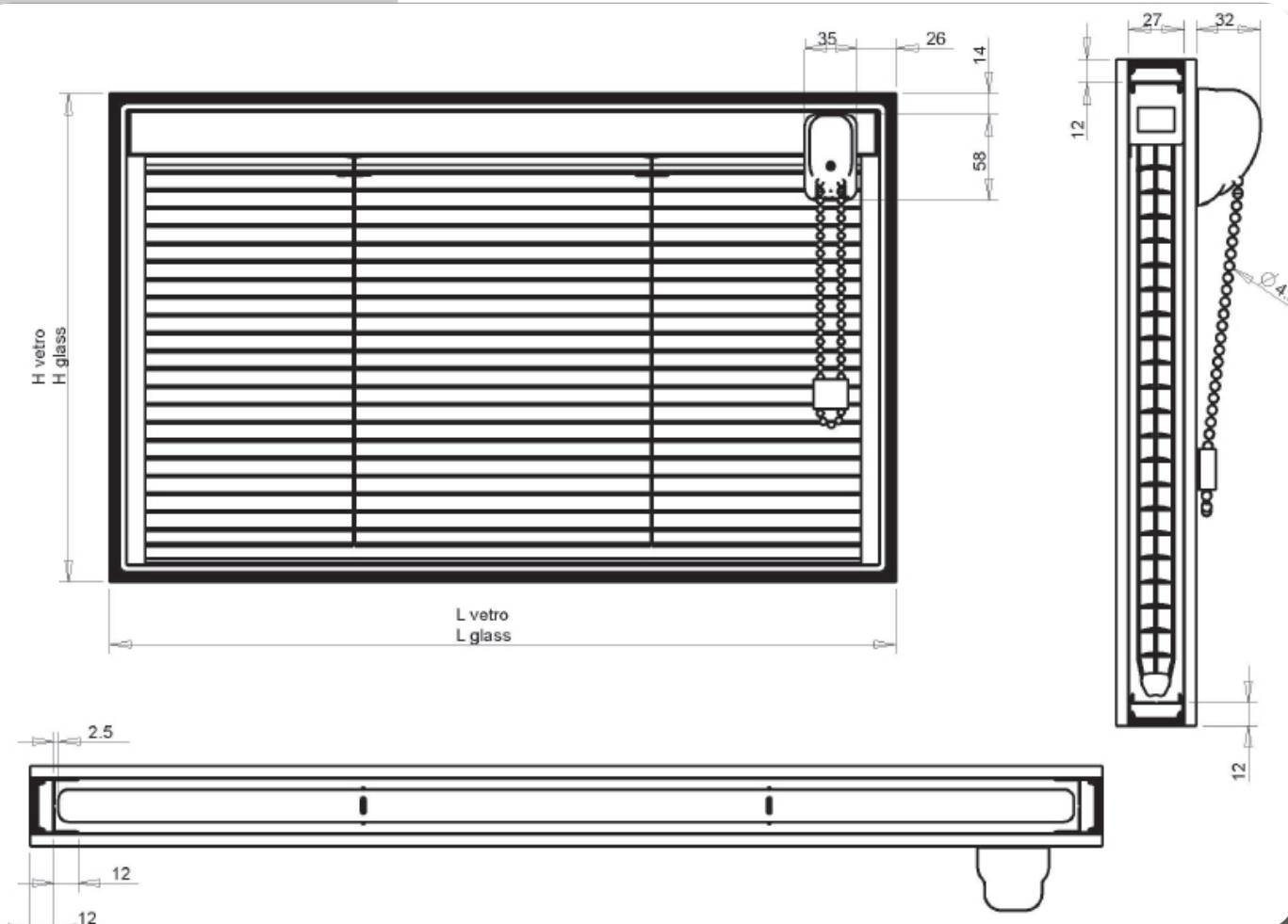
Movements (lifting and tilting) are transmitted to the Venetian blind from the external control device to the internal one by a couple of magnets perfectly interfaced one to the other and parted just by the single glass pane.

This magnetic system ensures the total tightness of the insulating glass. The modular chain allows to tilt slats or to lift the Venetian blind.

The magnetic transmission system is frictioned and consequently, when releasing the modular chain, motion is blocked by the force of inertia of the blind weight.

Besides, the friction system ensures longer lasting internal components of the blind and avoids unnecessary stress to the same.

The chain can be fixed to the double-glazed unit by a special guide (one or two), so as to avoid an improper use of the guide tubes and to protect children from choking hazards
(SAFETY CHILDREN).

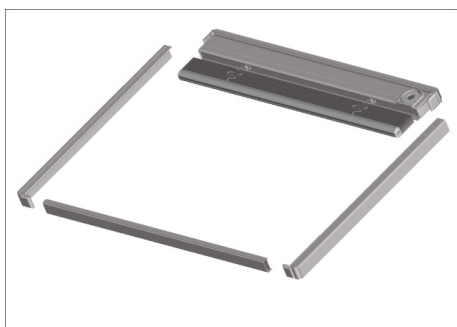


FEASIBILITY

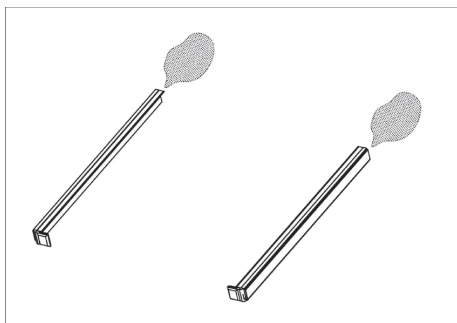
| | | | |
|--|---|----------|----------|
| Width | 300~3.000 mm | | |
| Height | 300~3.000 mm | | |
| Up to | 350 mm | 400 mm | 450 mm |
| Maximum Height | 750 mm | 1.800 mm | 2.400 mm |
| Maximum area | 3,5m² up to 33.1 internal glass thickness | | |
| For larger thicknesses, please contact our Engineering Department. | | | |
| Blind pack height | 4% blind height + 45 mm | | |

ASSEMBLY INSTRUCTIONS

1.- The blind as it is



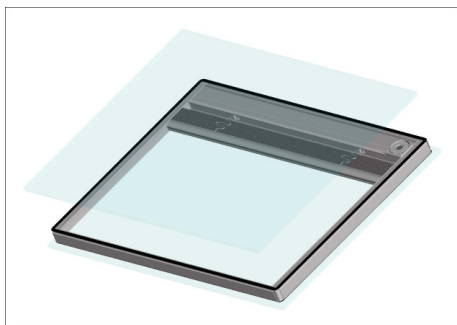
2.- Fill the molecular sieves into the spacers



3.- Assemble the blind into spacer frame



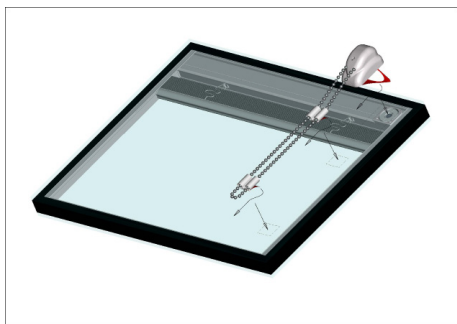
4.- Seal by butyl and assemble glass panes



5.- Secondary seal



6.- Position the control device



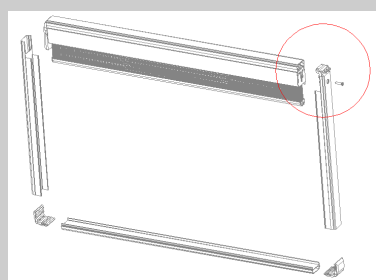
Velthec® VM27 is a motorized Venetian blind to install inside double-glazed units in accordance with EN 1279 regulations.

The advantages of the system are the following:

- Gear motor group: internal brushless motor and planetary reduction gear
- absolute zero point: reed sensor
- self-learning software: electronic card

In comparison to the correspondent brush motor, the brushless motor, thanks to its basic features, guarantees longer life, greater silence, minor wearing and minor electric noise. The planetary reduction gear is entirely made of steel with inserted rollers and a double bearing on the outlet side. Like the performance offered by the brushless motor, this reduction gear, too, guarantees a longer life to the system.

The motorization is housed inside the head rail and the corner-key has terminals for sealing connection to external power supply.



The reed sensor in the corner key starts working as soon as it feels the bottom rail by the magnet set in its end cap and represents the absolute zero point for all Venetian blind movements.

Since the first running, a self-learning software automatically records the upper and lower end stops of the blind and maps its parameters (absorbed current, instantaneous velocity) per every step of the blind movement.

Monitoring such values, which differ from blind to blind, guarantees a steady functioning speed no matter blind dimensions or weights both while raising and while lowering and detects possible anomalies (e.g. glass deflections).

An electronic card can be interfaced with a PC by the third wire (central power line) coming out of the corner key to acquire the chronicles of function parameters (function time, anomalous stops for overload and overheating, etc...).

This interface allows to update the software or to fix speed parameters or end stops different from the standard ones, without disassembling or opening the double-glazed unit.

The electrical function at inverse polarities allows to move simultaneously all connected blinds even if with different dimensions and weights.

A mechanical end stop located in the head rail serves as safety blocking device of the blind in the bottom position.

The head rail is screwed into the top of the spacer bar at frame assembly in glassworks thus obtaining an electrical connection between the corner key and the electronic card, which manages the pulses transmitted by the reed sensor and by the external push buttons (or by a remote control) causing movement, stop and inversion of the movement.

GEAR MOTOR

| | |
|----------------------------|----------|
| Power supply | 24 V DC |
| Maximum absorption | 300 mA |
| Blind speed | ~1,5m/1' |
| Maximum transmitted torque | 1 Nm |

Slotted brushless motor, built-in sensors.

Planetary reducer completely manufactured in steel. Cogged gears, external broached rim, planetary supports with guide rollers, double bearings in output.

| | |
|-------|-------|
| Ratio | 280:1 |
|-------|-------|

ELECTRONIC CARD

Manufactured with standard industrial components. Operating range (-20÷100 °C). It controls the encoder, the speed limiter, the motor safety function, and records movements (carried out cycles, absorbed current, achieved temperatures, etc....)

HEAD RAIL

Extruded aluminium, powder-coated with high mechanical strength, UV resistant, anti-fogging polyester powders.

| | |
|--------|-------|
| Width | 27 mm |
| Height | 36 mm |

SLAT

Extruded aluminium, powder-coated with high mechanical strength, UV resistant, anti-fogging polyester powders.

Available in 3 standard colours.

| | |
|-----------|--------|
| Width | 16 mm |
| Thickness | 0,2 mm |

LADDER TAPE

100% thermo-fixed polyether. Excellent dimension stability. UV resistance. Matching slat colours.

| | |
|------|-------|
| Step | 12 mm |
|------|-------|

INTERNAL CORD

100% thermo-fixed polyether internal cord. Excellent dimension stability. UV resistance. Low thermal shrinkage. Grey or white colour.

| | |
|----------|------|
| Diameter | 1 mm |
|----------|------|

BOTTOM RAIL

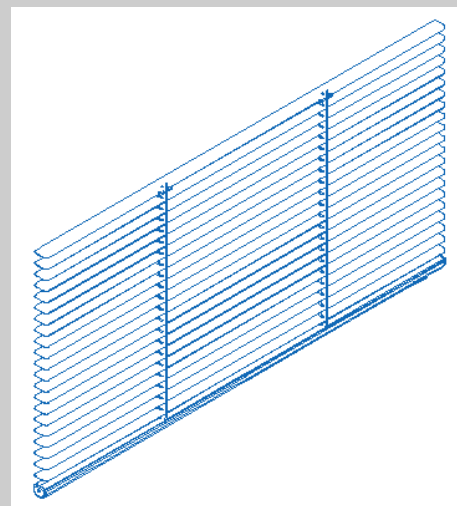
Extruded aluminium. Result of two interlocking profiles. Painted with high resistant polyether powders matching slat colours. Non fogging.

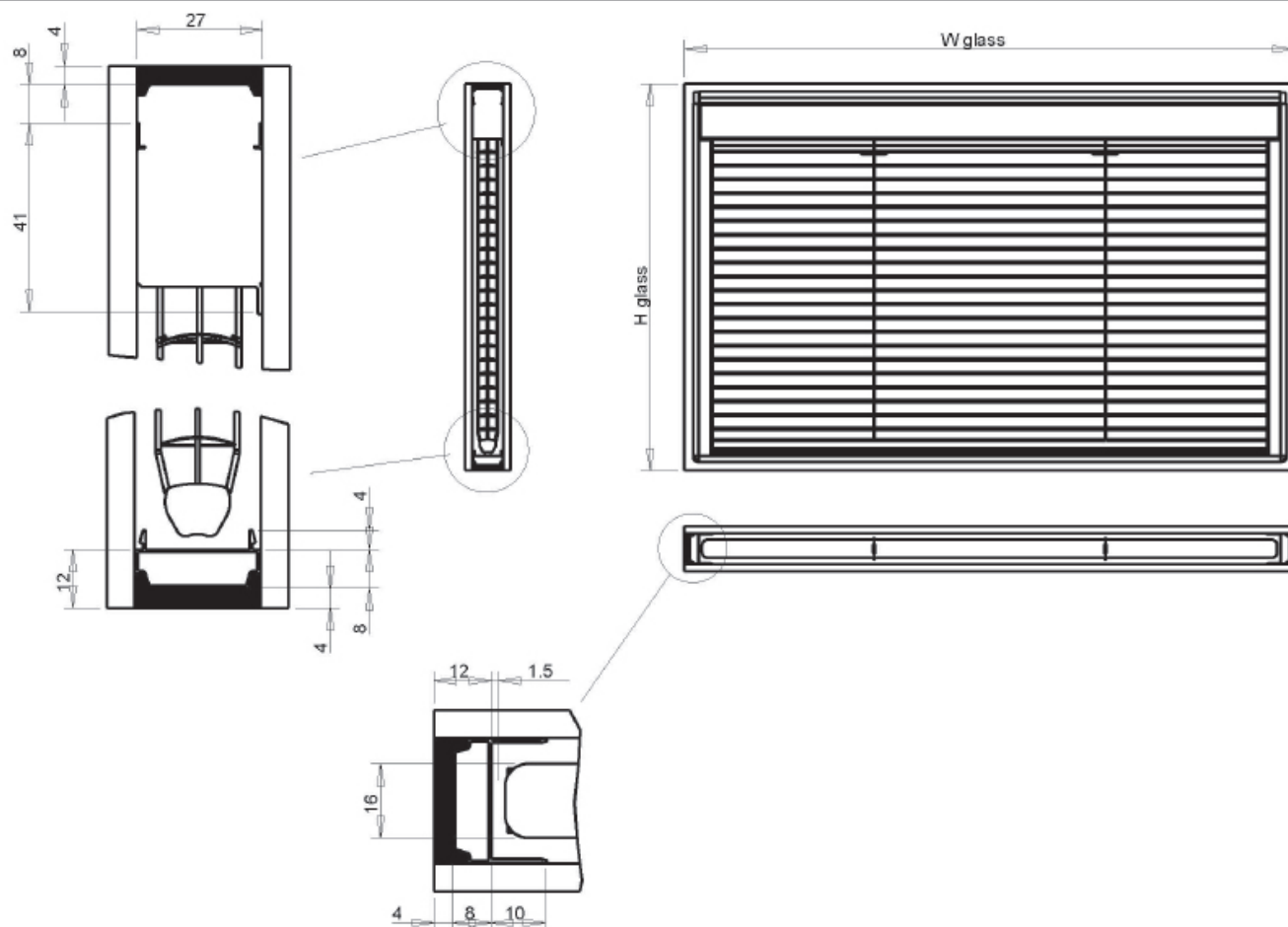
| | |
|--------|-------|
| Width | 14 mm |
| Height | 10 mm |

SPACERS

Extruded aluminium. The side spacers have a 12mm pelmet to prevent the light from entering sideways.

| | |
|------------|-------------|
| Dimensions | 27 x 8,5 mm |
|------------|-------------|





FEASIBILITY

Width 500~2.500 mm

Height 600~3.000 mm

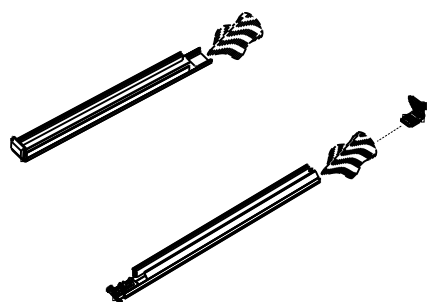
Maximum area 5m²

Up to 33.1 internal glass thickness; for larger thicknesses, please contact our Engineering Department

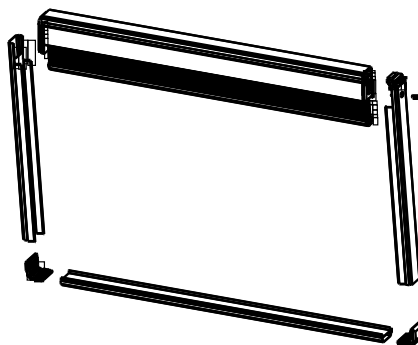
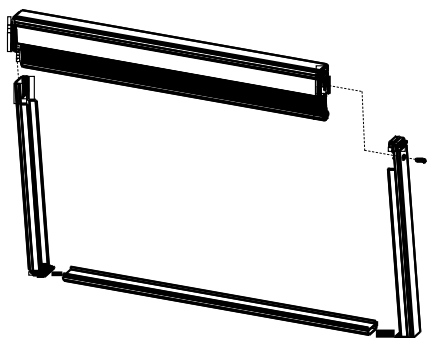
Blind pack height 4% blind height + 45 mm

ASSEMBLY INSTRUCTIONS

For further details, see VELTHEC® GENERAL SPECIFICATIONS.



Insert upper corner keys (one containing the motor) into vertical spacer bars to fill in with molecular sieves. Once filled in with molecular sieves, insert the other corner keys (the lower ones) preventing the sieves from coming out.

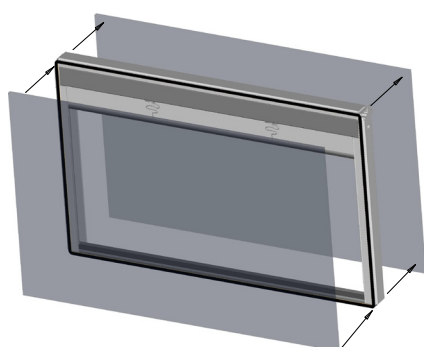


Assemble the kit making a frame. The rail is screwed into the corner key allowing the electrical connection between the external power supply unit and the internal motor. Three cables are coming out: two for power supply and one for data (that one in the middle).

TEST THE RIGHT ELECTRICAL FUNCTIONING OF THE BLIND BEFORE PROCEEDING WITH THE FOLLOWING ASSEMBLY OPERATIONS.



Cables are protected because of the following processes (e.g. second sealing). The assembled kit is sealed by butyl in its perimeter on both sides.



Assemble glass panes on both sides.



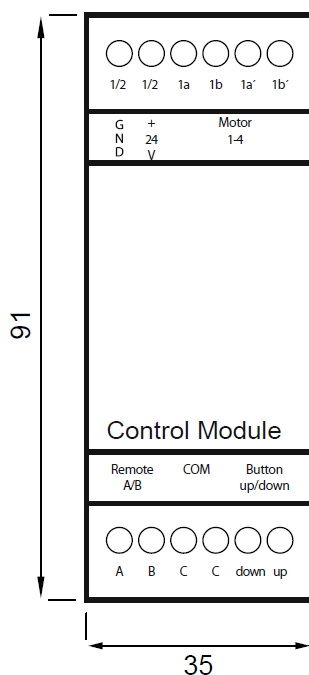
Apply the second sealing and remove cable protection.

CONTROL MODULE

Control Module to control up to 4 blinds.
Remote control input for centralized connections.
DIN rail mount.
Configuration software.

Technical Features:

- Dimensions (mm): W35 x H91 x L62
- Operating Modes:
blinds
tilt-only blinds
- Electronic switching output (anti short circuit)
- Main control input (potential free) for supplementary control modules (control groups)



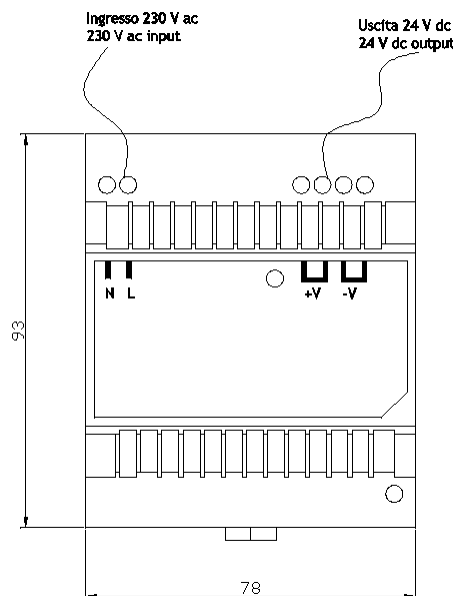
| Conn | DESCRIPTION | COMMENTS |
|------|-------------|------------------------------|
| 1 | GND | Power supply 24V DC |
| 2 | +24V DC | |
| 3 | Blind 1a | Blind group (max. 4) |
| 4 | Blind 1b | |
| 5 | Blind 1a' | |
| 6 | Blind 1b' | |
| 7 | Remote A | Main control line |
| 8 | Remote B | |
| 9 | COM | Blind control push button |
| 10 | COM | |
| 11 | Button Down | |
| 12 | Button Up | |

POWER SUPPLY

Power supply for up to 6 blinds.
Wall or DIN TS53/7.5 -15 mounts.
To locate inside properly ventilated electrical cabinets or junction boxes.

Technical Features:

- Dimensions (mm): W78 x H93 x L56
- Type: Switching
- Output: 24V DC +/-2%
- Voltage: 110 or 230V (universal AC input: 88-264VAC)
- Fuse: 2,5A
- Protections: short circuit/overloading/overvoltage
- Working temperature: -20+60°C



Power supply unit for up to 6 blinds

ELECTRICAL CONNECTION

The VM27 Venetian blind must be connected by the control unit to the appropriate power supply that guarantees 24Vdc constant voltage and the current needed by the motor.

Connect the cables of the power supply to the connectors set at the top of the double-glazed unit: the two side connectors are to be connected to the cables coming from the power supply, while the central cable (third cable) is to be set next to the power supply. The third cable is for the connection to a PC for firmware updating or maintenance activity of the card inside the head rail.

Screw tight for an optimal flow of electric current. Then, put the cable between window frame and insulating glass before closing it by glazing beads.

In case of opening frames with spring contacts for the transfer of the electric current, take maximum care to leave the space needed for a free output of the tips avoiding any possible short circuit.

FUNCTIONING OF VM27 BLIND

The movement of the blind is carried out by means of reverse polarity of the power supply, produced by a couple of push buttons or by a double switch or by the push buttons of the remote control.

- In case of use of a double switch like Vimar Idea (ref. item code 16145), it must be connected to the blinds to be controlled simultaneously (maximum up to 4) by two cables only.
- When using common buttons on sale, it is necessary to use the control unit CMO121. Buttons must be of NO type and all the blinds to be moved simultaneously (up to 4) shall be connected to the control unit by two electric wires.
- In case of use of a remote control, you can install a radio receiver per blind (optional 2) or just one control unit.

The electronic card inside the blind serves the following purposes: stop of the blind at extreme positions (end stops) and at different functioning speeds.

To tilt the slats

Keep your finger on the button until the desired tilt is reached. The starting slow speed allows a careful search for the desired tilt. When using a double switch to tilt slats, it is necessary to switch quickly from an extreme position to the central one.

To lift the blind

The push button must be kept pressed throughout tilting and released when high speed starts. This way of operating increases the life of the system because it limits involuntary interferences. In case a switch is used, release the switch when in desired position.

To stop the blind

Just press one of two operating push buttons or to shift the double switch in the centre.

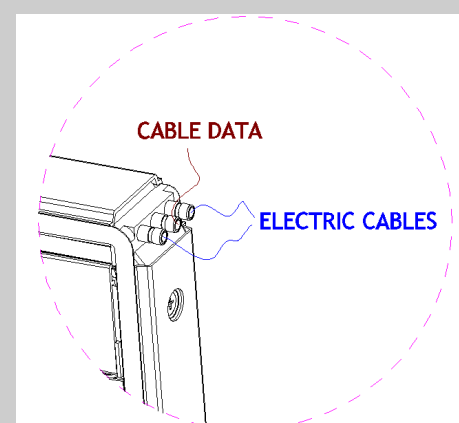
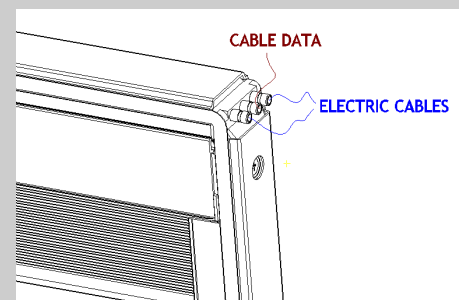
To reset end stops

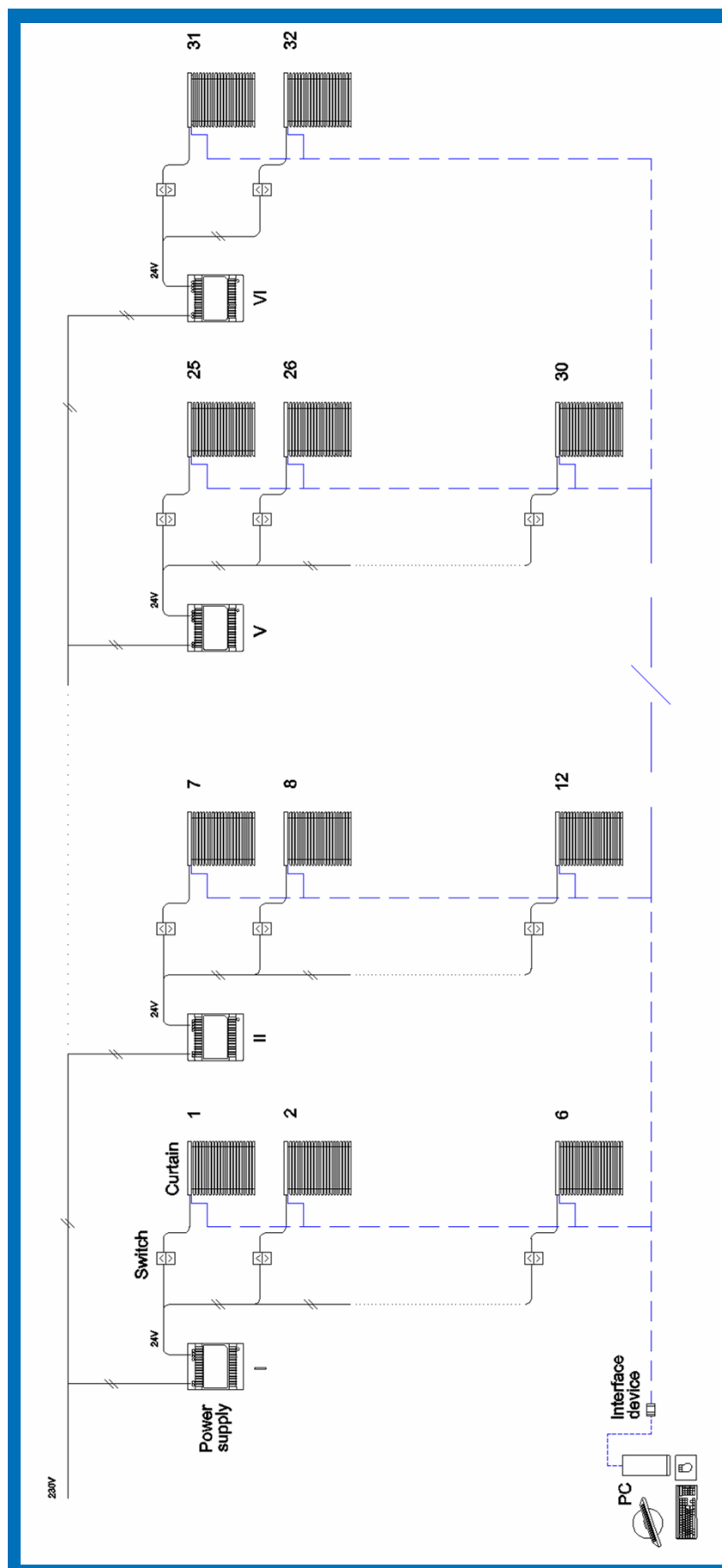
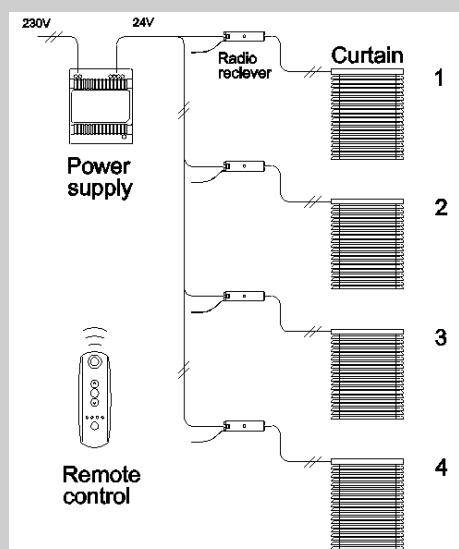
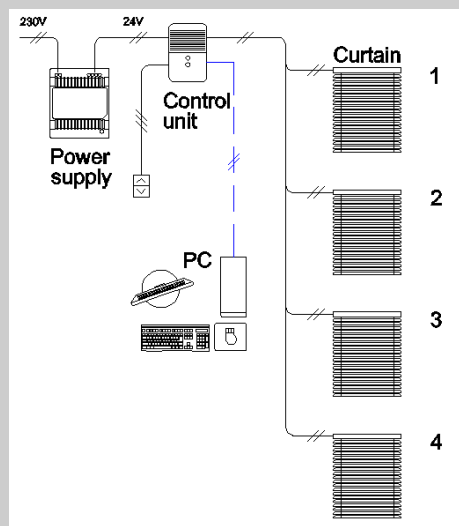
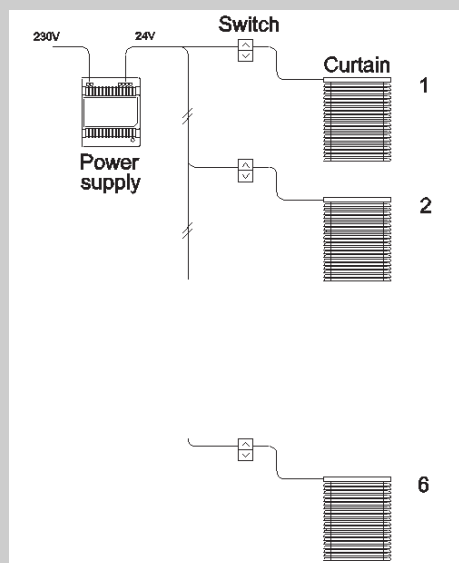
Please, follow these instructions:

- Pack the blind up to its upper end stop
 - Press the button for downward movement so as to disconnect the power supply from the motor
 - Push remote control button for lifting movement for a period of time from 10 to 15 seconds
 - Press the button for downward movement so as to disconnect the power supply from the motor
- Once the end stops are reset, the blind is able to determine its virtual end stops since its first cycle of functioning. Thanks to the central electrical contact on the corner key of the blind (third wire), it is possible to set the end stops positions of the blind or to update the firmware with new personalized releases simply by a PC, an appropriate interfacing card and a special software.

To set blind end stops

Consider that the end stops of the blind are automatically set by a self-learning system: during the first complete cycle of functioning, the blind acquires its end stops (upper and lower) and records their positions from zero point. The end stops represent the borders of the movement area of the blind and to avoid stressing its components, it will stop at a fixed distance taking into consideration the cord length variations (restriction or elongation) in the course of time.





Recommendations for Assembly, Mount, Transport and Installation of Venetian blinds inside Insulating Glass Units

Control and cleaning

All surfaces of the table where Venetian blinds and spacers are unpacked as well as of the assembly station where spacers are assembled with blinds, etc., must be clean, dustless and without any butyl residue.

It is recommended to use cotton gloves for all operations in order not to leave any marks nor fingertips on spacers and blinds.

Once the package is opened, check that all components necessary for assembly of venetian blinds inside insulating glass are in:

- 4 perimeter spacers
- 4 corner keys
- protection plugs for sealing connectors (VM27)

During these steps, take care of the integrity of the Venetian blinds and its components.

We recommend to clean carefully the spacers with isopropyl alcohol or other detergents currently used in the glassworks so as to remove any stains and to improve the adhesion of the sealant.

Filling with molecular sieves

Fill at least half perimeter of the spacers with molecular sieves and in any case in accordance with the manufacturer's technical specifications. If the height is greater than the width, we advise to fill the side spacers only. Otherwise, it is possible to fill the bottom spacer, too.

For this operation, make sure that the corner key has already been mounted on spacer bar and, at the end of the process, close the opposite side with another corner key or a sponge, in order to avoid any leakage of molecular sieves while handling the spacer bars.

Butyl sealing

It is recommended to seal using special equipment extruding hot butyl on the borders of spacers. Follow the instructions given by butyl manufacturer.

Adjust the nozzle width according to spacer sizes and adjust the height according to spacer thickness: 6,5 mm or 8,5 mm.

Do not exceed with the dosage of butyl so as to avoid any leakage inside the insulating glass.

For "recesses" of modest dimensions, we suggest to apply butyl sealant to assembled aluminium spacer frame. By contrast, for "recesses" of bigger dimensions, apply butyl sealant separately: spacer with blind first and the remaining spacers then.

At the end of the first sealing, fill in manually with butyl the joints between spacers and corners, which are the most critical points to have the assembled frame hermetically sealed.

Check that the butyl is uniformly spread over the entire perimeter and corner keys, which must rest on the spacers bars.

I.G. Assembly

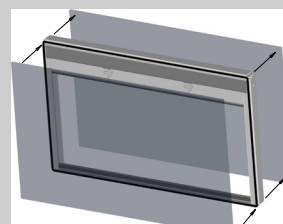
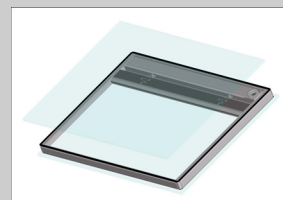
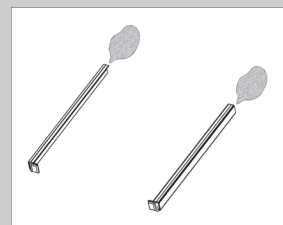
We suggest to use vertical automatic assembly lines for an easier installation of spacer frame and to avoid glass deflections, quite usual in case of manual horizontal assembly lines.

Clean and rinse glasses in order to remove any possible limescale residues that may cause scratches on glass at the passage of the ladder tape.

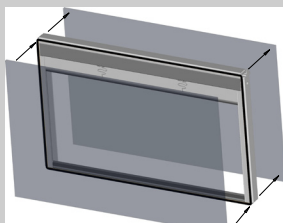
Be sure that glasses are flat (membrane effect of glasses) especially if tempered glasses.

In case of glass deflection and for acceptable values only, put the convex face outwards.

During transport of the spacer frame to the glass automatic assembly line, be careful not to damage the Venetian blind and above all do not stain the blind and its components with butyl: it could stick slats and cause malfunctioning.



I.G. Assembly



Position the spacer frame with the built-in blind on the first glass. Make sure that the blind is completely packed. We advise to put the head rail of the Venetian blind on the bottom next to the rollers preventing the blind from dropping during transfers on the automatic line. For very narrow and high blinds, the head rail can be located sideways in the frame.

Centre the frame on glass so as to leave space for the secondary seal on the 4 sides. For this operation, help yourself with the appropriate spacers of the automatic line.

Deflections of side spacers inwards are not admitted: they can block the free lifting and tilting of the blind. Use the edge of the glass as reference template, making sure that the lower or upper space be equal to the central one.

Press properly the frame on the glass in order to make sealant adhesion properties more effective especially for the following transfers of the glass on the automatic line.

Then, put the second glass for assembling and the following pressing on the automatic line.

We advise, especially if the assembly takes place in hot and wet season, to replace the air inside the glazed unit filled in with gas (e.g. argon), in order to avoid the deflection of the glasses in the cold season, which could block the blind movement. The replacement can be done automatically on the press of the line or manually by drilling properly the spacer bar to let the gas in and the air out.

Secondary seal



In case of motorized Venetian blinds (ref. **VM27**), before any second sealing insert the appropriate protection plugs for electric contacts.

The double-glazed unit is then transferred to the sealing station for the perimeter secondary seal.

Position the sealed insulating glass unit on the appropriate trolley and use the special cork spacers to space out the different IG units.

Inspection



Once the IG unit with built-in blind is sealed, be sure that the corners are well sealed, adding sealant if necessary by a palette knife. Besides, check that there are no air bubbles between the primary and secondary seal along the entire perimeter on both sides of the insulating glass unit.

Then, we recommend to check the correct functioning of the Venetian blind holding it vertically as it will be located in the window.

Check carefully also the side spaces between slats and spacers (no spacer internal deflections) and be sure that bottom rail stops at the lower spacer bar.

Any protection plugs for electric contacts must be obviously removed before checking the blind functioning.

Once inspection has ended, completely raise the blind.

In case of tilt-only blinds, close the slats before transport.

To test VM27 system, use 24V dc power supply only.

Transport and Storage



Stand the insulating glass unit on the appropriate trolley for transport.

We advise to position the head rail of the Venetian blind at the bottom of the trolley in order to prevent the blind from lowering during transport from the glassworks to the installation site. For narrow and high Venetian blinds only, the head rail can be located sideways during transport.

In case of tilt-only blinds, we suggest to keep slats horizontally during transport exactly as they will be installed.

The application of special altimetric valves is highly recommended while crossing mountain passes or places with remarkable altitude differences. Once the double-glazed unit is installed, the valves will be closed as usual for standard insulating glass units.

Finally, do not leave I.G. units outdoors, store them in a clean and dry place, far from UV light and low temperatures.

Installation

Installation of double-glazed units with built-in Venetian blinds follows the same procedures for standard insulating glass units, with special warnings because of built-in blinds.

Use the appropriate plastic spacers to locate and centre the glazed unit inside the window frame, the insulating glass must appear perfectly vertical.

As for blinds with a modular chain, for a correct installation of the external control device, follow this short and easy instruction: the internal part of the side spacers should be flush with or slightly projecting the internal side of the glazing bead.

For motorized blinds, before installing them into the frame, connect the three electrical connectors coming out the motor corner key, considering that the side connectors are to be connected to the cables coming from the power supply, meanwhile the central one is to be connected to the cable next to the power supply.

For that purpose, use the eyelet terminals and the screws supplied.

In case of the opening shutters, use the appropriate spring or magnetic contact to interrupt the flow of current at the opening of the door.

Install the glazed unit into the window frame rolling up the cable in excess between the double-glazed unit and the frame.

Finally, apply the glazing beads to close the double-glazed unit into the window frame.

Application of external magnetic control device

As far as **VC20** and **VC27** blinds are concerned, clean carefully the area around the magnetic control device inside the insulating glass, using isopropyl alcohol and waiting until it is completely evaporated.

Bring the external magnetic control device closer to the internal one so as to time magnets. During this operation, move slightly the magnet by the proper chain.

Once timing is completed, peel the bi-adhesive tape away from the external control device and bring it nearer to the internal one, following the magnetic attraction. Press the control device firmly against glass for a better adherence. Wait at least for one day before raising and/or tilting the Venetian blind for a better adherence of the biadhesive tape.

Then, attach the chain guide support to the end of the chain ring so as to allow the free sliding of the chain. This accessory must be applied for safety reasons in order to avoid an improper use of the chain by the children.

As for tilt-only **VS20** blinds, after timing magnets, stick the external slider rest on glass: bring the slider and its support closer to the internal invisible magnet. Move slider until slat tilting has been completed. Insert the slider into the rest and stick the latter to the glass in that position.

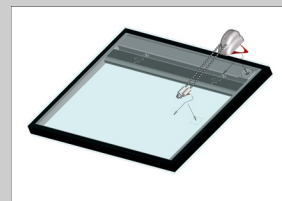
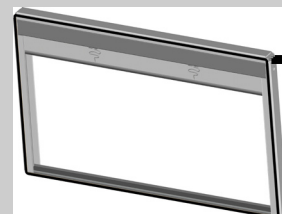
Function check

Once installation has been completed, check the correct functioning of the blind verifying that the slats are equidistant from the side spacer bars.

This can be performed by an external control device. Use the spirit level to be sure that the glazing unit is perfectly vertical and adjust its position by plastic support blocks of different thicknesses.

Check possible glass deflections by proper laser measuring devices and verify if the blind moves freely. In case the bottom rail is blocked, stop and raise the blind. Remove the nonconformity adjusting the insulation chamber, following the standard operating procedures and sealing the compensating hole by butyl at the end of the process.

In case of tilt-only blinds, slats must be moved immediately after installation so as to position them properly on the ladder tape: misaligned slats or slats exposed to long-term solar radiation may "stretch" the ladder tapes, which could cause a wrong position of the nearby slats compared to the other ones.



SALES TERMS & CONDITIONS

AL7 Meipa Srl general sale terms and conditions

1. **OVERALL** The general sale terms and conditions specified below ("General Sale Terms and Conditions"), are an integrated part of the order and/or order confirmation regarding the products and/or services ("Order" and "Order Confirmation") submitted to and supplied by AL7 Meipa S.r.l. ("Company").

Therefore the order is accepted by the company and placed by the purchaser ("Purchaser") in compliance with the General Terms which - unless otherwise agreed and undersigned by the Company - must be deemed to prevail over the various clauses and conditions referred to by the Purchaser.

2. **TRADEMARKS AND PATENTS** The Company is the sole owner, or licensee in force of regular contracts, of all the rights of industrial property relative to the trademarks placed on the products constituting the object of the Order ("Products") and of all the patents in force of which the Products have been manufactured. The Purchaser is in no way authorized to remove the trademarks of the Company from the Products, to replace them with other trademarks nor to add trademarks and/or other distinctive signs other than those owned by the Company.

3. **PRODUCTS OWNERSHIP** The ownership of the Products, even after supply has taken place, resides with the Company until the aforementioned company account has been settled by the Purchaser the entire payment of all the invoices relative to the Products delivered to the purchaser according to that provided for by art. 6 shown below.

4. **PRICES** Prices are those specified in the Order or, if different, those specified by the Company in the Order Confirmation which are set based on the costs relative to materials, manufacturing or any other cost known to the Company on the date of the Order Confirmation. Should the Company decide to increase prices owing to increases reCORDSd in such costs following that date, the Company will have to notify the Purchaser of the new prices, by registered letter or in writing, within 15 (fifteen) days after the date of the Order or, if subsequent, of the Order Confirmation. In this case, the new price will be deemed constituting the price of the Order, namely of the part of the order to be processed. If the new Price exceeds the previous one by over 10%, the Purchaser will be entitled to cancel the Order, namely the part of it still unprocessed by notifying such decision to the Company by written notice, possibly by registered letter, ahead of the Products shipment and, in any case, within and not later than 14 (fourteen) days after the date of forwarding of the price increase notice. Unless agreed otherwise in writing, the prices quoted by the Company are expressed in Euro and do not cover freight charges, insurance, loading and unloading of the Products and VAT or any other taxation, levies or duties and are ex works of the Company and delivered in standard packing.

5. **PACKING, FREIGHT AND INSURANCE - RISKS CHARGES** Charges for standard packing of the Products are met by the company, while charges for special packing (e.g. pallets or wooden crates in case of shipment) are charged to the Purchaser.

Freight charges of the Products through the forwarding company chosen by the Company and advanced by the same will be charged to the Purchaser in the invoice unless otherwise agreed. The Purchaser is also bound to pay to the Company an extra amount on the total amount of the Products specified in the invoice to meet with the expenses faced by the latter for insurance purposes. Freight charges of the Products are charged to the Purchaser who, within 3 (three) days after receipt, must inform the Company about any defect, damage, theft, shortage and delays occurred during the transport in order for the latter to file a complaint and formulate the necessary actions against either the forwarding company or the insurance company.

6. **PAYMENT TERMS** The price of the Products will have to be paid by the Purchaser to the Company within the deadline indicated in the sale invoices issued by the latter. 14 (fourteen) days having elapsed from the date of payment, the Company will be empowered to issue a sight draft to obtain the due amount alongside the interests for delayed payment which amounts to that provided for by art. 5 of the decree 9.10.2002 no. 231. The company reserves the right to claim damages, if any.

7. **BREACH OF THE PURCHASER** The Purchaser who does not settle the payment within the agreed terms, will be held in default albeit he/she will not have received any default notice. In the case of default by the Purchaser to pay the purchase price of the Products to the Company, according to what provided for by the art. 6 mentioned above, the Company reserves the right to cancel the Orders entirely or partly or to suspend delivery of the outgoing Products bound to the Purchaser's warehouse, even without issuing a default or injunction notice to the Purchaser, and is subject, anyway, to compensation for damage.

Should the Order refer to more deliveries, with regard to which the Company has issued more invoices, the delayed payment from the Purchaser - even if by one day only - of such invoices - or even one of them only - authorizes the Company to suspend finally later deliveries of the Products. In addition the Company will also be entitled to cancel an Order or to suspend partly or entirely the supply of the Products to the Purchaser, should a change in the financial and economic conditions of the same occur, such that his/her solvency guarantee is reduced. If the Purchaser is declared bankrupt, declares shutting down or ceases anyway to exist, or undergoes restraint or seizure of his/her property, the Company will be entitled to delay or cancel future deliveries, if any, and/or to back out of any contract without losing the right to be paid the full purchase price of the Products. The credit collection charges faced by the Company - both during the course of court proceedings and out of Court proceedings - including the fees charged by the Italian Lawyers, set by the Ordine degli Avvocati (Association of Italian Lawyers), will be charged entirely to the Purchaser. The Purchaser will not be entitled to withhold or compensate any payment by an alleged credit towards the Company.

8. **SITE OF DELIVERY OF THE PRODUCTS** The site of delivery of the Products is the factory of the company, based in Italy at San Giorgio di Piano (BO), Via Poggiorenatico, 1/3 ("Factory").

9. **PRODUCTS DELIVERY TERMS** Whereas the delivery of the Products is subordinate to the availability of the same at the Factory, the Company will do everything in its capacity to deliver the Products within the delivery terms agreed in the Order or, if different, in the Order Confirmation. Such terms, however, are approximate and not imperative. In case of delay, therefore, the Company will not be liable for breach of contract. Should a given delivery term have been agreed, the Purchaser will have to allow a proper extension - in any case not less than 30 (thirty) days - in order for the Company to fulfil its obligations.

Only in case the agreed extension timeframe should be exceeded, will the Company be liable for breach of contract. Unless agreed otherwise in writing, the Company is entitled to carry out the delivery of the Products in instalments.

10. **FORCE MAJEURE** Should the Company be faced with the impossibility to carry out the delivery within the agreed terms, due to circumstances beyond its control such as, by way of illustration and not exhaustive: war, governmental restrictions, strikes or lockouts, work force demonstrations or other general or local events; fire, floods, explosions, natural catastrophes, or any other acts of God owing to which the Products have been damaged and/or destroyed or any event which, be that as it may, may cause problems to the Company in terms of manufacturing, delivery or supply of the Products, the Company, without obligation to provide explanations to the Purchaser, will be entitled to cancel all and/or part of the Order, while doing everything in its capacity to inform the Purchaser as soon as possible. It remains that, in these cases, the Purchaser will not be entitled to require any reimbursement from the Company as compensation for the damage, if any, suffered by the Purchaser and/or by third parties owing to the cancellation of the Order by the Company.

11. **ORDER VARIATIONS, CHANGES AND CANCELLATIONS** The Order of the Products is irrevocably confirmed by the Purchaser. Barring what provided for by the art. 4 aforementioned, any changes or cancellations of the Order from the Purchaser and expressly authorized by the Company, will have to be communicated in writing to the latter by registered letter within, and at the latest, 10 (ten) days after the date of issuing of the Order.

12. **NON COLLECTION OF THE PRODUCTS FROM THE PURCHASER** Should the Purchaser not collect the purchased Products delivered to destination, the Company will be entitled, at its own discretion, to: (I) demand the settlement of the payment and leave the Products at the Purchaser's disposal; (II) proceed to the sale of the Products to third parties, without amendments or any other sort of measures having to be taken by the Legal Authorities.

It remains that any stoppage dues arising from the non collection of the goods at the forwarding company, handling and freight charges applying to the Products are charged to the Purchaser. Should the Purchaser have difficulty in accepting the delivery for a period of time longer than 14 (fourteen) days, the Company will be entitled to back out of the contract. In any case, it is agreed that the Company is fully entitled to compensation for the damage suffered.

13. **PRODUCTS WARRANTY AND COMPLAINTS** All the Products supplied by the Company are guaranteed against production faults provided they are handled in compliance with correct procedures. The Purchaser is obliged to inspect the goods delivered upon receipt of the same. Complaints, if any, about Product faults are to be communicated to the Company by means of registered letter - or anyway in writing - : (I) in case of manifest faults, within and not later than 5 (five) days after receipt of the Products; (II) in case of hidden faults, within and not later than 8 (eight) days after ascertaining the fault and, however, not later than 30 (thirty) days after delivery of the Products. The above being stated, no complaint can be made unless judicially exerted by way of action or plea, within 3 (three) months after receipt of the single batches of Products. However complaints are to be provided with all the evidence necessary to their documentation. Inadequate information in this regard might cause delays to the Company to settle the complaint. It is agreed that, should this be the case, the Company will not be liable for such delays. Complaints regarding Products having been cut, used and/or processed after the delivery, will be rejected, except when faults other than production faults could not be detected before the processing of the goods. Complaints regarding the processing expenses of the delivered goods will be rejected. Differences of the Products from what specified in the Order or, if different, in the Order Confirmation with reference to quality, quantity, width, colours, finishes, size and the like, which stand for variations commonly accepted in the commercial practice or technically inevitable, will not be considered valid reasons for lodging complaints. The Purchaser is not entitled to give back the Products or refuse the delivery unless through written authorization of the Company. Being agreed that, in no way, will the complaints authorize the Purchaser to suspend or delay the payment of the invoices relative to the Products. Should the grounds of the complaint be conventionally or legally acknowledged and should it not be settled with the Company granting a discount on the purchase price of the Products, the Purchaser will be entitled to ask the Company to be reimbursed exclusively the price of all the defective Products as per the relative invoice. The Company will be entitled to choose, at its own discretion and upon return of the defective Products, whether (I) to replace the Products with other flawless Products or (II) to reimburse to the Purchaser the price paid by the latter for the defective Products. Being agreed, in any case, that the Purchaser will waive any claim of reimbursement for any direct or consequential damage that might arise. The Purchaser will further have to protect the Company against any possible complaint from third parties regarding goods or services supplied by the Company.

14. **RETURNED GOODS** In no way will the Purchaser be entitled to return the Products purchased and duly delivered by the Company, without written authorization of the Company. Should such authorization be granted, the Purchaser, however, will have to specify the goods return authorization number provided by the Company in the forwarding note, upon express request of the Purchaser. The Products returned will have to be intact and in perfect conditions. Should the Products turn out damaged, the Company reserves the right, in its sole discretion, to: (I) reject the return of the Products; or (II) to charge the Purchaser with the cost of the Products and/or of all the steps required to their fixing. Forwarding of the returned goods will have to be free port at the Factory.

15. **GOVERNING LAW AND PLACE OF JURISDICTION** All the contracts executed by the Company will be governed by the laws in force in Italy except for the Vienna Convention on International Trade. For all disputes that should arise with regard to the contracts executed by the Company, in the first instance the Court of Bologna, Italy, will be the sole place of jurisdiction, being agreed that the Company is entitled to take legal measures against the Purchaser before the competent Court of the place of residence of the Purchaser or before any other competent Court.

AL7-Meipa Srl

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