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CONTENT

Ⅲ. PARTS LIST

I . INSTALLATION OF MACHINE

1. DIMENSION & FLOOR REQUIREMENT:

The minimum space for machine:

For your convenience to operate, please take the walkway into consideration. Therefore, the ideal space for machine should be:

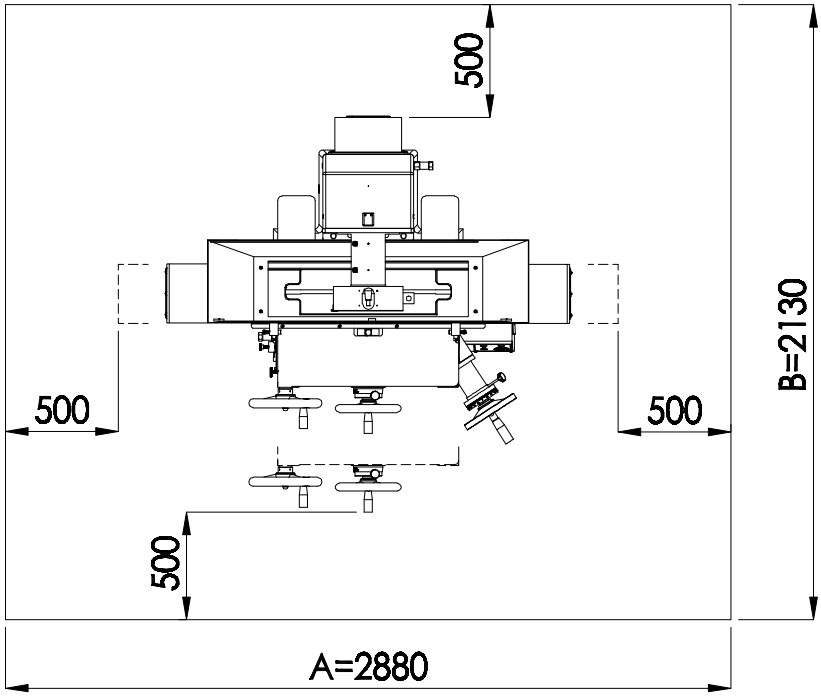
CB-618ASD:

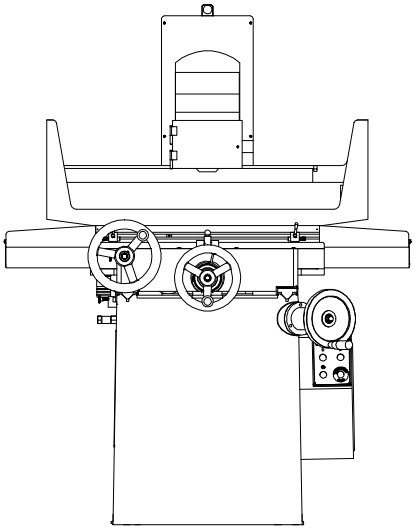
A - 2880MM (115")

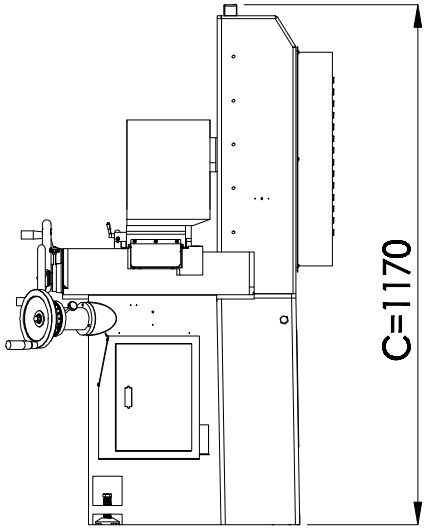
B - 2130MM (85")

C - 1170MM (47")

Note: Keep the machine away from the environment which might cause any explosion.







I . INSTALLATION OF MACHINE

2. REQUIREMENT OF THE GROUND:

Firm, steady, well constructed ground, and a well adjusted levelness of machine are the essential elements for precision grinding. The heat from the sunshine, and any vibration might also influence the precision.

The foundation for the machine needs:

(1)The bearing strength for machine should be more than 2 tons/㎡.

(2)Avoid the sun shining directly on the grinder.

(3)Avoid locating machine near other machines, such as Press or EDM.

(4)Good ventilation.

(5)Please install your machine based on the foundation plan.

(6)Foundation drawing please refer to the following:

3. REQUIREMENT OF THE ENVIROMENT:

As there's no anti-explosive electrical device, this machine cannot be operated in a potentially explosive environment. The requirement of the environment for this machine is as the below:

(1)Temperature: 5~40℃; However, if you're doing very precise grinding, please keep the temperature around 20℃.

(2)Relative humidity: 30%~95%, no dew allowed.

(3)Atmosphere: don't allow dust, corrosive fumes, salt, or acidic air in the neighborhood.

(4)Avoid any vibrating environment.

(5)Avoid sun shining directly on the machine.

(6)Avoid the disturbance from electromagnetism.

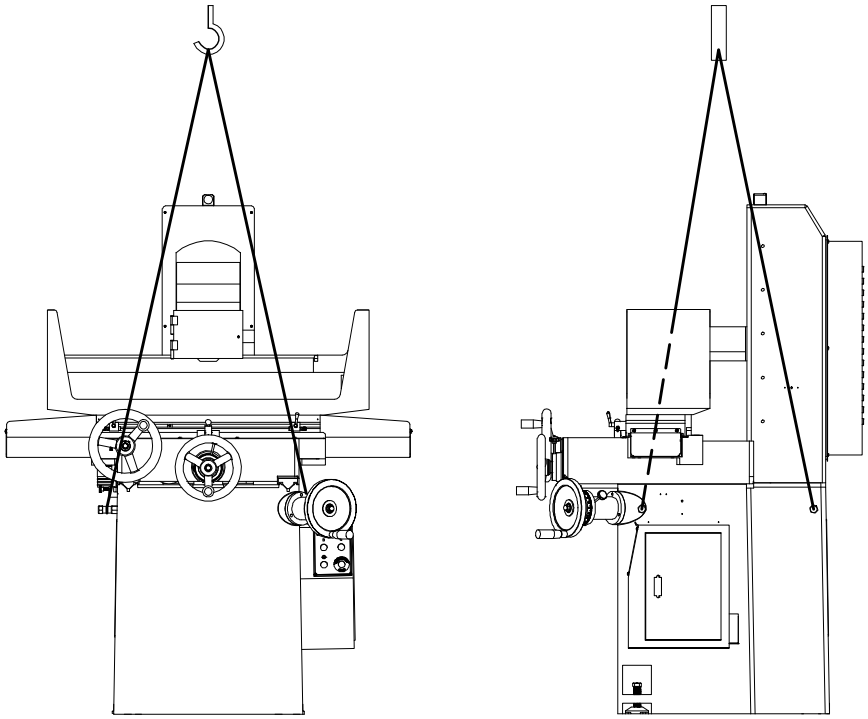
Light level: above 200 Lux.

I . INSTALLATION OF MACHINE

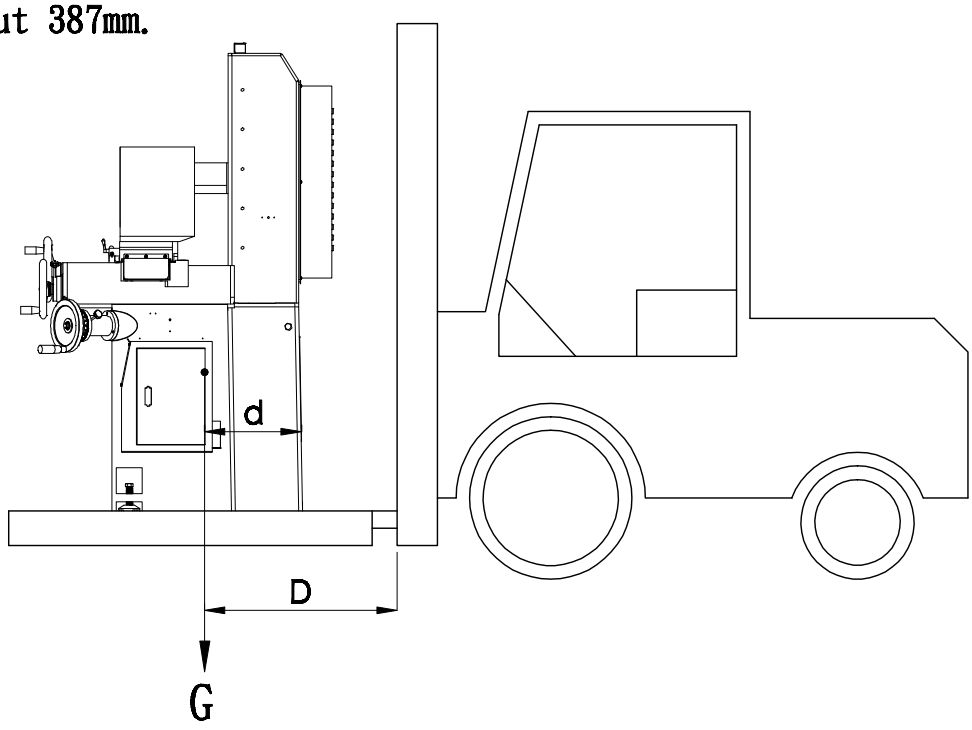
4. TRANSPORTATION OF MACHINE:

N.W: 740~840 KGS; G.W: 840~940 KGS

(1) CRANE LIFTING: Use steel cable or belt for hanging.
(As shown on the below drawing.)



(2)FORK LIFTING: Use the fork lift for transportation.
D: Distance the shorter the better.
G: Center of gravity.
d: About 387mm.

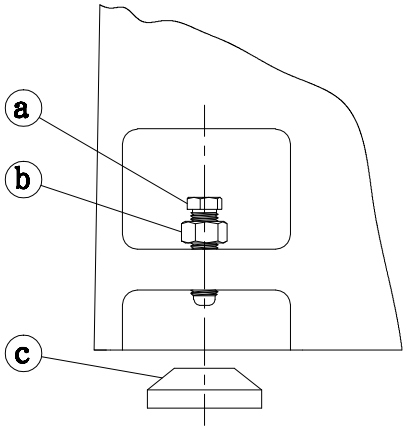


Ⅰ. INSTALLATION OF MACHINE

5. LEVELING BOLT & PAD

(1)Lock the leveling bolts and nuts onto the basement, and put the leveling pads under the machine. Lay down the machine carefully and adjust the leveling bolt to set at the center of the leveling pad.

(2)Follow the above to locate every leveling bolt on each pad, but leave the nuts un-tightened.



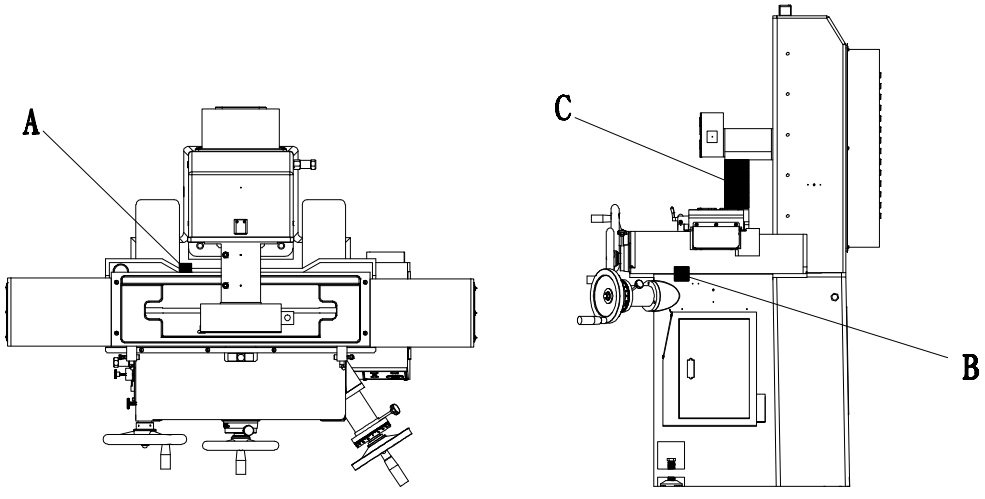
a. Leveling bolt
b. Screw nut
c. Leveling pad

6. REMOVE THE CLAMPS

When the machine is fixed on the required location, please remove the clamps. Do not cast away the clamps, they could be prepared for next transportation.

NOTE: (1) Before dismantling the crossfeed (B) and longitudinal (A) fixing blocks, please don't operate the handwheels to move the machine in case of any damage.

(2) Using the vertical feed handwheel to move the spindle upward to take off the fixing wooden block (C).



Ⅰ. INSTALLATION OF MACHINE

7. REMOVE DESICCANT & CLEAN THE ANTI-RUST OIL:

The machine has coated with the anti-rust oil and hanged desiccant to prevent rusting.

The brown cream on the surface of machine is anti-rust oil.

We coated the anti-rust oil on the table, spindle nose…., etc., and the desiccant will be put inside the electrical box, or hang on the table…., etc. After installation, please take off the desiccant and use cleaning rag with diesel to wipe off the anti-rust oil. Do not use any liquid that might corrode metal to do the job.

8. LEVELNESS ADJUSTMENT:

(1)Necessary tools: Leveling gauge x 2 sets (Tolerance: 0.02mm); Spanner x 2 sets (M20).

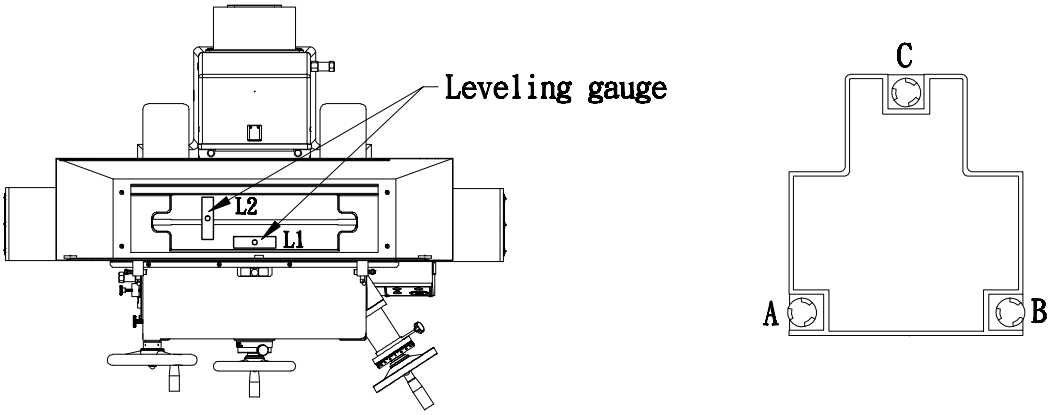
(2)Clean up the table surface or magnetic chuck, and put 2 sets of leveling gauge on by crosswise and longitudinal direction (L1 & L2).

(3)First, adjust the leveling bolts A & B to set the leveling bubble of leveling gauge L1 at the center (tolerance maintains within 1 scale). Secondly adjust the leveling bolt C to keep the bubble of the leveling gauge L2 at the center (tolerance maintains within 1 scale).

Repeat the adjustment methods until the tolerance of both leveling gauges satisfy the precision requirement.

(4)After the adjustment, tighten the screw nuts.

(5)Newly set up machine should check the levelness once in a week. And after that, check up should be made every six months.

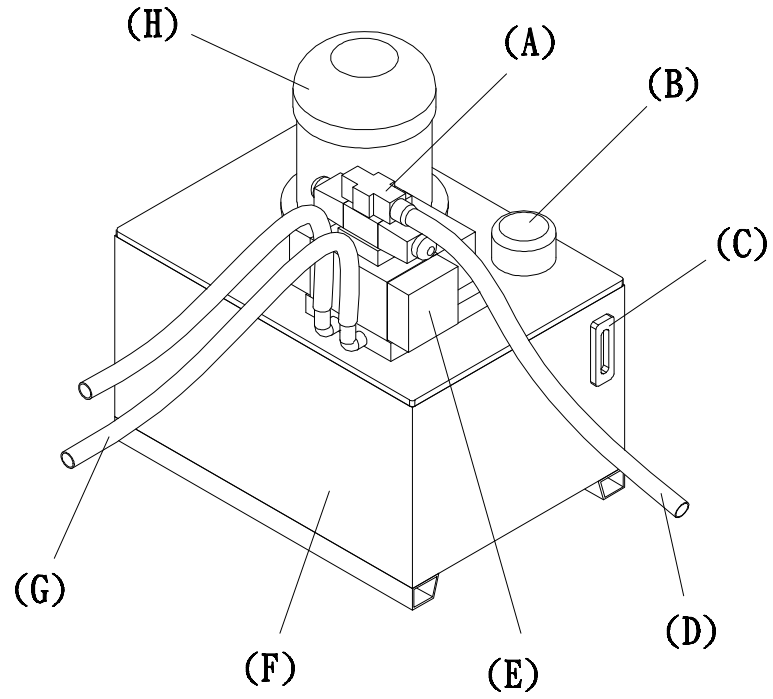


I . INSTALLATION OF MACHINE

9. HYDRAULIC SYSTEM SET UP:

(1) Hydraulic oil capacity: total oil tank is about 105 liters.

(2) Please check the drawing below about the oil inlet and outlet of hydraulic system. First, please locate the hydraulic tank in the right and beside the machine. Secondly, connect the hydraulic pipes according to the tags attached on the pipes and the oil tank. Thirdly, fill in sufficient oil with recommended oil brand. The oil level must maintain within the required amount shown on the oil gauge.



(A) Hydraulic solenoid valve
(B) Oil filler cover
(C) Oil gauge
(D) Power cable
(E) Directional control unit
(F) Oil tank
(G) Oil pipe
(H) Hydraulic motor

(3) Connect the power cables into the electrical box by the labels on them.

To ensure the performance of hydraulic system, please obey the below:

(1)First-time oil replacement should be done after 3 months operation.

(2)Replace the oil and the filter at an interval of 6 months after the first replacement.

(3)Check the pressure of pump within 12~16 Kg/cm2.

*Hydraulic system is properly adjusted before shipment. Unless it's necessary, please don't re-adjust it casually.

*Clean the filter of hydraulic tank every 6 months. Please discard the waste material according to the government sanitation or environmental laws.

Please be sure to fill the following suggested oil:

BRAND	TYPE	BRAND	TYPE
SUN	SUNVIS 916	SHELL	TELUS 32
SHOWA	A-R32	MOBIL	D.T.E 24
ESSO	NUTO H32	TEXACO	LUBE TAC #2
BP	ENERGOL HLP 32	ARAL	VITAM GF 32

10. AUTO LUBRICATION OIL CIRCULATION SYSTEM:

(1)With the spindle activation, this system starts immediately to constantly deliver the lubrication oil to necessary guide ways for smoothness and prevent wear out.

(2)A lubrication oil gauge (G) mounted on the top of the column for monitoring. Whenever the machine is on, it's obvious to check the oil from this gauge.

(3)Recommended oil brand: CPC #32 SLIDEWAY OIL or ISO #G68

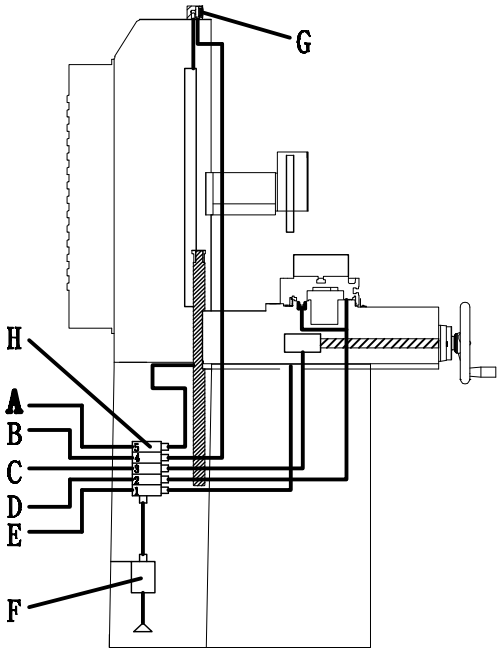
(4)Oil capacity: 4 liters.

I . INSTALLATION OF MACHINE

10. AUTO LUBRICATION OIL CIRCULATION SYSTEM:

(5)Parts list:

A. Vertical feed screw
B. Vertical slideways
C. Cross feed screw
D. Longitudinal slideways
E. Cross slideways
F. Lubrication oil pump
G. Lubrication oil gauge
H. Oil distributor



Note: Diseases of the skin may be caused by continuous contact with the oil, particularly with neat oil, and also with soluble oil. The following precautions should be taken:

1.: Avoid unnecessary contact with the oil.
2.: Wear protective clothing.
3.: Use protective shields.
4.: Do not wear oil soaked or contaminated clothing.
5.: After work thoroughly wash all parts of the body that has contact with the oil.
6.: Change the oil regularly.
7.: Dispose the oil correctly and properly.

Ⅰ. INSTALLATION OF MACHINE

11. REQUIREMENT OF THE ELECTRICITY:

(1)Voltage: 3 Phases, AC voltage which is decided by customers, rated voltage: 0.9~1.1.
(2)Frequency: 50/60Hz, 0.99~1.01 rated frequency.
(3)Voltage for electromagnetic chuck: Max. DC 110V (optional accessory).
(4)Electricity consumption: 3 KVA.
(5)Connecting wire: 2mm (R, S, T, E)
(6)Check the rotation direction of the spindle motor, hydraulic motor and so on after the wire connection.
Make sure all the motors rotation is by clockwise.
We've done the test before the shipment, if one of the motors rotation is normal, the rest will be the same.

Ⅱ. SAFETY PRECAUTIONS

Safety first!

We're glad to provide the information for using machines safely, to assist and keep safety while you're working, and to help avoiding any damage to the machine. We present this manual for your reference.

Please check if there's any pages missing in your manual as soon as you receive the machine. Let us or the agent nearby know if there's any insufficiency.

Put your manual near the machine in case you want to read it. Also keep the manual carefully so that you'll be able to read it any time you want.

Please use your experience and the information from this manual to get the most secure working environment.

1. GENERAL OPERATING SAFETY PRECAUTIONS:

1.1.: Machine usage - Obey every message and instructions you learn from the manual.
1.2.: Only an operator who is well trained for grinding machines should operate and maintain the machine.
1.3.: Please read and understand the manuals before using the machines.
1.4.: Keep the working area clean, and leave no oil spot.
1.5.: Do not wear gloves while operating machines.
1.6.: Please wear suitable outfit while operating machines. Tie up your sleeve links and don't wear any necktie.
1.7.: Do not touch any moving or rotating parts of the machine.
1.8.: Do not touch or open the parts where we have the electrical signs on, such as electrical box.
1.9.: Turn off the power before maintenance or leaving machine unattended.
1.10.: Make sure you have enough light in your working area.

Ⅱ. SAFETY PRECAUTIONS

1. GENERAL OPERATING SAFETY PRECAUTIONS:

1.11.: Prepare non-electric-conductor fire extinguisher (dry powder) in case of any fire danger.

1.12.: Stop the machine immediately if anything unexpected happens.

2. SAFETY PRECAUTIONS FOR OPERATING MACHINE:

For using this machine safely, please ask every operator, maintenance technician or any other people to obey the safety precautions. To obey the safety precautions below will reduce the danger of any possible damage.

2.1.: This machine can only grind metal workpiece. But do not grind magnesium or magnesium alloy.

2.2.: This machine cannot be used in a place where there's gas which is easy to burn or explode.

2.3.: Do not disassemble any protective guard before using.

2.4.: Please read an understand your manual before operation.

2.5.: Check the position of emergency stop buttons and other stop button before operation.

2.6.: Confirm the function of the buttons before operation.

2.7.: Wear safety glasses.

2.8.: Make sure every switch is in the position of "OFF" before operation.

2.9.: Require people with experiences to balance and install the grinding wheel.

2.10.:Check the running direction of the grinding wheel before operating.

2.11.:Turn on the power to rotate the grinding wheel about five minutes at least, then start to work.

2.12.:Check if the workpiece is secure on the table or magnetic chuck and is very steady before operation.

2.13.:Stop the movement of the table before adjusting the travel of cross and longitudinal movement.

Ⅱ. SAFETY PRECAUTIONS

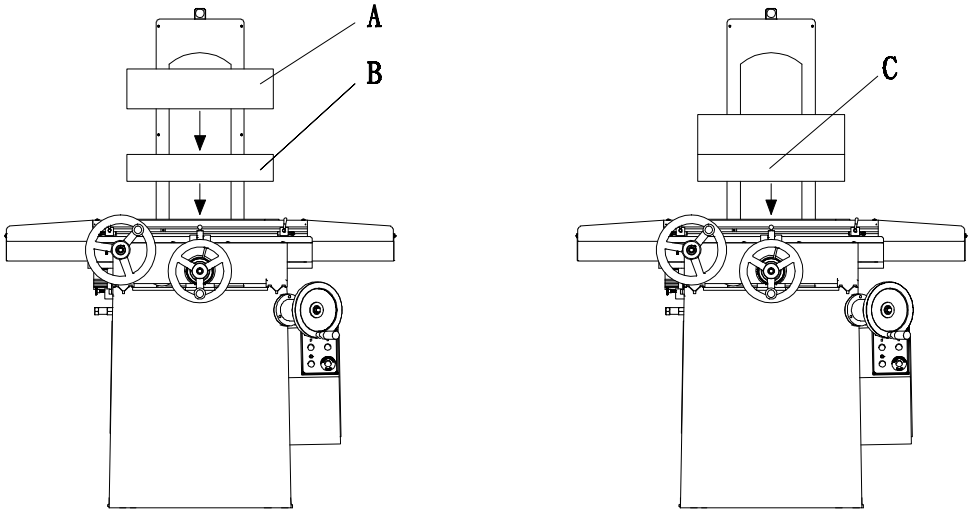
2. SAFETY PRECAUTIONS FOR OPERATING MACHINE:

2.14. :Before changing the procedure of grinding, make sure the machine stops completely.
2.15. :Never use any coolant liquid that is easy to burn or poisonous.
2.16. :The grinding wheel of this machine should be able to handle at least 2000M/min. speed.
2.17. :Do not grind on the side of the grinding wheel.
2.18. :Do not change any electrics or parts of machine.
2.19. :Require qualified people to maintain the electrical parts of machine.
2.20. :Do not tear off the warning signs on the machine. If they are not clear or damaged, please contact your agent or our sales department for replacement.
2.21. :Never mount on a workpiece too large for the machine.
2.22. :Use the correct lifting equipment for handling.
2.23. :Never use excessive depth of grinding or feed rate.
2.24. :Do not run the machine unattended.
2.25. :Turn off the coolant before stopping wheel.
2.26. :Do not grind the material for which the wheel is not designed.
2.27. :Dress the wheel regularly to avoid loading.

Ⅱ. SAFETY PRECAUTIONS

3. TABLE LOADING CAPACITY:

A = Workpiece weight: 160KGS, B = Magnetic chuck weight: 20KGS,
C = A+B Total weight: 180KGS



4. GENERAL GRINDING:

(1). Grinding volume: If it's for mass grinding volume, it's recommended choosing low grain size grinding wheel (about #30~#36), and set the dressing speed fast.

(2) If it's for smooth/polishing surface grinding, it's recommended choosing high grain size grinding wheel (about #46~#80), and set the dressing speed low.

(3) Table deforming: Mostly, the reason for this is set the grinding value too much, grinding face gets worn out or less of cooling. Find the reason and fix it.

(4) Workpiece burnt out: if this happens, mostly the reason is the grinding wheel gets worn out or too much chips stuck in the grinding wheel.

NOTE: Correctly choosing suitable grinding wheel and proper operation has effective influence on the grinding performance.

Ⅱ. SAFETY PRECAUTIONS

5. GRINDING WHEEL ASSEMBLY:

(1) Choosing correct grinding wheel and do the sound test to decide which grinding wheel is suitable for your production. Please check the below:

a. Check if there's any crack, damage or notch in the wheel. Abandon the wheel with any of the above problem.

b. See if there's any label or paper on the wheel, and don't tear them off.

c. Check if there's anything between flange and the wheel. Clean it up before set up.

d. See if the wheel got deformed. If it is, abandon it.

(2) Tap the wheel with a wooden hammer, listen if there's any metal sound, and also change the places you tap to listen if there's any different sound. Cracks of the wheel will reveal by different sound.

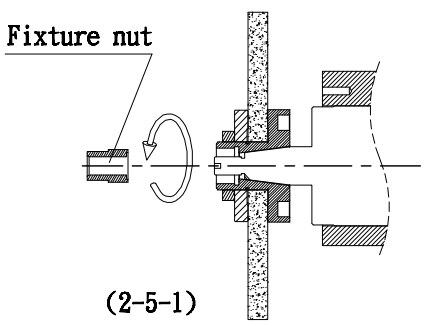
(3) After using the grinding wheel for a period of time, check and tighten the wheel with the flange again.

6. GRINDING WHEEL ENGAGE/DISENGAGE PROCEDURE:

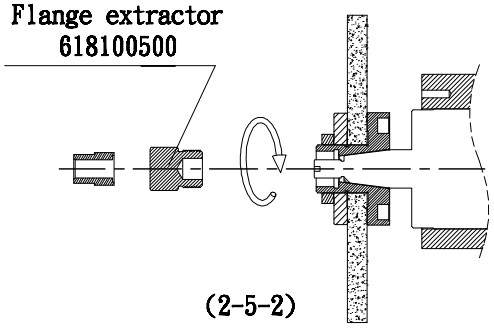
ENGAGE:(a) Clean the contact surface of the spindle taper and the I.D. of wheel flange, and apply some oil on. Then it's OK to put the wheel & flange set onto the spindle.

(b) Screw up the fixture nut by counter-clockwise direction to fasten the wheel & flange set on the spindle. (2-5-1)

DISENGAGE: Loosen the fixture nut and take it off. Then screw in he flange extractor to draw out the wheel & flange set from the spindle. (2-5-2)



(2-5-1)



(2-5-2)

Ⅱ. SAFETY PRECAUTIONS

7. GRINDING WHEEL BALANCING ADJUSTMENT:

In order to obtain fine surface finish, the grinding wheel must be checked and re-balanced periodically. A standard and well balanced grinding wheel is supplied from the grinder manufacturer. Please note the following procedure for balancing.

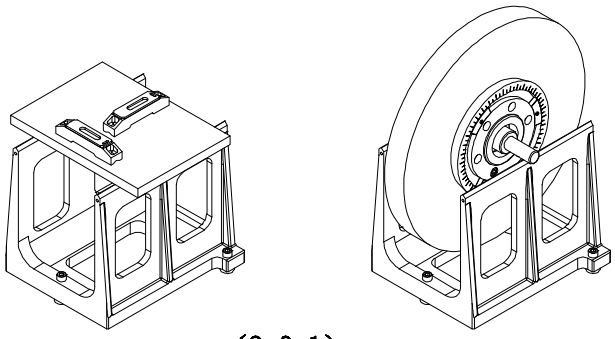
(1)Put the balancing stand on a steady table or ground, and use the leveling gauge to adjust the levelness of the balancing stand. (2-6-1)

(2)Let the wheel roll freely on the stand to find out its gravity center "W" and mark it on the wheel. (2-6-2)

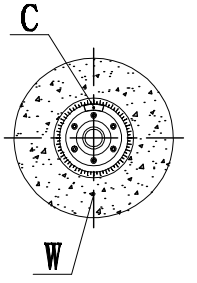
(3)Insert a balancing block into the opposite side as "C", and rotate the wheel 90 degrees to check which side is heavier. (2-6-3)

(4)Insert another balancing block on heavier side as "K", in which is on the same arc from "C" point. (2-6-4)

(5)Turn the wheel 90 degrees to check the balance of the wheel. If it's still not well balanced, repeat the above method until the wheel balance is done. If it requires to do the grinding on different workpiece material, it's better to change the wheel with the flange set to save time for balancing. (2-6-5)



(2-6-1)



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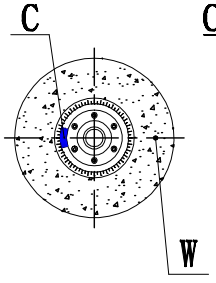
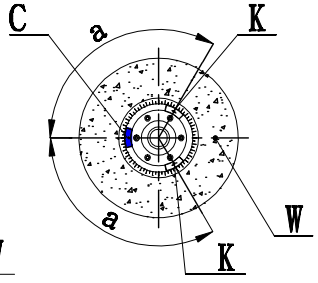


(2-6-3)



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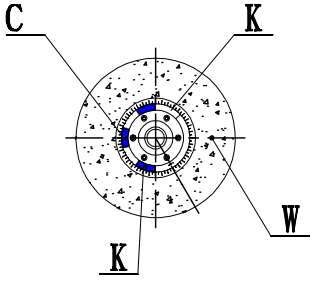
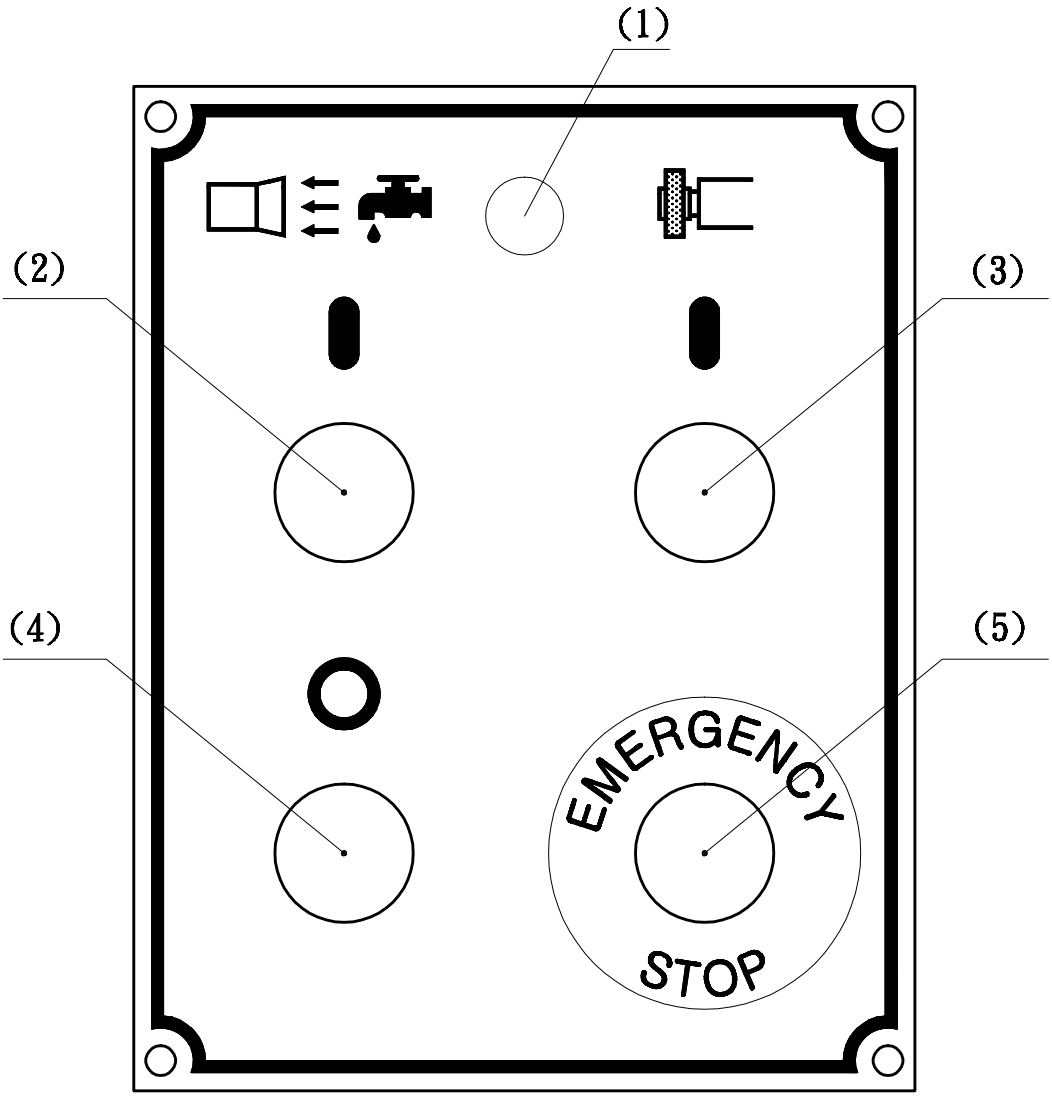


(2-6-5)

Ⅱ. SAFETY PRECAUTIONS

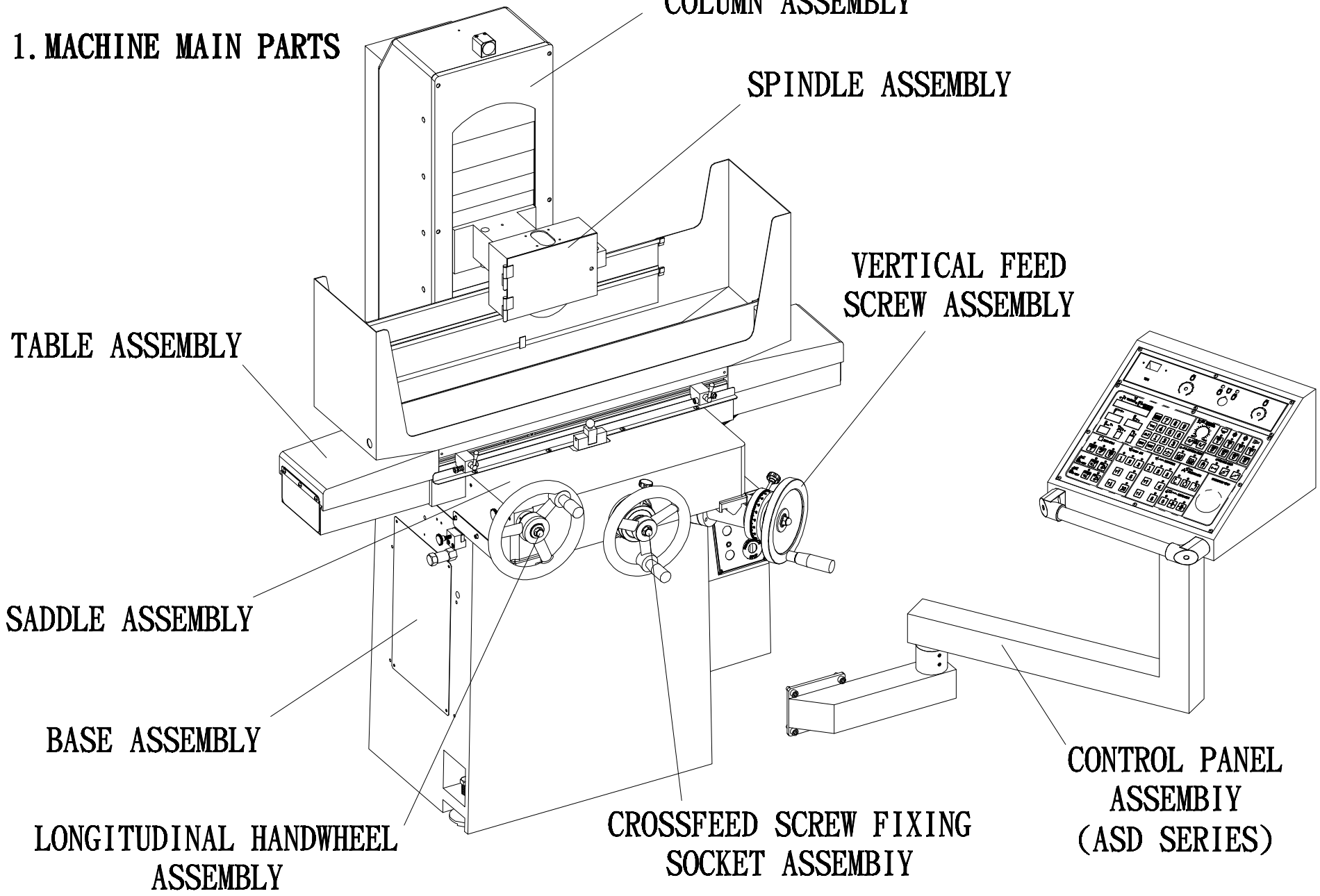
8. CONTROL PANEL (MANUAL TYPE)

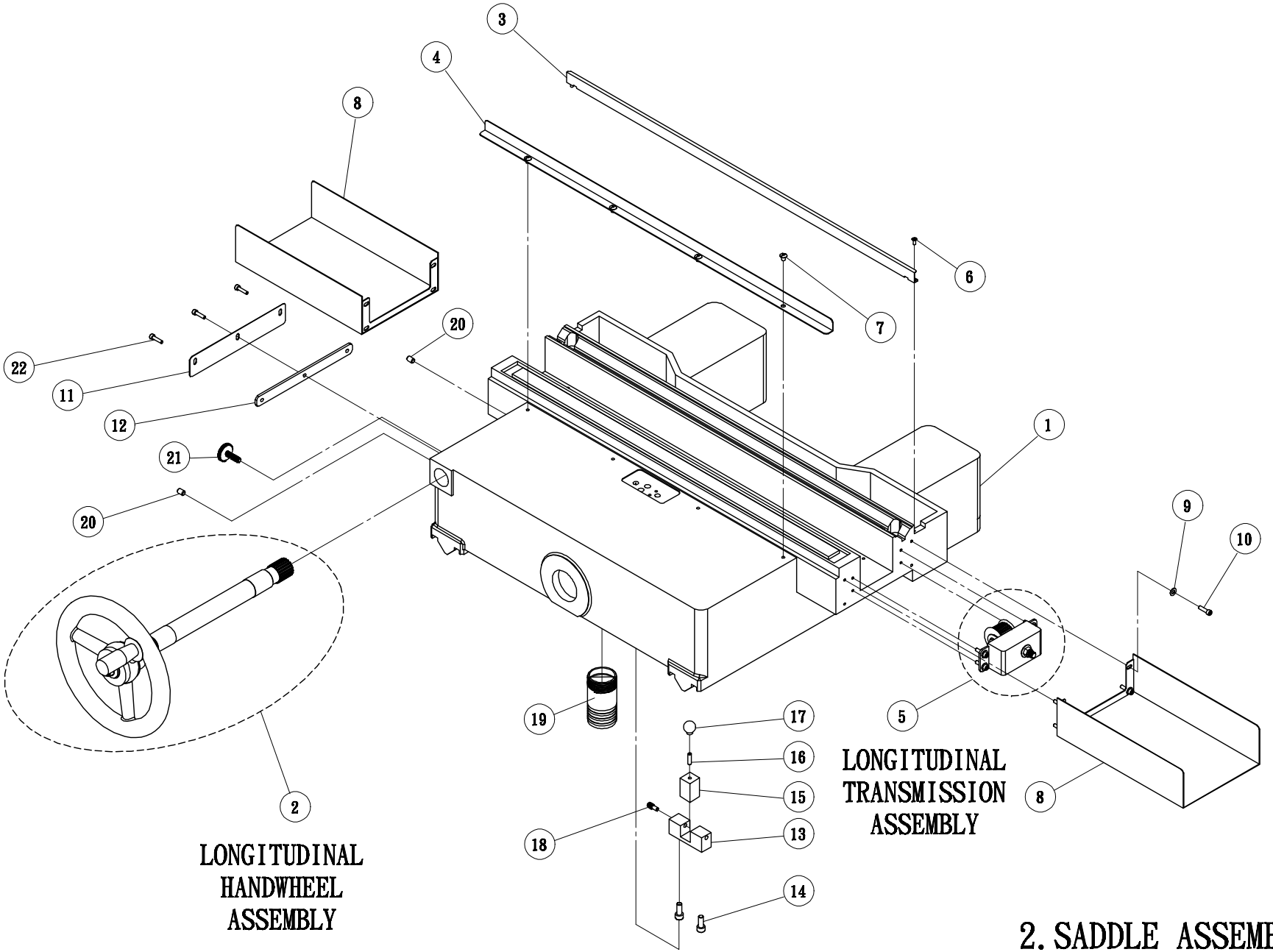


(1) Power supply indication light: With the light on, it means the power supply is normal.
(2) Coolant on button: Press this button, with the light on, it means the coolant system is activated.
(3) Spindle on button: Press this button, with the light on, it means the spindle is activated.
(4) Coolant off button: Press this button, the coolant system will stop running.
(5) Emergency stop button: Press this button will shut down all the functions in the machine.

Ⅲ. PARTS LIST

1. MACHINE MAIN PARTS

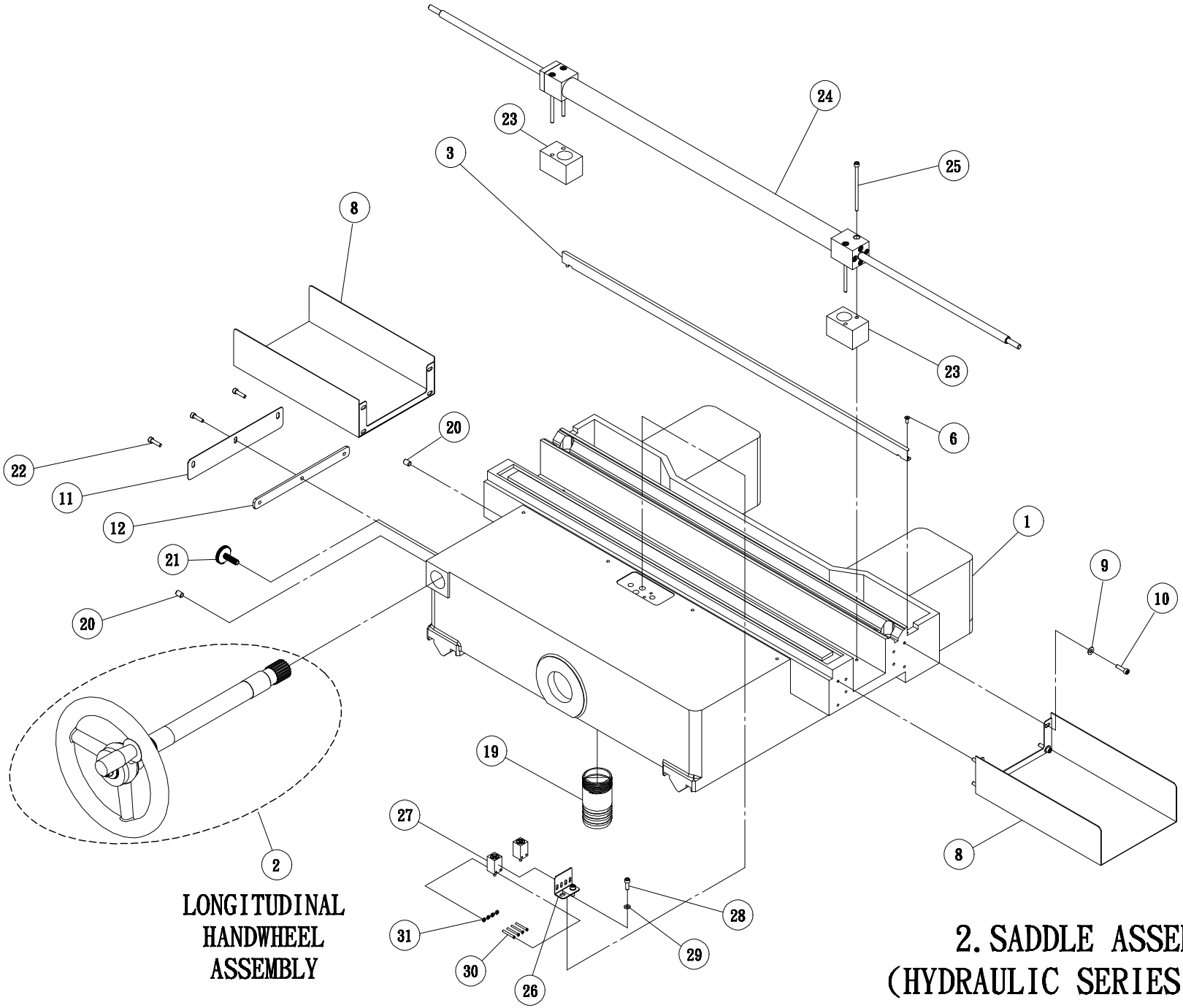




2. SADDLE ASSEMBLY (BELT TYPE)

SADDLE ASSEMBLY(BELT TYPE)

NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	618-01-010A	Saddle	1	
2		Longitudinal Handwheel Assembly	1set	
3	NB618-06-12	Dust proof bar(Rear)	1	
4	NB618-06-11	Dust proof bar(Front)	1	
5		Longitudinal Transmission Assembly	1set	
6	M4x0.7Px8L	Flat head screw	2	
7	M6x1.0Px8L	Cross round head screw	4	
8	NB618-06-07	Dust proof plate	2	
9	6.5x13x1	Washer	4	
10	M5x0.8Px20L	Inner hexagonal screw	7	
11	618-01-027	Crossfeed locking bar (Outer)	1	
12	618-01-028	Crossfeed locking bar (Inner)	1	
13	618-01-024	Longitudinal travel fixing seat	1	
14	M8x1.25Px20L	Inner hexagonal screw	2	
15	618-01-022	Longitudinal travel fixing block	1	
16	M6x20L	Inner hexagonal headless screw	1	
17	618-01-021	Plastic round ball	1	
18	618-01-025	Pin	1	
19	618-01-026	Pipe	1	
20	M5x12L	Inner hexagonal headless screw	2	
21	618-01-011	Handwheel handle	1	
22	M5x0.8Px20L	Inner hexagonal screw	3	

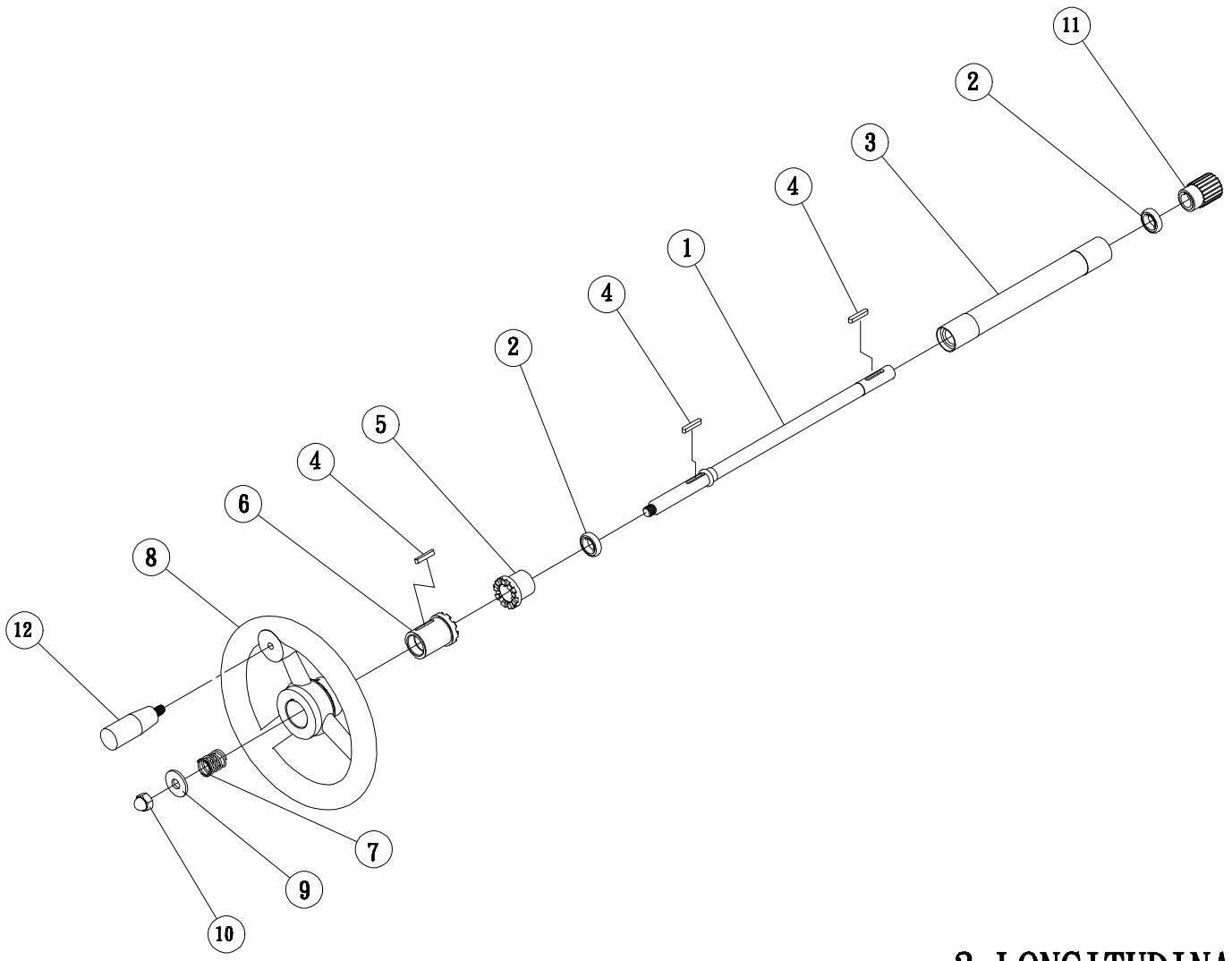


LONGITUDINAL
HANDWHEEL
ASSEMBLY

2. SADDLE ASSEMBLY (HYDRAULIC SERIES 1A~ASD)

SADDLE ASSEMBLY(HYDRAULIC SERIES 1A~ASD)

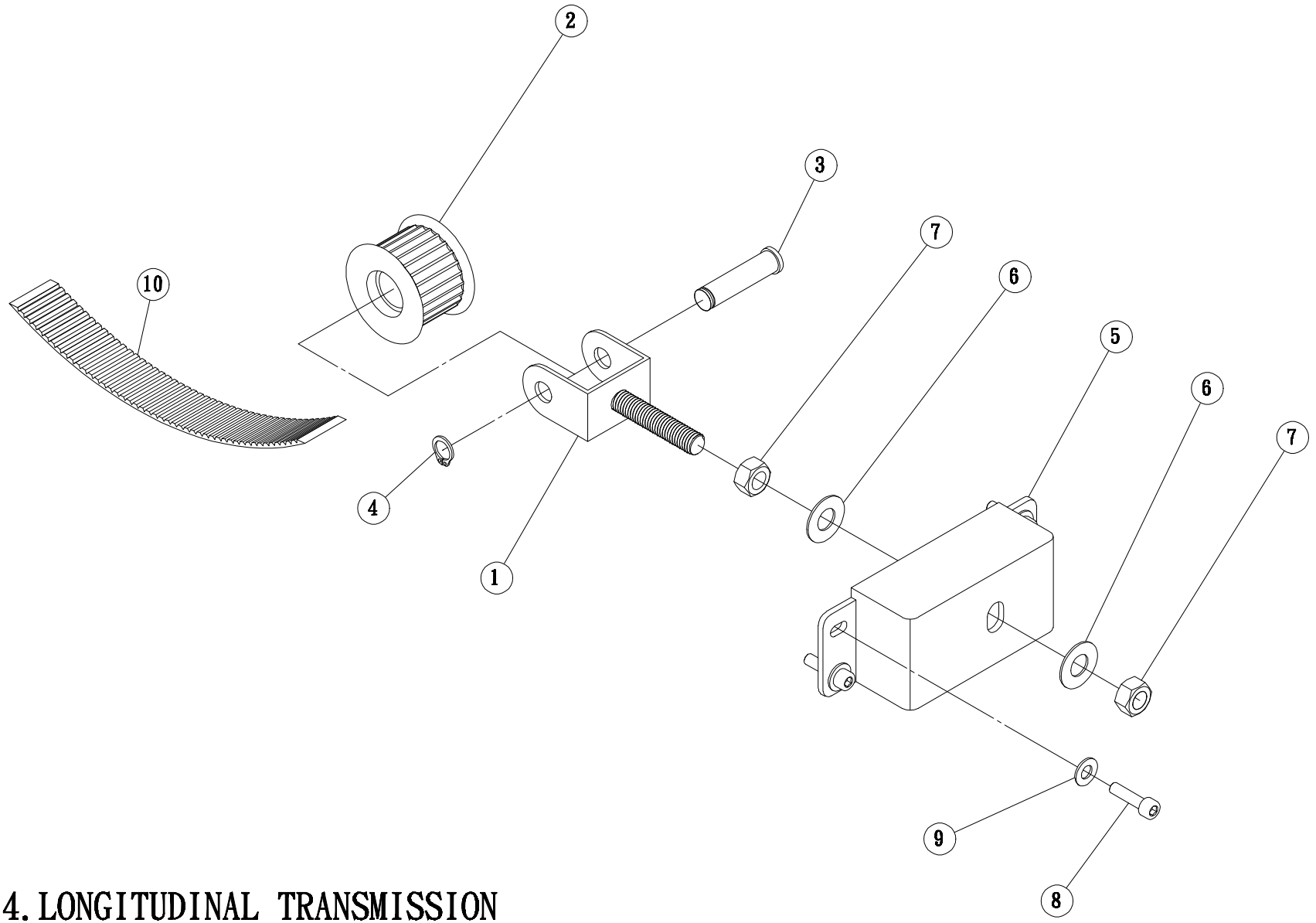
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	618-01-010A	Saddle	1	
2		Longitudinal Handwheel Assembly	1set	
3	NB618-06-12	Dust proof bar(Rear)	1	
6	M4x0.7Px8L	Flat head screw	2	
8	NB618-06-07	Dust proof plate	2	
9	6.5x13x1	Washer	4	
10	M5x0.8Px20L	Inner hexagonal screw	7	
11	618-01-027	Crossfeed locking bar (Outer)	1	
12	618-01-028	Crossfeed locking bar (Inner)	1	
19	618-01-026	Pipe	1	
20	M5x12L	Inner hexagonal headless screw	2	
21	618-01-011	Handwheel handle	1	
22	M5x0.8Px20L	Inner hexagonal screw	3	
23	618401100	Cylinder fixing block	2	
24	R1-25x560A	Cylinder set	1	
25	M5x0.8Px90L	Inner hexagonal screw	4	
26	618-01-047	Switch fixing seat	1	
27	TL-B5NE1	Longitudinal proximity switch	2	
28	M5x0.8Px15L	Inner hexagonal screw	2	
29	5x10x1	Washer	2	
30	M3x0.5Px25L	Cross round head screw	4	
31	M3x0.5Px6Wx2.5H	Nut	4	



3. LONGITUDINAL HANDWHEEL ASSEMBLY

LONGITUDINAL HANDWHEEL ASSEMBLY

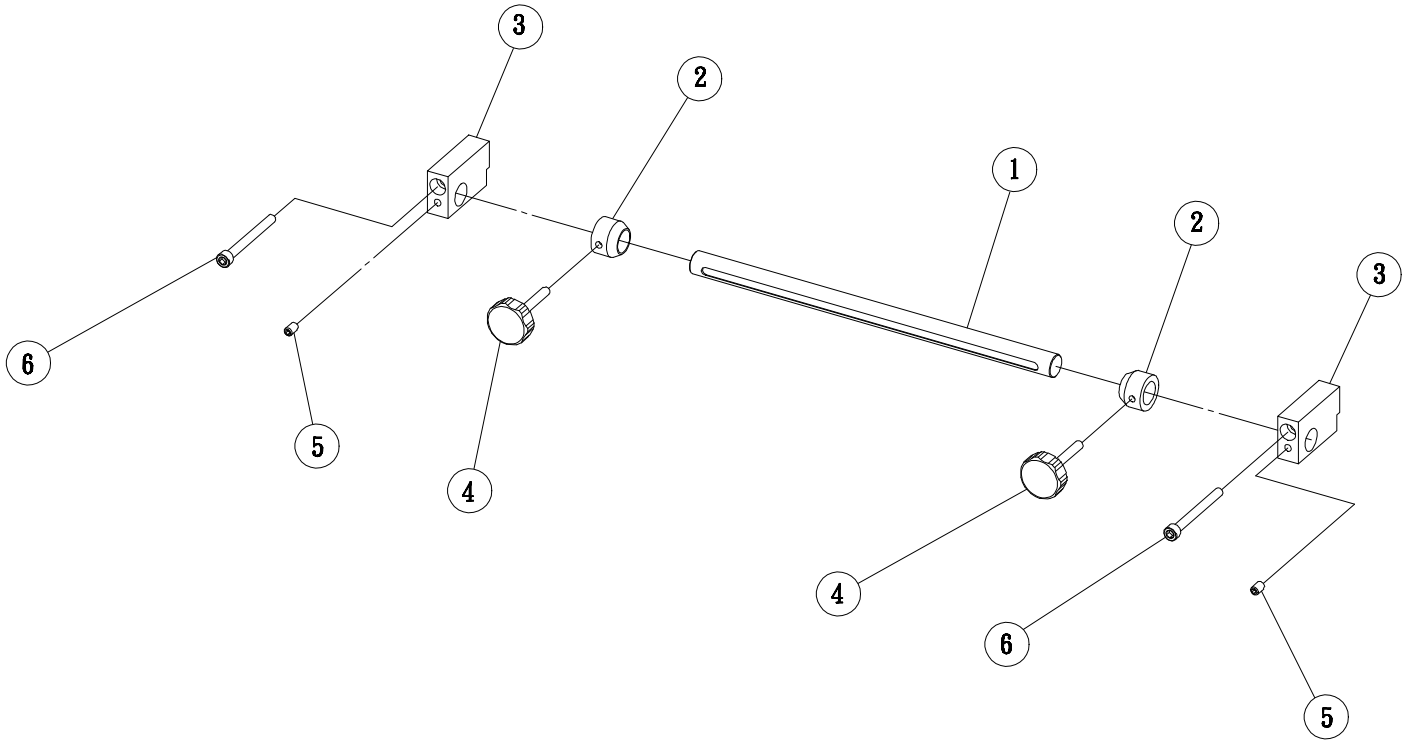
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	NB618-06-05	Transmission shaft	1	
2	6903ZZ(17x30x7)	Bearing	2	
3	NB618-06-04	Shaft housing	1	
4	5x5x30L	Pin	3	
5	NB618-06-002A	Gear	1	
6	NB618-06-003B	Gear	1	
7	618-06-015	Spring	1	
8	KSP250	Handwheel	1	
9	13x34x3	Washer	1	
10	M12	Nut	1	
11	NB618-06-006A	Gear (For one V one flat type)	1	
12	FR90-M10	Handle	1	



4. LONGITUDINAL TRANSMISSION ASSEMBLY

LONGITUDINAL TRANSMISSION ASSEMBLY

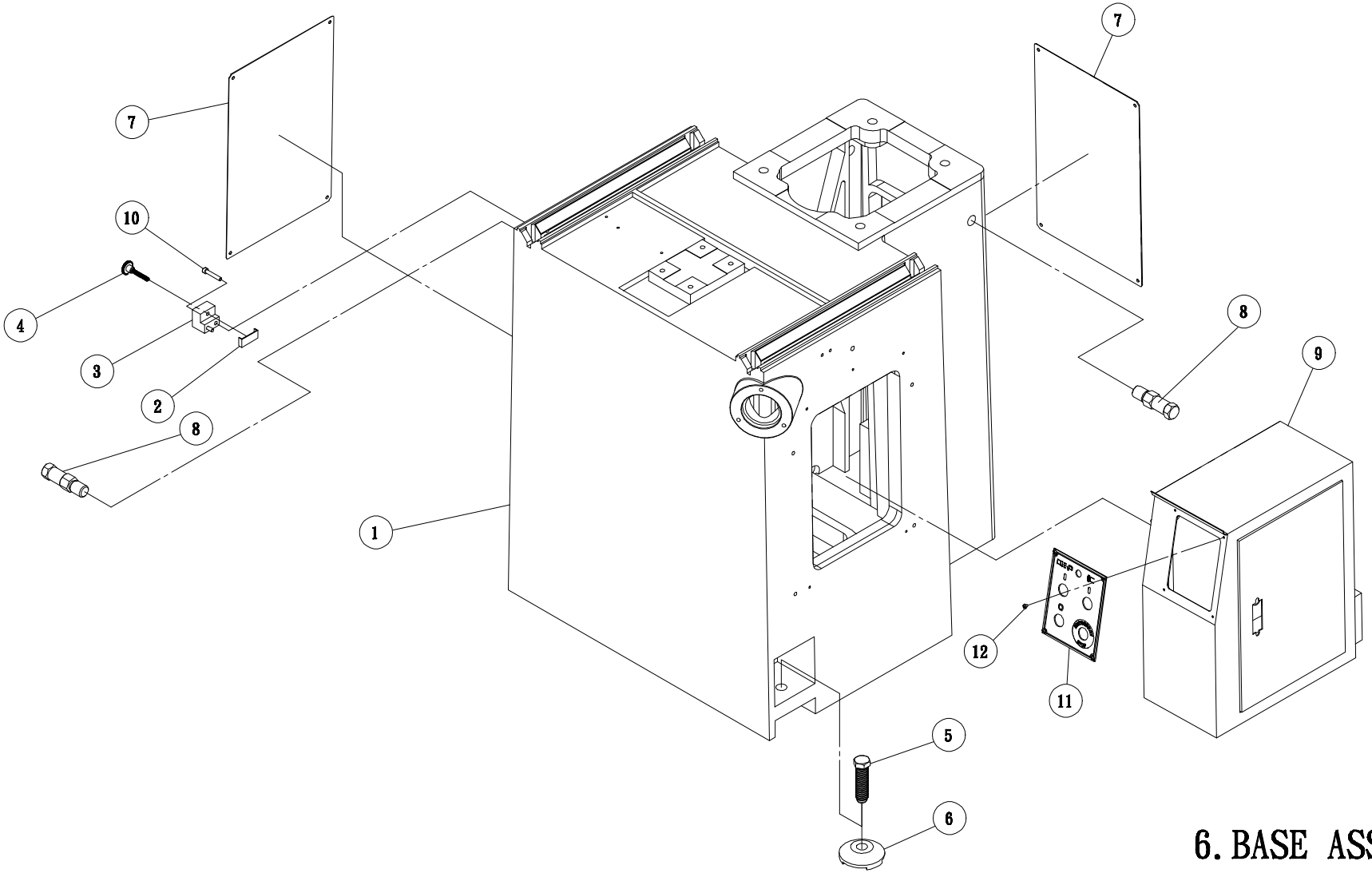
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	NB618-06-015	Gear fixing seat	1	
2	NB618-06-013	Gear	1	
3	NB618-06-014	Fixing shaft	1	
4	S10	Ring	1	
5	NB618-06-016	Gear fixing case	1	
6	10.5x22x1	Washer	2	
7	M10x1.5Px14Wx8H	Nut	2	
8	M5x0.8Px20L	Inner hexagonal screw	4	
9	6.5x13x1	Washer	4	
10	564XL-25MM	Timing belt	1	



5. CROSSFEED MICRO ADJUSTMENT ASSEMBLY
(HYDRAULIC SERIES 1A~ASD)

CROSSFEED MICRO ADJUSTMENT ASSEMBLY

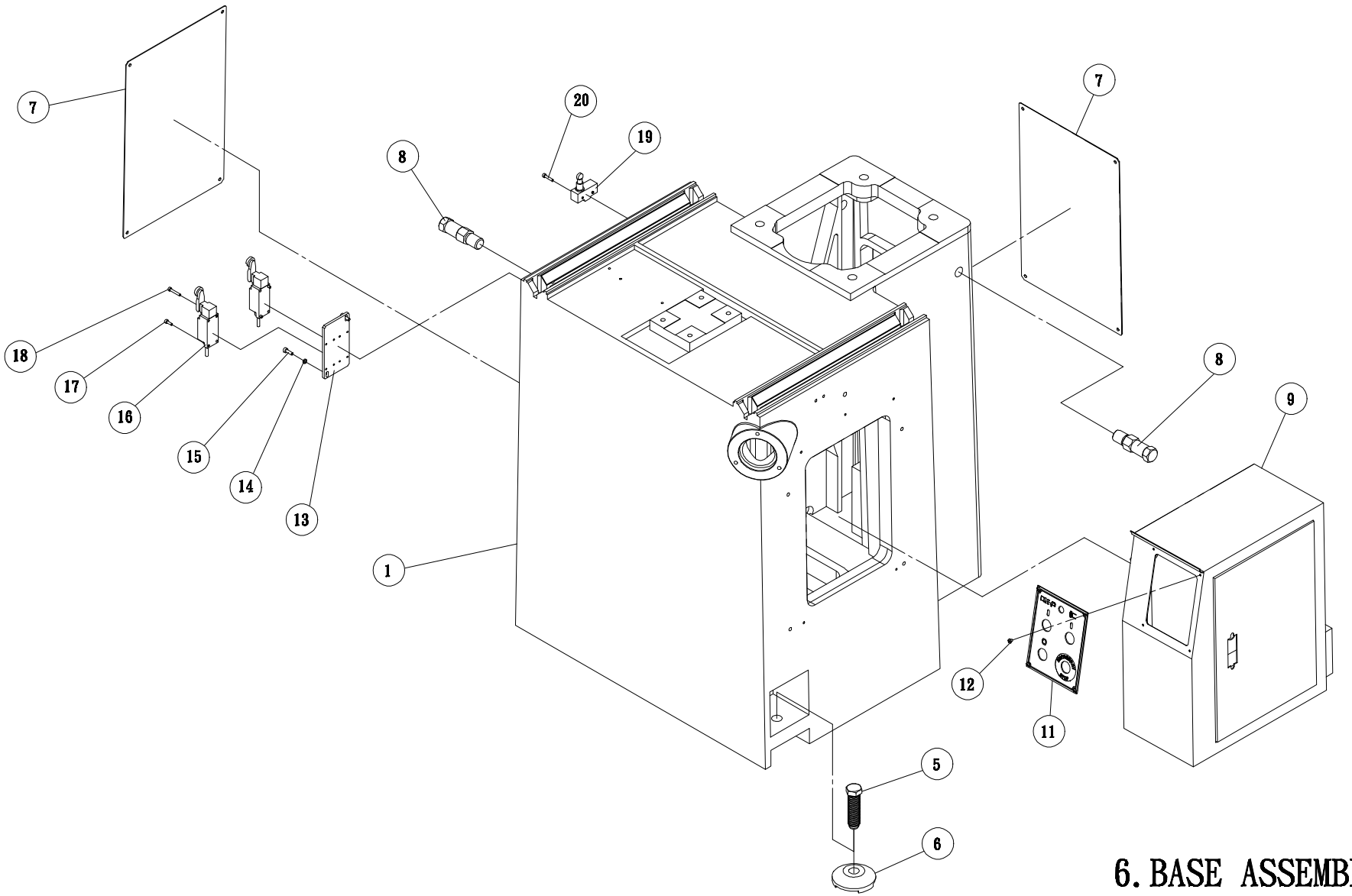
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	618-08-005	Cross adjustment rail	1	
2	618-08-004	Cross adjustment ring	2	
3	618-08-002	Cross adjustment rail fixing seat	2	
4	618-05-014	Fixing knob	2	6050-32-M6-30
5	M6-10L	Inner hexagonal headless screw	2	
6	M6x1.0Px35L	Inner hexagonal screw	2	



6. BASE ASSEMBLY

BASE ASSEMBLY

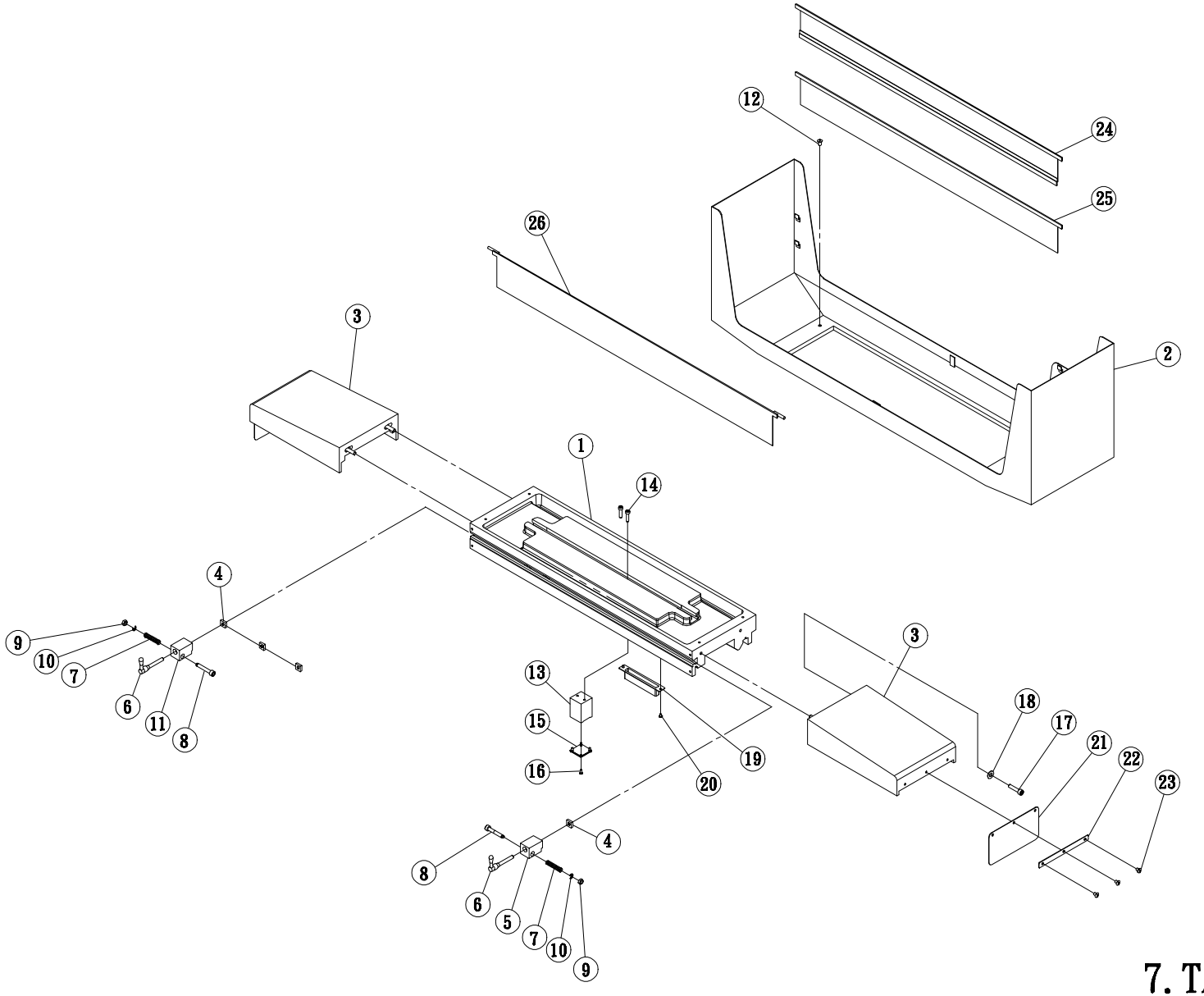
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	618-01-013	Base	1	
2	618-01-045	Fixing Plate	1	
3	618-01-030	Fixing Seat	1	
4	618-01-011	Fixing Screw (Adjustable)	1	
5	618-01-014	Leveling Bolt	3	
6	618-01-015	Leveling Block	3	
7	618-01-043	Side Cover	2	
8	618-01-049	Lifting Bolt	2	
9	618503100	Electrical Cabinet	1	
10	M6x1.0Px35L	Inner Hexagonal Screw	2	
11	618504600	Control Panel	1	
12	M4x0.7Px6L	Cross Round Head SCREW	4	



6. BASE ASSEMBLY
(HYDRAULIC SERIES 1A~ASD)

BASE ASSEMBLY

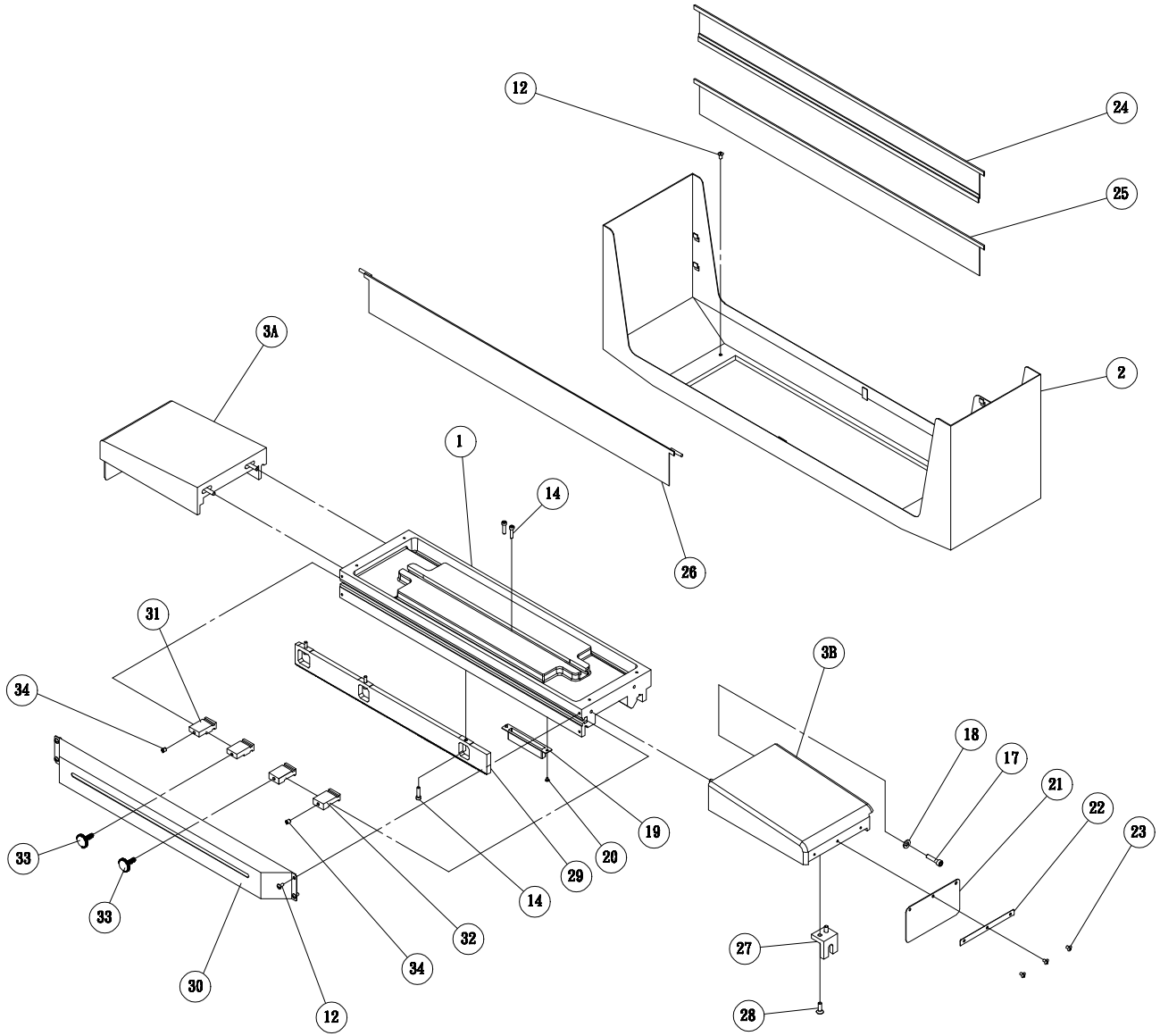
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	618-01-013	Base	1	
5	618-01-014	Leveling Bolt	3	
6	618-01-015	Leveling Block	3	
7	618-01-043	Side Cover	2	
8	618-01-049	Lifting Bolt	2	
9	618503100	Electrical Cabinet	1	
11	618504600	Control Panel	1	
12	M4x0.7Px6L	Cross Round Head SCREW	4	
13	0618500100	Cross micro adjustment switch fixing board	1	
14	5x10x1	Washer	2	
15	M4x0.7Px6L	Inner hexagonal screw	2	
16	AH-8104	Directional switch	2	
17	M4x0.7Px12L	Inner hexagonal screw	2	
18	M4x0.7Px25L	Inner hexagonal screw	2	
19	AM-1307	Limit switch	1	
20	M4x0.7Px20L	Inner hexagonal screw	2	



7. TABLE ASSEMBLY

TABLE ASSEMBLY

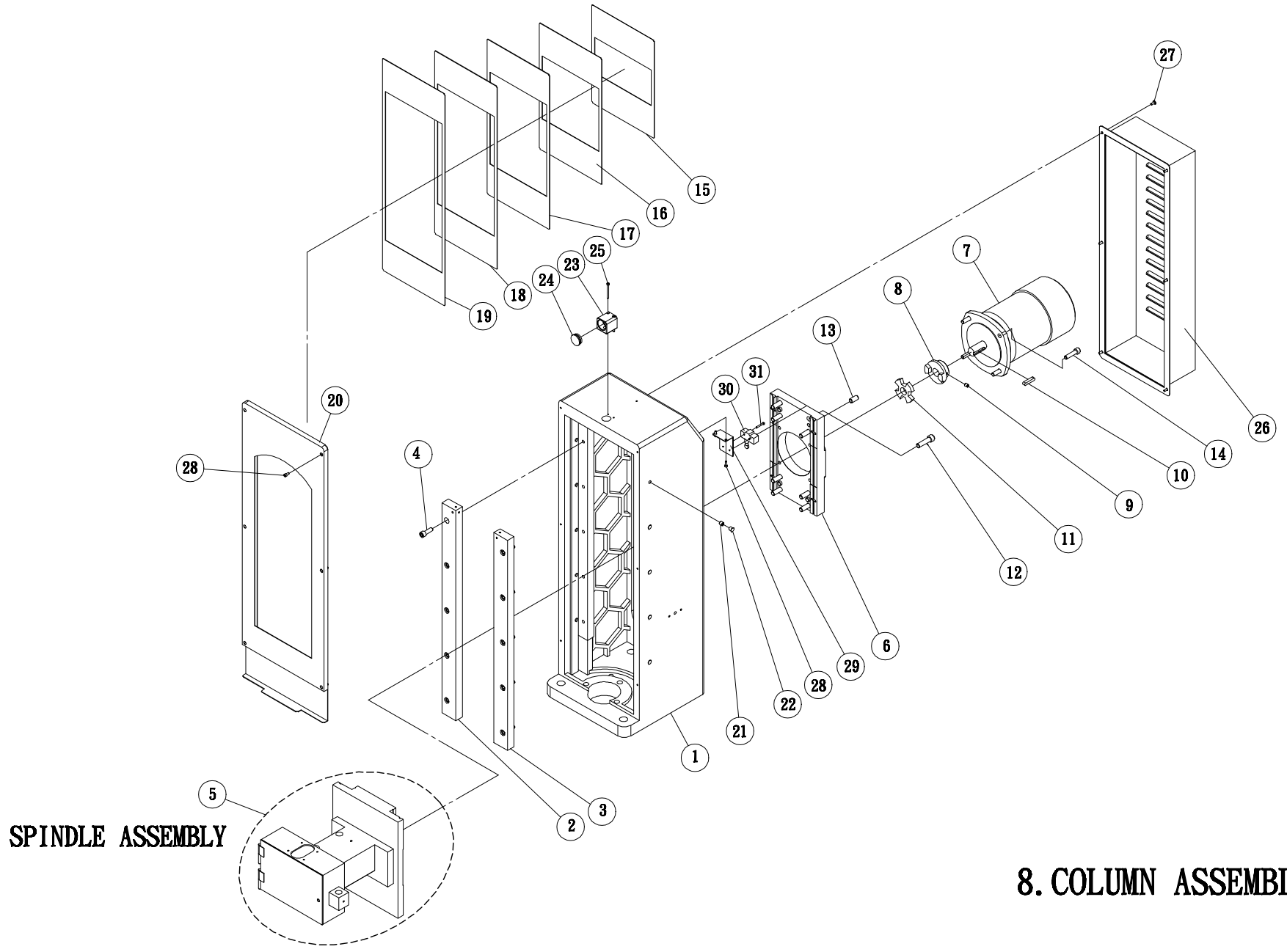
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	618-01-003A	Table	1	
2	618-01-001	Splash Guard	1	
3	NB618-06-019	Table wing	2	
4	618302600	Fixing nut	4	
5	618-01-020	Longitudinal travel adjusting block (Left)	1	
6	618-01-052	Adjusting knob	2	
7	618-06-018	Spring	2	
8	618-01-019	Fixing shaft	2	
9	M8x1.25Px12Wx6H	Nut	2	
10	∅6	Ring	2	
11	618-01-020A	Longitudinal travel adjusting block (Right)	1	
12	M6x1.0Px12L	Cross head screw	4	
13	06183009V0	Timing belt seat	1	
14	M6x1.0Px25L	Inner hexagonal screw	2	
15	NB618-06-010	Timing belt fixing board	1	
16	M4x0.7Px8L	Flat head screw	4	
17	M8x1.25Px35L	Inner hexagonal screw	4	
18	10x20x2L	Washer	4	
19	MPG-01-032	Coolant guiding block	1	
20	M4x0.7Px6L	Cross round head screw	2	
21	NB618-06-018	Rubber plate	2	
22	NB618-06-017	Fixing bar	2	
23	M6x1.0Px8L	Cross round head screw	6	
24	618-01-002A	Coolant guarding board A (Rear)	1	
25	618-01-002B	Coolant guarding board B (Rear)	1	
26	618-01-002C	Coolant guarding board C (Front)	1	



7. TABLE ASSEMBLY
(HYDRAULIC SERIES 1A~ASD)

TABLE ASSEMBLY

NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	618-01-003A	Table	1	
2	618-01-001	Splash Guard	1	
3A	0618302100	Table wing (L)	1	
3B	0618302200	Table wing (R)	1	
12	M6x1.0Px12L	Cross head screw	8	
14	M6x1.0Px25L	Inner hexagonal screw	5	
17	M8x1.25Px35L	Inner hexagonal screw	4	
18	10x20x2	Washer	4	
19	MPG-01-032	Coolant guiding block	1	
20	M4x0.7Px6L	Cross round head screw	2	
21	NB618-06-018	Rubber plate	2	
22	NB618-06-017	Fixing bar	2	
23	M6x1.0Px8L	Cross round head screw	6	
24	618-01-002A	Coolant guarding board A (Rear)	1	
25	618-01-002B	Coolant guarding board B (Rear)	1	
26	618-01-002C	Coolant guarding board C (Front)	1	
27	06183035M0	Cylinder rack	2	
28	M8x1.25Px20L	Flat head inner hexagonal screw	4	
29	618-01-033	Gear bar	1	
30	618-01-035A	Longitudinal travel adjustor cover (Hydraulic)	1	
31	618-01-034	Sensor block (L)	2	
32	618-01-034A	Sensor block (R)	2	
33	618-01-011	Fixing knob	2	
34	M8-10L	Inner hexagonal headless screw	2	



8. COLUMN ASSEMBLY

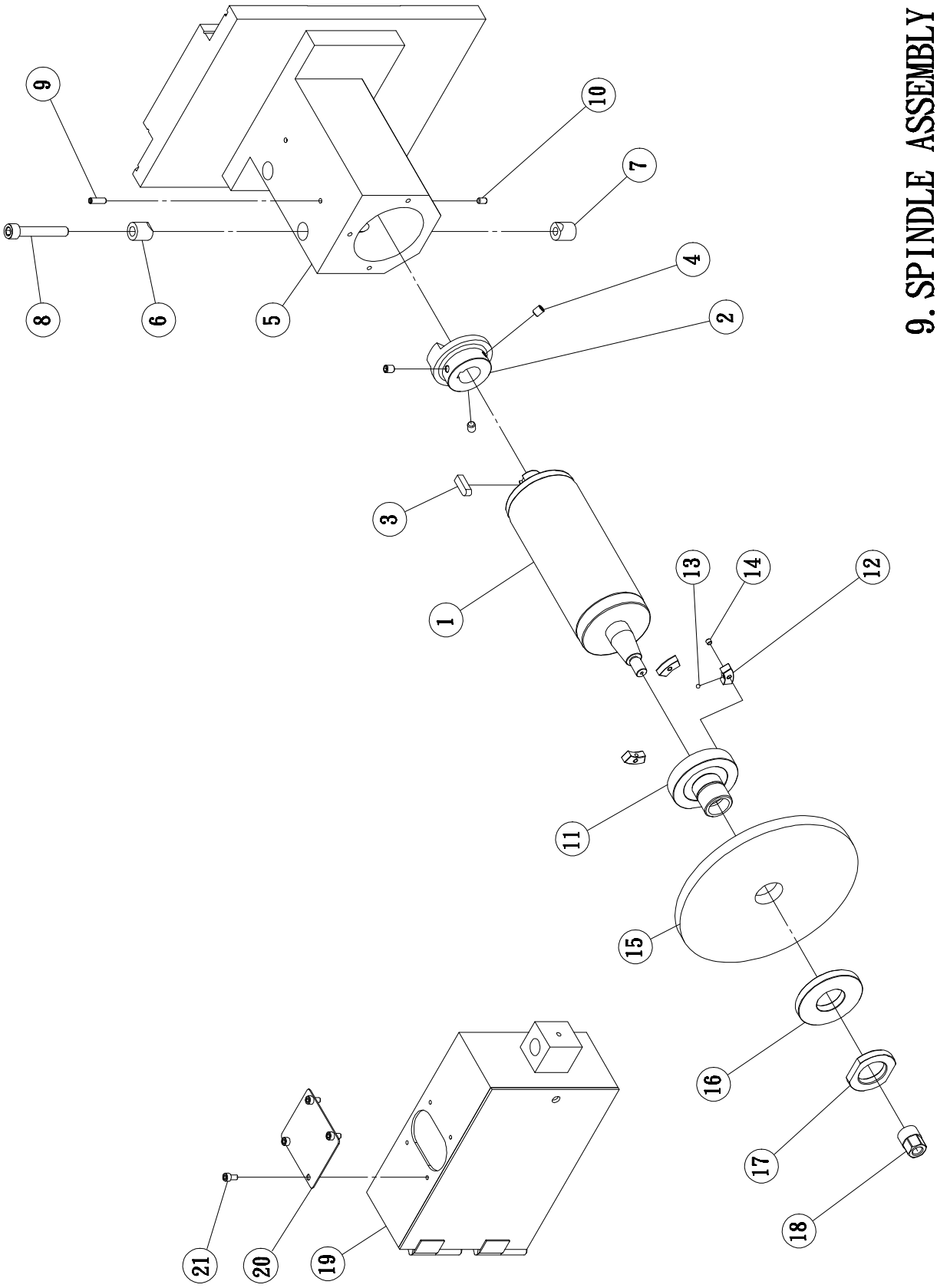
COLUMN ASSEMBLY

NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	618-02-013	Column	1	
2	618-02-012A	Vertical rail (L)	1	
3	618-02-012B	Vertical rail (R)	1	
4	M10x1.5Px30L	Inner hexagonal screw	10	
5		Spindle assembly	1set	
6	618-02-015	Motor fixing board	1	
7		Motor	1	
8	618-04-011	Coupling	1	
9	M8-10L	Inner hexagonal headless screw	3	
10	8x8x40	Pin	1	
11	618-04-012	Rubber coupling	1	
12	M12x1.75Px45L	Inner hexagonal screw	8	
13	M12-25L	Inner hexagonal headless screw	4	
14	M10x1.5Px50L	Inner hexagonal screw	4	
15	618-02-004	Dust proof sheet	1	
16	618-02-005	Dust proof sheet	1	
17	618-02-006	Dust proof sheet	1	
18	618-02-007	Dust proof sheet	1	
19	618-02-008	Dust proof sheet	1	
20	618-02-003C	Front cover plate	1	
21	M10-10L	Inner hexagonal headless screw	10	
22	618-02-014	Plug	10	
23	618-02-023	Lubrication oil gauge	1	
24	∅29	Lubrication oil gauge glass	1	
25	M4x0.7Px45L	Inner hexagonal screw	2	
26	618-02-016	Rear cover plate	1	
27	M5x0.8Px12L	Cross round head screw	6	

COLUMN ASSEMBLY

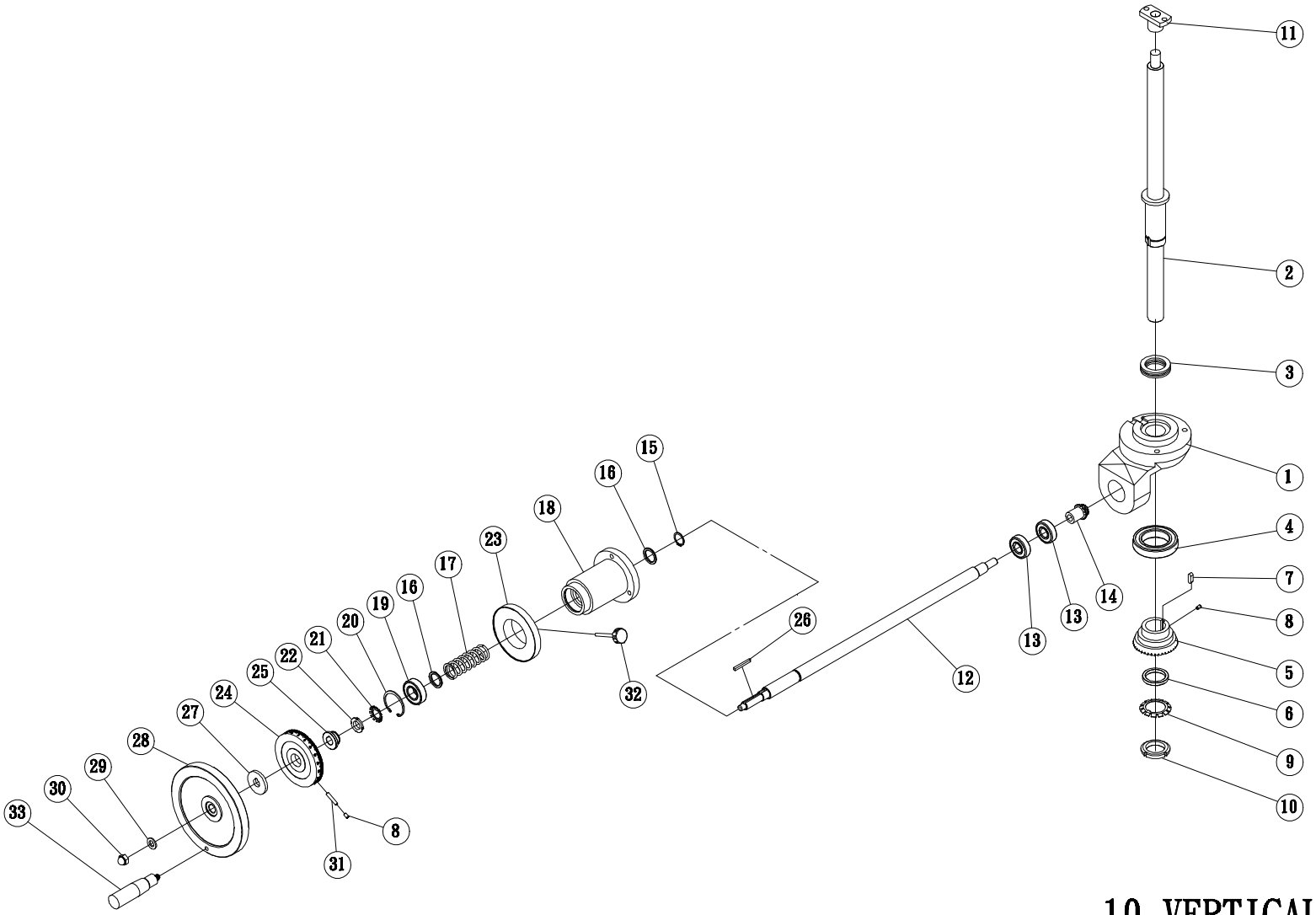
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
28	M5x0.8Px10L	Inner hexagonal screw	8	
29	3060211900	Vertical adjustment switch fixing board	1	3A~ASD
30	AM-1307	Limit switch	1	3A~ASD
31	M4x0.7Px20L	Inner hexagonal screw	2	3A~ASD

9. SPINDLE ASSEMBLY



SPINDLE ASSEMBLY

NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	CB1224-120	Spindle	1	
2	618-04-011	Motor coupling	1	
3	8x7x25	Pin	1	
4	M8-10L	Inner hexagonal headless screw	3	
5	618-02-009	Spindle housing	1	
6	618-02-010A	Spindle fixing ring A	2	
7	618-02-010B	Spindle fixing ring B	2	
8	M10x1.5Px60L	Inner hexagonal screw	2	
9	M6-20L	Inner hexagonal headless screw	3	
10	M6-10L	Inner hexagonal headless screw	2	
11		Wheel flange	1	
12		Balancing block	3	
13	∅6	Steel ball	3	
14		Inner hexagonal headless screw	3	
15		Grinding wheel	1	
16		Flange spacer	1	
17		Flange fixing ring	1	
18		Tightening nut	1	
19	618-02-001	Wheel guard	1	
20	618-02-001B	Wheel guard top cover	1	
21	M5x0.8Px10L	Inner hexagonal screw	4	



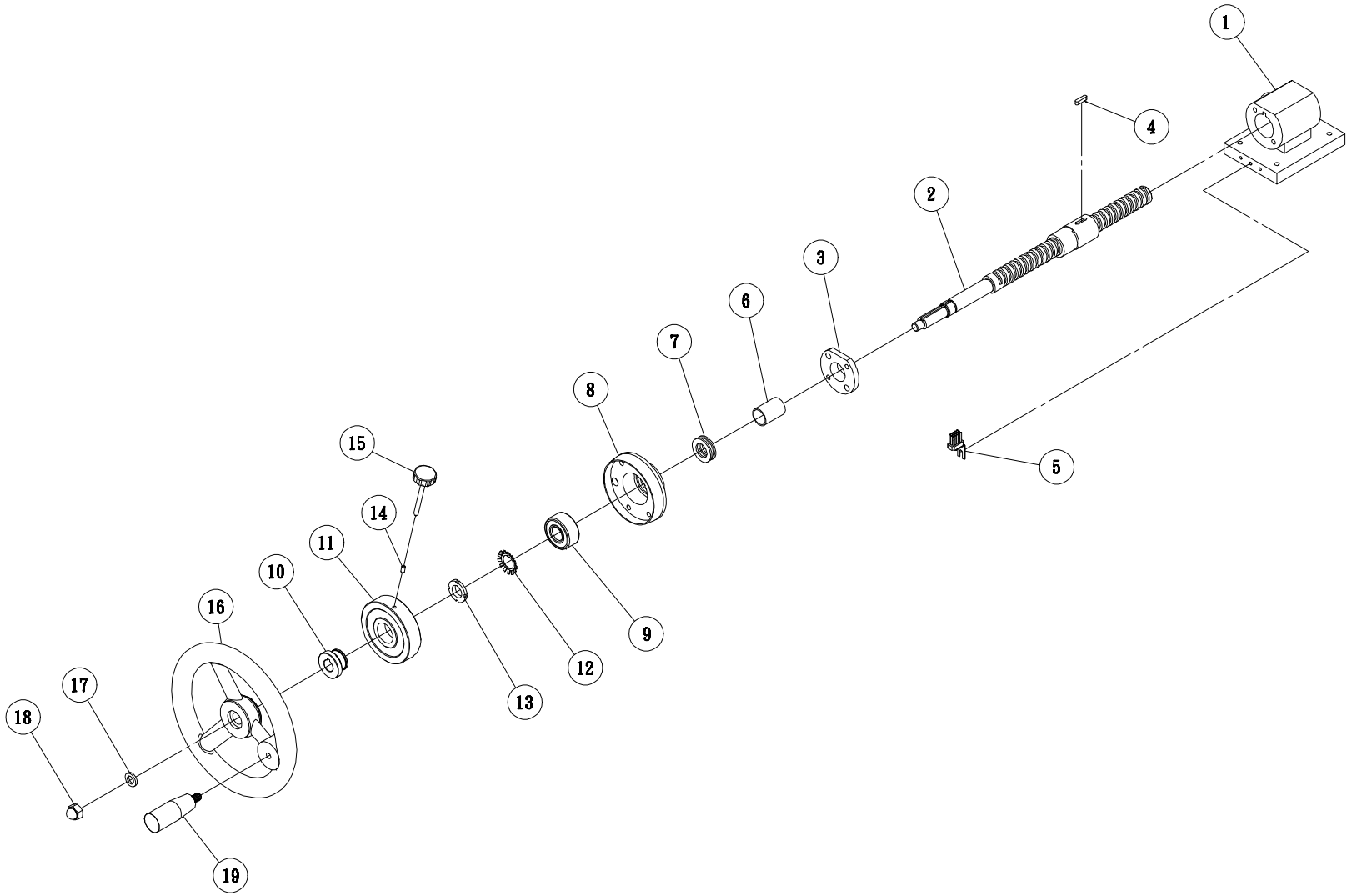
10. VERTICAL SCREW ASSEMBLY

VERTICAL SCREW ASSEMBLY

NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	618-03-010	Vertical screw nut seat	1	
2	618-03-011	Vertical screw	1	
3	51108(40x42x60x13)	Bearing	1	
4	6011ZZ(55x90x18)	Bearing	1	
5	1900.03.14	Vertical gear	1	
6	618-03-020	Spacer	1	
7	7x7x22	Pin	1	
8	M6-10L	Inner hexagonal headless screw	2	
9	AW08	Serrate washer	1	
10	AN08(M40x1.5P)	Nut	1	
11	618-03-013	Vertical screw top seat	1	
12	618-03-008	Vertical transmission shaft	1	
13	6204ZZ(20x47x14)	Bearing	2	
14	618-03-009	Vertical gear	1	
15	S25	snap ring	1	
16	618-03-020	Spacer	2	
17	618501500	Spring	1	
18	618-03-007	Vertical transmission shaft seat	1	
19	1205ZZ(25x52x15)	Bearing	1	
20	R52	Fixing ring	1	
21	AW04	Serrate washer	1	
22	AN04(M20x1.0P)	Nut	1	
23	618-03-005	Vertical indication ring	1	
24	618-03-004	Vertical graduation ring	1	
25	618-03-018	Indication ring sleere	1	
26	5x5x45	Pin	1	
27	618-03-016	Spacer	1	

VERTICAL SCREW ASSEMBLY

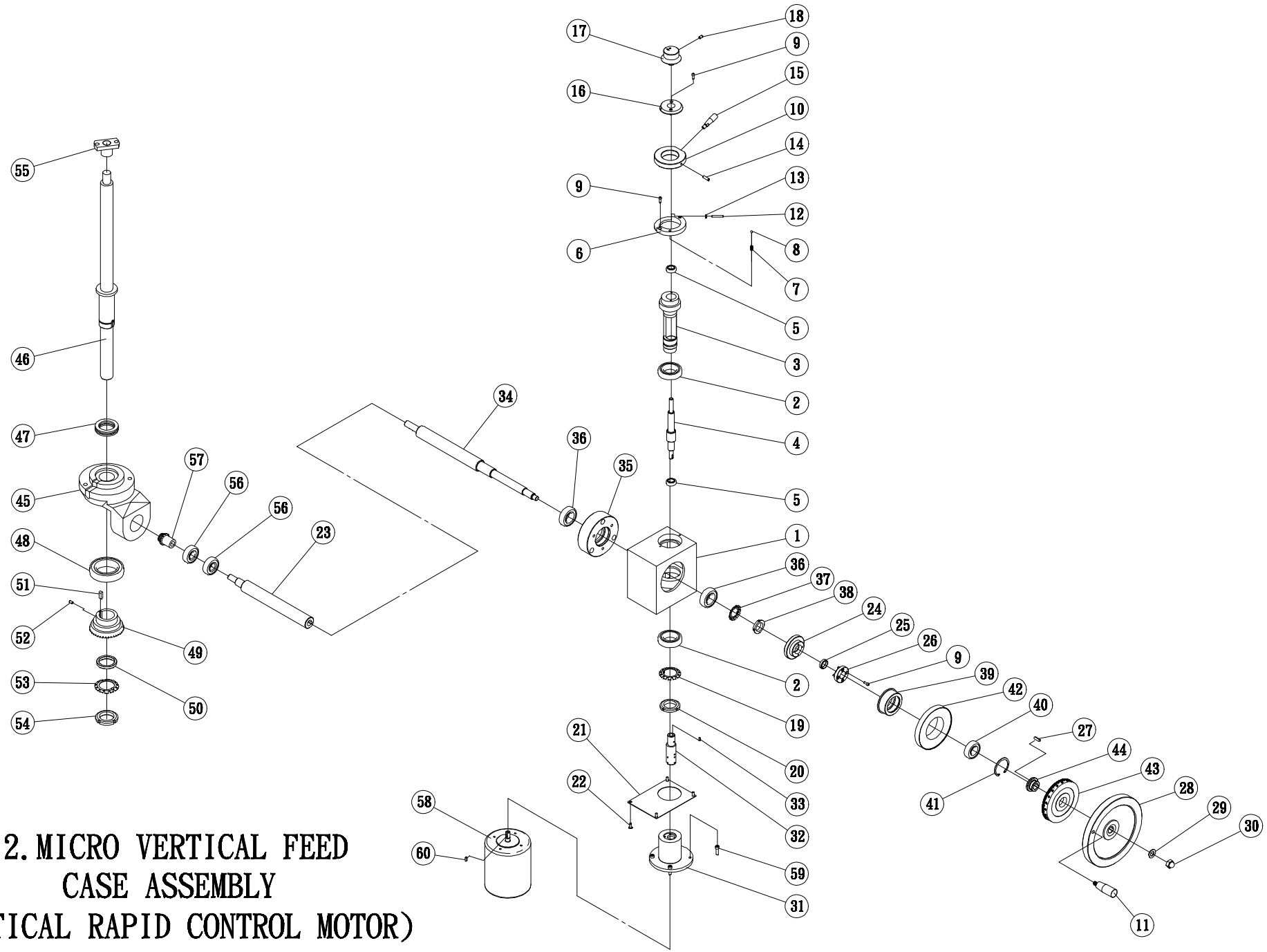
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
28	KRA200	Handwheel	1	
29	13x24x2.5	Washer	1	
30	M12	Nut	1	
31	∅6x30L	Iron bar	1	
32	618-05-014	Fixing knob	1	
33	FR90-M10	Handle	1	



11. CROSSFEED SCREW FIXING SOCKET ASSEMBIY

CROSSFEED SCREW FIXING SOCKET ASSEMBIY

NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	618-05-011A	Crossfeed screw fixing socket	1	
2	618-05-008	Crossfeed screw	1	
3	618-05-009	Crossfeed nut adjusting ring	1	
4	5x5x20	Pin	1	
5	618-05-015	Brush fixing pin	1	
6	618-05-019	Ring	1	
7	51104(20x21x35x10)	Bearing	1	
8	618-05-007	Crossfeed indication ring	1	
9	5204ZZ(20x47x20.6)	Bearing	1	
10	618-05-014	Crossfeed indication ring sleeve	1	
11	618-05-004	Crossfeed graduation ring	1	
12	AW04	Serrate washer	1	
13	AN04(M20x1.0P)	Nut	1	
14	5x30L	Pin	1	
15	618-05-014	Fixing knob	1	
16	618-05-003	Handwheel	1	
17	12x20x3	Washer	1	
18	M12	Nut	1	
19	FG90-M10	Handle	1	



12. MICRO VERTICAL FEED CASE ASSEMBLY (VERTICAL RAPID CONTROL MOTOR)

MICRO VERTICAL FEED CASE ASSEMBLY (VERTICAL RAPID CONTROL MOTOR)

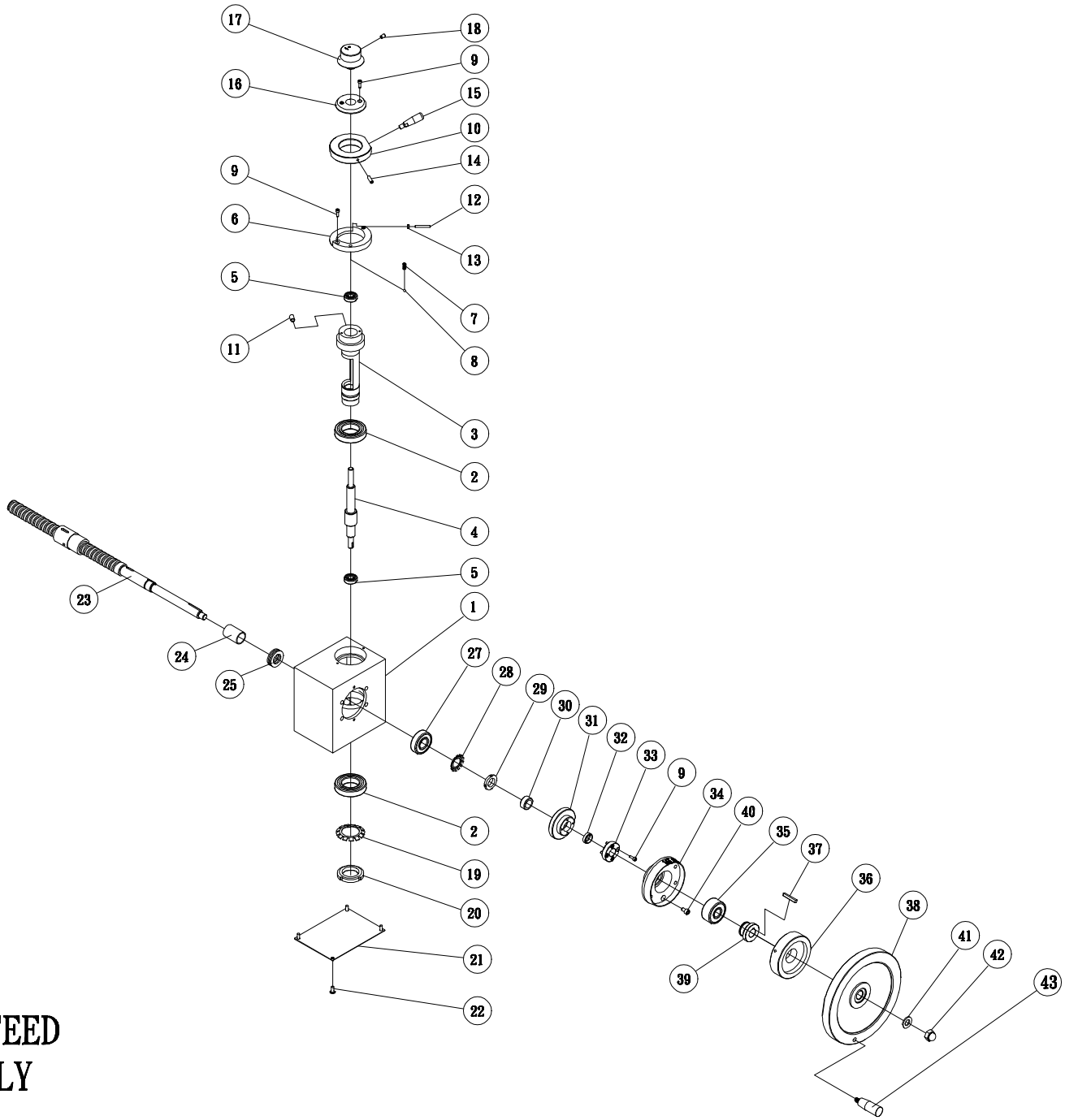
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	CB618-D07	Micro Vertical feed Case	1	
2	6007ZZ(35x62x14)	Bearing	2	
3	CB618-C04	Micro vertical feed shaft	1	
4	CB618-D02	Micro vertical feed gear	1	
5	6000ZZ(10x26x8)	Bearing	2	
6	CB618-C06	Ring	1	
7	∅6 ODxP3x∅0.6x18L	Spring	1	
8	∅6	Steel ball	2	
9	M4x0.7Px12L	Inner hexagonal screw	1	
10	CB618-C05	Ring	1	
11	FR90-M10	Handle	1	
12	M4x0.7Px30L	Screw	8	
13	M4x0.7Px7Wx3.2H	Nut	1	
14	M6-20L	Inner hexagonal headless screw	1	
15	CB618-C13	Micro crossfeed handle	1	
16	CB618-C03	Micro vertical feed indication ring	1	
17	CB618-C01	Micro vertical feed graduation ring	2	
18	M6-10L	Inner hexagonal headless screw	1	
19	AW07	Serrate washer	1	
20	AN07(M35x1.5P)	Nut	1	
21	CB618-D08	Micro vertical feed case cover board	1	
22	M5x0.8Px12L	Cross round head screw	4	
23	CB618-D14	Vertical feed gear shaft	1	
24	CB618-D02	Micro vertical feed gear	1	
25	SC-20	Spacer ring	4	
26	CB618-D10	Micro vertical feed fixing ring	1	
27	5x5x20	Pin	1	

MICRO VERTICAL FEED CASE ASSEMBLY (VERTICAL RAPID CONTROL MOTOR)

NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
28	KRA200	Handwheel	1	
29	13x24x2.5	Washer	1	
30	M12	Nut	1	
31	CB618-D19-ASD	Vertical feed motor socket	1	
32	CB618-D18-C2	Vertical feed motor shaft	1	
33	3x3x10	Pin	1	
34	CB618-D12	Vertical feed handwheel shaft	1	
35	CB618-D16	Micro vertical feed case fixing seat	1	
36	6205ZZ(25x52x15)	Bearing	2	
37	AW05	Serrate washer	1	
38	AN05(M25x1.5P)	Nut	1	
39	CB618-D17	Micro vertical feed case fixing ring	1	
40	6204ZZ(20x47x14)	Bearing	1	
41	R47	Fixing ring	1	
42	618-03-005	Vertical feed indication ring	1	
43	618-03-004	Vertical feed graduation ring	1	
44	618-03-018	Indication ring sleeve	1	
45	618-03-010	Vertical screw fixing seat	1	
46	618-03-011	Vertical leadscrew	1	
47	51108(40x42x60x13)	Bearing	1	
48	6011ZZ(55x90x18)	Bearing	1	
49	618-03-014	Gear	1	
50	618-03-020	Spacer	1	
51	7x7x22	Pin	1	
52	M6-10L	Inner hexagonal headless screw	1	
53	AW08	Serrate washer	1	
54	AN08(M40x1.5P)	Nut	1	

MICRO VERTICAL FEED CASE ASSEMBLY (VERTICAL RAPID CONTROL MOTOR)

NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
55	618-03-013	Vertical leadscrew nut	1	
56	6204ZZ(20x47x14)	Bearing	2	
57	618-03-009	Gear	1	
58	1/4HP	Vertical rapid control motor	1	
59	M6x1.0Px20L	Inner hexagonal screw	4	
60	4x4x12	Pin	1	



13. MICRO CROSSFEED CASE ASSEMBLY

MICRO CROSSFEED CASE ASSEMBLY

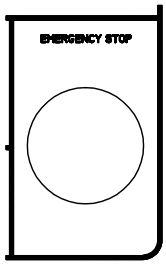
NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
1	CB618-C07	Micro Crossfeed Case	1	
2	6007ZZ(35x62x14)	Bearing	2	
3	CB618-C04	Shaft	1	
4	CB618-D02	Micro crossfeed gear	1	
5	6000ZZ(10x26x8)	Bearing	2	
6	CB618-C06	Ring	1	
7	∅6 ODxP3x∅0.6x18L	Spring	1	
8	∅6	Steel ball	1	
9	M4x0.7Px12L	Inner hexagonal screw	8	
10	CB618-C05	Ring	1	
11	M8-15L	Inner hexagonal headless screw	1	
12	M4x0.7Px30L	Screw	1	
13	M4x0.7Px7Wx3.2H	Nut	1	
14	M6-20L	Inner hexagonal headless screw	1	
15	CB618-C13	Micro crossfeed handle	1	
16	CB618-C03	Micro crossfeed indication ring	1	
17	CB618-C01	Micro crossfeed graduation ring	1	
18	M6-10L	Inner hexagonal headless screw	1	
19	AW07	Serrate washer	1	
20	AN07(M35x1.5P)	Nut	1	
21	CB618-C08	Micro crossfeed case cover board	1	
22	M5x0.8Px12L	Cross round head screw	4	
23	CB618-C12	Micro crossfeed ballscrew	1	
24	618-05-019	Ring	1	
25	51104(20x21x35x10)	Bearing	1	
26				
27	6204ZZ(20x47x14)	Bearing	1	

MICRO CROSSFEED CASE ASSEMBLY

NO.	DRAWING NO./SPEC.	DESCRIPTION	Q/TY	NOTE
28	AW04	Serrate washer	1	
29	AN04(M20x1.0P)	Nut	1	
30	CB618-C11	Spacer ring	1	
31	CB618-C02	Micro crossfeed gear	1	
32	SC-17	Ring	1	
33	CB618-C10	Crossfeed fixing ring	1	
34	618-05-007	Crossfeed indication ring	1	
35	5303ZZ(17x47x22.2)	Bearing	1	
36	618-05-004	Crossfeed graduation ring	1	
37	5x5x35	Pin	1	
38	KRA200	Handwheel	1	
39	618-05-014	Indication ring sleeve	1	
40	M6x1.0Px12L	Inner hexagonal screw	2	
41	13x24x2.5	Washer	1	
42	M12	Nut	1	
43	FG90-M10	Handle	1	

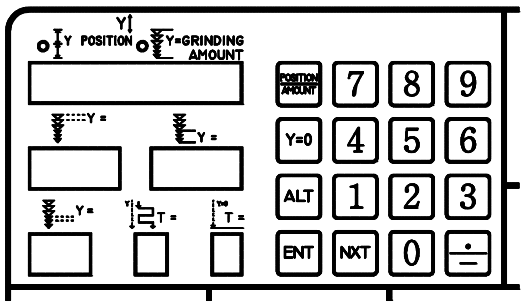
NOTE

Emergency Stop



The emergency stop push button shall be always pushed down BEFORE the machine is powered up.

If the emergency stop push button is not pushed down before the machine is powered up, the display of the first row will blink with "E-STOP" alert message and the other displays will go off.
In the meantime, the control functions of all the buttons on the control panel will be disabled.



To amend this alert, simply push down the emergency stop push button and release it again.

Pressing down this red emergency stop push button will force to stop ALL motors of the machine and the display of the first row will blink with "E-STOP" alert message.
However, The magnetic chuck will remain active.

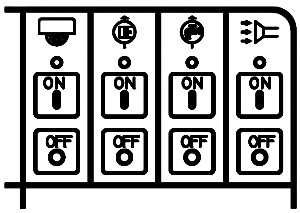
To release red emergency stop push button, user may, depending on the model of the machine, turn the button head according to the direction shown on the head or simply pull up the button head.

After the red emergency stop push button being pressed down, the automatic cycle will be immediately terminated and all the original data will be restored.

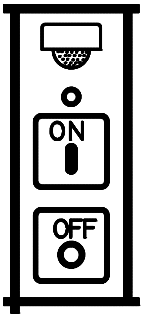
ON/OFF Control

Spindle Wheel ON/OFF Control

To turn ON the spindle wheel



Press ON push button to turn on the spindle wheel and the indicator for the spindle wheel will light up.

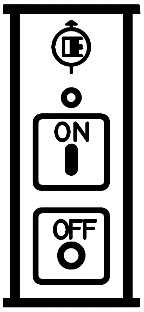


To turn OFF the spindle wheel

Press OFF push button to turn off the spindle wheel and the indicator for the spindle wheel will go off.

Hydraulic Pump ON/OFF Control

To turn ON the Hydraulic pump



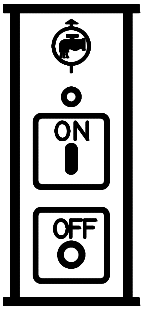
Press ON push button to turn on the hydraulic pump and the indictor for the hydraulic pump will light up.

To turn Off the Hydraulic pump

Press OFF push button to turn off the hydraulic pump and the indictor for the hydraulic pump will go off.

Coolant Motor ON/OFF Control

To turn ON the coolant motor



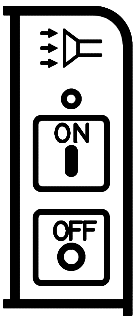
Press ON push button to turn on the coolant motor and the indictor for the coolant motor will light up.

To turn Off the coolant motor

Press OFF push button to turn off the coolant motor and the indictor for the coolant motor will go off.

Vacuum Cleaner ON/OFF Control

To turn ON the vacuum cleaner

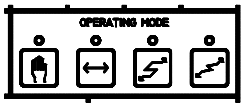


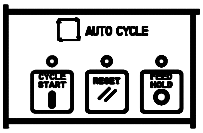
Press ON push button to turn on the vacuum cleaner and the indictor for the vacuum cleaner will light up.

To turn Off the vacuum cleaner

Press OFF push button to turn off the vacuum cleaner and the indictor for the vacuum cleaner will go off.

OPERATING MODE Selection





When the indicator above the RESET button is ON, user can use the right four push buttons to select the desired grinding mode: Manual, Slot, Surface, or Zigzag grinding mode.

To select Manual grinding mode

Press this button to select the Manual grinding mode, and the indicator for Manual grinding will light up.

In Manual grinding mode, automatic down-feed and cross-feed are disabled.

To select Slot grinding mode

Press this button to select the Slot grinding mode, and the indicator for Slot grinding will light up.

In Slot grinding mode, automatic cross-feed is disabled.

To select Surface grinding mode

Press this button to select the Surface grinding mode, and the indicator for Surface grinding will light up.

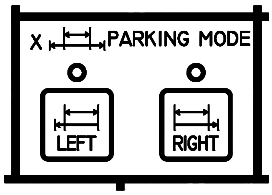
In Surface grinding mode, automatic down-feed and cross-feed are both enabled.

To select Zigzag grinding mode

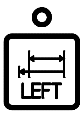
Press this button to select the Zigzag grinding mode, and the indicator for Zigzag grinding will light up.

In Zigzag grinding mode, automatic down-feed and cross-feed are both enabled.

PARKING MODE Selection

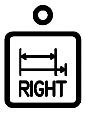


To Park the Working Table on the Left



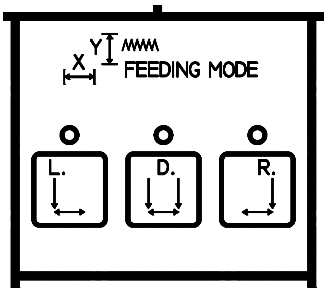
Press the LEFT button and the indicator above this button will light up.
The working table will part on the left-hand side on the completion of fully automatic cycle.

To Park the Working Table on the Right



Press the RIGHT button and the indicator above this button will light up.
The working table will part on the right-hand side on the completion of fully automatic cycle.

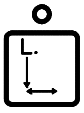
FEEDING MODE Selection



In Slot grinding mode

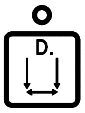
When the machine is in Slot grinding mode and automatic cycle is started:

L. Button



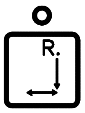
If the L. button is selected and the indicator above this button is lit up, the spindle wheel will start down-feed when the working table reaches to the left stroke.

D. Button



If the D. button is selected and the indicator above this button is lit up, the spindle wheel will start down-feeding whenever the working table reaches to the left or to the right stroke.

R. Button

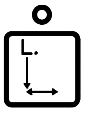


If the R. button is selected and the indicator above this button is lit up, the spindle wheel will start down-feeding when the working table reaches to the right stroke.

In Surface grinding mode

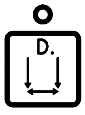
When the machine is in Surface grinding mode and automatic cycle is started:

L. Button



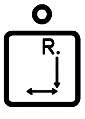
If the L. button is selected and the indicator above this button is lit up, the saddle will start cross-feeding when the working table reaches to the left stroke.

D. Button



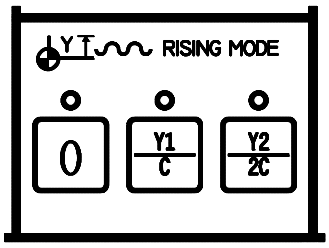
If the D. button is selected and the indicator above this button is lit up, the saddle will start cross-feeding whenever the working table reaches to the left or the right stroke.

R. Button

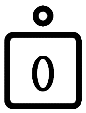


If the R. button is selected and the indicator above this button is lit up, the saddle will start cross-feeding when the working table reaches to the right stroke.

RISING MODE Selection

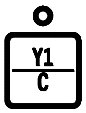


0 Button

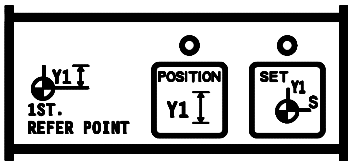


When this button is selected and the indicator above this button is lit up, the spindle wheel will not rise up on the completion of automatic grinding cycle.

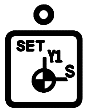
Y1/C Button



When this button is selected and the indicator above this button is lit up, the spindle wheel will rise up along the column on the completion of automatic grinding cycle.

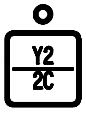


If the value of the 1st REFER POINT is set and the indicator above is lit up before the automatic cycle is started, the spindle wheel will rise up to the position where the 1st REFER PIONT is set.

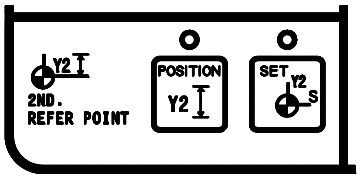


If the value of the 1st REFER POINT is NOT set before the automatic cycle started, the spindle wheel will rise up a distance which equals to the value of the total grinding amount.

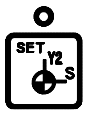
Y2/2C Button



When this button is selected and the indicator above this button is lit up, the spindle wheel will rise up along the column on the completion of automatic grinding cycle.

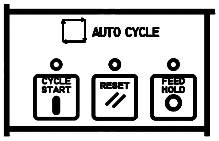


If the value of the 2nd REFER POINT is set and the indicator above is lit up before the automatic cycle is started, the spindle wheel will rise up to the position where the 2nd REFER PIONT is set.

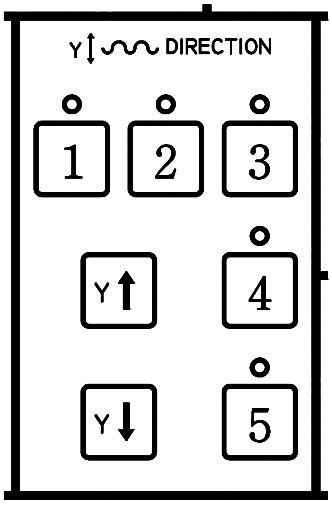


If the value of the 2nd REFER POINT is NOT set before the automatic cycle started, the spindle wheel will rise up a distance which equals to as twice the value of the total grinding amount.

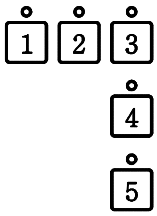
DIRECTION Control



The DIRECTION control function is valid only when the RESET button is selected and when one of the grinding modes other than Manual grinding mode is selected.



Numeric Buttons



The speed of the rapid movement is set by the numeric buttons: the larger number of the button is selected, the faster the rapid movement will be.

Rapid-Up Button

Pressing this button will bring the spindle wheel upward along the column at rapid speed; and releasing it will immediately stop the rapid upward movement of the spindle wheel.

Rapid-Down Button

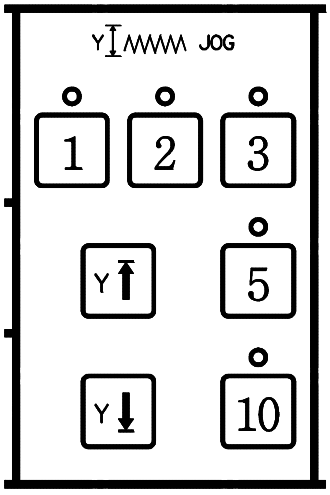
Pressing this button will bring the spindle wheel downward along the column at rapid speed; and releasing it will immediately stop the rapid downward movement of the spindle wheel.

JOG Control

The JOG control function is valid only when one of the grinding modes other than the Manual grinding mode is selected.

AND

If the RESET button is selected and the indicator above is lit up, BOTH of the stepping-up and the stepping-down control buttons are functional.



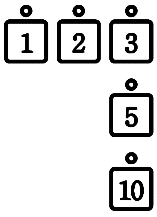
If the indicator above the RESET button goes off but both of the indicators

above the CYCLE START and the FEED HOLD buttons are lit up, only the stepping down control button is functional.

If both of the indicators above the RESET and the FEED HOLD buttons go off but the

indicator above the CYCLE START button are lit up, NONE of the stepping up and down control buttons are functional.

Numeric Buttons



The distance of one step is set by the numeric buttons: the larger number of the button is selected, the greater distance one stepping movement will be.

Stepping-Up Button

Pressing this button will bring the spindle wheel one step amount, which is set by the five numeric buttons, upward.

Stepping-Down Button

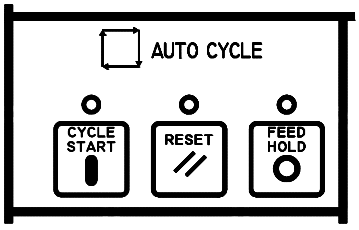
Pressing this button will bring the spindle wheel one step amount, which is set by the five numeric buttons, downward.

AUTO CYCLE Selection

Manual Cycle Selection

Whenever the emergency stop pushbutton is released or

when the RESET button is selected, the indicator above the RESET button will light up and the other two indicators above the CYCLE START and the FEED HOLD buttons will go off.



Semi-Automatic Cycle Selection

Press the CYCLE START button once, both indicators above the CYCLE START and the

FEED HOLD buttons will light up and the indicator above the RESET button will go off.

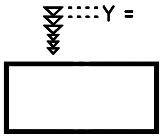
Fully-Automatic Cycle Selection

Press the CYCLE START button once again, the indicator above the CYCLE START

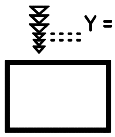
button will light up and both indicators above the RESET and the FEED HOLD buttons will go off.

In the Surface grinding mode, the fully automatic cycle will have the spindle wheel down-feed at the time when the saddle reaches to whether the front or the rear stroke.

In the Slot grinding mode, the full automatic cycle will have the spindle wheel down-feed at the time when the working table reaches to whether the left or the right stroke.



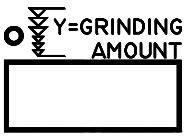
During the Rough grinding period, the down-feed amount each time equals to the value on the display for the Rough Down-Feed Amount.

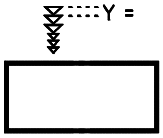


During the Finish grinding period, the down-feed amount each time equals to the value on the display for the Finish Down-Feed Amount.

The Rough Grinding Period

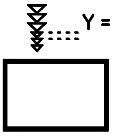
During the Rough grinding period, each down-feed will decrease the value on the display for the grinding amount in an amount equals to the value on the display for the Rough



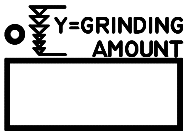


Down-Feed Amount. The Rough grinding period will be finished when the value on the display for the grinding amount equals to the value on the display for the Total Finish Grinding Amount, and the Finish Grinding period is started.

The Finish Grinding Period



When the Finish grinding period is started, each down-feed will decrease the value on the display for the grinding amount in an amount equals to the value

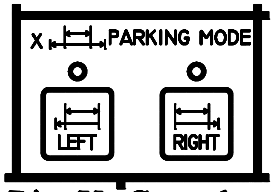


on the display for the Finish Down-Feed Amount. The Finish grinding period will be finished when the value on the display for the grinding amount reaches to zero, and the Zero grinding period is started.

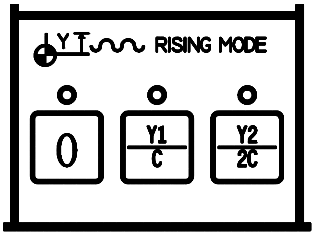
The Zero Grinding Period

During the Zero grinding period, there is no down-feeding but the countdown of the Zero grinding times. When the value on the display for the Zero grinding times Countdown to zero, the Zero grinding period is finished.

The Completion of the Automatic Grinding Cycle



After the Zero grinding period is finished, the working table would park on the selected side; and the spindle wheel would or would not rise up according to the setting in the Spindle Wheel Automatic Rise-Up Control and the whole Fully Automatic Cycle is completed. At this moment, the machine is in Manual grinding mode and the original value of the grinding amount is restored.

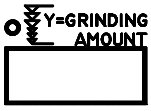


To Switch Between the Fully-Automatic and the Semi-Automatic Cycle

Press the FEED HOLD button once during the Fully-Automatic Cycle, the grinding cycle will switch from the Fully-Automatic Cycle to the Semi-Automatic Cycle and the residual of the grinding amount is held intact.

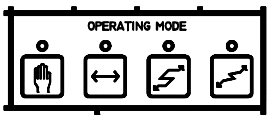
When press the CYCLE START button again, the grinding cycle will switch from the Semi-Automatic Cycle back to the Fully-Automatic Cycle, and the residual of the grinding amount will continue to be ground off.

During the Semi-Automatic or Fully-Automatic Cycle, press the RESET button will stop the automatic cycle and the original setting of the grinding amount will be restored.



For safety reasons, the following control functions will be disabled during the Semi-Automatic or Fully-Automatic Cycle:

★ OPERATING MODE Selection

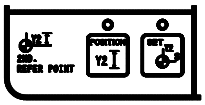


★ DIRECTION Control

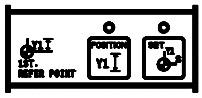
★ JOG Control during the Fully-Automatic Cycle

★ Stepping Down Control during the Semi-Automatic Cycle

★ Setting the 1st REFER POINT

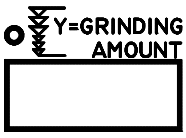


★ Setting the 2nd REFER POINT

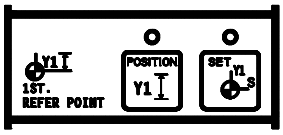


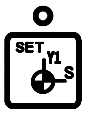
★ Zero Positioning

★ Change of the Grinding Amount



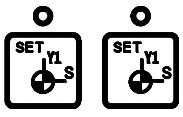
Setting the 1st REFER POINT



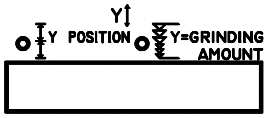


The indicator above this button is to indicate if the 1st REFER POINT is set: if the indicator is lit up, the 1st REFER POINT is set and vice versa.

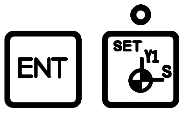
Two Ways to Set the 1st REFER POINT

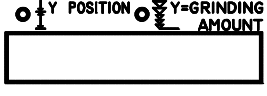


When the indicator above the Y1 SET button is off, pressing twice the Y1 SET button within 1 second will store the current value on the display for the Y POSITION as the value for the 1st REFER POINT.



Press the ENT button together with the Y1 SET button pressed down, the value on the first row display for the Y POSITION will flash if the value for the 1st REFER POINT has been set;





otherwise, the first row display for the Y POSITION will show "---.---". Use the numeric buttons, 0 to 9, to key in the desired value and end with pressing the ENT button to confirm the keyed-in value. On pressing the ENT button, the first row display will stop flashing and show the current position of the spindle wheel. By this time, the setting of the 1st REFER POINT is done.

The Requirement for Setting the 1st REFER POINT

Value of 2nd REFER POINT ≧ Value of 1st REFER POINT ≧ Current Position

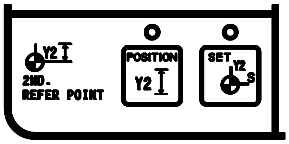
---

To Position the Spindle Wheel to the Position Set by the 1st REFER POINT

With the indicator above the Y1 SET button ON, pressing and holding down the Y1 POSITION button will move the spindle wheel upward or downward to the position set by the 1st REFER POINT. The positioning of the spindle wheel will stop when the spindle wheel reaches to the 1st REFER POINT and the indicator above the Y1 POSITION button will light up, or when user releases the Y1 SET button.

When the indicator above the Y1 POSITION button is ON, pressing Y1 POSITION button will not move the spindle wheel.

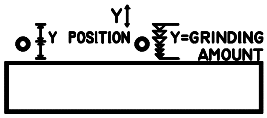
Setting the 2nd REFER POINT



The indicator above this button is to indicate if the 2nd REFER POINT is set: if the indicator is lit up, the 2nd REFER POINT is set and vice versa.

Two Ways to Set the 2nd REFER POINT

When the indicator above the Y2 SET button is off, pressing twice the Y2 SET button within 1 second will store the current value on the display for the Y POSITION as the value for the 2nd REFER POINT.



Press the ENT button together with the Y2 SET button pressed down, the value on the first row

display for the Y POSITION will flash if the value for the 2nd REFER POINT has been set; otherwise, the first row display for the Y POSITION will show "---.---".Use the numeric buttons, 0 to 9, to key in the desired value and end with pressing the ENT button to confirm the keyed-in value. On pressing the ENT button, the first row display will stop flashing and show the current position of the spindle wheel. By this time, the setting of the 2nd REFER POINT is done.

The Requirement for Setting the 2nd REFER POINT

Value of 2nd REFER POINT ≧ Value of 1st REFER POINT ≧ Current Position

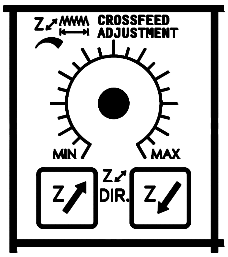
---

To Position the Spindle Wheel to the Position Set by the 2nd REFER POINT

With the indicator above the Y2 SET button ON, pressing and holding down the Y 2 POSITION button will move the spindle wheel upward or downward to the position set by the 2nd REFER POINT. The positioning of the spindle wheel will stop when the spindle wheel reaches to the 1st REFER POINT and the indicator above the Y2 POSITION button will light up, or when user releases the Y2 SET button.

When the indicator above the Y2 POSITION button is ON, pressing Y2 POSITION button will not move the spindle wheel.

Cross-Feed Control



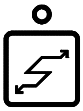
Holding down this Forward button will bring the saddle forward; the saddle will stop moving forward when this button is released.

Holding down this Backward button will bring the saddle backward; the saddle will stop moving backward when this button is released.

In Slot Grinding Mode

In Slot Grinding mode, neither the Forward button nor the Backward button can bring the saddle forward or backward.

In Surface Grinding Mode



When the indicator above the RESET button is ON, or before the hydraulic pump is started, or when the hydraulic throttle valve is closed :

Holding down this Forward button will bring the saddle forward; the saddle will stop moving forward when this button is released.

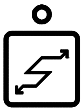
Holding down this Backward button will bring the saddle backward; the saddle will stop moving backward when this button is released.

When the indicator above the CYCLE START is ON, when the hydraulic pump is started, and when the hydraulic throttle valve is released :

If the saddle is not in cross-feed increment, holding down this Forward button will move the saddle forward with one cross-feed increment. If the saddle is in backward cross-feed increment when the Forward button is held down, the direction of the saddle cross-feed increment will change from backward to forward.

If the saddle is not in cross-feed increment, holding down this Backward button will move the saddle backward with one cross-feed increment. If the saddle is in forward cross-feed increment when the Backward button is held down, the direction of the saddle cross-feed increment will change from forward to backward.

In Zigzag Grinding Mode



In Zigzag Grinding mode when the indicator above the RESET button is ON, or before the hydraulic pump is started, or when the hydraulic throttle valve is closed :

Holding down this Forward button will bring the saddle forward; the saddle will stop moving forward when this button is released.

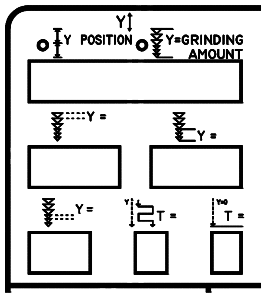
Holding down this Backward button will bring the saddle backward; the saddle will stop moving backward when this button is released.

When the indicator above the CYCLE START is ON, when the hydraulic pump is started, and when the hydraulic throttle valve is released :

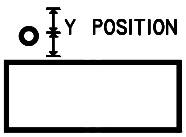
If the saddle is not in continuous cross-feed movement, holding down this Forward button will move the saddle forward continuously. If the saddle is in continuous backward cross-feed movement when the Forward button is held down, the direction of the saddle continuous cross-feed movement will change from backward to forward.

If the saddle is not in continuous cross-feed movement, holding down this Backward button will move the saddle backward continuously. If the saddle is in continuous forkward cross-feed movement when the Backward button is held down, the direction of the saddle continuous cross-feed movement will change from forward to backward.

LED Displays

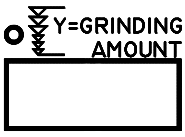


Y POSITION Display



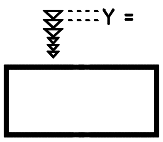
When the indicator for the Y POSITION is ON, the value on the display of the first row represents current position of the spindle wheel.

GRINDING AMOUNT Display



When the indicator for the GRINDING AMOUNT is ON, the value on the display of the first row represents the setting of the total grinding amount in manual period of the residual total grinding amount in automatic period.

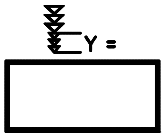
Rough Down-Feed Increment Display



The value on this display represents the setting of automatic down-feed increment for rough grinding. The setting of this rough grinding down-feed increment must not be larger than 500, otherwise the display of the first row

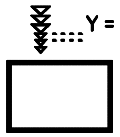
will show "E-07" alert message and in the meantime the setting will be automatically changed to 499.

Total Finish Grinding Amount Display



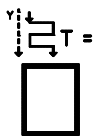
The value on this display represents the setting of the total finish grinding amount.

Finish Down-Feed Increment Display

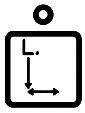


The value on this display represents the setting of automatic down-feed increment for finish grinding. The setting of this finish grinding down-feed increment must not be larger than the setting of automatic down-feed increment for rough grinding. Otherwise, the display of the first row will show "E-06" alert message and in the meantime the setting will be automatically changed to the value of automatic down-feed increment for rough grinding.

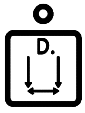
Down-Feed Time Interval Display



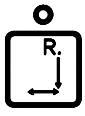
When the Slot Grinding mode is selected, this display shows the setting for the time interval between two automatic down-feeds :



When this L. button is selected and the working table travels to the left Stroke as many times as the setting for the time interval, the spindle wheel will begin down-feed increment when the working table is on the left.

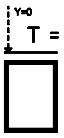


When this D. button is selected and the total traveling times of the working table to the left AND to the right stroke equals the setting for the time interval, the spindle wheel will begin down-feed increment.

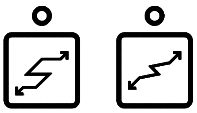


When this R. button is selected and the working table travels to the right stroke as many times as the setting for the time interval, the spindle wheel will begin down-feed increment when the working table is on the right.

Zero Grinding Times Display

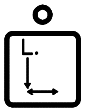


The value on this display represents the setting for the Zero Grinding times or the residual Zero Grinding times in Zero Grinding period. The Zero Grinding period begins when the value on the GRINDING AMOUNT display reaches zero , and the spindle wheel will not have any more automatic down-feed increment.

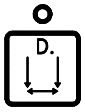


In both Surface Grinding and Zigzag Grinding modes, the value on this display for the Zero Grinding times wil decrease by 1 until 0 whenever the saddle reaches to the rear or the front stroke.

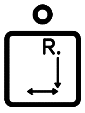
In Slot Grinding mode,



When the L. button is selected, the value on the display for the Zero Grinding times will decrease by 1 until 0 when the working table reaches to the left stroke.

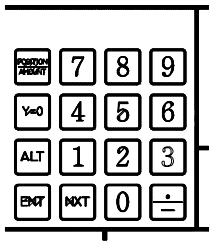


When the D. button is selected, the value on the display for the Zero Grinding times will decrease by 1 until 0 when the working table reaches whether to the left or the right stroke.



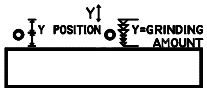
When the R. button is selected, the value on the display for the Zero Grinding times will decrease by 1 until 0 when the working table reaches to the right stroke.

KEYPAD



POSITION/AMOUNT Button

Pressing this button will swap displaying the value for the Y POSITION and the value for the GRINDING AMOUNT on the display for the first row, and the respective indicator will light up as well.



Y=0 Button

When the indicator for the Y POSITION is ON, which means the current position is displayed, pressing this Y=0 button will reset the value on the display of the first row to 0.000.

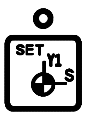
ALT Button

When the display of the first row is still blinking with alert message but the trouble causing this alert is cleared, pressing this ALT button will clear the alert message and restore the machine back to normal operation without resetting the GRINDING AMOUNT.

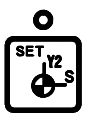
ENT Button

Pressing the ENT button alone can allow user to key in the value for the GRINDING AMOUNT.

Holding down the POSITION/AMOUNT button, then pressing the ENT button can allow user to key in the value for the current position.



Holding down the SET button for the 1st REFER POINT, then pressing the ENT button can allow user to key in the value for the 1st REFER POINT.



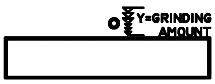
Holding down the SET button for the 2nd REFER POINT, then pressing the ENT button can allow user to key in the value for the 2nd REFER POINT.

Every time after keying in the value by the numeric buttons, always press the ENT button to confirm the keying-in of the number and to end the keying-in process.

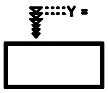
NXT Button

Press the NXT button to select the item for keying-in. User can use this button to select for changing the value for the following items:

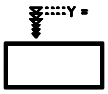
★ The GRINDING AMOUNT



★ The automatic down-feed increment for rough grinding.

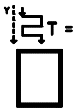


★ The total finish grinding amount.



★ The automatic down-feed increment for finish grinding.

★ The time interval for Slot Grinding.

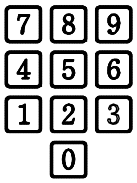


★ The Zero Grinding times.

. / - Button

Pressing this SIGN button in setting the value for the current position (Y POSITION) will allow the user to change the sign of the keyed-in value.

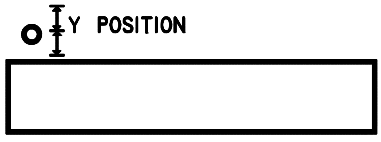
Numeric Buttons



User can use these ten numeric buttons for keying in the value for each parameter.

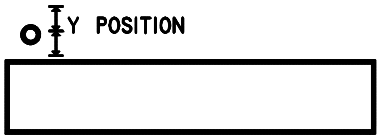
To Clear the Y POSITION

1. **Press the POSITION/AMOUNT button once if the indicator for the Y POSITION display is OFF, and the indicator for the Y POSITION display will light up to indicate that the value on the display of the first row represents the current position of the spindle wheel.**



2. **Press the Y=0 button two times to clear the Y POSITION to Zero, and the display of the first row show "0.000".**

To Set the Y POSITION



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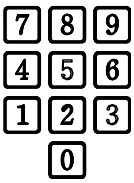
1. Holding down the POSITION/AMOUNT button and then pressing the ENT button will light up the indicator for the Y POSITION display, and the display of the first row will flash with the current value on the display.

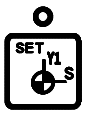
2. Use the numeric buttons to key in the desired value, and the SIGN button to change the sign.



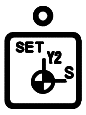
3. Press the ENT button to confirm the keying-in, and the display of the first row showing the keyed-in value will stop flashing. This ends the whole keying-in process.

To Set the REFER POINT Directly

1. Move the spindle wheel to the desired position by using the Rapid Up or Rapid Down button, or the Stepping Up or the Stepping Down button.



2. Press the SET button in for the 1st REFER POINT twice, and the indicator above this SET button will light up to indicate the setting of the 1st REFER POINT is done.

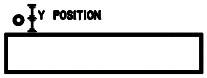


3. Press the SET button in for the 2nd REFER POINT twice, and the indicator above this SET button will light up to indicate the setting of the 2nd REFER POINT is done.

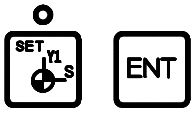
4. For safety reasons, the position of the 2nd REFERE POINT shall not be lower than that of the 1st REFER POINT. In equation, that is:

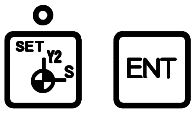
Value of the 2nd REFER POINT ≧ Value of the 1st REFER POINT

5. Should the position of the 2nd REFER POINT be lower than that of the 1st REFER POINT, the setting for the 2nd REFER POINT would be rejected and the display of the first row will flash with "E-02" alert message.



To Set the REFER POINT by Numeric Inputs





1. Hold down the SET button whether for the 1st REFER POINT (or for the 2nd REFER POINT), and pressing the ENT button once will turn off both the indicators for the Y POSITION and for the GRINDING AMOUNT. The display of the first row will flash with the former setting value or with "---.---" when there is no former setting value.

2. Use the ten numeric buttons to key in the desired value, and use the SIGN button to change the sign of the keyed-in value.

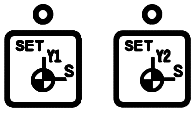
3. Press the ENT button to confirm the keying-in, and the display of the first row showing the keyed-in value will stop flashing. This ends the whole keying-in process.

4. For safety reasons, the vlaue of the 2nd REFERE POINT shall not be smaller than that of the 1st REFER POINT. In equation, that is:

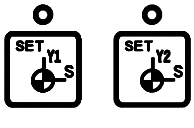
Value of the 2nd REFER POINT ≧ Value of the 1st REFER POINT

5. Should the value of the 2nd REFER POINT be smaller than that of the 1st REFER POINT, the setting for the 2nd REFER POINT would be rejected and the display of the first row will flash with "E-02" alert message.

To Clear the REFER POINTS

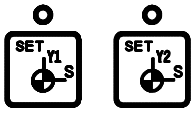


1. If the indicator above the SET button for the 1st REFER POINT (or the 2nd REFER POINT) is ON, it indicates that the 1st REFER POINT (or the 2nd REFER POINT) is set.

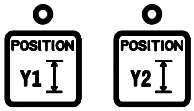


2. Press the SET button for the 1st REFER POINT (or the 2nd REFER POINT) two times, the indicator above this SET button will go OFF, and the 1st REFER POINT (or the 2nd REFER POINT) is cleared.

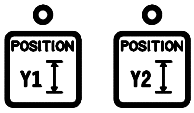
To Use Positioning Function



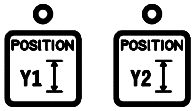
1. Make sure the indicator above the SET button for 1st REFER POINT (or the 2nd REFER POINT) is On in order to use the positioning function.



2. Press the POSITION button for the 1st REFER POINT (or the 2nd REFER POINT), and the spindle wheel will move toward and stop at the position set by the 1st REFER POINT (or the 2nd REFER POINT). When the spindle wheel is positioned, the indicator above the POSITION button will light up.



3. During the positioning period, releasing the POSITION button for the 1st REFER POINT (or the 2nd REFER POINT) will stop the movement of the spindle wheel along the column immediately.



4. When the indicator above the POSITION button for the 1st REFER POINT (or the 2nd REFER POINT) is ON, pressing the POSITION button for 1st REFER POINT (or the 2nd REFER POINT) will not move the spindle wheel along the column.

To Troubleshoot Alert Messages

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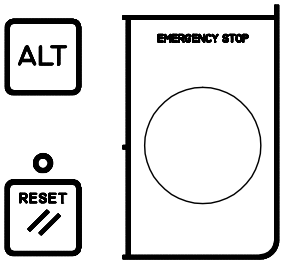
1. When the display of the first row flashes with "E-XX", or "OL-XX", or "LS-XX" alert messages, it indicates that the machine has some operation faults. Please look up the table for alert messages, and follow the recommendations to troubleshoot the faults.



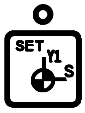
2. Pressing the ALT button, or the RESET button, or the EMERGENCY STOP button will clear alert messages on the display of the first row. However, pressing the RESET button or the EMERGENCY STOP button will restore the original setting of the GRINDING AMOUNT, while pressing the ALT button will still keep the GRINDING AMOUNT intact.

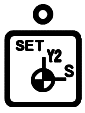
Functions in AUTO CYCLE Control

When the machine is powered ON, the indicator above the RESET button will light up while the other two indicators above the CYCLE START button and the FEED HOLD button will go OFF.

1. Whichever the Slot Grinding, or the Surface Grinding, or the Zigzag Grinding mode is selected, press the CYCLE START button once, and the indicators above the CYCLE START button and the FEED HOLD button will light up. This represents the semi-automatic down-feed mode. Press the CYCLE START button once again, the indicator above the FEED HOLD button will go off, while the indicator above the CYCLE START button will remain ON. This represents the fully-automatic down-feed mode.

2. If the indicator above the SET button for the 1st REFER POINT (or the 2nd REFER POINT) is ON, it indicates the value of the 1st REFER POINT (or the 2nd REFER POINT) is already set. At the moment when the semi-automatic down-feed mode is selected, the control will automatically check if the current position of the spindle wheel along the column is lower than that of 1st REFER POINT (or the 2nd REFER POINT). The basic requirement for the relationship among the current position, the 1st REFER POINT, and the 2nd REFER POINT must follow the following rule :



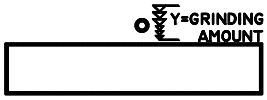


The Current Position ≦ The 1st REFER POINT ≦ The 2nd REFER POINT

3. If the above rule is not followed, the selection of the semi-automatic down-feed mode will be rejected and the display of the first row will flash with "E-01" alert message.

4. In the semi-automatic down-feed mode, the Rapid Up button, the Rapid Down button, and the Stepping Up button will be disabled. User can use only the Stepping Down button to manually bring down the spindle wheel along the column. And the GRINDING AMOUNT will subtract the traveling distance

that the spindle wheel is brought down by this manual Stepping Down operation. This manual Stepping Down operation will be no longer operative until the GRINDING AMOUNT is subtracted to 0.000.



NOTE

F26_001

ACER GROUP

Company / customer	
Project description	SUPRA-618II ASD surface grinder
drawing number	
Commission	
Manufacturer (company)	ACER GROUP
Path	
Project name	SUPRA-618IIASD-INV-Z-DELTA
make	
Type	SUPRA-618II ASD
Place of installation	
Responsible for project	
Part feature	

Created on	2011/11/8			
Edit date	2011/11/8	by (short name)	Number of pages	35

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Column X: An automatically generated page was edited

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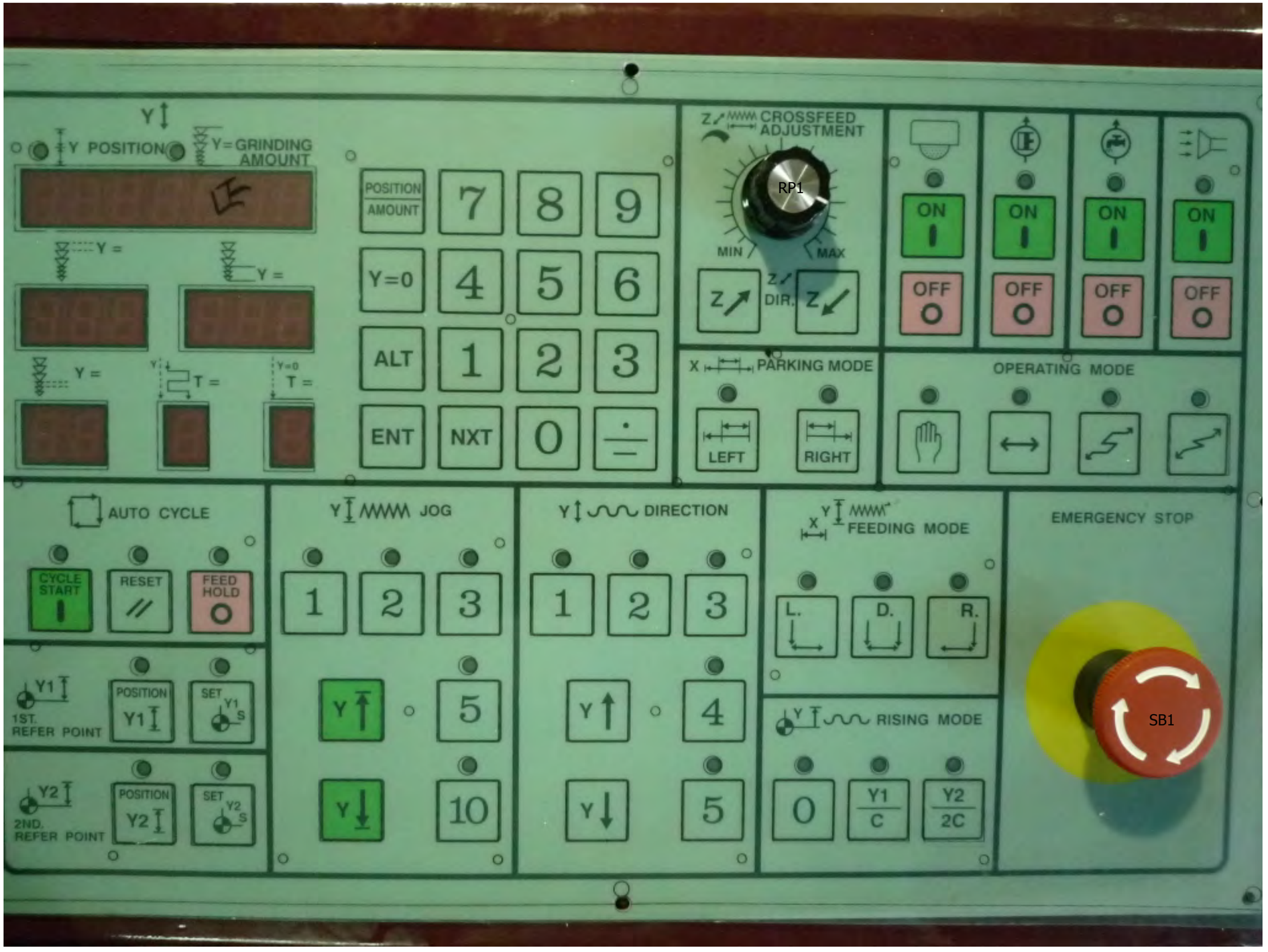

			Date	2011/11/8		ACER GROUP	Operating panel		= CA		
			Ed.						+		
			Appr		SUPRA-618II ASD surface grinder					Page	4
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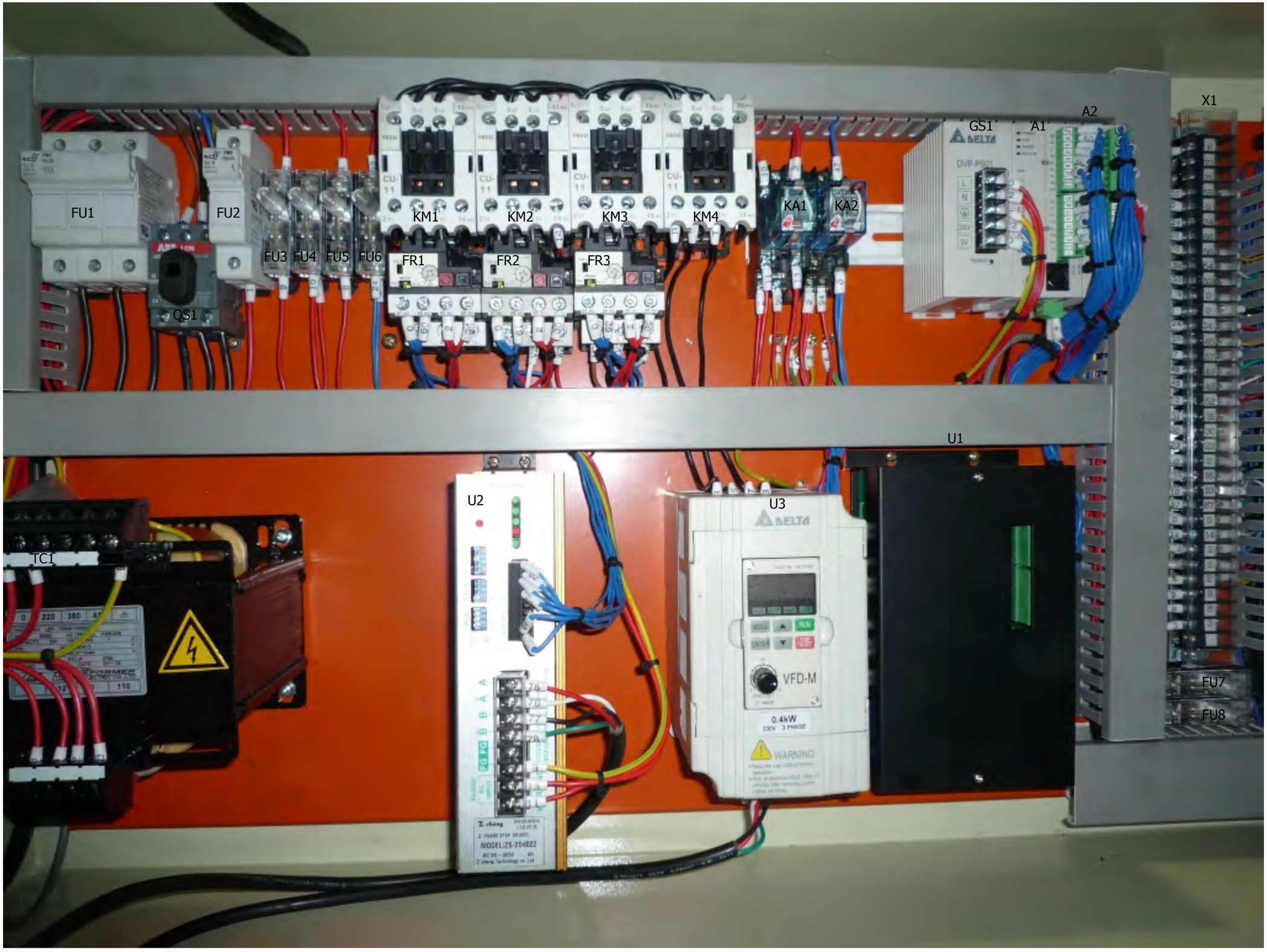

4 6

			Date	2011/11/8	SUPRA-618II ASD surface grinder		ACER GROUP	Electrical cabinet panel		= CA
			Ed.							+
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Modification	Date	Name	Original		Replaced by	Replaced by				Page 35

Device tag list

F03_001

device tag part number Type number	function text Article designation	X-Ref	symbol
=CA01-A1 DELTA.DVP12SC11T DVP12SC11T	Main controller SC series controller	=CA01/7.2	
=CA01-A1-X20	Extension port	=CA01/7.6	1
=CA01-A1-X21	POWER	=CA01/7.3	1
=CA01-A1-X22	RS-485	=CA01/7.4	1
=CA01-A1-X23	DI C	=CA01/7.5	1
=CA01-A1-X24	DO C0	=CA01/7.5	1
=CA01-A2 DELTA.DVP16SP11R DVP16SP11R	Digital input/output unit S series 8DI/8DO extension unit	=CA01/7.6	
=CA01-A2-X25	DI C	=CA01/7.7	1
=CA01-A2-X26	DO C0	=CA01/7.7	1

device tag part number Type number	function text Article designation	X-Ref	symbol
=CA01-A15	Resisters	=CA01/4.7	
=CA01-A15-R1	1/4W	=CA01/4.7	
=CA01-A15-R2	=	=CA01/4.8	
=CA01-FR1 TECO.RHU-10K1.7,2-10A RHU-10K1.7,2-10A	Grinding wheel motor overload Motor overload switch	=CA01/1.3	1 3 5 2 4 6
=CA01-FR2 TECO.RHU-10K1.3,5-4,8A RHU-10K1.3,5-4,8A	Hydraulic motor overload Motor overload switch	=CA01/1.5	1 3 5 2 4 6
=CA01-FR3 TECO.RHU-10K1.1,8-2,5A RHU-10K1.1,8-2,5A	Coolant motor overload Motor overload switch	=CA01/1.7	1 3 5 2 4 6
=CA01-FR5	Vacuum motor overload	=CA01/6.8	95 96
=CA01-FU1	Main fuses	=CA01/1.0	1 3 5 2 4 6
=CA01-FU2		=CA01/5.1	1 2

5

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			Date	2011/11/3		ACER GROUP	Device tag list : =CA01+-A1 - =CA01+-FU2	= CA
			Ed.		SUPRA-618II ASD surface grinder			+
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Device tag list

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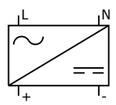
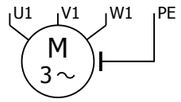
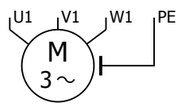
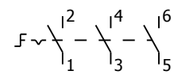
device tag part number Type number	function text Article designation	X-Ref	symbol
=CA01-FU3		=CA01/5.2	
=CA01-FU4		=CA01/5.3	
=CA01-FU5		=CA01/5.1	
=CA01-FU6		=CA01/7.2	
=CA01-FU7		=CA01/3.3	
=CA01-FU8		=CA01/3.4	
=CA01-GS1 DELTA.DVP-2401 DVP-2401	Power supply Power supply unit, 1-phase	=CA01/7.2	
=CA01-KA1 OMRON.LY2N-J.110VAC LY2N-J.110VAC	Elevator power starter Control relay	=CA01/6.7	
=CA01-KA2 OMRON.MY2N-J.110VAC MY2N-J.110VAC	In/outward starter Control relay	=CA01/6.6	

device tag part number Type number	function text Article designation	X-Ref	symbol
=CA01-KM1 TECO.CU-11E10 CU-11E10	G. W. motor starter Motor contactor	=CA01/6.1	
=CA01-KM2 TECO.CU-11E10 CU-11E10	Hydraulic motor starter Motor contactor	=CA01/6.2	
=CA01-KM3 TECO.CU-11E10 CU-11E10	Coolant motor starter Motor contactor	=CA01/6.3	
=CA01-KM4 TECO.CU-11E10 CU-11E10	Cross feed power starter Motor contactor	=CA01/6.5	
=CA01-KM6 TECO.CU-11E10 CU-11E10	Vacuum starter Motor contactor	=CA01/6.8	
=CA01-M1 CB.MS01362346-2,3KW MS01362346	Grinding wheel motor 3-phase induction motor	=CA01/1.3	
=CA01-M4 CB.MC01402200-40W MC01402200-40W	Cross feed motor 3-phase induction motor	=CA01/2.3	
=CA01-M5 CB.MSUD29902A MSUD29902A	Stepping motor 2-phases stepping motor	=CA01/4.1	
=CA01-QS1	Main switch	=CA01/1.0	

			Date	2011/11/3	SUPRA-618II ASD surface grinder		ACER GROUP	Device tag list : =CA01+-FU3 - =CA01+-QS1	= CA	
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Device tag list

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device tag part number Type number	function text Article designation	X-Ref	symbol
=CA01-R2		=CA01/3.5	
=CA01-TC1 LGE.500VA.110V.12V 500VA.110V.12V	Control transformer Transformer	=CA01/5.0	
=CA01-U1 GSENN.2A.AD.INV.001 2A.AD.INV.001	Motion controller Motion controller for AD with inverter	=CA01/3.2	
=CA01-U1-TB1		=CA01/3.5	1
=CA01-U1-TB2		=CA01/3.2	1
=CA01-U1-TB3		=CA01/3.6	1
=CA01-U1-TB4		=CA01/3.4	1
=CA01-U2 ZS.ZS.2D4022 ZS.2D4022	2 phases stepping driver 2-phase stepping motor driver	=CA01/4.0	
=CA01-U2-X11		=CA01/4.1	1

device tag part number Type number	function text Article designation	X-Ref	symbol
=CA01-U2-X12	OVH-	=CA01/4.5	1
=CA01-U3 DELTA.VFD004M23A VFD004M23A	Cross feed motor drive Inverter	=CA01/2.2	
=CA01-U3-DTB1		=CA01/2.3	1
=CA01-U3-DTB2		=CA01/2.3	1
=CA01-U3-J1	RS485	=CA01/2.6	3 SG-
=CA01-U3-J4		=CA01/2.7	1
=CA01-U3-J5		=CA01/2.4	1
=CA01-XS1 LLE.LLPM509-30-7 LLPM509-30-7	Hydraulic unit socket 7P power socket	=CA01/1.5	
=CA01-XS2 LLE.LLPM508-25-4 LLPM508-25-4	Coolant unit socket 4P power socket	=CA01/1.7	

			Date	2011/11/3		ACER GROUP	Device tag list : =CA01+-R2 - =CA01+-XS2	= CA
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Device tag list

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device tag part number Type number	function text Article designation	X-Ref	symbol
=CA01-XS3 YYE.LK-3021F LK-3021F	 Female receptacle		
=CA02-A3 GSENN.AD-MB-002 AD-MB-002	Operator's panel Membrane panel for AD series	=CA02/1.0	
=CA02-A3-AP1 GSENN.KEYSW1 KEYSW1	Operating element Elements of operating panel	=CA02/1.0	
=CA02-A3-AP1-CN1		=CA02/1.1	1
=CA02-A3-AP1-CN2		=CA02/1.1	1
=CA02-A3-AP1-CN3		=CA02/1.2	1
=CA02-A3-AP1-CN12		=CA02/1.3	1
=CA02-A3-AP1-CN21		=CA02/1.4	1
=CA02-A3-AP1-CN22		=CA02/1.4	1

device tag part number Type number	function text Article designation	X-Ref	symbol
=CA02-A3-AP1-CN26		=CA02/1.5	1
=CA02-A3-AP1-U3 GSENN.PLC-PANELV2.2 PLC-PANELV2.2	Panel controller Panel controller	=CA02/1.0	
=CA02-A3-AP1-U3-CN1		=CA02/1.1	1
=CA02-A3-AP1-U3-CN2		=CA02/1.1	1
=CA02-A3-AP1-U3-CN3		=CA02/1.2	1
=CA02-A3-AP1-U3-CN12		=CA02/1.3	1
=CA02-A3-AP1-U3-CN21		=CA02/1.4	1
=CA02-A3-AP1-U3-CN22		=CA02/1.4	1
=CA02-A3-AP1-U3-CN26		=CA02/1.5	1

			Date	2011/11/3	SUPRA-618II ASD surface grinder	ACER GROUP	Device tag list : =CA01+-XS3 - =CA02+-A3-AP1-U3-CN26	= CA
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Device tag list

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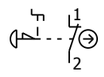
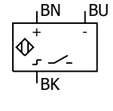
device tag part number Type number	function text Article designation	X-Ref	symbol
=CA02-A3-AP1-U3-TB1	POWER	=CA02/1.4	
=CA02-A3-AP1-U3-TB2	RS-485	=CA02/1.3	
=CA02-A3-AP1-VRCN		=CA02/1.8	
=CA02-A3-RP1 TOKOS.RV24YN20S503 RV24YN20S503	Jog increamental adjustment Potentiometer	=CA02/1.8	
=CA02-A3-SB1 MOE.A22-ESTOP-K11 A22-ESTOP-K11	Emergency stop Emergency stop pushbutton	=CA02/1.7	
=CA03-A13	12V working light (Option)	=CA03/1.2	
=CA03-A131	110V working light (Option)	=CA03/1.5	
=CA03-A131-FU1		=CA03/1.6	
=CA03-A131-U1		=CA03/1.5	

device tag part number Type number	function text Article designation	X-Ref	symbol
=CA03-A301	Optical linear scale counter	=CA03/2.2	
=CA03-A301-PWR		=CA03/2.3	
=CA03-A301-X	Scale connector	=CA03/2.4	
=CA03-A302	Linear scale unit	=CA03/2.2	
=CA03-A302-A302		=CA03/2.4	
=CA03-X9	Working light cinnectors	=CA03/1.3	
=CA03-XP1	Working light plug	=CA03/1.5	
=CA03-XP2		=CA03/2.3	
=CA04-SQ1 KFPS.TL-B5NE1 TL-B5NE1	Leftward switching detect Proximity switch (NO contact)	=CA04/1.5	

			Date	2011/11/3	SUPRA-618II ASD surface grinder	ACER GROUP	Device tag list : =CA02+-A3-AP1-U3-TB1 - =CA04+-SQ1	= CA
			Ed.					+
			Appr					Page 10
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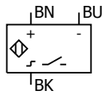
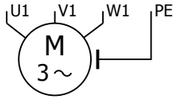
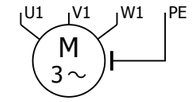
Device tag list

F03_001

device tag part number Type number	function text Article designation	X-Ref	symbol
=CA04-SQ2 KFPS.TL-B5NE1 TL-B5NE1	Rightward switching detect Proximity switch (NO contact)	=CA04/1.3	
=CA04.1-SQ4 HLE.AH-8104 AH-8104	Inward moving stroke Limit switch	=CA04.1/1.3	
=CA04.1-SQ5 HLE.AH-8104 AH-8104	Outward move stroke Limit switch	=CA04.1/1.4	
=CA04.1-SQ6 HLE.Z15G1308 Z15G1308	Upward limit detect Limit switch	=CA04.1/1.5	
=CA04.1-SQ7 HLE.Z15G1308 Z15G1308	In/outward limit detect Limit switch	=CA04.1/1.6	
=CA04.2-SQ3 OMRON.V-152-1A5 V-152-1A5	Throttle in safe detect Limit switch	=CA04.2/1.4	
=CA06-A11 CB.EV3V221101 EV3V221101	Hydraulic tank unit Hydraulic solenoid drive	=CA06/1.2	
=CA07-A401		=CA07/1.3	
=CA07-A401-M51 CB.MWPU402346-0,1KW MWPU402346	Coolant pump motor 3-phase induction motor	=CA07/1.4	

device tag part number Type number	function text Article designation	X-Ref	symbol
=CA07-A401-M52	Vacuum motor	=CA07/1.6	
=CA09-A14-M6 CB.CHCY.EL-1-110VAC CHCY.EL-1-110VAC	Electro magnetic pump	=CA09/1.4	
=CA10-A51-AP4 CB.DVM-1 DVM-1	Chuck controller (Option) Display device	=CA10/1.1	
=CA10-A51-AP4-CN3		=CA10/1.5	
=CA10-A51-AP4-CN6		=CA10/1.4	
=CA10-A51-AP4-CN7		=CA10/1.6	
=CA10-A51-AP4-CN8		=CA10/1.5	
=CA10-A51-AP4-CN9		=CA10/1.6	
=CA10-A51-AP4-INPUT		=CA10/1.4	

			Date	2011/11/3	SUPRA-618II ASD surface grinder		ACER GROUP	Device tag list : =CA04+-SQ2 - =CA10+-A51-AP4-INPUT	= CA
			Ed.						+
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Device tag list

F03_001

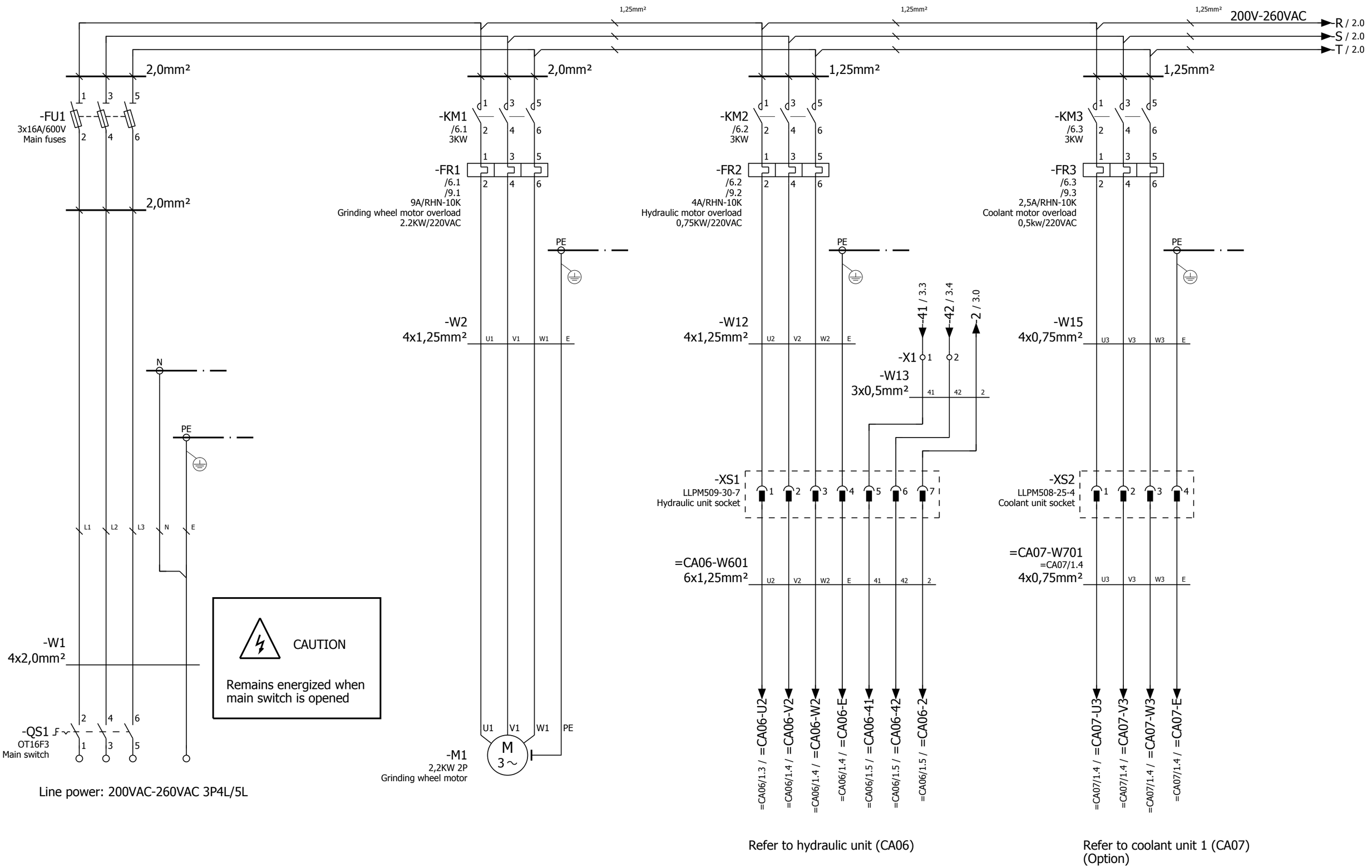
device tag part number Type number	function text Article designation	X-Ref	symbol
=CA10-A51-AP4-TB1		=CA10/1.4	E
=CA10-A51-AP4-TB2		=CA10/1.2	COM
=CA10-A51-AP4-TB4		=CA10/1.3	C
=CA10-A51-AP4-TB5		=CA10/1.5	0
=CA10-A52	Electrical magnetic chuck (Option)	=CA10/1.3	

device tag part number Type number	function text Article designation	X-Ref	symbol

Parts list

F01_001

device tag	Quantity	designation	Type number	supplier	part number
=CA01-A1	1	SC series controller	DVP12SC11T	DELTA	DELTA.DVP12SC11T
=CA01-A2	1	S series 8DI/8DO extension unit	DVP16SP11R	DELTA	DELTA.DVP16SP11R
=CA01-FR1	1	Motor overload switch	RHU-10K1.7,2-10A	TECO	TECO.RHU-10K1.7,2-10A
=CA01-FR2	1	Motor overload switch	RHU-10K1.3,5-4,8A	TECO	TECO.RHU-10K1.3,5-4,8A
=CA01-FR3	1	Motor overload switch	RHU-10K1.1,8-2,5A	TECO	TECO.RHU-10K1.1,8-2,5A
=CA01-GS1	1	Power supply unit, 1-phase	DVP-2401	DELTA	DELTA.DVP-2401
=CA01-KA1	1	Control relay	LY2N-J.110VAC	OMRON	OMRON.LY2N-J.110VAC
=CA01-KA2	1	Control relay	MY2N-J.110VAC	OMRON	OMRON.MY2N-J.110VAC
=CA01-KM1	1	Motor contactor	CU-11E10	TECO	TECO.CU-11E10
=CA01-KM2	1	Motor contactor	CU-11E10	TECO	TECO.CU-11E10
=CA01-KM3	1	Motor contactor	CU-11E10	TECO	TECO.CU-11E10
=CA01-KM4	1	Motor contactor	CU-11E10	TECO	TECO.CU-11E10
=CA01-KM6	1	Motor contactor	CU-11E10	TECO	TECO.CU-11E10
=CA01-M1	1	3-phase induction motor	MS01362346	CB	CB.MS01362346-2,3KW
=CA01-M4	1	3-phase induction motor	MC01402200-40W	CB	CB.MC01402200-40W
=CA01-M5	1	2-phases stepping motor	MSUD29902A	CB	CB.MSUD29902A
=CA01-TC1	1	Transformer	500VA.110V.12V	LGE	LGE.500VA.110V.12V
=CA01-U1	1	Motion controller for AD with inverter	2A.AD.INV.001	GSENN	GSENN.2A.AD.INV.001
=CA01-U2	1	2-phase stepping motor driver	ZS.2D4022	ZS	ZS.ZS.2D4022
=CA01-U3	1	Inverter	VFD004M23A	DELTA	DELTA.VFD004M23A
=CA01-XS1	1	7P power socket	LLPM509-30-7	LLE	LLE.LLPM509-30-7
=CA01-XS2	1	4P power socket	LLPM508-25-4	LLE	LLE.LLPM508-25-4
=CA01-XS3	1	Female receptacle	LK-3021F	YYE	YYE.LK-3021F
=CA02-A3	1	Membrane panel for AD series	AD-MB-002	GSENN	GSENN.AD-MB-002
=CA02-A3-AP1	1	Elements of operating panel	KEYSW1	GSENN	GSENN.KEYSW1
=CA02-A3-AP1-U3	1	Panel controller	PLC-PANELV2.2	GSENN	GSENN.PLC-PANELV2.2
=CA02-A3-RP1	1	Potentiometer	RV24YN20S503	RS	TOKOS.RV24YN20S503
=CA02-A3-SB1	1	Emergency stop pushbutton	A22-ESTOP-K11	MOE	MOE.A22-ESTOP-K11
=CA04-SQ1	1	Proximity switch (NO contact)	TL-B5NE1	KFPS	KFPS.TL-B5NE1
=CA04-SQ2	1	Proximity switch (NO contact)	TL-B5NE1	KFPS	KFPS.TL-B5NE1
=CA04.1-SQ4	1	Limit switch	AH-8104	HLE	HLE.AH-8104
=CA04.1-SQ5	1	Limit switch	AH-8104	HLE	HLE.AH-8104
=CA04.1-SQ6	1	Limit switch	Z15G1308	HLE	HLE.Z15G1308
=CA04.1-SQ7	1	Limit switch	Z15G1308	HLE	HLE.Z15G1308
=CA04.2-SQ3	1	Limit switch	V-152-1A5	OMRON	OMRON.V-152-1A5
=CA06-A11	1	Hydraulic solenoid drive	EV3V221101	CB	CB.EV3V221101
=CA06-A11	1	3-phase induction motor	MO01162346-0,75KW	CB	CB.MO01162346-0,75KW
=CA07-A401-M51	1	3-phase induction motor	MWPU402346	CB	CB.MWPU402346-0,1KW
=CA09-A14-M6	1	Electro magnetic pump	CHCY.EL-1-110VAC	CB	CB.CHCY.EL-1-110VAC
=CA09-A14-M6	1	Floating switch	LLSW18105L	CB	CB.LLSW18105L
=CA10-A51-AP4-AP1	1	Magnetic chuck control card	CHUCK60		CB.CHUCK60
=CA10-A51-AP4-AP2	1	Magnetic chuck power card	PWR50-10A	CB	CB.PWR50-10A
=CA10-A51-AP4-AP3	1	Display device	DVM-1	CB	CB.DVM-1
=CA10-A51-AP4-SA1	1	3-position thump-grip selector	A22-WRK3-K10+K10	MOE	MOE.A22-WRK3-K10+K10



Line power: 200VAC-260VAC 3P4L/5L

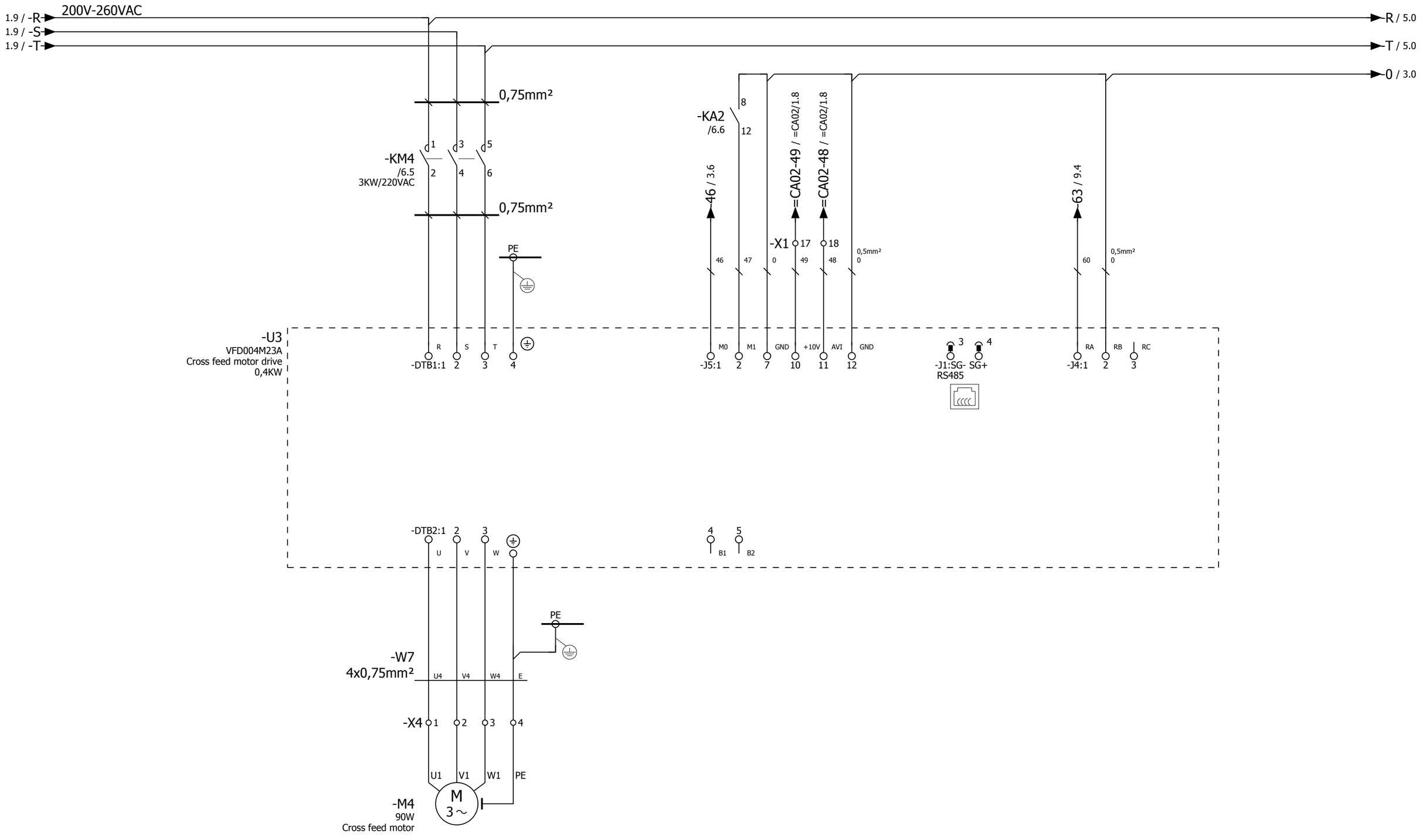
Refer to hydraulic unit (CA06)

Refer to coolant unit 1 (CA07) (Option)

=CA/13

2

			Date	2011/11/8		ACER GROUP	Main power		= CA01
			Ed.						+
			Appr		SUPRA-618II ASD surface grinder				Page 1
Modification	Date	Name	Original		Replaced by	Replaced by			Page 35



			Date	2011/11/8		ACER GROUP	Cross feed motor drive		= CA01
			Ed.						+
			Appr		SUPRA-618II ASD surface grinder				Page 2
Modification	Date	Name	Original		Replaced by	Replaced by			Page 35

1.7 / -2

110VAC

-16 / 6.0

-2 / 4.0

0,5mm²

-W17
/3.4
3x0,5mm²

-W17
/3.3
2x0,5mm²

-FU7
1A

-FU8
1A

41 / 1.6

97 / 11.9

42 / 1.6

50 / 8.1

51 / 8.2

46 / 2.4

0,5mm² 2

0,5mm² 97

0,5mm² 42

0,5mm² 0

0,5mm² 51

0,5mm² 0

16

41

50

46

-U1
2A.AD.INV.001
Motion controller

-TB2: 1 2 3 4 5 6 7 8 9 10

-TB1: 1 2 3 4 5 6 7 8 9 10

DELAY MAX. SOL1 SOL2 MC1 MC2 TRIG

-TB4: 6 5 4 3 2 1

-TB3: 8 7 6 5 4 3 2 1

0,5mm² 0

0,5mm² 81

23 31 32 0 0 80

-R2
4,7K ohms 0,25W

-X1 13 15 14 12

=CA04/1.5 / =CA04-23

=CA04/1.5 / =CA04-31

=CA04/1.5 / =CA04-32

=CA04/1.5 / =CA04-0

10.1 / -80

10.2 / -81

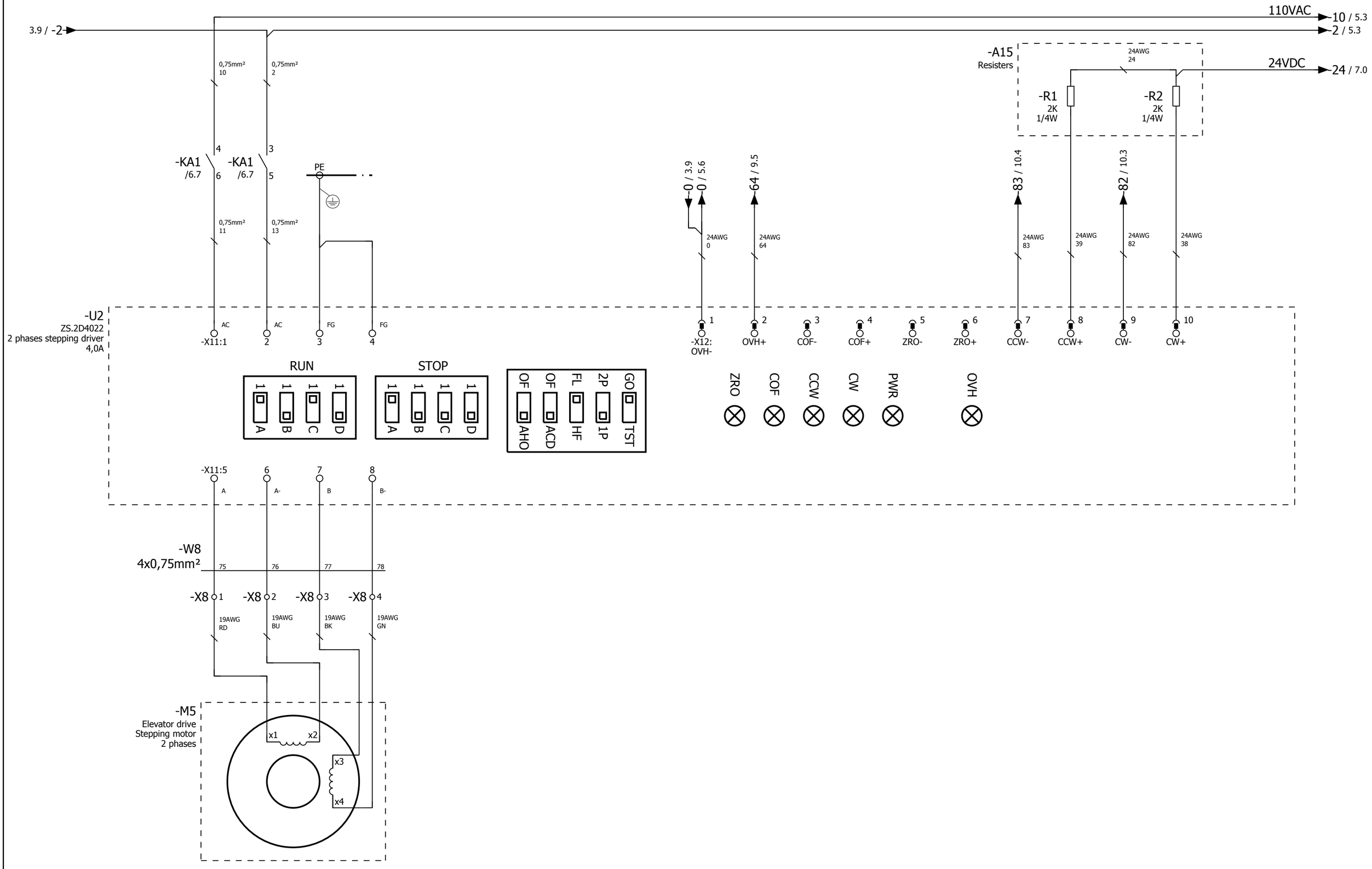
2.9 / -0

-0 / 4.4

2

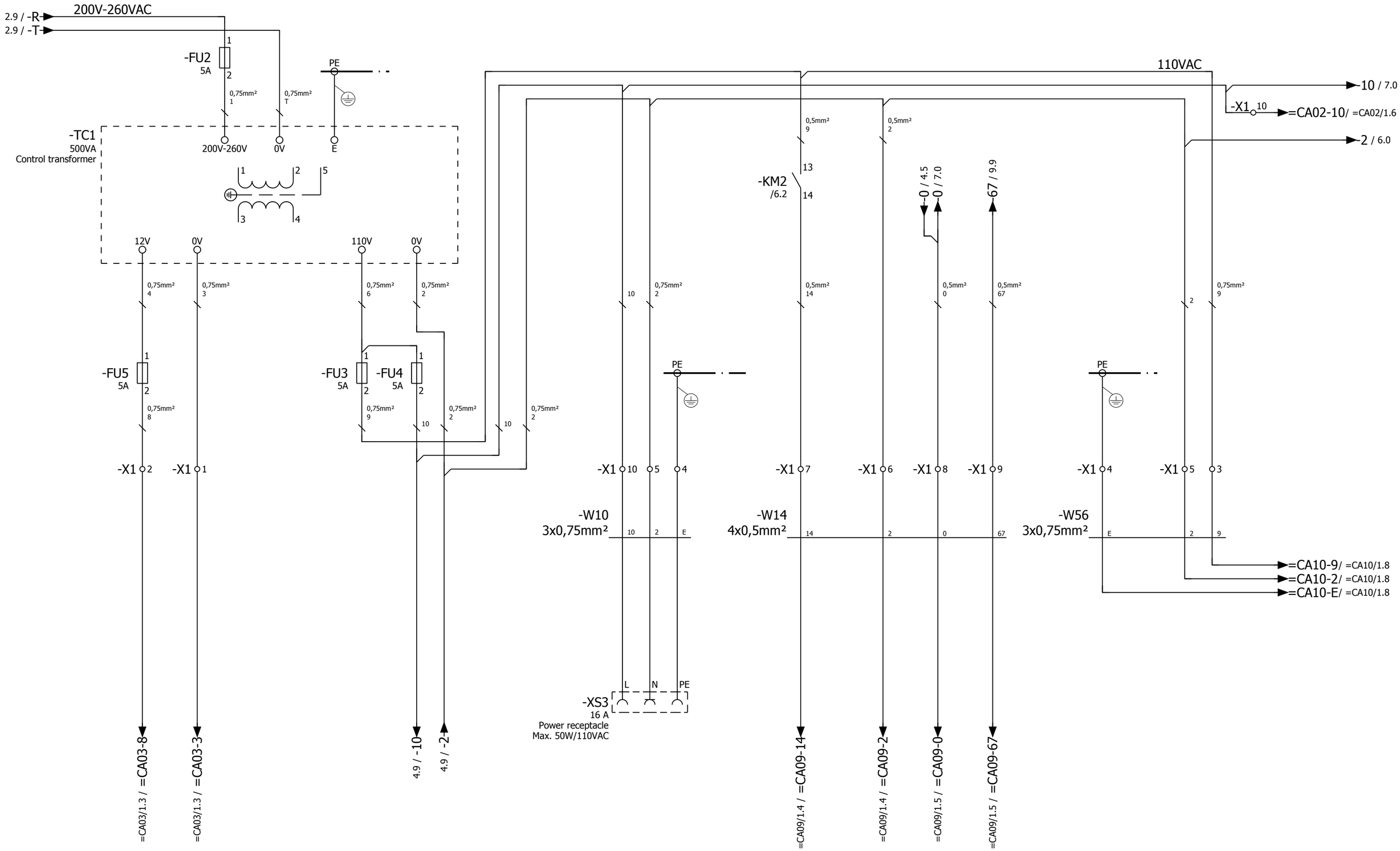
4

			Date	2011/11/8	SUPRA-618II ASD surface grinder	ACER GROUP	Left/rightward & in/outward motion drive	= CA01
			Ed.					+
			Appr					Page 3
Modification	Date	Name	Original		Replaced by / Replaced by			Page 35



3 5

			Date	2011/11/8	SUPRA-618II ASD surface grinder		ACER GROUP	Elevating motor drive	= CA01
			Ed.						+
			Appr						Page 4
Modification	Date	Name	Original		Replaced by	Replaced by			Page 35



			Date	2011/11/8	SUPRA-618II ASD surface grinder	ACER GROUP	Control power		= CA01
			Ed.						+
			Appr					Page	5
Modification	Date	Name	Original		Replaced by	Replaced by		Page	35

3.9 / -16 110VAC

-16 / 7.0

-X1 11

=CA02-16/ =CA02/1.6

-90 / 11.1	-91 / 11.2	-92 / 11.3	0,5mm² 16	-94 / 11.5	-96 / 11.8	-93 / 11.4
0,5mm² 90	0,5mm² 91	0,5mm² 92		0,5mm² 94	0,5mm² 96	0,5mm² 93
A1	A1	A1		A1	A1	A1
-KM1 ~ A2	-KM2 ~ A2	-KM3 ~ A2		-KM4 ~ A2	-KA2 ~ 13	-KA1 ~ 13
CU-11/110VAC G. W. motor starter 3KW/220VAC	CU-11/110VAC Hydraulic motor starter 3KW/220VAC	CU-11/110VAC Coolant motor starter 3KW/220VAC		CU-11/110VAC Cross feed power starter 3KW/220VAC	MY2/110VAC In/outward starter 40W/24VDC	LY2/110VAC Elevator power starter 200W/110VAC
0,5mm² 34	0,5mm² 35	0,5mm² 36				
95	95	95		A1	14	14
-FR1 /1.3 9A/RHN-10K G. W. motor overload 2.2KW/220VAC	-FR2 /1.5 4A/RHN-10K Hydraulic motor overload 0,75KW/220VAC	-FR3 /1.7 2,5A/RHN-10K Coolant motor overload 0,5kw/220VAC		A2	13	13
96	96	96				
0,5mm²	0,5mm²	0,5mm²	0,5mm²	0,5mm²	0,5mm²	0,5mm²

-KM6	-FR5
0,5mm² 98	
A1	
~ A2	
CU-11/110VAC Vacuum starter 3KW/220VAC	2,5A/RHN-10K Vacuum motor overload 0,4KW/220VAC
	95
	96
0,5mm²	0,5mm²

5.9 / -2 -2 / 7.0

Grinding wheel starter

1 2 /1.3
3 4 /1.3
5 6 /1.3

Hydraulic pump starter

1 2 /1.5
3 4 /1.5
5 6 /1.5
13 14 /5.5

Coolant pump starter

1 2 /1.7
3 4 /1.8
5 6 /1.8

Cross feed power starter

1 2 /2.3
3 4 /2.3
5 6 /2.3

In/outward moving starter

8 12 /2.5

Elevator power starter

3 5 /4.1
4 6 /4.1

Vacuum starter (Option)

5 7

			Date	2011/11/8	SUPRA-618II ASD surface grinder		ACER GROUP	Magnetic contacts & relays	= CA01
			Ed.						+
			Appr						Page 6
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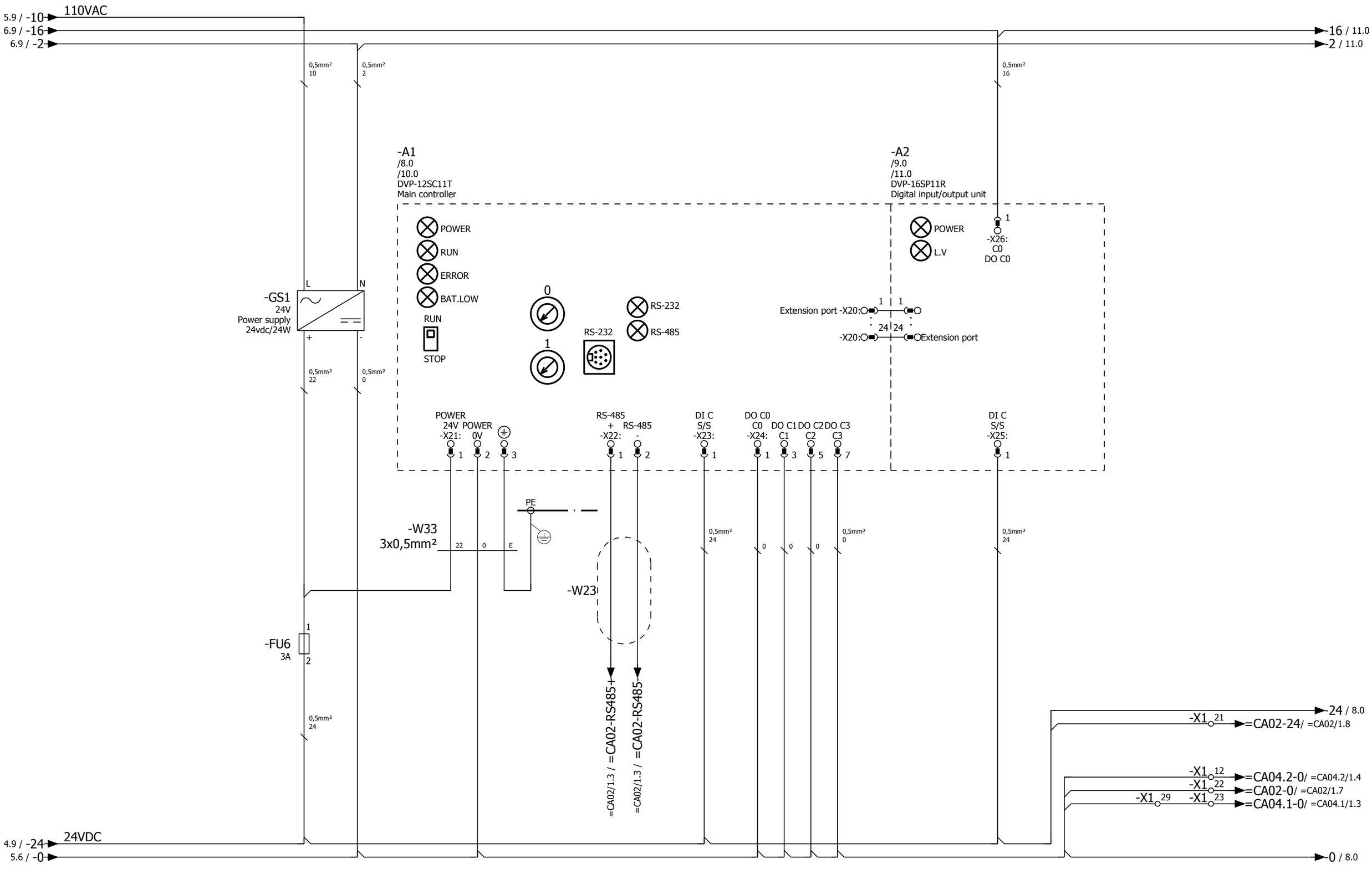


			Date	2011/11/8	SUPRA-618II ASD surface grinder		ACER GROUP	Controller power	= CA01
			Ed.						+
			Appr						Page 7
Modification	Date	Name	Original		Replaced by	Replaced by			Page 35

7.9 / -24 — 24VDC — -24 / 9.0

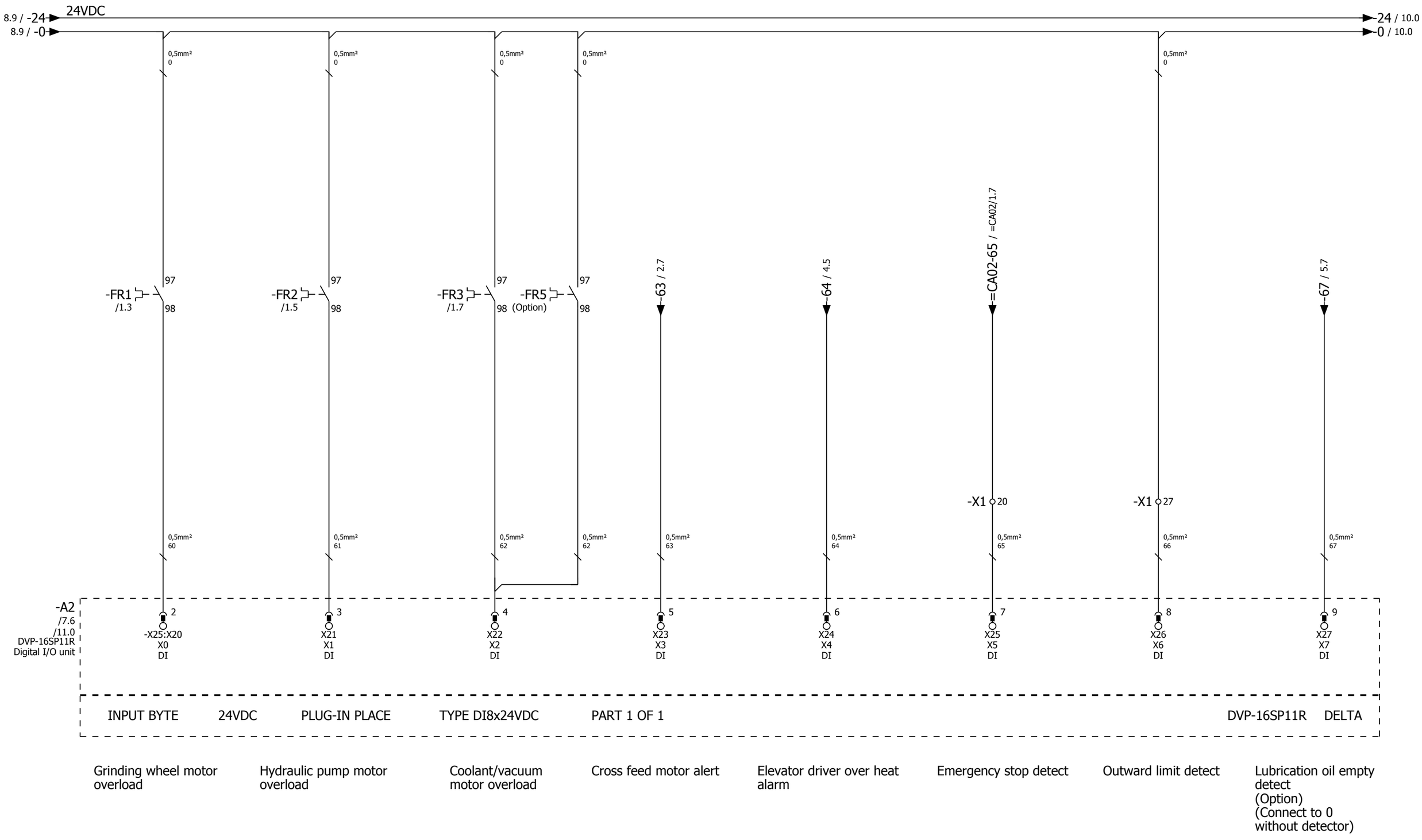
7.9 / -0 — -0 / 9.0

	-50 / 3.5	-51 / 3.5	=CA04.2-52 / =CA04.2/1.4	=CA04.1-53 / =CA04.1/1.3	=CA04.1-54 / =CA04.1/1.4	=CA04.1-55 / =CA04.1/1.5	=CA04.1-56 / =CA04.1/1.6	=CA02-57 / =CA02/1.8
			-X1 16	-X1 24	-X1 25	-X1 30	-X1 26	-X1 19
	0,5mm² 50	0,5mm² 51	0,5mm² 52	0,5mm² 53	0,5mm² 54	0,5mm² 55	0,5mm² 56	0,5mm² 57
-A1 /7.2 /10.0 DVP-12SC11T Main controller	2 -X23:X0 X0 DI	3 X1 X1 DI	4 X2 X2 DI	5 X3 X3 DI	6 X4 X4 DI	7 X5 X5 DI	8 X10 X10 DI	9 X11 X11 DI
	Lfet switching detect	Right switching detect	Throttle in safe detect	Inward moving stroke	Outward moving stroke	Upward limit detect	Inward limit detect	Chuck power detect (Option)

INPUT BYTE 24VDC PLUG-IN PLACE TYPE DI8x24VDC PART 1 OF 1 DVP-12SC11T DELTA

7 9

			Date	2011/11/8		ACER GROUP	Sensors & detectors (X0-X7)	= CA01
			Ed.					+
			Appr		SUPRA-618II ASD surface grinder			Page 8
Modification	Date	Name	Original		Replaced by	Replaced by		Page 35



			Date	2011/11/8	SUPRA-618II ASD surface grinder		ACER GROUP	Sensors & detectors (X20-X27)	= CA01
			Ed.						+
			Appr						Page 9
Modification	Date	Name	Original		Replaced by	Replaced by			Page 35

Jog cross feeding output Rapid cross feeding output Elevator series pulse output Elevator direction output

-A1
/7.2
/8.0
DVP-12SC11T
Main controller

OUTPUT BYTE 24VDC PLUG-IN PLACE TYPE DO8x24VDC PART 1 OF 1 DVP-12SC11T DELTA

DO	DO	DO	DO	
Y0	Y1	Y10	Y11	
-X24:Y0	Y1	Y10	Y11	
2	4	6	8	Not used 9
0,5mm² 80	0,5mm² 81	24AWG 82	24AWG 83	
3.5 / -80	3.6 / -81	4.8 / -82	4.7 / -83	

9.9 / -24 ▶ 24VDC ▶ -24 /
9.9 / -0 ▶ ▶ -0 /

9 11

			Date	2011/11/8	SUPRA-618II ASD surface grinder	ACER GROUP	Control signals (Y0, Y1, Y10, Y11)	= CA01
			Ed.					+
			Appr					Page 10
Modification	Date	Name	Original		Replaced by / Replaced by			Page 35

Grinding wheel enabled | Hydraulic pump enabled | Coolant/vacuum enabled | Vacuum enabled (Option) | Inward moving enabled | Outward moving enabled | Elevator power enabled | Left/right switching enabled

-A2
/7.6
/9.0
DVP-16SP11R
Digital I/O unit

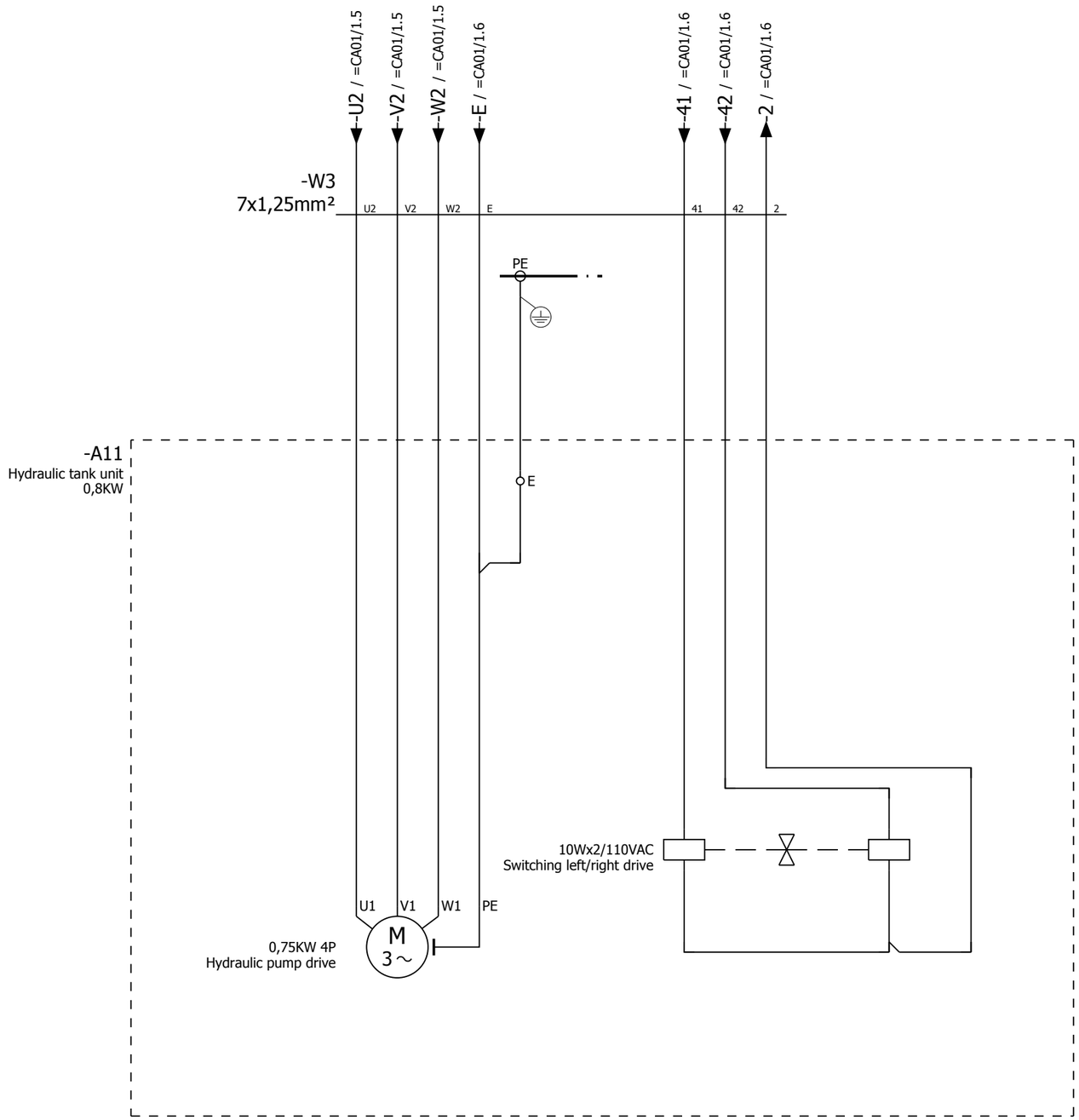
OUTPUT BYTE 24VDC PLUG-IN PLACE TYPE DO8x24VDC PART 1 OF 1 DVP-16SP11R DELTA

DO	DO	DO	DO	DO	DO	DO	DO
Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
-X26:Y20	Y21	Y22	Y23	Y24	Y25	Y26	Y27
2	3	4	5	6	7	8	9
0,5mm² 90	0,5mm² 91	0,5mm² 92	0,5mm² 93	0,5mm² 94	0,5mm² 95	0,5mm² 96	0,5mm² 97
6.1 / -90	6.2 / -91	6.3 / -92	6.8 / -93	6.6 / -94	/ -95	6.7 / -96	3.3 / -97

7.9 / -16 ▶ 110VAC ▶ -16 /
7.9 / -2 ▶ ▶ -2 /

10 =CA06/1

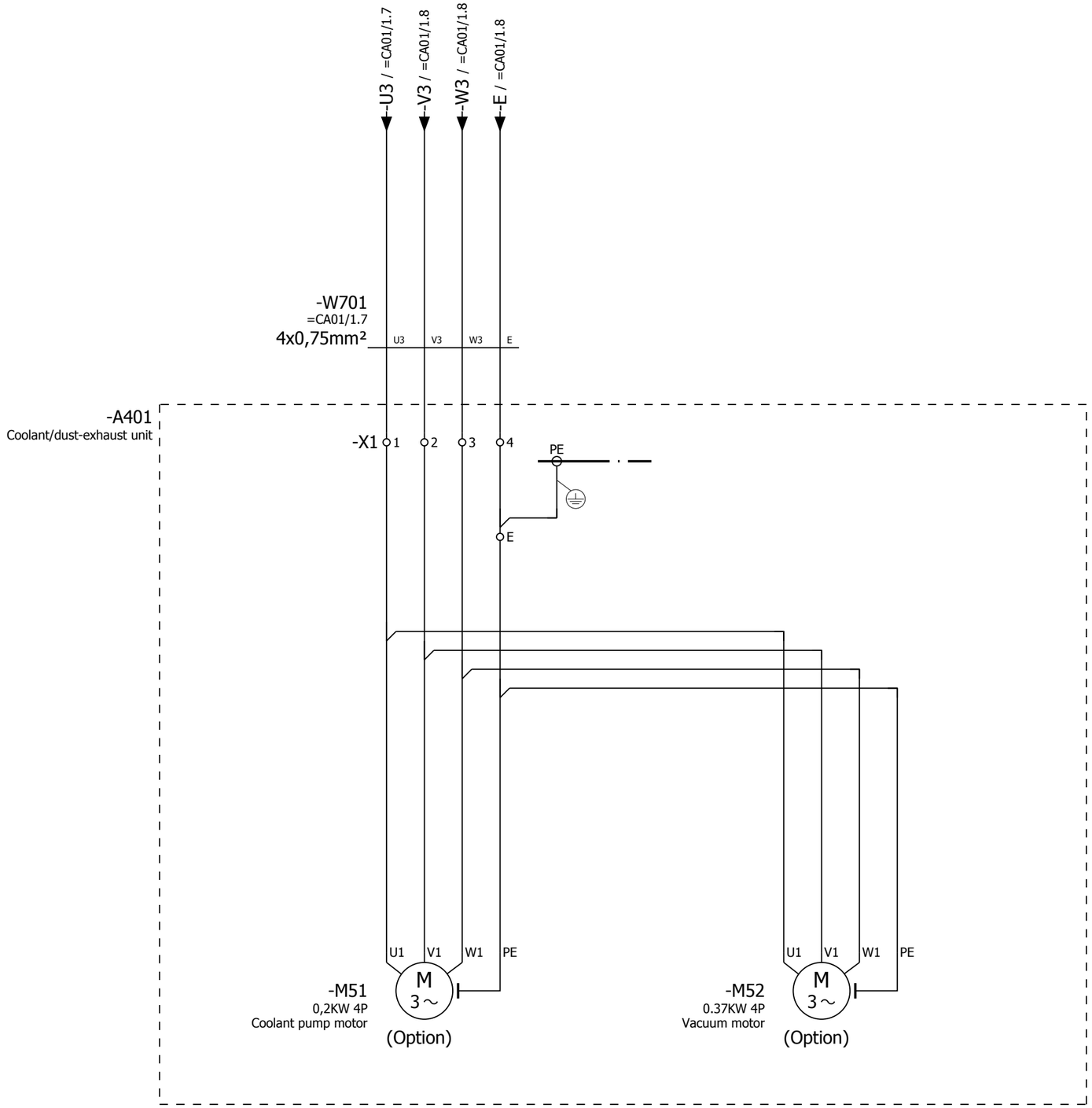
			Date	2011/11/8	SUPRA-618II ASD surface grinder	ACER GROUP	Control signals (Y20-Y27)	= CA01
			Ed.					+
			Appr					Page 11
Modification	Date	Name	Original		Replaced by / Replaced by			Page 35



=CA01/11

=CA07/1

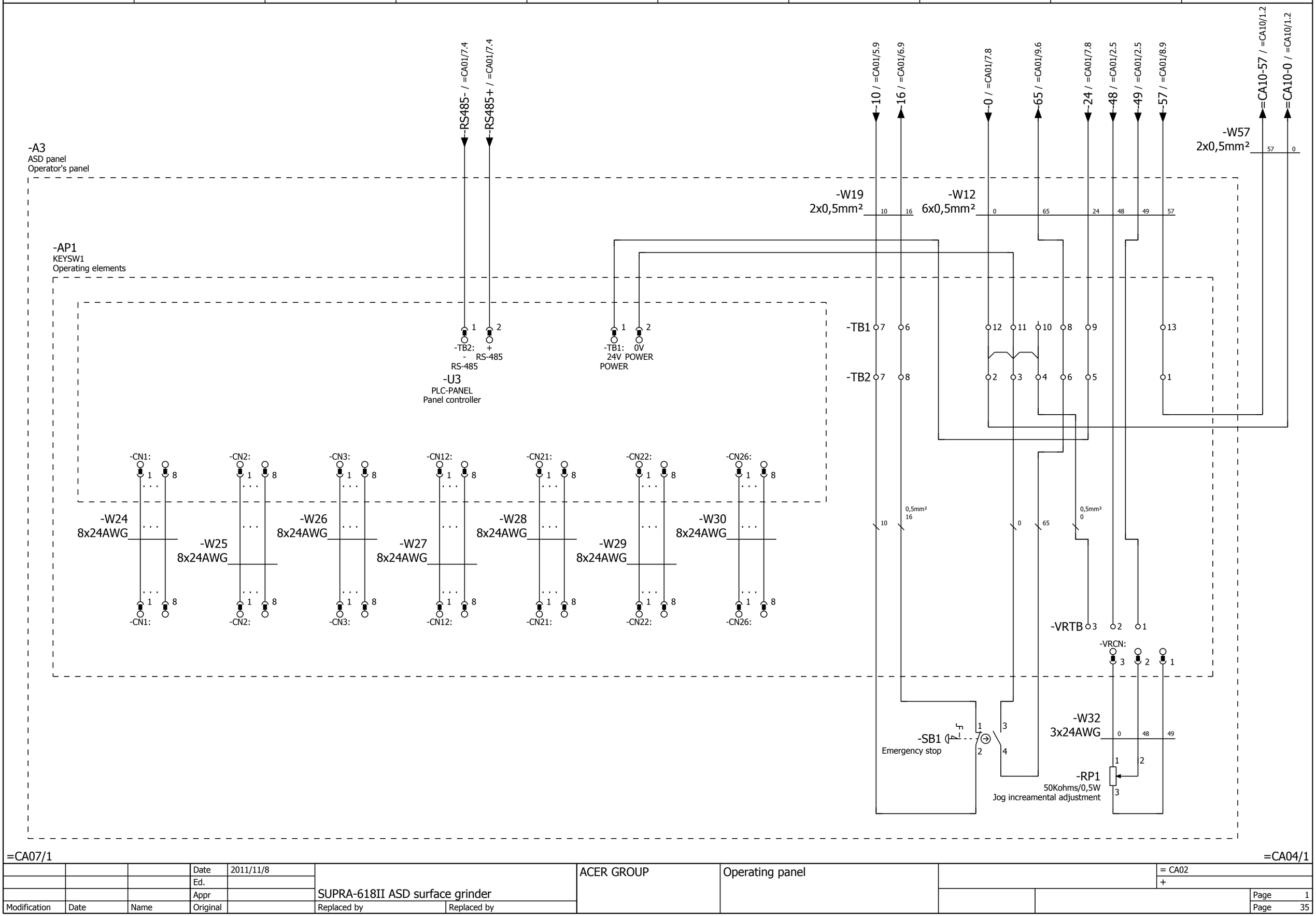
			Date	2011/11/8	SUPRA-618II ASD surface grinder	ACER GROUP	Hydraulic unit	= CA06
			Ed.					+
			Appr					Page 1
Modification	Date	Name	Original		Replaced by / Replaced by			Page 35



=CA06/1

=CA02/1

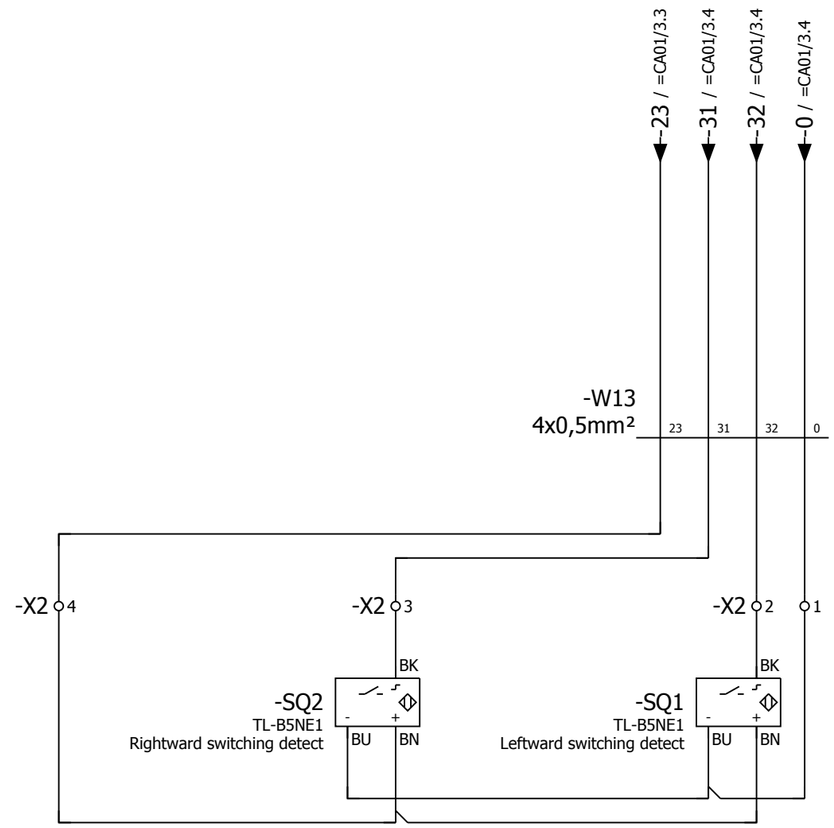
			Date	2011/11/8	SUPRA-618II ASD surface grinder	ACER GROUP	Coolant unit	= CA07
			Ed.					+
			Appr					Page 1
Modification	Date	Name	Original		Replaced by / Replaced by			Page 35



=CA07/1

=CA04/1

			Date	2011/11/8		ACER GROUP	Operating panel	= CA02
			Ed.					+
			Appr		SUPRA-618II ASD surface grinder			Page 1
Modification	Date	Name	Original		Replaced by	Replaced by		Page 35

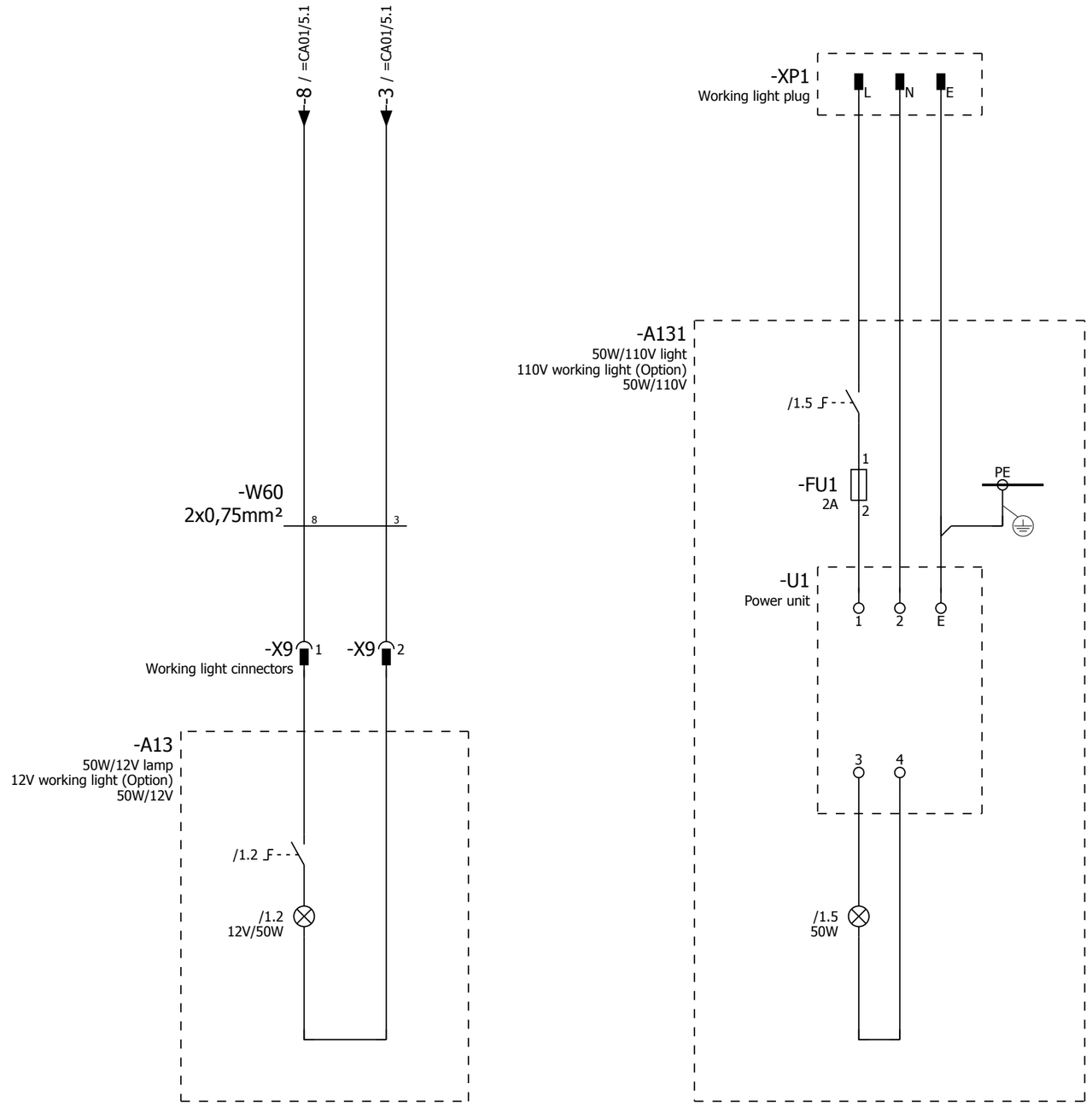


=CA02/1

=CA03/1

			Date	2011/11/8	SUPRA-618II ASD surface grinder		ACER GROUP	Left/rightward switching switches	= CA04
			Ed.						+
			Appr						Page 1
Modification	Date	Name	Original		Replaced by	Replaced by			Page 35

0	1	2	3	4	5	6	7	8	9



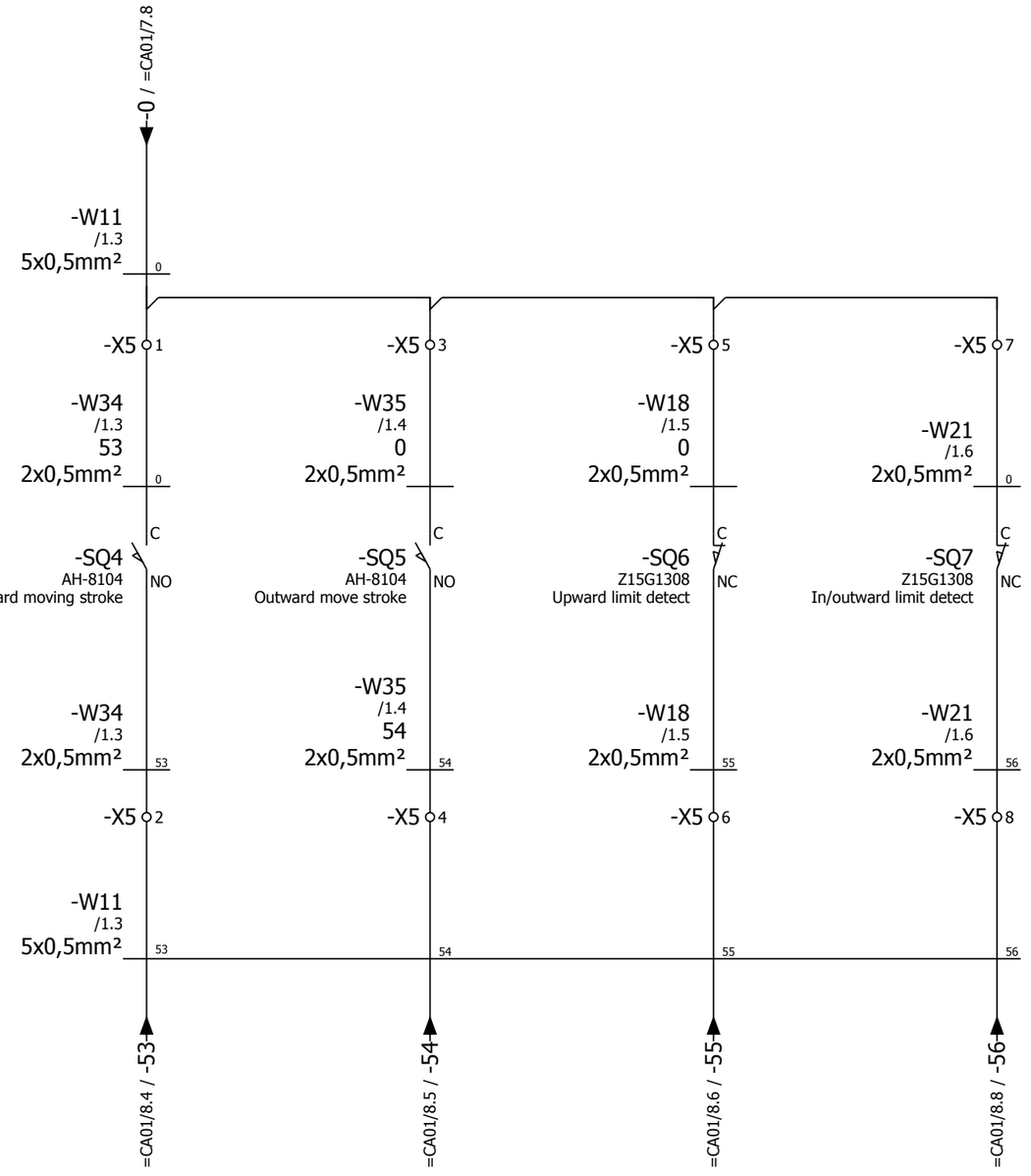
=CA04/1

2

			Date	2011/11/8		ACER GROUP	Working lamp	= CA03
			Ed.					+
			Appr		SUPRA-618II ASD surface grinder			Page 1
Modification	Date	Name	Original		Replaced by	Replaced by		Page 35

(Option)

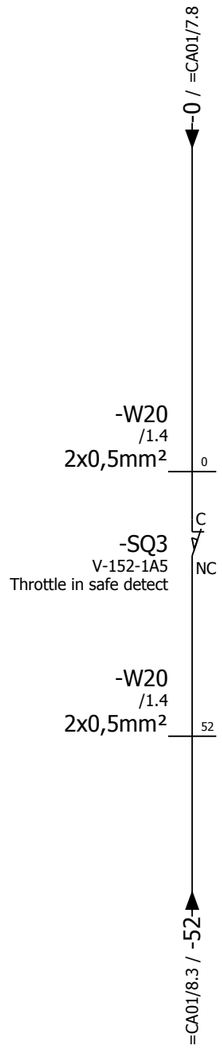
			Date	2011/11/8	SUPRA-618II ASD surface grinder		ACER GROUP	Optical linear scale unit	= CA03
			Ed.						+
			Appr						Page 2
Modification	Date	Name	Original		Replaced by	Replaced by			Page 35



Inward moving stroke Outward moving stroke Upward limit detect In/outward limit detect

=CA03/2 =.2/1

			Date	2011/11/8		ACER GROUP	In, out & top limit switches	= CA04.1
			Ed.					+
			Appr		SUPRA-618II ASD surface grinder			Page 1
Modification	Date	Name	Original		Replaced by	Replaced by		Page 35

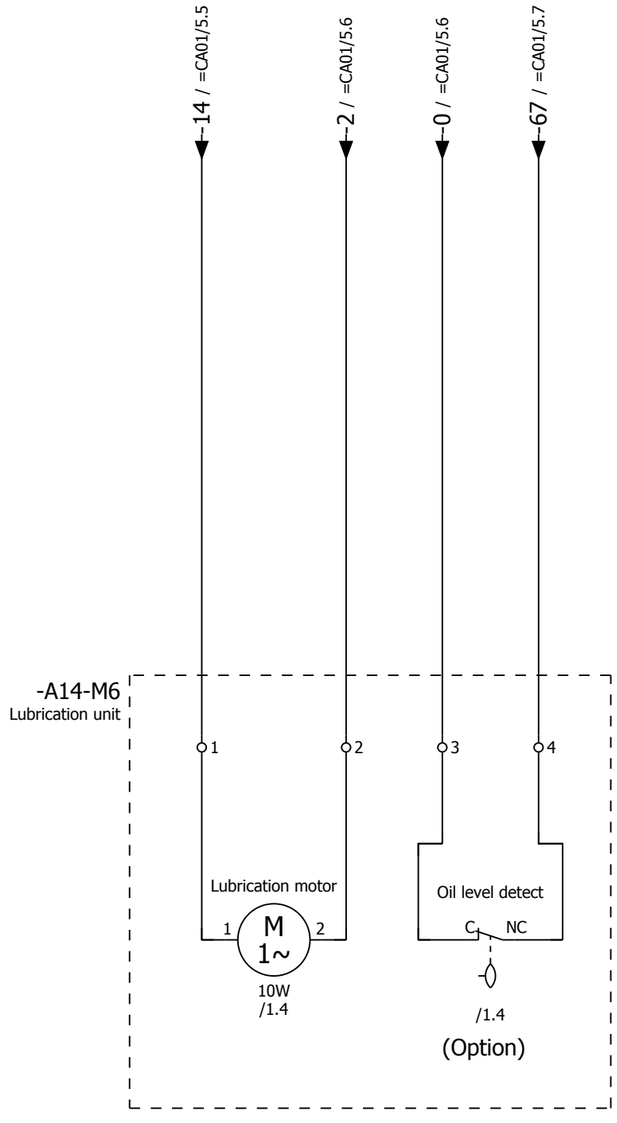


Throttle in safe detect

=.1/1

=CA09/1

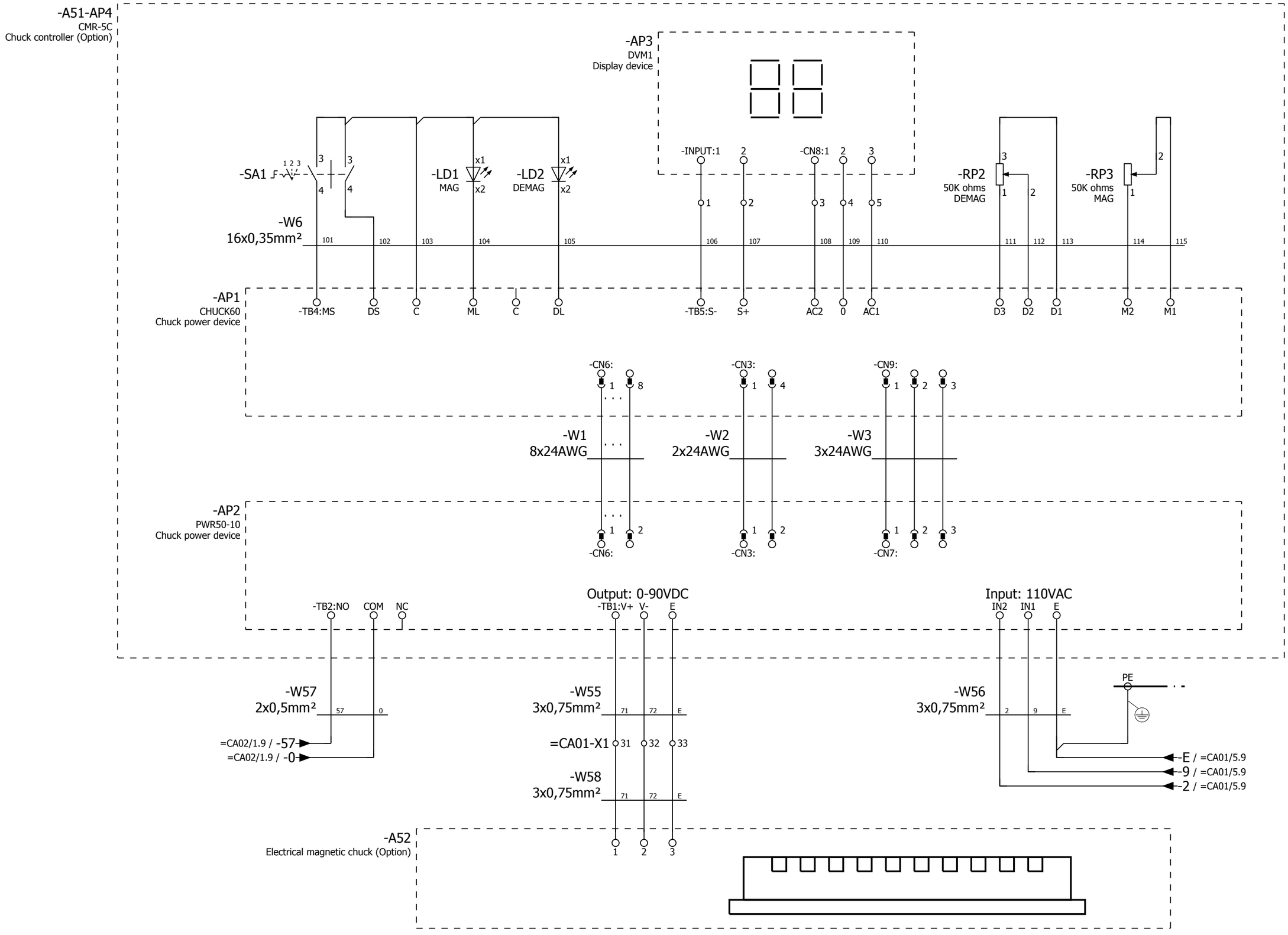
			Date	2011/11/8	SUPRA-618II ASD surface grinder		ACER GROUP	Throttle limit switches		= CA04.2
			Ed.							+
			Appr							Page 1
Modification	Date	Name	Original		Replaced by	Replaced by				Page 35



=CA04.2/1

=CA10/1

			Date	2011/11/8	SUPRA-618II ASD surface grinder		ACER GROUP	Slide guide lubrication unit	= CA09
			Ed.						+
			Appr						Page 1
Modification	Date	Name	Original		Replaced by	Replaced by			Page 35



=CA09/1

=CA20/1

			Date	2011/11/8		ACER GROUP	Chuck control unit (Option)	= CA10
			Ed.					+
			Appr		SUPRA-618II ASD surface grinder			Page 1
Modification	Date	Name	Original		Replaced by	Replaced by		Page 35

Table of alert messages and troubleshooting

Alert message	Definition	Troubleshooting methods
E-StoP	Emergency stop	Release or check the emergency stop button.
oL-S	Overload of the grinding wheel motor	Contact the technical service personnel.
oL-H	Overload of the hydraulic pump motor	
oL-c	Overload of the coolant pump motor	
oL-d	Overload of the vacuum motor	
oL-F	Overload of the cross-feed motor	
oL-U	Alarm of the elevating driver	
LS-i	The saddle traveled over the inward or outward limit.	Turn off the throttle or the hydraulic pump before move the saddle by handle. Contact the technical service personnel.
LS-U	The grinding wheel ascended over the upper limit.	Contact the technical service personnel.
E-01	The starting position is lower than the 1st reference point.	1. Raise high the starting position. 2. Clear the 1st reference point.
E-02	The 1st reference point is higher than the 2nd reference point.	Reset the reference points.
E-04	The electrical chuck lost its power or fault as the table in automatic motion.	1. Check the connection box of magnetic chuck. 2. Contact the technical service personnel.
E-09	The throttle is off as the saddle in automatic motion.	1. Chose the cross feed direction again after the throttle on for continually. 2. Check the safety limit of the throttle.