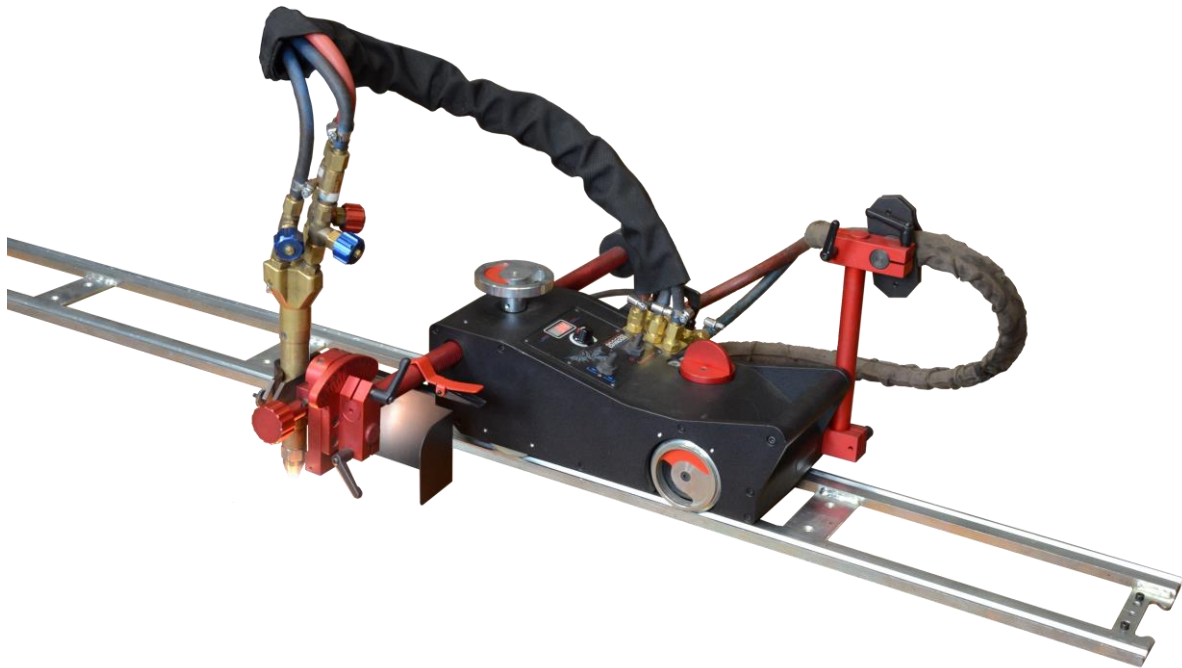




## OPERATOR'S MANUAL

# DRAGON (HS)

## CUTTING CARRIAGE



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## 1. GENERAL INFORMATION

### 1.1. Application

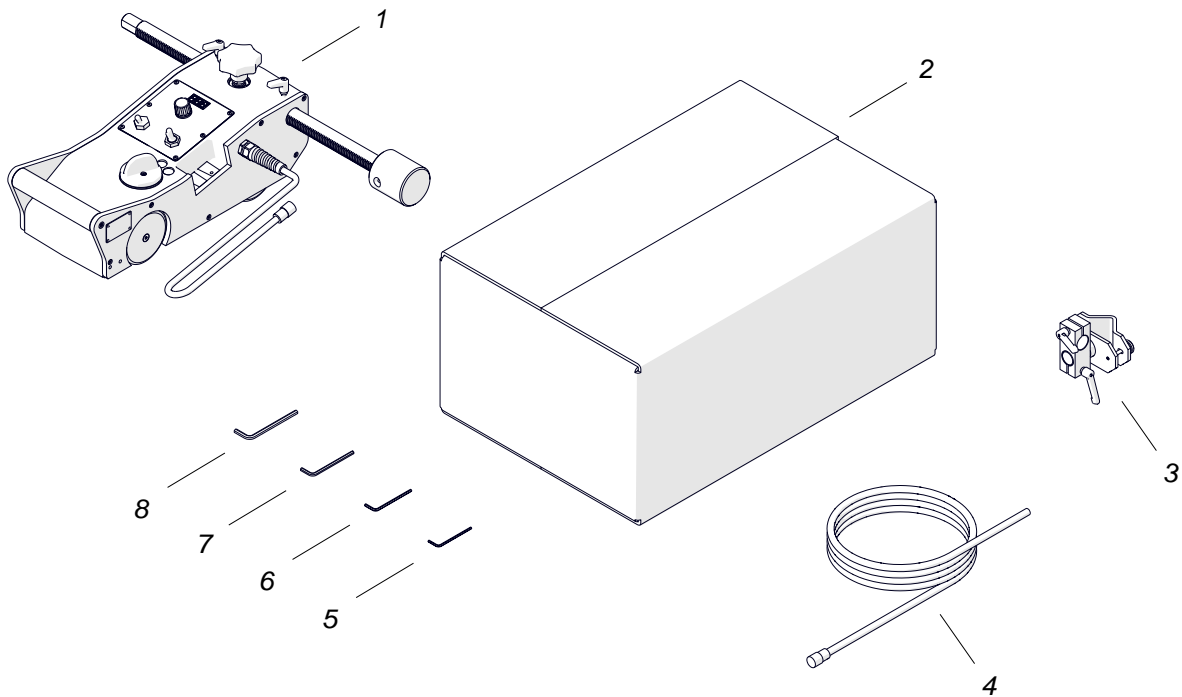
The DRAGON (HS) is a cutting carriage designed to cut steel by using oxy-fuel or plasma torches with the handle diameter of 28–35 mm (1.10–1.38"). The carriage travels horizontally on the workpiece or track tilted up to 10°.

Accessories allow, for example, using torches with different handle diameters, using two torches at the same time, and cutting holes with the radius of 240–2500 mm (0.8–8.2 ft).

### 1.2. Technical data

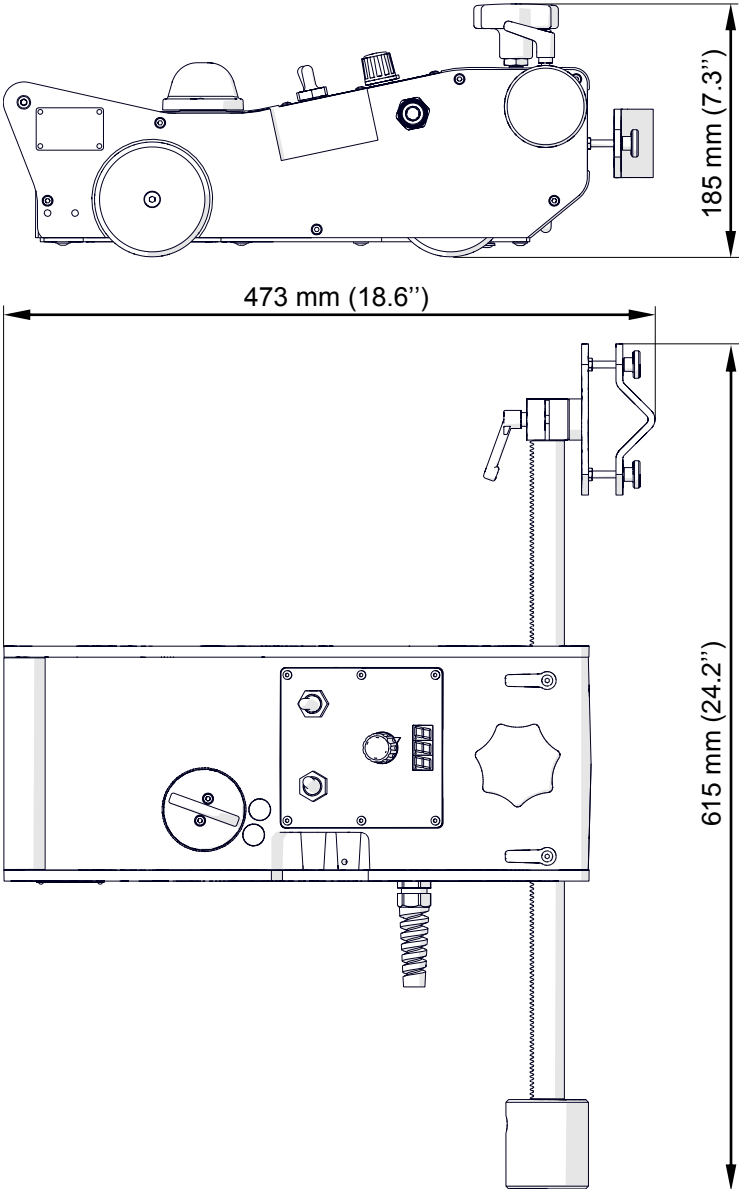
	<b>DRAGON</b>	<b>DRAGON HS</b>
Voltage	1~ 115–230 V, 50–60 Hz	1~ 115–230 V, 50–60 Hz
Power	20 W	20 W
Work position	Horizontal	Horizontal
Torch diameter	28–35 mm (1.10–1.38")	28–35 mm (1.10–1.38")
Ground clearance	8 mm (0.31")	8 mm (0.31")
Speed	0–150 cm/min (0–59 in/min)	10–300 cm/min (4–118 in/min)
Weight	16.8 kg (37 lbs)	16.8 kg (37 lbs)

### 1.3. Equipment included

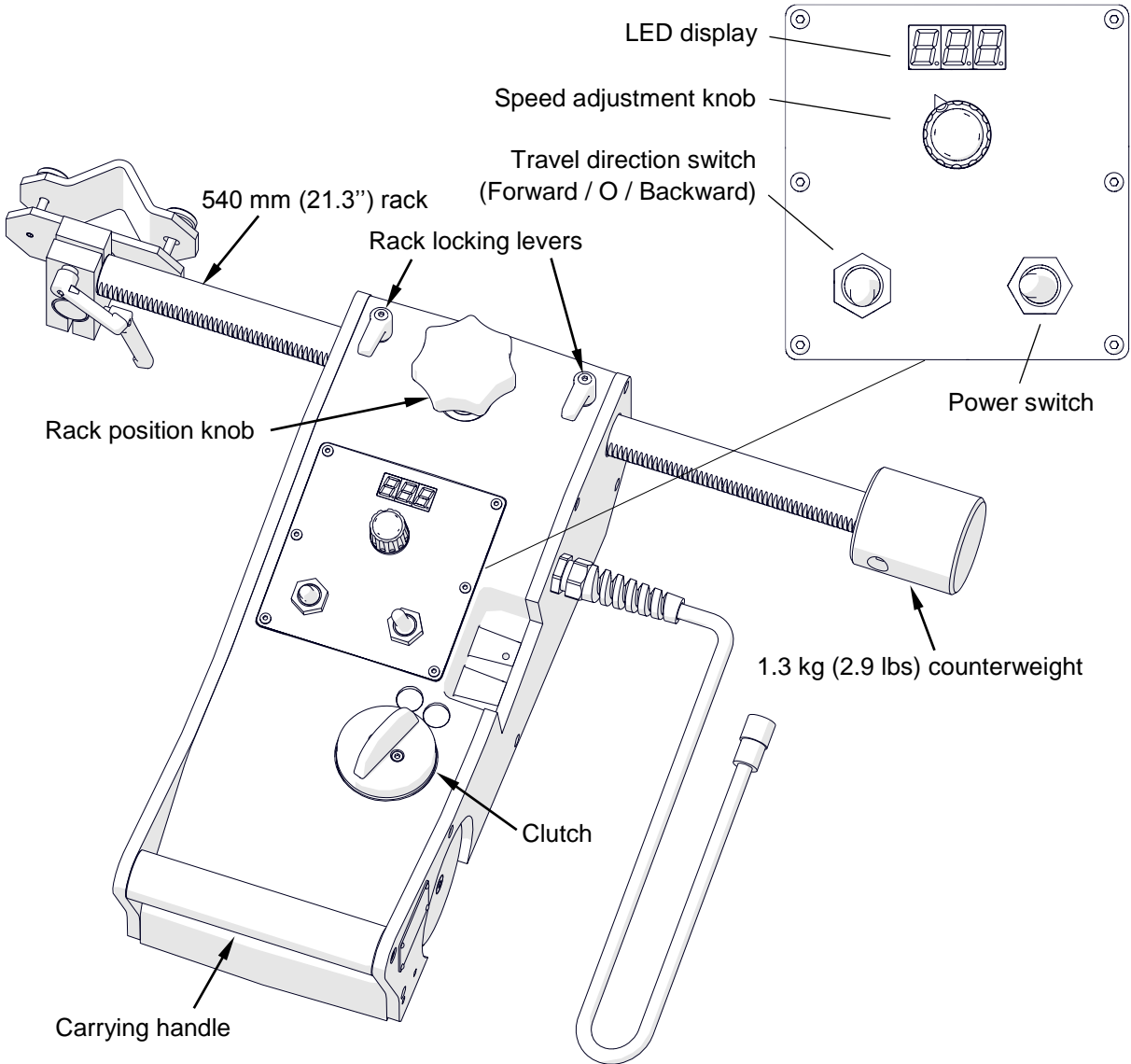


1	Carriage	1 unit
2	Foam-filled cardboard box	1 unit
3	28–35 mm standard torch holder	1 unit
4	3 m (10 ft) power cord	1 unit
5	2.5 mm hex wrench	1 unit
6	3 mm hex wrench	1 unit
7	4 mm hex wrench	1 unit
8	5 mm hex wrench	1 unit
–	Operator’s Manual	1 unit

1.4. Dimensions



1.5. Design



## 2. SAFETY PRECAUTIONS

1. Before starting, read this Operator's Manual and complete proper occupational safety and health training.
2. Use the carriage only in applications specified in this Operator's Manual.
3. The carriage must be complete and all parts must be genuine and fully functional.
4. The specifications of the power source must conform to those specified on the rating plate.
5. Connect the carriage into a properly grounded power source.
6. Never carry the carriage by the cords or arc ignition cable and never pull them because this may damage them and result in electric shock.
7. Untrained bystanders must not be present near the carriage.
8. Before starting, ensure the correct condition of the carriage, power source, power cords, arc ignition cable, plugs, and control panel.
9. Keep the carriage dry, and never expose it to rain, snow, or frost.
10. Keep the work area well lit, clean, and free of obstacles.
11. Never use near flammable liquids or gases, or in explosive environments.
12. Transport and position the carriage by using the carrying handle.
13. Do not stay below the carriage placed at heights.
14. Plug the cords and arc ignition cable into sockets only when the power switch is set to 'O'.
15. Keep the sockets clean. Do not use compressed air for cleaning.
16. Install only torches which handle diameter is the same as the diameter of the torch holder in use.
17. Keep the torch cables from coming in contact with the surface. They must be suspended to reduce the load of the carriage.
18. Use the torch according to the torch manual.
19. Use the carriage in horizontal positions only.
20. Always use eye protection (helmet, shield, and screen), hearing protection, gloves, and protective clothing during work. Do not wear loose clothing.
21. Before every use, inspect the carriage to ensure it is not damaged. Check whether any part is cracked or improperly fitted. Make sure to maintain proper conditions that may affect the operation of the carriage.

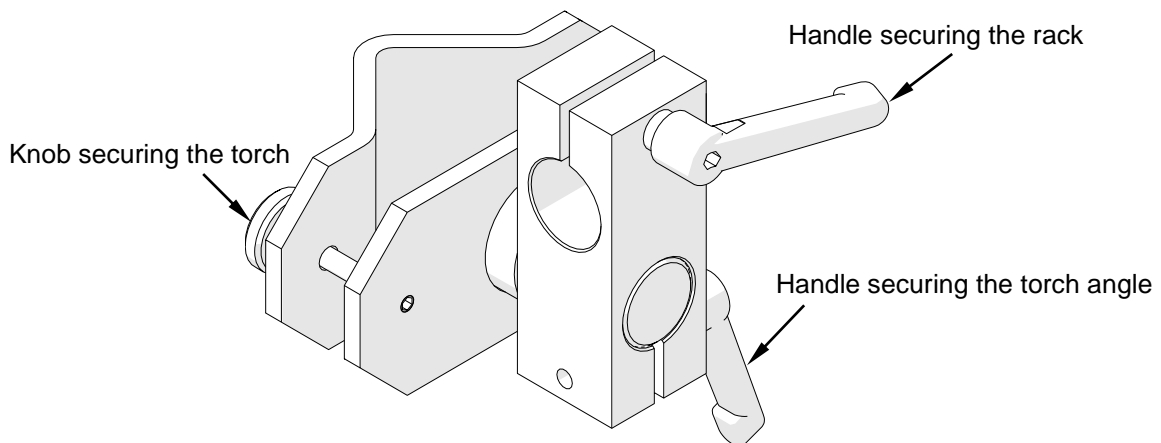
22. Never try to manually stop the travel. To stop, set the clutch to OFF or the travel direction switch to 'O'.
23. Maintain only when the carriage is unplugged from the power source.
24. Repair only in a service center appointed by the seller.
25. If the carriage falls from any height, is wet, or has any other damage that could affect the technical state of the carriage, stop the work and promptly send the carriage to the service center for inspection and repair.
26. Never leave the carriage unattended during work.
27. Remove from the worksite and store in a secure and dry place when not in use.



### 3. STARTUP AND OPERATION

#### 3.1. Preparing

Before starting, clean the wheels of the carriage and remove the anti-corrosion coating from the track. Use the carrying handle to transport the carriage to the worksite. Set the power switch and the travel direction switch to 'O', and set the clutch to OFF. Then, plug the power cord into the power source, insert the torch into the standard torch holder (Fig. 1), and secure with the knobs.



**Fig. 1.** Standard torch holder design

The holder allows torches with the handle diameter of 28–35 mm (1.10–1.38”). Loosen the lower handle to roughly set the torch angle.

Use the rack position knob to adjust the horizontal position of the torch, and use the rack locking levers to lock the rack in position.

Then, connect the torch to a proper gas source. Depending on the cutting method (oxy-fuel or plasma), install into the carriage slot either a gas manifold or the arc ignition set as described in the subsection of the respective accessory.

Position the carriage on the workpiece or track so that the torch is placed right above the starting point of the cut. Then, set the clutch to ON.

### 3.2. Operating

Set the power switch to 'I' to turn on the power, which will light all parts of the display (888). Then, the *EUR* appears if the unit of speed is set to centimeters per minute, or *USA* for inches per minute. Next, the carriage speed appears. The speed can be changed by rotating the knob on the panel. If needed, set the clutch to OFF and travel the carriage manually.

To start the cutting, light the torch as described in the torch manual. Adhere to all rules included in the torch manual.

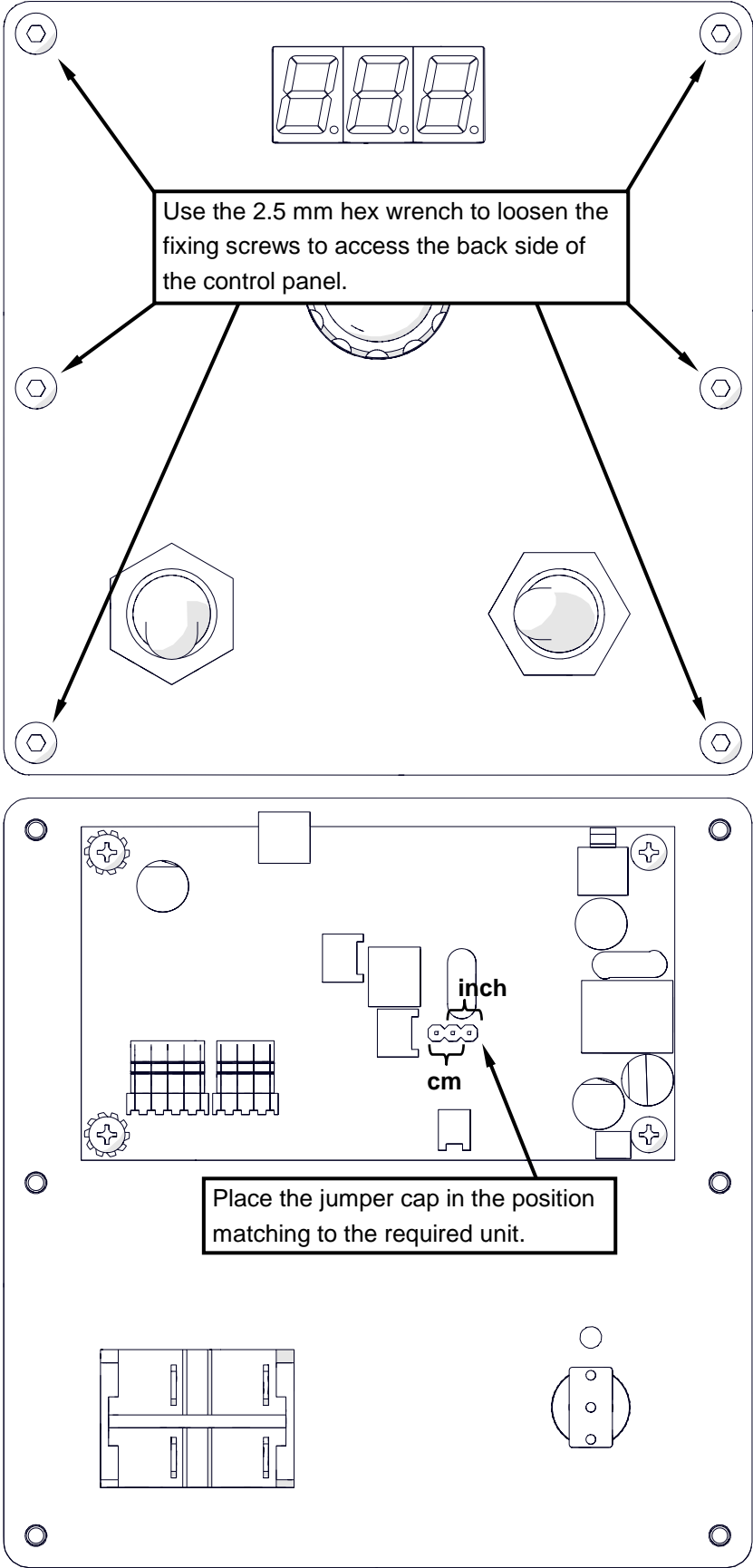
Use the travel direction switch to select a direction of travel. Then, the real speed of the carriage appears on the display. To stop the travel, set the travel direction switch to 'O' or the clutch to OFF. To extinguish the torch flame, proceed as described in the torch manual.

After the work is finished, use the power switch to turn off the power and unplug the carriage from the power source. Clean the teeth of the rack once a week.

### 3.3. Changing the unit of speed

To change the unit of speed between centimeters per minute and inches per minute, unplug the carriage from the power source and follow the steps shown in Fig. 2.

After the unit is changed and the carriage powered, the current unit of measure appears. When the jumper cap connects the left and center pin, the display shows *EUR* and the speed is given in centimeters per minute. When the jumper cap connects the center and right pin, the display shows *USA* and the speed is given in inches per minute. The 2.5 mm hex wrench needed to unscrew the control panel is not included in standard equipment.



**Fig. 2.** Changing the unit of speed

### 3.4. Troubleshooting

Message	Problem	Solution
0.55.	Not all display segments lit after powering indicate a problem with the display or controller.	Contact service center for inspection and repair.
EUR	Speed displayed in centimeters per minute instead of inches per minute.	Follow instructions given in the section "Changing the unit of speed."
USA	Speed displayed in inches per minute instead of centimeters per minute.	Follow instructions given in the section "Changing the unit of speed."
Er.5.	<p>1. Travel direction switch not set to 'O' when powering.</p> <p>2. Displayed during travel indicates a malfunction of the travel direction switch or travel direction identification circuit of the controller.</p>	<p>1. Set the travel direction switch to 'O'. If the message still appears, contact service center for inspection and repair.</p> <p>2. Contact service center for inspection and repair.</p>
erL	Motor overload (safe current level exceeded) that promptly stops the carriage.	<p>Adjust the arrangement of the cables that block the travel and remove any other elements that block the carriage or its wheels.</p> <p>If this message still appears, contact service center for inspection and repair.</p>

## 4. MAINTENANCE

### Daily:

1. Clean the wheels.
2. Clean the torch nozzle. Replace if damaged.

### Monthly:

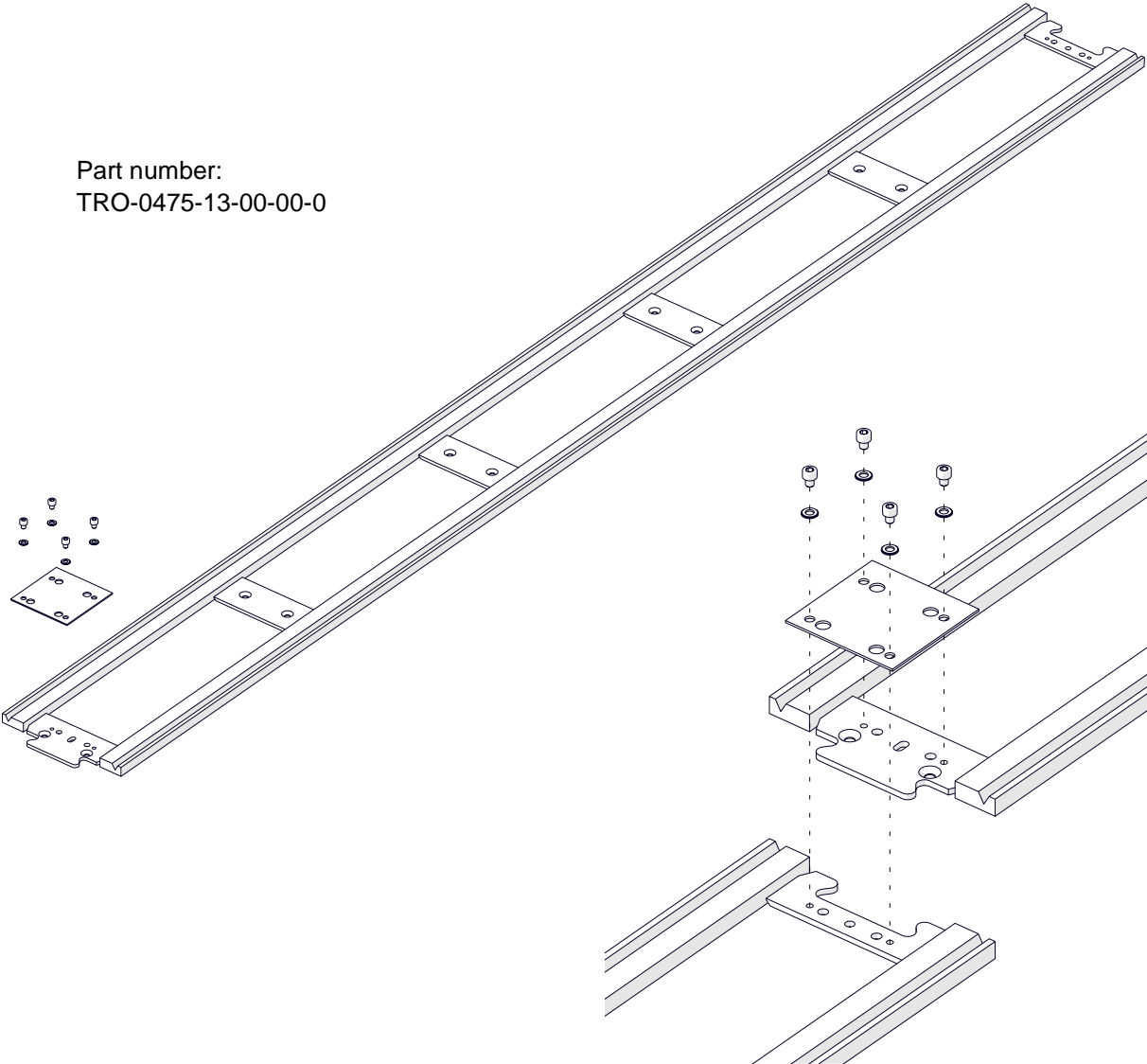
1. Check whether the knob and switches work as intended. Replace if loose or damaged.
2. Inspect cables, cords, and hoses. Replace if damaged.
3. Tighten screws if loose.

## 5. ACCESSORIES

### 5.1. Track

Increases the cutting precision by forcing straight-line travel. The length of a single rail is 1800 mm (70.9”) and the V-groove centerline is 152 mm (6”). To connect two rails, use the 4 mm hex wrench, connecting plate, M5x6 screws, and 5.3 mm washers as shown in the figure below.

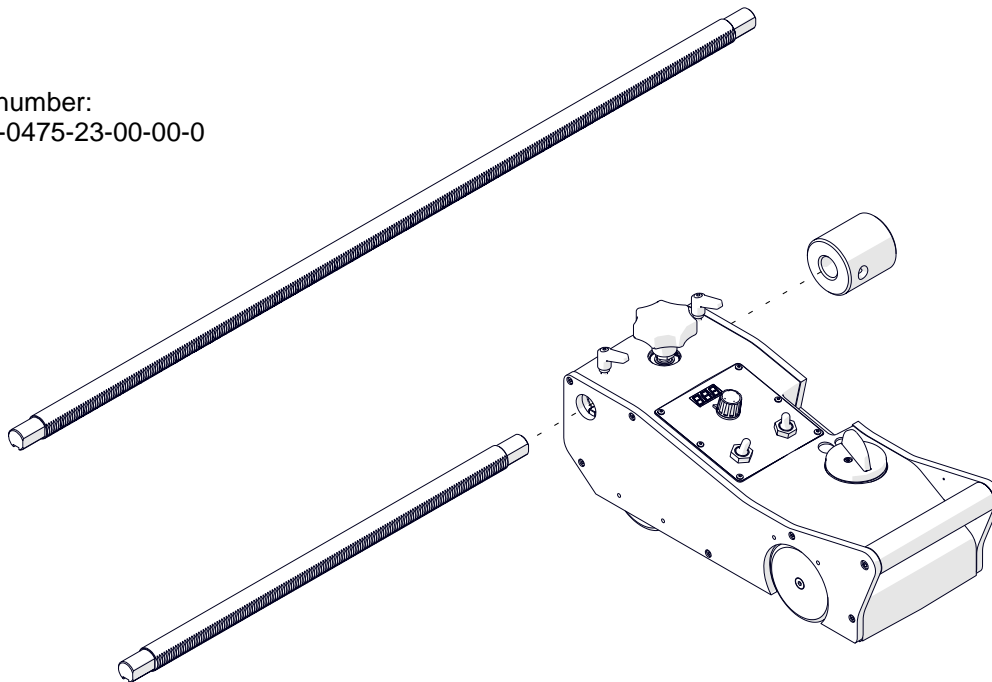
Part number:  
TRO-0475-13-00-00-0



## 5.2. 1000 mm (39") rack

Increases the reach of the torch holder.

Part number:  
RAM-0475-23-00-00-0

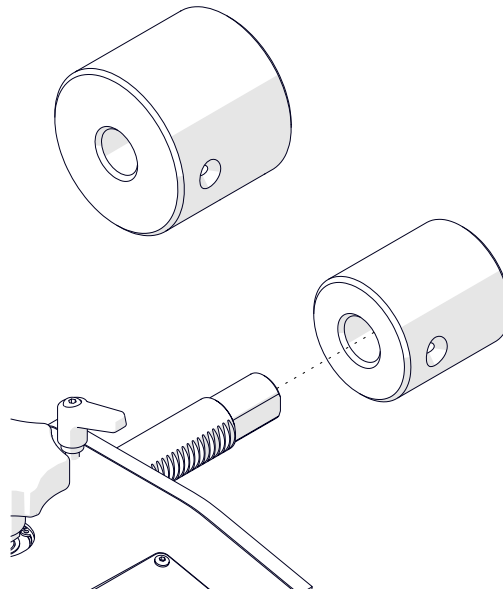


To remove the installed rack, use the 3 mm hex wrench to loosen the set screw and remove the counterweight. Then, loosen the handle of the torch holder and remove the holder. Next, unlock two rack locking levers and rotate the rack position knob to move the rack out of the carriage body. Install in reverse order. Position the rack teeth sideways to engage them with the gear of the knob. Note that using the 1000 mm (39") rack may also require the roller support or 2.6 kg counterweight to balance the carriage.

### 5.3. 2.6 kg (5.7 lbs) counterweight

Provides balance when using additional holders, 1000 mm (39") rack, or heavier torch. To remove the counterweight, use the 3 mm hex wrench to loosen the set screw. Install in reverse order.

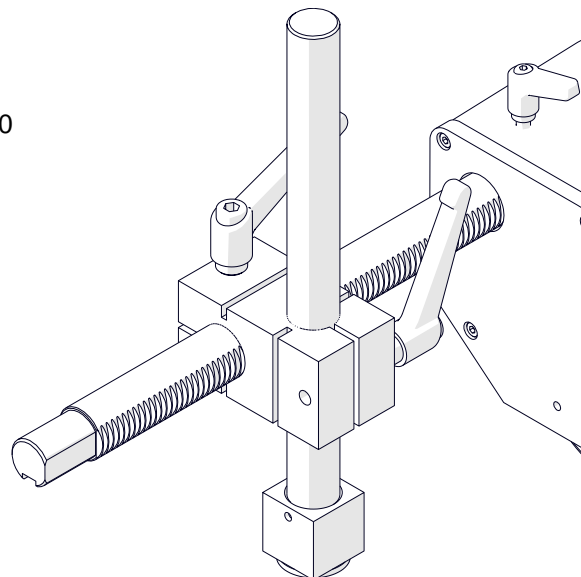
Part number:  
PWG-0475-10-00-00-0



### 5.4. Roller support

Provides balance when using the 1000 mm (39") rack or a heavier torch.

Part number:  
PDT-0475-26-00-00-0



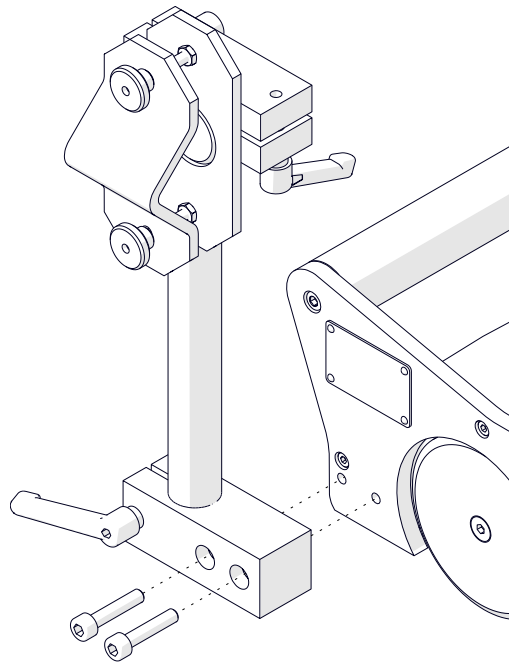
To install, loosen the handle of the torch holder and remove the holder. Then, place the support onto the rack, secure with the handle, and reinstall the holder.



## 5.5. Cable anchor

Anchors gas cables and power cord to relieve stress for the torch holder. Install the anchor to the side wall with the 5 mm hex wrench and two M6x30 screws.

Part number:  
PDT-0475-34-00-00-0

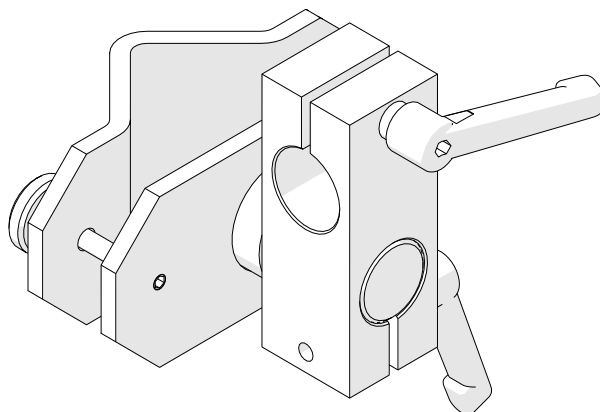


## 5.6. Torch holders

### 5.6.1. Standard torch holder

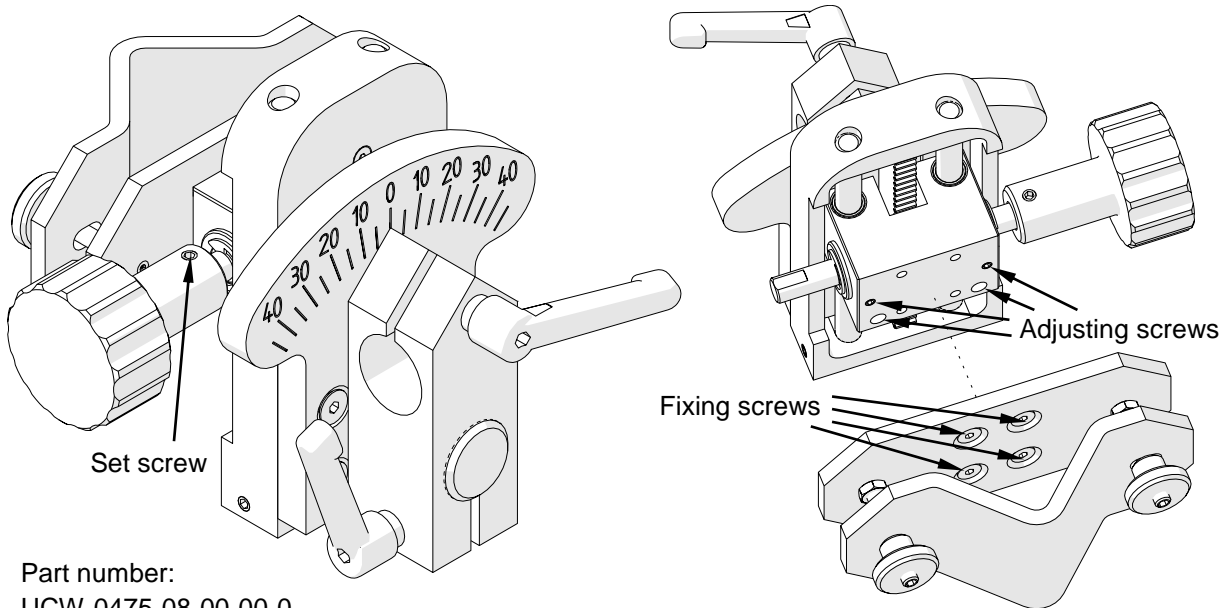
Designed for torches with the handle diameter of 28–35 mm (1.10–1.38”) and allows rough adjustment of the torch angle.

Part number:  
UCW-0475-28-00-00-0



### 5.6.2. Precise torch holder

Designed for torches with the handle diameter of 28–35 mm (1.10–1.38”) and allows precise adjustment of the torch angle. The knob can be installed at either side after loosening the set screw and is used to adjust the vertical position of the torch. To adjust the resistance of the vertical move, use the 2.5 mm hex wrench and unscrew all fixing screws, and then use the 2 mm hex wrench and adjust the adjusting screws.



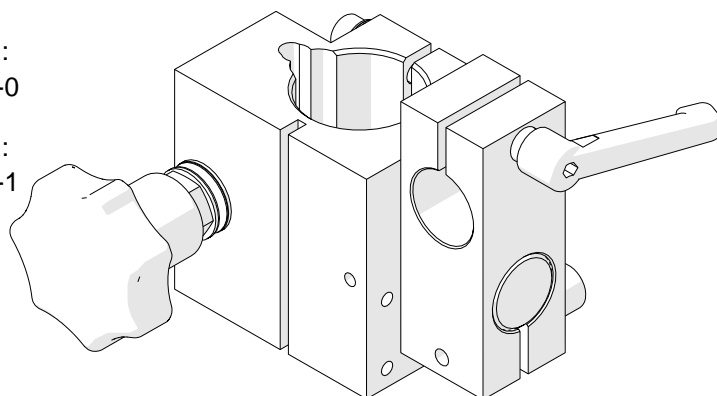
Part number:  
UCW-0475-08-00-00-0

### 5.6.3. Machine torch holder (for oxy-fuel cutting)

Designed for torches with the handle diameter of 30 mm (1.18”) or 35 mm (1.38”) equipped with a rack. The holder allows adjustment of the vertical position of the torch by using the knob and rough adjustment of the angle.

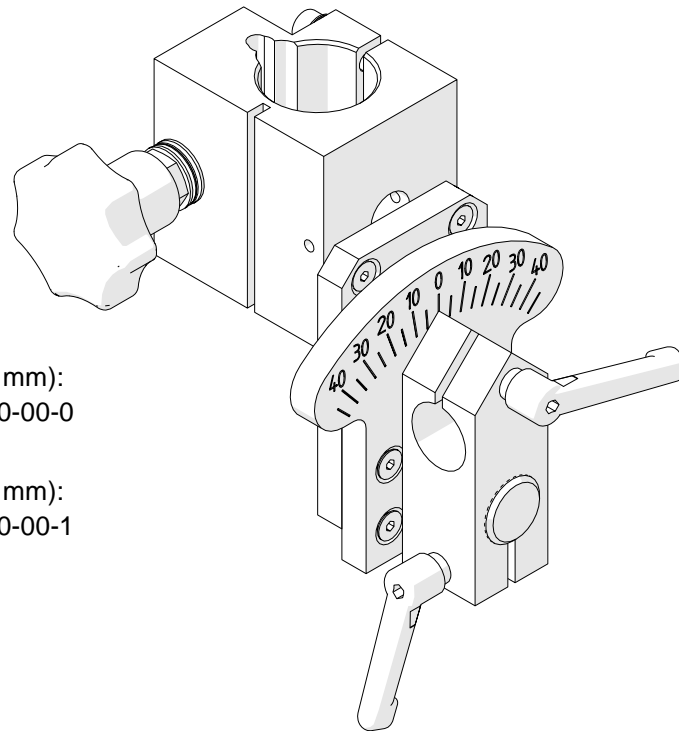
Part number (30 mm):  
UCW-0475-61-00-00-0

Part number (35 mm):  
UCW-0475-29-00-00-1



### 5.6.4. Precise machine torch holder (for oxy-fuel cutting)

Designed for torches with the handle diameter of 30 mm (1.18”) or 35 mm (1.38”) equipped with a rack. It allows adjustment of the vertical position of the torch by using the knob and precise adjustment of the angle.

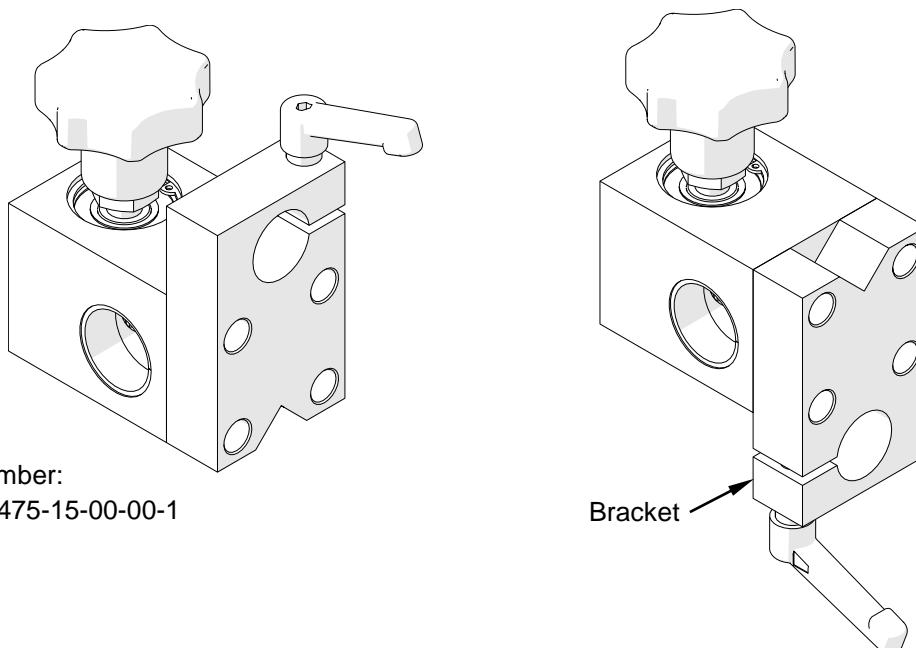


Part number (30 mm):  
UCW-0475-59-00-00-0

Part number (35 mm):  
UCW-0475-42-00-00-1

### 5.7. Slide rack holder

Designed to be combined with torch holders, which enables use of a second torch independently of the standard torch.



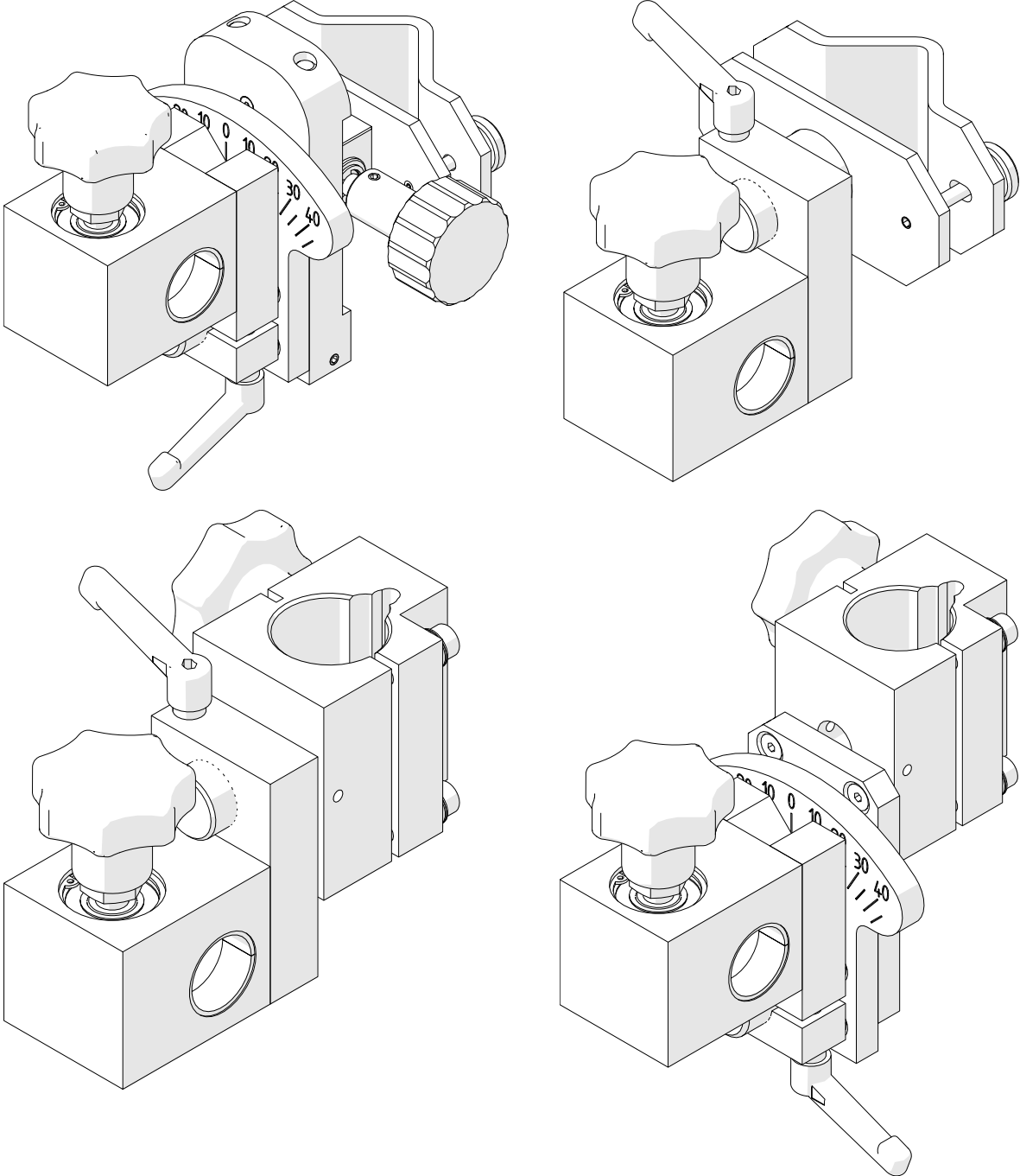
Part number:  
UCW-0475-15-00-00-1

Bracket

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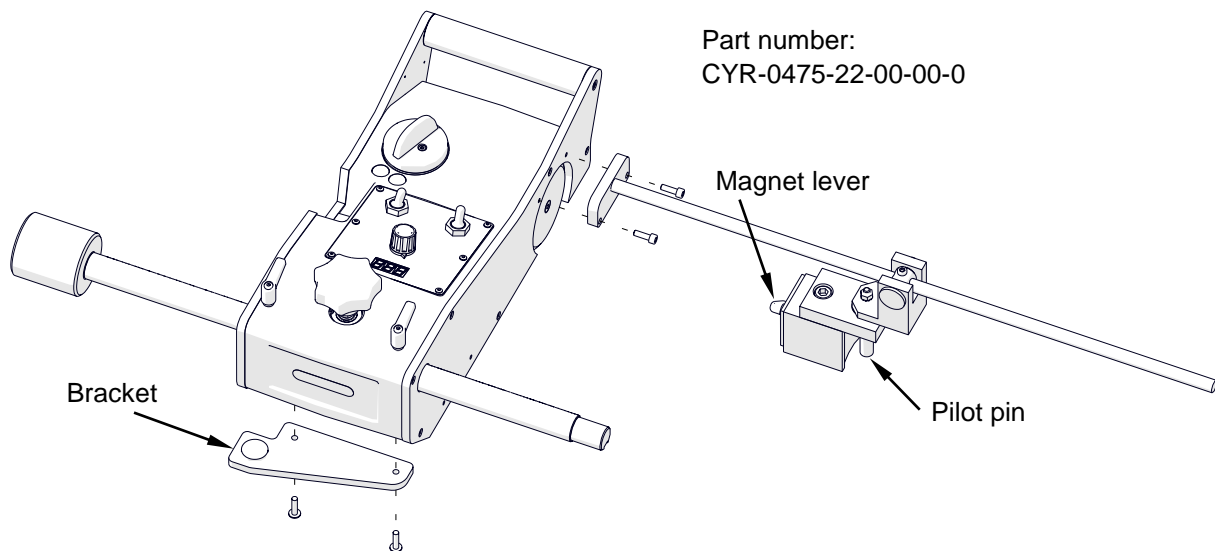
To adapt the rack holder for use with a precise torch holder, use the 4 mm hex wrench and unscrew four screws from the rack holder, rotate the bracket by 180°, and secure with the screws. Before linking to the rack holder, remove the clamping block (part with one or two handles) from the torch holder to be installed. Remove the counterweight or holder in use, and then place the combined holder onto the rack. Next, rotate the knob to set the combined holder in the required position along the rack.



## 5.8. Circle cutting attachments

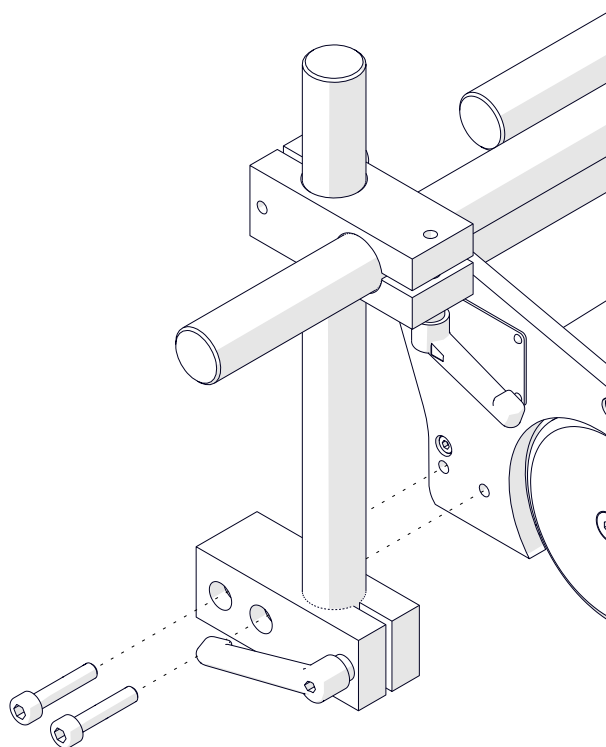
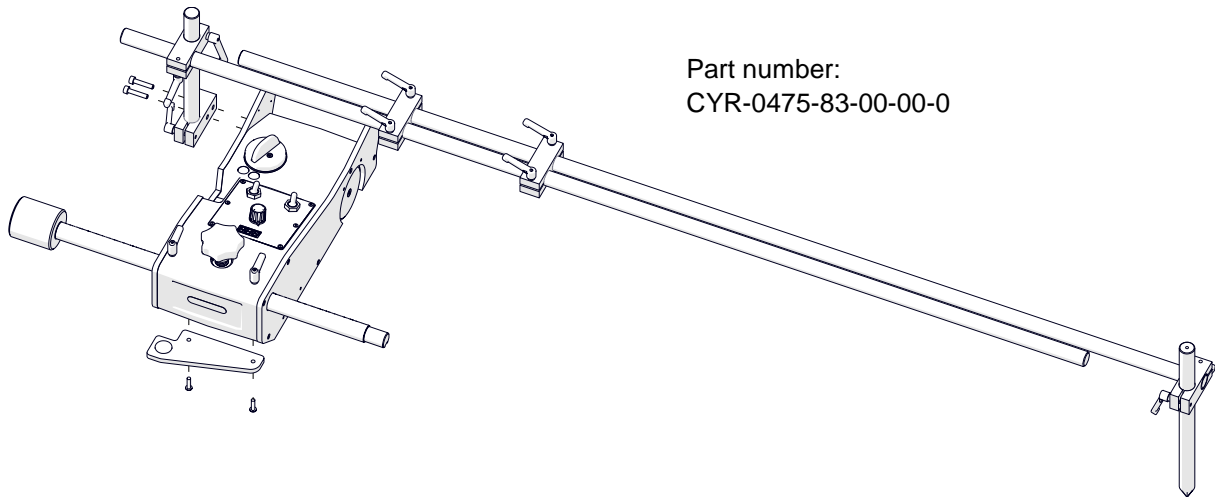
### 5.8.1. Circle cutting attachment for 240–1000 mm radius

Allows cutting holes with the radius of 240–1000 mm (0.8–3.3 ft; when used with the standard rack). To install, use the 3 mm hex wrench and unscrew two front screws from the bottom plate, and then use them to tighten the bracket to the exposed holes. Next, use the 4 mm hex wrench to fix the arm to the side wall with two M5x16 screws. Set the pilot pin above the center of the circle and turn on the magnet with the magnet lever.



### 5.8.2. Circle cutting attachment for 400–2500 mm radius

Allows cutting holes with the radius of 400–2500 mm (1.3–8.2 ft; when used with the standard rack). To install, use the 3 mm hex wrench and unscrew two front screws from the bottom plate and use them to install the bracket. Next, use the 5 mm hex wrench to install the arm to the side wall with two M6x30 screws. Place the tip of the pilot pin in the center of the circle and lock the levers of the clamping blocks.

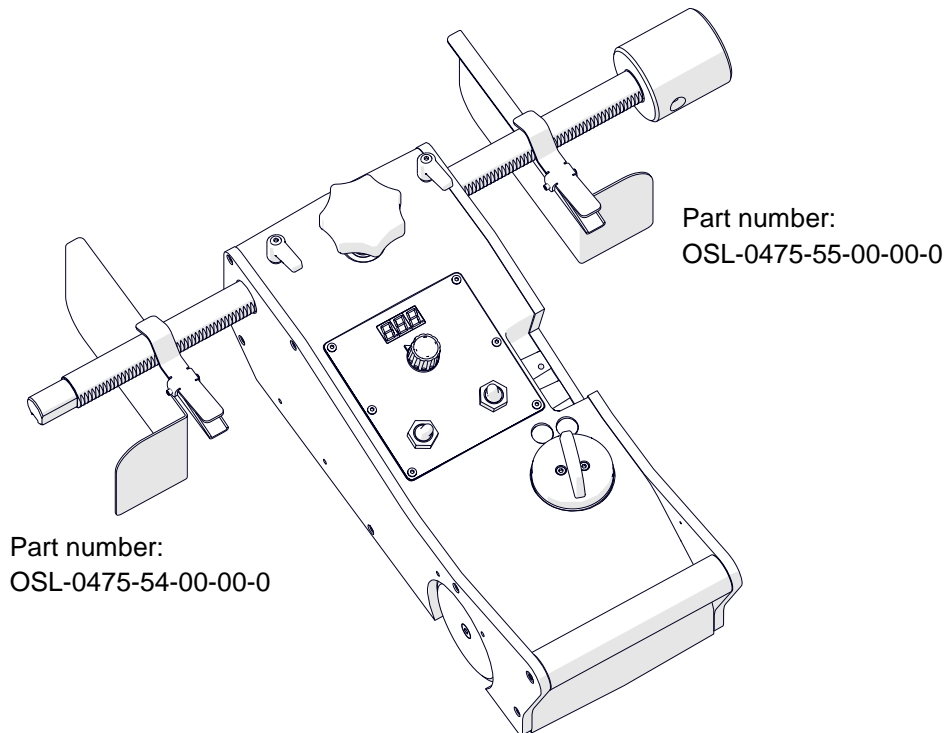


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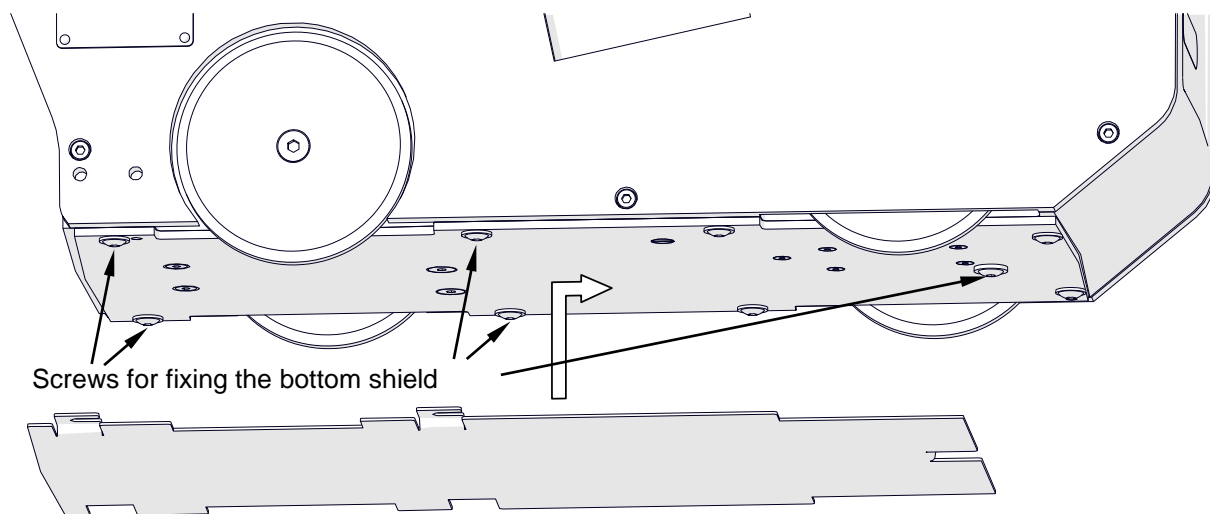
### 5.9. Left and right heat protection shield

Additionally protect the carriage from the influence of a high temperature. Install as shown in the figure below.



### 5.10. Bottom heat protection shield

Additionally protects the carriage from the influence of a high temperature. To install, loosen five screws with the 3 mm hex wrench, slide the shield under the heads of the screws according to the direction of the arrow, and then tighten the screws.



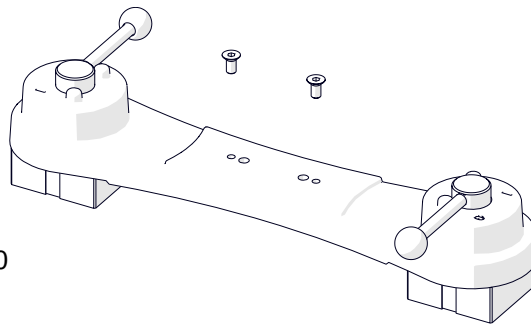
Part number: OSL-0475-53-00-00-0

## 5.11. Magnetic units

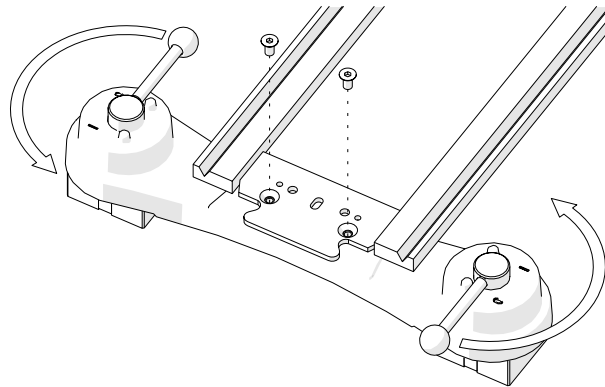
### 5.11.1. Magnetic unit

Allows clamping the track to ferromagnetic surfaces. The holding force on a 5 mm (0.2") thick surface is 1200 N up to a temperature of 100°C (212°F). At 180°C (356°F) the force decreases to 720 N.

Part number:  
ZSP-0475-44-00-00-0



Tighten the unit to the track with the 4 mm hex wrench and two M6x12 screws. To clamp the unit to the surface, set the levers to 'I'.

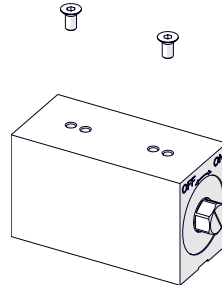




### 5.11.2. Narrow magnetic unit

Allows clamping the track to ferromagnetic surfaces. The holding force on a 5 mm (0.2") thick surface is 750 N up to a temperature of 100°C (212°F). At 180°C (356°F) the force decreases to 450 N.

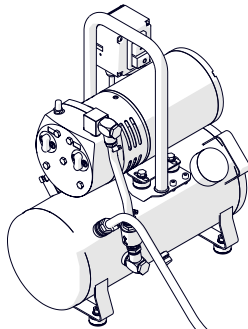
Part number:  
PDS-0582-10-00-02-0



Install the unit in the same way as the magnetic unit is installed. To clamp the unit to the surface, use the 17 mm flat wrench (not included) and rotate the side screw to ON.

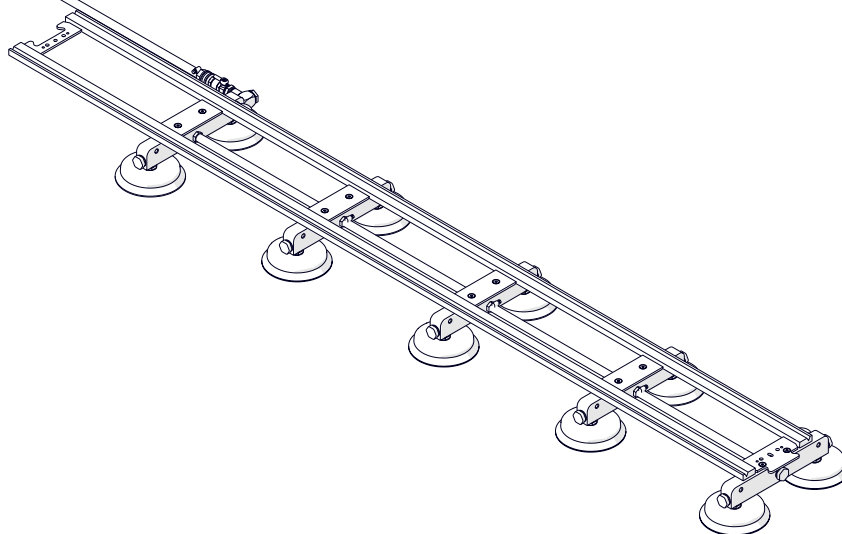
### 5.12. Vacuum track system

Dedicated to fixing the track to non-ferromagnetic surfaces.



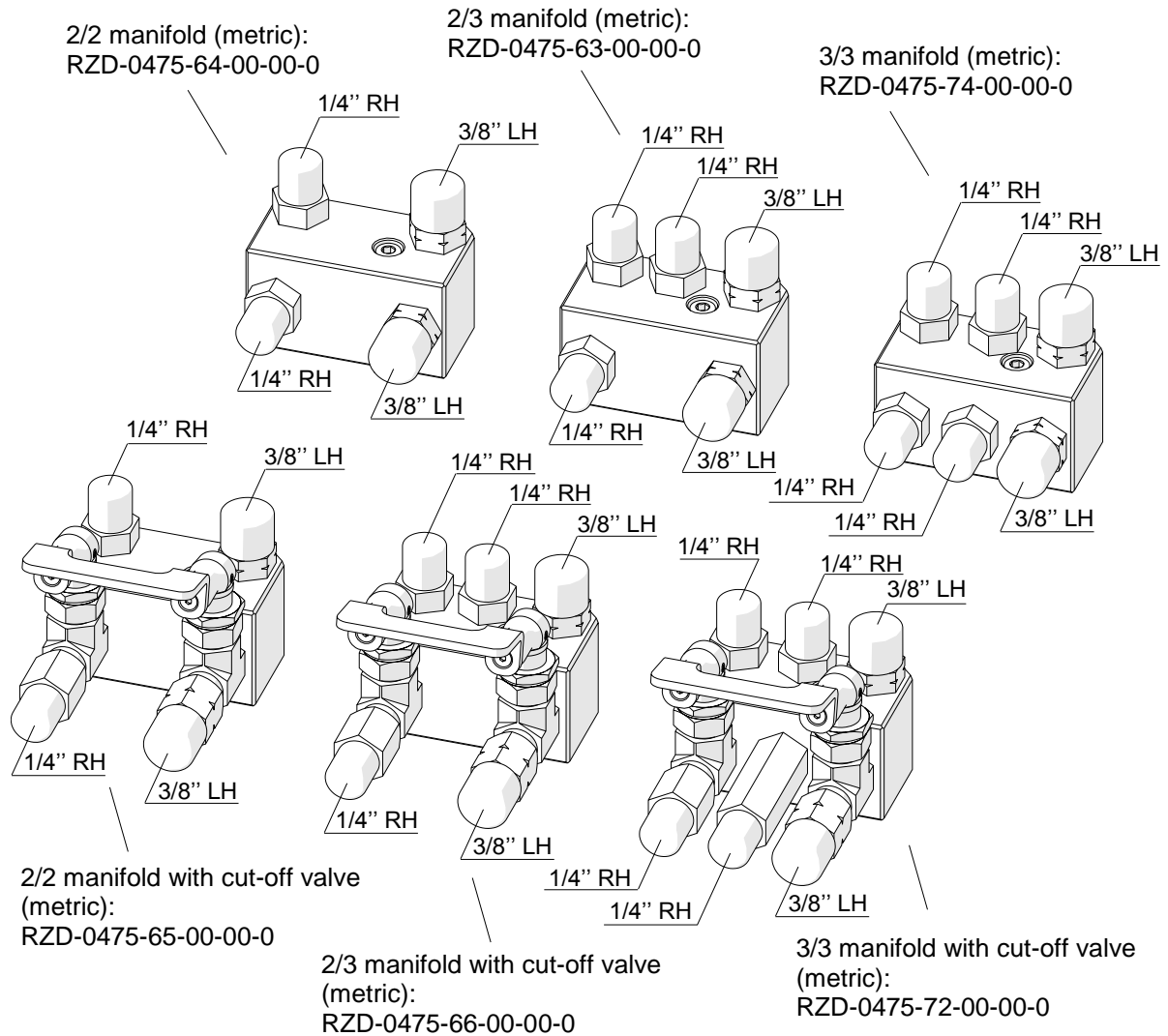
Part number (vacuum pump with safety reservoir):  
AGR-0541-10-10-00-0 (115 V UK)  
AGR-0541-10-20-00-0 (230 V CEE)

Other parts of the system are described in a separate manual.



### 5.13. Gas manifold (for oxy-fuel cutting)

Provides safe gas delivery to 2- or 3-hose torches. Manifolds are available with or without gas cut-off valve in both metric and imperial versions.



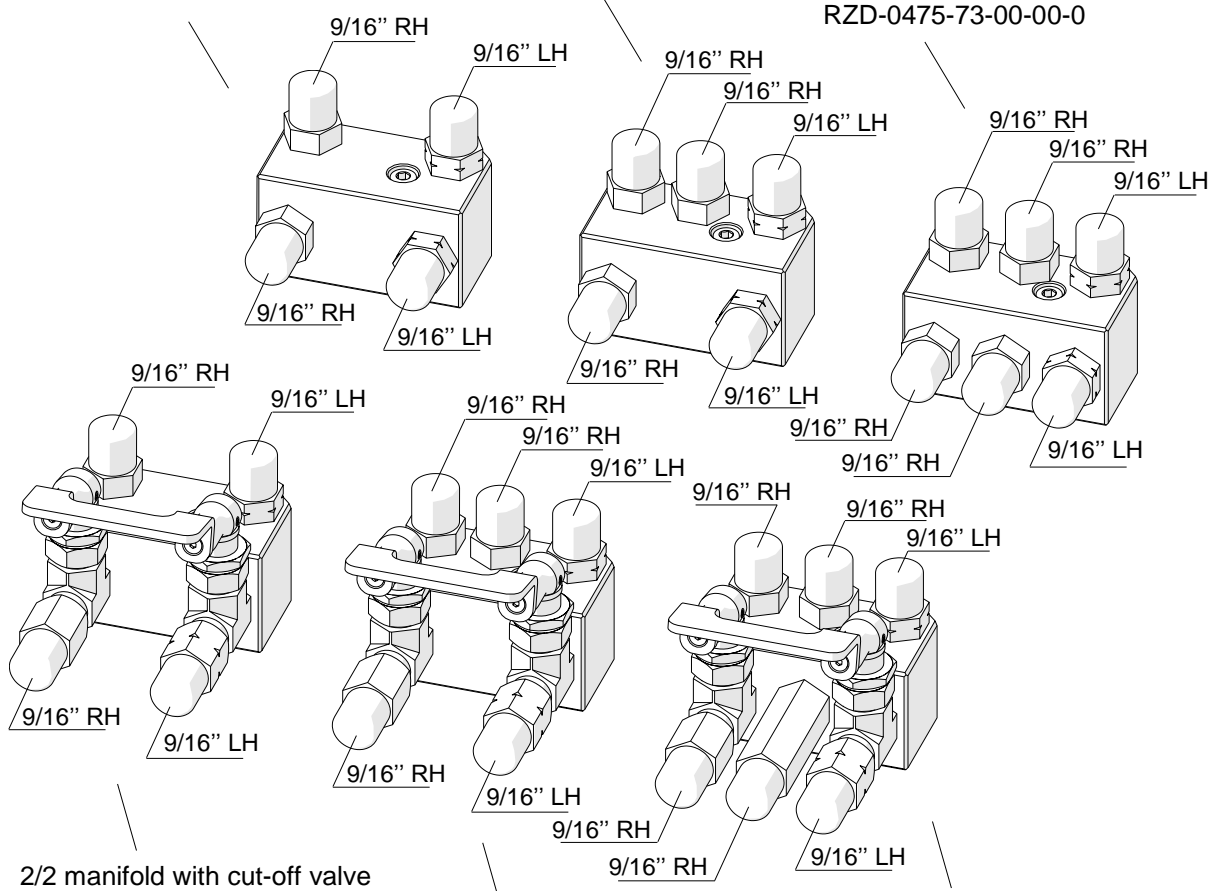
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2/2 manifold (imperial):  
RZD-0475-68-00-00-0

2/3 manifold (imperial):  
RZD-0475-67-00-00-0

3/3 manifold (imperial):  
RZD-0475-73-00-00-0

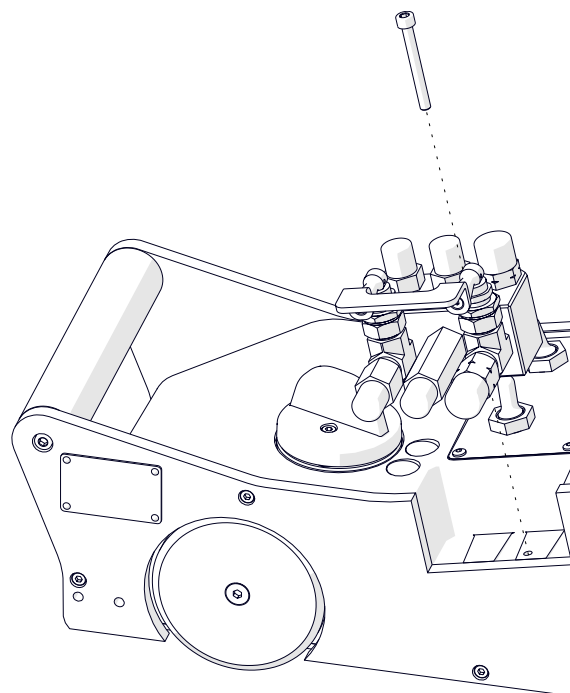


2/2 manifold with cut-off valve  
(imperial):  
RZD-0475-70-00-00-0

2/3 manifold with cut-off valve  
(imperial):  
RZD-0475-69-00-00-0

3/3 manifold with cut-off valve  
(imperial):  
RZD-0475-71-00-00-0

To install, place the manifold into the slot and tighten with the 4 mm hex wrench and the M5x45 screw.

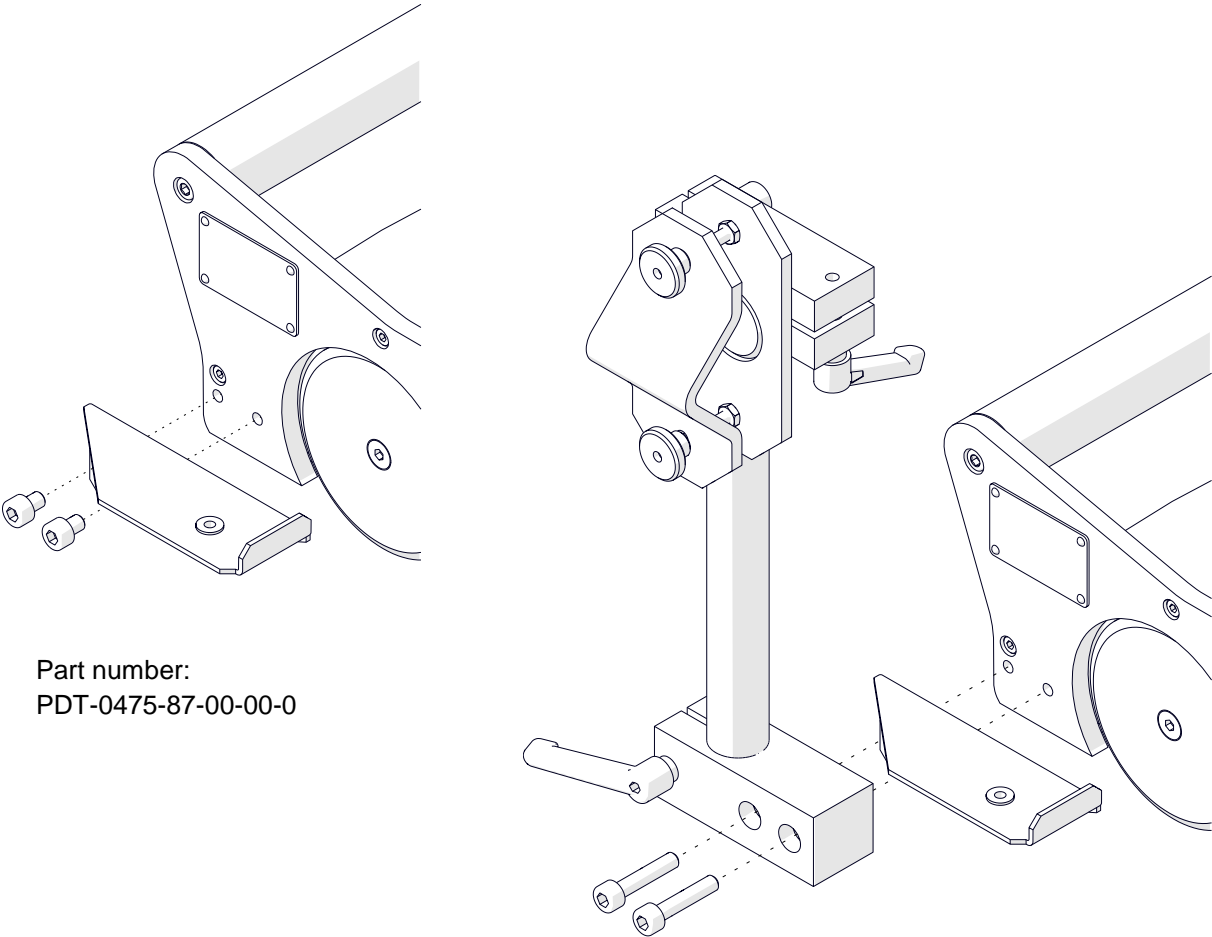


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### 5.14. Gas manifold bracket (for oxy-fuel cutting)

Allows use of a second gas manifold. Use the 5 mm hex wrench and M6x8 screws to tighten the bracket to the side wall or, if used with the cable anchor, use the 5 mm hex wrench and M6x30 screws to tighten the bracket between the cable anchor and the side wall.

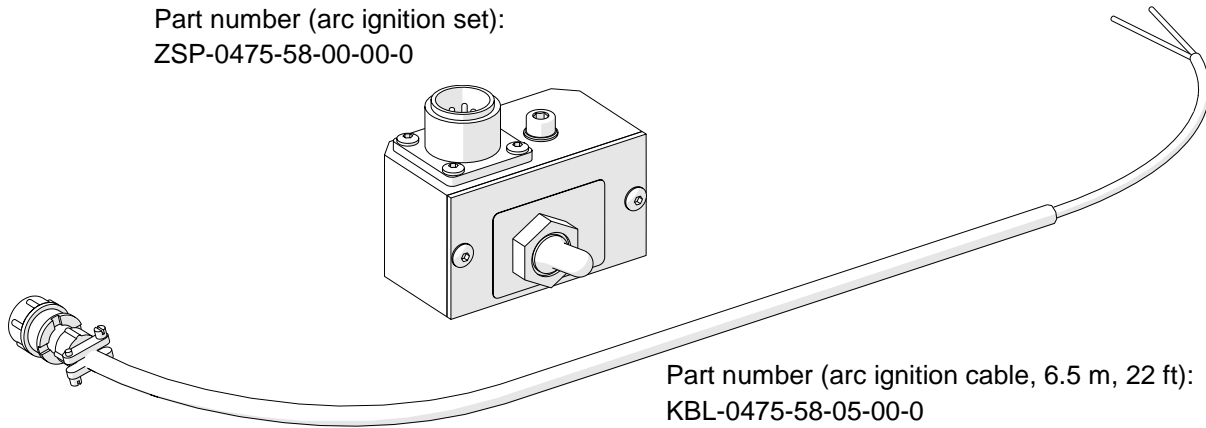


Part number:  
PDT-0475-87-00-00-0

### 5.15. Arc ignition set (for plasma cutting)

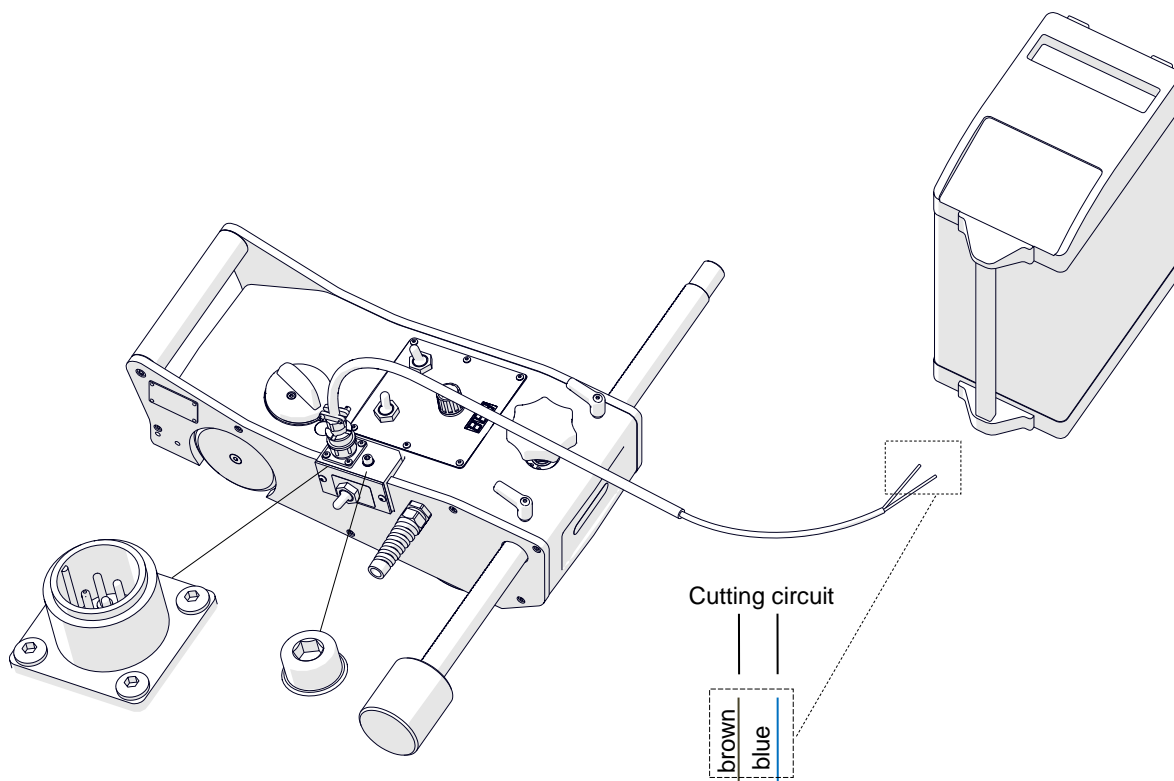
Allows control of one torch by using the arc ignition cable.

Part number (arc ignition set):  
ZSP-0475-58-00-00-0



Part number (arc ignition cable, 6.5 m, 22 ft):  
KBL-0475-58-05-00-0

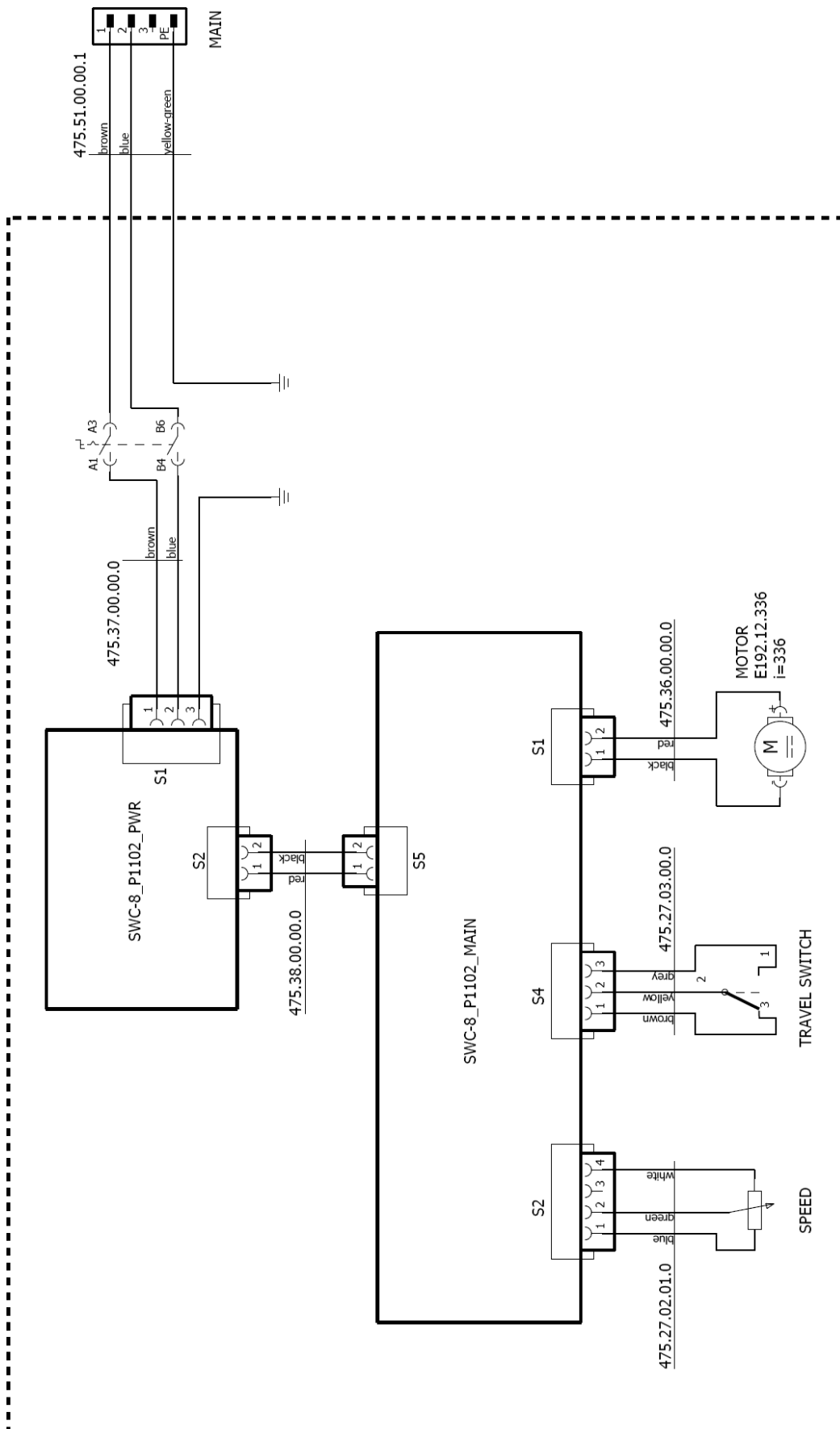
To install, place the arc ignition set into the carriage slot, and then tighten the set with the 4 mm hex wrench and the M5x50 screw. Next, plug the cable into the socket and connect the brown wire to the first terminal of the cutting circuit, and connect the blue wire to the second terminal of the same circuit, according to the diagram shown in the figure.



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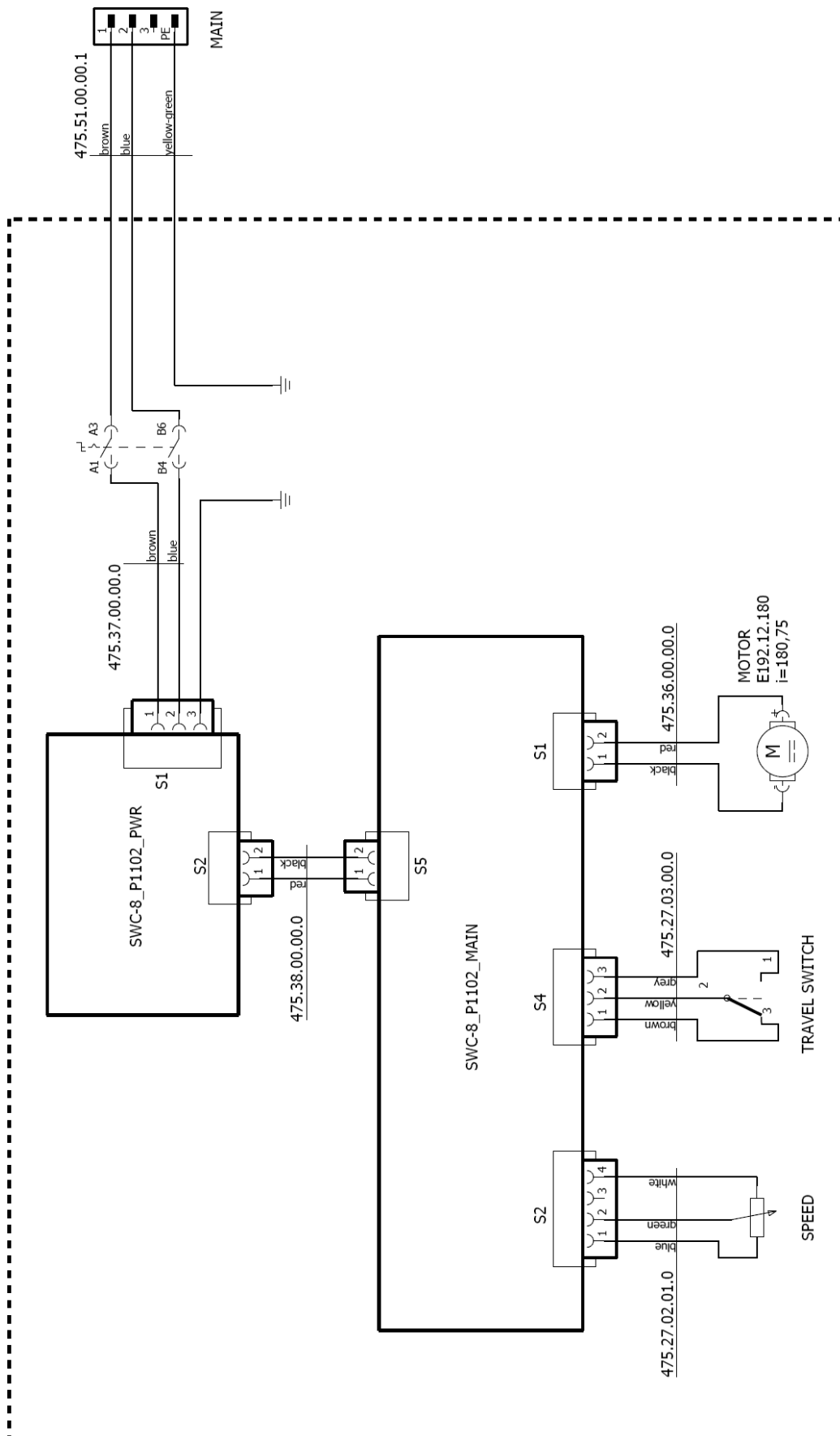
### 6. 115–230 V WIRING DIAGRAM



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### 7. 115-230 V HS WIRING DIAGRAM



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## 8. DECLARATION OF CONFORMITY

### *EC Declaration of Conformity*

We

***JEI Group Ltd  
Unit 21 Empire Business Park  
Enterprise Way, Burnley  
Lancs, BB12 6LT***

declare with full responsibility that:

### **DRAGON (HS) CUTTING CARRIAGE**

is manufactured in accordance with the following standards:

- EN 12100
- EN 60204-1
- EN 60974-10

and satisfies safety regulations of the guidelines: 2014/30/EC, 2014/35/EC, 2006/42/EC.

Person authorized to compile the technical file:

David McFadden, Burnley



Burnley, 29 October 2018

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David McFadden  
Managing Director



**9. QUALITY CERTIFICATE**

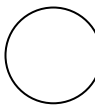
**Machine control card  
DRAGON (HS) CUTTING CARRIAGE**

- 115–230 V**
- 115–230 V HS**

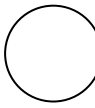
Serial number .....

Electric test

Type of test	Result	Name of tester
Insulation electrical strength test (1000 V, 50 Hz)		..... Date
Continuity test of the protective earth system	..... Ω	..... Signature

Quality control ..... 

**Adjustments, inspections**

Quality control ..... 

**10. WARRANTY CARD**

**WARRANTY CARD No.....**

..... in the name of Manufacturer warrants the DRAGON (HS) Cutting Carriage to be free of defects in material and workmanship under normal use for a period of 12 months from the date of sale.

This warranty does not cover damage or wear that arise from misuse, accident, tempering or any other causes not related to defects in workmanship or material.

Date of production .....

Serial number .....

Date of sale .....

Signature of seller.....

**1.09 / 30 October 2018**

***WE RESERVE THE RIGHT TO MAKE CHANGES IN THIS MANUAL WITHOUT NOTICE***