



## **OPERATION MANUAL**

# **CONVENTIONAL POSITIONER Model VP3**

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## 1.0 PREFACE

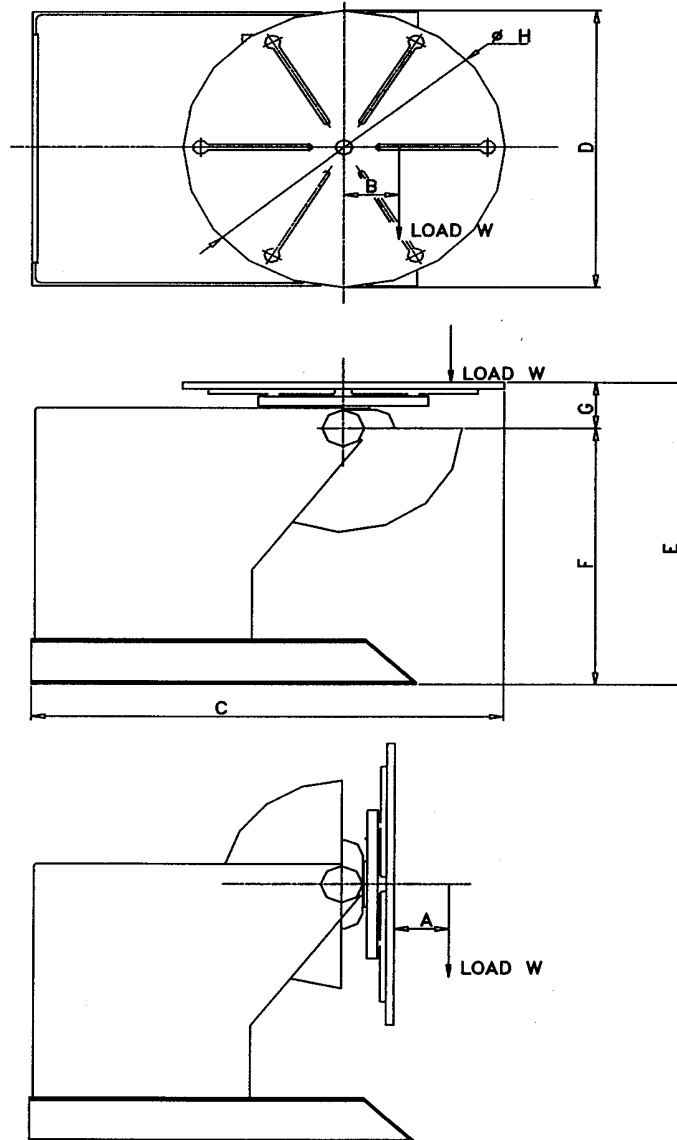
This user's manual describes the everyday use and maintenance of our Welding Positioners. Any actions that are required to be carried out by the manufacturer have not been included in this manual.

This manual is part of the machine. Please keep this manual safe. Information in this manual could be useful at a later time or when a repair or maintenance is carried out. We suggest that a copy of the manual is made and kept with the machine; the original should be kept in a safe place. If necessary, replacement copies can be supplied. If the machine is sold at a later date then the manual should be also supplied with it to the new user.

## 1.1 MACHINE SPECIFICATIONS

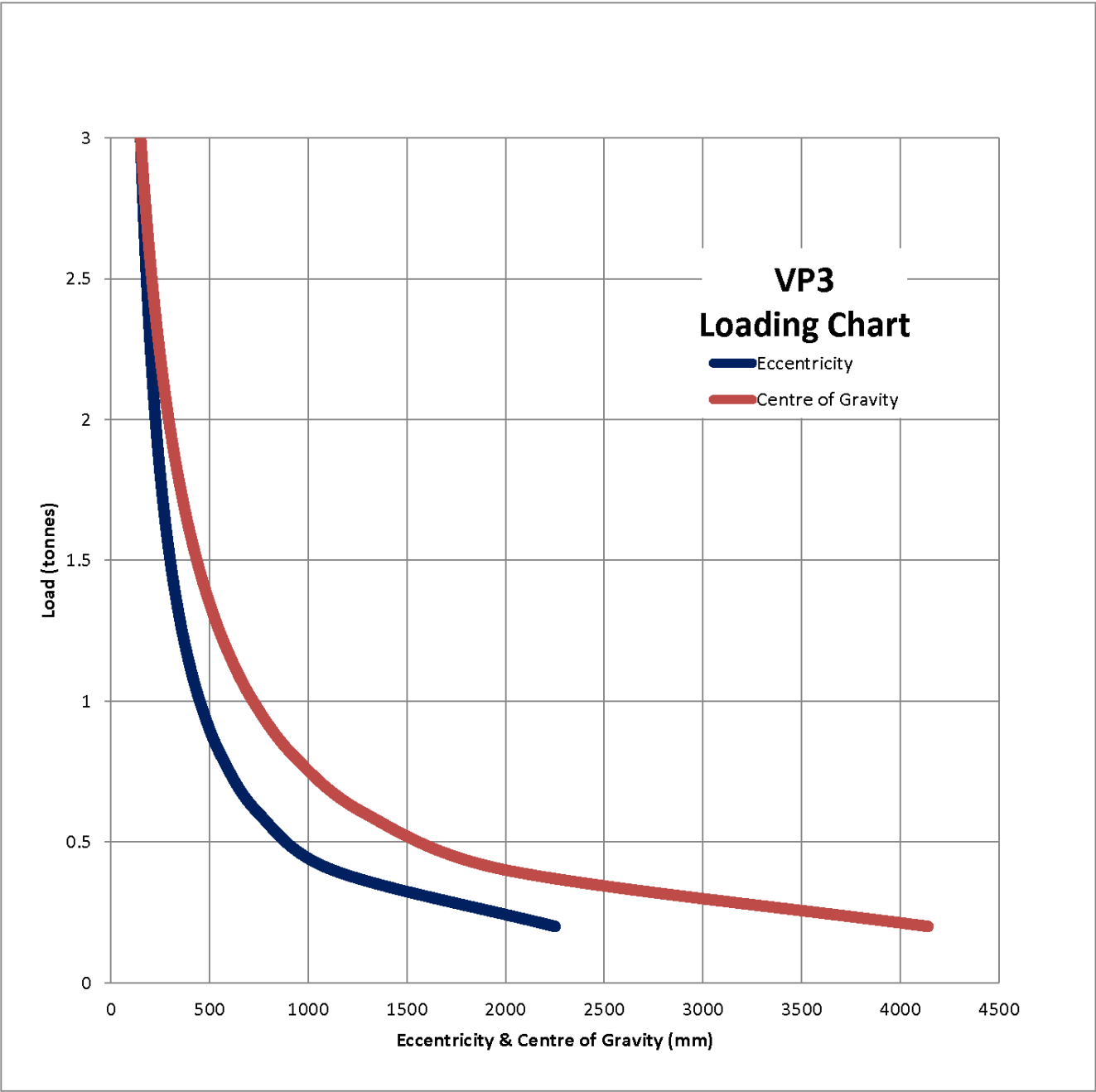
### 1.2 LOADING DATA

# CONVENTIONAL POSITIONERS LOADING DATA



ROTATION TORQUE (R) IS A STRAIGHT FORWARD  
 CALCULATION OF LOAD (W) X ECCENTRICITY (B)  
 BUT TO ENSURE AN ACCURATE FIGURE FOR TILT  
 TORQUE (T) IT IS IMPORTANT TO USE THE FULL  
 DISTANCE TO THE PIVOT POINT. THIS IS OBTAINED  
 BY ADDING TOGETHER THE CENTRE OF GRAVITY (A)  
 AND TABLE PIVOT DISTANCE (G). THEREFORE :-  
 ROTATION TORQUE (R) = W X B Kg METRES  
 TILT TORQUE (T) = W X (A + G) Kg METRES  
 MULTIPLY BY 9.81.

1.3 LOADING CHART



## 1.4 SPECIFICATION

Load capacity	:	3000kgs @ 300mm c.o.g. & 150mm eccentricity.
Table diameter	:	1200mm
Degree of table tilting	:	135°
Degree of table rotation	:	360°
Table rotation speed	:	0.1 – 1.0 RPM
Table tilting speed	:	100 seconds through 135°
Machine Overall Dimensions	:	1700mm x 1070mm x 1100mm (LxWxH)
Machine Weight	:	1,250kgs

Table machined with concentric circular markings and 4 off 22mm (M20) slots.

Table equipped with efficient built-in earthing, 800 amps, and mounted on pre-loaded crossroll bearing.

Table rotation fitted with AC motor and controlled by an Inverter unit suitable for 380 to 440V, 3 Phase supply.


Tilting through braked AC electric motor equipped with limit switches to prevent over-run.

The main control panel mounted on the machine containing the following, mains isolator, mains on lamp, emergency stop button and reset button.

The positioner is also supplied with a low voltage remote pendant control containing forward/stop/reverse, tilt-up/tilt-down pushbuttons and a variable speed potentiometer connected to the control panel.

Mains electrical supply suitable for 380-4440 Volts, 3 phase, 50/60 Hz.

## 1.5 CE Certificate of Conformity

	DESCRIPTION	Conventional Positioner
	MODEL	VP3
	SERIAL No.	11220

### EC/EU DECLARATION OF CONFORMITY

This EC declaration of conformity, certifies that the equipment delivered complies with the legislation in force, if it is used, and maintained in accordance with the enclosed instructions. Any different assembly or modification renders our certification void. It is therefore recommended that Westermans International Ltd be consulted about any possible modification. Failing that, the company which makes the modifications should issue their own certification. Should the latter occur, the new certification is not binding on us in anyway whatsoever.

Year of Manufacture                                 2021

#### This equipment complies with European Directives.

No. 2006/42/CE   No. 2014/30/UE  
No. 2004/108/EC                                      No. 2006/95/EC

#### Using the following harmonised standards:

EN 12100:2010	EN 60974-1:2006
EN ISO13849-1:2008	EN 60974-2:2006
EN ISO13857:2008	EN 60974-3:2006
EN ISO13850:2008	EN 60974-5:2006
EN ISO349:1993+A1:2008	EN 60974-7:2006
EN ISO953:1997+A1:2009	EN 60974-8:2006
EN 1088:1995+A2:2008	EN 61439-1:2009
EN 60204-1:2006+AC:2010	EN 61439-2:2009
EN 982:1996+A1:2008	EN ISO 1200-1:2003+A1:2009
EN ISO 4413:2010	EN ISO 1200-2:2003+A1:2009
EN ISO 14121-1:2007	EN ISO 60204-1:2006+A1:2009

## 2.0 INSTALLATION

Remove transport protection (if any) from the machine.

Locate the machine on a level floor that is capable of withstanding approximately 2.5 tonnes over the contact area.

Connect the electrical mains to the machine, 380-440 volts, 3 phase, 50 Hz.

### 2.1 Electrical Phase Connection

When power is connected the white "Power On" lamp should illuminate.

Next press the blue "Reset" button. This should then illuminate also, and the system is then ready to operate.

If the Reset button does not illuminate, then first check that all of the Emergency Stop buttons on the control panels and pendants are released, and press the reset button again.

If the reset button still does not illuminate, then the phase connection may be incorrect. Check the Phase Detector Relay inside the panel. This has a red LED light on it. If the phases are correct the red light will be on permanently, if they are incorrect the red LED will flash continuously. Swap over wires L1 and L3 from the incoming mains supply to the isolator inside the control panel.

Once this is complete, and the reset button is illuminated, the machine is ready to operate.

Connect the welding earth cable to the copper earthing strip that is located on the underside of the table, fixed to the crosshead. If this connection is NOT made the weld current will earth through the centre of the table assembly and damage the bearings and other transmission parts.

Before making the machine fully operational, remove any necessary covers and check that gearboxes have not lost any lubrication during transport.



## 2.2 PHASE CONNECTION

### IMPORTANT NOTICE

In order to ensure that the electrical phase sequence is correct;

1. Press the TILT-UP push-button on the pendant,
2. Manually operate the upper limit switch by lifting the limit arm.

If the tilt movement stops the phase sequence is correct.

If the tilt movement does not stop release the TILT-UP push-button on the pendant, change the two phase wires around at the main connection, and then retest.

**Failure to carry out this procedure may cause severe damage to the machine**

## 3.0 OPERATION

### 3.1 Control Panel

In the front of the main control panel Once the mains power has been connected the Power On lamp **1** will be illuminated.

To prepare the positioner to start press the reset button **2**, this will then illuminate to indicate that the machine is ready to operate. Please note that if the Emergency stop button **3** is pressed, the reset button will not illuminate.

To restart after the Emergency Stop button (either on the panel or the pendant) has been activated;

First, release the emergency stop button (**3** or button on pendant see the next page), by twisting the head in the direction of the arrows marked on it. It will then spring out. Second, press the Reset button **2**. This will illuminate to show that the machine is ready to operate again.

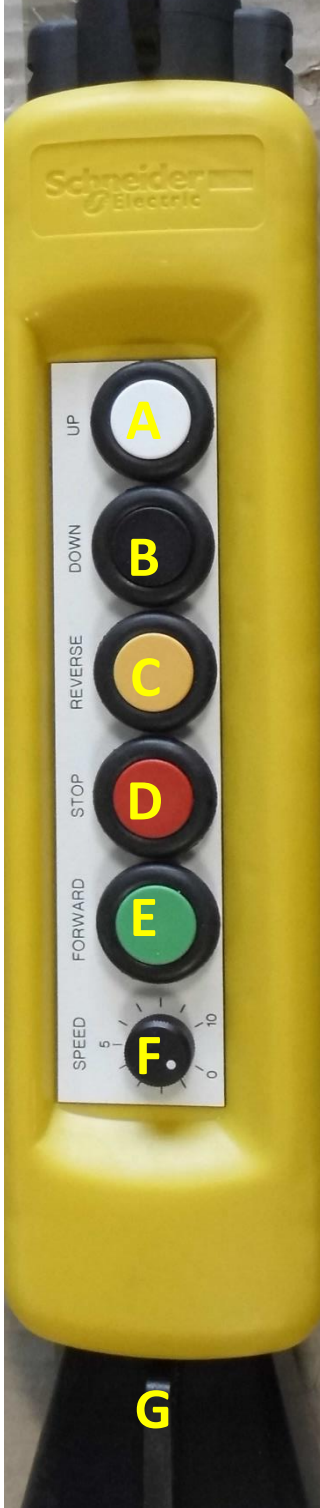
Each day before first operation, all the emergency stop buttons on the system should be activated and checked for correct operation.



Also, on the door of the control panel is an Electrical Isolation Switch **4**. The switch must be turned to the off position, cutting power to the panel in order to open the door. The handle can also accept a padlock or similar, in order to lock out the panel and prevent it from being powered up.

### 3.2 Control Pendant

It is imperative when loading the machine that the fabrication is held firmly on the table, using the table slots provided. It is also important that the machine is NOT OVERLOADED by placing on it fabrications which are heavy or are beyond the capacity of the machine in terms of Centre of Gravity or Eccentricity.



Once the machine has power connected and the “power on” light is illuminated. The machine will be ready to run. If the emergency stop button has been depressed then release this by twisting the cap, then press the emergency stop reset button on the control box.

Speed and movement of the positioner are controlled by the hand pendant, (see photo below).

The buttons on the pendant operate as follows

- Button A** Table Tilt Up
- Button B** Table Tilt Down
- Button C** Table Rotation Forward
- Button D** Table Rotation Stop
- Button E** Table Rotation Reverse (opposite direction to B)
- Dial F** Table Rotation Speed Control Potentiometer
- Button G** Pendant Emergency Stop Button

## **4.0 MAINTENANCE**

### **4.1 MAINTENANCE - OPEN GEARS**

All gears are liberally coated with grease, CASTROL MS3 [molybdenum disulphide]. At 500 hour intervals remove safety guards and check coating, and if required replenish grease.

### **4.2 MAINTENANCE - ROTATION WORMBOX**

The worm box fitted on this machine is factory filled with a synthetic lubricant SHELL TIVELA SA and should not require any further maintenance during its lifetime.

It is important however to check at regular intervals that there are no leaks. If any leaks are observed, the unit must be drained, new seals fitted and re-filled with the correct amount of lubricant.

### **4.3 MAINTENANCE - TILT WORM BOX**

The worm box fitted on this machine is factory filled with a synthetic lubricant SHELL TIVELA SA and should not require any further maintenance during its lifetime.

It is important however to check at regular intervals that there are no leaks. If any leaks are observed, the unit must be drained, new seals fitted and re-filled with the correct amount of lubricant.

### **4.4 MAINTENANCE - EARTHING BRUSHES**

All rotary tables that are used for manipulating components to be welded are fitted with Earthing Brush's to carry welding current away from the machines rotating axis to a suitable pickup point.

IT IS MOST IMPORTANT TO CONNECT AN EARTHING CABLE TO THE MACHINES PICKUP POINT AND NOT TO EXCEED THE MAXIMUM RATING STATED. OTHERWISE SERIOUS DAMAGE CAN OCCUR TO MACHINES ROTATING AND ELECTRICAL PARTS.

### **4.5 MAINTENANCE - ELECTRICAL MAINTENANCE**

It is the responsibility of the user to ensure only competent personnel deal with the operation and maintenance of the equipment.

Operators should be conversant with the equipment and be able to recognise the symptoms maloperation and/or degraded performance. They should also be aware of what action to take in the event of a fault/emergency.

It is recommended that maintenance personnel have adequate training on the system and also the component parts. They should have a thorough knowledge of diagnosis and fault finding techniques and be conversant with identifying the first signs of maloperation.

During maintenance/fault finding etc, the following points should be observed

The equipment should be completely isolated whenever possible. If an element of live diagnosis is required the use of barriers/warning notices is a must.

The maintenance staff should be familiar with the appropriate factory and safety regulations that apply in the province and country that they are employed in, and work on the equipment in such a manner as to comply with them.

The period between specific maintenance tasks will vary dependant on such factors as type of equipment and environment of the equipment. These factors should be assessed by the respective maintenance staff and maintenance periods adjusted accordingly.

Maintenance should include attention to the points listed below:

#### **4.6 MAINTENANCE - CLEANLINESS / ENVIRONMENT**

It is essential that the cubicle interior remains clean and dry. Any ingress of moisture or dirt should be cleaned with a lint free cloth or suitable suction device. Fans and filters should be checked regularly for blockages and dirty filter mats should be replaced with the correct grade of mat.

#### **4.7 MAINTENANCE - TIGHTNESS OF CONNECTIONS**

It will be necessary to periodically check the tightness of terminals and busbar connections including earth connections, especially in areas where vibration is apparent. Check for any hot spots developing during running.

Checks should be performed with the power supply isolated.

#### **4.8 MAINTENANCE - INSULATION**

A visual check of cable/control gear insulation should be performed at regular intervals. If this inspection reveals any change in appearance an insulation resistance measurement is recommended. For older equipment these measurements should be taken on a more regular basis where successive lower readings would indicate a problem.

**NOTE:** It is important to use insulation testing equipment with care. Electronic components should be securely isolated before employing meggers or similar test methods.

#### **4.9 MAINTENANCE – CONTROL GEAR**

A visual inspection should be performed at regular intervals. Movements should be checked for free and unobstructed operation. This is very important for critical safety components (Emergency Stop Pushbuttons and Relays).

## 4.10 – INVERTER DRIVE PARAMETER SETTINGS

The following settings have been programmed into the inverter at the factory.

### C200 DRIVE PARAMETERS

Parameter	Value	Description
00.001	2.5	Min Set Speed
00.002	70	Max Set Speed
00.003	2	Acceleration Rate
00.004	2	Deceleration Rate
00.005	AV	Drive Config
00.006	2.5	Motor Rated Current
00.007	1500	Motor Rated Speed
00.008	400	Motor Rated Voltage
00.009	0.85	Motor Power Factor
00.010	ALL	Parameter Access
00.011	0	Start/Stop Logic

AFTER ALL SETTING ENTERED:

- Go to setting 00.000
- Set to save
- Press enter
- Press red button to finalise save

Options 00.001 through to 00.010 will be represented by 1 to 10 respectively until option 00.010 is set.

All other values are as factory set by the inverter manufacturer and need not be altered.

#### PENDANT CONTROL:

- FORWARDS      GREEN BUTTON      TABLE ROTATES CLOCKWISE
- REVERSE      YELLOW BUTTON      TABLE ROTATES ANTICLOCKWISE
- TILT UP      WHITE BUTTON      TABLE TILTS TOWARDS HORIZONTAL
- TILT DOWN      BLACK BUTTON      TABLE TILTS TOWARDS VERTICAL

#### OVERLOAD SETTING:

CB3 (TILT MOTOR OVERLOAD) SET TO 2.2Amps.

CB5 (FORCE VENT OVERLOAD) SET TO 0.4Amps.

## 5.0 REPLACEMENT PARTS

Use only parts as detailed by the supplier. Failure to do so could impair safety of equipment/personnel or impair machine operation or the design of the equipment.

### 5.1 MECHANICAL PARTS LIST

<b>Part Number</b>	<b>Description</b>	<b>Quantity</b>
KPVP030151	Positioner Mainframe Adjustable Height	1
KPVP030152	Baseframe Adjustable Height	1
KPVP030102	Crosshead	1
KPVP030103	Table	1
KPVP030108	Trunnion Shaft	2
KPVP030115	Rotation Box Pad	1
KPVP030118	Rotation Spur Pinion Guard	1
KPVP030117	Rotation Spur Pinion	1
KPVP030204	1.1kW AC Tilt Motor with Brake	1
KPVP030207	Tilt Gearbox	1
KPVP030206	Tilt Spur Pinion	1
KPVP030205	Tilt Quadrant	1
KPVP030220	Earthing Bracket	1
KPVP030222	Earthing Strip	1
KPVP030225	Trunion Flanged Bush	1
KPVP030229	Crosshead Spacer	1
KPVP030240	Slot Cover	6
KPVP030245	Back Frame Guard	1
KPVP030246	Front Frame Guard	1
KPVP030203	1.1kW AC Rotation Motor	1
KPVP030208	Rotation Gearbox	1
KPVP030311	Earthing Brush Assembly	2
KPVP030320	Control Panel Frame	1
KPVP030350	Slewing Ring	1
KPVP030260	Tilt Angle Indicator & Pointer	1
KPVP030261	Tilt Pinion Guard	1
KPVP030262	Tilt Box Pad & Gusset	1
KPVP030161	Height Adjustment Locking Pins	2
KPVP030162	Height Adjustment Stabilising Bolts	4

4.2 ELECTRICAL PARTS LIST

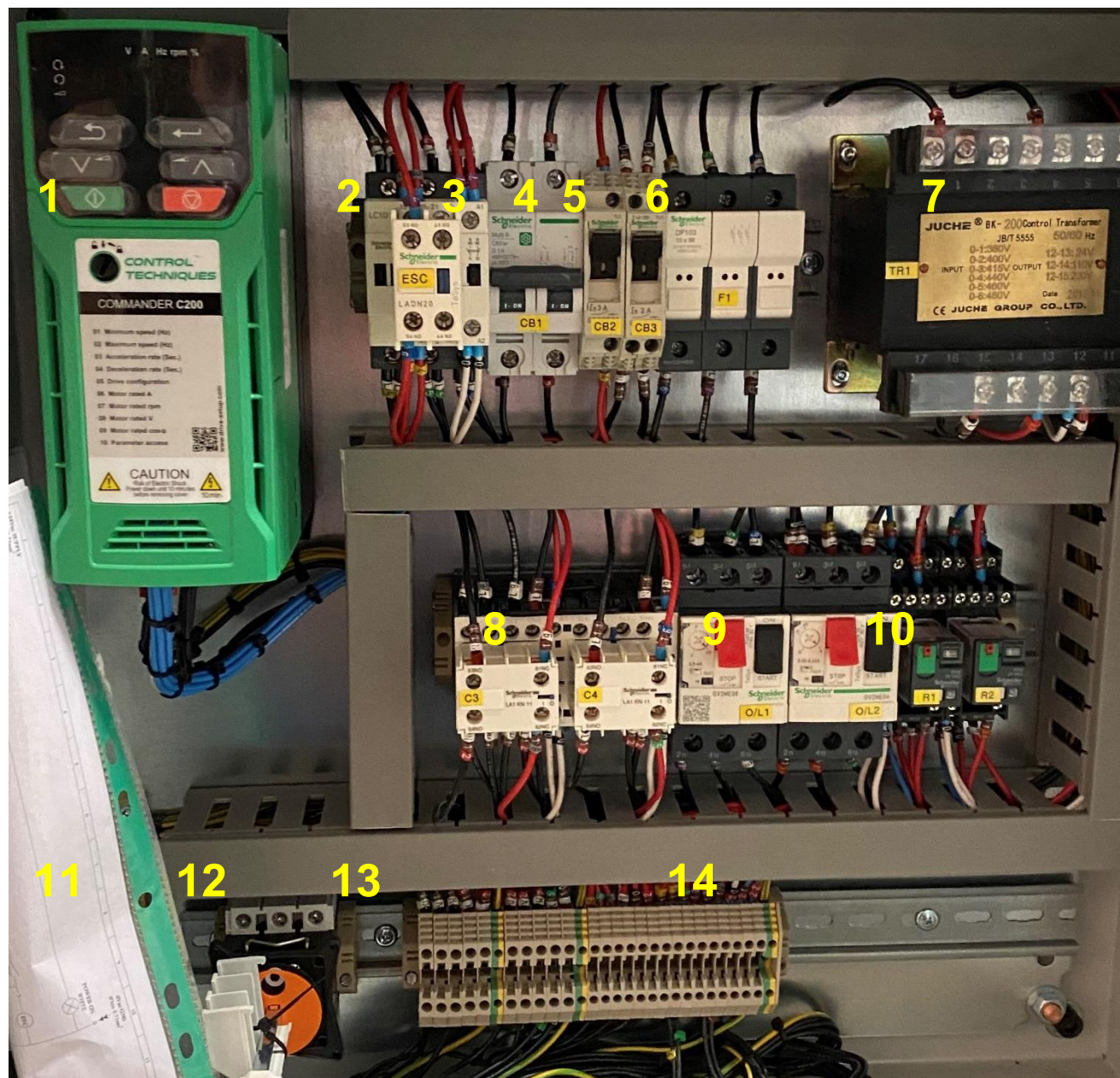
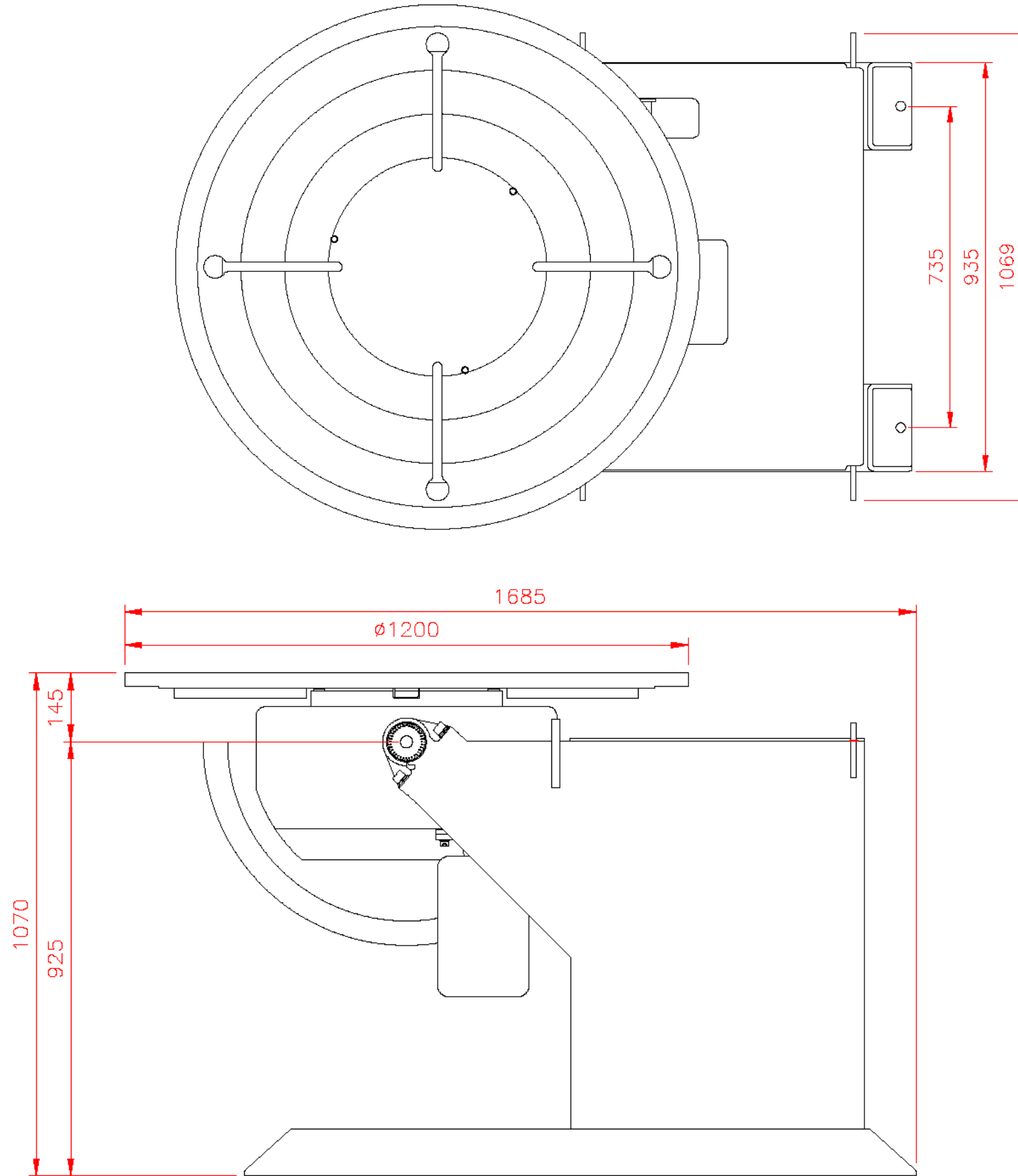


Photo No.	Part Number	Description	Quantity
1	KP3008	Inverter Drive 3Ph 1.1kW	1
2	KP1041	E-Stop Contactor 9A	1
3	KP1020	2 Pole Circuit Breaker 1A	1
4	KP1010	1 Pole Circuit Breaker 3A	1
5	KP1017	1 Pole +N Circuit Breaker 2A	1
6	KP1006	3 Phase Fuse Holder	1
7	KP7463	Transformer 440V/220V/24V	1
8	KP1047	Reversing Contactor	1
9	KP1029	Motor Circuit Breaker	2
10	KP1060	AC Relay and Base (14 Pin)	2
11	KP2000	Earthing Bar	1
12	KP1062	Door Isolator	1
13	KP1002	Grey Terminals	25
14	KP1001	Earth terminals	3
15	KP1067	Pendant Body (6 Button)	1
16	KP1068	White Push Button	1
17	KP1069	Black Push Button	1
18	KP1072	Yellow Push Button	1
19	KP1071	Red Push Button	1
20	KP1070	Green Push Button	1
21	KP4001	Single Turn Potentiometer	1
22	KP1075	Pendant Estop Button	1
23	KP1027	Door Isolator Handle	1
24	KP1091	Power On Lamp	1
25	KP1093	Reset Button	1
26	KP1090	Panel E-Stop Button	1

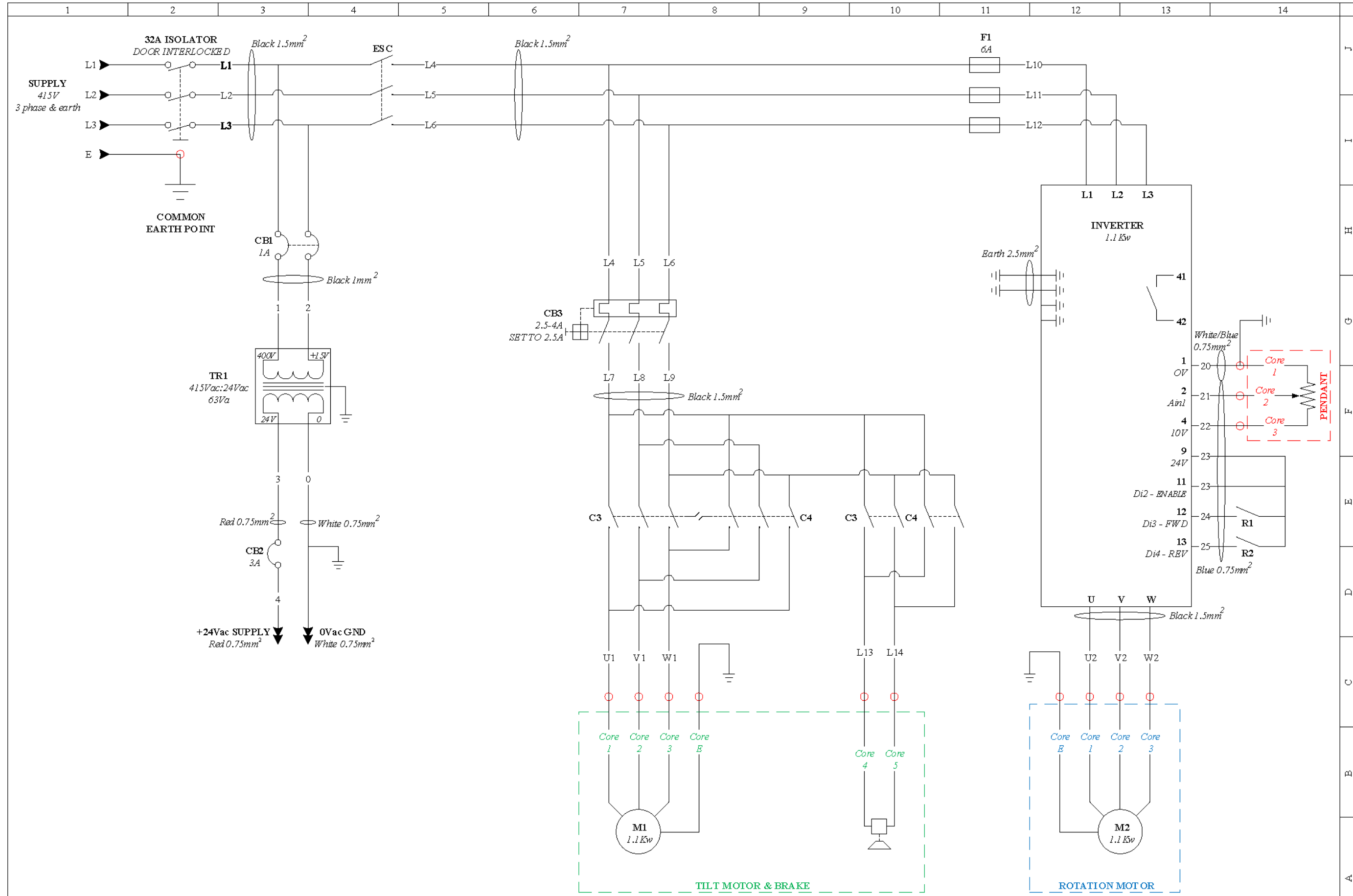




APPENDIX A - OVERVIEW DRAWING



APPENDIX B – WIRING DIAGRAM



ELECTRICAL SCHEMATIC:  
Mains Distribution and Inverter

KPVP3 CE With 415V Brake				Drawn By	GB	Created	01/03/2021	Revised	01/03/2021
File	KP VP3 CE Rev1.vsd	Dwg. No.:		Approved		Scale	1 : 1	Page	1 of 2

