3T-STD
HYDRAULIC POSITIONER
TAP-3-STD

Instruction & Service Manual

INDEX OF INSTRUCTION MANUAL

WARNING

Arc welding and cutting can be injurious to yourself and others. Take precautions when welding. Ask for your employer's safety practices which should be based on manufacturer's hazard data.

ELECTRIC SHOCK can kill.

- Install and earth the welding unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing.
- Insulate yourself from earth and the work piece.
- Ensure your working stance is safe.

FUMES AND GASES can be dangerous to health.

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to keep fumes and gases 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.

FIRE HAZARD

- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby.

NOISE can damage hearing.

- Protect your ears. Use earmuffs or other hearing protection.
- Warn bystanders of the risk.

MALFUNCTION

- Call for expert assistance in the event of malfunction.

READ AND UNDERSTAND THE INSTRUCTION & SERVICE MANUAL BEFORE INSTALLING AND OPERATING.

PROTECT YOURSELF AND OTHERS!

INSTRUCTION MANUAL

1. SAFETY FUNCTIONS

Users of handling equipment have ultimate responsibility for ensuring that anyone who works with or near the equipment observes all the relevant safety precautions.
The following recommendations should be observed in addition to the standard regulations that apply to the work place.
All work must be carried out by trained personnel who are familiar with the operation of TAP-STD series positioners. Incorrect operation of the equipment may lead to a hazardous situation which can result in injury to the operator or damage to the equipment.
Staying under the workpiece during the working cycle is absolutely forbidden! Staying on top of the workpiece during the working cycle is forbidden without the correct safety equipment employed.

1. Anyone who uses the TAP-STD positioner must be familiar with
   - it's operation
   - the location of the emergency stop
   - it's function
   - relevant safety precautions

   To make this easier each switch, pushbutton or potentiometer is marked with a symbol that indicates its function when activated.

2. The operator must ensure that
   - no unauthorized person is stationed within the working area of the machine when it is energised
   - personnel UV protection is employed when the arc is struck including others working in the area of the TAP-STD positioner

3. The work place must
   - be suitable for the purpose
   - be free from loose objects
   - be clean, because dust and welding flux can cause excessive ware on rotating components

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

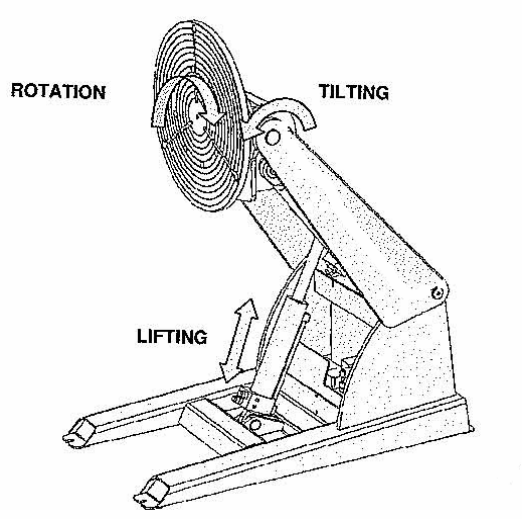
5. General precautions
   - make sure the welding return cable is connected securely to the workpiece.
   - work on high voltage equipment may only be carried out by a qualified electrician
   - appropriate fire extinguishing equipment must be clearly marked and close at hand
   - lubrication and maintenance must not be carried out on the equipment during it's operation; follow the lubrication instructions
   - check the tightness of the hydraulics, repair all possible leaks immediately. In other problem cases please contact the producer or his representative
   - these products should not be lubricated or serviced during operation.

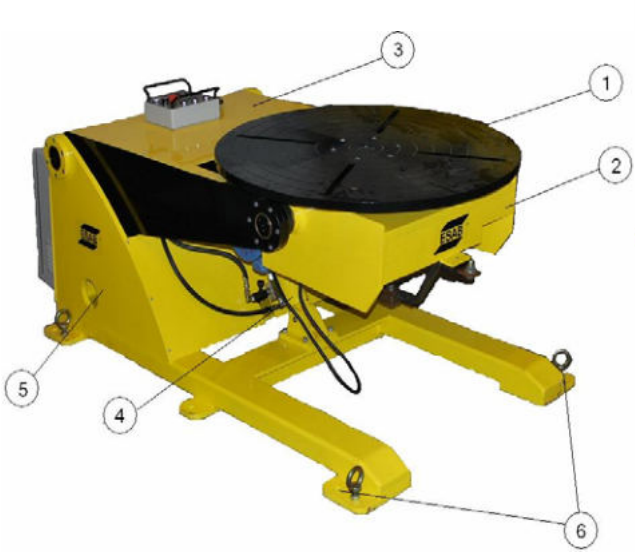
2. INTRODUCTION

2.1 General

Positioners are designed to facilitate manual and mechanized welding. All models meet or exceed the EN occupational safety requirements. With positioners, the work piece is always turned to the most favourable position. If you use the positioner for any other purpose please confirm suitability from the manufacturer or his representative.

The TAP-STD series positioners have 3 axis of movement: height, tilting angel and rotation.
The 3-axis operation guarantees the ideal ergonomic working position for the welder.





1. Table Plate
2. Rotation Machinery
3. Arm
4. Hydraulic Cylinders
5. Frame
6. Holes for Basement Fastening
7. Electric Cabinet
8. Removable cover Electric Cabinet
9. Pendant

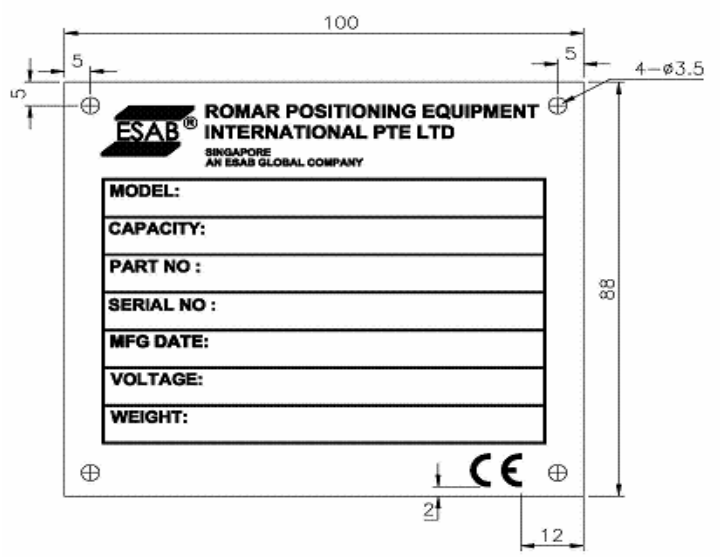
2.2 TAP-STD Series Technical Specifications

TAP-STD Model**

MODEL	TAP-1-STD	TAP-3-STD
CAPACITY (LOADING)	REFER TO CAPACITY CHART	REFER TO CAPACITY CHART
CAPACITY (TILTING)	REFER TO CAPACITY CHART	REFER TO CAPACITY CHART
ROTATING SPEED	0.1-1.5 RPM AT 5-50HZ	0.06-0.6 RPM AT 5-50Hz
TILT RANGE OF TABLE	0-135 º	0-135 º
TILT RANGE OF ARM	0-45 º	0-45 º
INCOMING SUPPLY	400V-3PH-50Hz	400V-3P-50Hz
CONTROL VOLTAGE	24VAC	24VAC
DIAMETER OF TABLE	Φ900mm	Φ1000mm
IP CLASSIFICATION (MOTOR)	IP 55	IP 55
IP CLASSIFICATION (ELECTRICAL)	IP 43	IP 43
EARTHING	800A	800A
WEIGHT (KG)	782	1500
DIMENSIONS (LxBxH)	1930x1025x756	2040x1268x1019

** These are the technical values for standard models. If you have ordered a special, the values might be different from these.

2.3 Machine Plate



It has important information:

Type	The type of machine
Capacity	The capacity of machine
Ser.No.	The serial number of machine
Part.No.	The ESAB article number for the machine
Man.year	The manufacturing year of the machine.
Weight	The weight of the machine.

NOTE! *THE WEIGHT IS WITHOUT ACCESSORIES!*

The machine plate has electrical information:

Hz	Mains supply connection Hz
V	Mains supply connection V
KW	Mains supply connection KW

NOTE! *WHEN ORDERING SPARE PARTS, PLEASE STATE ALL THE INFORMATION IN MACHINE PLATE!*

2.4 Installation

IMPORTANT!!!

No Fluid in the Hydraulic System (Refer Appendix D – Hydraulic System Page D4).

Read all relevant manuals and safety precautions carefully before starting to unpack and install the equipment! NOTE! Make sure installation is carried out by suitably trained personnel.

Handling and storage of the machine

The machine is packed on a base suitable for lifting by crane and/or forklift. Lift the machine from the lifting points (Lifting Loops) only.

Unload the machine from the packing and check the outer condition. Do not store the machine outside or in damp places.

NOTE! *CHECK THE MACHINE WEIGHT FROM THE TECHNICAL DATA. BE CAREFUL AND OBSERVE THE GENERAL LIFTING INSTRUCTIONS.*

2.5 Start Up Instruction

- Check the required space from the dimensional drawing and ensure that the electric cabinet can be opened freely. Take into consideration the shape and external dimensions of work pieces (can the work piece be handled freely).
- Access to the work point must be free and it should be possible to rotate the work point to a convenient working position.
- The foundation should be flat and made of non cracked concrete. The foundation strength has to be 30 N/mm² or better.
- Positioners are mounted to the foundation with anchor bolts.
- Check the weight of the workpiece and the location of centre of gravity with relation to rotational and tilting axles (checked with the calculation instructions and loading curves).
- Take into consideration all possible special demands caused by the welding process.
- Connect the remote control. NOTE! Plug fits only in one position.
- Before connecting the mains supply, check that the main switch is OFF and that the mains voltage is the same as the connection voltage (qualified Electrician).
- Check the amount of hydraulic oil.
- If the hydraulic lifting and tilting do not function the main supply phase rotation may be incorrect. It should be changed from the supply mains point in the cabinet (qualified Electrician).
- Turn the supply on by main switch – The signal lamp should light.
- Test the function of each axis via the push buttons on the remote control pendant.
- Test rotation and speed control of positioner in both directions.
- Test the height adjustment – if the lifting movement is jerky there is air in the hydraulic system. Run positioner up and down until the air has been expelled.
- Connect foot pedal if any, and test the action.

NOTE! *IF YOU HAVE TO TAKE OFF THE STOP SCREW FROM THE HOLE IN THE TABLE PLATE CENTRE, MAKE SURE THAT THE HOLE WILL BE BLOCKED AGAIN BEFORE WORKING, SO THAT DUST AND OTHER DIRT DO NOT GET INSIDE THE MACHINE.*

ALWAYS CONNECT THE EARTHING OF THE WELDING POWER SOURCE TO THE POSITIONER'S OWN EARTHING CONNECTOR. MARKED WITH THE SYMBOL.

DO NOT DRIVE AGAINST THE FLOOR WHEN TILTING AS DOING SO CAN DAMAGE THE POSITIONER.

FOLLOW THE OPERATING INSTRUCTIONS AND POSITIONER'S LOADING DIAGRAMS.

READ AND UNDERSTAND THE USE OF THE LOADING DIAGRAMS AND LOADING CALCULATIONS.

2.6 Operation Instructions

Loading, fastening and unloading of the work piece

- Use the table plate holes and T-slots for work piece fastening (Figure A).
- Check that the fastening of the work piece is permanent during all the working time. Check regularly that the fastening is tight!
- Check that the welding return terminal of the welding machine is connected to the positioner's own return connector (Figure B).

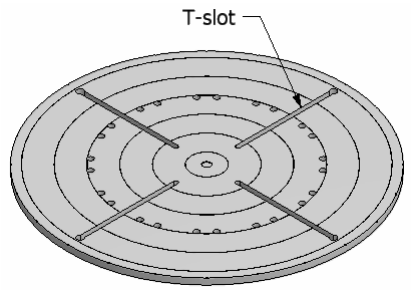


Figure A

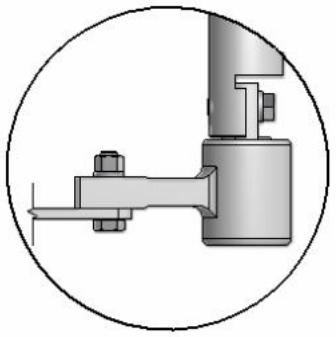


Figure B

Control Devices

This cabinet contains all the necessary electrical components such as the inverter, fuses, circuit breaker etc. The front panel is equipped with an interlock isolator and E-stop button.

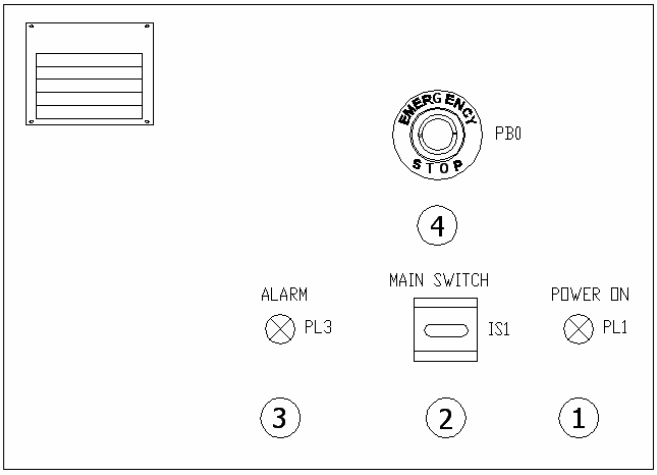


Figure C

Table (1) Control Devices Table

Item	Description	Type	Function
1	Light	White	Power ON Indication
2	Switch	Interlock & lockable	Isolator ON/OFF
3	Light	Amber	Alarm Indication
4	Button	Rotary Release	Emergency-stop
5	Data Plate	NA	Info.

Pendant

This is mounted on a 6m control cable

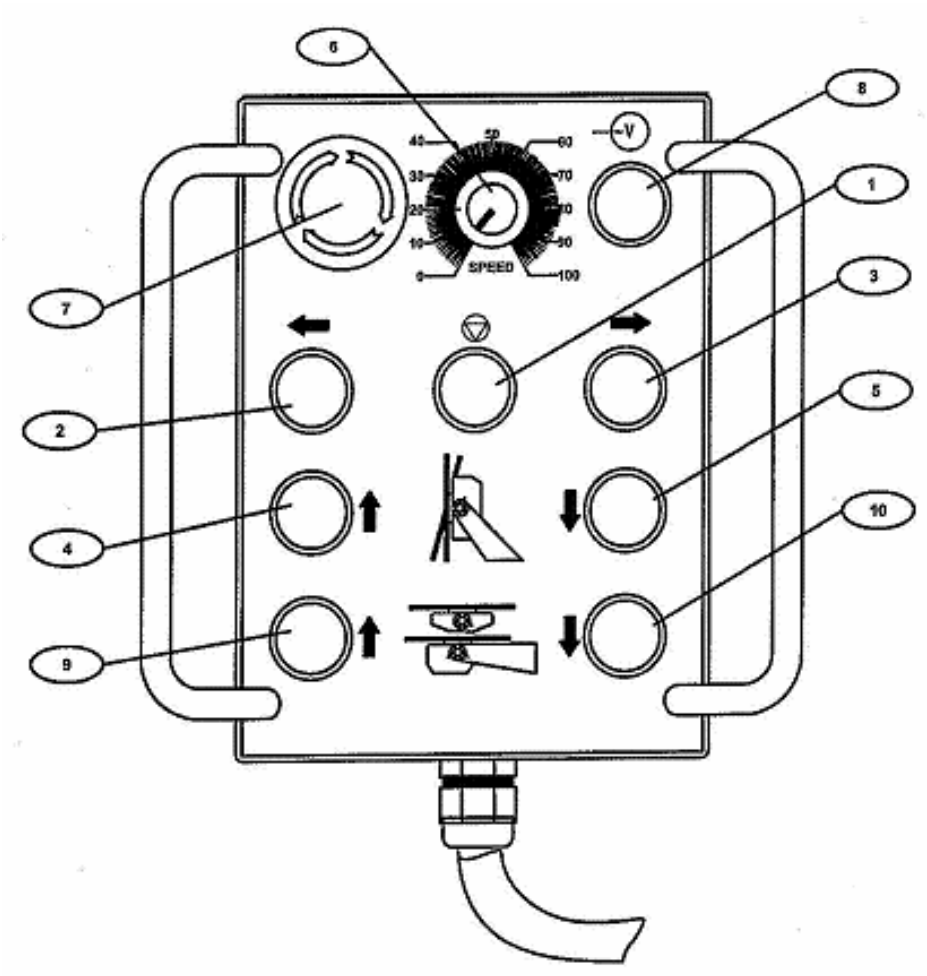
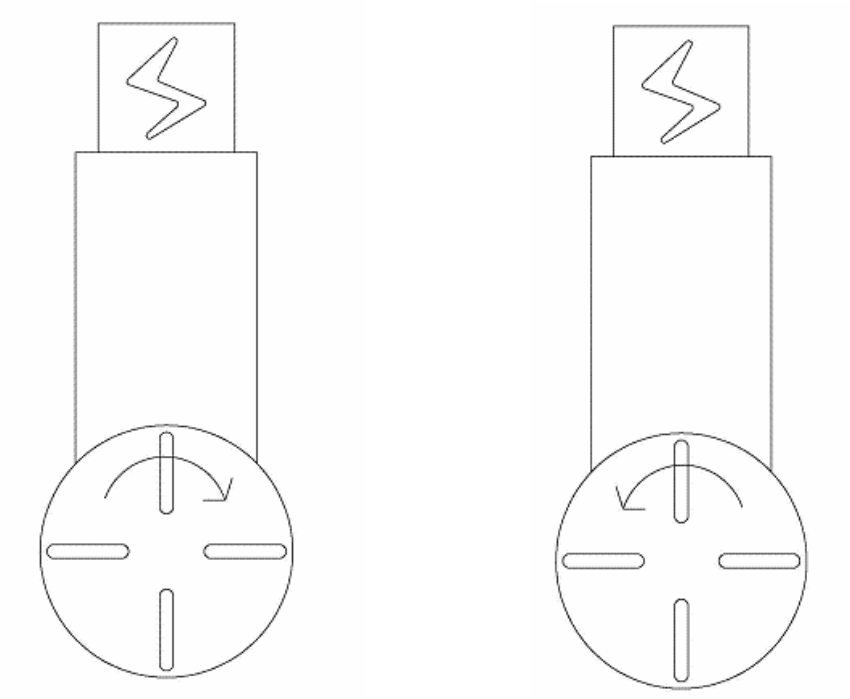


Figure D

Table (2) pendant Function Table

Item	Description	Type	Purpose
1	Button	Self-Holding	Rotation Stop
2	Button	Self-Holding	Rotation Forward
3	Button	Self-Holding	Rotation Reverse
4	Button	Self-Holding	Tilt Up
5	Button	Self-Holding	Tilt Down
6	Knob	Potentiometer	Rotation Speed Setting
7	Emergency Stop	Rotary Release	Emergency Stop Button
8	Light	On/Off	Power On Light
9	Button	Self-Holding	Raise
10	Button	Self-Holding	Lower

Note: Change any 2 input phase at isolator if orientation of table rotation is incorrect from as shown in Figure E. (qualified electrician)



Forward Reverse

Figure E Orientation of Table Rotation

3. INTRODUCTION

3T-STD Hydraulic Positioner

3-1 General

A welding positioner is one of the most indispensable pieces of equipment in welding applications. ESAB's hydraulic positioner TAP-STD series is developed specifically to meet the rugged and harsh environment of welding such as ship building, oil and gas, pressure vessel, boiler and structural steel industries etc. Unlike conventional welding positioners the TAP-STD series allows elevating movement of table in addition to the usual tilting and rotation function. A lot of design attention has been focused on areas such as safety during use, ease of use and maintenance, robust construction just to name a few. Coupled with polyurethane paintwork to guard against corrosive environments, you can be assured that your positioner will provide you with years of uninterrupted use.

3-2 Main specification

Rated Capacity:	1500kg
Table Diameter:	1000mm
Tilting Range:	0~135º
Table Rotation:	0.06~0.6rpm/min
Rotation Control:	1.5kw AC Inverter

3-3 Construction & Description

General

The hydraulic positioned consists of

a) Base Frame
b) Elevating Arm
c) Tilting Assembly
d) Table Top
e) Rotation Assembly
f) Elevating Assembly
g) Power pack
h) Earth Assembly
i) Electrical panel
j) Control Pendant

Base Frame

Elevating arm and rotation assembly, these are welded structural parts with precisely machine holes for assembly purpose after welding process.

Table Top

This is machined from a solid piece of steel plate. It has 4 slots for jigs & fixtures, thus enabling easy securing of the work piece onto the Table.
Concentric indents are also available on the table to aid the centric positioning of a work piece.
A centre recess spigot is available for the fitting an optional 3-Jaw chuck.

Tilting Assembly/Rotation Assembly

This is fitted to the rotation assembly, a short bronze bush on each side that engages into the elevating arms front end.

This suspended rotation assembly is tilted by the action of a tilting hydraulic cylinder that is fitted between the side of the elevating arm and an offset point on the rotation assembly.

The rotation assembly is independant of the tilting assembly. It carries a thrust bearing that is engaged to the output shaft of a worm drive gearbox, which is in turn mounted to an AC motor that provides the rotation. The steeples speed of rotating is controlled via an inverter.

Elevating Assembly

The rear end of the elevating arm is connected at each side of the base frame.

An elevating hydraulic cylinder is fitted to engage the base frame and the elevating arm. The action of the cylinder moves the elevating arm which is pivoted on the base frame thus providing the elevating feature of the rotation assembly that is fitted to the front end of the elevating arm.

Power pack

This is a self contained vane type hydraulic power unit that is located under the rear end elevating arm. It provides 16Mpa of pressure and the circuit is fitted with solenoid valve, control valve, pressure gauge etc. for the control of elevating cylinder and tilting cylinder.

Earth Assembly

This rotary earth (welding return) unit is connected directly to the table top. A Copper bar connects between the rotating weld return while the other end protrudes out from the rotation assembly. The rating is 800 Amp.

3-4 Installation & Commissioning

Pre-requisites for Installation

a) Use lifting eyes provided on equipment.
b) The thicknesses of floor must not be less than 150mm.
c) Anchor should be either encased type or chemical type. Do not use expansion bolt.
d) Grout after leveling.
e) Correct size of mains supply cable to panel.
f) Electrical connections to be carried out by qualified electrical person.

After Installation

a) Check rotation gearbox oil level
b) Top up hydraulic tank
c) Incoming cable is properly protected
d) No loose connections at terminals (qualified electrical person)
e) Clear up the area

3-5 Gearbox Oil

Equipment Model	Type of Oil	First Stage (Gear Oil)	Second Stage (Grease)	Second Stage (Gear Oil)
TAP3-STD & TAP3-HD	CPC HD320 Gear Oil	1.25 L	3.6 KG	1.38 L

* CPC HD320 Gear Oil which is equivalent to ISO – VG 320, Mobil gear 632, Shell Omala 320 and Energol GR-XP 320.

3-6 Maintenance & Care

Table (3) Maintenance & Care

S/N	Location	Things To do	Month	Observation
1	Entire Equipment	Unlade operation	daily	Unusual sound, smell or vibration
2	Entire Equipment	Visual suspect	daily	Rust, oil leak, water retention
3	E-Stop	Press E-stop	daily	Stop all functions
4	Incoming Voltage	Check voltage	1mth	Within±10%
5	Electrical panel	Remove dirt dust	3mth	Cleanliness induces fife
6	Wiring	Test "looseness"	3mth	Tight connected
7	Fasteners	Retighten	6mth	Looseness
8	Gearbox(Primary)	Renew 3.5 liter oil	1yr	Use grade320(Shell Omala)
9	Gearbox(Secondary)	Renew 0.14 liter oil	1yr	Use Shell EP Grease 1128
10	Hydraulic oil	Renew 8 liter oil	1yr	Use grade 46
11	Rotary Earth	Renew Earth grease	3yr	Use conductive grease

∗ To renew oil after 1st month of new equipment operation

3-7 Operation & Use

General

(1) It is recommended that the operator is knowledgeable enough of the theories behind the function of this equipment
(2) Read this manual thoroughly before operating
(3) Put on personal protective equipment
(4) Observe all the safety rules & regulations in your company

Start-Up

(1) Ensure no encumbrances around equipment
(2) Turn "on" wall isolator
(3) Turn "on" panel isolator
(4) Release "E-stop" on panel
(5) Release "E-stop" on pendant
(6) Follow daily check as shown in table (3)
(7) If there is a work piece on the equipment, check that it is still securely fastened and there is no encumbrance to the work piece
(8) Check welding return is in good condition
(9) Operate machine via the pendant as in table (2)

Usage

(1) Always turn potentiometer to low (anti-clockwise)
(2) Start the rotation and adjust potentiometer to desired speed
(3) Always allow the table to come to a complete halt before changing rotation direction
(4) Do not allow the pendant cable to pass under the equipment (crush hazard)
(5) Do not leave pendant on floor or area that is subjected to water or fluids

Shut down

(1) Turn potentiometer to low position
(2) Depress "E-Stop" on pendant
(3) Depress "E-stop" on panel
(4) Turn "off" panel isolator
(5) Turn "off" wall isolator
(6) Clean and clear up the work area

3-8 Troubleshooting

S/N	Problem	Possible cause	Remedy
1	No Rotation	1) No Incoming Supply	1) Turn on Isolator & Release E-Stop
		2) Faulty potentiometer	2) Replace
		3) Inverter Alarm	3) Refer Inverter manual
		4) Faulty push button	4) Lubricate or replace
		5) Faulty contactor	5) Replace
		6) Faulty Transformer	6) Replace
2	No speed adjustment	1) Faulty potentiometer	1) Replace
		2) Inverter Alarm	2) Rater Inverter manual
		3) Faulty inverter	3) Replace
3	No cylinder movement	1) Wrong Rotation direction on power pack motor	1) change 2 phases at wall isolator
		2) Air trapped in system	2) purge the system
		3) Faulty solenoid valve	3) Replace
		4) Faulty push button	4) Replace
		5) Faulty contactor	5) Replace
		6) Faulty transformer	6) Replace
		7) Faulty power pack motor	7) Replace

APPENDIX A
GENERAL ARRANGEMENT DRAWING

The general arrangement is a CAD module illustrating the general set up of the equipment. The main specifications of the equipment are also listed in the GA. The general arrangement drawing for the TAP-3-STD hydraulic positioner is presented on the following page.

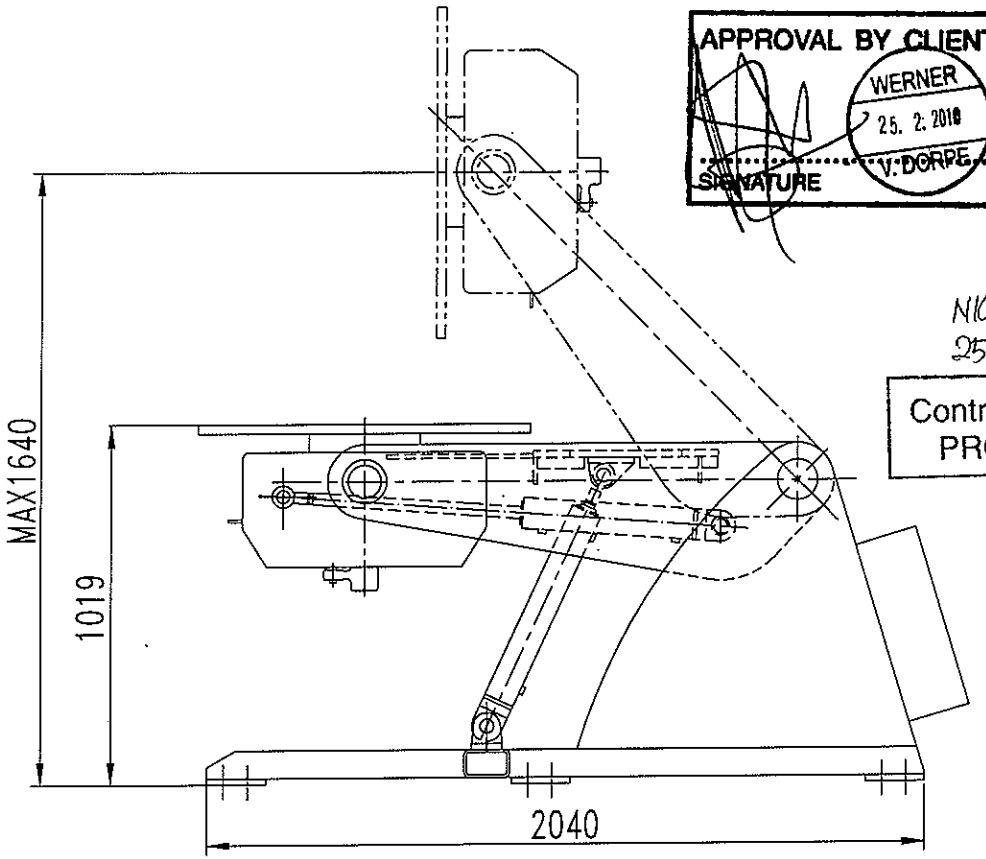
specification for positioner

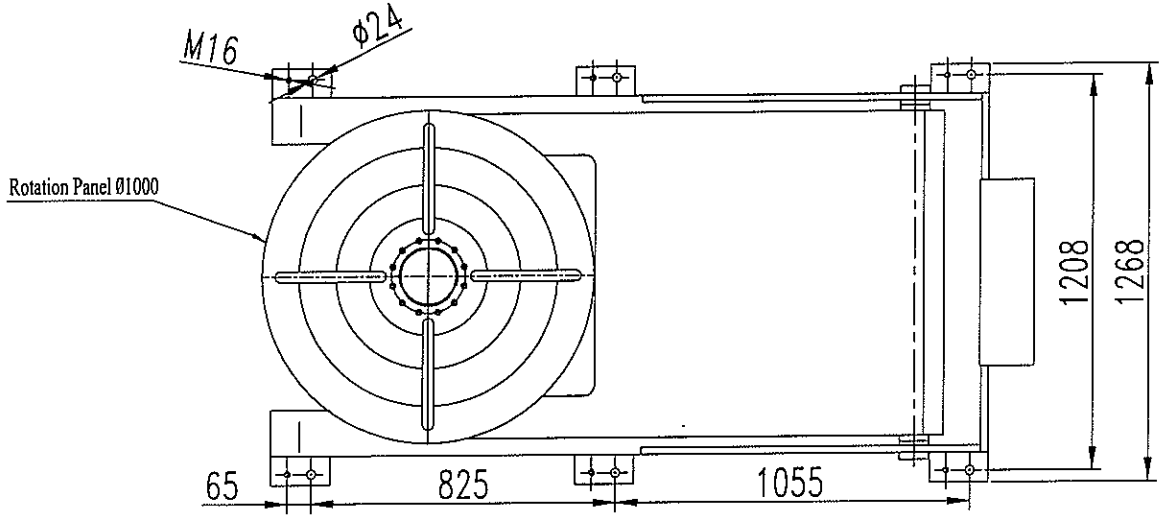
1	Model	Positioner TAP 3T (0370250751)
2	Capacity(Turning)	3MT @ 150mm (Please refer to load chart)
3	Capacity(Tilting)	3MT @ 150mm (Please refer to load chart)
4	Electrical Panel	YES
5	Rotation Speed	0.06-0.6rpm at 5-50Hz
6	Tilt Range Of Table	0~135 Degree
7	Incoming Supply	380/400/415V-3P-50HZ 440/460/480V-3P-60HZ
8	Control Voltage	24VAC
9	Diameter of table	Ø1000 mm
10	Rotation Drive Control	1.5Kw AC Inverter
11	Control Means	Via Push Button Pendant c/w 6m cable
12	Rotation Drive Motor	1×1. 5kw c/w force Cooling
13	Tilt Range Of Arm	0-45deg.
14	Lifting Drive &Vertical	Hydraulic Unit System 16Mpa 2.2Kw 35L
15	Hydraulic Cylinders	Tilt,2"(Bore -Ø90 RodsizeØ40). Lifting ,1"(Bore -Ø100 RodsizeØ56)
16	Earthing	800A
17	Surface Preparation	Gritblast to SA2.5
18	Painting	2 coats Zinc phosphate, 1 coat Polyurethane
19	Color	Esab Yellow and Black
20	Qty	4 units
21	Est Weight(kg)	T.B.A

APPROVAL BY CLIENT:
WERNER
25. 2. 2010
V. DORPE
SIGNATURE

NICK
25/2/2010

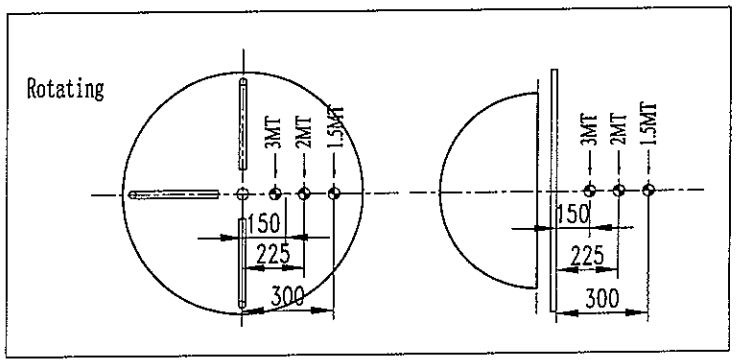
Controlled To:
PROJECT





Note: - Equipments must be certified CE
- Factory default for incoming supply is 400V-3P-50Hz

LOAD CHART



ALL DIMENSION IN MM UNLESS OTHERWISE SPECIFIED

ESAB
WERNER
DRAWN Dennis DATE 24-02-10
25. 2. 2010
APPROVED V. DORPE

PROJECT/MODEL : Positioner TAP 3T (0370250751)
CLIENT : ESAB Saldatura
DWG. NAME : GENERAL ARRANGEMENT
DWG. NO. : PJ-4991-GA02
SCALE: N.T.S.
REVISION: 0
SHEET NO: 1 OF 1

APPENDIX B
ELECTICAL DRAWINGS

Electrical Drawings are compiled in this section to give the user a detailed graphical illustration of the electrical components and circuit diagrams associated with the equipment. For more information regarding the electrical and electrical system of this positioner, please visit the respective manufacturer's website.

DRAWING LIST

Sales Order No	4991	Item No	2
Customer/Project	ROMAR POSITIONING EQUIPMENT INTERNATIONAL PTE LTD	No. of Units	4
Product	Hydraulic Positioner	Reference No	PJ-4991-ED21
Model	TAP-3	Revision	1(Revised on 7/6/10)

Prepared By :	Approved By :	Issued To :
Chen Yi 07/06/10	MAR 07/6/2010 CHEN	Controlled To: PROJECT NIOC 7/6/10

No	Drawing No.	Sht	Rev	Description	Qty/Unit	Remarks
1	PJ-4991-EC21	1	0	Control Panel Equipment List	N/A	
2	PJ-4991-EC21	2	0	Control Panel Equipment List	N/A	
3	TAP-3-EI01-380~480V	1	02	Power Control Circuit Diagram	N/A	
4	PJ-4991-E202	1	02	Control Circuit Diagram	N/A	
5	PJ-4991-E203	1	02	Block Diagram	N/A	
6	PJ-4991-EP21	1	02	Outside View of Control Panel Diagram	N/A	
7	TAP-3-EIP2-380~480V	1	02	Outside View of Control Panel Diagram	N/A	
8	TAP-3-EIP3-380~480V	1	02	Outside View of Pendant Controller Diagram	N/A	
9	TAP-3-EIW1-380~480V	1	02	Cabel List	N/A	
10	TAP-3-EIS1-380~480V	1	02	Variable Speed Controller setting Table	N/A	
11						
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Note:

CONTROL PANEL EQUIPMENT LIST

Sales Order No.:	4991	**Customer/Project :**	
Item No.:	2	**Model No :**	TAP-3
No. of Units :	4	**Reference No.:**	PJ-4991-EC21
Revison :	0		

Prepared By: Chen Yi 07/06/10	**Approved By:** MAIN 07.6.2010 CHEN	**Issued To:** Controlled To: PROJECT NICK 7/6/10

No.	Symbol No.	Description	Type	Qty/Unit	Brand	Remarks
1	MCB1/MCB2	THERMAL MAGNETIC CIRCUIT BREAKER	GV2-PM14C 6-10A	2	TELEMECANIQUE	
2	FR	OVERLOAD RELAY	LRD10C (4-6A)	1	TELEMECANIQUE	
3	SW0	PADLOCK-ABLE EXTERNAL OPERATOR	GV2-AP01	1	TELEMECANIQUE	
4	PL2	PILOT LIGHTS WITH INTEGRAL LED	XB2-BVB5LC (Yellow)	1	TELEMECANIQUE	
5	PL3	PILOT LIGHTS WITH INTEGRAL LED	XB2-BVB1LC (White)	1	TELEMECANIQUE	
6	PL1	LEGEND HOLDERS FOR 8 x 27 mm	ZB2-BWB11C (Power On)	1	TELEMECANIQUE	
7	PL1	LEGEND HOLDERS FOR 8 x 27 mm	ZB2-BW31C (White)	1	TELEMECANIQUE	
8	PB0/PB7	PUSH-BUTTONS	XB2-BA42C (Red)	2	TELEMECANIQUE	
9	PB1/PB4/PB5	PUSH-BUTTONS	XB2-BA31C (green)	3	TELEMECANIQUE	
10	PB2/PB3/PB6	PUSH-BUTTONS	XB2-BA51C (Yellow)	3	TELEMECANIQUE	
11	E.STOP1 E.STOP2	MUSHROOM HEAD PUSH-BUTTONS	XB2-BS542C (RED)	2	TELEMECANIQUE	
12	VF1	VARIABLE SPEED CONTROLLER	ATV312HU15N4	1	TELEMECANIQUE	
13	MC1/ MC0	3-POLE CONTACTORS	LC1D09B7C	2	TELEMECANIQUE	
14	F1-F4	MODULAR FUSE CARRIERS	(10 x 38) 32A	4	MRO	
15	F3	DOMESTIC CARTRIDGE FUSE	(10 x 38)1A	1	MRO	
16	F1/F2	DOMESTIC CARTRIDGE FUSE	(10 x 38) 2A	2	MRO	
17	F4	DOMESTIC CARTRIDGE FUSE	(10 x 38) 4A	1	MRO	
18	CP1	CONTROL PANEL	H600 x W500x D210	1	ESECO	
19	VR1	POTENTIONMETER	RV24NY 20S B502	1	COSMOS	
20	--	POTENTIONMETER KNOB	RW100C	1	COSMOS	
21	FANP	CONTROL BOX COOLING BLOWER	220VAC (120 x 120 x 25)	1		
22	--	VENTILATION KIT FOR CABINETS	(138 mm x 138 mm)	2		
23	P1	ALUMINIUN GREHAUSE	260H x 160W x 90D	1	ROSE ENCLOSURE	
24	CR1-CR6	RELAY	MY4NJ DPCO AC24V	6	OMRON	
25	--	RELAY SOCKET FOR MY4N	PYF14A-E	6	OMRON	

Rev : 02
Released Date : 21 Apr 2010

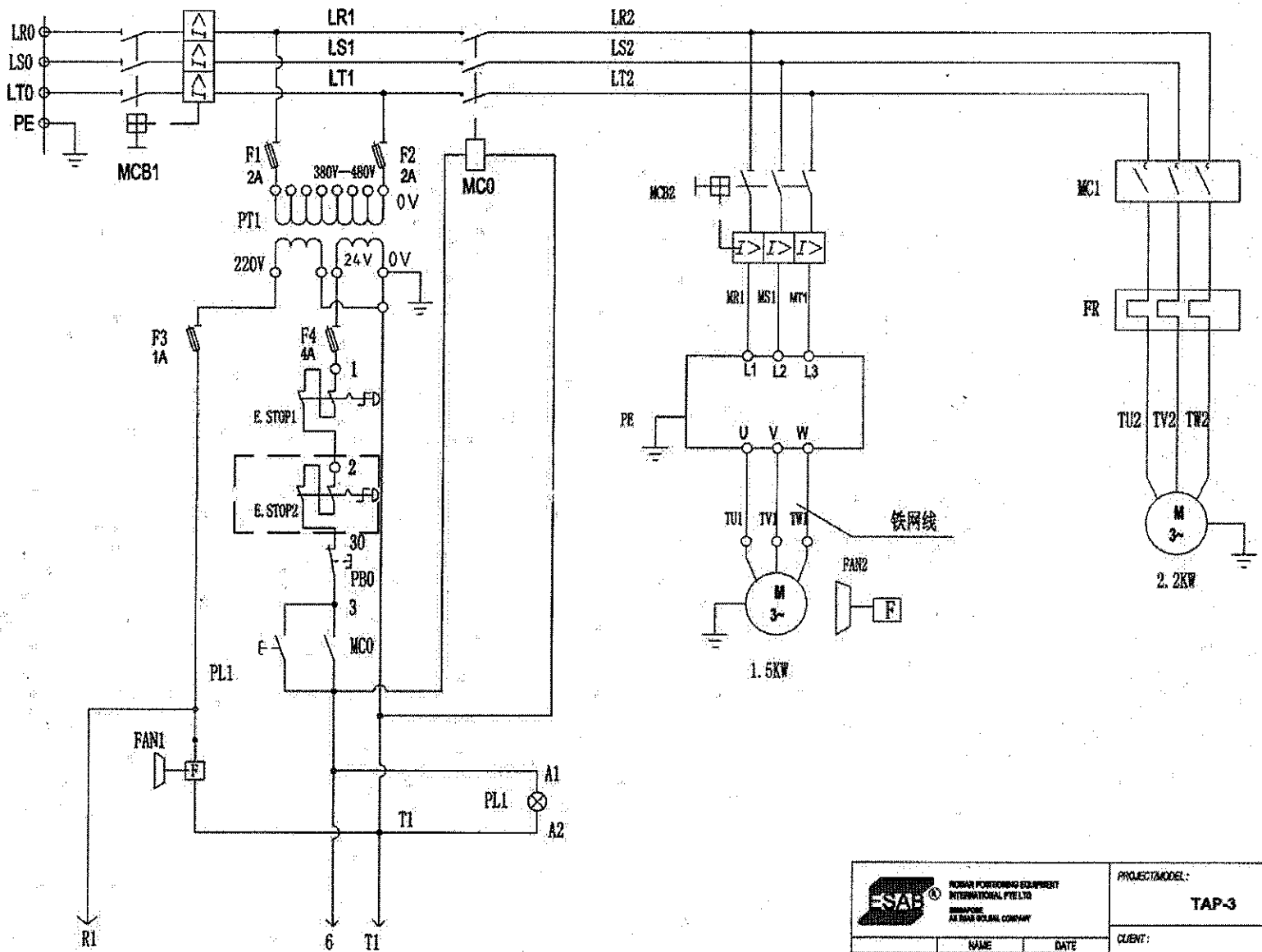
CONTROL PANEL EQUIPMENT LIST

Sales Order No.:	4991	Customer/Project :	
Item No.:	2	Model No :	TAP-3
No. of Units :	4	Reference No.:	PJ-4991-EC21
Revison :	0		

Prepared By:	Approved By:	Issued To :
Chen Yi 07/06/10	MARK 07.06.2010 CHEN	Controlled To: PROJECT NICK 7/6/10

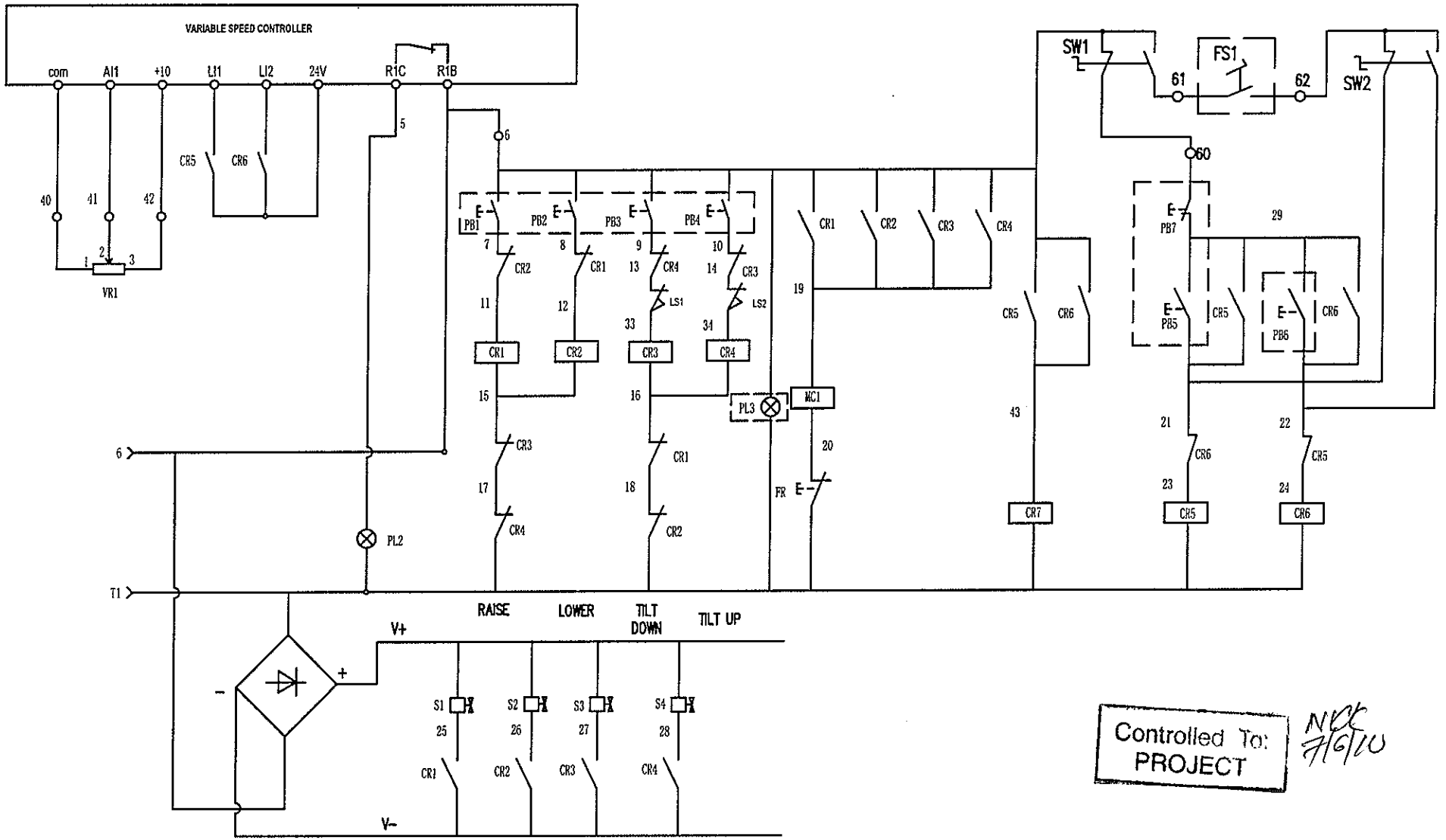
No.	Symbol No.	Description	Type	Qty/Unit	Brand	Remarks
26	CR7	RELAY	LY2NJ DPCO AC24V	1	OMRON	
27	--	RELAY SOCKET FOR LY2	PTF08A-E	1	OMRON	
28	--	RELAY HOLD-DOWN CLIPS	PYC-A1	14	OMRON	
29	D2	CABLE GLANDS	M25	1		
30	D3	CABLE GLANDS	M22	1		
31	TB1	TERMINAL BLOCKS	AB1-VV435U (4mm²)	9	TELEMECANIQUE	
32	TB1	TERMINAL BLOCKS	AB1-TP435U (4mm²)	1	TELEMECANIQUE	
33	TB1	TERMINAL BLOCKS	AB1-VV235U (2.5mm²)	25	TELEMECANIQUE	
34	TB1	TERMINAL BLOCKS	AB1-AB8P35	2	TELEMECANIQUE	
35	TB1	OBSTRUCT	AB1-24V	1	TELEMECANIQUE	
36	TB1	LEAD RAIL	DIN	1		
37	PT1	TRANSFORMER	IP: 380V~480V OP:230/110/24/0V (300VA)	1	JIUCHUAN	
38	SW1, SW2	SELECTOR SWITCH	XB4BD21 + ZBE102	2	SCHNEIDER	
39	TB1	TERMINAL BLOCKS	AB1-VV235U (2.5mm²)	3	SCHNEIDER	
40	--	END COVERS	AB1-AC24	1	SCHNEIDER	
41	--	END STOPPER	BNL6P	2	IDEC	
42	--	LEGEND HOLDERS FOR 8 x 27 mm	ZBY-4101 White	2	SCHNEIDER	

Rev : 02
Released Date : 21 Apr 2010



ESAB — KOBAR POSITIONING EQUIPMENT INTERNATIONAL PTE LTD, SINGAPORE, AN ESAB GLOBAL COMPANY		PROJECT/MODEL: TAP-3
	NAME / DATE	CLIENT:
DRAWN	- / 2010/04/21	
APPROVED	chaogang Hou	DWG NAME: Power Control Circuit Diangram
		DWG NO.: TAP-3-EK01-380V~460V
		SCALE: N/A
		REVISION: 02
		SHEET NO: 1 OF 1

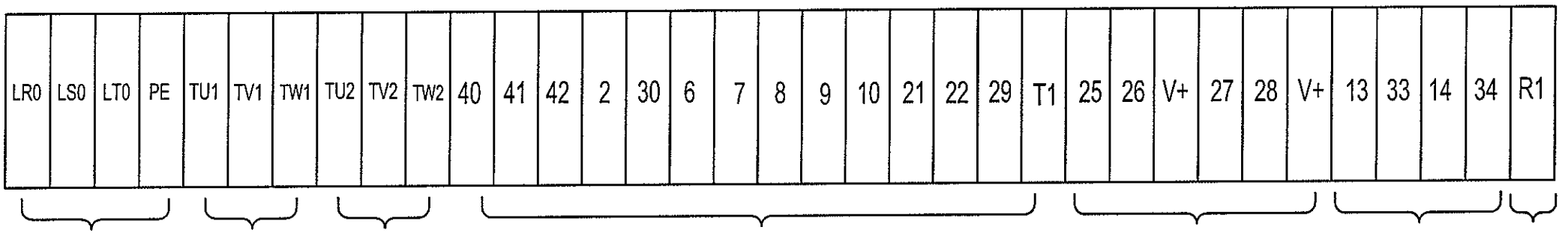
SIZE: A4

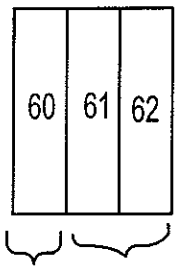


Controlled To: PROJECT

NCK 7/6/10

ESAB® ROMAR POSITIONING EQUIPMENT INTERNATIONAL PTE LTD SINGAPORE AN ESAB GOLBAL COMPANY		PROJECT/MODEL: TAP-3
	NAME / DATE	CLIENT:
DRAWN	CHENYI / 7/6/10	SCALE: N/A
APPROVED	MARK 07.6.2010 CHEN	DWG NAME: Control Circuit Diagram
		REVISION: 0
		DWG NO.: PJ-4991-E202
		SHEET NO: 1 OF 1



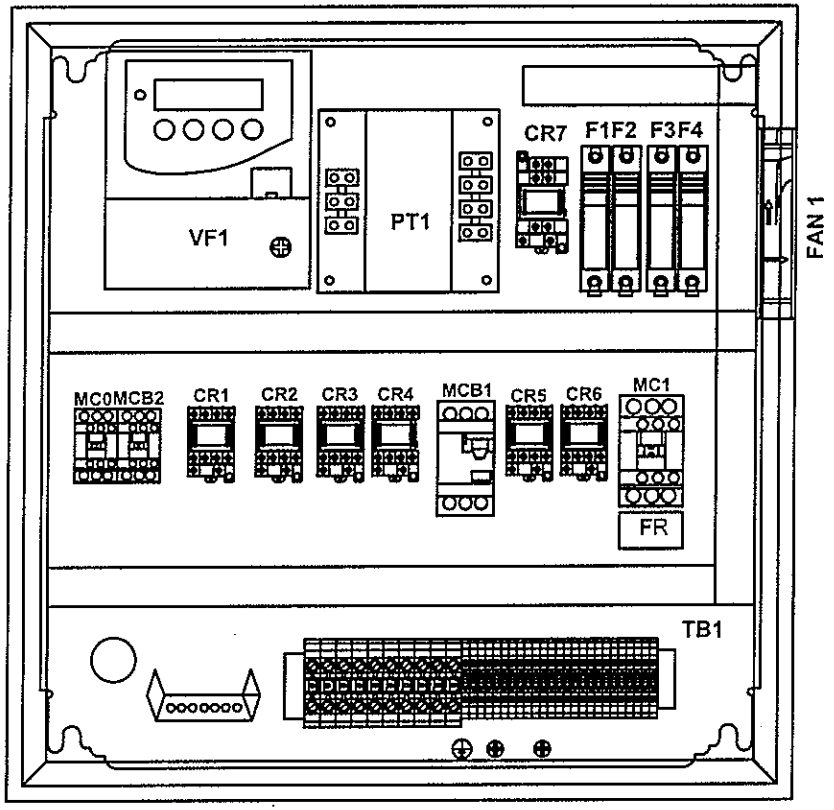


PENDANT CONTROLLER(P1)

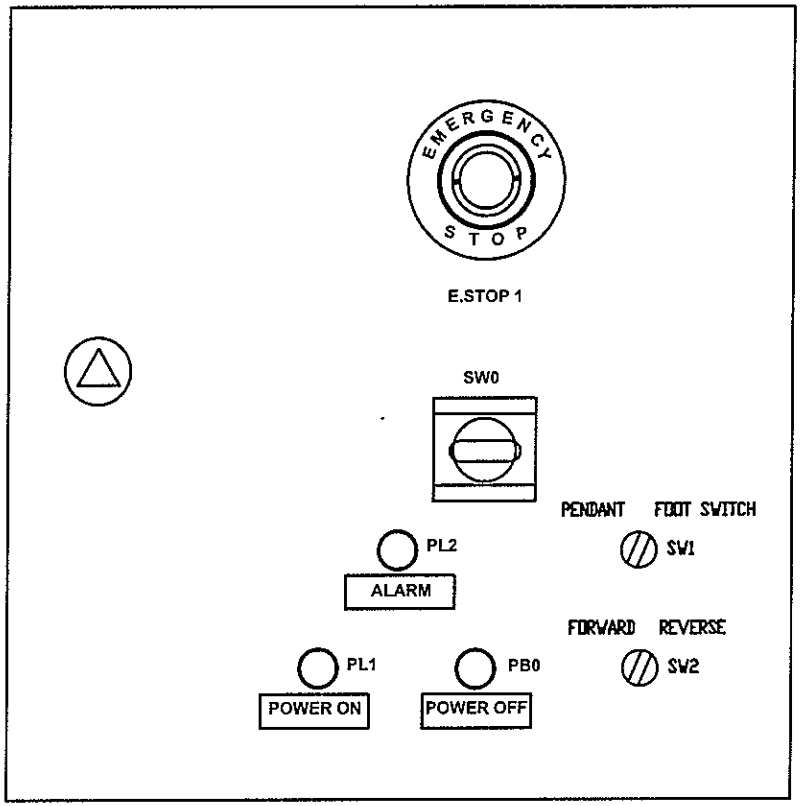
Controlled Doc
PROJECT

NICK 7/6/10

ESAB® ROMAR POSITIONING EQUIPMENT INTERNATIONAL PTE LTD SINGAPORE AN ESAB GOLBAL COMPANY		PROJECT/MODEL: TAP-3
	NAME / DATE	CLIENT:
DRAWN	CHENY / 7/6/10	SCALE: N/A
APPROVED	MARK 07.6.2010 CHEN	DWG NAME: Block Diagram
		DWG NO.: PJ-4991-E203
		REVISION: 0
		SHEET NO: 1 OF 1



CONTROL PANEL (CP1)

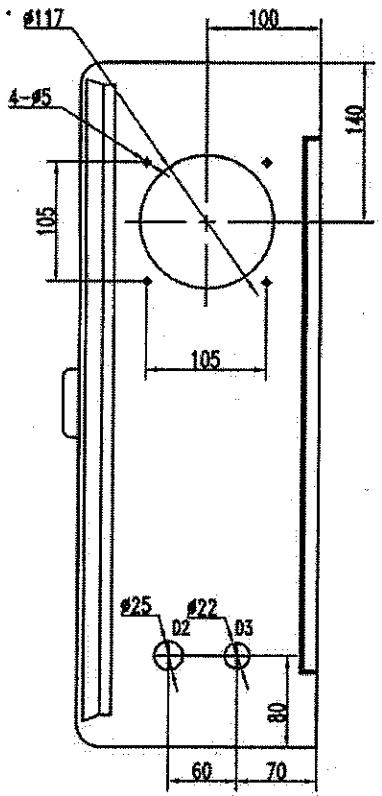


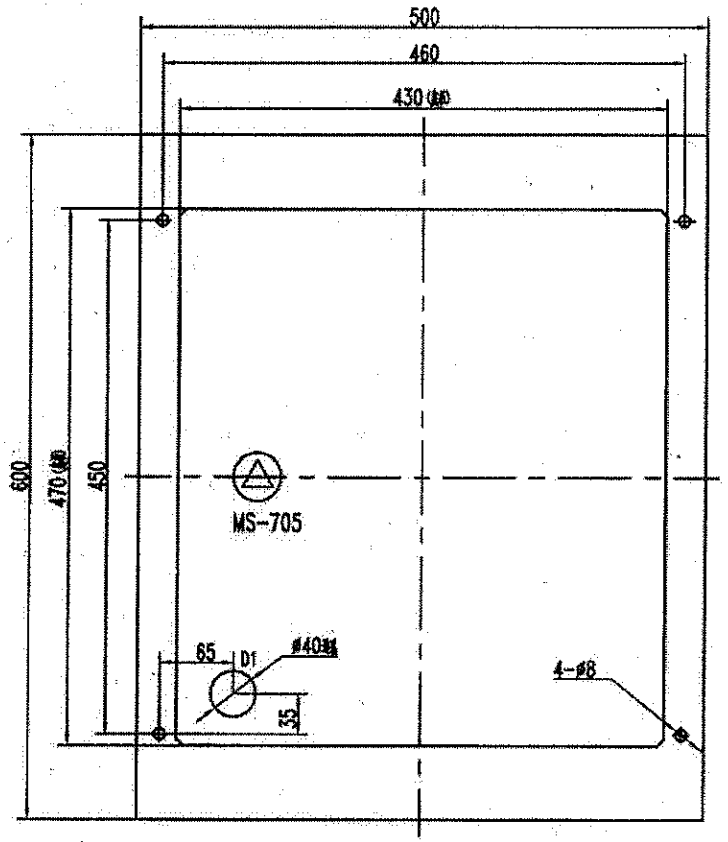
CONTROL PANEL (CP1)

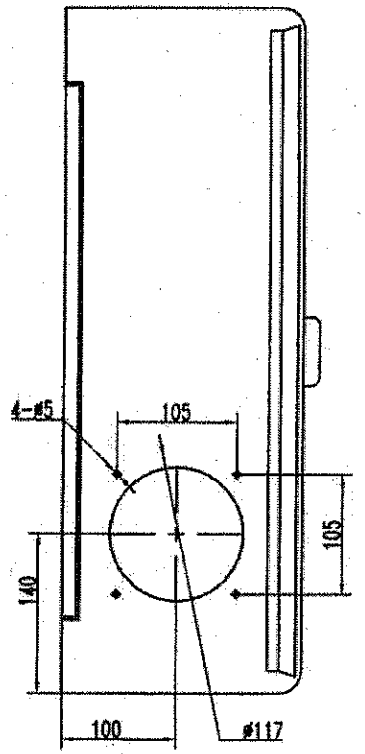
Controlled for PROJECT

N/A 7/6/10

ESAB® RONAR POSITIONING EQUIPMENT INTERNATIONAL PTE LTD SINGAPORE AN ESAB GOLBAL COMPANY		PROJECT/MODEL : TAP-3
	NAME / DATE	CLIENT :
DRAWN	CHENYT 7/6/10	
APPROVED	MARK 07/6/2010 CHEN	DWG NAME : Outside View of Control Panel Diagram
		DWG NO. : PJ-4991-EP21
		SCALE: N/A
		REVISION: 0
		SHEET NO: 1 OF 1







D1 : CABLE TO MOTOR & MOTOR FAN
D2 : CABLE TO CONTROL PENDANT (M25)
D3 : CABLE FROM MAIN POWER SUPPLY (M22)

ESAB INTERNATIONAL PTE LTD
SINGAPORE
AN ESAB GLOBAL COMPANY

PROJECT/MODEL: TAP-3

CLIENT:

	NAME	DATE
DRAWN		2019/04/21
APPROVED	chaojang Hou	

DWG NAME: Outside View of Control Panel Diagram

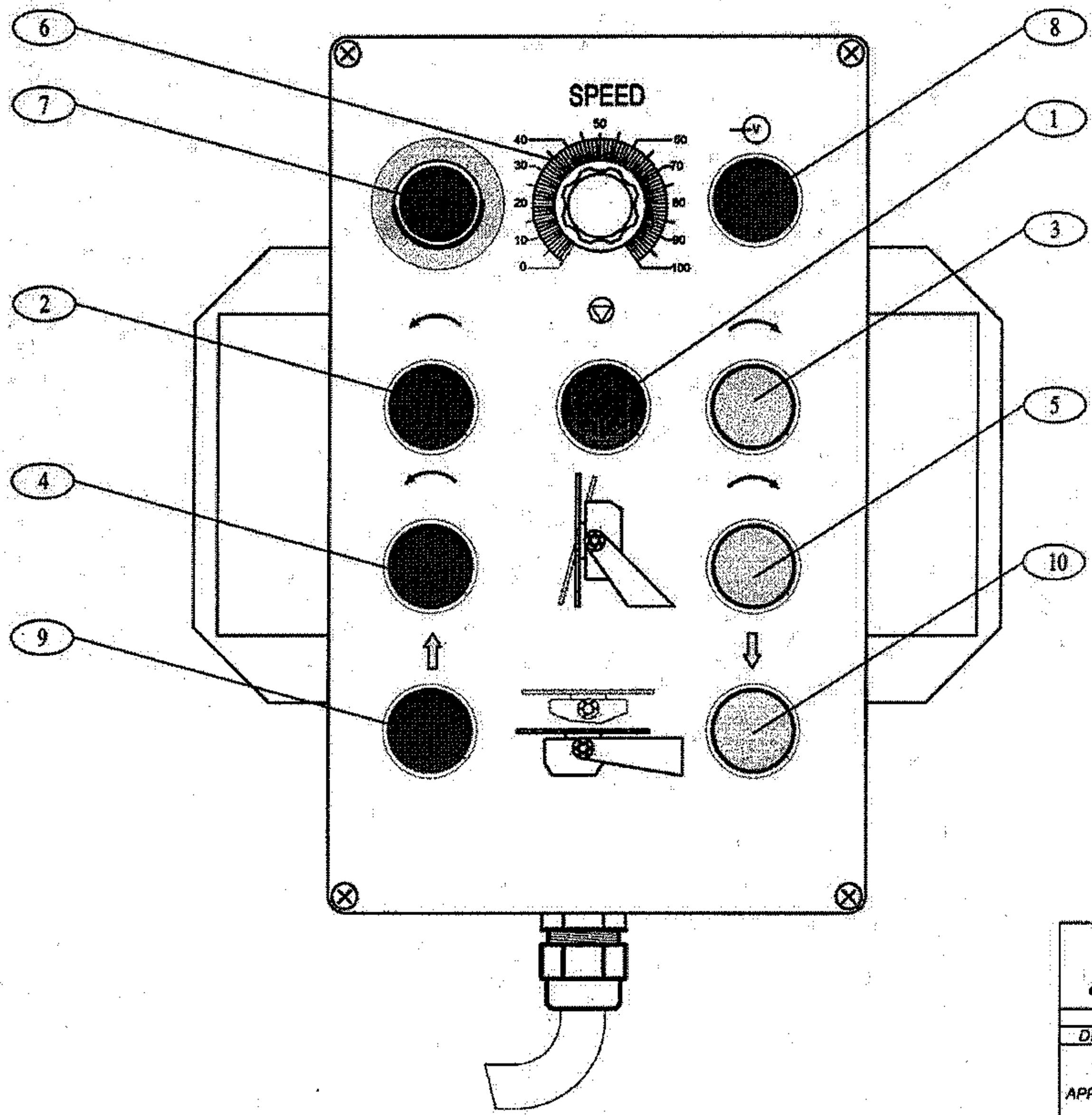
DWG NO.: TAP-3-EIP2-380V~480V

SCALE: N/A

REVISION: 02

SHEET NO.: 1 OF 1

SIZE: A4



Specification for Pendant Controller

NO.	Symbols	Description
1.	PB7	Rotation Stop.
2.	PB5	Rotation Forward.
3.	PB6	Rotation Reverse.
4.	PB4	Tillt UP.
5.	PB3	Tillt Down.
6.	VR1	Speed Setting.
7.	E.STOP 2	Emergency Stop Button.
8.	PL3	Power Light
9.	PB1	Raise
10.	PB2	Lower

ESAB® ROMAR POSITIONING EQUIPMENT INTERNATIONAL PTE LTD SINGAPORE AN ESAB GLOBAL COMPANY			PROJECT/MODEL: TAP-3	
	NAME	DATE	CLIENT:	
DRAWN		2010/04/21		
APPROVED	Chaogang.Hou		DWG NAME : Outside View of Pendant Controller Diagram	SCALE: N/A
				REVISION: 02
			DWG NO. : TAP-3-EIP3-380V~480V	SHEET NO: 1 OF 1

SIZE: A4

CABLE NO.	CABLE SIZE	ESTIMATE	FROM	TO													
W001	2.5 mm² x 4C		Power Incomming	Panel (P1)	CABLE CODE	1	2	3	Yellow/Green								
					WIRING NO.	UR0	LS0	LT0	PE								
W002	2.5 mm² x 4C		Panel (CP1)	Motor M1	CABLE CODE	1	2	3	Yellow/Green								
					WIRING NO.	TU1	TV1	TW1	PE								
W003	2.5 mm² x 4C		Panel (CP1)	Power Unit	CABLE CODE	1	2	3	Yellow/Green								
					WIRING NO.	TU2	TV2	TW2	PE								
W004	0.75 mm² x 14C		Panel (CP1)	Pendant (P1)	CABLE CODE	1	2	3	4	5	6	7	8	9	10	11	12
					WIRING NO.	40	41	42	2	30	6	7	8	9	10	21	22
					CABLE CODE	13	14										
					WIRING NO.	29	T1										
W005	(2C x 0.75 mm²) x 4C		Panel (CP1)	VALVE	CABLE CODE	1	2	3	4	5	6						
					WIRING NO.	25	26	V+	27	28	V+						
W006	(2x0.75 mm²) x2C		Panel (CP1)	LIMIT SENSOR	CABLE CODE	1	2	3	4								
					WIRING NO.	13	33	14	34								
W006	0.75 mm² x 2C		Panel (CP1)	Fan 1	CABLE CODE	1											
					WIRING NO.	R1											
					CABLE CODE												
					WIRING NO.												
					CABLE CODE												
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					CABLE CODE												
					WIRING NO.												

NOTE : 1.This table is used for Drawing No. TAP-3-EI03-380v~480v

ESAB®		PROJECT/MODEL: TAP-3	
	NAME	DATE	CLIENT:	
DRAWN		2010/04/21	DWG NAME: Cable List	SCALE: N/A
APPROVED	Chaogang.Hou		DWG NO.: TAP-3-EIW1-380V~480V	REVISION: 02
				SHEET NO: 1 OF 1

SIZE: A4

Settings menu SEt -

Code	Factory setting	Romar Setting
ACC	3 s	2 s
dEC	3 s	2 s
LSP	0 Hz	5 Hz
HSP	bFr	50 Hz
Ftd	bFr	bFr

Fun menu Fun

Code	Factory setting	Romar Setting
Adc	Yes	No

Motor control menu drC -

Code	Factory setting	Romar Setting
bFr	50 Hz	50 HZ
Uns	400V	400V
Frs	50 Hz	50 Hz
tFr	60 Hz	50 Hz
nCr	n	3.5
nSP	n	1395
COS		0.79

I/O menu I - O -

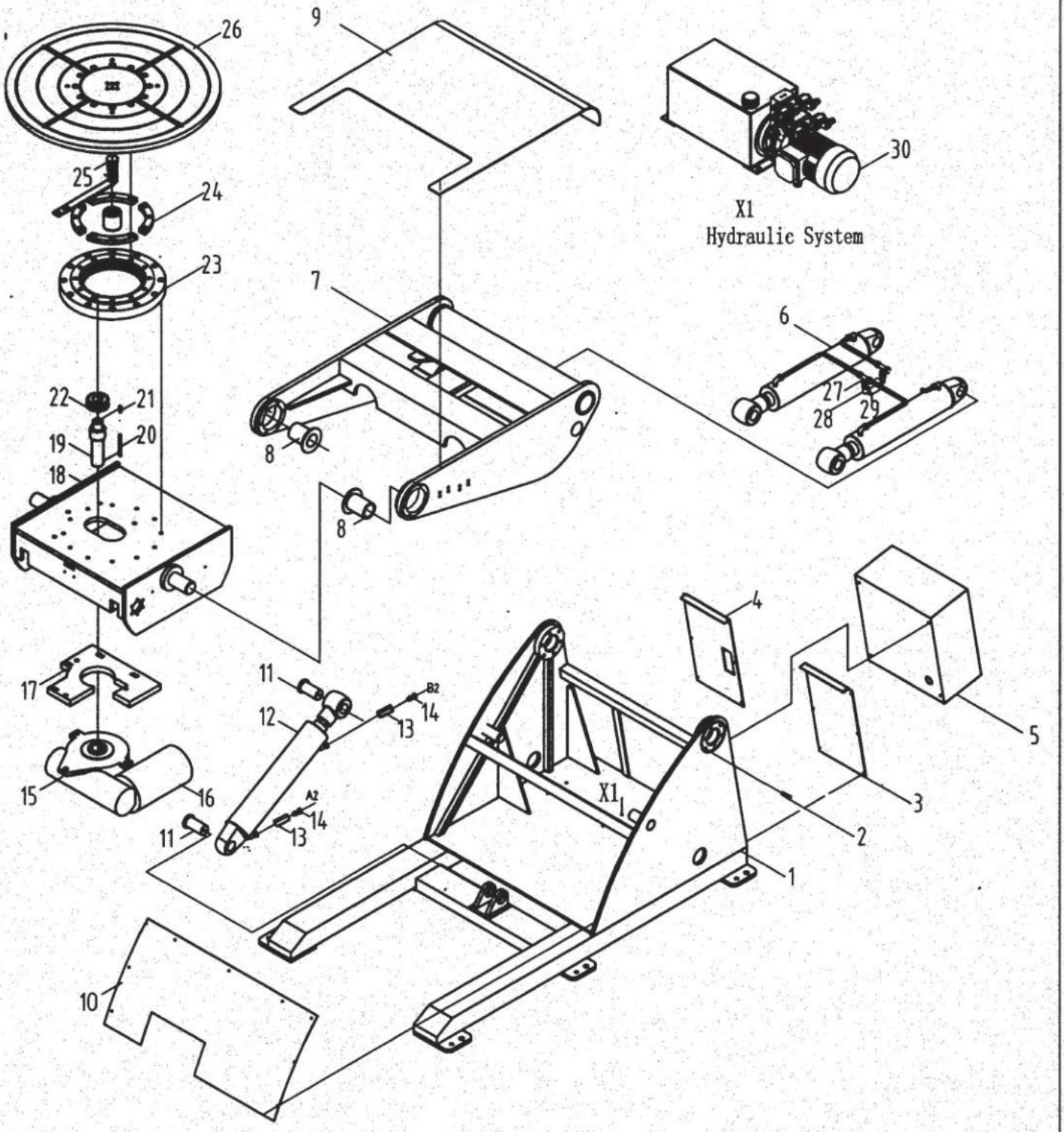
Code	Factory setting	Romar Setting
tCC	2C	2 C
r2	nO	nO

ESAB ROMAR POSITIONING EQUIPMENT INTERNATIONAL PTE LTD		PROJECT/MODEL: TAP-3
	NAME / DATE	CLIENT:
DRAWN	2010/04/21	SCALE: N/A
APPROVED: chaogang Hou		DWG NAME: Variable Speed Controller setting Table
		DWG NO.: TAP-3-EIS1-380V~460V
		REVISION: 02
		SHEET NO: 1 OF 1

SIZE: A4

APPENDIX C
MECHANICAL PARTS LIST

Parts list drawings are included in this manual for ease of reference when ordering spare parts. Please indicate the item number, part number, description, and quantity of the spare parts when making any purchase.
The parts list drawings for the TAP-3-STD hydraulic positioner is found on the following page.



ESAB		PROJECT/MODEL : TAP-3	
	NAME	DATE	CLIENT :
DRAWN		2010/04/21	SCALE: N/A
APPROVED			DWG. NAME : Assembly Drawing
			DWG. NO. : TAP-3-380V~480V
			REVISION: 02
			SHEET NO: 1 OF 1

NO	Specification model	Name	QTY	TYPE	Remark
1		Base	1	Q235	
2	M12x50	Hexagon Screw	12		
3		Back Cover (Left)	1	Q235	
4		Back Cover (Right)	1	Q235	
5		Control Box	1	Q235	
6		Cylinder(Turning)	2		
7		Lifting Arm	1	Q235	
8		Copper Cover	2		
9		Cover (Up)	1	Q235	
10		Cover (Front)	1	Q235	
11		Shaft Of Cylinder	2	45#	
12		Cylinder (Lifting)	1		
13		Throttle	2		
14		Oil Pipe Connector (PT 3/8)	10		
15	i=900	Gearbox	1		
16	1.5kw	Motor (Rotate)	1		
17		Gearbox Fix Base	1	Q235	
18		Turn Table Base	1	Q235	
19		Gearbox Shaft	1	45#	
20		Gearbox Flat Key	1		
21		Gear Flat Key	1	45#	
22		Pinion	1	45#	
23		Rotation Support	1		
24		Plate	4	45#	
25		Earthing	1	H59	
26		Turn Table(φ1000)	1	45#	
27		Three Ways Coupling	2		
28		Throttle	2		
29		Hydraulic one-way Valve	1		
30		Hydraulic System	1		

ESAB

	NAME	DATE
DRAWN		2010/04/21
APPROVED		

PROJECT/MODEL : TAP-3

CLIENT :

DWG. NAME : Assembly List

DWG. NO. : TAP-3-380V~480V

SCALE: N/A

REVISION: 02

SHEET NO: 1 OF 1

APPENDIX D
HYDRAULIC SYSTEM

Index

1. Description

The hydraulic power pack is specially designed and built for ESAB. The configuration pump and motor are assembled in line to achieve low headroom and compactness. The special design facilitates relatively easy maintenance.

2. Operation Guide

a) Fill the tank until the level indicator is reached.
(Note: always use a filter when adding oil)
b) Start the power pack and check that rotation of the cooling fan on the motor is same as the arrow indicator.
c) Let the motor idle 5-10 minutes before you use the equipment. The pressure is factory set and no further adjustment is generally necessary. However, if there is need adjust the required pressure of the system (pressure increase is clockwise, and decrease is anti clockwise). Lock pressure adjustment nut tightly after operation.
d) Pressure reducing valve.
e) Control the supply flow of system with the throttle valve's adjustment, this controls the flow rate to cylinders.

3. System Maintenance

a) Check that the system pressure falls within the standard range daily.
b) Observe if there is any abnormal noise when the system is operating.
c) The oil temperature must be within standard range, ie. not more than 60°C.
d) Incoming voltage must be kept within the range +5% to -15% (qualified electrician).
e) Check the leakage of oil or frayed hoses.
f) Change the filter at least once a year or more frequent (depending on the site condition)

4. Main Notice

a. Stop the machine when the temperature is above 60°C or below 15°C.
b. Stop the machine when the oil in the oil tank fall below the gauge mark.
c. Stop immediately if there is gushing oil or serious oil leak.
d. Suggest to use hydraulic oil that meet 8/9(NAS1638) and viscosity degree to 25-54CST.

5. Ordinary trouble and operation procedure

Out of order	Possible Cause	Remedy
1.No. oil flow	a. Wrong rotating directing of motor.	Stop immediately and revise the way
	b. The Pump not working.	Check the Motor power is electric or not, key board is damaged or not
	c. Suction pipe or filter is blocked	Check the suction pipe's circulation and clean the suction filter
	d. Oil viscosity is to high.	Change to the stipulated viscosity (According to the sample)
	e. Leaking at suction pipe.	Check the suction pipe circulation
	f. The tank's filter above the liquid	Add oil to the upper line of oil gauge
	g. Vane concentricity is off.	Repair the Pump
2.Abnormal noise	a. Suction filter is blocked.	Clean the suction filter
	b. Suction pipe suck the air.	Screw the pump's suction port tightly and check that the other suction port is tight.
	c. Vane concentricity is off.	Repair the Pump.
	d. Pressure set too high.	Check the pressure gauge.
	e. Pump wore out.	Oil is too dirty and must be replace, also replace the pump.
3.Insufficient flow	a. No oil flow out.	Refer to no.1
	b. Rotor wore out.	Repair the pump or replace it.
	c. Pump cap is loose	Re-tighten.
	d. Viscosity	Change to lighter oil grade.

6. Main Component List

Description	Model	QTY	Remarks
Oil tank	16L	1	Hydraulic Power
Gear Pump	2.1cc/r	1	Hydraulic Power
Motor	1.5KW/380V/50Hz	1	Hydraulic Power
Main Block	Aluminium Alloy	1	Hydraulic Power
Single Block	Aluminium Alloy	2	Hydraulic Power
Suction Filter	Power Unit Use	1	Hydraulic Power
Air Breathe	Power Unit Use	1	Hydraulic Power
Check Valve	Power Unit Use	1	Hydraulic Power
Solenoid operated directional valve	SWH-G02-C4-R240-20	2	Hydraulic Power
Modular Blance Valve	MCS -02A-K-2-20	1	Hydraulic Power
Modular Throttle Valve	MTC-02W-K-20	1	Hydraulic Power
Pressure Relief	Power Unit Use	1	Hydraulic Power

7. Hydraulic Oil

Detail of Mineral Based Hydraulic Oil.

Hydraulic oil ISO 46 (For Cold Weather Area)				
Mineral based hydraulic oil				
Property	**Value in metric unit**		**Value in US unit**	
Density at 60°F (15.6°C)	0.871 *10³	kg/m³	54.4	lb/ft³
Kinematic viscosity at 104°F (40°C)	46.3	cSt	46.3	cSt
Kinematic viscosity at 212°F (100°C)	6.94	cSt	6.94	cSt
Viscosity index	106		106	
Flash point	220	ºC	428	ºF
Pour Point	-30	ºC	-22	ºF
Aniline Point	108	ºC	226	ºF
Color	max. 2.0		max. 2.0	

Hydraulic oil ISO 100 (For Hot Weather Area)				
Mineral based hydraulic oil				
Property	**Value in metric unit**		**Value in US unit**	
Density at 60°F (15.6°C)	0.882 *10³	kg/m³	55.0	lb/ft³
Kinematic viscosity at 104°F (40°C)	96.7	cSt	96.7	cSt
Kinematic viscosity at 212°F (100°C)	11.0	cSt	11.0	cSt
Viscosity index	100		100	
Flash point	254	ºC	489	ºF
Pour Point	-27	ºC	-17	ºF
Aniline Point	113	ºC	235	ºF
Color	max. 2.5		max. 2.5	

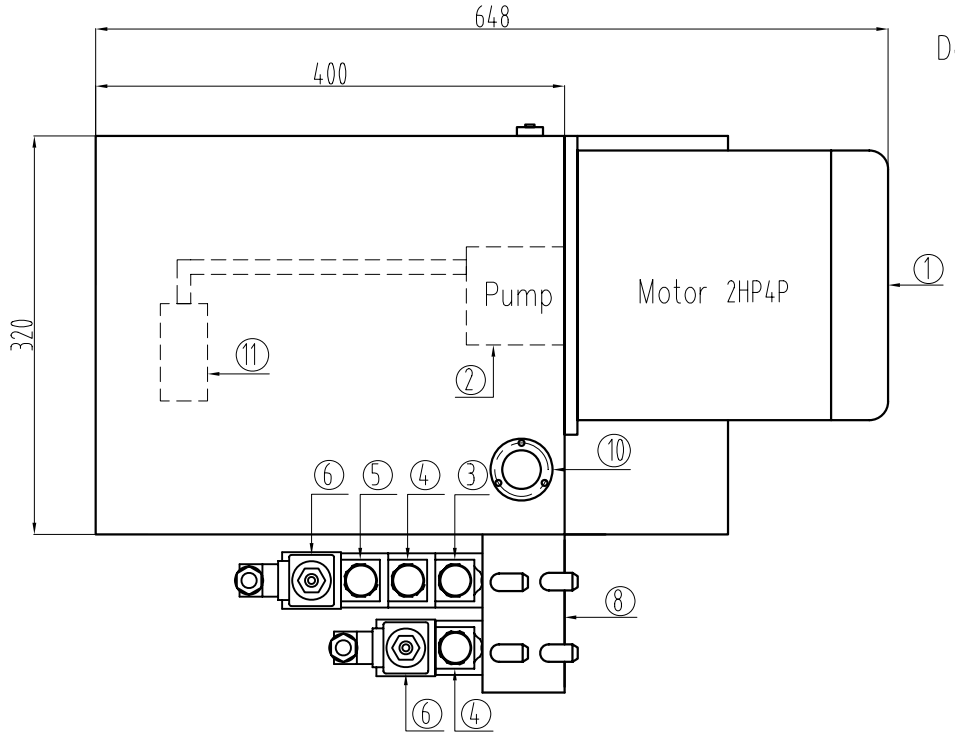
Type of Fluid & Quality of Hydraulic System.

For Cold Weather Area:

Model	Type of Fluid (Oil)	Tank Fluid (L)	Additional amounts standby for each unit, for fill up the empty hoses (L)	Fluid Amounts (L)
TAP3-STD & TAP3-HD	Shell Tellus Oil VG22, Shell Tellus Oil VG32 , Shell Tellus Oil VG46	23	-	23

For Hot Weather Area:

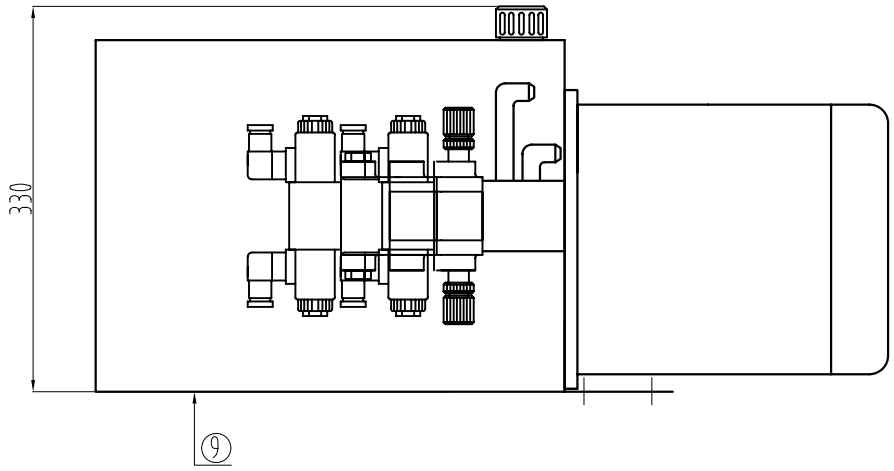
Model	Type of Fluid (Oil)	Tank Fluid (L)	Additional amounts standby for each unit, for fill up the empty hoses (L)	Fluid Amounts (L)
TAP3-STD & TAP3-HD	Shell Tellus Oil VG68, Shell Tellus Oil VG100 ,	23	-	23

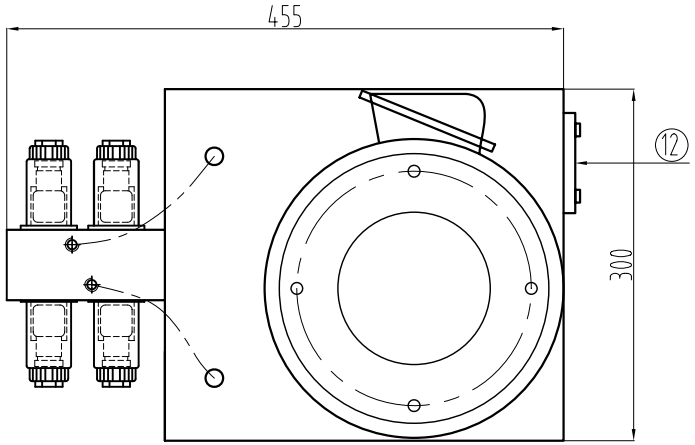


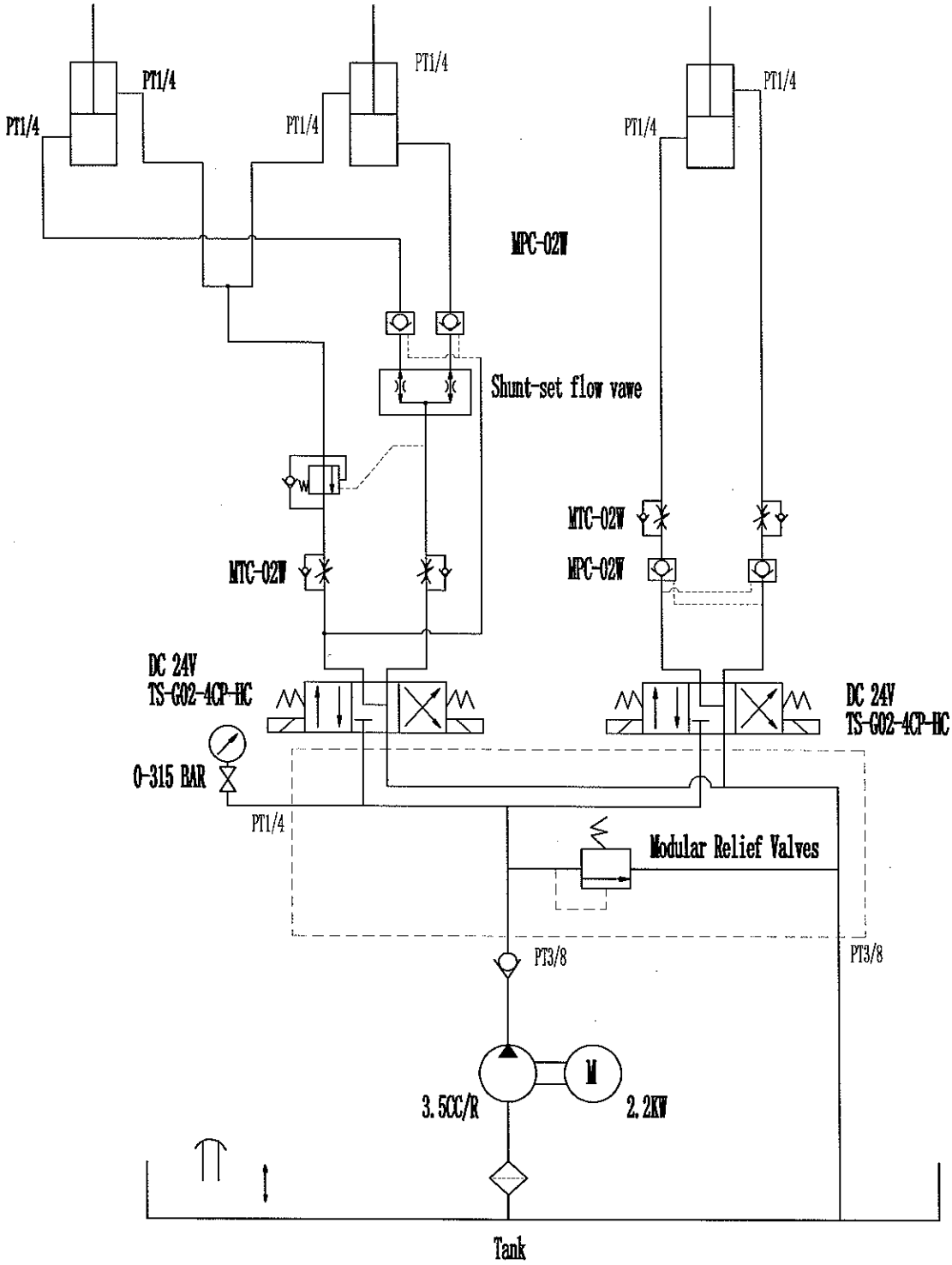
Description: 1 motor: 3HP4P, 400V/50HZ.
2, pump: 3.5ml / r.
3, solenoid valve voltage: 24V.
4, the system working pressure: 14MPA
Maximum working pressure: 20MPA

Valve functions to use:
③: adjust the size of the total pressure
④: transfer shunt flow
⑤: The packing shunt

Order	Name	Specification	Qty
1	Motor	2HP4P,415V/50HZ	1
2	Pump	CBWMA-F2.0-ALPR	1
3	Pressure relief valve	MRB-02P-3-11	1
4	Throttle	MTC-02W-11	2
5	Check valve	MPC-02W-20-11	1
6	Electromagnetic valve	TS-G02-4CP-CC	2
7			
8	Manifold block	125×70×60	1
9	Tank	400×320×300	1
10	Oiling port	HS1162-G	1
11	Suction filter	MF-04	1
12	Oil level meter	LS-3	1







Description:

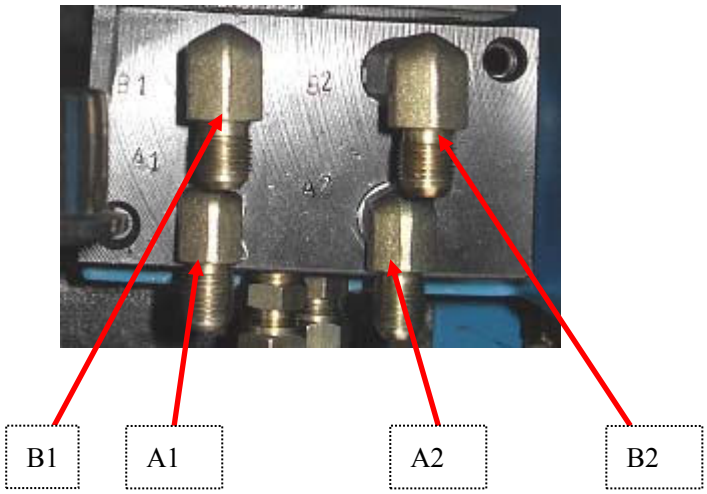
1、The system pressure to use 17 MPA.
maximum working pressure 21 MPA.

2、The maximum flow rate 6L/min.

Asphalt Figure				1		mm	date	09-12-30
name				amount	material	unite	notes	
drawing	audit	approval	proportional	1:1	drawing NO			
			view					

Hydraulic System Installation Manual

1、Asphalf A1 control board turned, B1 under the control turned, A2 control the rise, B2 control the decline in.



2、Then three-phase 400v motor voltage .

3、Solenoid valve terminal voltage is DC24V.

4、Hydraulic station after the system pressure on-site commissioning, Do not re-tune.

5、Koch good gauge on-site commissioning Do not re-commissioning after.

6、Please use ISOVG32、ISOVG46、ISOVG68 or the same grade hydraulic oil.

7、Please replace the first three months, a hydraulic oil ,the replacement once every six months after the hydraulic oil.

8、Oil box of hydraulic oil as no more than two-thirds of the oil level meter.

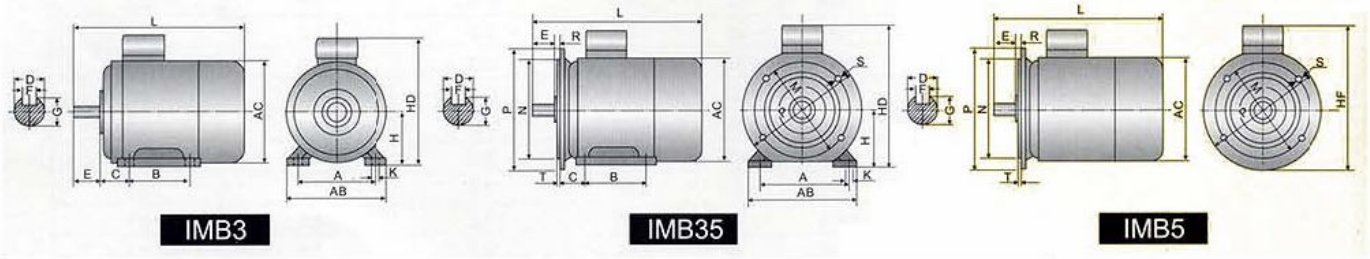
9、Hydraulic box keep the oil temperature at 60 degrees below, if it is over, please contact our technical staff.

APPENDIX E
SPECIFICATION OF GEARBOX & MOTOR

Motors in general run at a very high speed and to accommodate the required operating speed of the positioner a gearbox is necessary. The gearbox houses the gearing system for the positioner and it's primary purpose is to provide a torque speed conversion (commonly known as "Gear Reduction" or "Speed Reduction") from a higher speed motor to a slower but more forceful output. Positioner gearboxes always consist of the primary gearbox & secondary gearbox, exploded views of the positioner gearboxes are shown in the DWG on the following page.

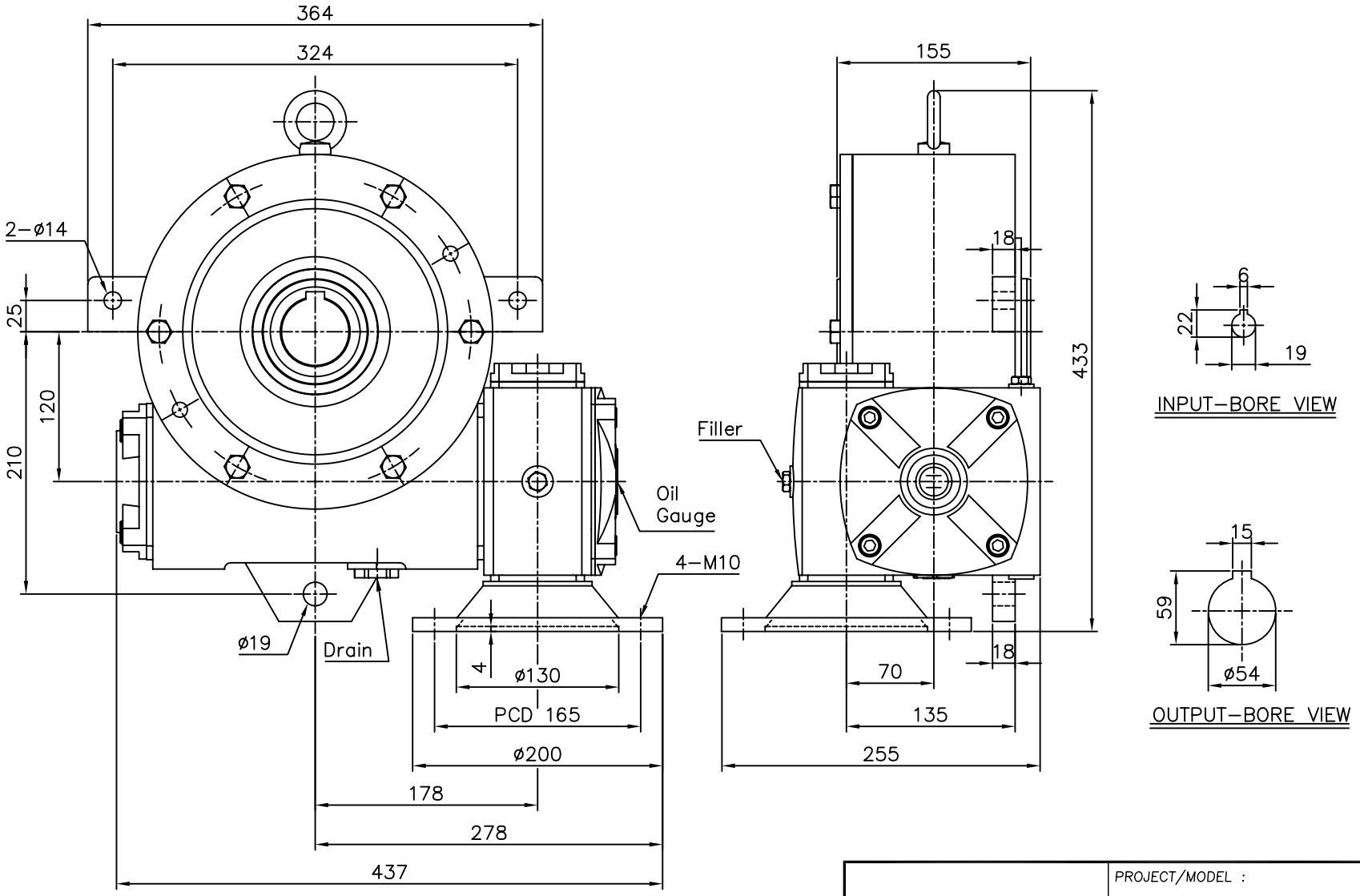
DIMENSIONS OF MSVF SERIES ALUMINUM HOUSING ELECTRIC MOTORS(WITH FORCE COOLING FAN)

Frame Size	Power(kw)				DIMENSIONS OF MOUNTING TYPE B3, B35 AND B5															
	2P	4P	6P	8P	A	B	C	D	DH	E	F	G	GD	H	K	M	N	P	R	S	T
90L		1.5kw			140	125	56	24	M8*19	50	8	20.0	7	90	10.0	165	130	200	0	12	3.5



Frame Size	Power(kw)				B3 Overall Dimensions(mm)					DIMENSION OF B14					
	2P	4P	6P	8P	AB	AC	HD	L	KK	M	N	P	R	S	T
90L					180	195	250	390	1*M25*1.	115	95	140	0	M8	3.5

Specification	IEC 60034-1		Efficiency class	
Motor type	MSVF-90L-B5		Load date	100% 75% 50% 25%
Rated power	1.5	KW	Efficiency	78%
Speed	1500	r.p.m	Power factor	0.85
Voltage	380/400/415	V		
Frequency	50/60	Hz	Sound pressure level(1m)	dB(A)
Connection	Y		Resistance R20	Ω
Amps full load	4.2	A	Full load torque	Nm
Amps no-load			DOL Starting torque vs FL torque	2.3
Enclosure	IP55		DOL Pull up torque vs FL torque	
Insulation Class	F(temp,riseB(80K))		DOL Pull out torque vs FL torque	2.3
Cooling	ICO141		DOL Starting current vs FL current	6
Max.coolant temp	40℃		Grease type	
Max.altitude	1000 mtr,above sea level		Grease Quantity DE	gr
Comment			Grease Quantity NDE	gr
Cable entries			Grease Intervel	2000 h
Feature	Cast-iron motor			
Rotor Inertia	0.0027	kgm^2		
Weight	29	kg	Bearing DE	6205ZZC3
Catalog no			Bearing NDE	6205ZZC3



			PROJECT/MODEL : Gearbox RHX–120–70–1
	NAME	DATE	CLIENT :
DRAWN			
APPROVED			DWG. NAME : General Assembly
			DWG. NO. : RHX–120–70–1
			SCALE: N.T.S
			REVISION: 0
			SHEET NO: 1 OF 1

APPENDIX F
INVERTER

A variable-frequency drive controls the operating speed of an AC motor by controlling the frequency and voltage of the power supplied to the motor. An inverter provides the controlled power. In most cases, the variable frequency drive includes a rectifier so that DC power for the inverter can be provided from main AC power. Since an inverter is the key component, variable frequency drives are sometimes called inverter drives or just inverters.

This type of positioner can be operated from a minimum of 5Hz to a maximum of 50Hz by adjusting the speed knob found in the pendant controller. This in turn updates the frequency value setting of the inverter.

NOTE! *ALWAYS SET THE SPEED TO MINIMUM BEFORE STARTING ANY OPERATION!*

NOTE! *FOR COMPLETE MANUAL, REFER TO THE ORIGINAL ACCOMPANIED HARDCOPY MANUAL OR SOFTCOPY FROM THE MANUFACTURER'S WEBSITE.*

APPENDIX G
CE CERTIFICATE

CE-Certificate included in TAP-STD Series Manual.

ESAB Subsidiaries and Representative Offices

Europe

AUSTRIA
ESAB Ges.m.b.H
Vienna-Liesing
Tel: +43 1 888 25 11
Fax: +43 1 888 25 11 85

BELGIUM
S.A. ESAB N.V.
Brussels
Tel: +32 2 745 11 00
Fax: +32 2 745 11 28

THE CZECH REPUBLIC
ESAB VAMBERK s.r.o.
Vamberk
Tel: +420 2 819 40 885
Fax: +420 2 819 40 120

DENMARK
Aktieselskabet ESAB
Herlev
Tel: +45 36 30 01 11
Fax: +45 36 30 40 03

FINLAND
ESAB Oy
Helsinki
Tel: +358 9 547 761
Fax: +358 9 547 77 71

FRANCE
ESAB France S.A.
Cergy Pontoise
Tel: +33 1 30 75 55 00
Fax: +33 1 30 75 55 24

GERMANY
ESAB GmBH
Solingen
Tel: +49 212 298 0
Fax: +49 212 298 218

GREAT BRITAIN
ESAB Group (UK) Ltd
Waltham Cross
Tel: +44 1992 76 85 15
Fax: +44 1992 71 58 03

ESAB Automation Ltd
Andover
Tel: +44 1264 33 22 33
Fax: +44 1264 33 20 74

HUNGARY
ESAB Kft
Budapest
Tel: +36 1 20 44 182
Fax: +36 1 20 44 186

ITALY
ESAB Saldatura S.p.A.
Mesero (Mi)
Tel: +39 02 97 96 81
Fax: +39 02 97 28 91 81

THE NETHERLANDS
ESAB Nederland B.V.
Utrecht
Tel: +31 30 2485 377
Fax: +31 30 2485 260

NORWAY
AS ESAB
Larvik
Tel: +47 33 12 10 00
Fax: +47 33 11 52 03

POLAND
ESAB Sp.zo.o
Katowice
Tel: +48 32 351 11 00
Fax: +48 32 351 11 20

PORTUGAL
ESAB Lda
Lisbon
Tel: +351 8 310 960
Fax: +351 1 859 1277

SLOVAKIA
ESAB Slovakia s.r.o
Bratislava
Tel: +421 7 44 88 24 26
Fax: +421 7 44 88 87 41

SPAIN
ESAB Ibérica S.A.
Alcalá de Henares (MADRID)
Tel: +34 91 878 3600
Fax: +34 91 802 3461

SWEDEN
ESAB Sverige AB
Gothenburg
Tel: +46 31 50 95 00
Fax: +46 31 50 92 22

ESAB International AB
Gothenburg
Tel: +46 31 50 90 00
Fax: +46 31 50 93 60

SWITZERLAND
ESAB AG
Dietikon
Tel: +41 1 741 25 25
Fax: +41 1 740 30 55

North and South America

ARGENTINA
CONARCO
Buenos Aires
Tel: +54 11 4 753 4039
Fax: +54 11 4 753 6313

BRAZIL
ESAB S.A.
Contagem-MG
Tel: +55 31 2191 4333
Fax: +55 31 2191 4440

CANADA
ESAB Group Canada Inc.
Missisauga, Ontario
Tel: +1 905 670 02 20
Fax: +1 905 670 48 79

MEXICO
ESAB Mexico S.A.
Monterrey
Tel: +52 8 350 5959
Fax: +52 8 350 7554

USA
ESAB Welding & Cutting Products
Florence, SC
Tel: +1 843 669 44 11
Fax: +1 843 664 57 48

Asia/Pacific

CHINA
Shanghai ESAB A/P
Shanghai
Tel: +86 21 5308 9922
Fax: +86 21 6566 6622

INDIA
ESAB India Ltd
Calcutta
Tel: +91 33 478 45 17
Fax: +91 33 468 18 80

INDONESIA
P.T. ESABindo Pratama
Jakarta
Tel: +62 21 460 0188
Fax: +62 21 461 2929

JAPAN
ESAB Japan
Tokyo
Tel: +81 3 5296 7371
Fax: +81 3 5296 8080

MALAYSIA
ESAB (Malaysia) Sdn Bhd
Selangor
Tel: +60 3 8027 9869
Fax: +60 3 8027 4754

SINGAPORE
ESAB Asia/Pacific Pte Ltd
Singapore
Tel: +65 6861 43 22
Fax: +65 6861 31 95

SOUTH KOREA
ESAB SeAH Corporation
Kyungnam
Tel: +82 55 269 8170
Fax: +82 55 289 8864

UNITED ARAB EMIRATES
ESAB Middle East FZE
Dubai
Tel: +971 4 887 21 11
Fax: +971 4 887 22 63

Representative Offices

BULGARIA
ESAB Representative Office
Sofia
Tel/Fax: +359 2 974 42 88

EGYPT
ESAB Egypt
Dokki-Cairo
Tel: +20 2 390 96 69
Fax: +20 2 393 32 13

ROMANIA
ESAB Representative Office
Bucharest
Tel/Fax: +40 1 322 36 74

RUSSIA
LLC ESAB
Moscow
Tel: +7 095 543 9281
Fax: +7 095 543 9280

LLC ESAB
St Petersburg
Tel: +7 812 336 7080
Fax: +7 812 336 7060

Distributors

For addresses and phone numbers to our distributors in other countries, please visit our home page

www.romar.com.sg

ESAB/Romar Positioning Equipment
International Pte Ltd
18 Tuas Crescent
Singapore 638712
Phone +65 68610928/68613978

www.romar.com.sg