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USER MANUAL

PRODUCT NAME	Twister
PART NUMBER	1401.100
DESCRIPTION	Pay-out assistant for twist-free welding wires in drums
DEVICE	Mechanically driven
MANUFACTURER	AWDS Technologies S.R.L
ISSUE	07/2024

FOREWORD AND NOTES FOR THE USER

Carefully read this manual before using the device

Before starting any operation, it is mandatory to read this instruction manual.

The guarantee of the correct functioning and full performance compliance of the device is strictly dependent on the implementation of all the instructions contained in this document.

This manual contains all the necessary information in order to allow correct use of the device.

The listed routine maintenance policies can help keep your device in perfect condition.

The workers responsible for using this device must have all the necessary information and instructions and must receive adequate training on the best safety practices related to:

- the conditions of use of the equipment;
- to foreseeable abnormal situations; pursuant to art. 73 of Legislative Decree 81/08.

This manual has been prepared exclusively for use by its customers, guaranteeing the most up-todate version at the date of edition.

AWDS Technologies S.R.L. reserves the right to make changes to the product described in this manual at any time and without notice.

GENERAL INDEX

Summary

1 INTRODUCTION

1.1 MANUAL ORGANIZATION

The manual is designed to describe the operation, the main components, the various configurations and ordinary maintenance of the Twister.

- Operation section: Description of startup and operation of the device.
- Configurations section: Description of the various configurations and accessories.
- Components section: Description of main components.
- Maintenance section: Troubleshooting and unit replacement

This manual is made up of chapters so that the user can choose and read the chapters according to the operation he wishes to carry out.

1.2 GENERAL WARNINGS

The Twister must only be used by qualified and adult personnel.
The safety manager should ensure that the person assigned to use the device has read and understood the information contained in this manual.
The personnel in charge of maintenance, both ordinary and extraordinary, must have good mechanical knowledge.
While the device is turning, it is recommended not to remove its protections.
It is recommended to avoid performing any type of work, repair or intervention which is not shown on this manual.
It is advisable to store this manual with care, for a correct use of the device.

The manufacturer declines all responsibilities for any damage to people and/or things caused by incorrect use of the device.
Any modifications to the device effected by the user should be considered sole responsibility of the same, and therefore the manufacturer declines all responsibilities for any damage caused to people and/or things deriving from maintenance interventions carried out by non-professionally qualified personnel and in a manner differing from the operating procedures listed below.

2 SPECIFICATIONS AND MAJOR COMPONENTS

2.1 GENERAL DESCRIPTION OF THE DEVICE

The TWISTER is an anti-torsional device designed to relieve the residual tension remaining sometimes on the welding wire after the twist-free winding process, for the purpose of preventing knots, jams and consequent unwanted machine stops.

The device must be installed on the upper end of the hood positioned on the bulk welding wire container, as shown in figure 1.

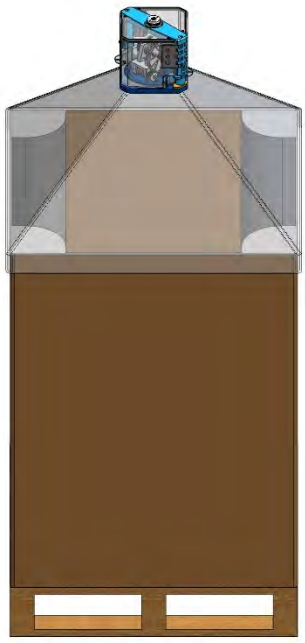


Figure 1

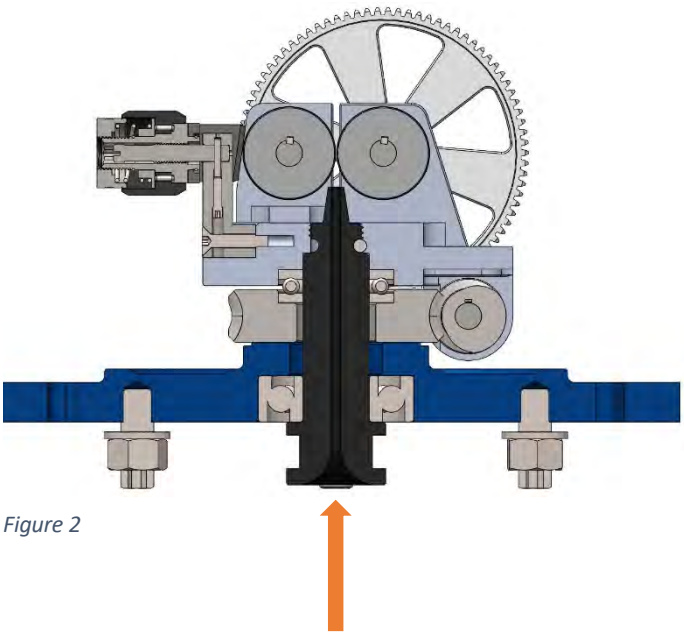


Figure 2

For the initial threading, the welding wire has to be first of all manually inserted through a plastic core, as shown in figure 2, and subsequently passed through the two contact wheels, whose "pinching" force is controlled by a special pressure knob equipped with torque limiting clutch.

The passing of the wire through the two engaging wheels, generates the rotational movement of the gear assembly, consisting of three or four spur gears (depending on the model version), a worm gear and a helical gear, which in turn imparts a rotation on the wire itself along its axis.

2.2 COMPONENTS GENERAL OVERVIEW

Front isometric view

Rear isometric view

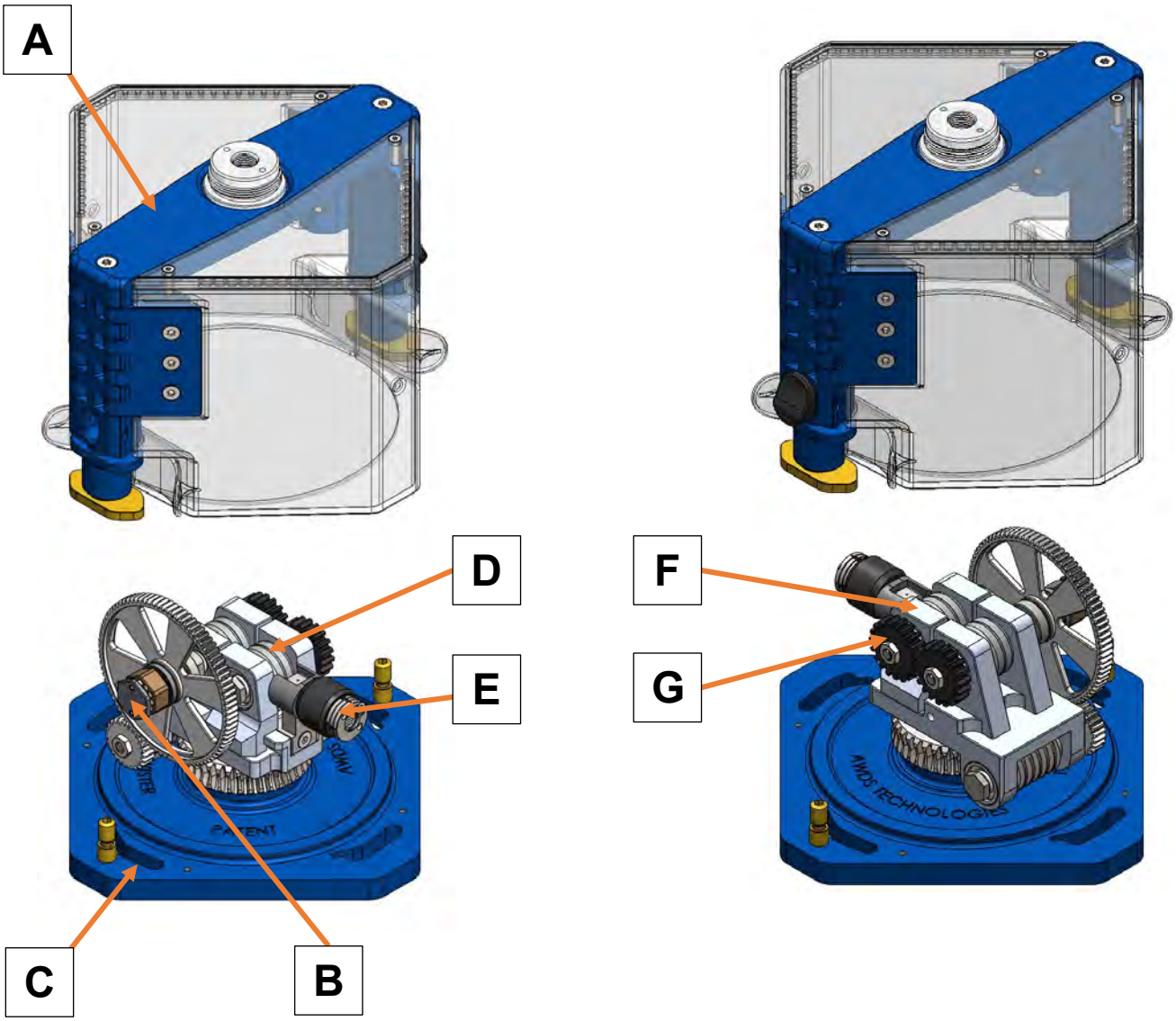


Figure 3

A	Protective cover dome
B	Torque limiter
C	fixed Base
D	wire contacting wheels
E	Torque limiter control knob
F	movable Cursor
G	synchro wheels

2.3 TECHNICAL FEATURES

Mass kg]	2,4
Closed Twister measurements [mm]	167x167
Measurement with open protections [mm]	427.1
Height from Base [mm]	163.3
Total height [mm]	183.3
Minimum wire loop diameter inside pack [mm]	500

Should you plan to feed smaller wire loop diameters, contact first the manufacturer for additional clarifications and instructions.

Closed Side protection doors

Open Side protection doors

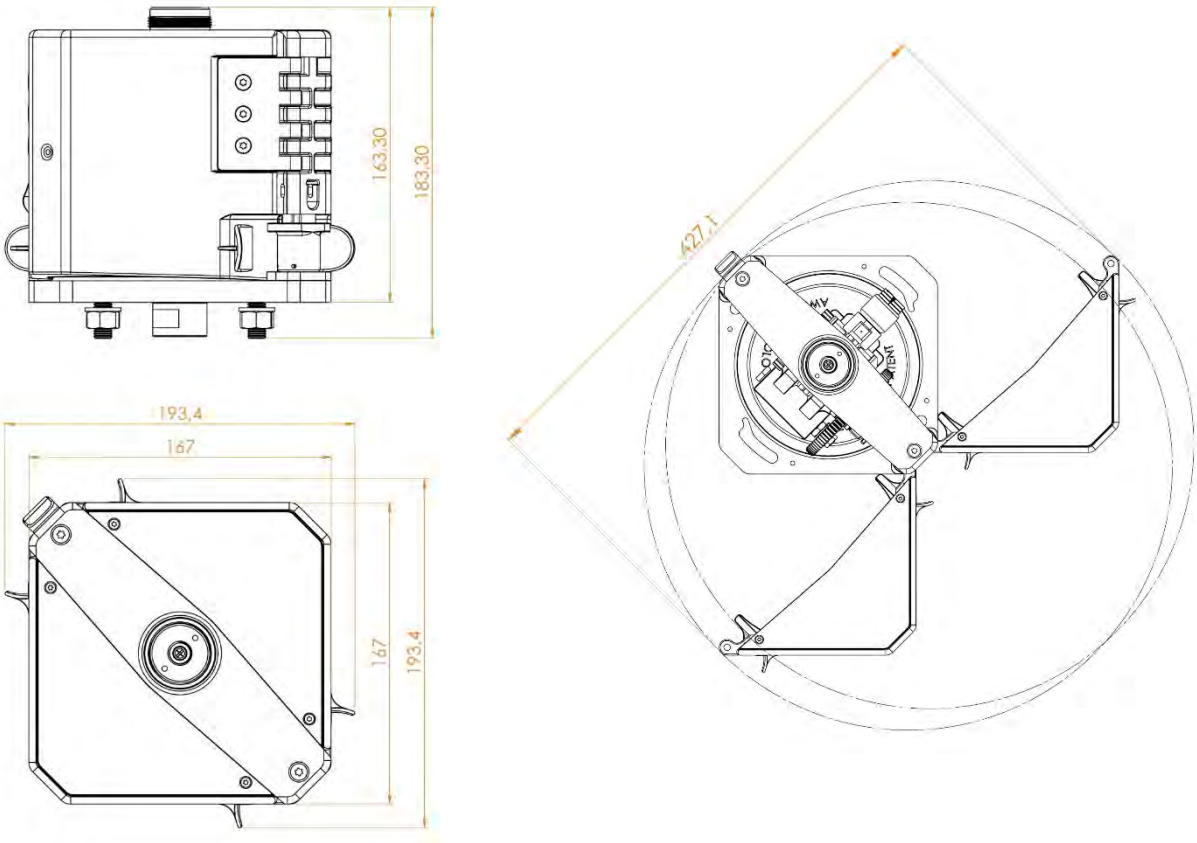


Figure 4

3 COMMISSIONING THE DEVICE

3.1 UNPACKING

The Twister is supplied fully assembled, in a cardboard box.

Before removing the packaging, verify the condition of the device, and ensure that all required accessories and the user manual or other documentation are contained in the box.

When moved around the Twister must be held by the fixed base and NOT by the cover.

3.2 DRUM OR BULK PACK PREPARATION

For a correct the functioning of the device, it is necessary to remove any type of central core from the drum / pack, as this could prevent the anti-torsional action of the Twister.
Figure 5 shows a central core.

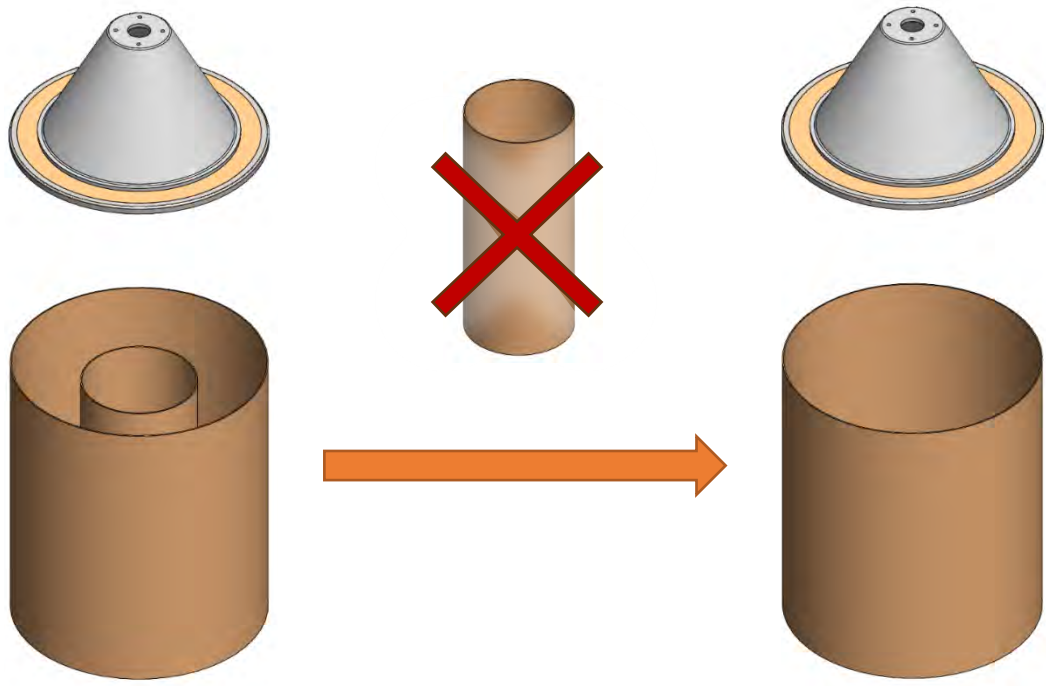


Figure 5

Depending on the model,the Twister can rotate in two different direction (clockwise or anticlockwise). In order to function correctly, it **must always rotate in the same unwinding** (pay-out) **rotation of the wire**. When ordering your Twister, always specify the unwinding direction of the wire.
See chapter 4.1.

3.3 MOUNTING THE TWISTER ON THE DRUM / BULK PACK HOOD

The Twister is mounted and locked on the dome by fastening 4x M10 nuts.

To facilitate the drilling on the upper part of the hood, an aluminum template is supplied with the device with the exact holes which must be drilled on the plastic dome.

Tools:

- Drill and bit ø11[mm].
- Open end wrench with 17[mm] hexagonal mouth

The operations to be carried out in sequence are:

1. Position the supplied template on the upper end of the dome, making sure that it is placed in a central position with respect to the hole of the hood. Figures 6 and 7;

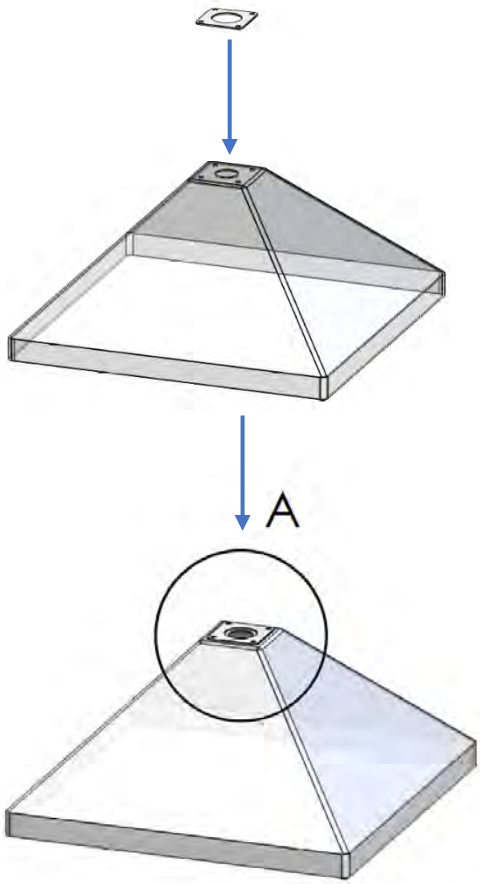
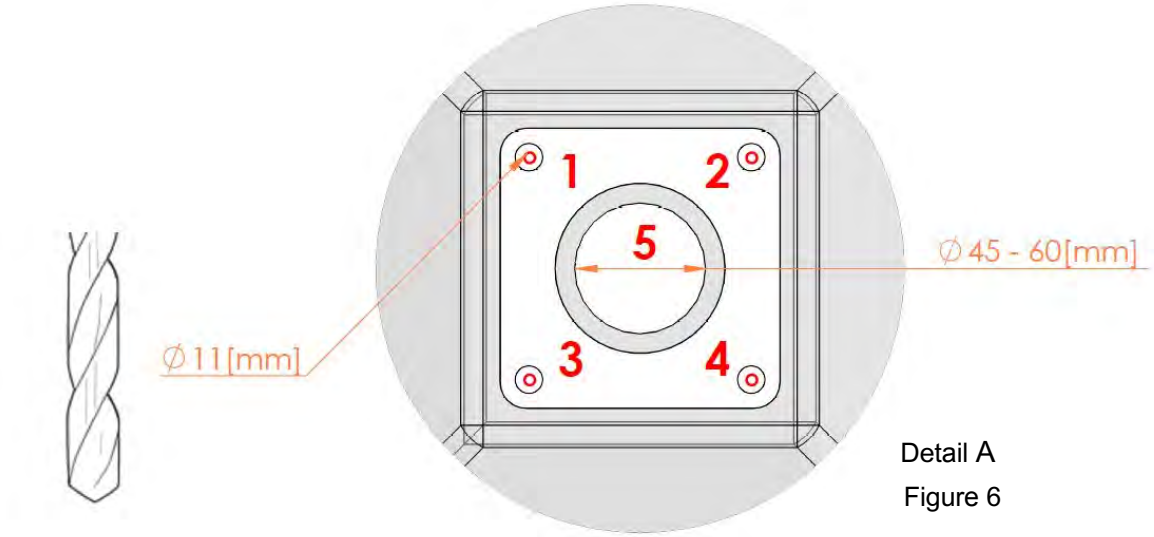


Figure 6

Figure 7

2. Drill the dome carefully matching the diameters shown in figure 8;

The central hole no.5 (figure 8) of the hood must be drilled or cut respecting the indicated diameter (min 45 max 60 mm). Drilling a hole with a smaller diameter than the one shown below can compromise the functioning of the device, as it could prevent the free rotation of the plastic core where the wire enters the twister.
See Figure 11.



Detail A

Figure 6

Figure 8

3. Unscrew the 4 nuts and remove the 4 washers that you will find pre-assembled on the Twister. Figure 9.

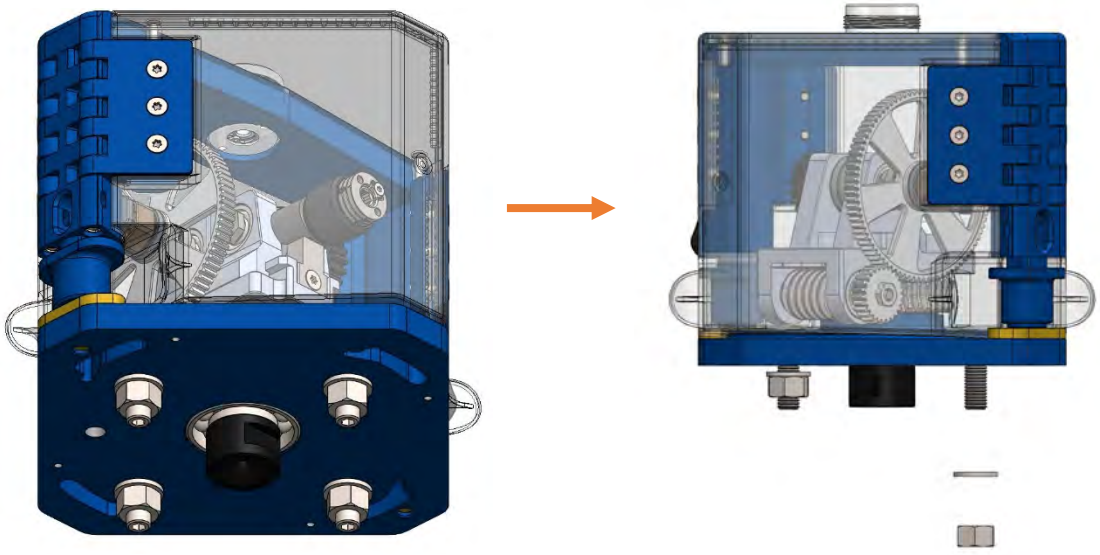


Figure 9

4. Place the Twister on the upper end of the hood making sure that the grains present on the base of the Twister are inserted into the appropriate holes. Figure 10;

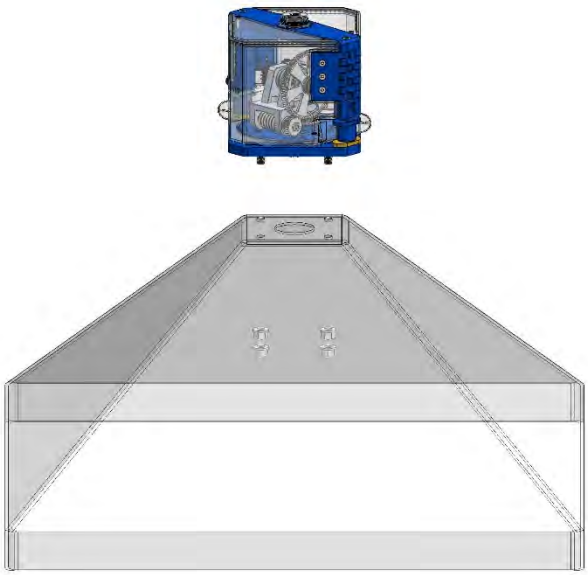


Figure 10

5. Finally, fix the Twister by tightening the nuts back and making sure that the washers are correctly positioned. Figure 11.

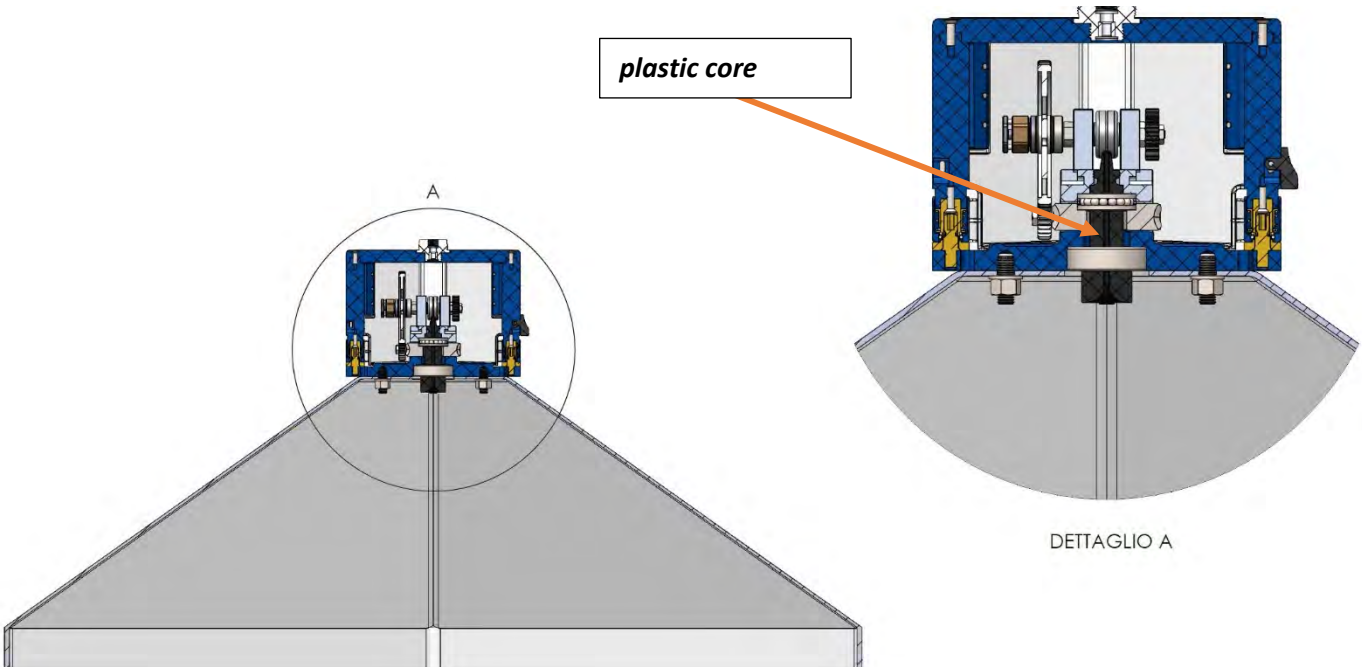


Figure 11

3.4 REMOVING THE PROTECTION COVER

It is absolutely forbidden to operate the Twister if the cover top is not correctly positioned.

Cover removal should be done when the Twister is completely stopped.

To remove the protection cover, simply:

1. Simultaneously press upwards the two buttons located on opposite sides of the cover. Figures 12 and 13

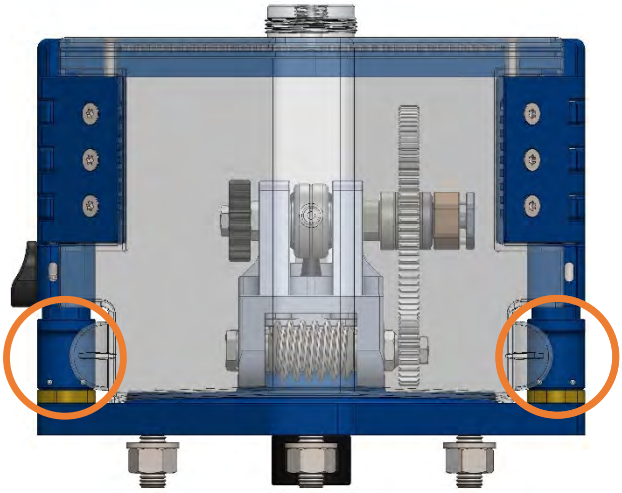


Figure 12

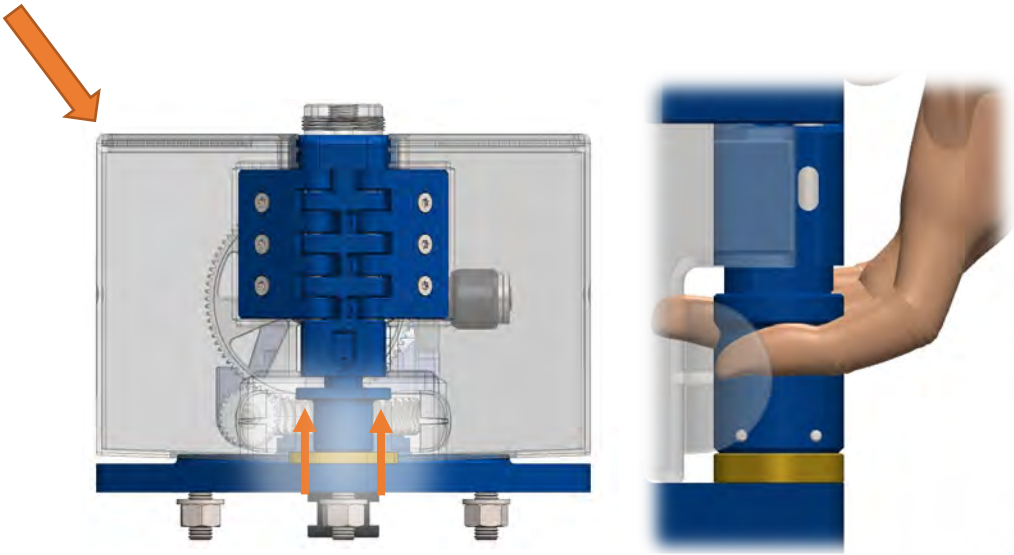


Figure 13

2. While holding the buttons down, lift the cover. Figure 14;

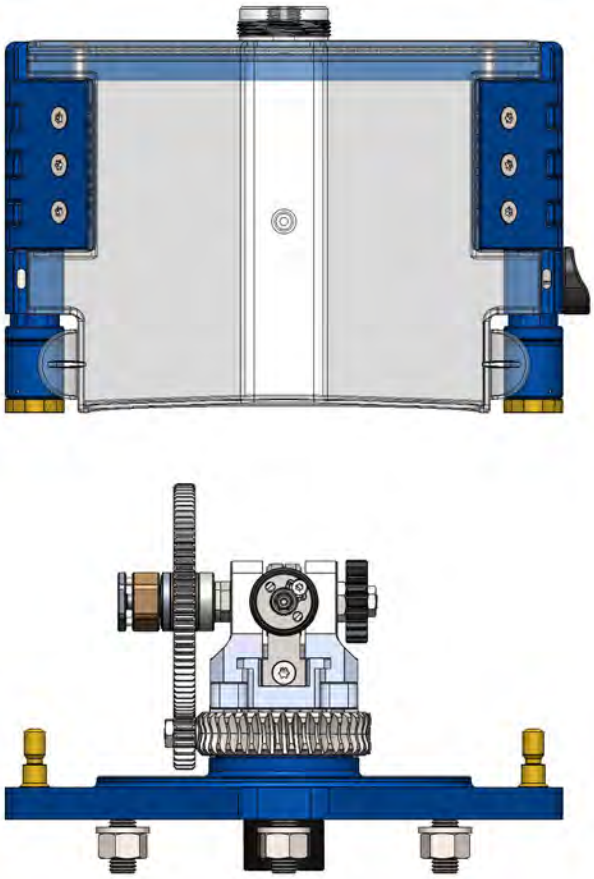


Figure 14

3. To replace the cover, simply reverse the process; then, carefully place the cover into its seat, ensuring that the side pins are aligned and apply moderate pressure to allow the locking mechanism to engage. Figures 12 and 13

3.5 OPENING THE SIDE PROTECTION DOORS

It is strictly forbidden to operate the Twister if the side protection doors are not correctly closed.

The opening of the side protection doors of the cover must be effected only when the Twister is completely stationary.

To speed up wire insertion, knob calibration and other cleaning or maintenance operations, it is possible to open just the side doors, thus avoiding removing the cover.

To open the side protections simply:

1. Press the button on the side of the cover. Figure 15;

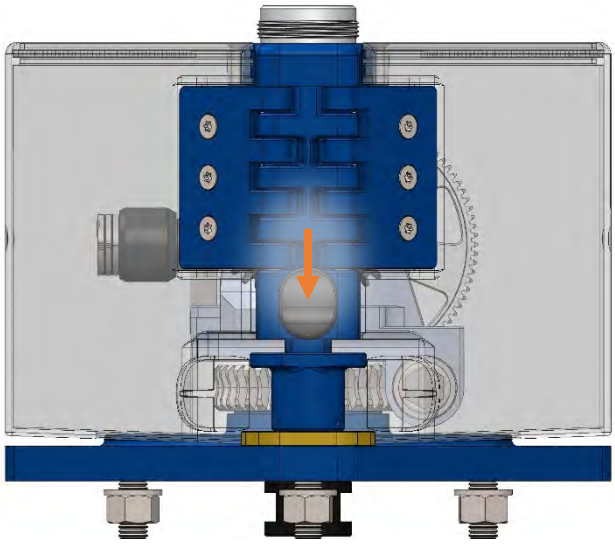


Figure 15

2. While holding down the button, open one or both side doors by rotating them in the direction indicated by the arrow. Figure 16;

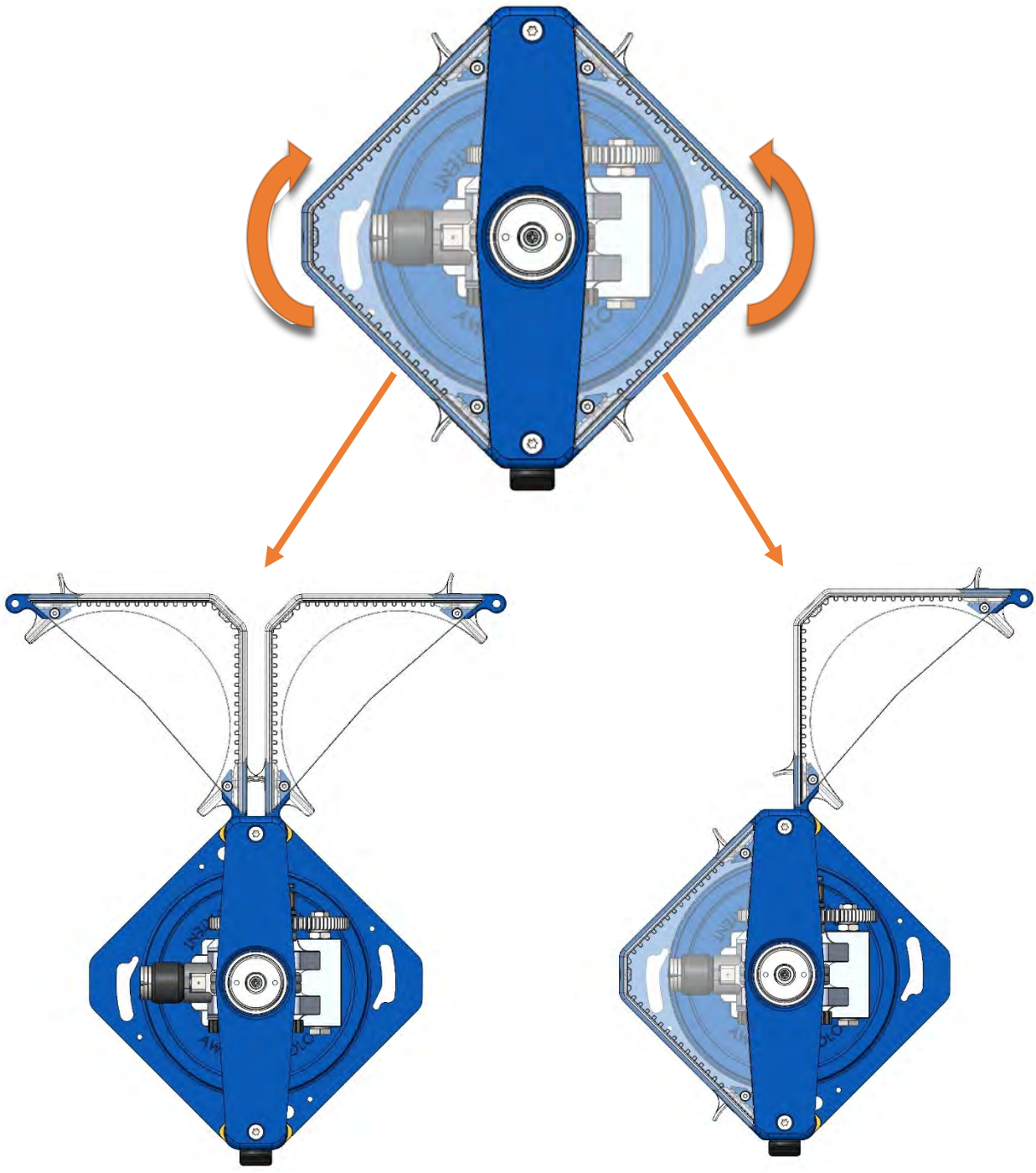


Figure 16

3. To close the side doors, you need to push them, applying moderate pressure in the final phase, to allow the locking mechanism to engage. Figures 17 and 18;

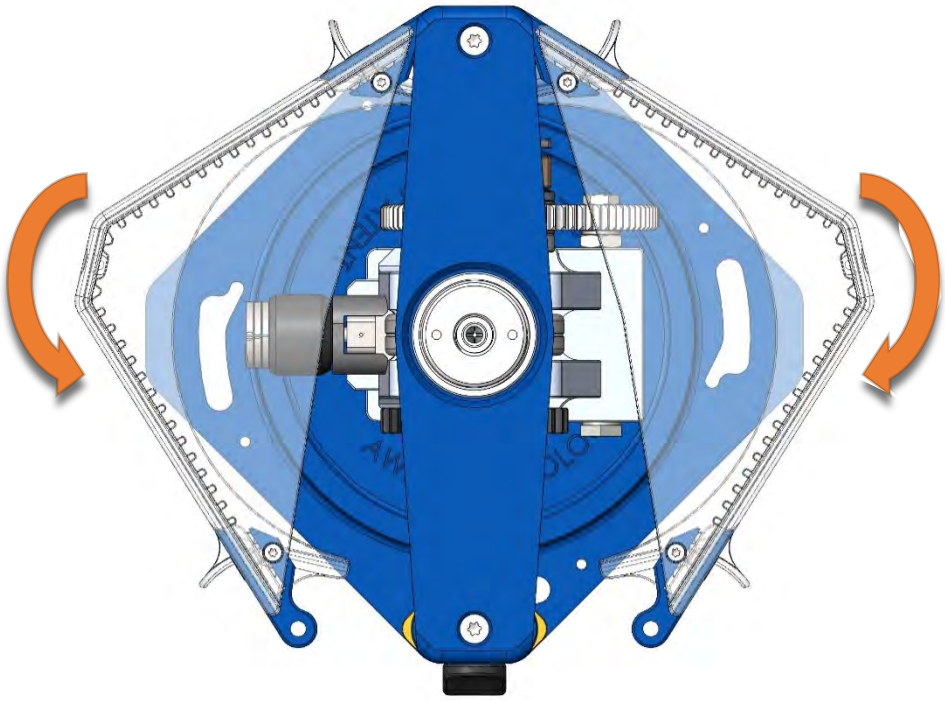


Figure 17

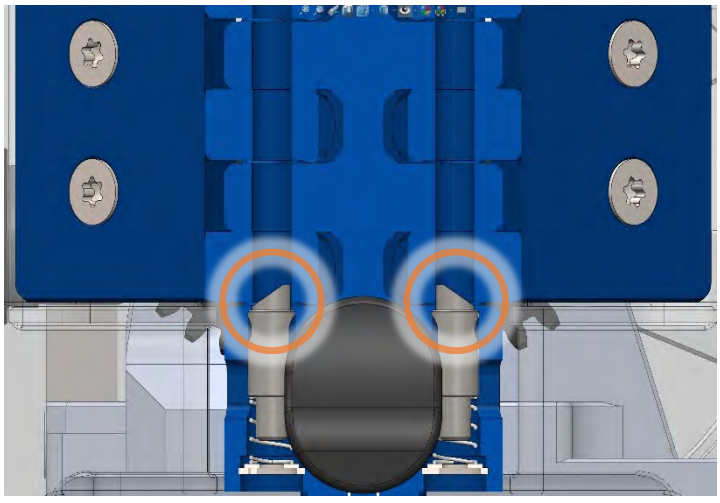


Figure 18

3.6 INSERTING THE WIRE

This operation must be carried out after the Twister has been mounted on the hood of the pack containing the twist-free wound welding wire; it consists in threading the wire through the device.

1. Remove the cover as explained in the previous chapter. Figure 19;

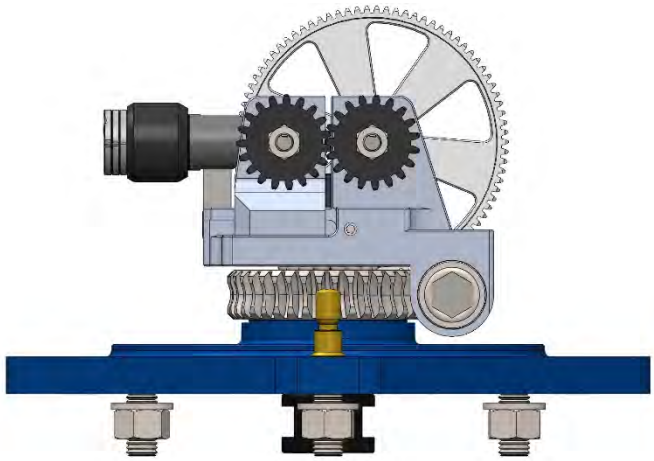


Figure 19

2. Unscrew the pressure knob located on the side of the Twister. Figure 20;

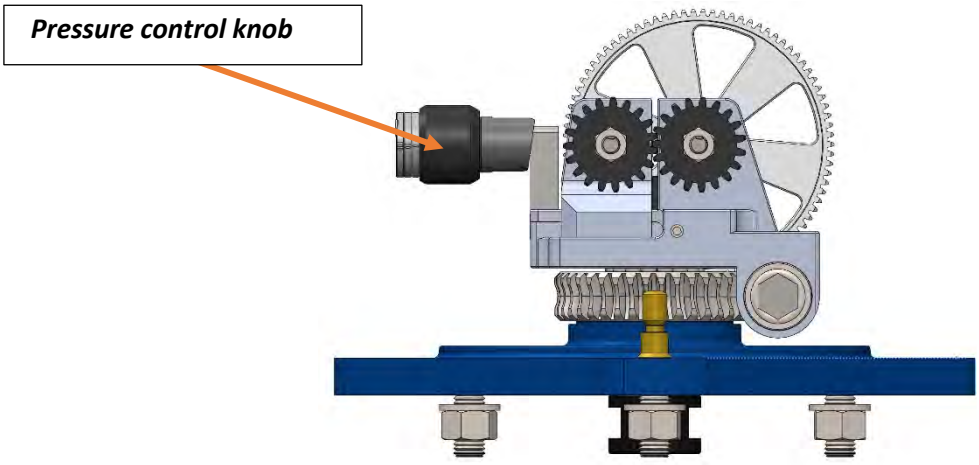


Figure 20

3. Slide the movable support along the guide to allow the Twister wheels to open. Figure 21;

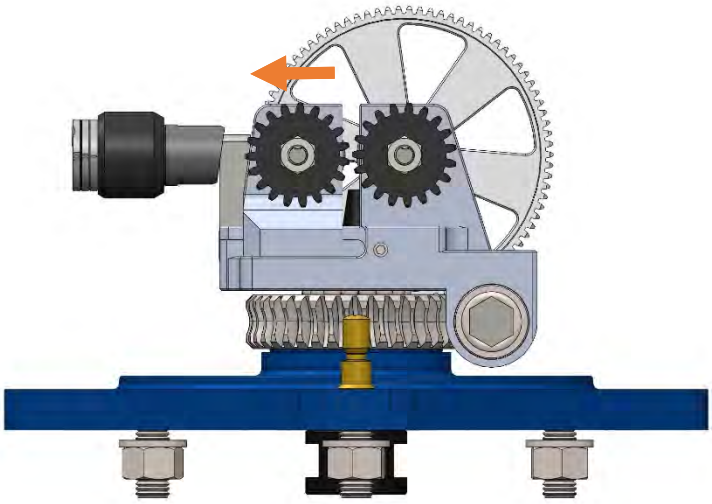


Figure 21

4. Insert the welding wire, passing it through the hole in the plastic core located at the bottom, until it reaches the opposite end. Figure 22 and 23;

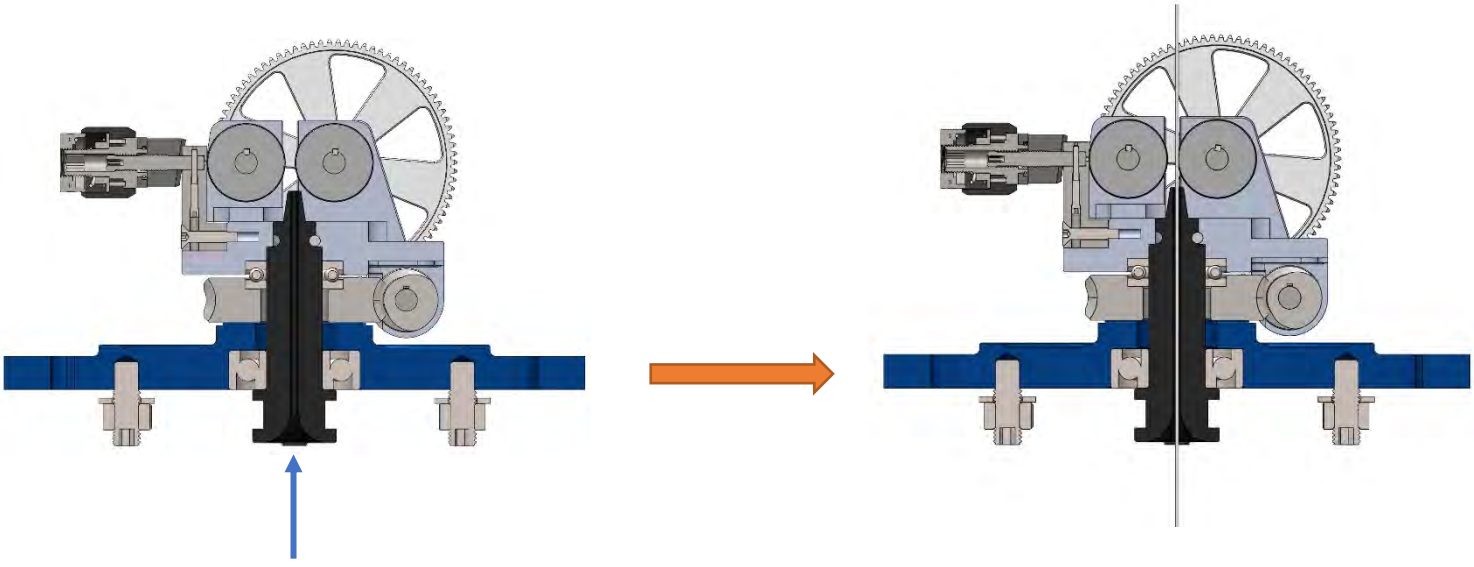


Figure 22

Figure 23

5. Now perform the reverse process: reposition the movable cursor, making sure that the wire is centered in the contact wheel "U" shaped grooves (Figure 24), and tighten the knob until the torque limiter is engaged. Figure 25;

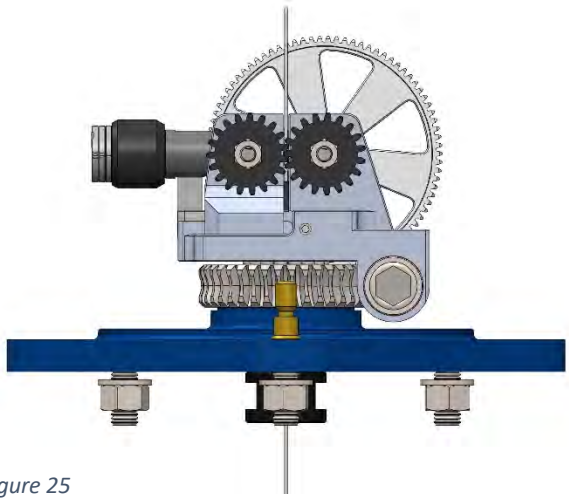
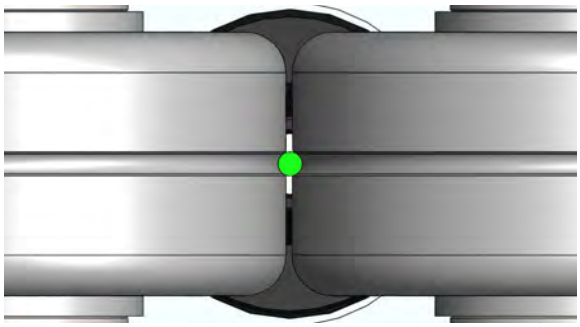
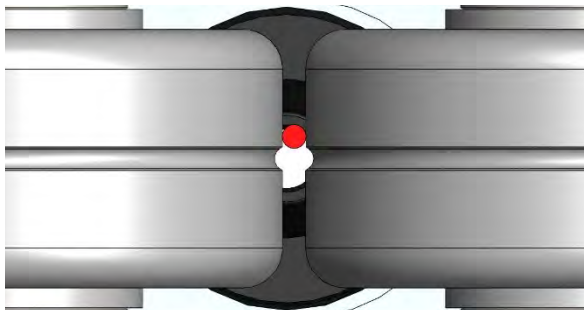


Figure 25



Correct wire position inside the "U" grooves



Wrong wire position outside the "U" grooves

Figure 24

6. If the process was carried out with the side protection doors open, close them as described in chapter 3.5 and go straight to point 9

7. If the process is performed with the cover removed, pull some welding wire out until at least 70-80 mm protrude from the top of the Twister;h

8. Install the cover as indicated in chapter 3.4, taking care to correctly insert the wire through the opening of the dome. Figure 26;

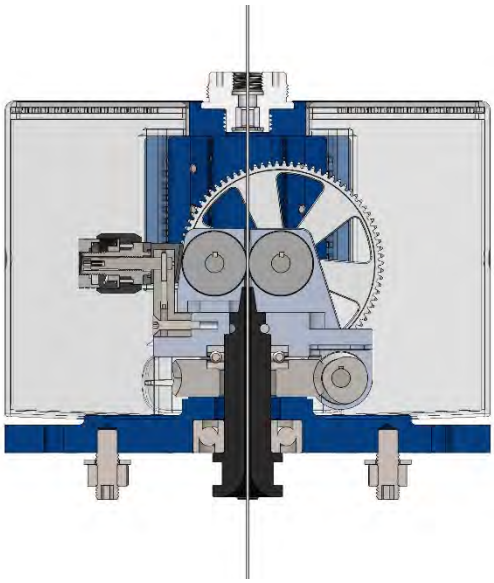


Figure 26

9. Gently pull the wire upward, to ensure that it feeds smoothly and without jerks. If this is not the case, verify and repeat the procedures making sure they are carried out as described in this manual. Should the problem persist, an excessively high pressure adjustment could be the root cause and it will become necessary to readjust the knob torque limiter. See chapter 3.7.

3.7 ADJUSTING THE WHEEL PRESSURE CONTROL KNOB

The pressure knob controls the pressure applied while pushing the two contact wheels one against another and through the built-in torque limiter it prevents, through a correct adjustment, an excessive pressure on the passing welding wire.
The torque limiter requires different adjustments depending on the type of welding wire, its diameter and its columnar strength.

To simplify this operation, the knob has 3 adjustment levels: low, medium, high pressure.

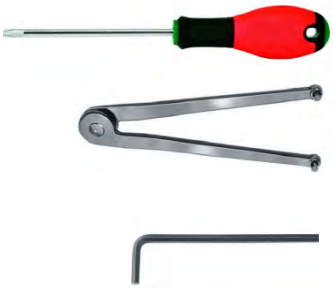
The following table provides general guidelines for proper calibration based on material type and wire diameter.

I	Material: aluminium; Diameters: 0.90 -1.20 mm
II	Material: aluminium; Diameter: 1.60 mm
III	Material: steel; Diameters: 1.20 mm

Note: The above recommended adjustments represent a generic indication and may require to be changed, depending on the characteristics and the hardness of the wires used.

Tools required:

- TORX screwdriver.
- Compass wrench.
- Allen key, with 6 mm hexagon



Knob adjustment steps:

1. Remove the protection cover and loosen the knob, turning it anti-clockwise;
2. Loosen the knob until it reaches the run end position. Figure 27;

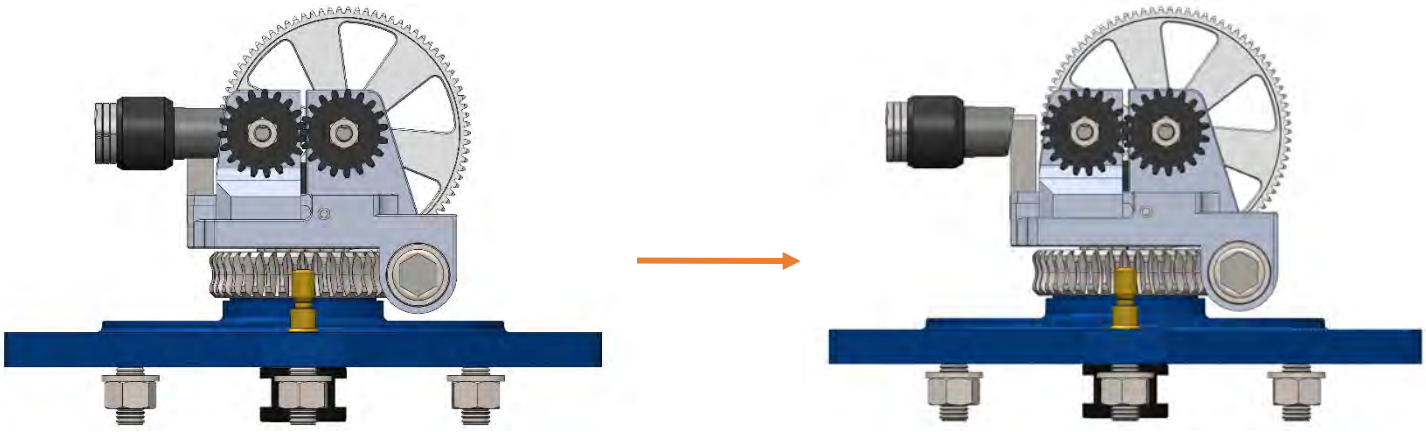


Figure 27

3. Loosen the screw on the top of the knob, highlighted by an orange circle in Figure 28, using theTORX screwdriver while holding the slider in place using the compass wrench.(**Do not remove the screw**);

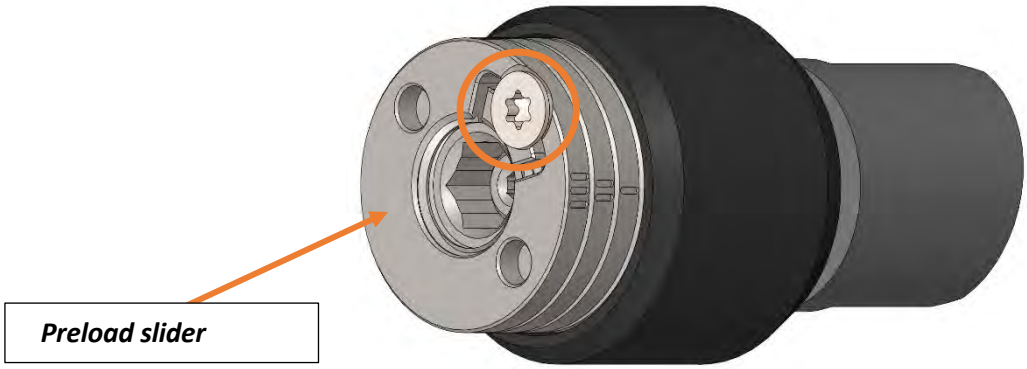


Figure 28

4. The slider has 3 notches, marked with a number which indicates the adjustment level. To set the desired level, simply align the corresponding notch with the edge of the knob. Figure 29 and 30;

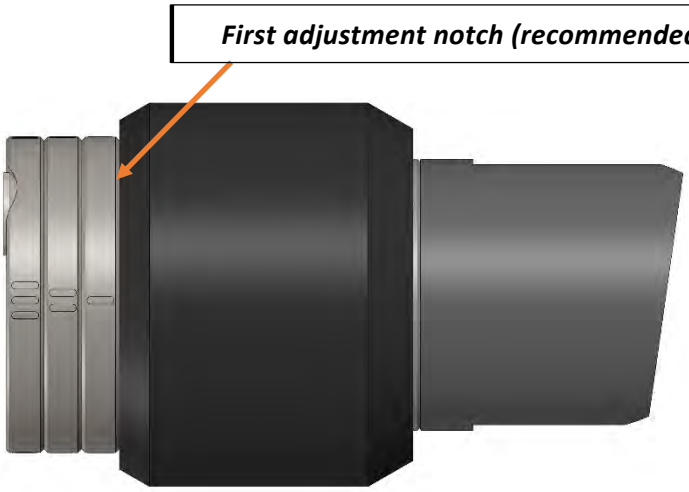


Figure 29

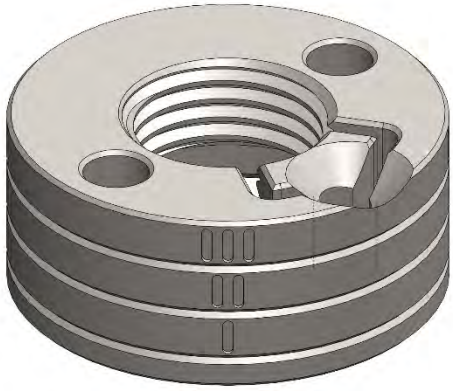


Figure 30

5. To proceed with the adjustment, it is necessary to use the compass wrench and the hexagonal Allen key. Insert the Allen key into the appropriate seat. Then insert the compass wrench into the appropriate holes of the cursor. Holding the Allen key firm, rotate the compass wrench to adjust the height of the cursor to the desired level. Figures 31 and 32;

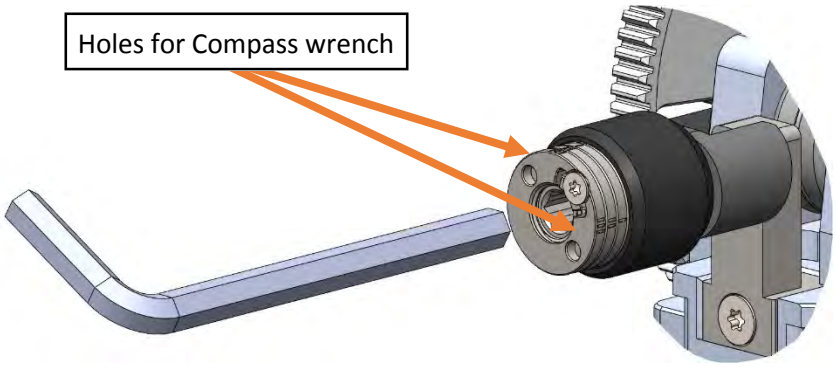


Figure 31

Figure 32

6. Once the cursor is positioned, screw the locking screw back in, making sure that the welding wire is in the correct position (See figure 24).

Pressure adjusting criteria:

The action of the Twister should never alter the shape of the wire, nor damage its surface

An incorrect adjustment for the type of wire in use:

- Could negatively impact the performance of the device. With an excessively low torque adjustment, the force exerted on the wire could not be sufficient to activate the Twister wire counter-torsioning function, while on the contrary if the pressure exerted on the wire by the pushing wheels is too high, a wire dragging force is generated and it could affect the wire feeding or excessive resistance to the pulling force of the front feeder.
- If the force exerted on the wire is too high, it might damage its surface and shape.

To verify that the pressure adjustment is adequate:

1. Make sure that the wire runs through the Twister smoothly and without jerks.
2. Verify that the wire surface does have any shavings or scratches after it has passed through the Twister wheels.
3. Cut 1meter of welding wire, pass it through the Twister wheels and compare its curvature with 1 meter of welding wire taken directly from the pack, by laying both next to one another on a flat surface. There should be no difference between the shapes of the two wire pieces.

Should one of the above situations occur, it will indicate that the pressure exerted on the wire is too high, and it is therefore necessary to set the knob on a lower notch position.

Caution: an incorrect adjustment can seriously compromise the device functions and performance

4 SETTINGS

4.1 CHOOSING THE RIGHT TWISTER

The choice of the correct device depends on the variables below:

• the welding wire diameter;

• the unwinding direction of the wire while it is being paid out from the drum;

Welding wire diameter

The available models available currently support the following wire diameters:

- 0.90 mm - 0.035 "
- 1.00 mm - 0.040 "
- 1.20 mm - 5/64 "
- 1.60 mm - 1/16 "

Rotating direction

The Twister rotation (clockwise or anti-clockwise) must always match the unwinding direction of the wire while it is being paid out from the drum.

Unwinding wire direction during use	Twister rotation Setup
clockwise	clockwise
anti-clockwise	anti-clockwise

Warning: if the above two parameters (1. diameter 2. rotating direction) are not correct, the Twister will be totally useless.

4.2 POSSIBLE CONFIGURATIONS

The configurations vary according to the welding wire diameter and the rotation direction required.

- **Configurations for wire diameter 0.90 mm (0.035")**

PART NUMBER	DESCRIPTION
1401.100-009	Twister for welding wire diam. 0.90 mm, clockwise rotation
1401.100-109	Twister for welding wire diam. 0.90 mm, anti-clockwise rotation

- **Configurations for wire diameter 1.00 mm (0.040")**

PART NUMBER	DESCRIPTION
1401.100-010	Twister for welding wire diam. 1.00 mm, clockwise rotation
1401.100-110	Twister for welding wire diam. 1.00 mm, anti-clockwise rotation

- **Configurations for wire diameter 1.20 mm (5/64")**

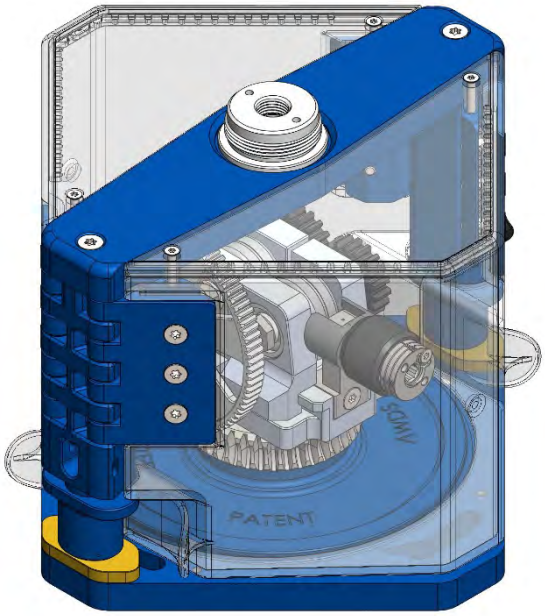
PART NUMBER	DESCRIPTION
1401.100-012	Twister for welding wire diam. 1.20 mm, clockwise rotation
1401.100-112	Twister for welding wire diam. 1.00 mm, anti-clockwise rotation

- **Configurations for wire diameter 1.60 mm (1/16")**

PART NUMBER	DESCRIPTION
1401.100-016	Twister for welding wire diam. 1.20 mm, clockwise rotation
1401.100-116	Twister for welding wire diam. 1.00 mm, anti-clockwise rotation

In case of need for Twister wheels with additional wire diameters grooves, contact the manufacturer.

Basic Configuration



In the basic configuration the Twister plastic cover is equipped with a thread reduction which allows the subsequent connection of various conduit adapters. Figures 33 and 34.

Figure 33

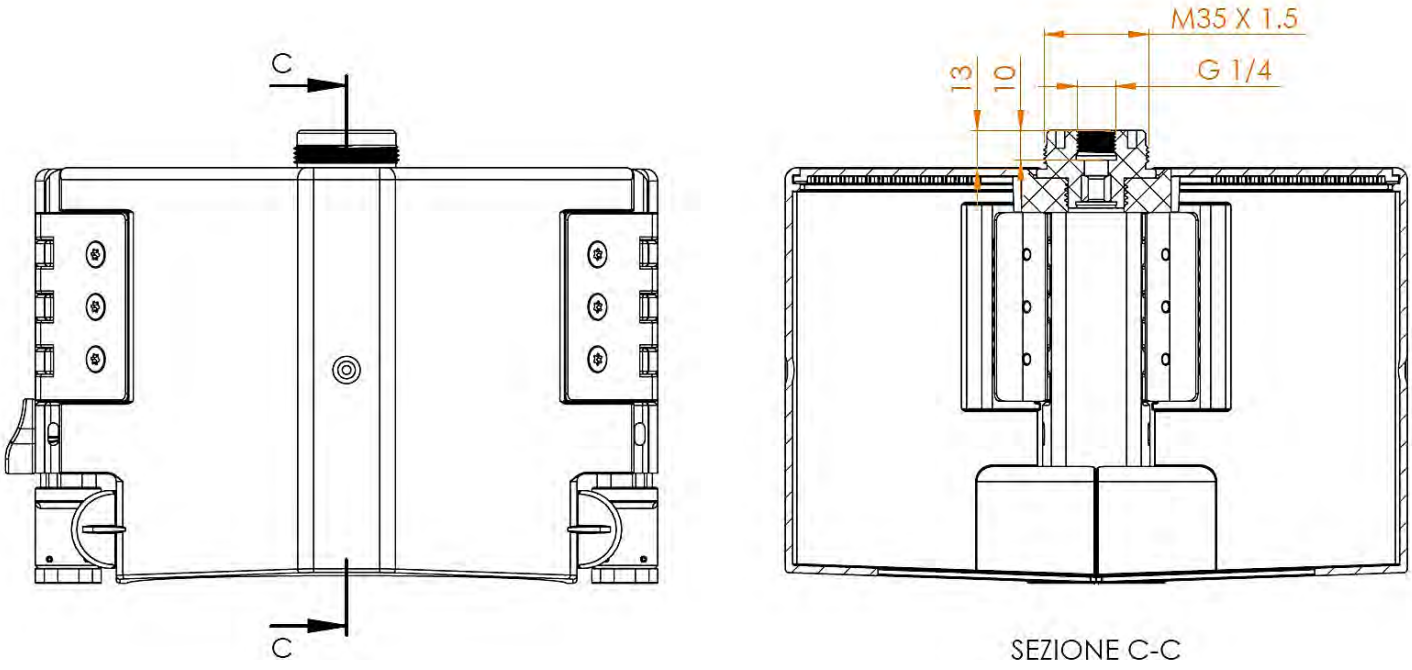


Figure 34

4.3 PLASTIC COVER ACCESSORIES AND FITTINGS FOR CONNECTION TO THE WIRE FEEDING SYSTEM (CONDUIT)

Depending on the type of connection, the following accessories are available:

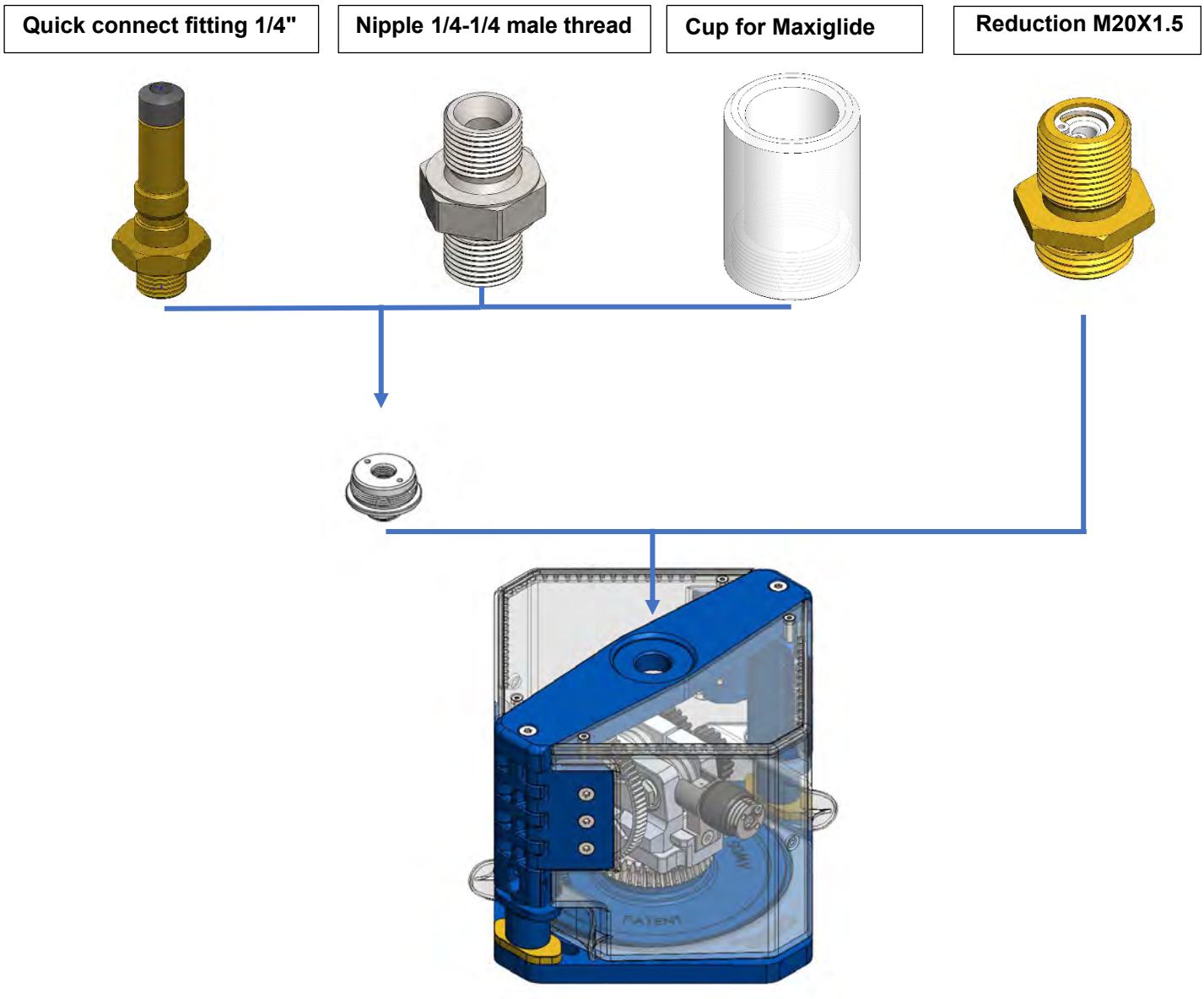


Figura 35

Accessories Part Numbers:

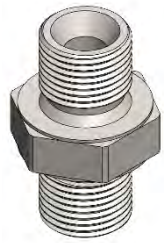


Figure 36

PART NUMBER	DESCRIPTION
1401.500-056	adapter 1/4-1/4 male

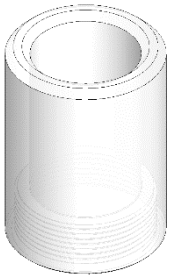


Figure 37

PART NUMBER	DESCRIPTION
1401.500-051	Cup for bare maxiglide

Figure 38

PART NUMBER	DESCRIPTION
601.082	Quick connect fitting 1/4" male

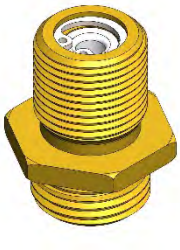


Figure 39

PART NUMBER	DESCRIPTION
1401.510-050	Reduction M20X1.5 with ceramic

4.4 EXAMPLE OF POSSIBLE APPLICATIONS FOR ACCESSORIES Part

Number: 1401.500-051

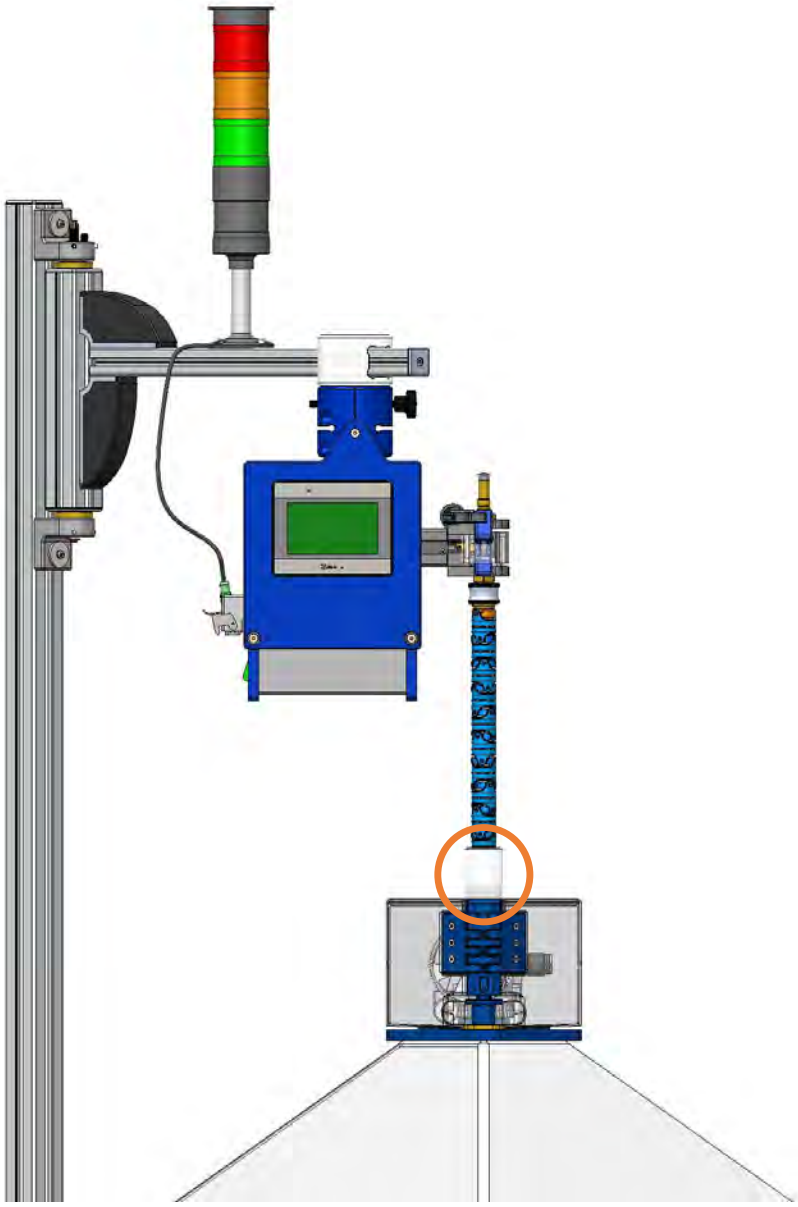


Figure 40

4.4 EXAMPLE OF POSSIBLE APPLICATIONS FOR ACCESSORIES

Part Number: 601.082

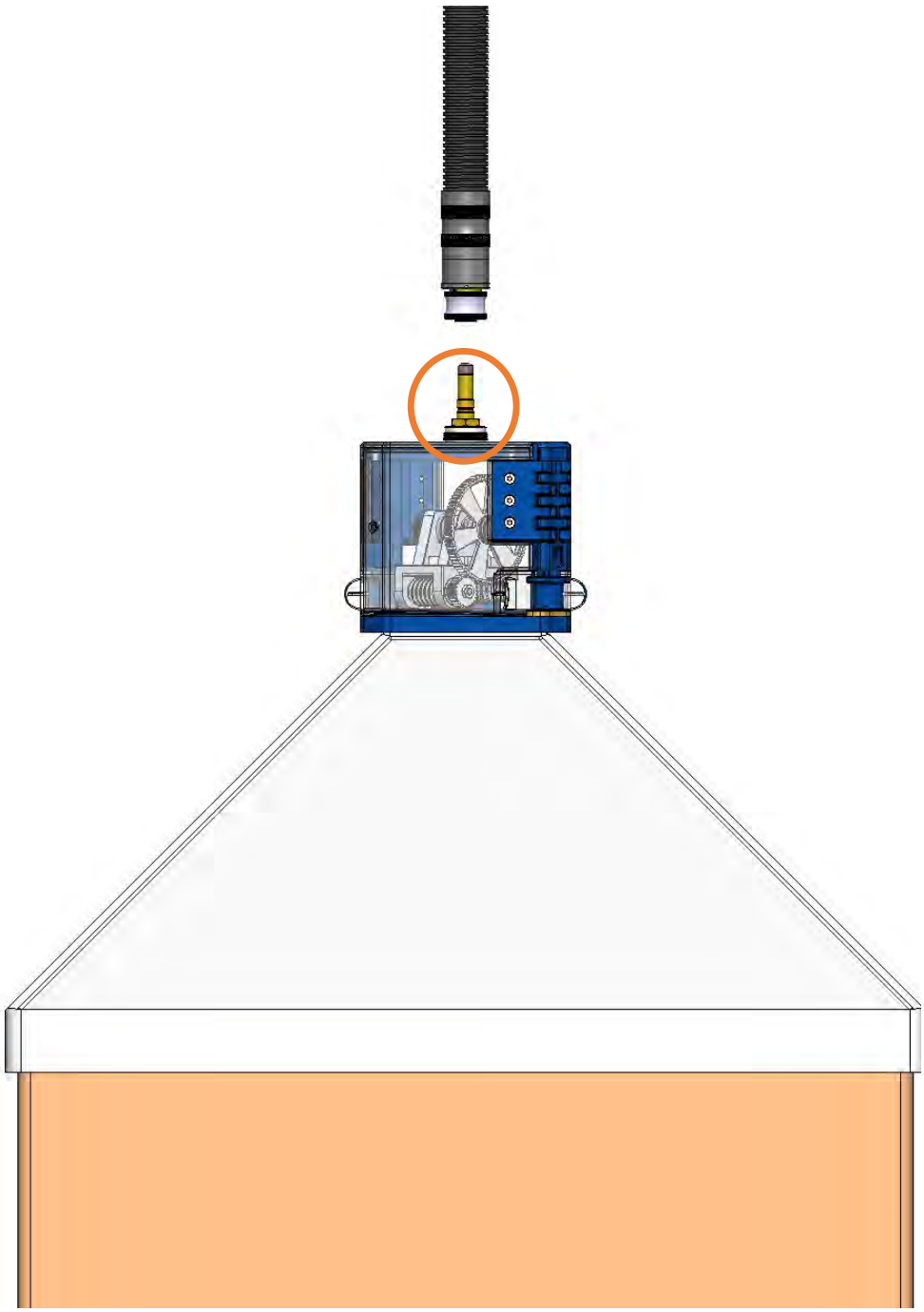


Figure 41

4.4 EXAMPLE OF POSSIBLE APPLICATIONS FOR ACCESSORIES

Part Number: 1401.500-056

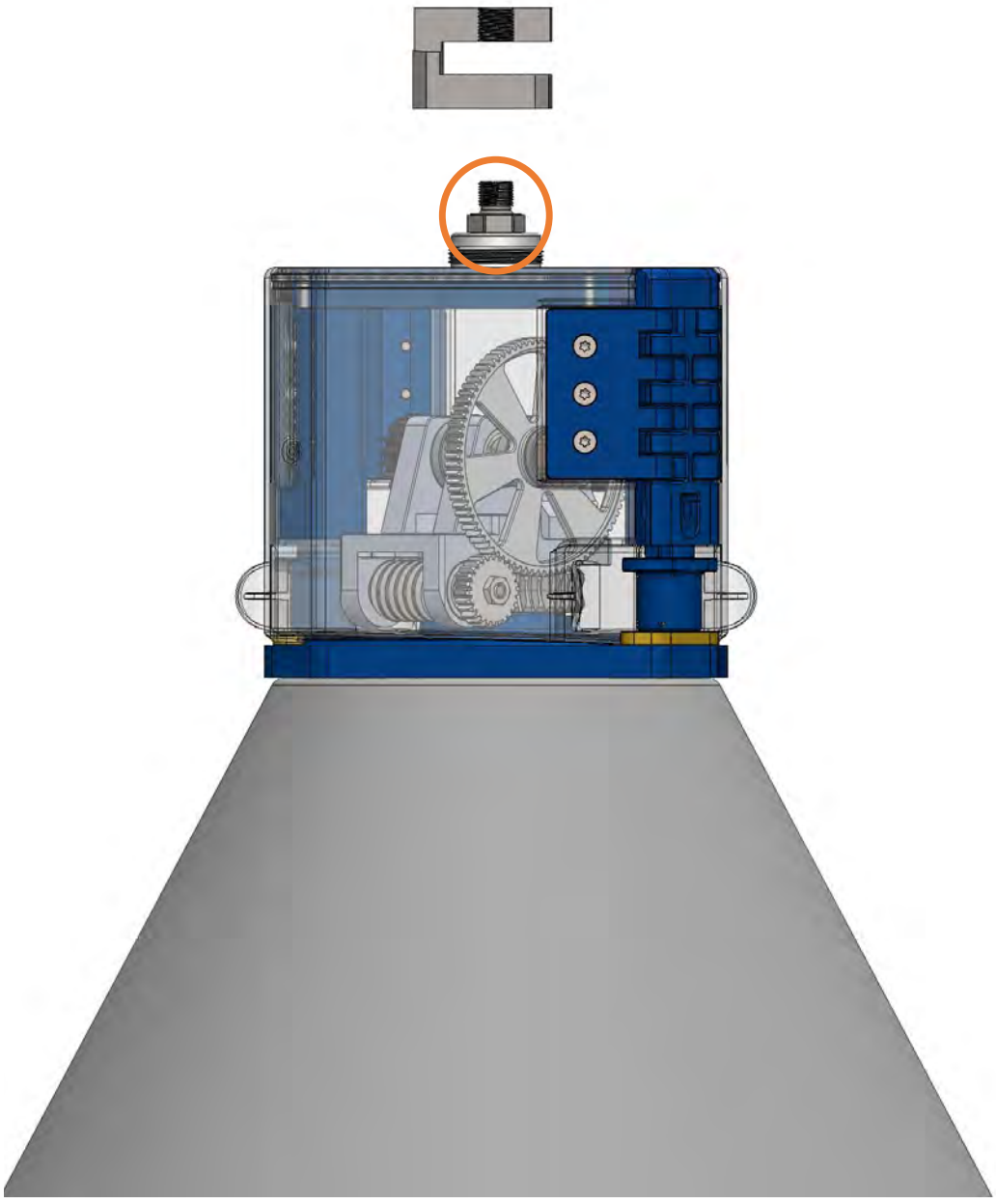


Figure 42

5 MAINTENANCE

5.1 ORDINARY MAINTENANCE

This paragraph has the purpose of illustrating the main Twister control and maintenance procedures. Maintenance and repairs must be done by specialized personnel.

Type of intervention			
	Daily Frequency	Weekly Frequency	Every 2 Months
General visual check	•		
Labels readability check	•		
Cleaning		•	
Gears wear check			•
Wheel grooves wear check			•

- **General visual inspection:** check the general condition of the device, specially look for loose screws or damaged parts.
- **Labels readability:** verify that the plate on the Twister is perfectly legible.
- **General cleaning:** blow away accumulations of dust or dirt using compressed air.
- **Gears wear check:** check the wear of the Twister gears and, if damaged, promptly contact the Manufacturer for replacement parts.
- **Contact wheel grooves wear check:** check the state of wear of the contact wheels and their "U" shaped grooves; in the event of excessive wear or damage, replace them following the instructions contained in the manual.

6 DISPOSAL

In the event that the Twister is to be scrapped, proceed with the disposal of its parts in a differentiated way.

Contact a specialized center for the collection of metallic materials.

ITwister is made up of parts in aluminum, steel and parts in plastic materials.
The different materials must be separated according to their nature, and disposed of through specialized authorized companies, in compliance with the requirements of the law.