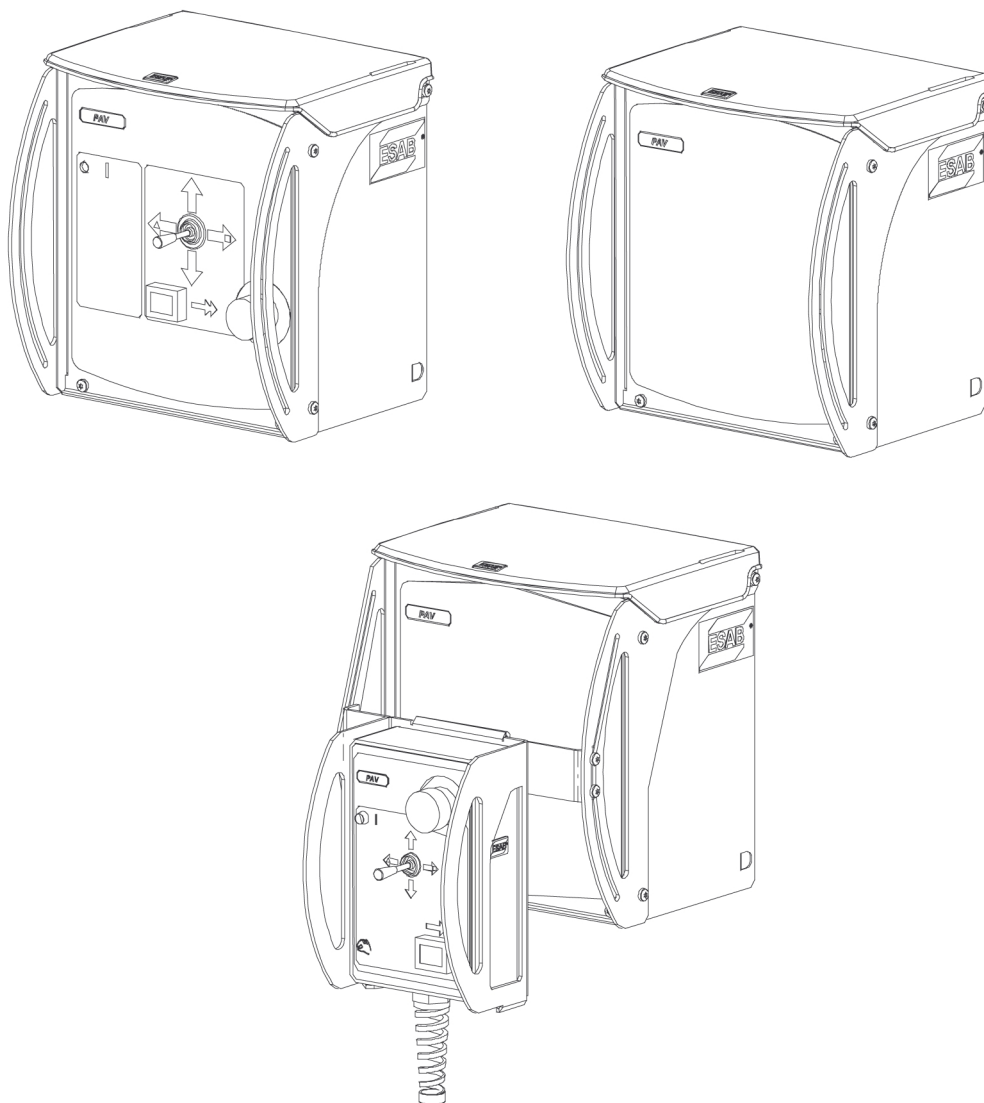


# PAV



## Instruction manual



## EU DECLARATION OF CONFORMITY

According to  
The Low Voltage Directive 2014/35/EU  
The EMC Directive 2014/30/EU  
The RoHS Directive 2011/65/EU

### Type of equipment

Arc welding joint tracking unit

### Type designation

PAV	serial number starting with 049 XXX XXXX
PAV remote control	serial number starting with 941 XXX XXXX
GMH	serial number starting with 049 XXX XXXX
GMH remote control	serial number starting with 941 XXX XXXX

### Brand name or trademark

ESAB

### Manufacturer or his authorised representative established within the EEA

#### Name, address, and telephone No:

ESAB AB  
Lindholmsallén 9, Box 8004, SE-402 77 Göteborg, Sweden  
Phone: +46 31 50 90 00, [www.esab.com](http://www.esab.com)

### The following harmonised standards in force within the EEA has been used in the design:

EN IEC 60974-1:2018/A1:2019	Arc Welding Equipment – Part 1: Welding Power Sources
EN 60974-10:2014,	Arc Welding Equipment – Part 10: Electromagnetic Compatibility (EMC) requirements

### Additional Information:

Restrictive use, Class A equipment, intended for use in location other than residential.

**By signing this document, the undersigned declares as manufacturer, or the manufacturer's authorised representative established within the EEA, that the equipment in question complies with the safety requirements stated above.**

Place/Date

Signature

Gothenburg  
2022-02-01

Peter Kjällström  
Standard Automation Director

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# 1 SAFETY

## 1.1 Meaning of symbols

As used throughout this manual: Means Attention! Be Alert!



### **DANGER!**

Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.



### **WARNING!**

Means potential hazards which could result in personal injury or loss of life.



### **CAUTION!**

Means hazards which could result in minor personal injury.



### **WARNING!**

Before use, read and understand the instruction manual and follow all labels, employer's safety practices and Safety Data Sheets (SDSs).



## 1.2 Safety precautions

Users of ESAB equipment have the ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions. Safety precautions must meet the requirements that apply to this type of equipment. The following recommendations should be observed in addition to the standard regulations that apply to the workplace.

All work must be carried out by trained personnel well-acquainted with the operation of the equipment. Incorrect operation of the equipment may lead to hazardous situations which can result in injury to the operator and damage to the equipment.

- 1 Anyone who uses the equipment must be familiar with:
  - its operation
  - location of emergency stops
  - its function
  - relevant safety precautions
  - welding and cutting or other applicable operation of the equipment
- 2 The operator must ensure that:
  - no unauthorised person is stationed within the working area of the equipment when it is started up
  - no-one is unprotected when the arc is struck or work is started with the equipment
- 3 The workplace must:
  - be suitable for the purpose
  - be free from drafts
- 4 Personal safety equipment:
  - Always wear recommended personal safety equipment, such as safety glasses, flame-proof clothing, safety gloves
  - Do not wear loose-fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns
- 5 General precautions:
  - Make sure the return cable is connected securely
  - Work on high voltage equipment **may only be carried out by a qualified electrician**



- Appropriate fire extinguishing equipment must be clearly marked and close at hand
- Lubrication and maintenance must **not** be carried out on the equipment during operation



**WARNING!**

Wire feeders are intended to be used with power sources in MIG/MAG mode only.

If used in any other welding mode, such as MMA, the welding cable between wire feeder and power source must be disconnected, or else the wire feeder becomes live or energized.

**If equipped with ESAB cooler**

Use ESAB approved coolant only. Non-approved coolant might damage the equipment and jeopardize product safety. In case of such damage, all warranty undertakings from ESAB cease to apply.

Recommended ESAB coolant ordering number: 0465 720 002.

For ordering information, see the "ACCESSORIES" chapter in the instruction manual.



**WARNING!**

Arc welding and cutting can be injurious to yourself and others. Take precautions when welding and cutting.



**ELECTRIC SHOCK - Can kill**

- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing
- Insulate yourself from work and ground.
- Ensure your working position is safe



**ELECTRIC AND MAGNETIC FIELDS - Can be dangerous to health**

- Welders having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers.
- Exposure to EMF may have other health effects which are unknown.
- Welders should use the following procedures to minimize exposure to EMF:
  - Route the electrode and work cables together on the same side of your body. Secure them with tape when possible. Do not place your body between the torch and work cables. Never coil the torch or work cable around your body. Keep welding power source and cables as far away from your body as possible.
  - Connect the work cable to the workpiece as close as possible to the area being welded.



**FUMES AND GASES - Can be dangerous to health**

- Keep your head out of the fumes
- Use ventilation, extraction at the arc, or both, to take fumes and gases away from your breathing zone and the general area



**ARC RAYS - Can injure eyes and burn skin**

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing
- Protect bystanders with suitable screens or curtains



**NOISE - Excessive noise can damage hearing**

Protect your ears. Use earmuffs or other hearing protection.

**MOVING PARTS - Can cause injuries**



- Keep all doors, panels and covers closed and securely in place. Have only qualified people remove covers for maintenance and troubleshooting as necessary. Reinstall panels or covers and close doors when service is finished and before starting engine.



- Stop engine before installing or connecting unit.
- Keep hands, hair, loose clothing and tools away from moving parts.

**FIRE HAZARD**



- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby
- Do not use on closed containers.

**HOT SURFACE - Parts can burn**



- Do not touch parts bare handed.
- Allow cooling period before working on equipment.
- To handle hot parts, use proper tools and/or insulated welding gloves to prevent burns.

**MALFUNCTION - Call for expert assistance in the event of malfunction.**

**PROTECT YOURSELF AND OTHERS!**



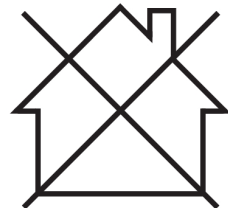
**CAUTION!**

This product is solely intended for arc welding.



**CAUTION!**

Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There may be potential difficulties in ensuring electromagnetic compatibility of class A equipment in those locations, due to conducted as well as radiated disturbances.



**NOTE!**

**Dispose of electronic equipment at the recycling facility!**

In observance of European Directive 2012/19/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical and/or electronic equipment that has reached the end of its life must be disposed of at a recycling facility.

As the person responsible for the equipment, it is your responsibility to obtain information on approved collection stations.

For further information contact the nearest ESAB dealer.



**ESAB has an assortment of welding accessories and personal protection equipment for purchase. For ordering information contact your local ESAB dealer or visit us on our website.**

## 2 INTRODUCTION

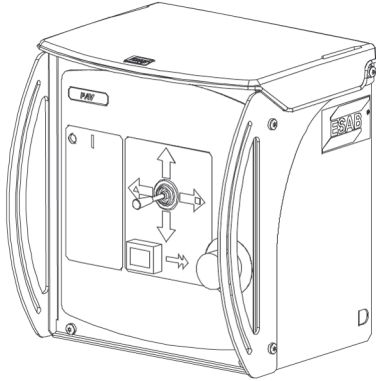
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### 2.1 General

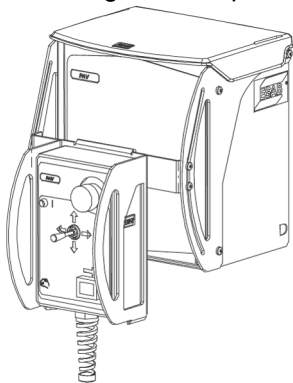
PAV is a control system for motorised slides. The system is available in several variants, see below.

### 2.2 Variants

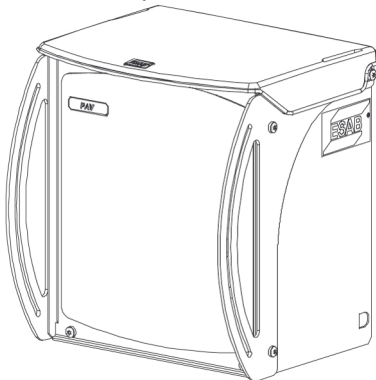
- Joint-tracking unit with control panel



- Joint-tracking unit with portable control box



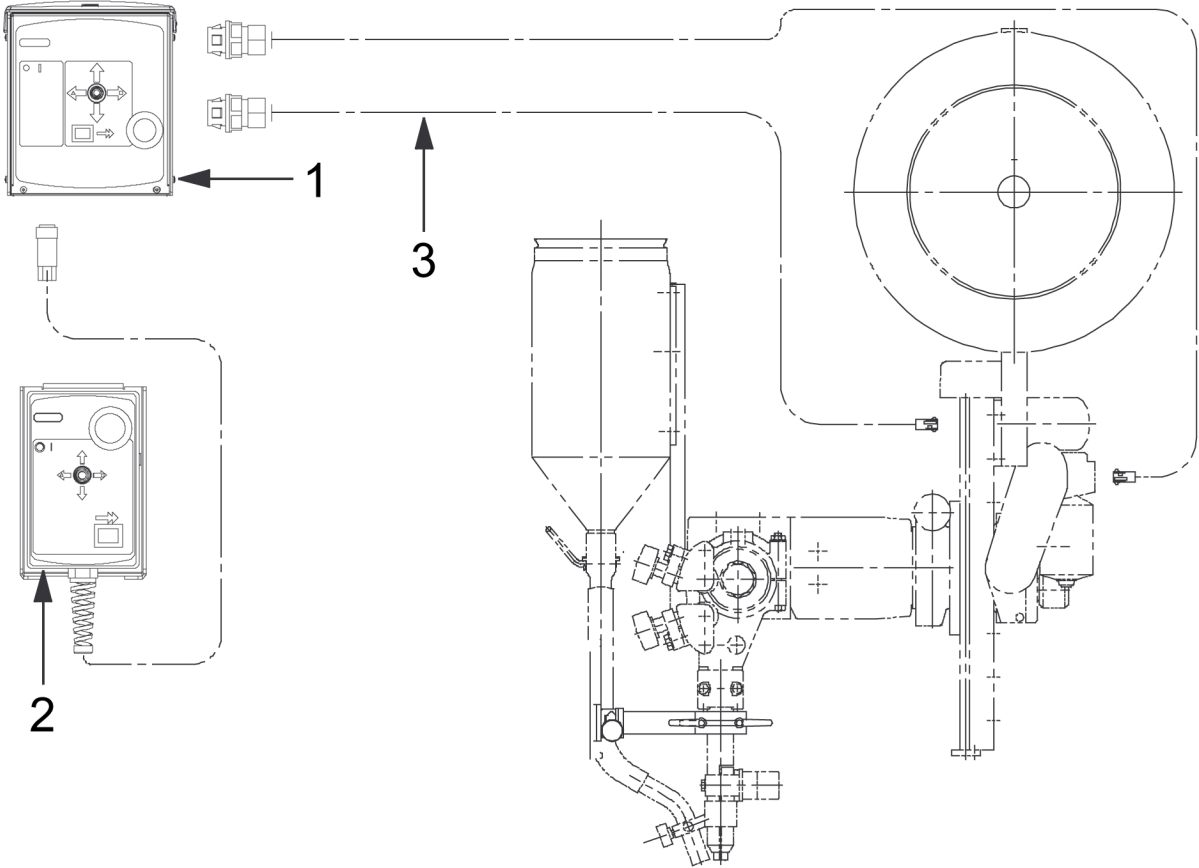
- Built-in components for columns and booms



### 2.3 Main parts

- 1 Joint-tracking unit (with or without control panel)
- 2 Portable control box
- 3 Motor cable

For more information, see OPERATION chapter.



## 3 TECHNICAL DATA

	<b>PAV</b>
<b>Supply voltage</b>	42 V AC, 50-60 Hz
<b>Current output</b>	450 V A
<b>Ambient temperature</b>	-15°C ± 45°C
<b>Relative atmospheric humidity</b>	Max. 98%
<b>Maximum motor current</b>	6 A, 100%
<b>Enclosure class</b>	IP23
<b>Current limits</b>	15 A (hardware current limit)
<b>Power supply fusing</b>	10 A slow
<b>Motor regulator, type</b>	Switched four quadrant reg.
<b>Rotor voltage</b>	40 V DC
<b>Field voltage, separate magnetised motor</b>	60 V DC
<b>Weight</b>	58.5 kg
Joint-tracking unit	6.2 kg
Portable control box	2.7 kg (complete with 4 m cable and protection)

### Enclosure class

The **IP** code indicates the enclosure class, i.e. the degree of protection against penetration by solid objects or water.

Equipment marked **IP23** is intended for indoor and outdoor use.

## **4      INSTALLATION**

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### **4.1    General**

The installation must be carried out by a professional.

### **4.2    Installation and connection**

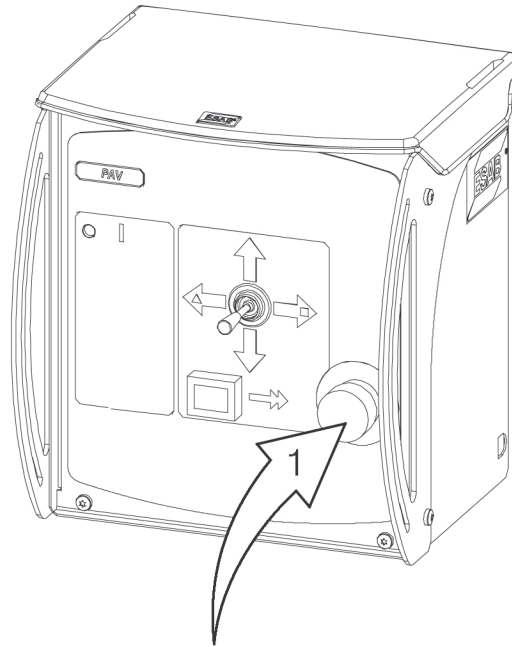
- 1 Measurement information, see DIMENSION DRAWING.
- 2 Connection, see DIAGRAM.
- 3 Check that the required output and voltage is available for complete installation.

## 5 OPERATION

### 5.1 General

General safety regulations for handling the equipment can be found in the "SAFETY" chapter of this manual. Read it through before you start using the equipment!

### 5.2 Joint-tracking unit with control panel



#### Emergency stop (1)

- One press on the button activates **EMERGENCY STOP**.



#### NOTE!

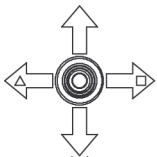
An emergency stop must never be reset before the cause of the abnormal function or signal has been established and rectified.

#### Signal lamp



- Illuminates when the power has been switched on.

#### Control lever



- Manual control of the servo slides Up/Down and Left/Right.




#### Lamp pushbutton (rapid speed)



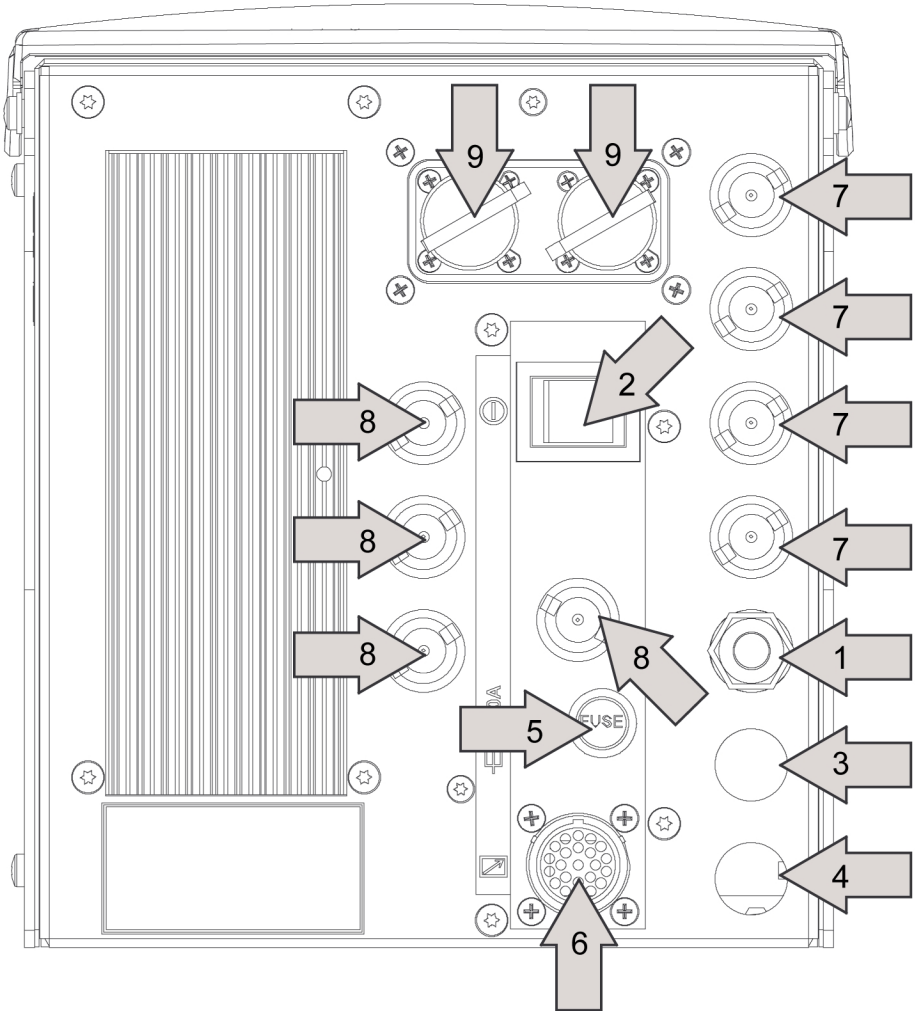
Selection of low or high speed during manual positioning with the control lever.

- One press on the button activates rapid speed.  
A lamp in the button illuminates when the function is activated.
- Return to low speed by pressing the button again.  
Check that the lamp has gone out before carrying out further commands.

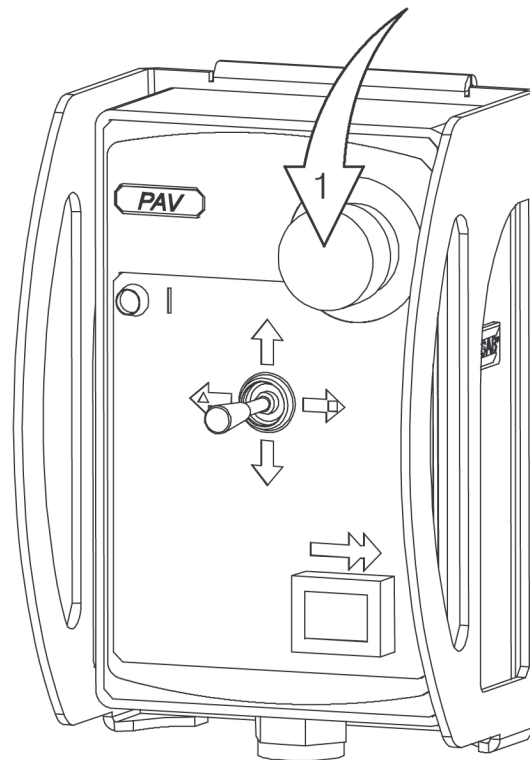
### 5.3 Joint-tracking unit (rear section)

1		Connection, power supply 42 V
2		Switch Power supply On/Off
3		Socket, for connecting the vertical slide motor
4		Socket, for connecting the horizontal slide motor
5		Control fuse, 10 A slow
6		Socket (23-pin), for connecting the portable control box
7		Sockets, for connecting the limit position switch
8		Extra sockets
9		Service contacts





## 5.4 Portable control box



### Emergency stop (1)

- One press on the button activates **EMERGENCY STOP**.



#### NOTE!

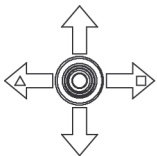
An emergency stop must never be reset before the cause of the abnormal function or signal has been established and rectified.

### Signal lamp



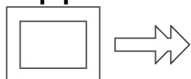
- Illuminates when the power has been switched on.

### Control lever



- Manual control of the servo slides Up/Down and Left/Right.

### Lamp pushbutton (rapid speed)

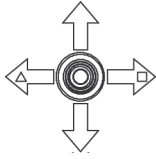


Selection of low or high speed during manual positioning with the control lever.

- One press on the button activates rapid speed.  
A lamp in the button illuminates when the function is activated.
- Return to low speed by pressing the button again.  
Check that the lamp has gone out before carrying out further commands.

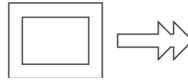
## 5.5 Positioning before welding start

- 1 Align the welding equipment into position in relation to the weld joint with the control lever.

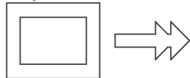


- 2

For rough settings, press the lamp pushbutton  
The lamp illuminates.



- 3 For precise settings and during welding, check that the lamp pushbutton



is not depressed. The lamp should be switched off.

## 6 MAINTENANCE

---



**CAUTION!**

All warranty undertakings from the supplier cease to apply if the customer attempts any work to rectify any faults in the product during the warranty period.

- Check that the cables are intact and that they are correctly connected.
- Clean the equipment with compressed air regularly.
- Follow the instructions for the internal components.

## 7 ACCESSORIES

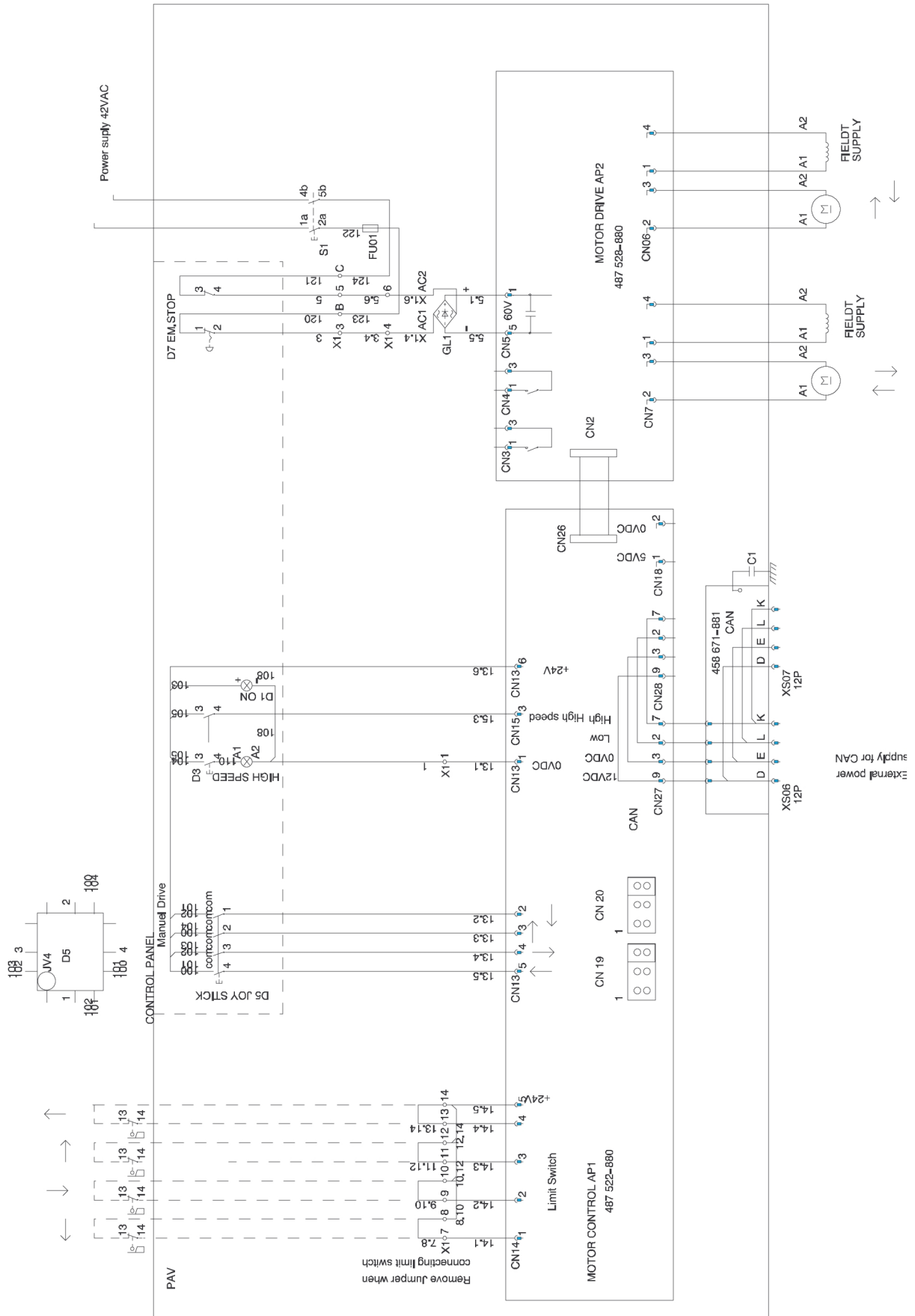
Ordering number	
0148636002	Intermediate transformer for separate power supply, from mains power 190, 220, 380, 415, 440, 500 V 50 Hz 200, 230, 380, 415, 440, 500 V 60 Hz to secondary 42 V, 660 VA
0262613404	Cable 3×2.5 mm <sup>2</sup> , connection, transformer
0334333xxx	A6 servo slide ball bushing type with permanent magnetised motor 42 V DC
0334426xxx	A6 motor driven slide, slide bearing mounted long runner, with A6 VEC motor 42 V - 4000 rom ratio 74:1
0460745xxx	Motor cable. The cable is available in different lengths, see the appropriate sales brochure for the servo slide. (Contact ESAB's sales office.)

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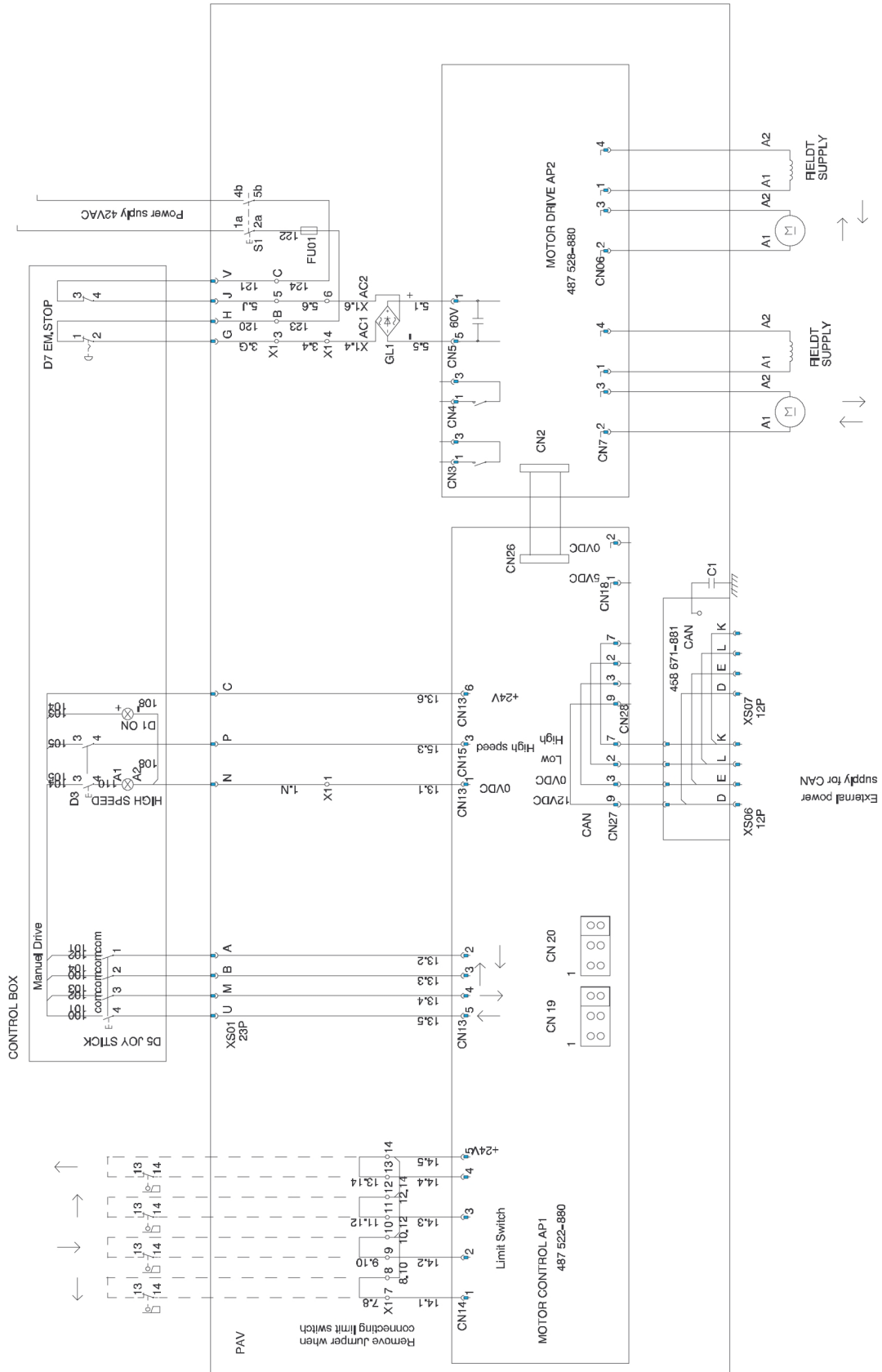
# 8 DIAGRAM

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PAV with control panel



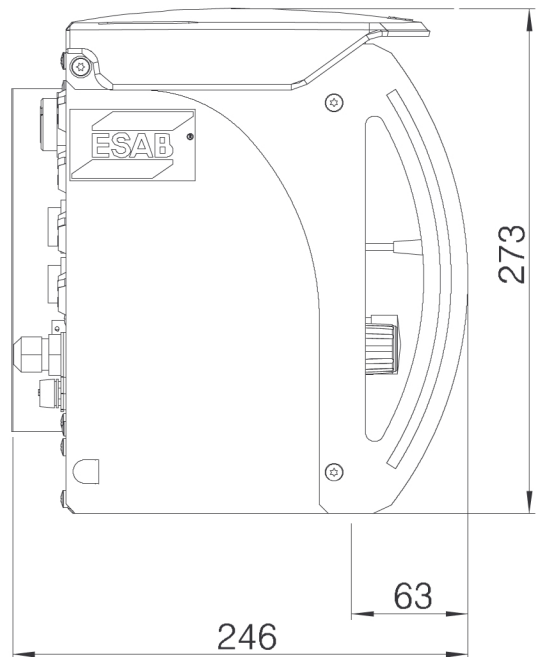
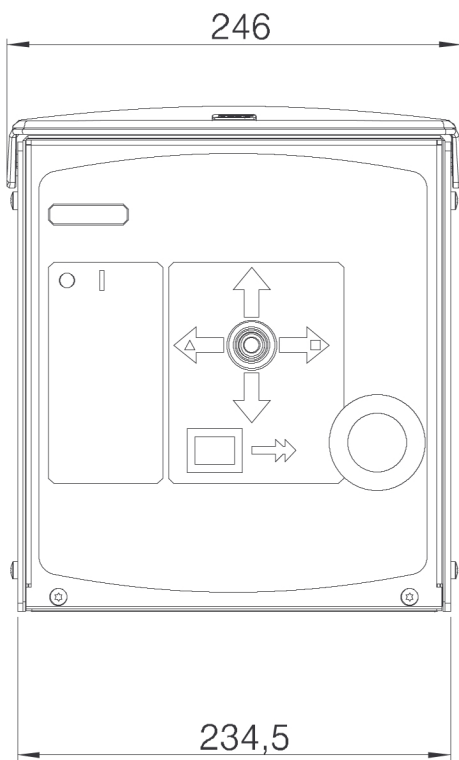
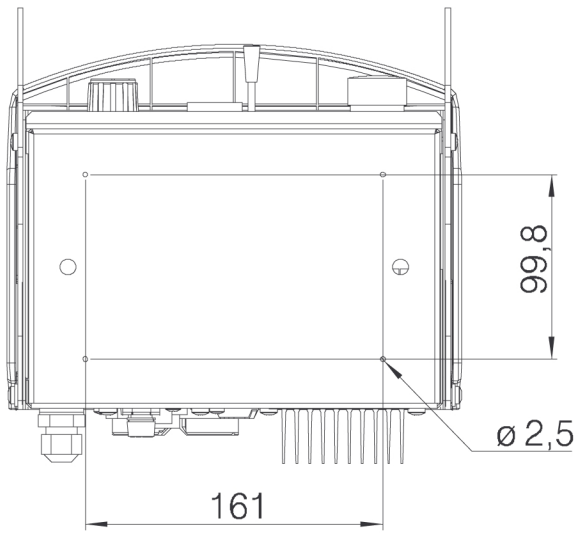
PAV with remote control box



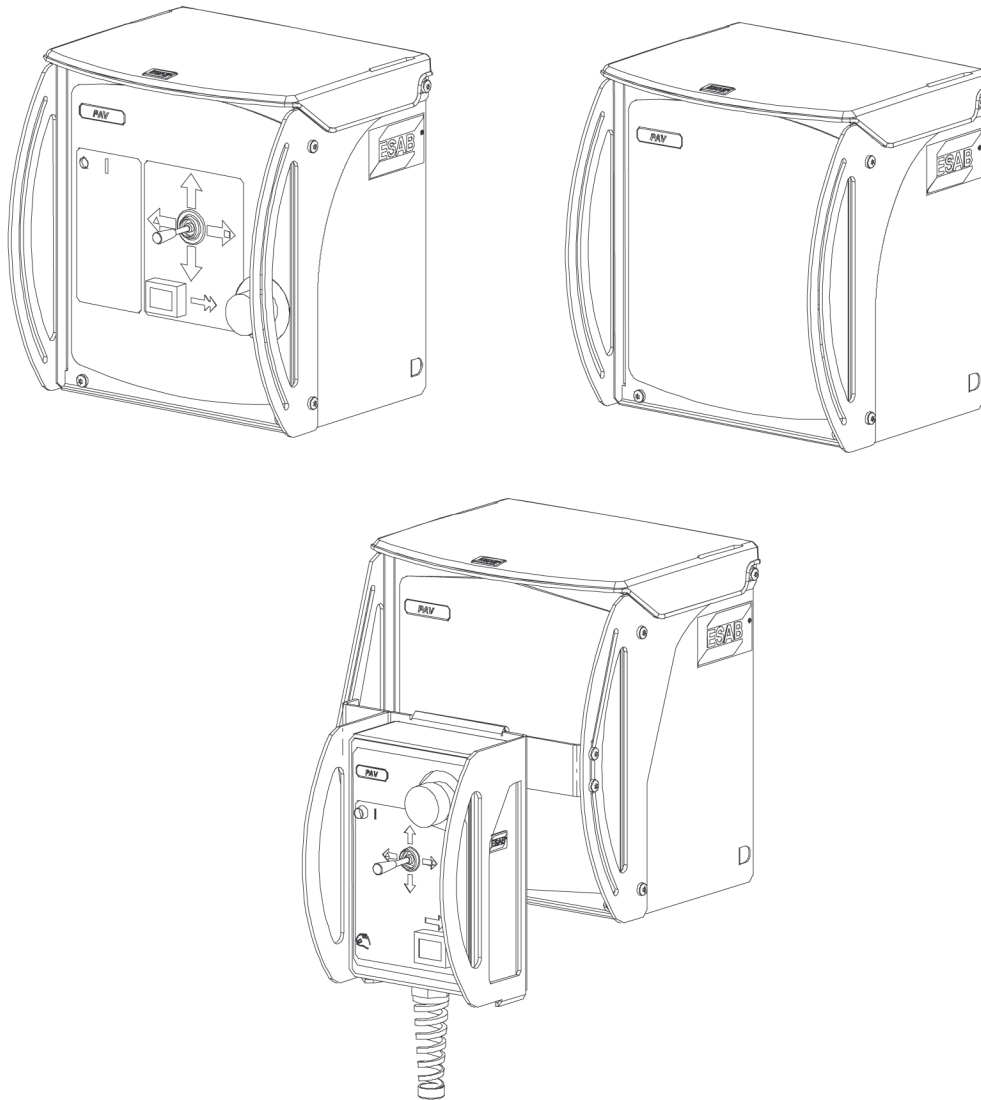




# 9 DIMENSION DRAWING



# 10 ORDERING NUMBERS

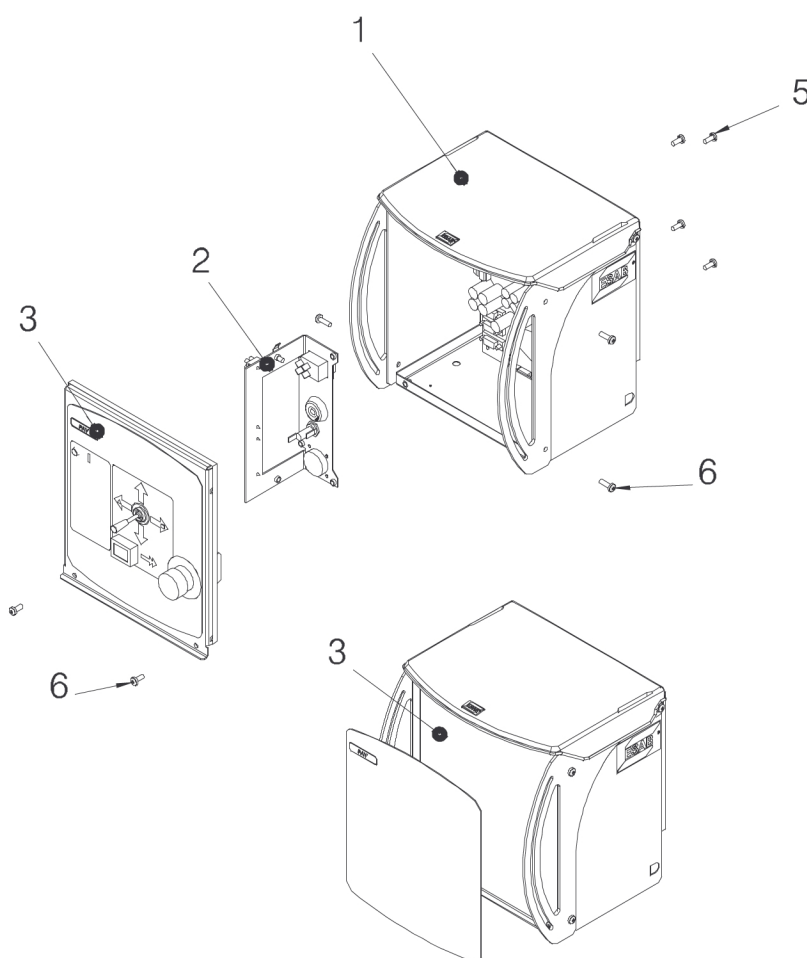


Ordering number	Denomination	Notes
0460502880	PAV complete	Joint tracking unit without control panel
0460502881	PAV with MMC Complete	Joint tracking unit with control panel
0460502881	PAV with portable control box	Joint tracking unit without control panel and with portable control box
0460570881	Portable control box	

Technical documentation is available on the Internet at: [www.esab.com](http://www.esab.com)

# 11 SPARE PARTS LIST

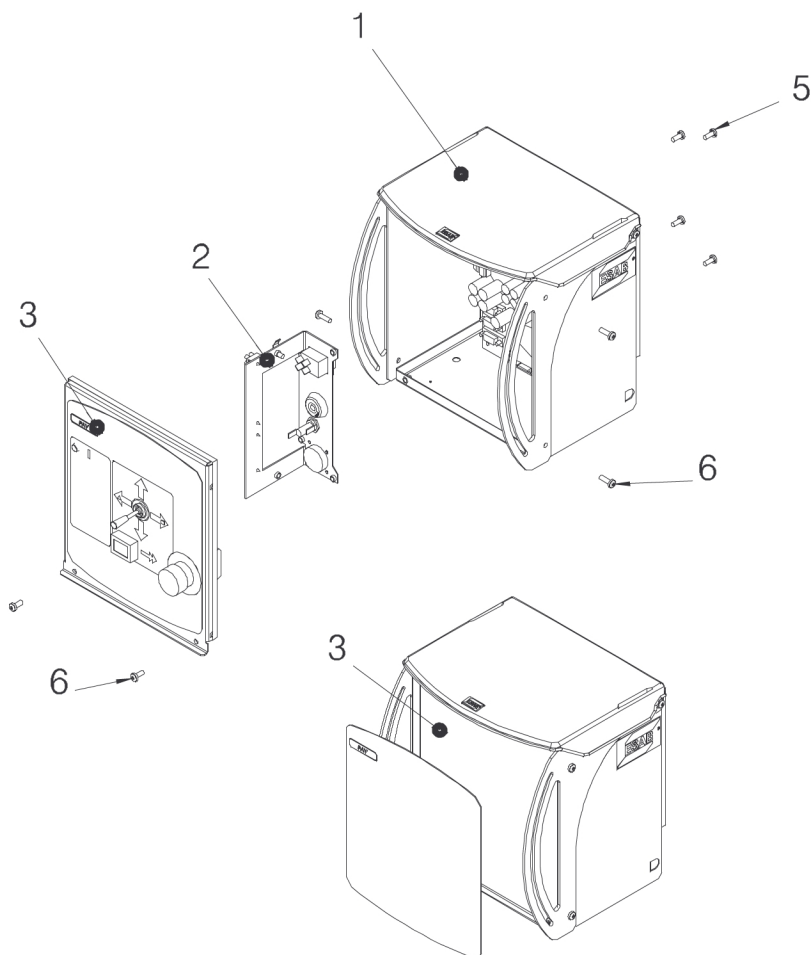
Item	Qty	Ordering no.	Denomination	Notes
		<b>0460502880</b>	<b>PAV</b>	<b>Without control panel</b>
1	1	0460468880	Basic module	
2	1		Outlet module, PAV remote control	
3	1	0460462880	MMC without controls	
4	7	0194292020	Grommet	20
5	4		Screw MRT, ground -cutter (black)	M5x12
6	6		Screw MRT (black)	M5x12
12	1	0460673880	Supply cable	



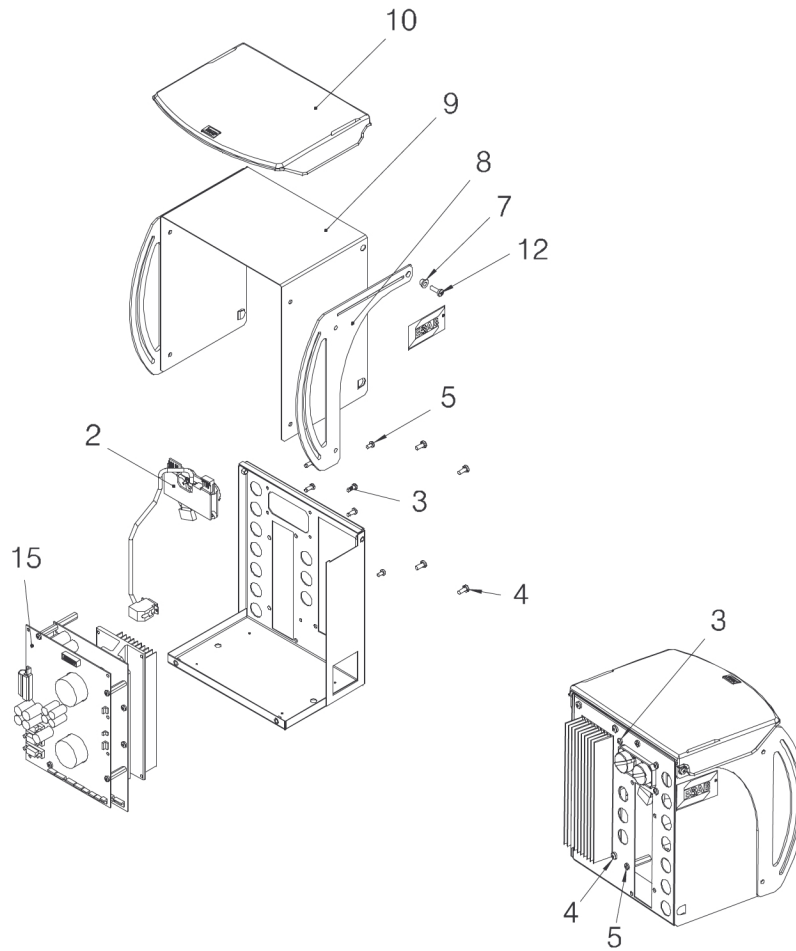
Item	Qty	Ordering no.	Denomination	Notes
		<b>0460502881</b>	<b>PAV with MMC</b>	<b>With control panel</b>
1	1	0460468880	Basic module	
2	1		Outlet module, PAV remote control	
3	1	0460462881	MMC PAV	
4	7	0194292020	Grommet	20
5	4		Screw MRT, ground -cutter (black)	M5x12

11 SPARE PARTS LIST

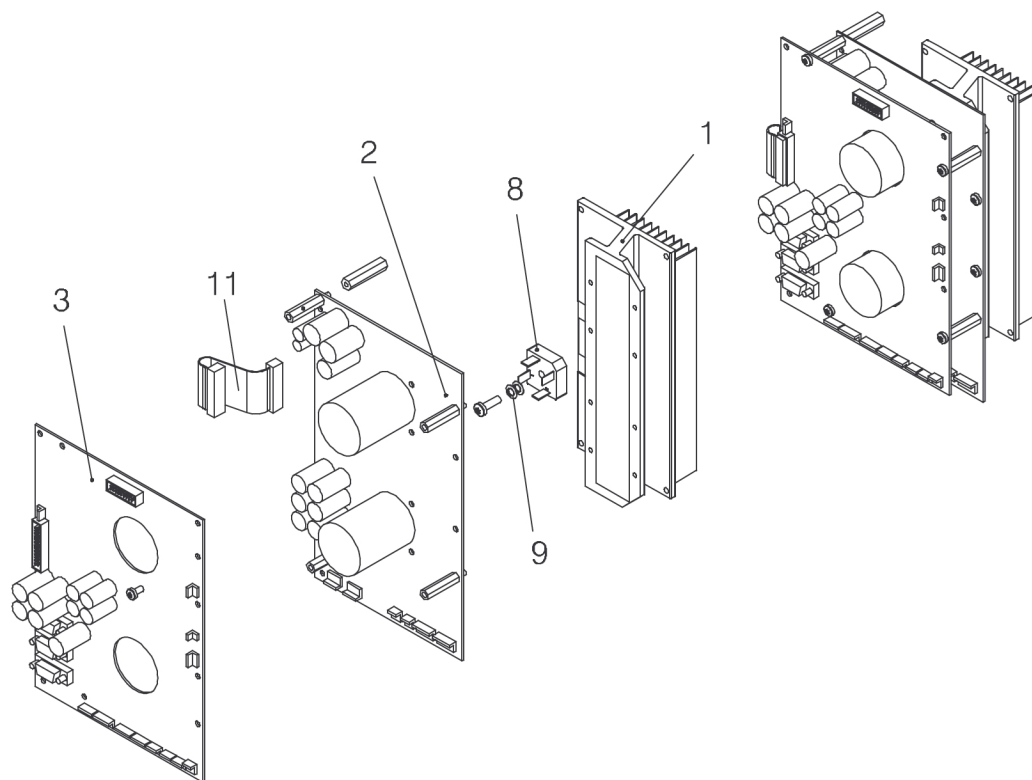
Item	Qty	Ordering no.	Denomination	Notes
6	4		Screw MRT (black)	M5x12
12	1	0460673880	Supply cable	



Item	Qty	Ordering no.	Denomination	Notes
		<b>0460468880</b>	<b>Basic module</b>	
2	1	0458679885	Operating contact can tractor	
3	4		Screw RX -PT	6 -19x8
4	6		Screw MRT ground -cutter	M5x12
5	8		Screw MRT	M4x8, DIN 7985
7	2	0460465001	Spacer hinge	
8	2	0460463001	Protective frame	
9	1	0460430001	Cover	
10	1	0460469001	Sun visor	
12	2		Screw MRT (black)	M5x16
15	1		Circuit board module	



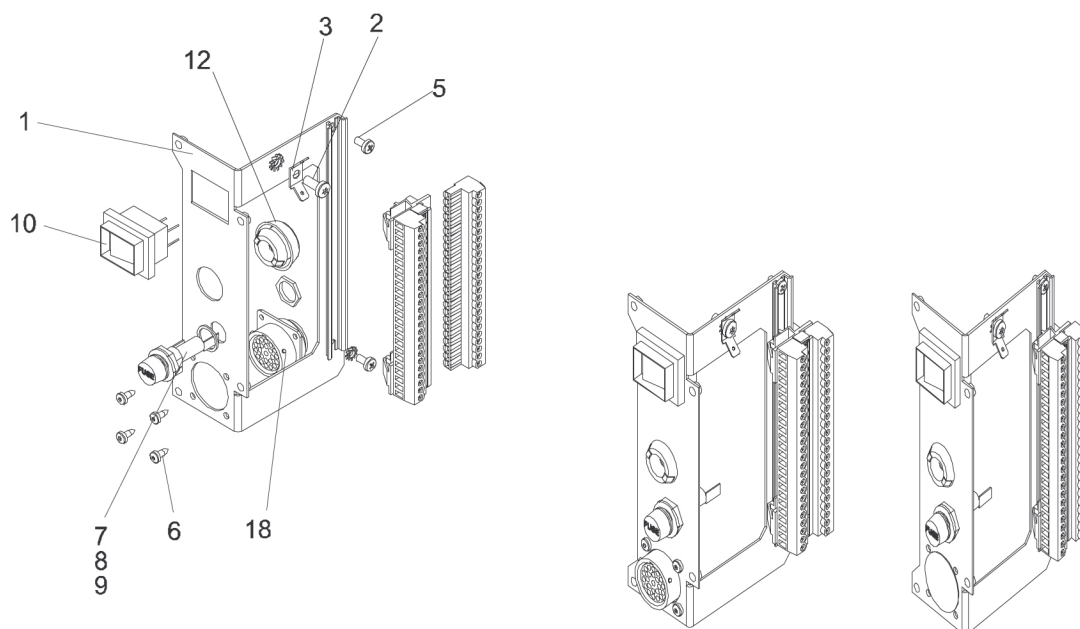
Item	Qty	Ordering no.	Denomination	Notes
			<b>Circuit board module</b>	
1	1	0460461001	Heat sink	
2	1	0487528880	PC board, motor drive	
3	1	0487522980	PC board, motor control	PAV
8	1	0460648880	Cable set, rectifier bridge	
9	2		Spring washer	
11	1	0193700703	Ribbon cable+connectors	26 -pole



Item	Qty	Ordering no.	Denomination	Notes
			<b>Outlet module, PAV remote</b>	<b>PAV</b>
1	1	0460431002	Bracket	jog
2	1	0194179327	Screw mrt ground -cutter	m5x12 steel 8.8 fzb
3	1	0192038102	Flat pin	D5,3
5	2	0193578287	Screw MRX	4x8
6	4	014119200	Screw RTS	5x9,5
7	1	0193701001	Fuse holder	fine.5x12
8	1	0193701002	Fuse holder	5x20
9	1	0567900116	Fuse	10 a
10	1	0193317001	Switch	tigaid 315/lto/ltt
12	1	0192230110	Dummy plug	p -812 d=23/20
18	1	0368544005	Contact	Burndy, 23 -pole
			<b>Outlet module, PAV MMC</b>	<b>PAV</b>
1	1	0460431002	Bracket	jog
2	1	0194179327	Screw mrt ground -cutter	m5x12 steel 8.8 fzb
3	1	0192038102	Flat pin	D5,3
5	2	0193578287	Screw MRX	4x8
6	4	0194119200	Screw RTS	5x9,5

11 SPARE PARTS LIST

Item	Qty	Ordering no.	Denomination	Notes
7	1	0193701001	Fuse holder	fine.5x12
8	1	0193701002	Fuse holder	5x20
9	1	0567900116	Fuse	10 a
10	1	0193317001	Switch	tigaid 315/lto/ltt
12	1	0192230110	Dummy plug	p -812 d=23/20

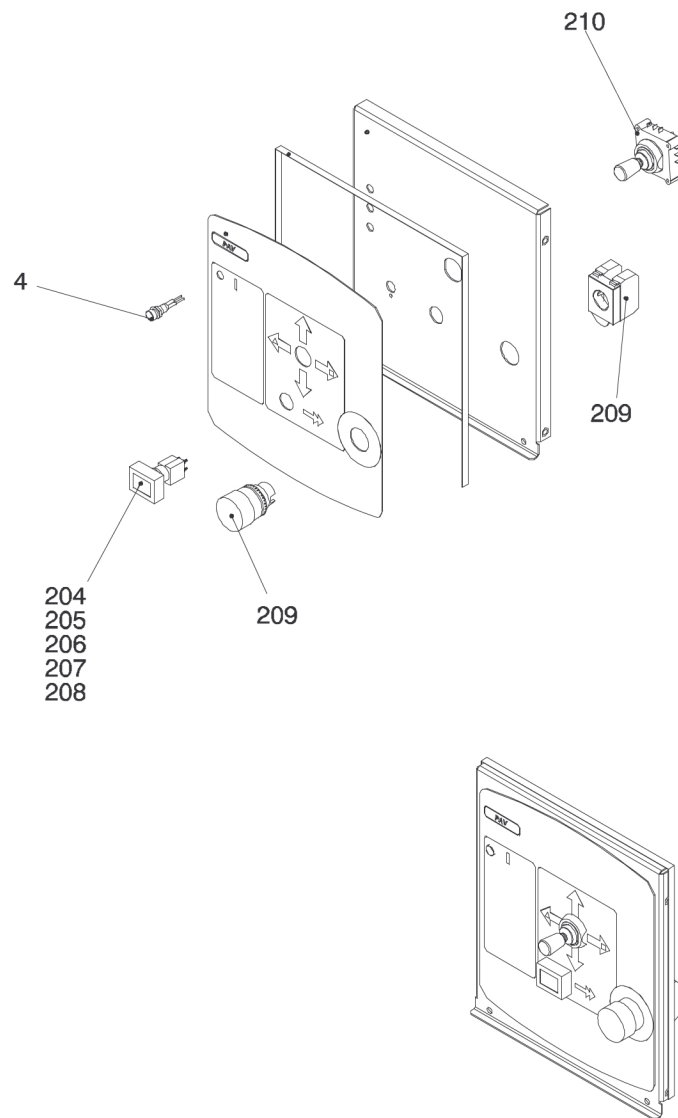


Item	Qty	Ordering no.	Denomination	Notes
		<b>0460462881</b>	<b>MMC PAV</b>	<b>PAV</b>
4	1	0194282001	LED (white)	24 V
			<b>Cable set PAV with MMC</b>	
201	1	0460635880	Wire set PAV with MMC	
202	1	0194344024	Connection block	24 pol
203	1	0194345024	Connection block	24 pol
204	2	0415200020	Contact block	1no+1nc
205	1	0415200033	Cap orange	18x18
206	1	0415200001	Pushbutton	18x24
207	1	0415200048	Bulb	28v 40ma
208	1	0391844022	Splash water shield	

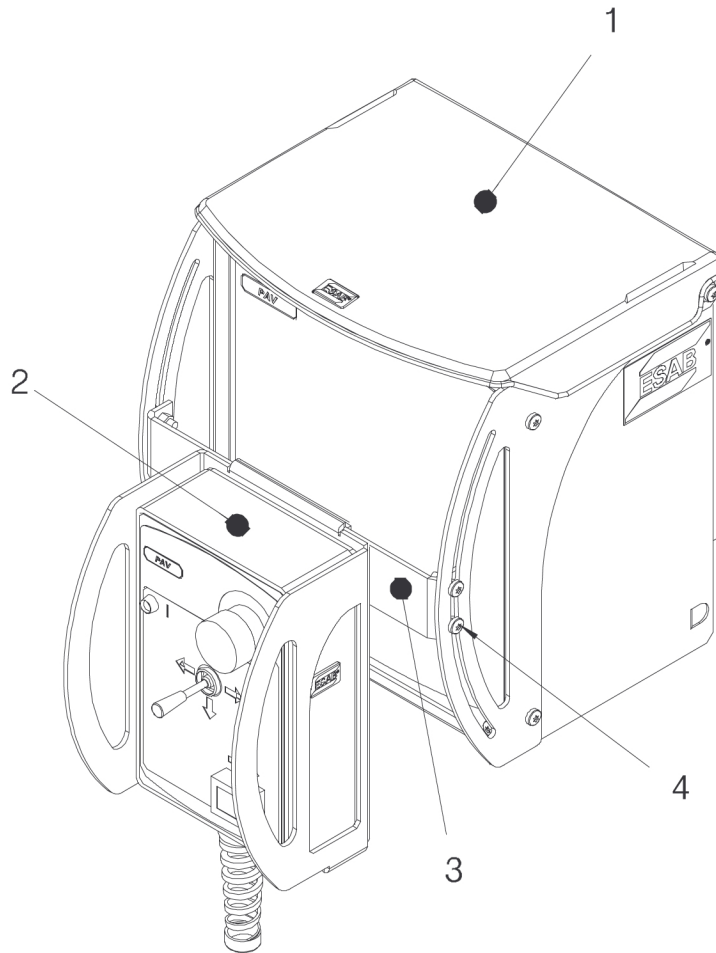


11 SPARE PARTS LIST

Item	Qty	Ordering no.	Denomination	Notes
209	1	0460424881	Emergency stop	
210	1	0460795001	Joystick	

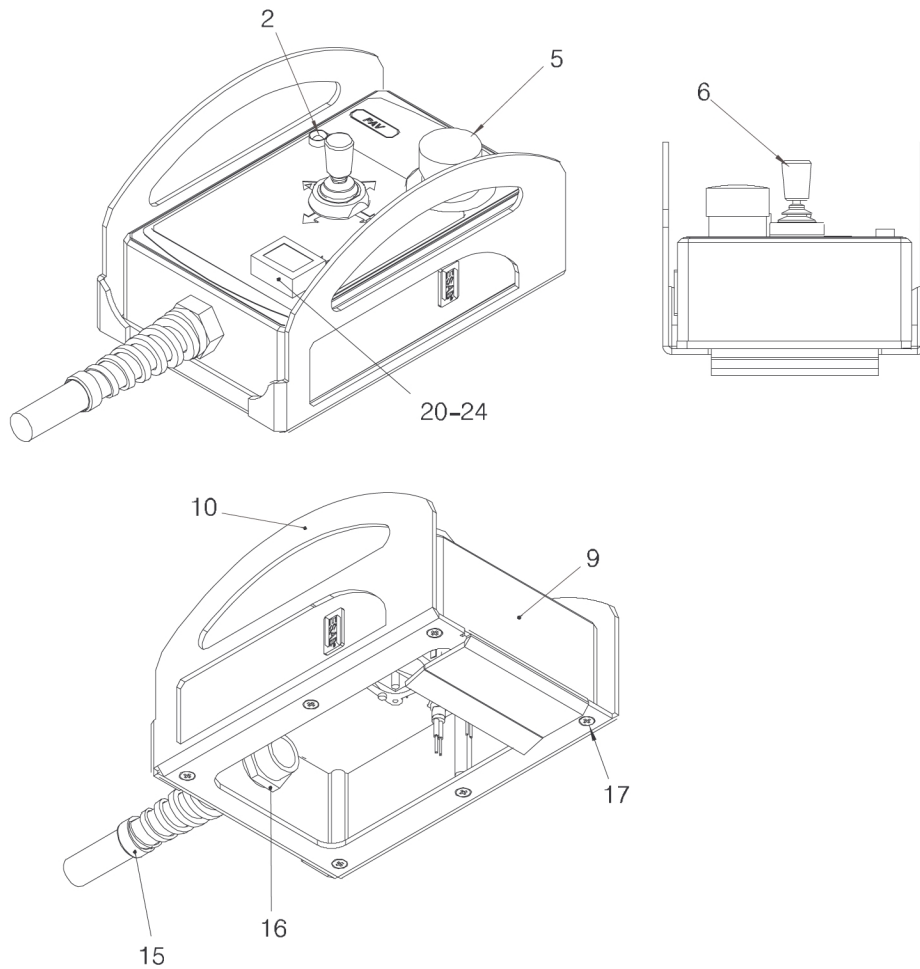


Item	Qty	Ordering no.	Denomination	Notes
		<b>0460697880</b>	<b>PAV with portable control box</b>	
1	1	0460502880	PAV without MMC	
2	1	0460570881	Portable control box	
3	1	0460481001	Bracket	
4	4		Screw (black)	MRT M5×16

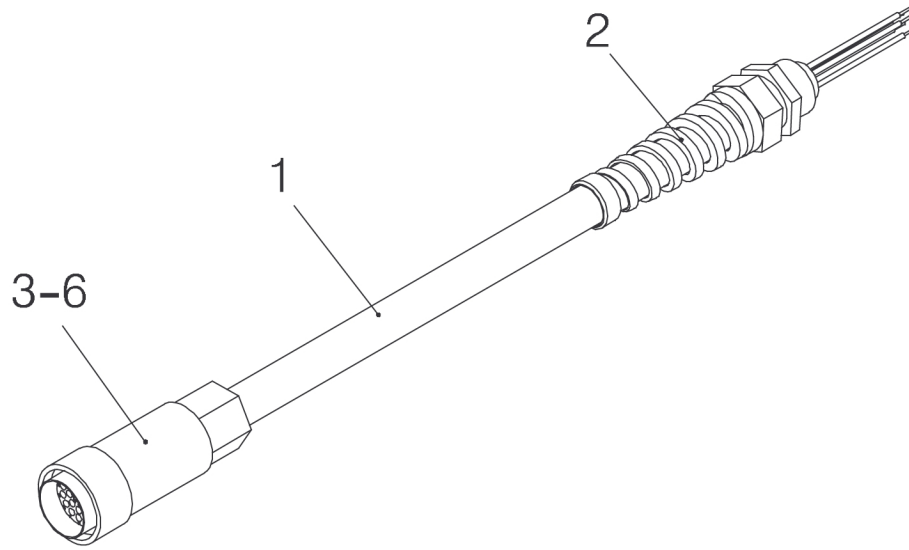


Item	Qty.	Ordering no.	Denomination	Notes
		<b>0460570881</b>	<b>PAV Remote control</b>	
2	1	0194282001	Led indicator white	
5	1	0460424881	Emergency stop	
6	1	0460795001	Joystick	
9	1	0460599001	Box	
10	1	0460569001	Cover	
14	1	0460632880	Wire set remote	PAV/ GMH
15	1	0460759880	Remote cable	4m
16	1		Nut	pr22,5
17	6		Screw	m4x16
20	1	0415200020	Contact block	1no+1nc
21	1	0415200033	Cap orange	18x18
22	1	0415200002	Push button	18x18
23	1	0415200048	Bulb	28V 40mA
24	1	0391844022	Splash water shield	

## 11 SPARE PARTS LIST



Item	Qty.	Ordering no.	Denomination	Notes
		<b>0460759880</b>	<b>Remote cable</b>	<b>4m</b>
1	4	0193963002	Cable screened	6x1,5mm <sup>2</sup> 12x0,5mm <sup>2</sup>
2	1	0193307105	Cable fitting	stp -b 16
3	1	0194200023	Cable gland with tube	23 -pole
4	1	0194182023	Pin plug	23 -pole
5	11	0323945001	Connector pin	rm20m -13k
6	6	0323945004	Connector pin	rm16m -23k







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