OPERATION MANUAL

CONVENTIONAL POSITIONER
Model LCVP5

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Contents

1.0 PREFACE

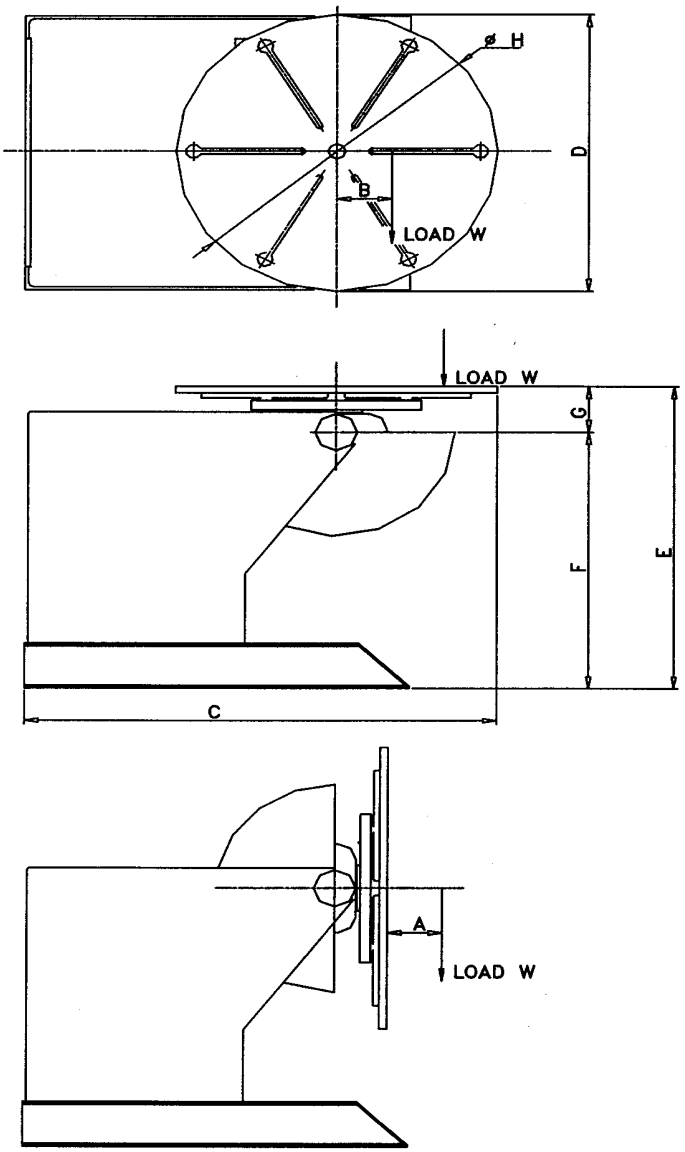
This user's manual describes the everyday use and maintenance of our Welding Positioners. Any actions that are required to be carried out by the manufacturer have not been included in this manual.

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

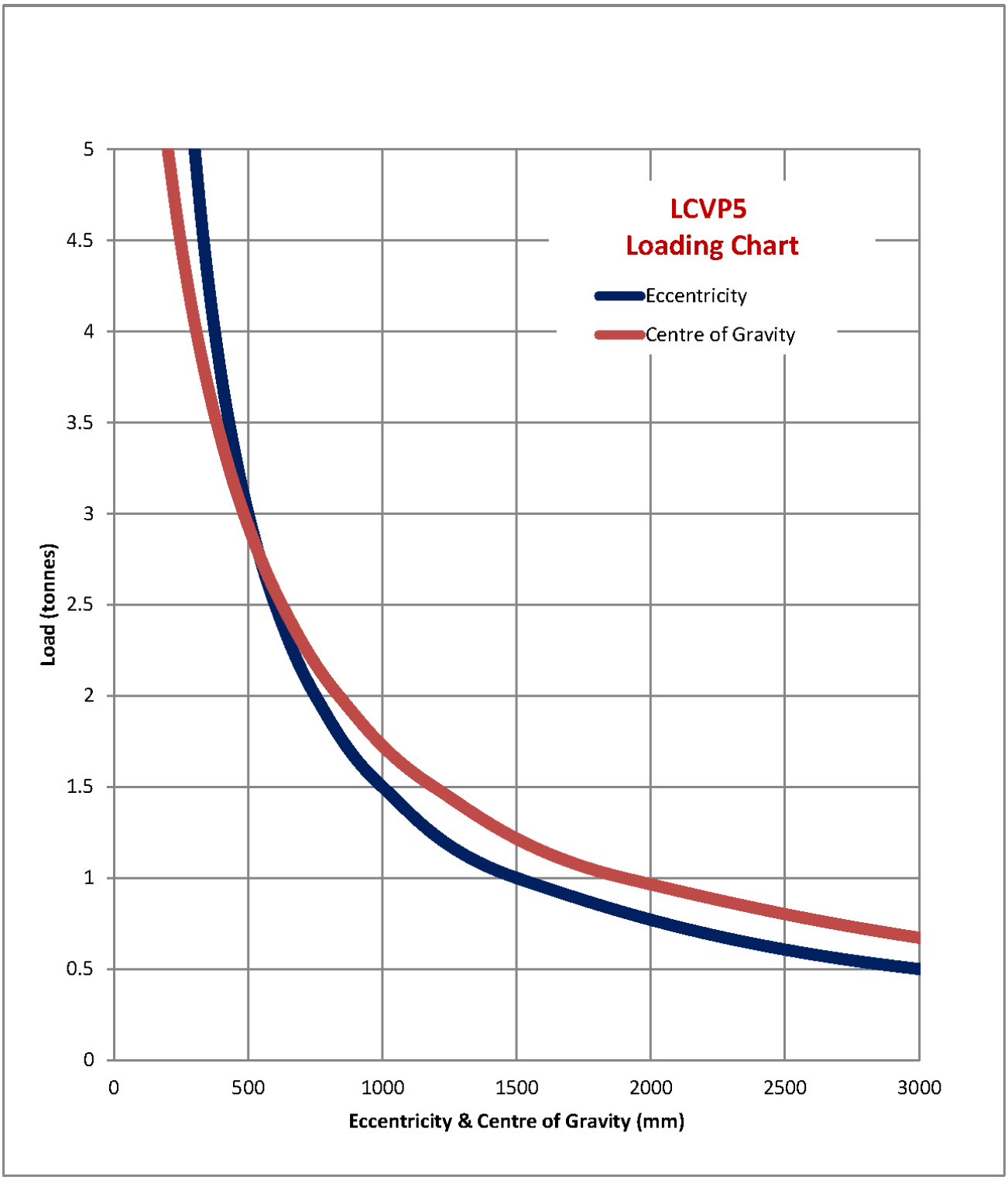
1.2 LOADING DATA

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	:	5000kgs @ 300mm c.o.g. & 200mm eccentricity.
Table diameter	:	1500mm
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	:	2200mm x 1780mm x 1190mm (LxWxH)
Machine Weight	:	3000kgs

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 380-440 Volts, 3 phase, 50/60 Hz.

2.0 INSTALLATION

Remove transport protection (if any) from the machine.

Locate the machine on a level floor that is capable of withstanding approximately 2.0 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 is released, and press the reset button again.

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 ❶ will be illuminated.

To prepare the positioner to start press the system on ❸, this will then illuminate to indicate that the positioner is ready to start rotating.

Please note that if the Emergency stop button is pressed, the system on 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 (❹ 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 ❸. 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.

If there is a fault, or the emergency stop is active, then the alarm lamp ❷ will illuminate. This must be cleared before operating the positioners.

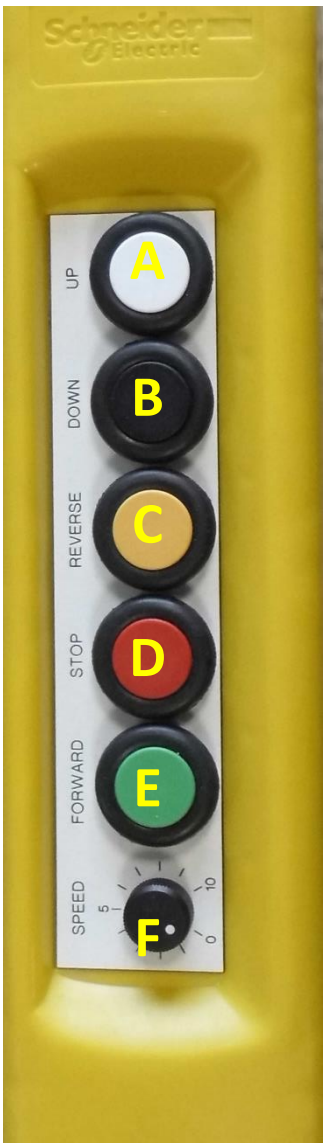
Also, on the door of the control panel is an Electrical Isolation Switch ❺. The switch must be turned to the off position, cutting power to the panel to open the door. The handle can also accept a padlock or similar, to lock out the panel and prevent it from being powered up

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

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 is 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).

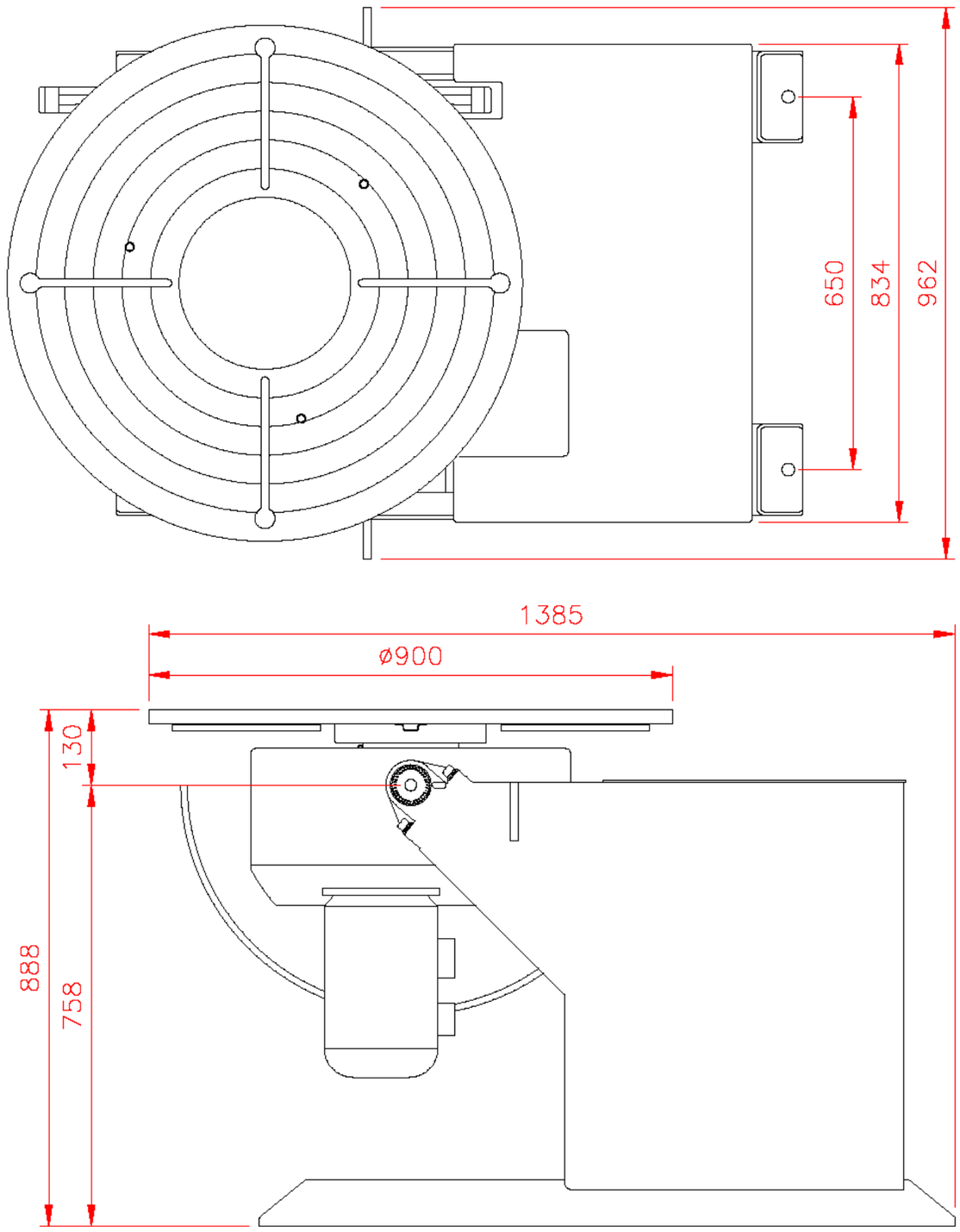
5.0 REPLACEMENT PARTS

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.

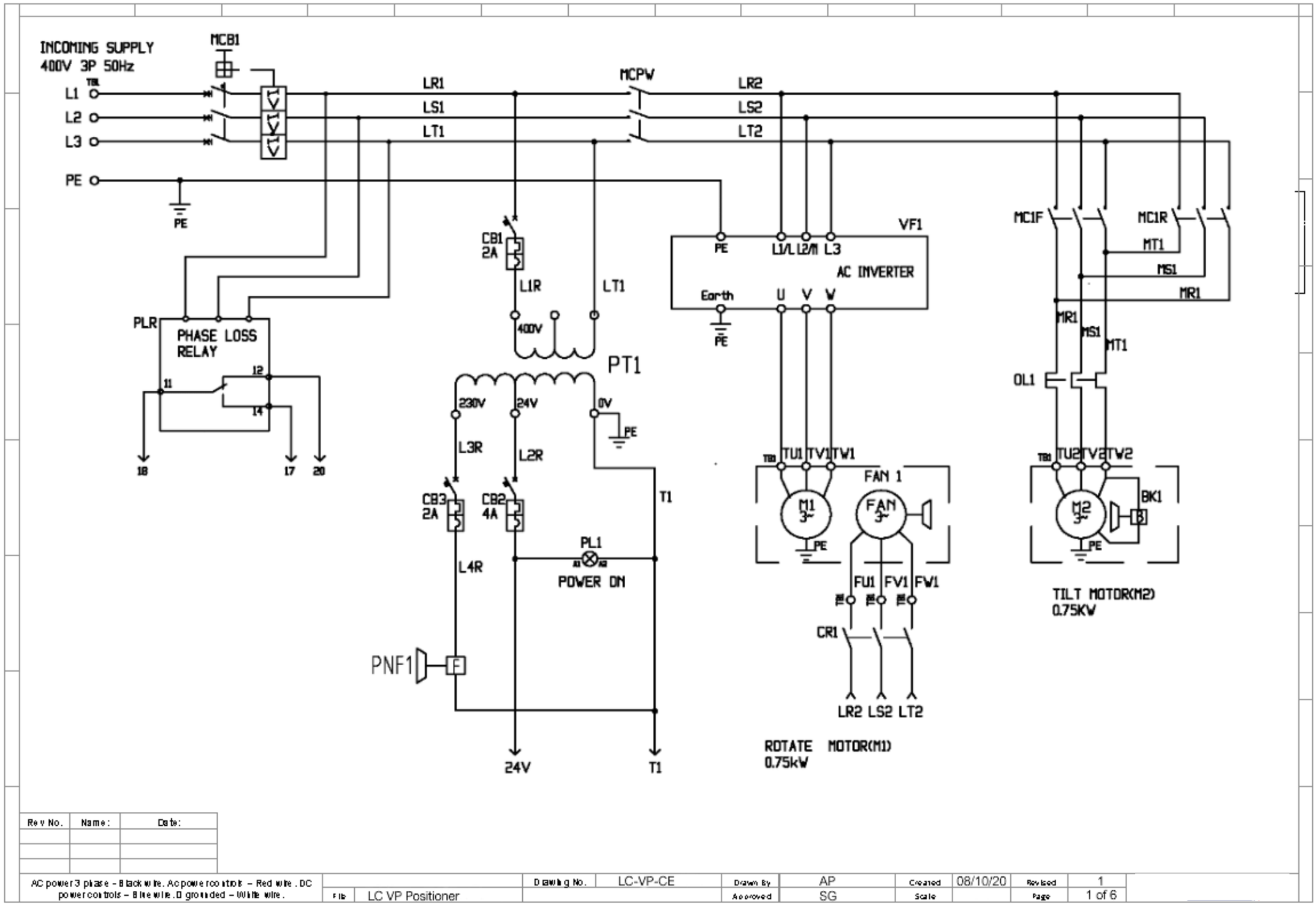
5.1 MECHANICAL PARTS LIST

Part Number	Description	Quantity
KPLCVP01151	Positioner Mainframe Adjustable Height	1
KPLCVP01152	Baseframe Adjustable Height	1
KPLCVP01102	Crosshead	1
KPLCVP01103	Table	1
KPLCVP01108	Trunnion Shaft	2
KPLCVP01115	Rotation Box Pad	1
KPLCVP01118	Rotation Spur Pinion Guard	1
KPLCVP01117	Rotation Spur Pinion	1
KPLCVP01204	AC Geared Tilt Motor with Brake	1
KPLCVP01206	Tilt Spur Pinion	1
KPLCVP01205	Tilt Quadrant	1
KPLCVP01220	Earthing Bracket	1
KPLCVP01222	Earthing Strip	1
KPLCVP01225	Trunion Flanged Bush	1
KPLCVP01229	Crosshead Spacer	1
KPLCVP01240	Slot Cover	6
KPLCVP01245	Back Frame Guard	1
KPLCVP01246	Front Frame Guard	1
KPLCVP01203	AC Geared Rotation Motor	1
KPLCVP01311	Earthing Brush Assembly	2
KPLCVP01320	Control Panel Frame	1
KPLCVP01350	Slewing Ring	1

APPENDIX A - OVERVIEW DRAWING



APPENDIX B – WIRING DIAGRAM



Rev No.	Name:	Date:

AC power 3 phase – Black wire. Ac power controls – Red wire. DC power controls – Blue wire. Ground ed – White wire.		Drawing No.	LC-VP-CE	Drawn By	AP	Created	08/10/20	Revised	1
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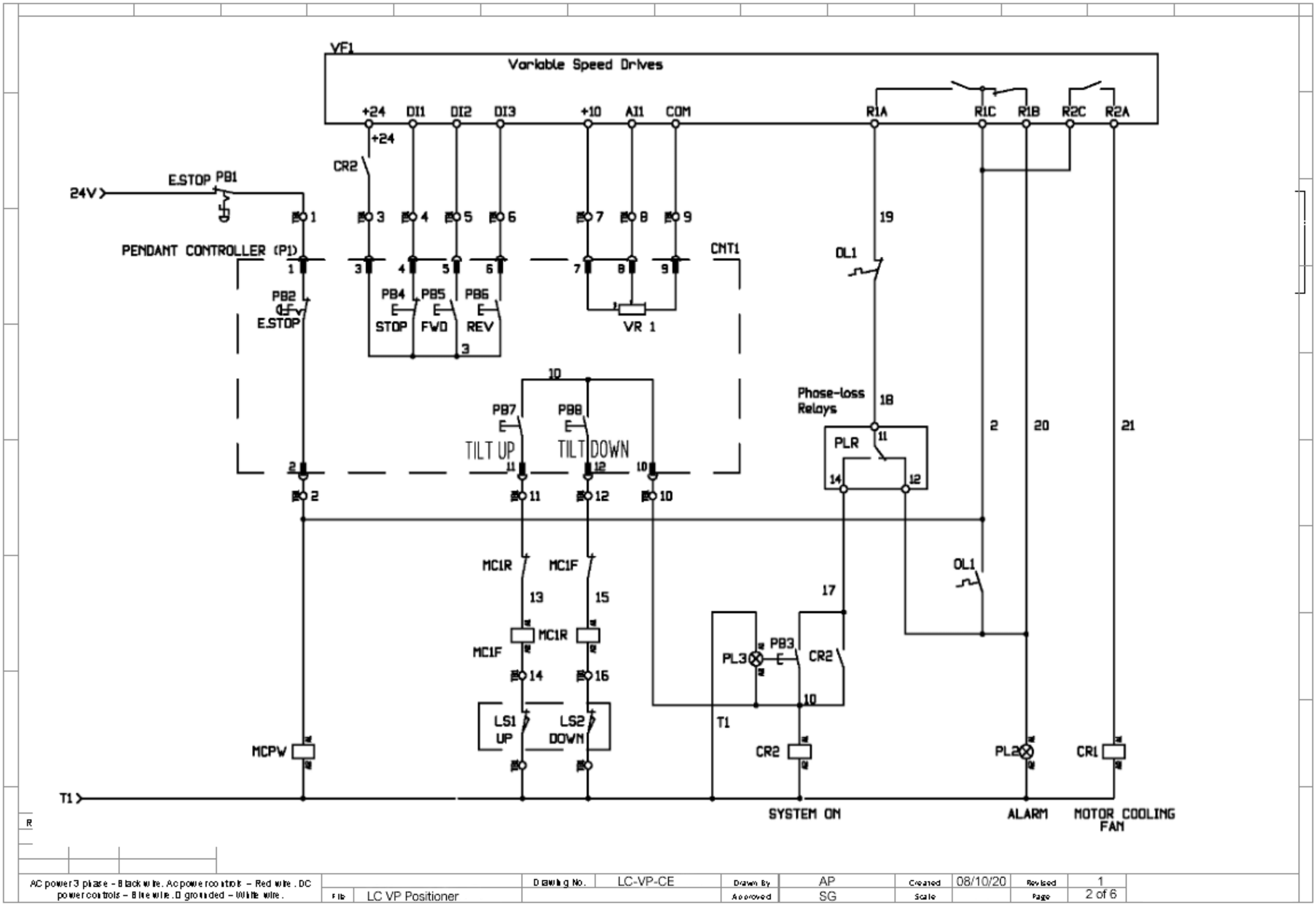

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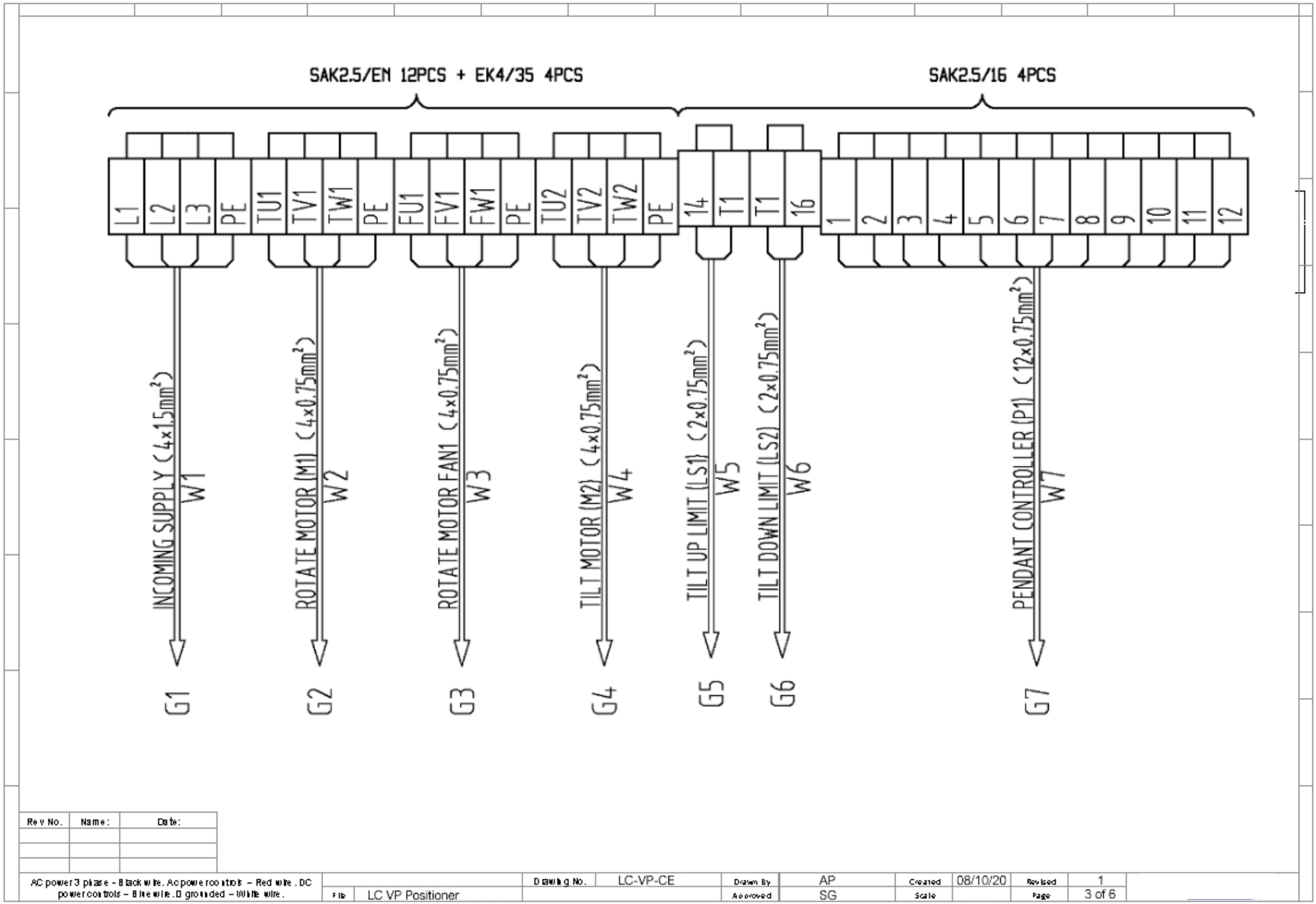
SAK2.5/EN 12PCS + EK4/35 4PCS
SAK2.5/16 4PCS
L1
L2
L3
PE
TU1
TV1
TW1
PE
FU1
FV1
FW1
PE
TU2
TV2
TW2
PE
14
T1
T1
16
1
2
3
4
5
6
7
8
9
10
11
12
INCOMING SUPPLY (4x1.5mm²)
W1
G1
ROTATE MOTOR (M1) (4x0.75mm²)
W2
G2
ROTATE MOTOR FAN1 (4x0.75mm²)
W3
G3
TILT MOTOR (M2) (4x0.75mm²)
W4
G4
TILT UP LIMIT (LS1) (2x0.75mm²)
W5
G5
TILT DOWN LIMIT (LS2) (2x0.75mm²)
W6
G6
PENDANT CONTROLLER (P1) (12x0.75mm²)
W7
G7
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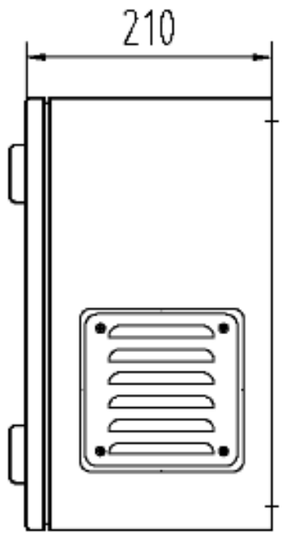

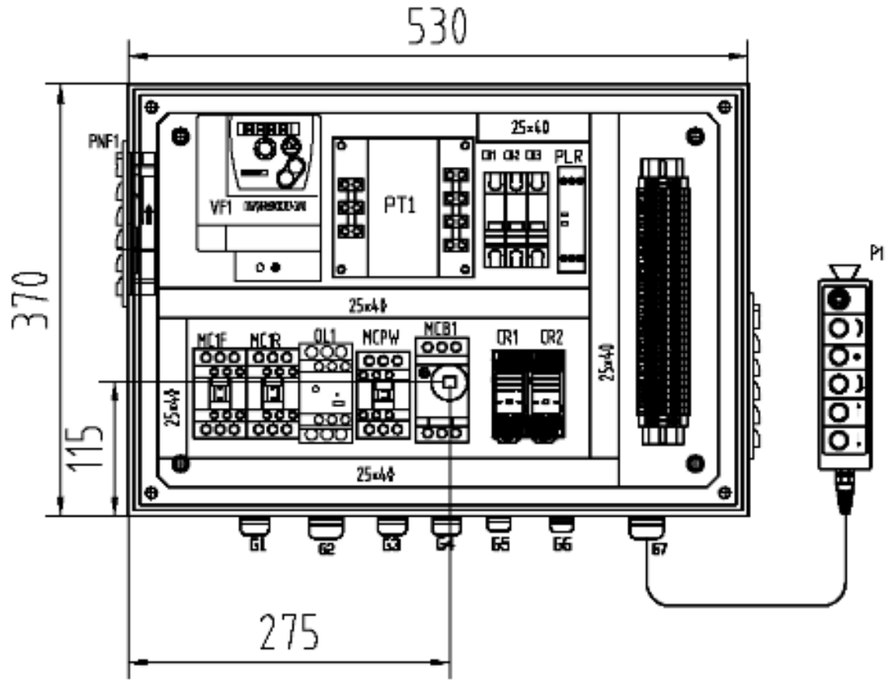

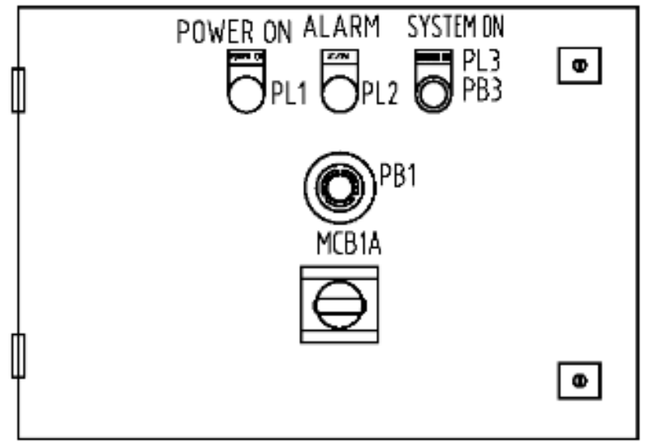

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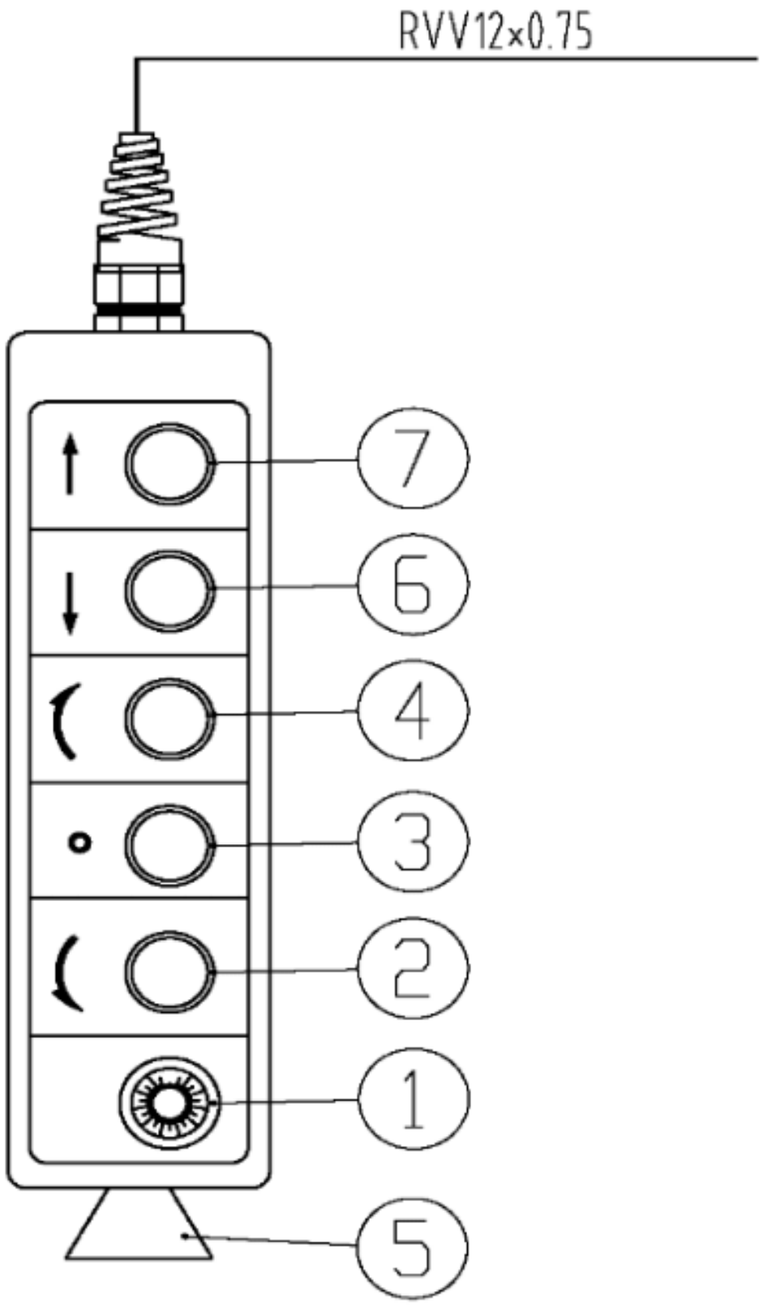

ITEM	DESCRIPTION
1	ROTATION SPEED ADJUST : VR1
2	ROTATION REVERSE : PB6
3	ROTATION STOP : PB4
4	ROTATION FORWARD : PB5
5	EMERGENCY STOP : PB2
6	TILT DOWN : PB8
7	TILT UP : PB7

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VF1

Settings menu Set -

Code	Factory setting	Setting
ACC	3 s	3 s
dEC	3 s	3 s
LSP	0 Hz	5 Hz
HSP	50	50 Hz
Ftd	0Hz	0 Hz

VF1

Motor control menu drC -

Code	Factory setting	Setting
UnS	380V	400V
ITH	2.3A	2.3A
bFr	50 Hz	50 Hz
FrS	50 Hz	50 Hz
tFr	50 Hz	50 Hz

Legend	Setting
OL1	2.3A
MCB1	9A

VF1

I/O menu I/O -

Code	Factory setting	Setting
r2	rUn	rUn
tcc	2C	3C

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File: LC VP Positioner

Drawing No. LC-VP-CE

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