ACER

OPERATION MANUAL

Bed Type Milling Machine with ATC
Model: ATM 1054 & ATM 1050

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CONTENT

DESCRIPTION **PAGE NO.**

1. BASIC MACHINE INFORMATION

Bed type mill is very high precision and CNC controlled machine. Therefore, before operating this type of the machine, please read this manual carefully, and make sure you have the knowledge to operate this machine properly. If you have any question, please contact our local distributor. We will answer your question promptly.

1-1. Machine Specification

Specification					
	Model	ATM 1050	ATM 1050A	ATM 1054	ATM 1054A
Table	Table Size	10"x50" (254x1270mm)		10"x54" (254x1372mm)	
	T-Slots	3 x 5/8" (16mm)			
	Table Load	1320 lbs (600kgs)			
Travel	X Axis Max./Rapid Feed	27.5"(700mm)/200ipm		31.5"(800mm)/200ipm	
	Y Axis Max./Rapid Feed	20"(500mm)/200ipm			
	Z Axis Max./Rapid Feed	20.87"(530mm)/200ipm			
	Max Spindle Nose to Table	5.31"(135mm)~25.39" (645mm)			
	Spindle Center to Column Face	23.62" (600mm)			
Spindle	Quill Diameter	4.72" (120mm)			
	Spindle Taper	CAT #40 or BT #40			
	Spindle Speed RPM	0~6000RPM			
Motor	Spindle HP	7.5			
	X Axis Servo Motor	AC 750 watts, Option (1KW or 6.3Nm)			
	Y Axis Servo Motor	AC 750 watts			
	Z Axis Servo Motor	AC 1 KW	AC 1 KW with brake	AC 1 KW	AC 1 KW with brake
	Coolant Pump HP	1/8			
ATC Tool Dimension	Tool Total Length x Number of Tools	12" (300mm) x 8 tools, Option (10 or 12 tools)			
	Tool Maximum Width	2.95" (75mm)			
	Tool Total Weight	15 lbs (8kgs)			
Power	Control	230V/3P/30A			
	Machine Total	12.5KVA			
Air Req.	Cylinder Pressure	6kg/cm² min.			
Dimension	Max. Height at Cylinder	110" (2794mm)			
	Max. Work-Piece Height	18" (457.2mm)			
	Height from Table Top to Bottom of Bed	35.43" (900mm)			
	Width of Machine Including Table	67.65"(1719mm)		71.65"(1820mm)	
	Overall Length with Electrical Door Closed	80.71" (2050mm)			
	Overall Length with Electrical Door Open	108.27" (2750mm)			
	Overall Width with Full Table Traverse	100" (2540mm)		108"(2743mm)	
	Footprint of Machine inches	67.65"x80.71"x110"		71.65"x80.71"x110"	
	Footprint of Machine metric	1719x2050x2794mm		1820x2050x2794mm	
Weight	Net Approx.	5830 lbs (2650 kgs)	5170 lbs (2350 kgs)	5896 lbs (2680 kgs)	5236 lbs (2380 kgs)
	Gross Approx.	6169 lbs (2804 kgs)	5509 lbs (2504 kgs)	6235 lbs (2834 kgs)	5575 lbs (2534 kgs)
Packing Dimension Approx.	X x Y x Z inch (metric) w/balancing block	82.22"x86.22"x99.61" (2088x2190x2530mm)	-	86.22"x86.22"x99.61" (2190x2190x2530mm)	-
	X x Y x Z inch (metric) w/balancing cylinder (A model)	-	82.22"x86.22"x99.61" (2088x2190x2530mm)	-	86.22"x86.22"x99.61" (2190x2190x2530mm)
Maximum Working Capacity in Mild Steel					
Drilling Max Capacity		1 1/4" (32mm) Dia.			
Milling Max Capacity		5 inch³/min			
Boring Capacity		8" (200mm) Dia			
Tapping Max Capacity		1" (25mm)			
Handwheel Type		Electronic MPG			

1-2. Accessories of the Machine

1-2-1. Standard Accessories

a. **Three axes C5x2B ball screw**
b. **Timed lubrication pump**
c. **Leveling pads & screws**
d. **Tool box w/tools**
e. **Three axes CNC control or with 4th axis installed.**
f. **Coolant tank on machine base at 13.21 gallons or 50 liters.**

1-2-2. Optional Accessories

a. **Y axis metal type way cover**
b. **T slot cover**
c. **Clamping kit**
d. **Milling vise**
e. **Horizontal/vertical rotary table**
f. **Super indexing spacer**
g. **CAT/BT#40 collet holder set**
h. **Hydraulic machine vise**
i. **Tool maker's vise**
j. **CNC power vise**
k. **4th axis rotary table**
l. **Pull stud**

1-3. Floor Space of the Machine

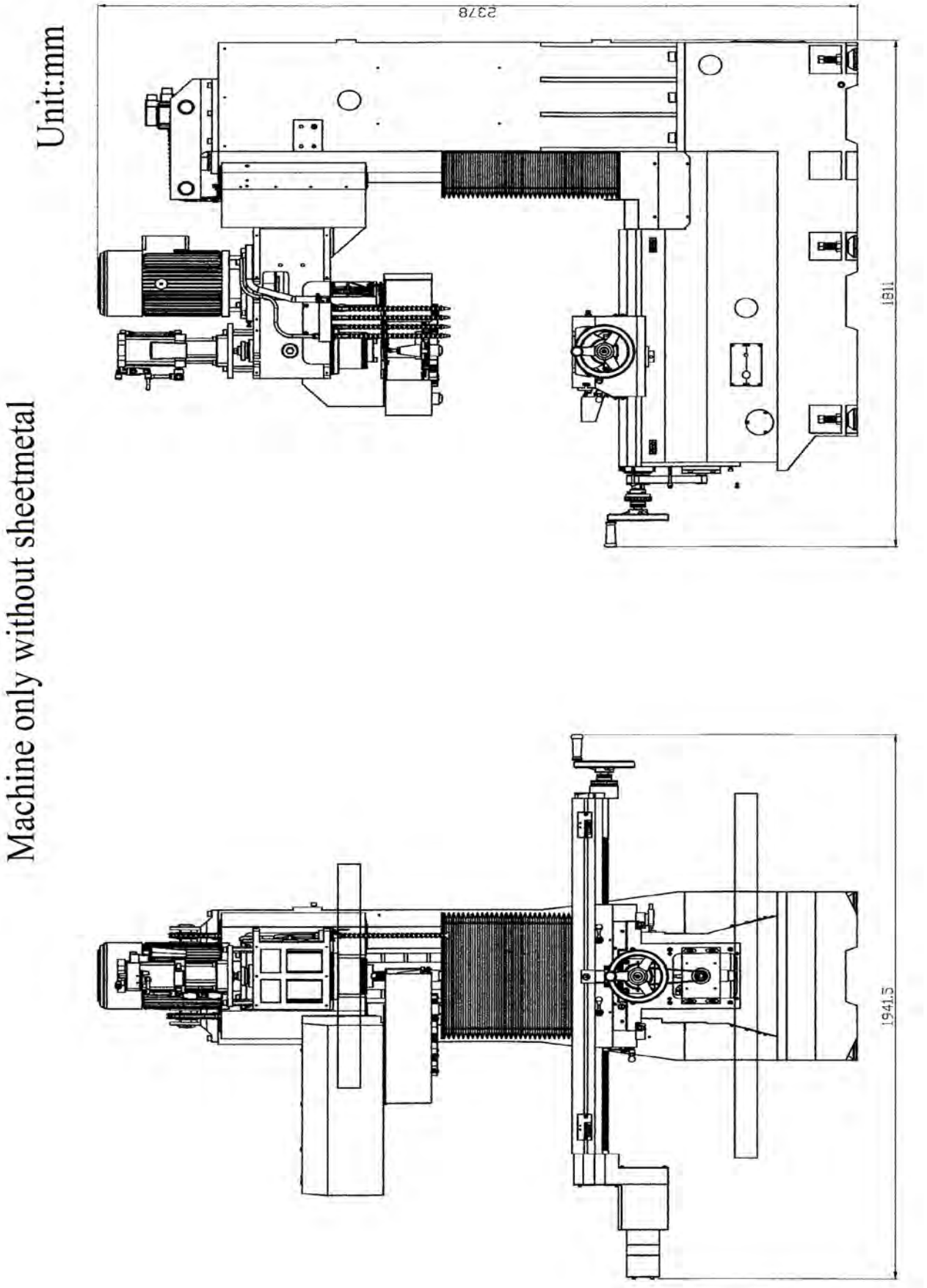


Figure 1

2. INSTALLATION

2-1. Machine Foundation Requirement

Incorrect foundation will affect machine's accuracy. Only correctly done foundation will avoid machine vibration, reduce machine malfunction, and loosening level of the machine. All these factors will contribute to machine's machining accuracy.
Every machine has a different control and is weighed differently. They are also designed different. Therefore they also need a different foundation. We strongly suggest customers to build the foundation according to the requirement (shown on fig. 2 & 3).
All new machines, we have supply with leveling pads and screws. They are used to level the machine, and reduce the vibration. All accessories are shipped with the machine. Please check for any missing items and contact your distributor for replacement.

2-2. Installation & Its Site

To prolong the life of the machine and its accuracy, please carefully select the proper installation site. The criteria are:

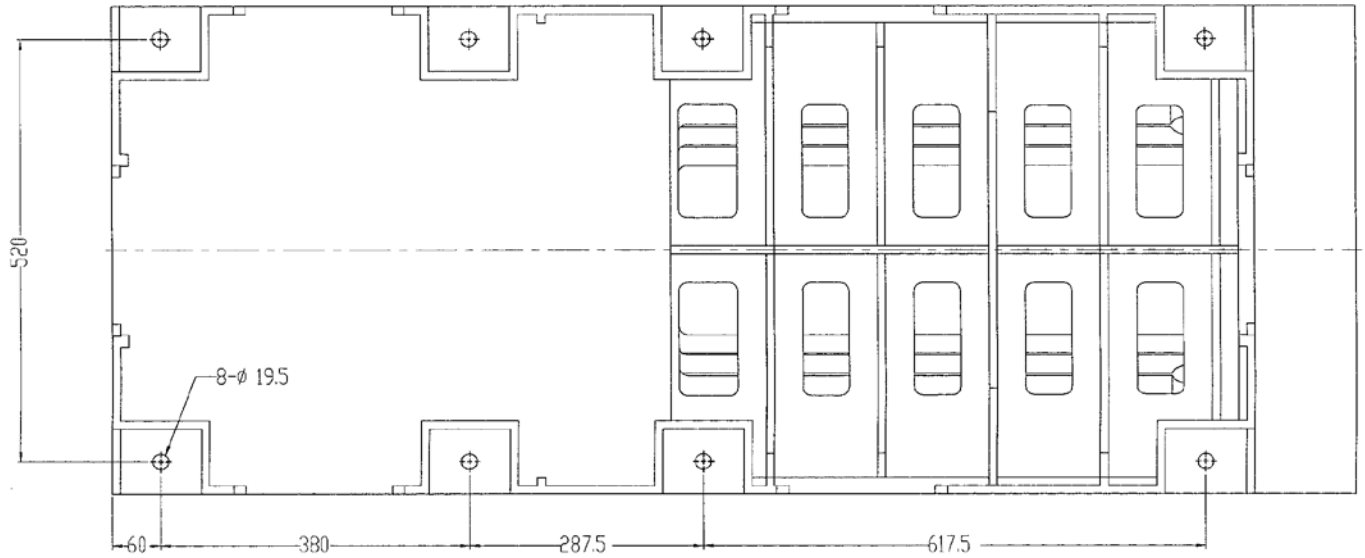
a. **Find the site where there is vibration-free and there is no power shortage. Please avoid install the machine around press, shaping machine etc. They will affect the accuracy of the machine.**
b. **Never install the machine under direct sunlight or where humidity is high.**
c. **Avoid the site where there is corrosive powder and mist.**

2-3. Level & Leveling Screws

The method of building the foundation is as figure 2. Please build the foundation 15 days before machine arrive. The procedure is as follow:

a. **Check the foundation map before digging.**
b. **Dig the foundation area to the proper depth, flatten it, fill it with rocks, and use rubbles to fill the gaps.**
c. **Make the screw molds for selected leveling screw area. Make sure they are not out of straight or penetrate out of shape.**
d. **Concrete mix ratio is 1:2:4 (concrete: sand: small rubbles) They need to be mixed thoroughly, and make sure the concrete mix has the right elasticity and color content.**
e. **Before pouring in the concrete mix, place the screw molds in place. They are prepared for J type locating screws.**
f. **After concrete solidified, you may remove the molds. In summer, the time required for concrete to solidify is 4~5 days, and in winter, it is 8~10 days.**
g. **When the machine is shipped to the location, install the J type locating screws through leveling screws and screw on the hex nuts, and then slowly settling down the machine on the foundation site. Be sure to match each J screw position before completely lowering down the machine.**
h. **After adjust each J screws' length to 6" above the ground, the concrete can be poured into the J screw positions.**

i. **After the concrete is solidified, you may then adjust the level of the machine.**
j. **Machine level in X and Y axis has to be within 0.0008/12" or better.**



*****Above is the foundation map of ATM 1054 with 8 leveling screws Unit: mm**

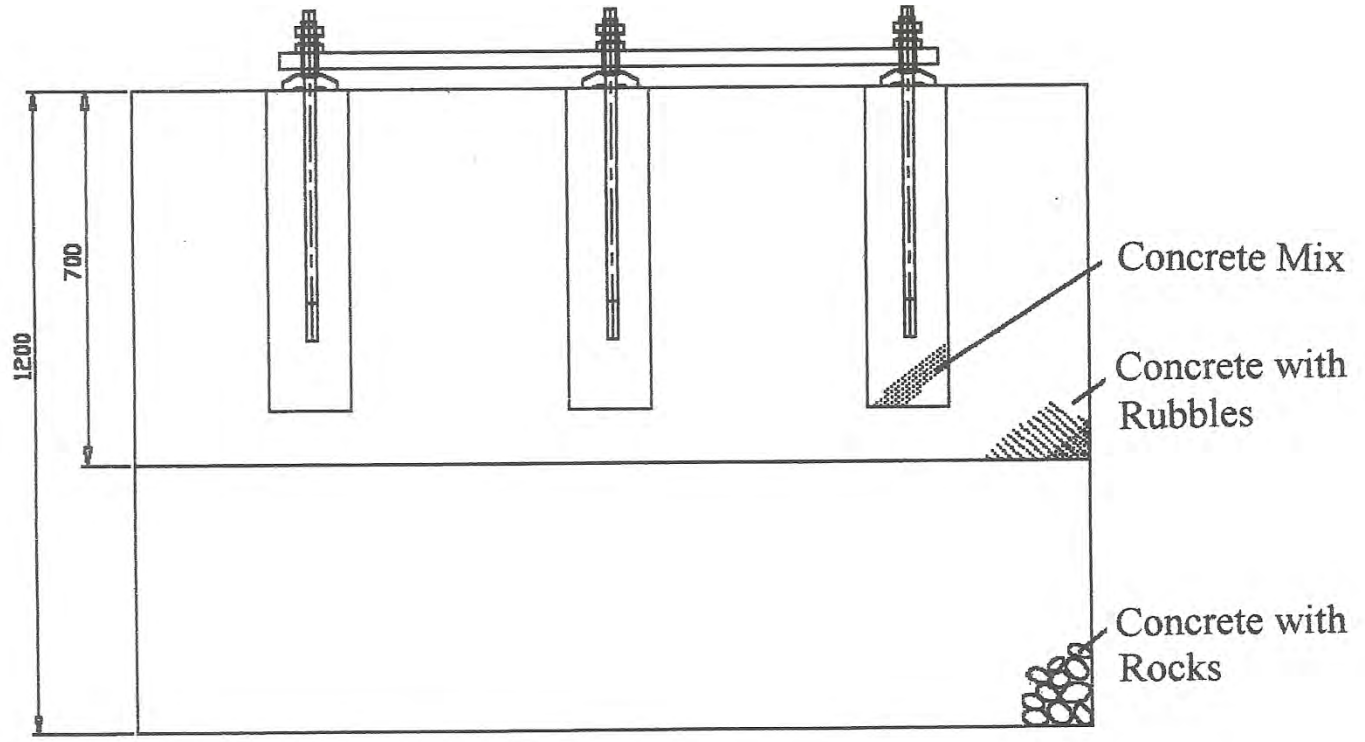


Figure 2

Foundation Bolt

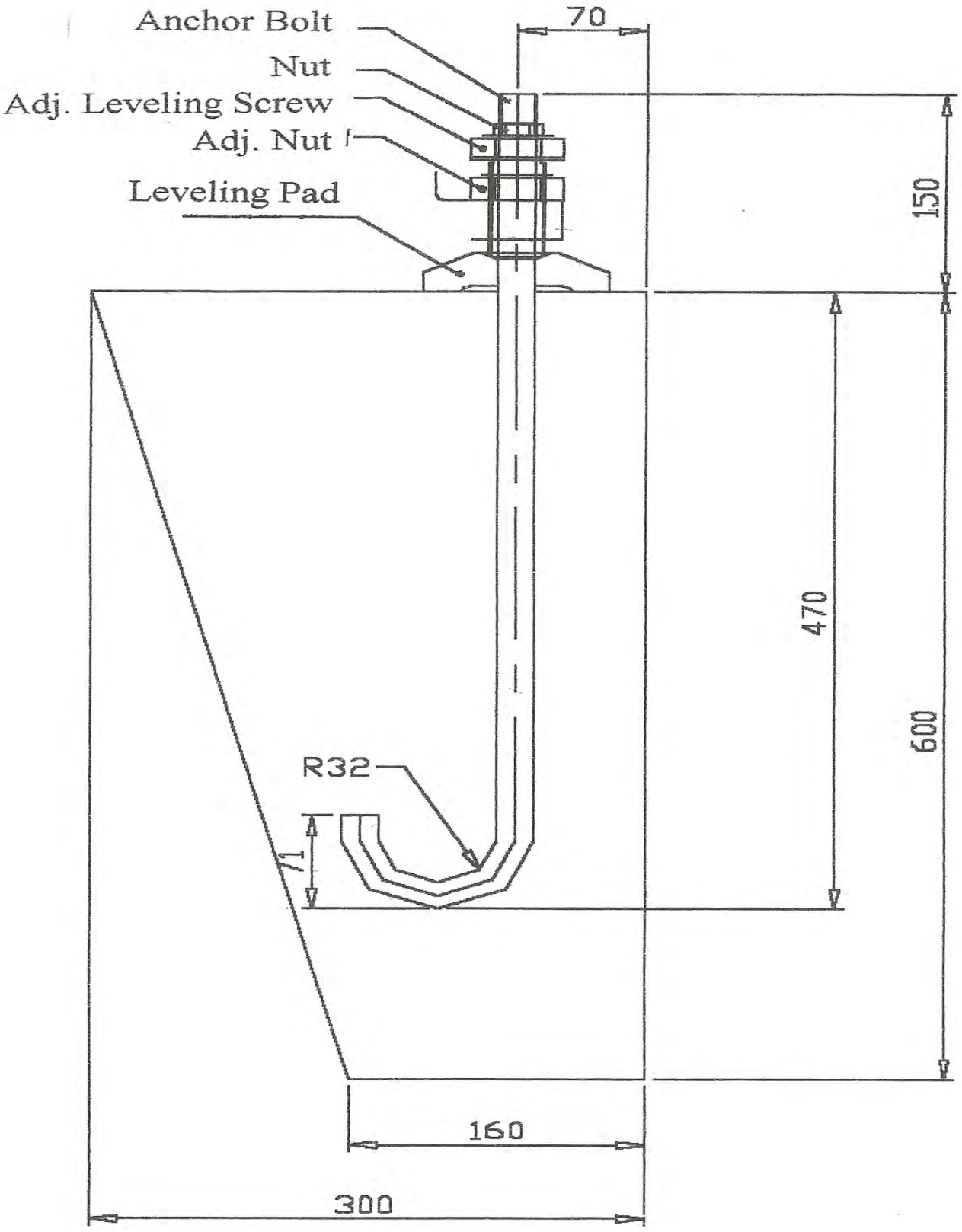


Figure 3

Unit: mm

3. MACHINE PACKAGE & ITS METHOD

To make sure quality and accuracy of the machine are maintained. Before machine is shipped out, we carefully inspect packaging procedure and check the final packaging pallet. Until they are done properly, we will not ship it out.

Package Method Before Shipping:

On the pallet, a PE plastic bag is set on top of it. Then the machine is lowered on the pallet, and is screwed tight onto the pallet. Before the PE plastic bag is wrapped up, absorbent bags are placed and machine is sprayed with cosmoline. Please see the following picture for sample (Figure 4). (Crated if individually shipped!)

To reduce the vibration when shipping, all movable items are fixed and screwed at a particular position. The positions are as follow:

a. X axis ball screw is fixed by tighten the table clamp lever to the saddle. (Fig 5)
b. Y axis ball screw is fixed by tighten the saddle locking lever to the saddle. (Fig 5)
c. Z axis ball screw is fixed by the wooden block under the spindle nose. (Fig 5-1)
d. Balancing block is tightened at column. (Fig 5-1)
e. Control box is support on top of the table with wooden block. (Option)
f. ATC is fixed at position 1, 2 and 3. (Fig 5-2) In order to reach the positions, ATC's top motor cover must be taken off by unscrewing the 10 screws. (Fig 5-3)

*****To make sure all levers and locating items are loosen, please double-check and make sure all of them in doubt are "surely" loosen before operating the machine.**

Packing for Shipment

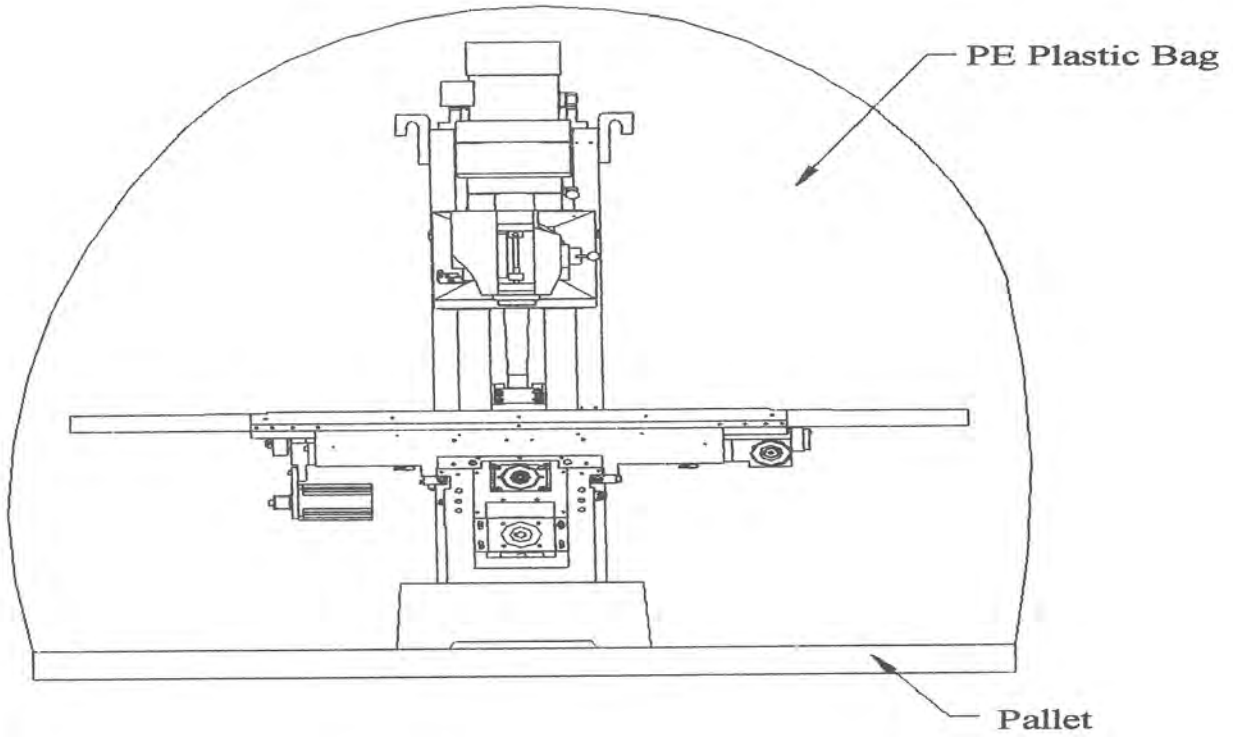


Figure 4

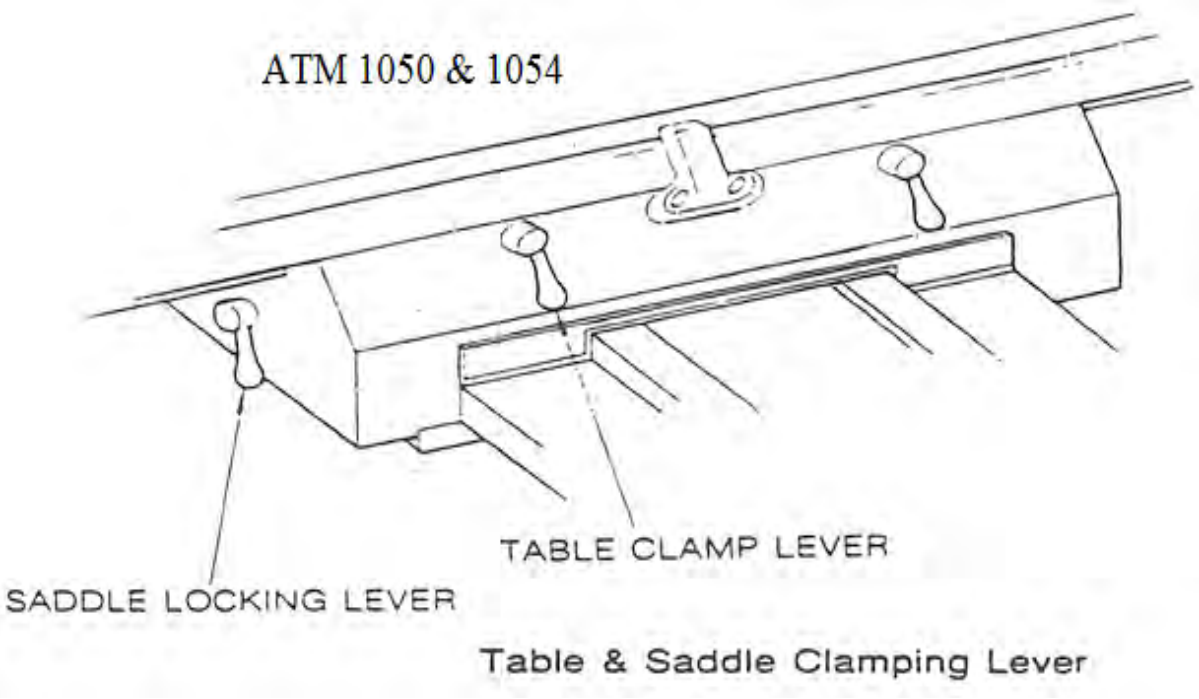


Figure 5

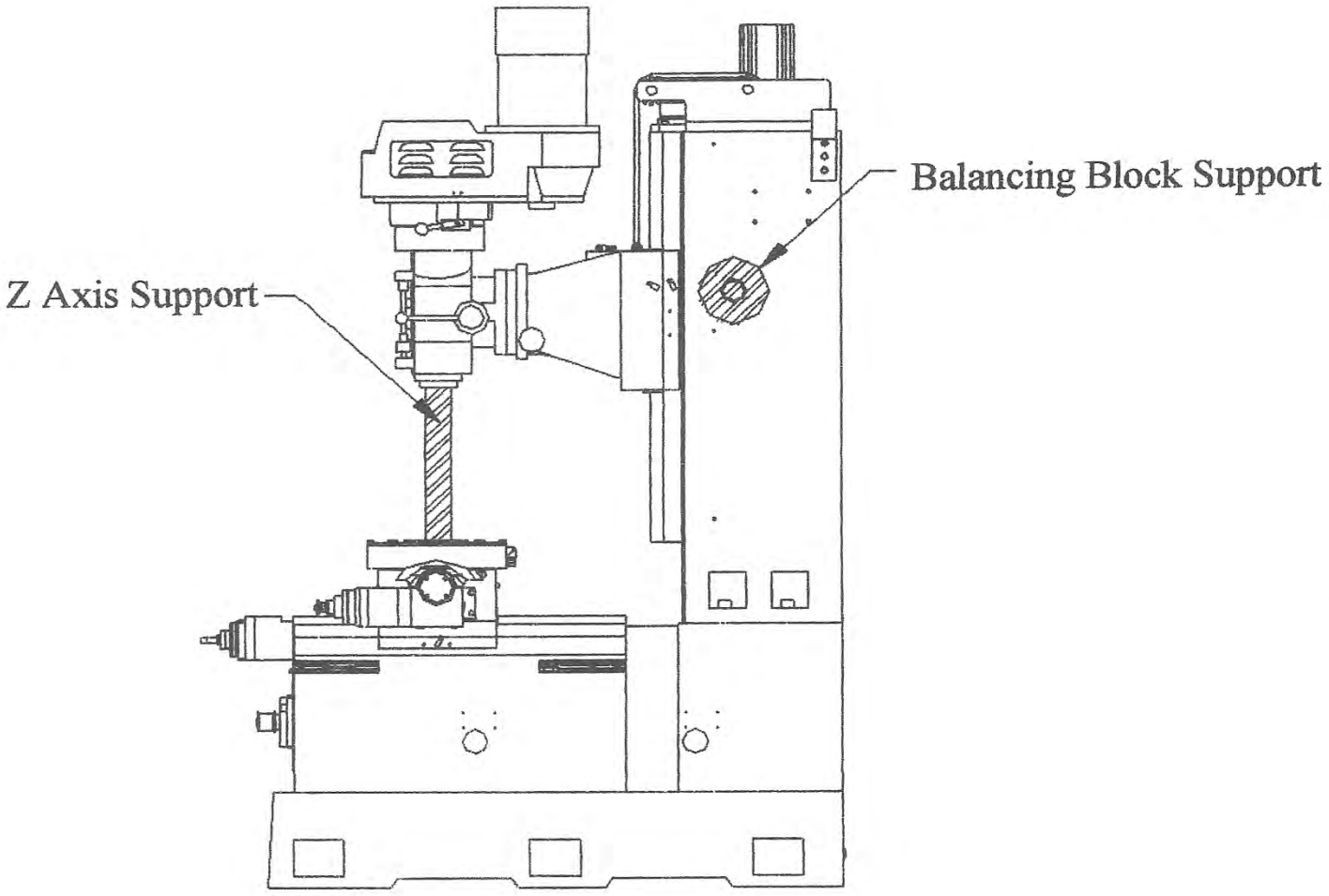


Figure 5-1

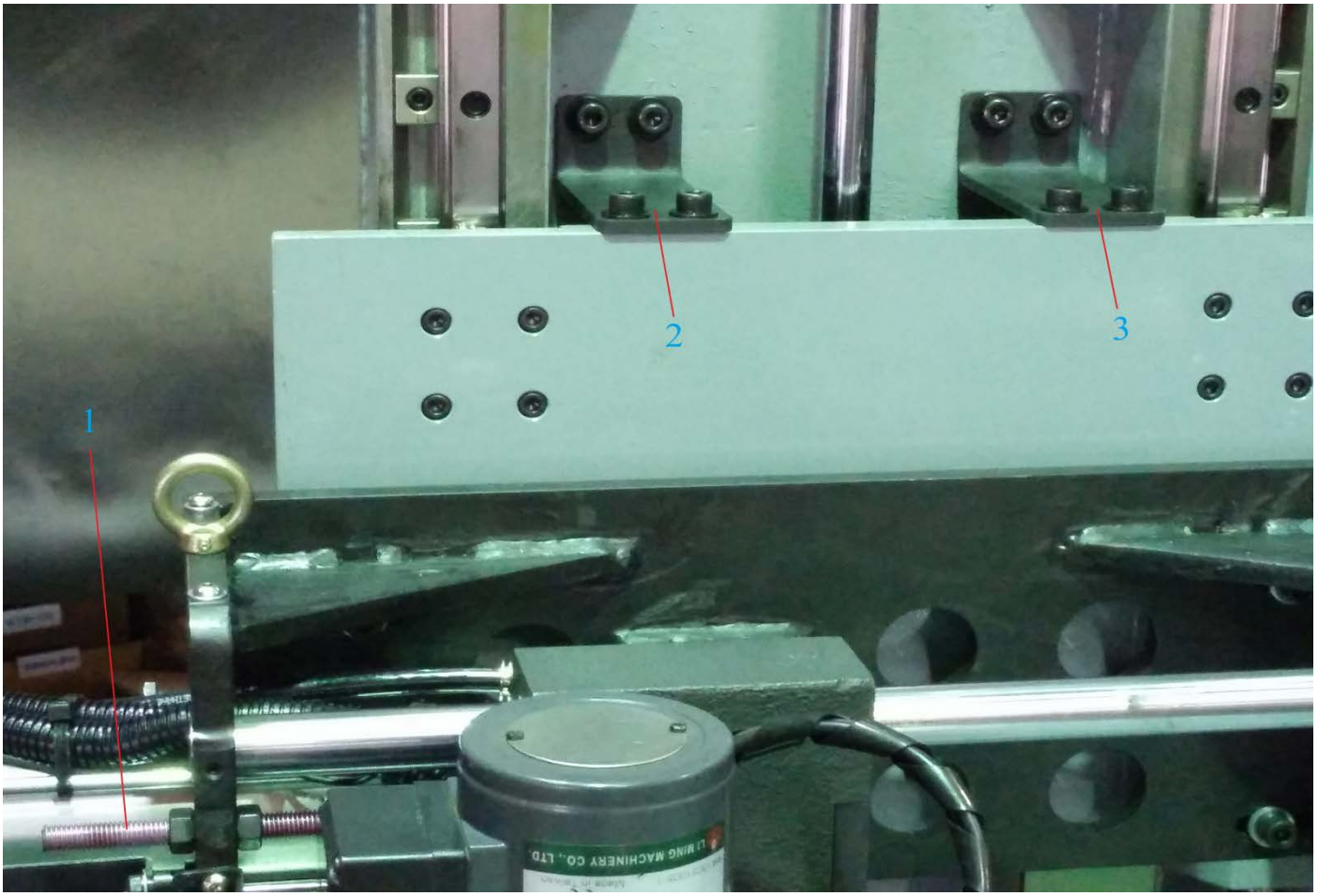


Figure 5-2 above

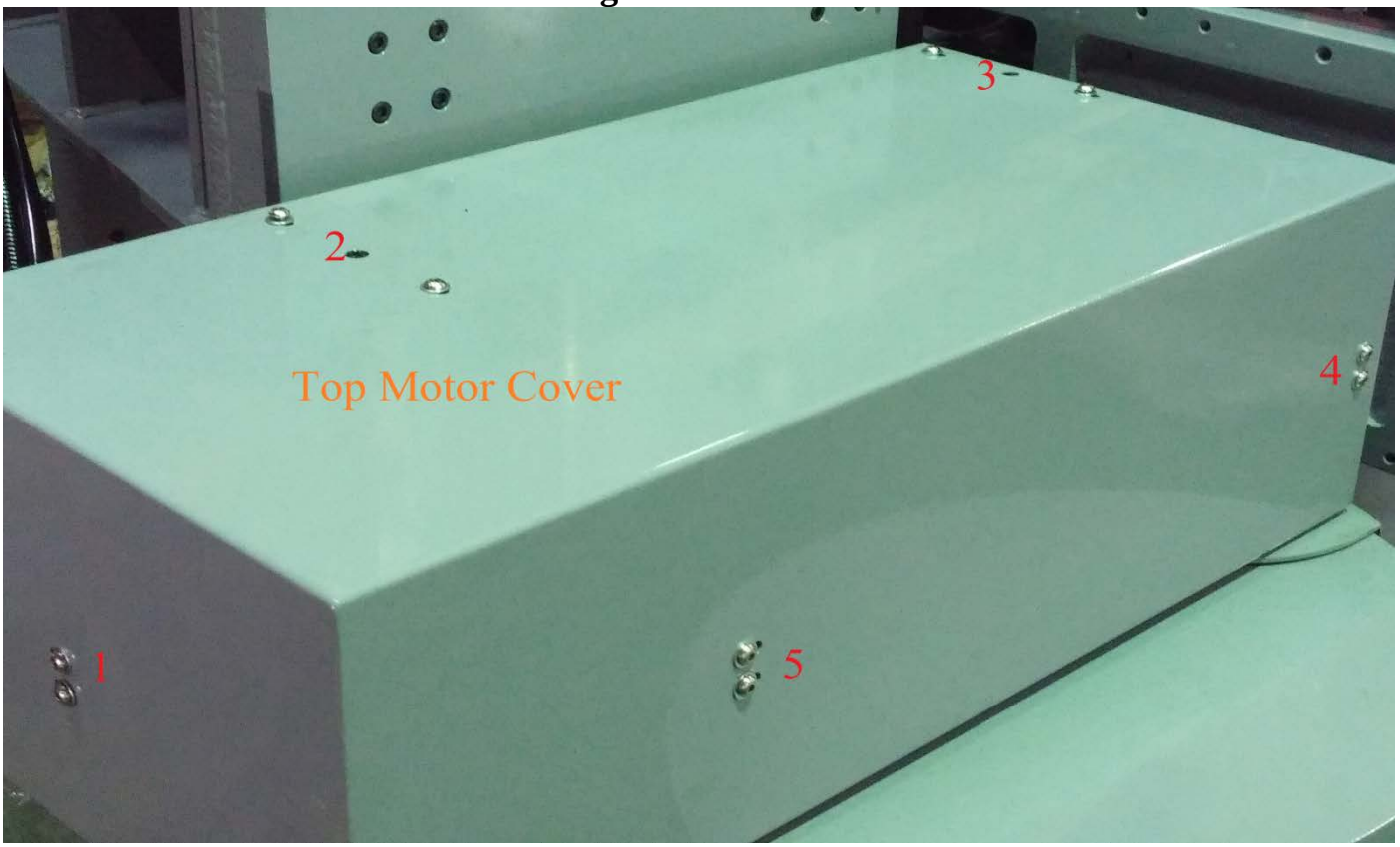


Figure 5-3 above

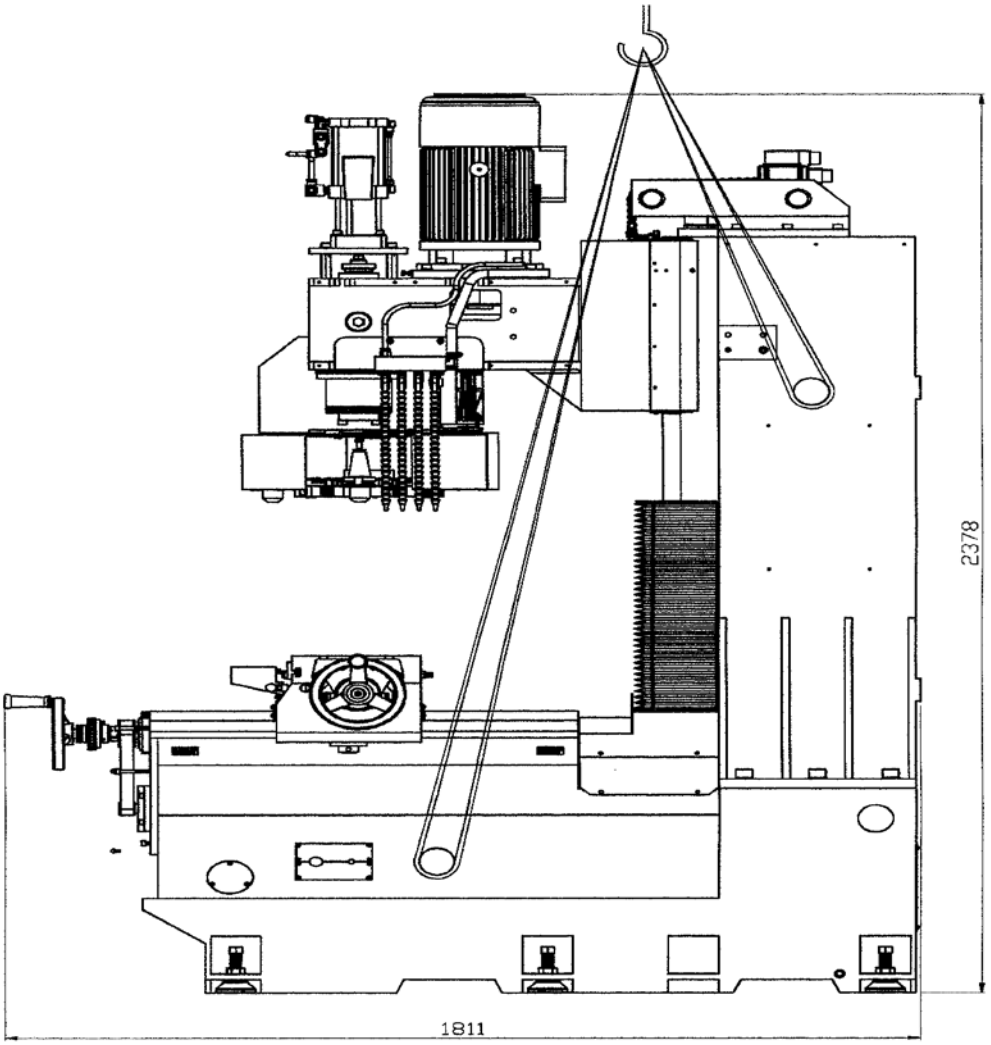
4. UN-PACKAGING & INSTALLATION ON SITE

When the machine arrives to the site, unscrew the locating bolts and nuts before lifting the machine. Transporting the machine onto the site is very dangerous. So please follow the instructions below carefully:

a. **Before settling the machine, make sure the locking items have not been loosen.**
b. **On the way to transport the machine to the site, make sure there is no obstacle or make sure all personnel are out of the way.**
c. **After removing from the pallet, the transporting equipment (example such as forklift) must have a capacity over 6,000 lbs (3 tons) to move or lift the machine.**
d. **When lifting, the machine must stay balanced. It might tip over and damage the machine if it is not balanced.**
e. **When transporting, please do not vibrate the machine too much. Vibration will cause the machine to lose its accuracy.**

Installation of machine:
Depending on the term, customer can request assistance from the factory or distributor. They can assist to do the installation and train the customer.

Machine Transporting with Overhead Crane



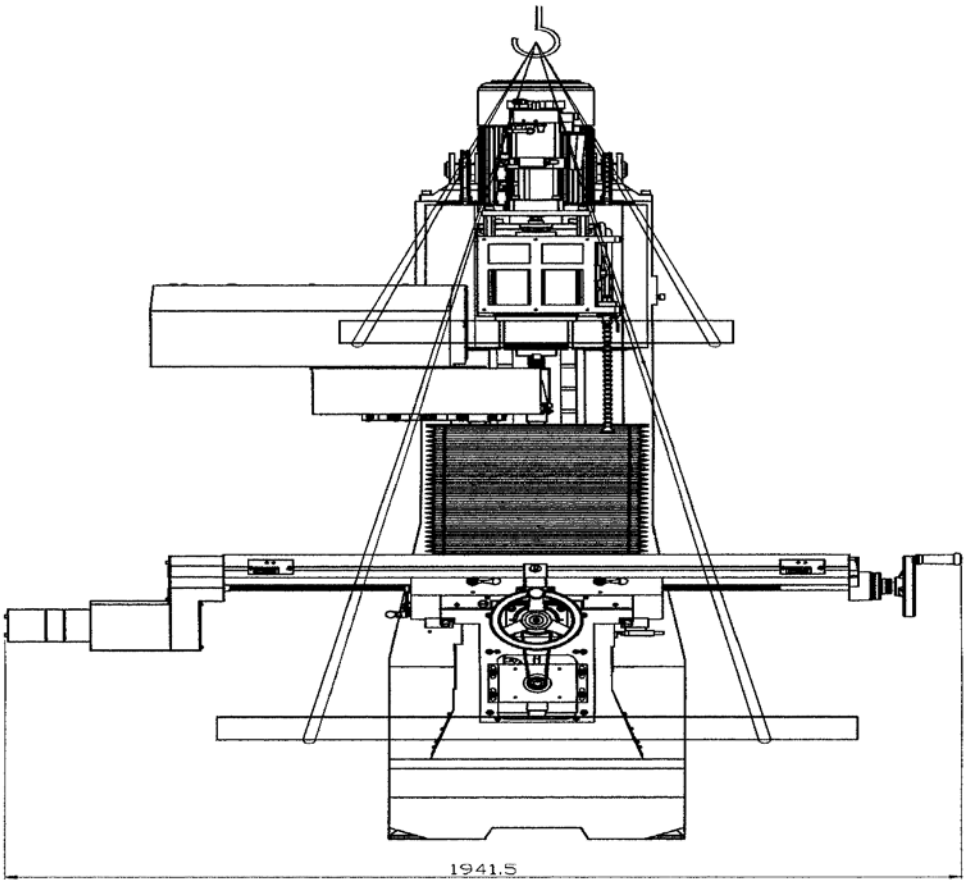


Figure 6
Machine Shipment on Pallet

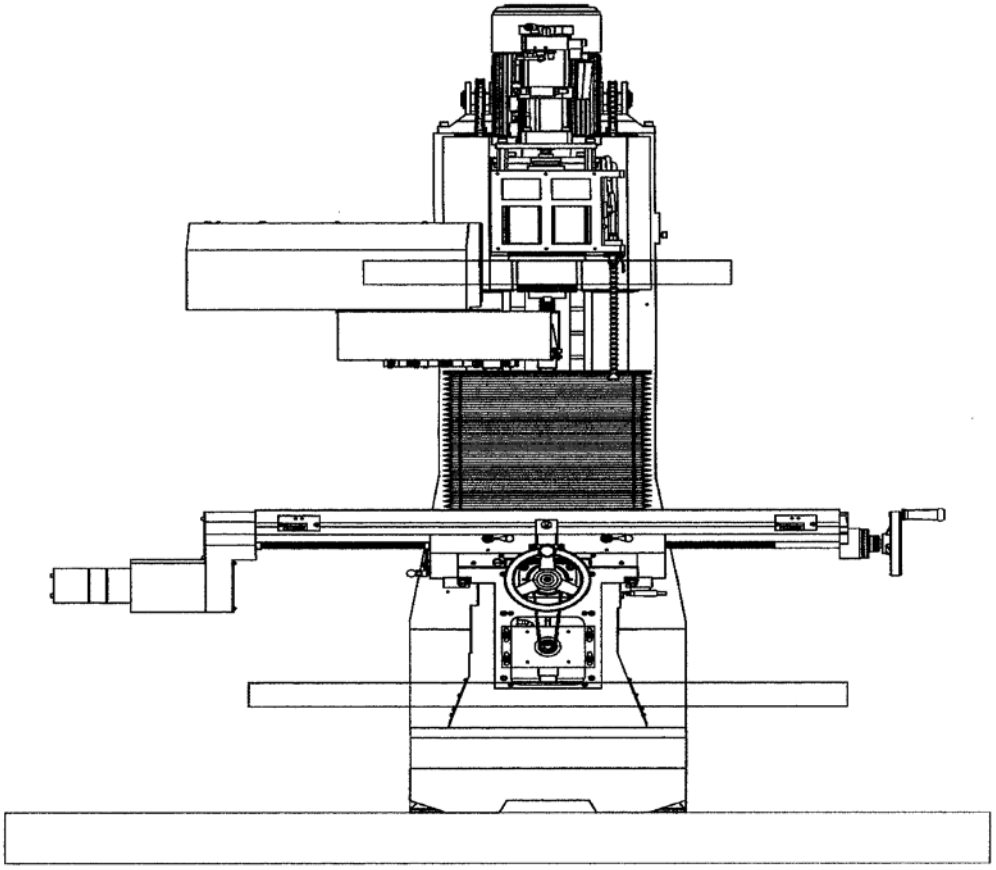


Figure 7

5. PROCEDURE BEFORE INTIAL OPERATION

To increase operation efficiency and maintain machine accuracy, please check the following points:

a. **Is power source within 10 % of 230V or 460V or 10% of local voltage?**
b. **Is compressor pressure within specification?**
c. **All locating items are removed and loosen?**
d. **Are all cosmoline cleaned?**
e. **Are all movable items removed from the table top, X, Y, Z traveling mechanism?**

The above instructions must follow each time before operation. This is done to reduce the chance of damaging the machine, and also might otherwise hurt the operator or bystanders accidentally.

6. PREVENTIVE MAINTENANCE

6-1. Everyday maintenance:

1. **Check the oil level of lubrication pump. Add more if it is below low level.**
2. **Check all lubrication points to see if oil is present.**
3. **Check compressor pressure to be 6 kg/cm ^2.**
4. **Check all air hoses for leaking. Must fix the air leak if it is found!**
5. **Check oil level of air filter gauge. Add if not to the level.**
6. **Remove all movable items from the machine to reduce the chance of damaging the machine and operator.**
7. **Check coolant system to see if it is full and is operational?**
8. **After each day's work, clean the machine and lubricate all moving parts.**
9. **Spindle taper must be clean and lubricated each day.**
10. **Add a few drops of #10 spindle oil into oil cups around the milling head.**
11. **If any false signal is present, please stop the machine and repair the machine immediately.**

6-2. Weekly maintenance:

1. **Please use clean rugs or paper towels to clean halogen light and control panel to keep them readable.**
2. **Use water based solvent to clean air filter. This is to keep air pressure normal and machine operational.**
3. **Make sure spindle taper is smooth and chip-less.**
4. **Check all lubrication points and lubrication pump to see if they are function normally.**
5. **Check coolant mixture is still usable? Color changed, etc.**

6-3. Six month maintenance:

1. **Check taper run-out of spindle to see if it is still within accuracy.**
2. **Check all machine's screws and nuts to see if they are still tight?**
3. **Check the tightness of the gibs. Are they still within specification?**
4. **Inspect all electrical terminals and wires. Make sure they are normal and functional. Clean the dust within the electric cabinet.**
5. **Inspect the servo drive and its parameters. Make sure they are adjusted.**
6. **Level the machine with precision engineering levels again. Levelness should come within 0.00008/12" (0.02mm/300mm). If not, please re-level the machine.**
7. **Lower head gear housing must add grease thru the grease fitting.**
8. **Replace coolant mixture recommended.**

6-4. Yearly maintenance

1. **Check all electric components on the control panel to see if they are still sensitive.**
2. **Remove all carbon deposit on the magnetic contactors.**
3. **Check balance block mechanism. Are they functional?**

4. **Replace coolant liquid with new one to ensure machining accuracy.**
5. **Clean and replace lubrication pump's oil reservoir with new way lube oil.**
6. **Check leveling and adjust the machine to maintain machine accuracy.**
7. **Replace coolant mixture regardless of usage.**

6-5. Points to watch on doing maintenance

1. **All scheduled maintenance must be exercised and recorded.**
2. **During mechanical maintenance such as gibs adjustment, etc., all power must be shut-off to prevent accidental injury.**
3. **When inspecting servo drive boards outside of their sockets, do not supply power! It might cause servo motor to rotate in its high speed state and cause injury.**
4. **In any unable maintenance situation, please contact authorized distributor or corresponding manufacturer.**
5. **Before doing any maintenance work, maintenance personnel must concur with manual to disconnect power or not. This is to reduce accidental injury.**
6. **Any discoloration on the coolant mixture, coolant must be replaced immediately! This is done to prolong life-span of cutting tools.**

7. LUBRICATION SYSTEM

7-1. Lubrication of the Machine

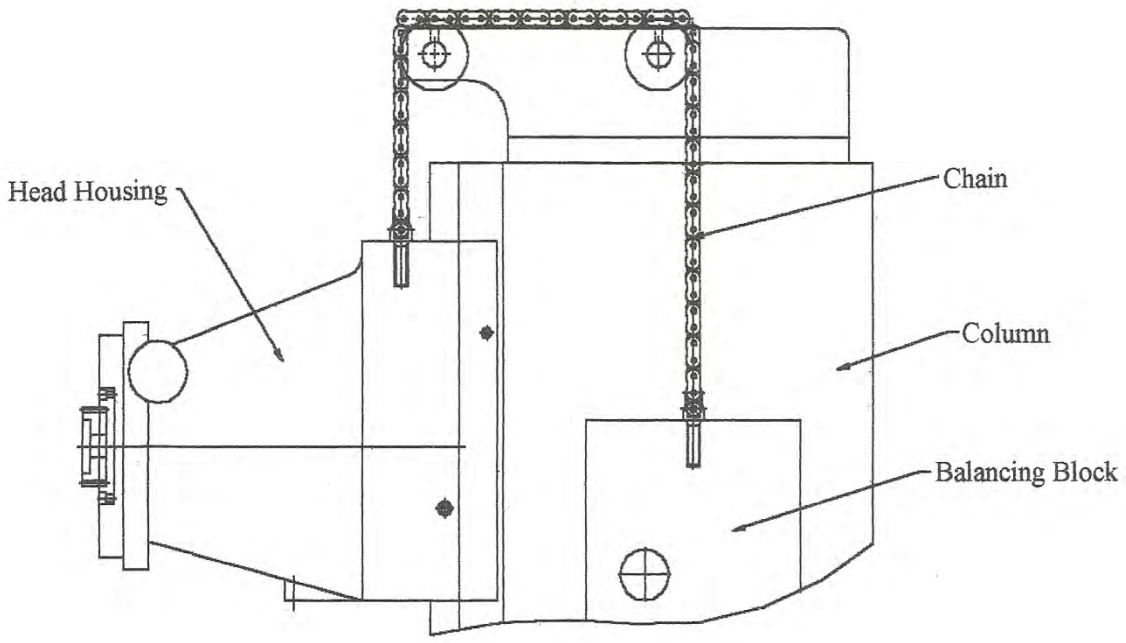
All machines have lubrication system. To maintain their accuracy, users must check and inspect lubrication system every so often. A properly lubricated machine will prolong its life-span and maintain its accuracy longer. All sections of a machine need to be lubricated, but there are few parts that particularly need more attention:

a. **Spindle bearing has seal packed high pressure & temperature grease. It needs to be inspected for its condition every 6 months. Recommended grease type: Kluber LDS 18 or equivalent.**
b. **Some section of slideways are coated with Turcite-B to reduce wear and vibration. The waylube oil for this type of material must have high viscosity, and it is tolerable to high pressure and very wear resistance. Recommended oil type: Mobil Vactra # 2 waylube, Chevron 68X waylube or equivalent.**
c. **All ball screws must be lubricated. They need oil present at all time. Recommended oil type: See item b.**
d. **Balance block's chain mechanism need to be greased when needed. Recommended grease type: Any lithium based grease is OK.**
e. **Air filter unit needs #10 spindle oil when oil level is below recommended level.**

7-2. Lubrication Chart

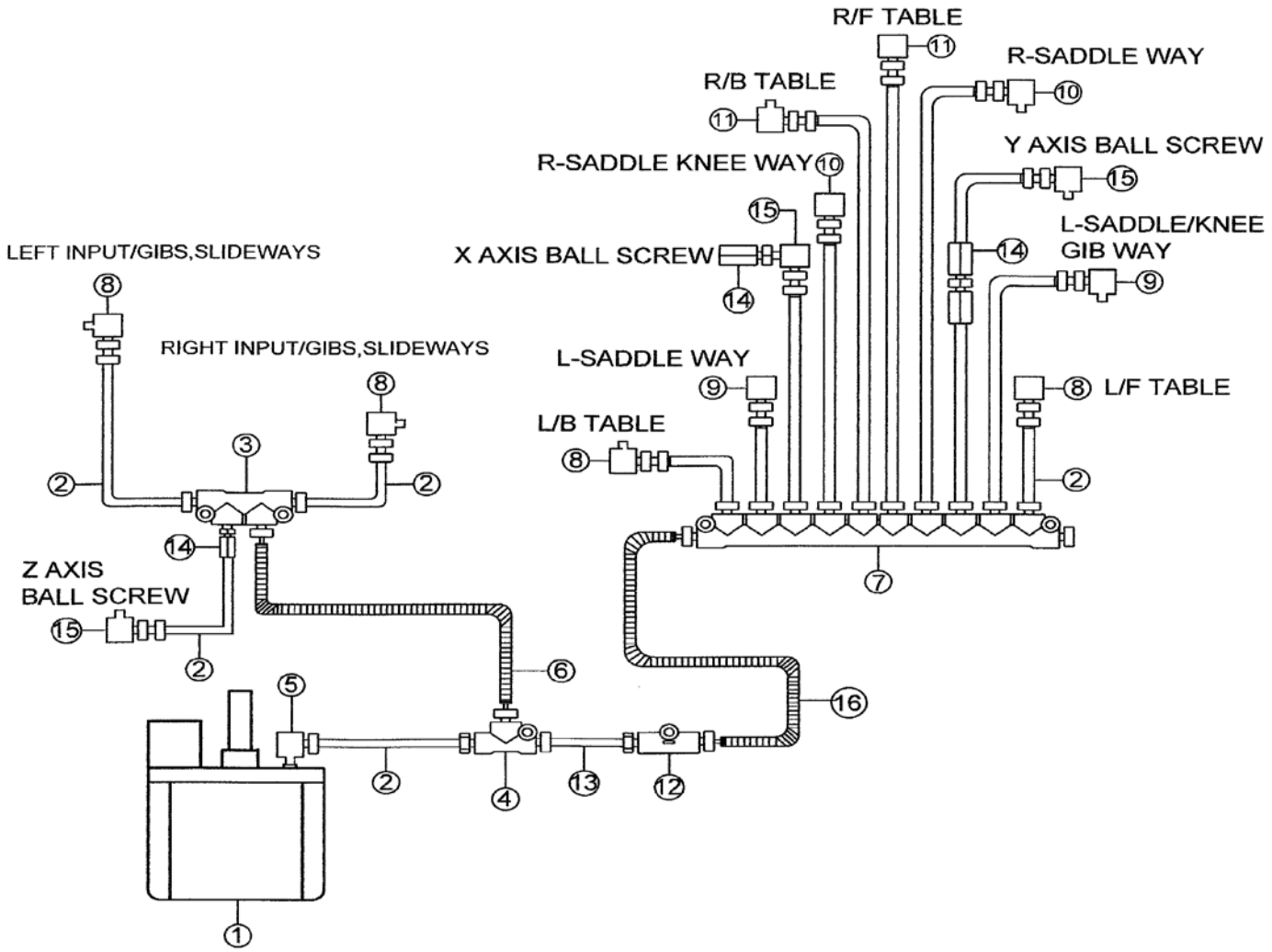
Lubrication Area	Table, Saddle, Slideways, X, Y, Z Ball Screws	Cutting Tool	Air Filter Unit	Chain, Chain Gear	Pressure Unit
Volume	3 Liters	Circulation	Mist Lub.	Hand Grease	Hand add Oil
Schedule Changing	Add if Below Level	Every Year	Add if Below Level	Every 6 Months	Every Year
Oil Type	*Viscosity ISOVG68 *Thickness > 100 *High Pressure, Friction Resist. *Anti-rust, Bubbleless, Oxidization Resistance	*High Heat Resistance *High Pressure Resistance	*Viscosity ISOVG32 *Thickness >95 *Anti-rust, Bubbleless, Oxidization & Colouri-zation Resist. *Stable, not Easy to Change	Lithium Based	*Viscosity ISOVG32 *Thickness >95 *Anti-rust, Bubbleless, Oxidization & Colouri-Zation Resist
Suggestion	*Mobil Vactra #2 *Esso Febisck 68 *Shell Tonna T68 *Chevron Way-NT68	*Esso Pennex #47 *Shell Dromus B	*Mobil DTE Oil #10 *Shell Tellus #10 *Esso Nuto H10	*Esso #2 *Shell Alvaia R-2	*Mobil DTE Oil #26 *Esso Nuto H32 *Shell Tellus #32
Lube Pump Position	Lower Column	Coolant Tank within Machine Base	Top side of Column	Top of Column	Lower Column

7-3. Manual Lubrication Area



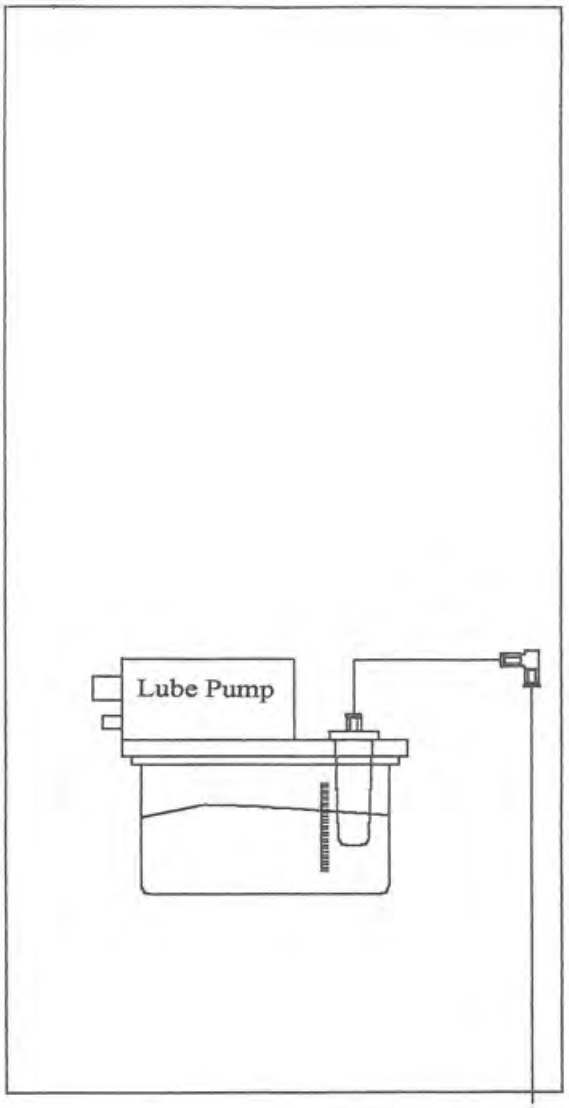
Please grease the chain roller at least every six months. Recommend grease type is shown within lubrication chart of section 7-2.

7-4. Distribution of Lubrication System



Drawing #: ACER-B1-G01			
Item #	Part #	Description	Quantity
1	ACER-B1-G001	Lubrication Pump	1
2	9002	4mm Aluminum Pipe (9002)	-
3	9021	A4 Distributing Joint	1
4	9004	A3 Distributing Joint	1
5	9022	Elbow Joint	1
6	9061	Flexible Oil Tube 650mm	1
7	9009	A12 Distributing Joint	1
8	9005	Oil Check Valve-ST 1	4
9	9008	Oil Check Valve-ST 2	2
10	9007	Oil Check Valve-ST 4	2
11	9010	Oil Check Valve-ST 5	2
12	9062	A2 Distributing Joint	1
13	9063	6mm Aluminum Pipe	-
14	9064	Oil Check Valve-SS1	2
15	9065	Elbow Valve-PH 401	3
16	9066	Flexible Oil Tube 1600mm	1

7-5. Position of Lubrication Pump



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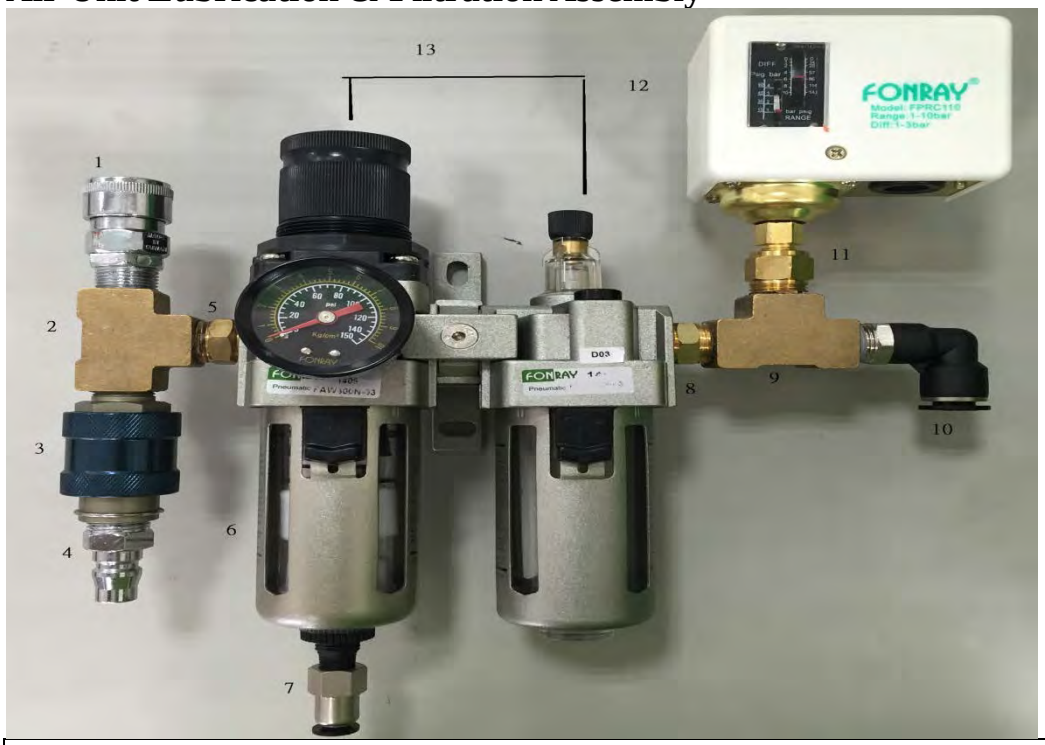
Please add lube oil to the pump whenever it is eyed 1/4 tank full.
Recommended oil type is shown within lubrication chart of section 7-2.

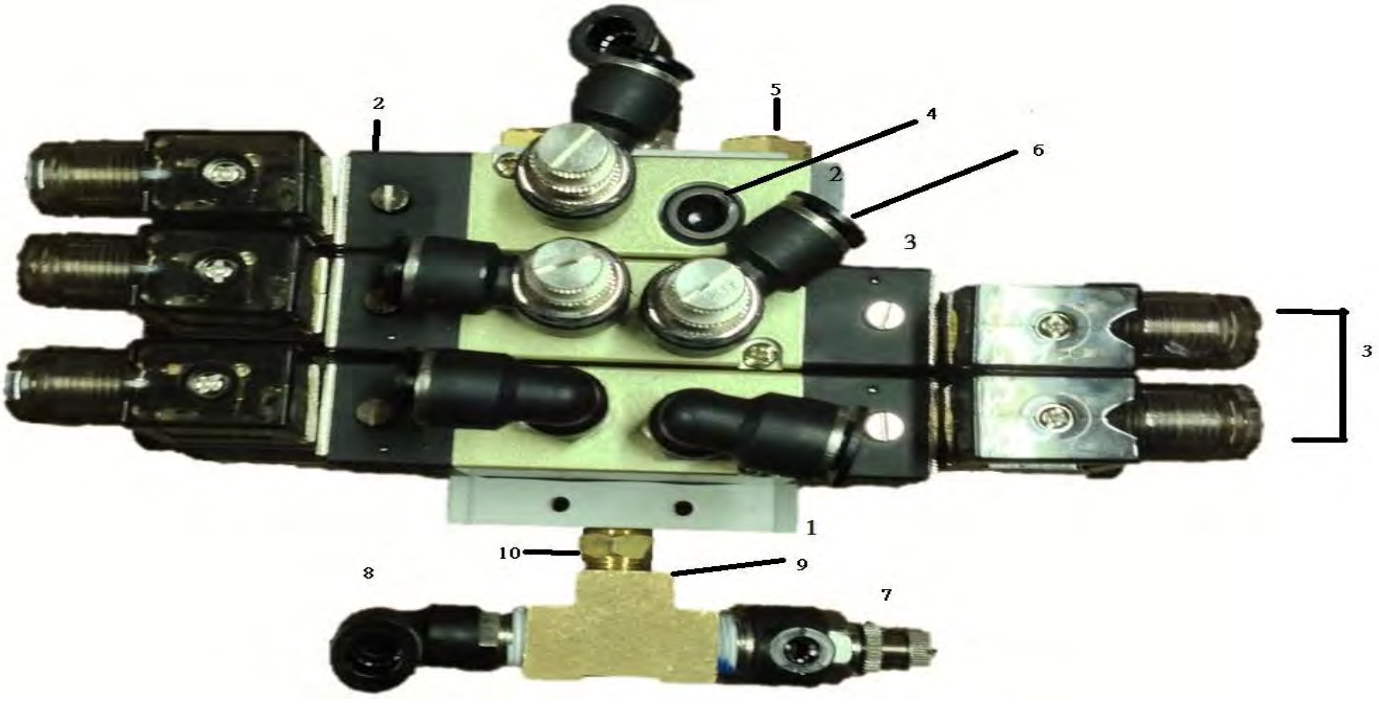
7-6. Air Lubrication Assembly

Air Unit Lubrication & Filtration Assembly



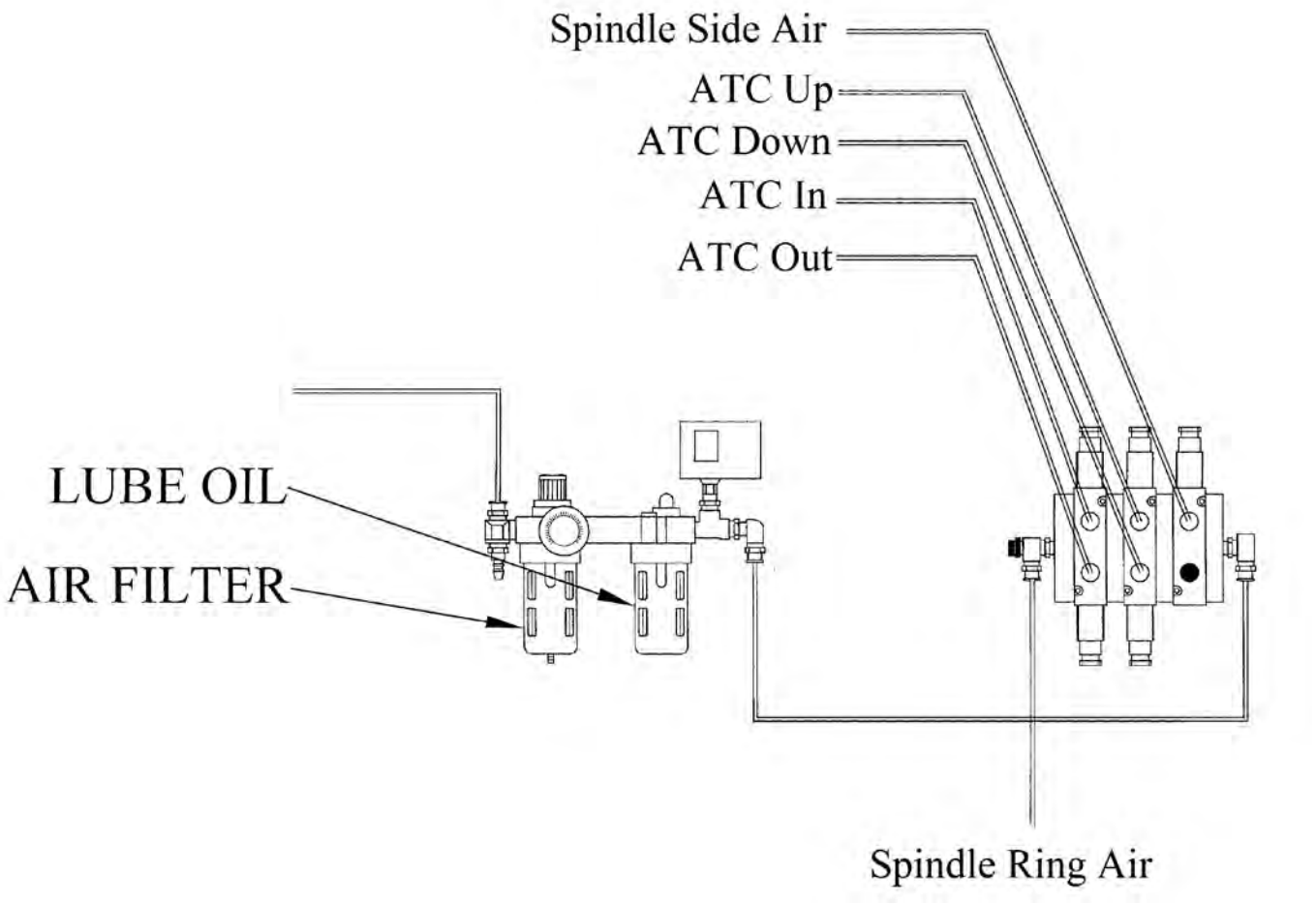
Air Unit Lubrication & Filtration Assembly					
Item#	Part #	Description	Item#	Part #	Description
1	30SM	Female Air Quick-release Plug	8	P013	Straight Joint
2	P096	Three Way Joint	9	P096	Three Way Joint
3	HSV-03	Air Releasing Valve	10	EPL10-03	Elbow Air Quick Fitting
4	30PM-I	Male Air Quick-release Plug	11	E09-C302	Pressure Coupler
5	P013	Straight Joint	12	FPRC110	Pressure Gauge
6	MADV-300	Air Release-Filtration Unit	13	FAC301N-03	Air Lubrication & Filtration Unit
7	EPCF6-02	Dual End Thread Straight Point	14		

Air Unit Solenoid Assembly



Air Unit Solenoid Assembly					
Item#	Part #	Description	Item#	Part #	Description
1	310M-03F	Air Manifold	6	ESL10-03	Adjustable Air Fitting
2	4V310-10-F-DC24V	One-direction Solenoid	7	ESL6-03	Adjustable Air Fitting
3	4V320-10-F-DC24V	Bi-directional Solenoid	8	EPL10-03	L Shape Air Fitting
4	ISH-03	Jam Nut	9	P096	Three Way Joint
5	FSL-03	Plug	10	P013	Straight Joint

Air in-out flow chart

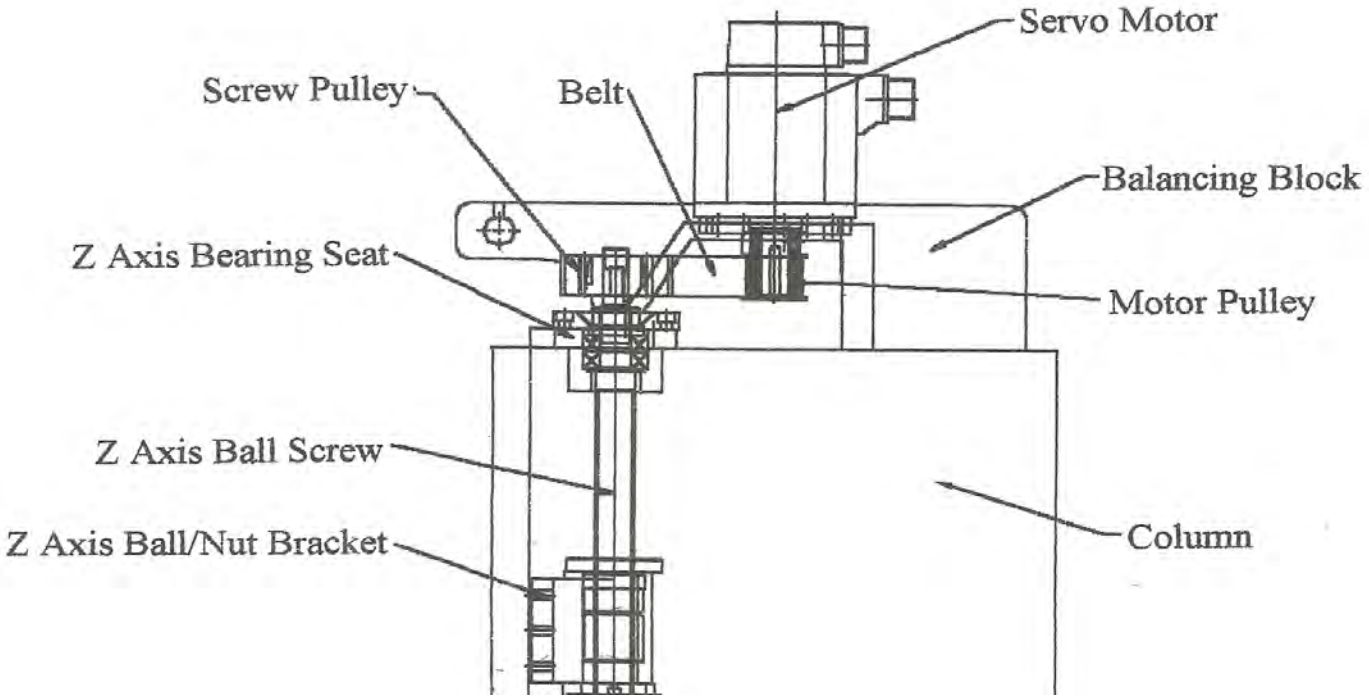


*****On the lube oil unit, when the oil level is low, please add #10 spindle oil for lubrication.**

8. X, Y, & Z AXES TRANSMISSION METHOD

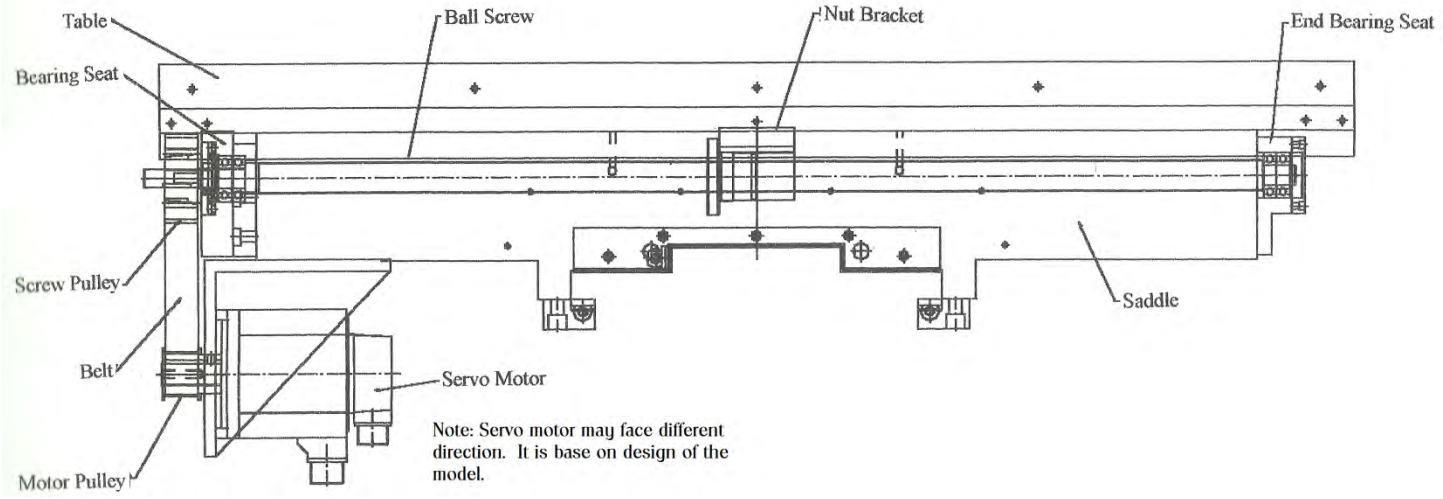
8-1. Z axis transmission method

Z axis is driven by AC servo motor. The brand name varies with control brand. Between the servo motor and the ball screw, there are two timing belt pulleys and a timing belt. The head housing moves up and down when servo motor rotates the ball screw in either direction. Please see drawing below:



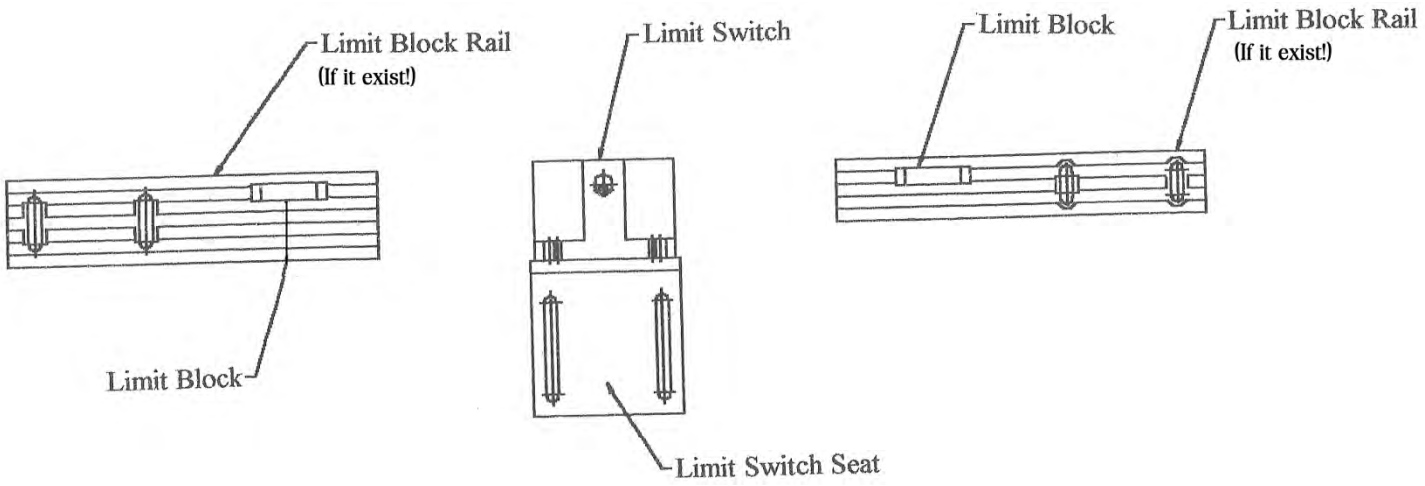
8-2. X & Y axes transmission method

X & Y axes' motion is control by AC servo motor. Name brand is also tagged with control. The servo motors drive the ball screws through two pulleys and a timing belt. Both axes will move when servo motor rotate. The items in motion are saddle and working table. Please see the drawing below:



8-3. Travel adjustment of X, Y, & Z axes

The control package usually comes with maximum travel setting design. This design is to avoid damage when user sets the travel over the travel limit. When machine over travels (on all axes), a limit block will bump a limit switch. The limit switch will send a signal to the control, which will then stop all motions on the machine. Please see drawing for the design below.



9. MAINTENANCE

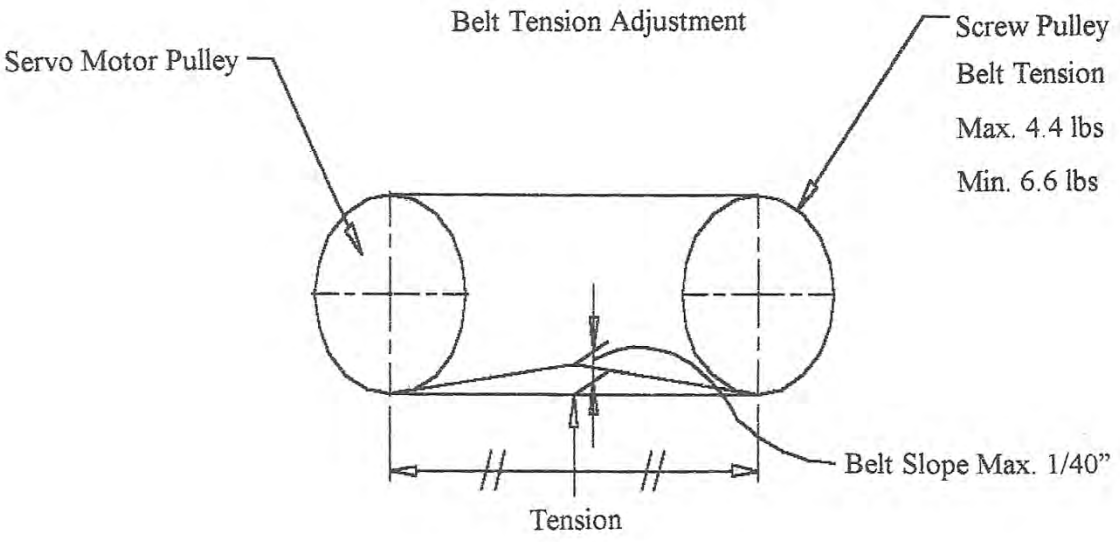
9-1. ADJUSTMENT OF THE TIMING BELT

Because all three axes are drive through using a timing belt, it is essential to keep the tension on the timing belt at constant. Please check the belts every six months and adjust them when needed. The method of adjustment is as following:

a. Release servo motor by unscrewing the locating bolts.

b. Re-adjust the motor distance from the ball screw by feeling the tension on the timing belt. The pressure on the timing belt should be between 4.4 to 6.6 lbs.

d. Screw tight on the motor locating bolts.



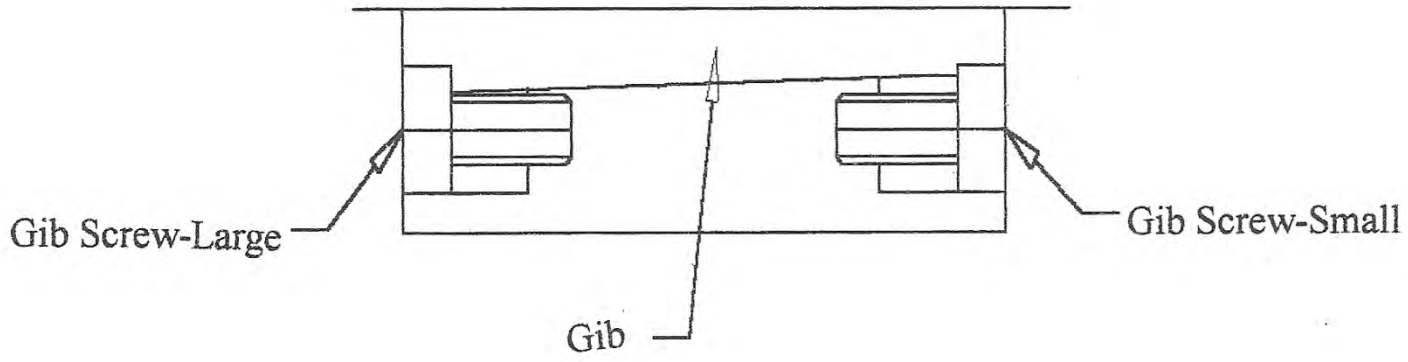
Belt Tension in Between Pulley center

9-2. ADJUSTMENT OF THE GIBS

During machine's motion, there will be wears on the moving items, and will create backlashes on all three axes. To compensate for this situation, user can adjust gibs to minimize effect.

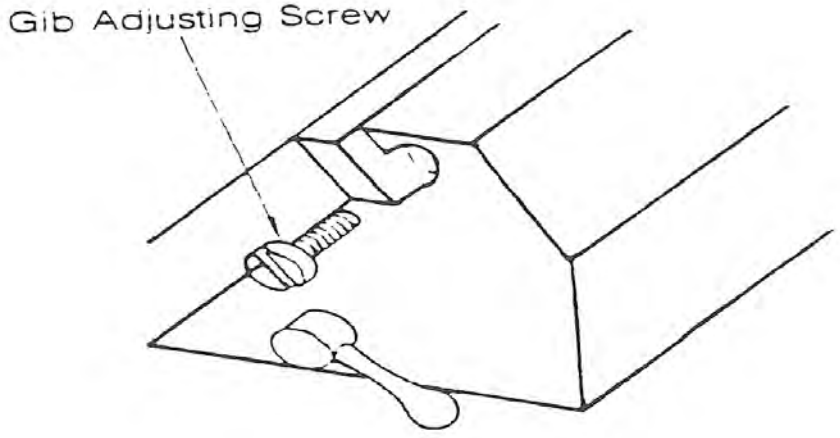
The procedure for adjusting gibs (for Z & Y axes):

a. **Release the smaller taper end gib by unscrewing the gib screw half turn.**
b. **Rotate the axis toward the smaller taper end to close the gap between the sliding surfaces.**
c. **Screw in the gib screw on the big taper end side.**
d. **Repeat the procedure until surface pressure on the gib is 3.5kg/cm2.**
e. **Check gibs pressure once every six months.**



For table gib adjustment:

a. **Unscrew the inner side hex nuts on the stud (show as A on the figure).**
b. **Use an open-end wrench to screw in the outer hex nut to proper tension (about 5kg/cm^2). Note: Turn the nut clockwise!**
c. **When the hex nut is turned about 1/4 turn, move the table left and right to test the tightness of the gib. Repeat this procedure until proper tension is achieved.**
d. **Check gib pressure once every six months.**



10. ELECTRICAL DIAGRAM & ITS PARTS LIST

To order parts, please have the following information ready:

1. **Year of production**
2. **Model and serial number**
3. **Item number and description**
4. **Quantity**

Note: If the machine is shipped with CNC control, in order to get its parts information, please refer to its supplied control manuals to find the correct part number and specification. And please contact the original control manufacturer for the ordering instructions.

*****Trouble shooting on the control? Please contact control manufacturer's service department, they can get your question solved and get you going quickly. Any other question, please contact our service department. The phone numbers are listed at the front page of the manual. Or please visit our websites www.acerlinks.com, and www.aceronline.net, and leave us with your questions, we will response quickly. Thank you for your attention and have a great day!**

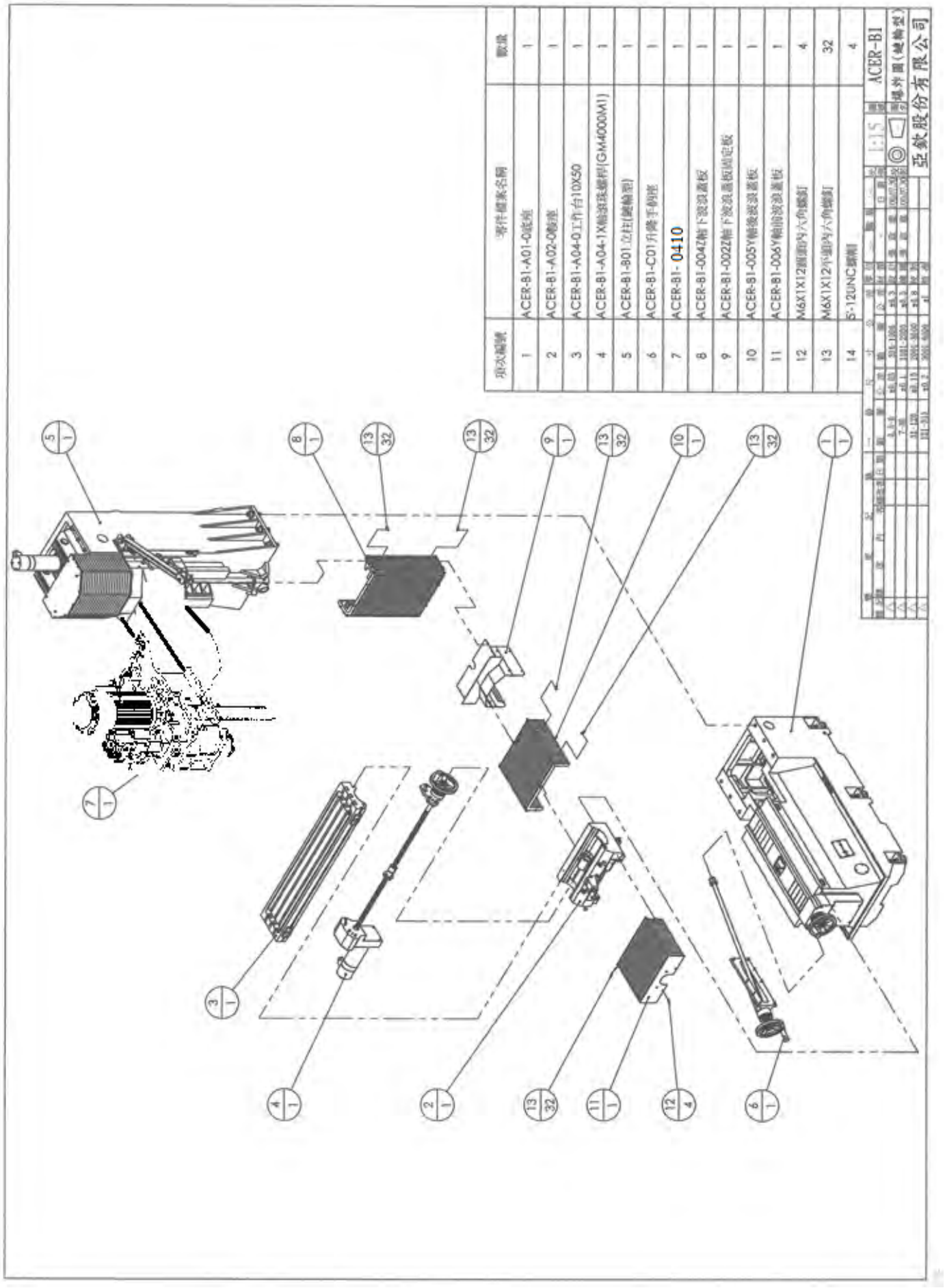
Please read separate electrical diagram & part list manual for more information.

11. Mechanical Drawings
&
Parts Breakdown List

Note: When ordering parts, please be prepared with,

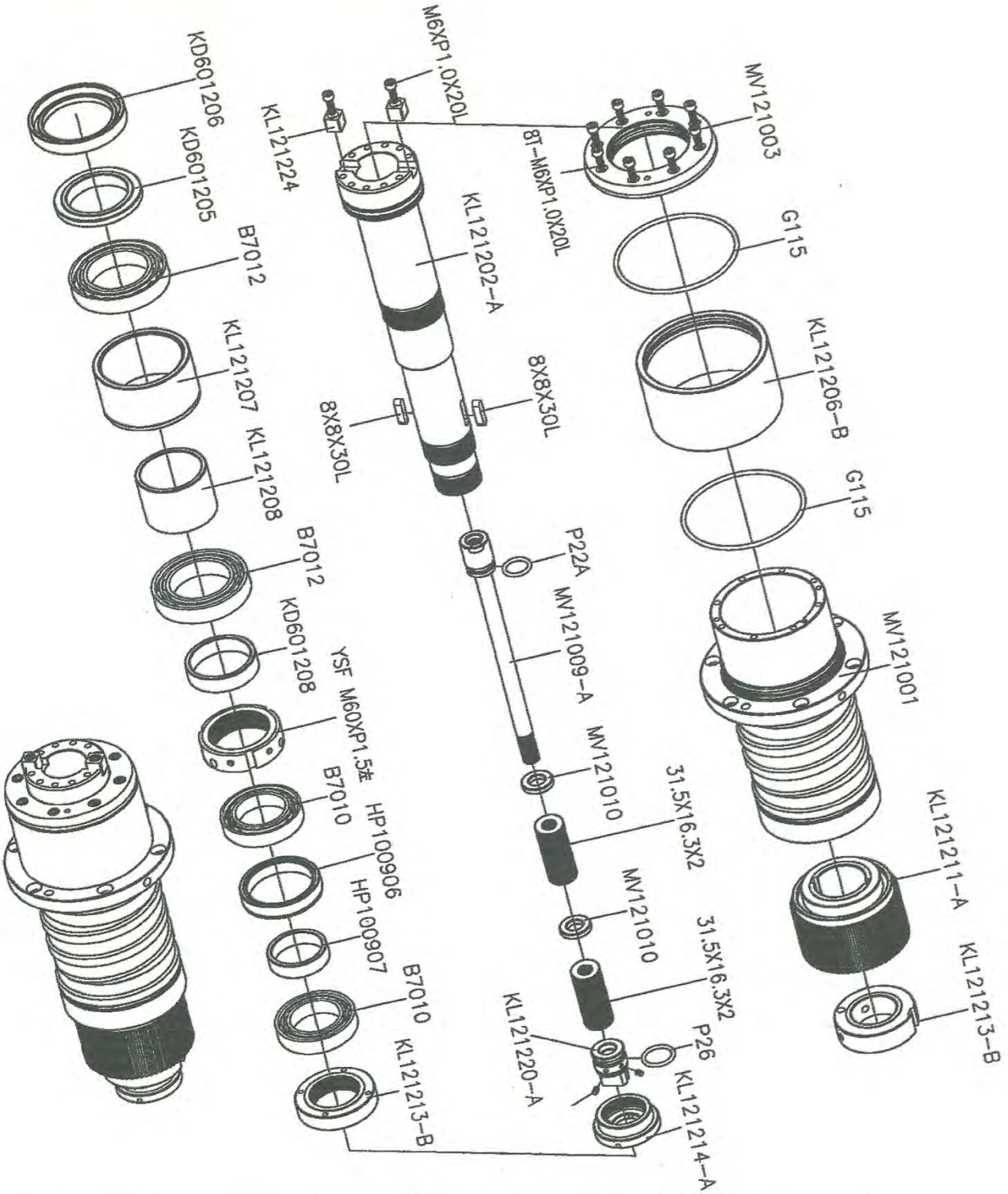
1. Machine model & serial number.
2. Item number.
3. Part number and description.
4. Year of Production.
5. Voltage & horsepower.
6. Quantity

11-1. ACER-B1 ASSEMBLY DRAWING



Drawing #: ACER-B1			
Item #	Assembly #	Assembly Description	Quantity
1	ACER-B1-A01-0	Machine Base Assembly	1
2	ACER-B1-A02-0	Saddle Assembly	1
3	ACER-B1-A04-0	Table Assembly	1
4	ACER-B1-A04-1	X Axis Travel Assembly	1
5	ACER-B1-B01	Column Assembly-Balancing Block Type	1
6	ACER-B1-C01	Elevation Crank Assembly	1
7	ACER-B1-0410	Spindle Housing Assembly	1
8	ACER-B1-004	Z Axis Accordion Way Cover-Lower One	1
9	ACER-B1-002	Z Axis Accordion Way Covers Locating Plate	1
10	ACER-B1-005	Y Axis Accordion Way Cover-Back	1
11	ACER-B1-006	Y Axis Accordion Way Cover-Front	1
12	M6x1x12R	Socket HD Round Top Cap Screw	4
13	M6x1x12F	Socket HD flat Top Cap Screw	32

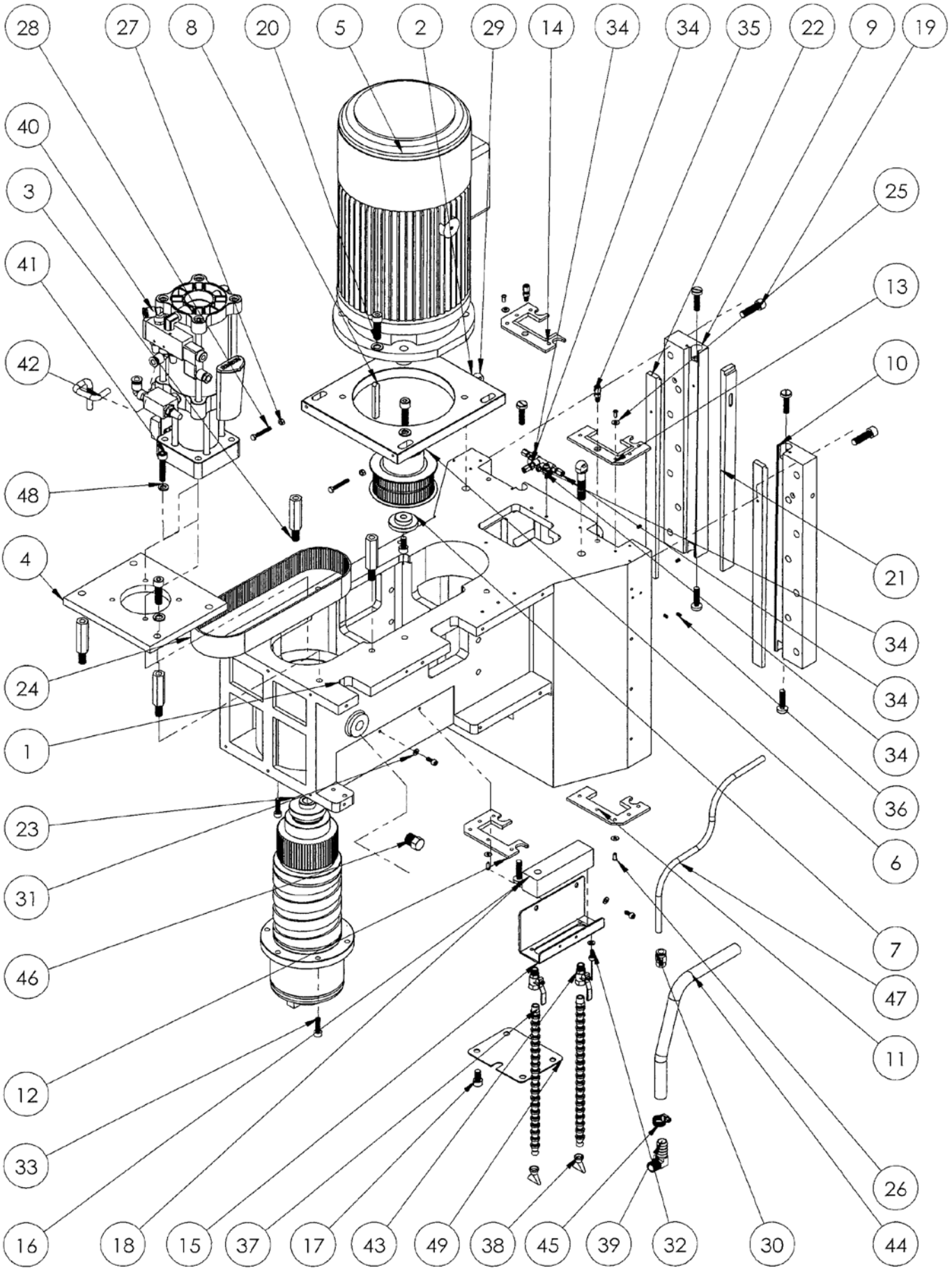
11-2. 7.5 HP SPINDLE ASSEMBLY



品名	圖號	數量
軸心	KL121202-A	1
外水套	KL121206-B	1
外隔環	KL121207	1
內隔環	KL121208	1
皮帶輪	KL121211-A	1
螺母	KL121212	1
磁性開關座	KL121213-B	1
後蓋	KL121214-A	1
拉桿螺母	KL121220-A	1
定位銷	KL121224	1
軸管	MV121001	1
前蓋	MV121003	1
拉桿	MV121009-A	1
墊片	MV121010	2
外隔環	HP100906	1
內隔環	HP100907	1
前防塵蓋	KD601205	1
前防塵蓋	KD601206	1
內隔環	KD601208	1
軸承	B7012	2
軸承	B7010	2
無頭螺絲	M5XP0.8X6L	6
內六角螺栓	M6XP1.0X20L	10
O型環	P22A	1
O型環	P26	1
O型環	G115	2
螺母	YSR M60XP1.5 左	1
雙頭圓鍵	8X8X30L	2
碟型墊片	31.5X16.3X2	90

Spindle Assembly			KL1212
Item#	Part #	Description	Quantity
1	KL121202-A	Spindle Shaft	1
2	KL121206-B	External Jacket	1
3	KL121207	Spacer	1
4	KL121208	Spacer	1
5	KL121211-A	Spindle Pulley	1
6	KL121212	Screw Nut	1
7	KL121213-B	Magnetic Switch Seat	1
8	KL121214-A	Screw Nut	1
9	KL121220-A	Nut of Drawbar	1
10	KL121224	Alignment Key	1
11	MV121001	Spindle Housing	1
12	MV121003	Front Cover	1
13	MV121009-A	Drawbar	1
14	MV121010	Washer	2
15	HP100906	Spacer	1
16	HP100907	Spacer	1
17	KD601205	Dust Proof Cap	1
18	KD601206	Dust Proof Cap	1
19	KD601208	Spacer	1
20	B7012	Ball Bearing	2
21	B7010	Ball Bearing	2
22	M5xP0.8x6L	Set Screw	6
23	M6xP1.0x20L	Socket HD Cap Screw	10
24	P22A	O Ring	1
25	P26	O Ring	1
26	G115	O Ring	2
27	YSR M60XP1.5	Precision Ground Lock Nut-Left Hand Thread	1
28	8x8x30L	Key	2
29	31.5x16.3x2	Disk Spring	90
30	BT40-45°	Clamping Jaw	1

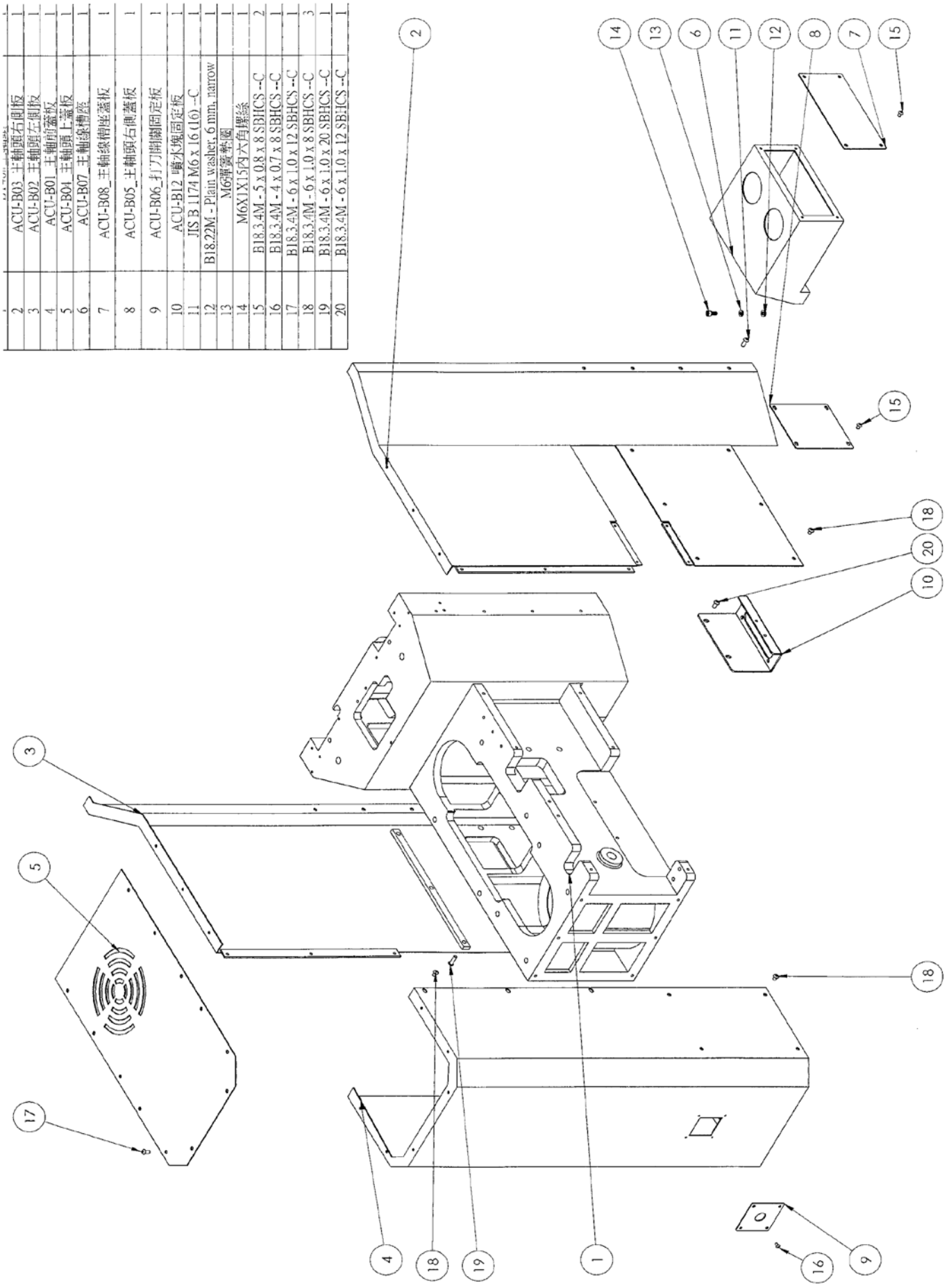
11-3. ACER-B1-0410 SPINDLE HOUSING ASSEMBLY



Item #	Part #	Description	Quantity
1	ACU-020	#40 Spindle Housing	1
2	ACU-021	Motor Locating Plate	1
3	1020L3Z3121	Extension Rod for Tool Grabbing Cylinder	4
4	1020L3Z3091	Locating Plate for Tool Grabbing Cylinder	1
5	ACU-034	7.5HP Spindle Motor	1
6	ACU-035	Spindle Motor Pulley	1
7	ACU-036	End Cover for Motor Pulley	1
8	ACU-037	Key for Spindle Pulley	1
9	ACER-B1-B003	Gib Pate-Left	1
10	ACER-B1-B004	Gib Pate-right	1
11	ACER-B1-B016	Way Wiper-Right Bottom	1
12	ACER-B1-B015	Way Wiper-Left Bottom	1
13	ACER-B1-B013	Way Wiper-Right Top	1
14	ACER-B1-B014	Way Wiper-Left Top	1
15	ACU-B12	Locating Bracket for Manifold	1
16	MCSMS-004	Coolant Distributor	1
17		M10x20L Socket Head Cap Screw	2
18	3-24UNF	3/8"x24UNF Gib Screw	6
19		M12x40L Socket Head Cap Screw	14
20		M12 Spring Washer	4
21	ACER-B1-B005	Gib- Center	1
22	ACER-B1-B006	Gib-Two Sides	2
23	KL1212	Spindle Assembly	1
24	ACU-023	Timing Belt HTD-5M-820	1
25		M5 Flat Washer	16
26		M5x12L + Round Head Cap Screw	16
27		M6 Hex Nut	2
28		M6x50L Socket Head Cap Screw	2
29		Chain Locating Screw	2
30	ACU-024	PT3' 10mm Air Hose Fitting	1
31		M6 Spring Washer	2
32		M6x1.0x15 Socket Head Cap Screw	2
33		M8x1.25x30 Socket Head Cap Screw	6
34	MP9021	A4 Distributing Joint	1
35	ACU-025	M8x1 Check Valve	5
36		M5x0.8x8 Set Screw	6
37	MCSMS-002-1	Nozzle Tubing	4
38	MCSMS-002-2	Coolant & Air Nozzle	4
39	ACU-029	1/2" 90˚ Elbow Joint	1
40	BC3T13S07	Floating Air Cylinder Assembly	1
41		M10x1.5x50 Socket Head Cap Screw	4
42	ACU-030	Air Hose 10mm	1
43	MCSMS-003	Valve	4

Item #	Part #	Description	Quantity
44	ACU-031	Coolant Hose 1/2"	1
45	ACU-032	1/2" Stainless Adjustable Strap	1
46	ACU-033	1/2" Plug	1
47	ACU-030	Air Hose 10mm	1
48		M10 Spring Washer	4
49	ACU-B11	Lower Housing Cover	1

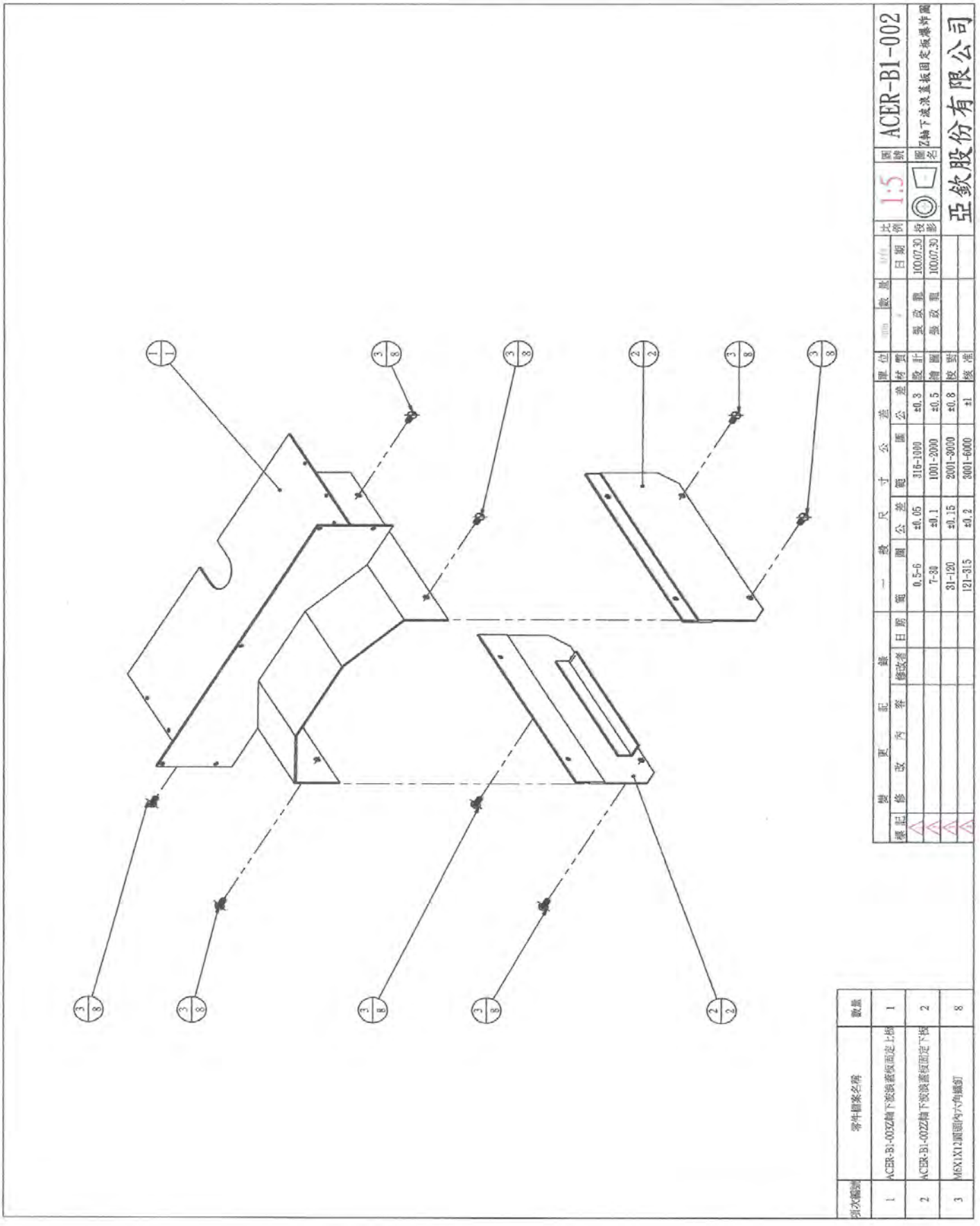
11-4. SPINDLE HOUSING SHEETMETAL



2	ACU-B03_主軸頭右側板	1
3	ACU-B02_主軸頭左側板	1
4	ACU-B01_主軸前蓋板	1
5	ACU-B04_主軸頭上蓋板	1
6	ACU-B07_主軸線槽座	1
7	ACU-B08_主軸線槽座蓋板	1
8	ACU-B05_主軸頭右側蓋板	1
9	ACU-B06_打刀開關固定板	1
10	ACU-B12 噴水塊固定板	1
11	JIS B 1174 M6 x 16 (16) --C	1
12	B18.22M - Plain washer, 6 mm, narrow	1
13	M6彈簧墊圈	1
14	M6X1X15內六角螺絲	1
15	B18.3.4M - 5 x 0.8 x 8 SBHCS --C	2
16	B18.3.4M - 4 x 0.7 x 8 SBHCS --C	1
17	B18.3.4M - 6 x 1.0 x 12 SBHCS --C	1
18	B18.3.4M - 6 x 1.0 x 8 SBHCS --C	3
19	B18.3.4M - 6 x 1.0 x 20 SBHCS --C	1
20	B18.3.4M - 6 x 1.0 x 12 SBHCS --C	1

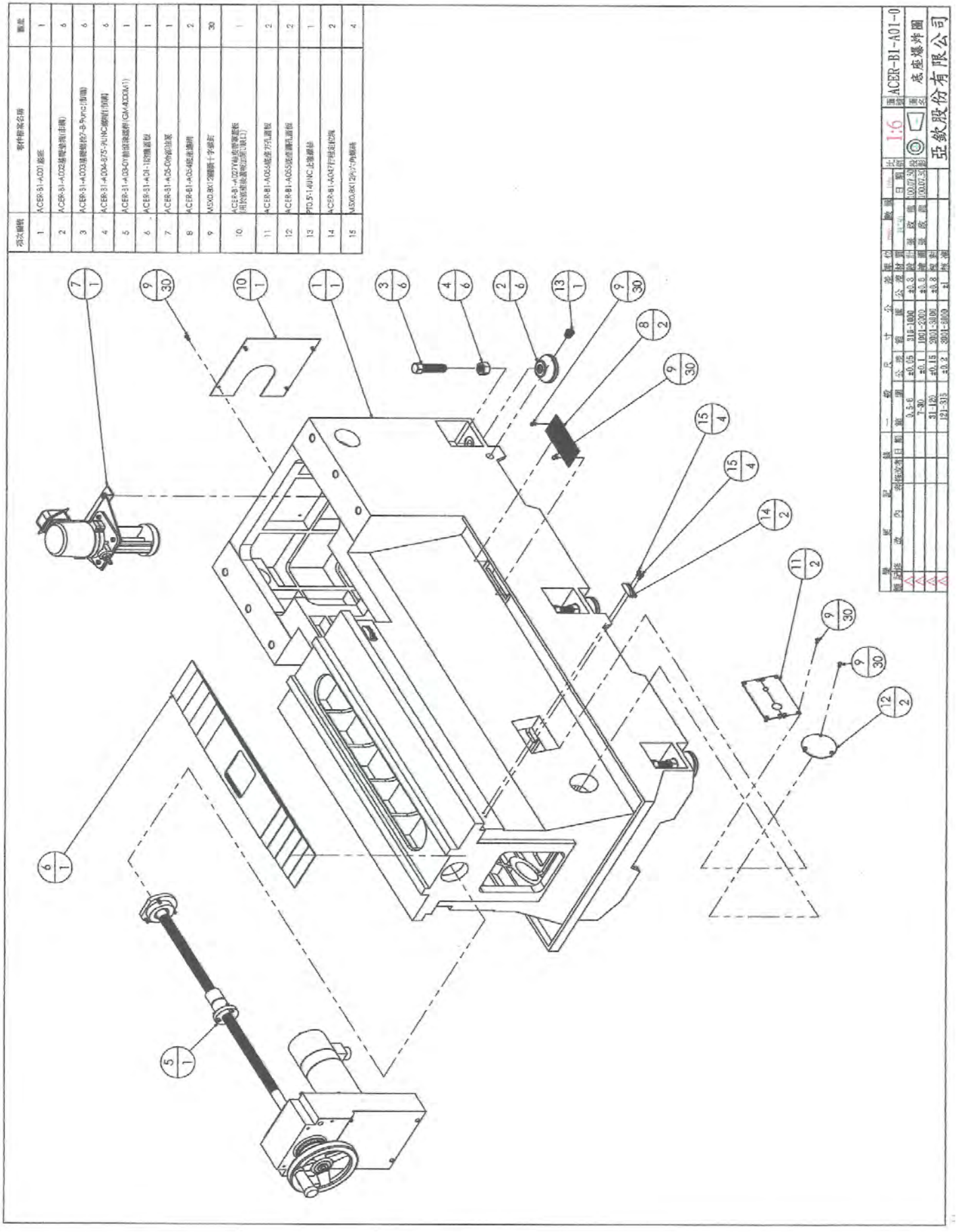
Item #	Part #	Description	Quantity
1	ACU-020	#40 Spindle Housing	1
2	ACU-B03	Spindle Housing Cover-Right	1
3	ACU-B02	Spindle Housing Cover-Left	1
4	ACU-B01	Spindle Housing Cover-Front	1
5	ACU-B04	Spindle Housing Cover-Top	1
6	ACU-B07	Tubing Junction Box	1
7	ACU-B08	Junction Box Cover	1
8	ACU-B05	Spindle Housing Cover-Small Right	1
9	ACU-B06	Tool Release Button Plate	1
10	ACU-B12	Bracket for Air/Coolant Manifold	1
11		M6x1.0x16 Round Head Socket Cap Screw	8
12		M6 Flat Washer Thin	3
13		M6 Spring Washer	3
14		M6x1.0x15 Socket Head Cap Screw	3
15		M5x0.8x8 Round Head Socket Cap Screw	4
16		M4x0.7x8 + Round Head Cap Screw	4
17		M6x1.0x12 Round Head Socket Cap Screw	12
18		M6x1.0x8 Round Head Socket Cap Screw	12
19		M6x1.0x120 Round Head Socket Cap Screw	5
20		M6x1.0x12 Round Head Socket Cap Screw	2

11-5. ACER-B1-002 Z AXIS ACCORDION WAY COVERS LOCATING PLATE



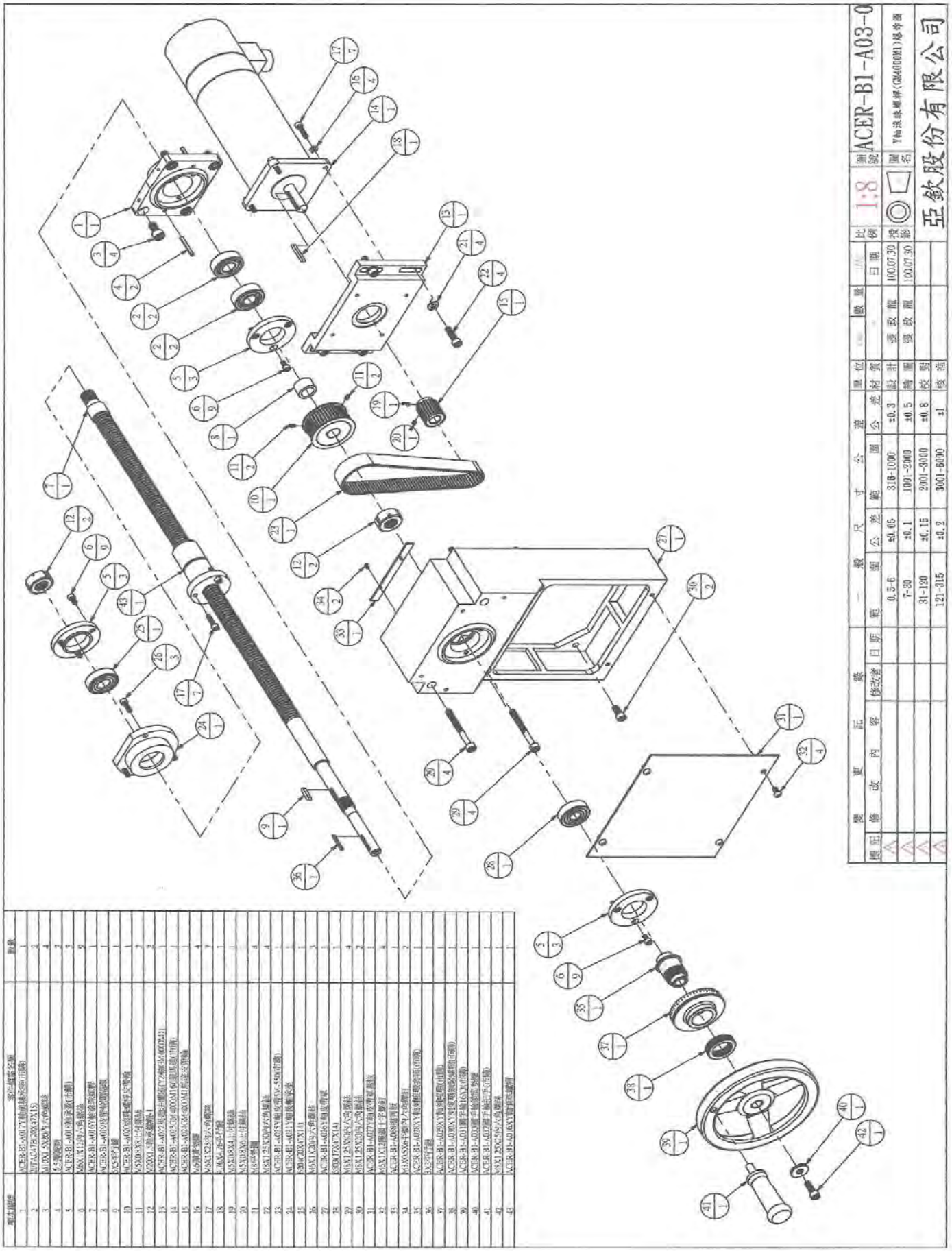
Drawing #: ACER-B1-002			
Item #	Part #	Description	Quantity
1	ACER-B1-003	Z Axis Accordion Way Cover Locating Bracket	1
2	ACER-B1-002	Z Axis Accordion Way Cover Locating Plate	2
3	M6x1x12R	Socket HD Round Cap Screw	8

11-6. ACER-B1-A01-0 MACHINE BASE ASSEMBLY



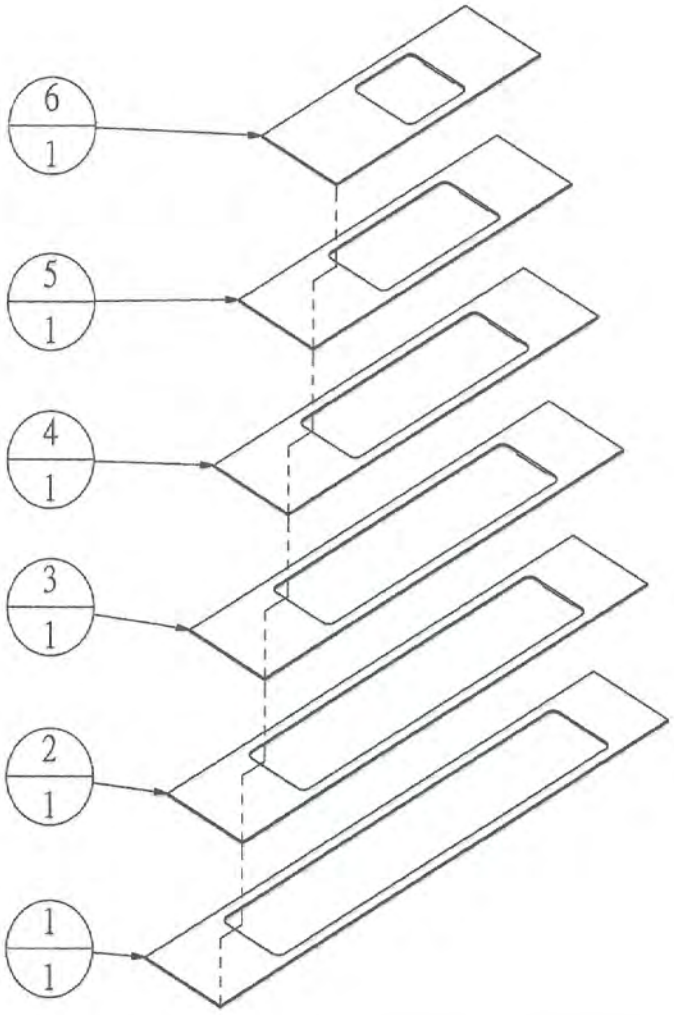
Drawing #: ACER-B1-A01-0			
Item #	Part #	Description	Quantity
1	ACER-B1-A001	Machine Base	1
2	ACER-B1-A002	Leveling Pad	8
3	ACER-B1-A003	Leveling Screw	8
4	ACER-B1-A004	Hex Nut	8
5	ACER-B1-A03-0	Y Axis Travel Assembly	1
6	ACER-B1-A01-1	Chip Cover Assembly	1
7	ACER-B1-A05-0	Coolant Pump Assembly	1
8	ACER-B1-A054	Wire Mesh	2
9	M5x0.8x12	Round Hd Cap + Screw	4
10	ACER-B1-A027-B1	Machine Base Cover	1
11	ACER-B1-A056	Cable Cover Plate	2
12	ACER-B1-A055	Round Cover Plate	4
13	Pt0.5"-14 UNC	Coolant Plug	1
14	ACER-B1-A047	Axis Positioning Block	2
15	M5x0.8x12	Socket HD Cap Screw	4

11-7. ACER-B1-A03-0 Y AXIS TRAVEL ASSEMBLY



Drawing #: ACER-B1-A03-0			
Item #	Part #	Description	Quantity
1	ACER-B1-A017	Cross Feed Bearing Bracket-Aluminum	1
	ACER-B1-A017C	Cross Feed Bearing Bracket-Cast Iron	1
2	20TAC47B	Ball Screw Support Ball Bearing	2
3	M10x1.5x20	Socket Hd Cap Screw	4
4	Φ5	Roll Pin	2
5	ACER-B1-A018	Bearing Cap	3
6	M6x1x12	Socket Hd Cap Screw	9
7	ACER-B1-A016	Y Axis Ball Screw	1
8	ACER-B1-A019	Spacer	1
9	M5x5x20	Key	1
10	ACER-B1-A020	Ball Screw Pulley for 750W	1
	ACER-B1-A020-1K	Ball Screw Pulley for 1KW	1
	ACER-B1-A020-F	Ball Screw Pulley for Fagor Servo Motor	1
11	M5x0.8x8	Set Screw	2
12	M20x1.5	Precision Lock Nut	2
13	ACER-B1-A022	Motor Plate for 750W Motor	1
	ACER-B1-A022-1K	Motor Plate for 1KW Motor	1
	ACER-B1-A022-F	Motor Plate for Fagor Servo Motor	1
14	ACER-B1-A023	Servo Motor 750W	1
	ACER-B1-A023-1K	Servo Motor 1KW	1
	ACER-B1-A023-F	Servo Motor Fagor	1
15	ACER-B1-A024	Motor Pulley for 750W	1
	ACER-B1-A024-1K	Motor Pulley for 1KW	1
	ACER-B1-A024-F	Motor Pulley for Fagor Servo Motor	1
16	M6	Spring Washer	4
17	M6x1x25	Socket Hd Cap Screw	4
18	M4.76x4.76	Key	1
19	M5x0.8x4	Set Screw	1
20	M5x0.8x6	Set Screw	1
21	M8	Flat Washer	4
22	M8x1.25x30	Socket Hd Cap Screw	4
23	ACER-B1-A025	Timing Belt for 750W (5Mx550)	1
	ACER-B1-A025-1K	Timing Belt for 1KW	1
	ACER-B1-A025-F	Timing Belt for Fagor Servo Motor	1
24	ACER-B1-A021	Ball Bearing Seat	1
	ACER-B1-A021L	Ball Bearing Seat with OD120mm	1
25	6204ZZ	Ball Bearing (20x47x14)	1
26	M6x1x20	Socket Hd Cap Screw	3
27	ACER-B1-A026	Y Axis Front Cover Assembly	1

Item #	Part #	Description	Quantity
28	6303ZZ	Ball Bearing (17x47x14)	1
29	M8x1.25x80	Socket Hd Cap Screw	4
30	M8x1.25x20	Socket Hd Cap Screw	2
31	ACER-B1-A027	Front Cover Plate	1
32	M6x1x12R	Round Hd Cap + Screw	4
33	ACER-B1-A068	Chip Plate	1
34	M3x0.5x6F	Socket Hd Flat Cap Screw	2
35	ACER-B1-A028	X, Y Axis Dial Holder	1
36	M3x3x25	Key	1
37	ACER-B1-A029	Dial (2012)	1
38	ACER-B1-A030	Dial Lock Nut (2016)	1
39	ACER-B1-A031	Handwheel (5/8"x3mm)	1
40	ACER-B1-A033	Handwheel Washer	1
41	ACER-B1-A032	Handle	1
42	M8x1.25x25	Socket Hd Cap Screw	1
43	ACER-B1-A016	X, Y Ball Screw Nut	1



項次編號	零件檔案名稱	數量
1	ACER-B1-A009防塵蓋板1	1
2	ACER-B1-A010防塵蓋板2	1
3	ACER-B1-A011防塵蓋板3	1
4	ACER-B1-A012防塵蓋板4	1
5	ACER-B1-A013防塵蓋板5	1
6	ACER-B1-A014防塵蓋板6	1

變更記錄				一般尺寸公差				單位	mm	數量	1/台	比例	1:8	圖號	ACER-B1-A01-1
標記	修改內容	修改者	日期	範圍	公差	範圍	公差	材質			日期				
1				0.5-6	±0.05	316-1000	±0.3	設計	張政龍		100.07.30	投影		圖名	防塵蓋板爆炸圖
2				7-30	±0.1	1001-2000	±0.5	繪圖	張政龍		100.07.30				
3				31-120	±0.15	2001-3000	±0.8	校對							
4				121-315	±0.2	3001-6000	±1	核准							

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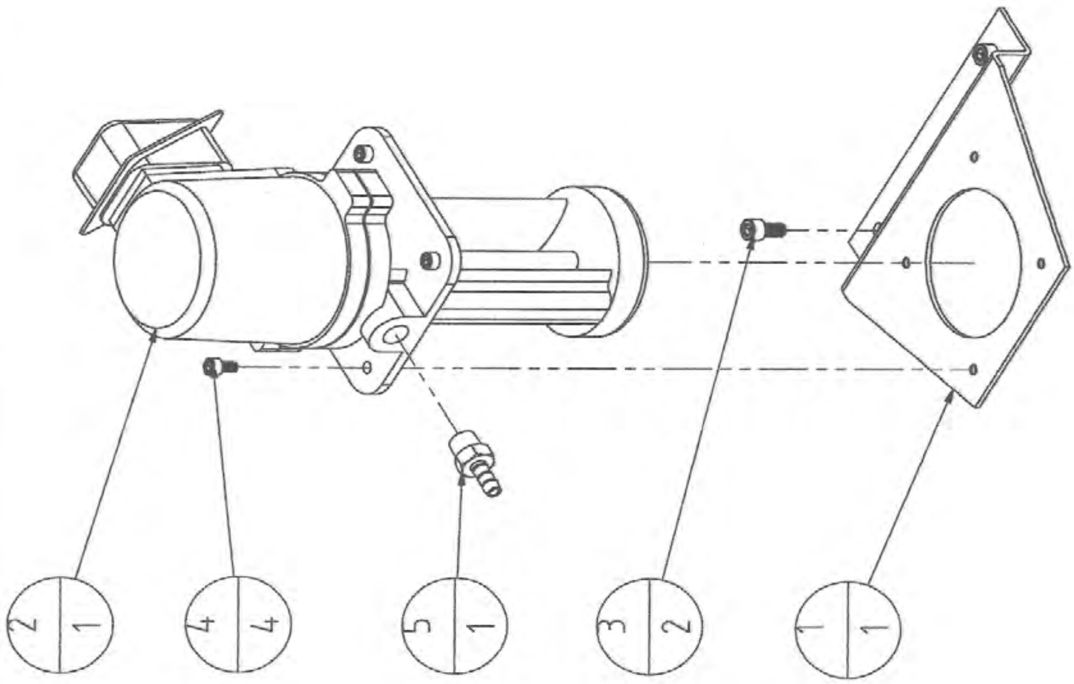
Drawing #: ACER-B1-A01-1			
Item #	Part #	Description	Quantity
1	ACER-B1-A009	Chip Cover 1	1
2	ACER-B1-A010	Chip Cover 2	1
3	ACER-B1-A011	Chip Cover 3	1
4	ACER-B1-A012	Chip Cover 4	1
5	ACER-B1-A013	Chip Cover 5	1
6	ACER-B1-A014	Chip Cover 6	1

11-9. ACER-B1-A05-0 COOLANT PUMP ASSEMBLY

項次編號	零件檔案名稱	數量
1	ACER-B1-A052冷卻油泵固定板	1
2	ACER-B1-A053冷卻油泵(市購)	1
3	M8X1.25X16內六角螺絲	2
4	M6X1X12內六角螺絲	4
5	3'冷卻軟管接頭	1



變更記錄			
標記	修改內容	修改者	日期

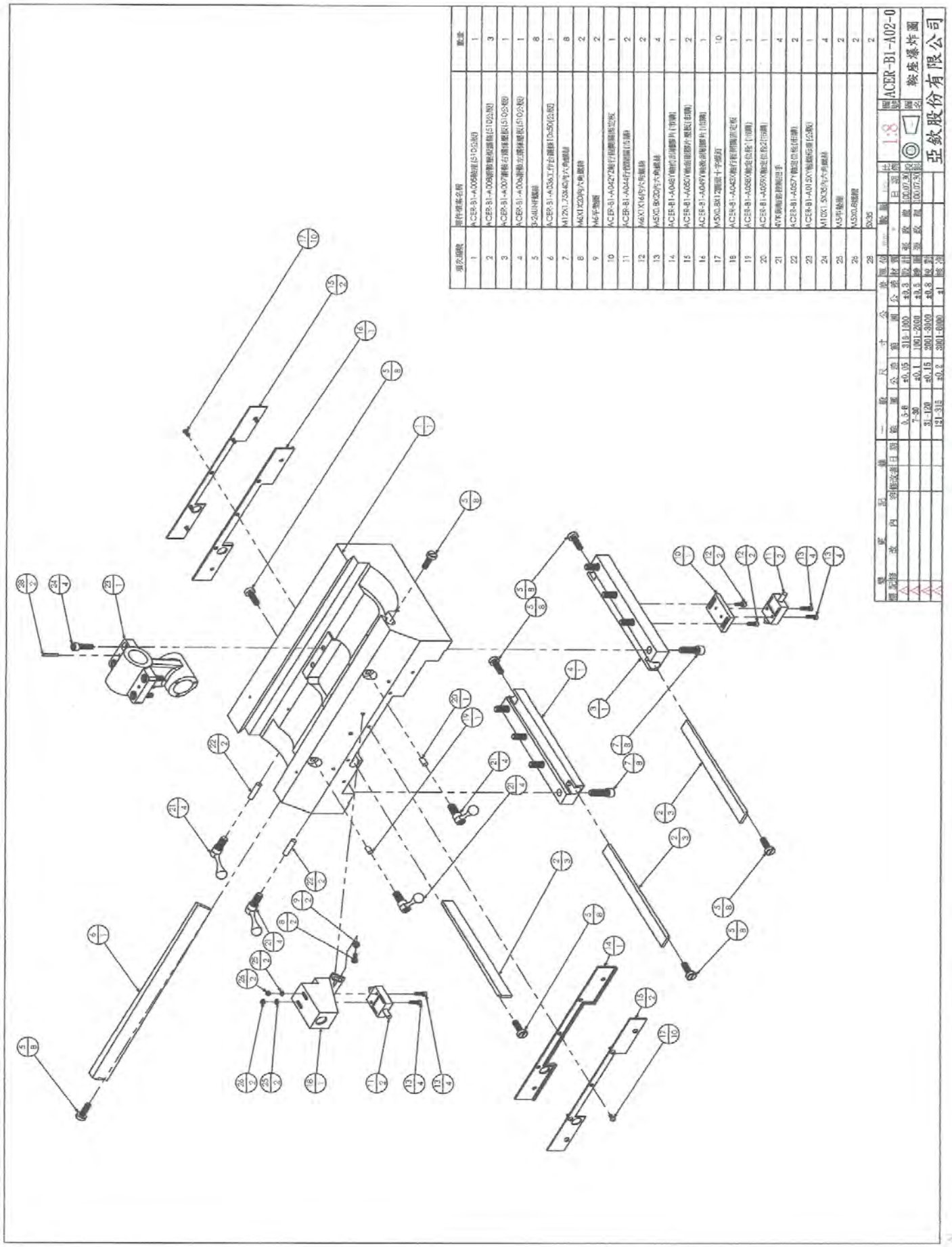
一般尺寸公差			
範圍	公差	範圍	公差
0.5-6	±0.05	316-1000	±0.3
7-30	±0.1	1001-2000	±0.5
31-120	±0.15	2001-3000	±0.8
121-315	±0.2	3001-6000	±1

單位	mm	數量	1/台
材質		日期	
設計	張政龍	100.07.30	
繪圖	張政龍	100.07.30	
校對			
校准			
比例	1:4	圖號	ACER-B1-A05-0
投影		圖名	冷卻油泵爆炸圖

亞鈫股份有限公司

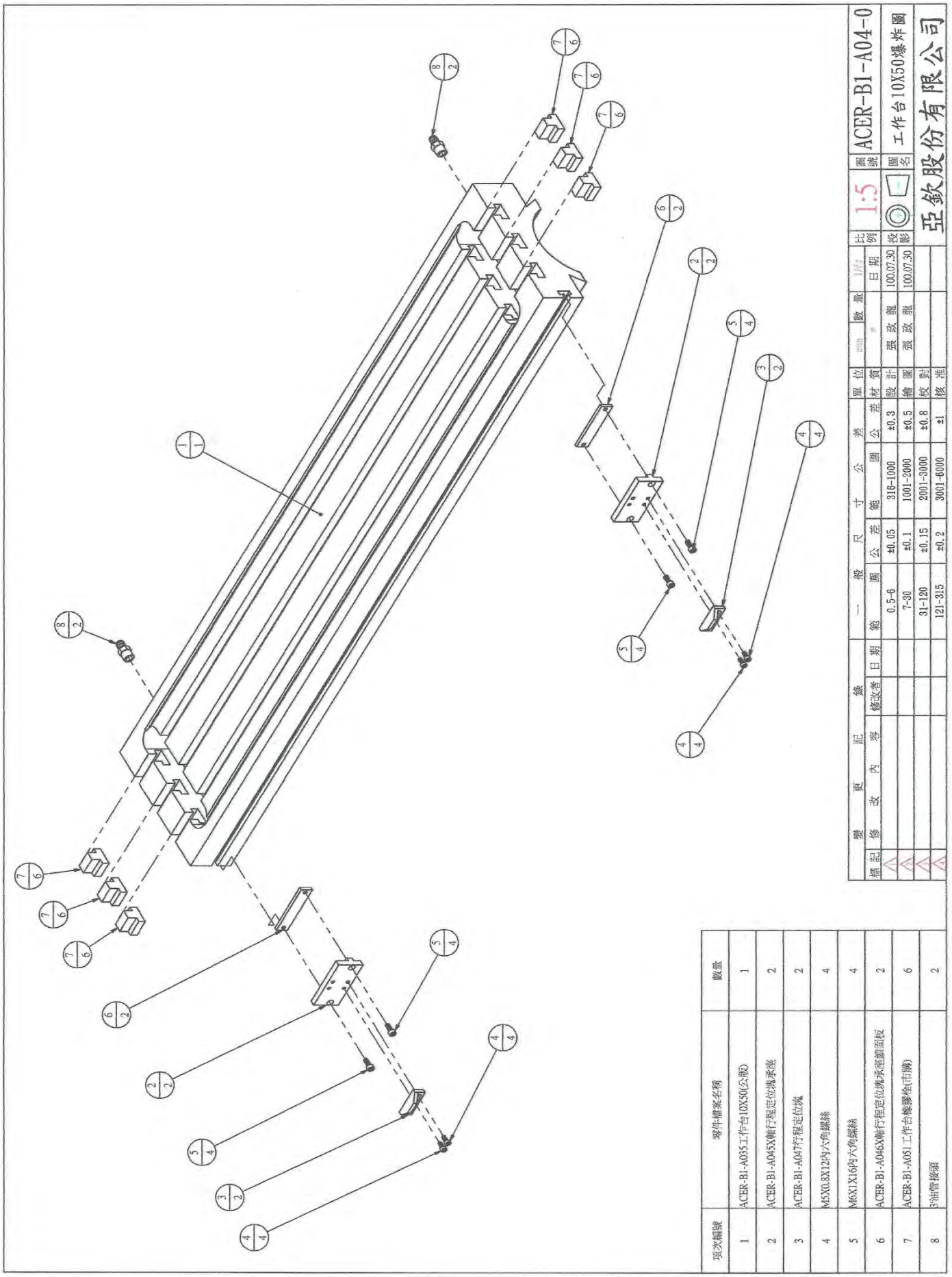
Drawing #: ACER-B1-A05-0			
Item #	Part #	Description	Quantity
1	ACER-B1-A052	Coolant Pump Locating Bracket	1
2	ACER-B1-A053	Coolant Pump 1/8HP	1
3	M8x1.25x16	Socket Hd Cap Screw	2
4	M6x1x12	Socket Hd Cap Screw	4
5	1/2"	Coolant Fitting	1

11-10. ACER-B1-A02-0 SADDLE ASSEMBLY



Drawing #: ACER-B1-A02-0			
Item #	Part #	Description	Quantity
1	ACER-B1-A005	Saddle	1
2	ACER-B1-A008	Gib	3
3	ACER-B1-A007	Gib Support Right (4H-3050)	1
4	ACER-B1-A006	Gib Support Left (4H-3050)	1
5	3-24UNF	Gib Screw	8
6	ACER-B1-A036	Saddle/Table Gib (3026)	1
7	M12x1.75x40	Socket HD Cap Screw	8
8	M6x1x20	Socket HD Cap Screw	2
9	M6	Washer	2
10	ACER-B1-A042	X, Y Limit Switch Locating Plate	1
11	ACER-B1-A044	Limit Switch	2
12	M6x1x16	Socket HD Cap Screw	2
13	M5x0.8x20	Socket HD Cap Screw	4
14	ACER-B1-A048	Felt Wiper (4H-3037)	1
15	ACER-B1-A050	Wiper Plate (4H-3037-1)	2
16	ACER-B1-A049	Felt Wiper (4H-3037)	1
17	M5x0.8x12	Round HD Cap + Screw	10
18	ACER-B1-A043	X Axis Limit Switch Bracket	1
	ACER-B1-A043S	X Axis Limit Switch Bracket-Small	1
19	ACER-B1-A058	Table Lock Plunger (H-3029)	1
20	ACER-B1-A059	Table Lock Plunger (H-3029)	1
21	3030+3031	Table Lock Assembly	4
22	ACER-B1-A057	Saddle Lock Plunger (4H-3032)	2
23	ACER-B1-A015	Yoke	1
24	3/8"x1"	Socket HD Cap Screw	4
25	M5	Washer	2
26	M5x0.8	Hex Nut	2
27	-		
28	M5x35	Roll Pin	2

11-11. ACER-B1-A04-0 TABLE ASSEMBLY



項次編號	零件檔案名稱	數量
1	ACER-B1-A035工作台10X50(公版)	1
2	ACER-B1-A045X軸行程定位塊承座	2
3	ACER-B1-A047行程定位塊	2
4	M5X0.8X12內六角螺絲	4
5	M6X1X16內六角螺絲	4
6	ACER-B1-A046X軸行程定位塊承座鎖面板	2
7	ACER-B1-A051工作台橡膠栓(市購)	6
8	3油管接頭	2

標記	變更記錄 修改內容	修改者	日期

一般尺寸公差			
範圍	公差	範圍	公差
0.5-6	±0.05	316-1000	±0.3
7-30	±0.1	1001-2000	±0.5
31-120	±0.15	2001-3000	±0.8
121-315	±0.2	3001-6000	±1

單位	mm	數量	Unit
材質		張政龍	100.07.30
設計		張政龍	100.07.30
繪圖			
校對			
核准			

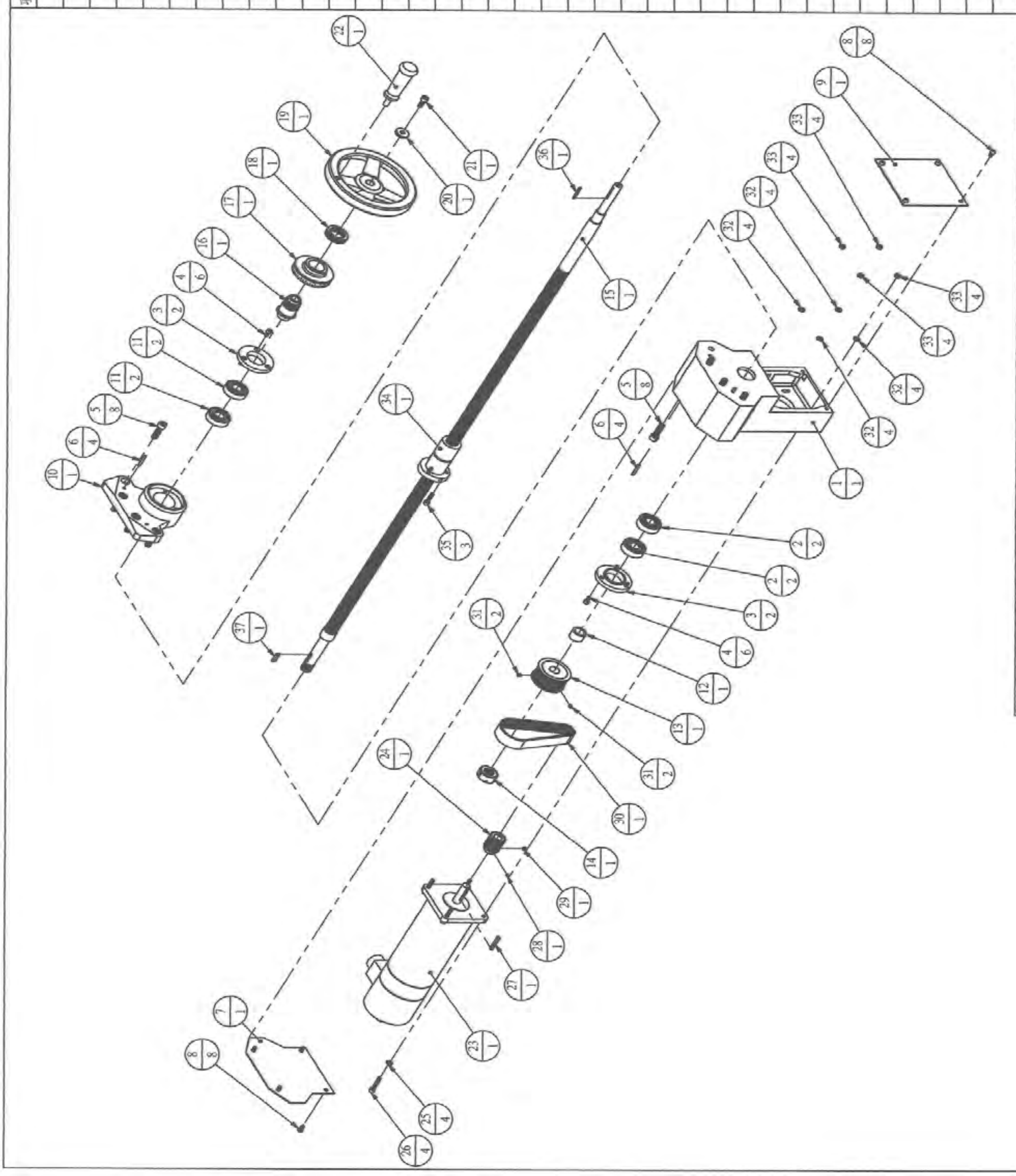
比例 1:5 圖號 ACER-B1-A04-0

投影 圖名 工作台10X50爆炸圖

亞欽股份有限公司

Drawing #: ACER-B1-A04-0			
Item #	Part #	Description	Quantity
1	ACER-B1-A035	Table 10”x50”	1
	ACER-B1-A036	Table 10”x54”	1
2	ACER-B1-A045	X Axis Travel Locating Plate	2
3	ACER-B1-A047	Axis Positioning Block	2
4	M5x0.8x12	Socket HD Cap Screw	4
5	M6x1x16	Socket HD Cap Screw	4
6	ACER-B1-A046	Traveling Locating Back Plate	2
7	ACER-B1-A051	Table End Rubber Stopper	6
8	1/2"PT	Coolant Plug	2

11-12. ACER-B1-AO4-1 X AXIS TRAVEL ASSEMBLY



項次編號	零件檔案名稱	數量
1	ACER-B1-A037X軸電機軸承座(GM4000M1)	1
2	20TAC47B(20X47X15)	2
3	ACER-B1-A018軸承蓋(市購)	2
4	M6X1X12內六角螺絲	6
5	M10X1.5X35內六角螺絲	8
6	φ5彈簧銷	4
7	ACER-B1-A039X軸電機軸承座蓋板1	1
8	M6X1X12圓頭十字螺釘	8
9	ACER-B1-A040X軸電機軸承座蓋板2	1
10	ACER-B1-A041X軸右軸承座(市購)	1
11	6204(20X47X14)	2
12	ACER-B1-A019皮帶輪間隔環	1
13	ACER-B1-A020滾珠螺桿皮帶輪	1
14	M20X1.5軸承螺帽-1	1
15	ACER-B1-A034X軸滾珠螺桿	1
16	ACER-B1-A028XY軸刻度環套筒(市購)	1
17	6280	1
18	ACER-B1-A030XY刻度環鎖緊螺帽(市購)	1
19	ACER-B1-A031圓手輪16X3(市購)	1
20	ACER-B1-A033圓手輪鎖固墊圈	1
21	M8X1.25X20內六角螺絲	1
22	ACER-B1-A032圓手輪把手(市購)	1
23	ACER-B1-A023GM4000M1伺服馬達(市購)	1
24	ACER-B1-A024GM4000M1馬達皮帶輪	1
25	M6彈簧墊圈	4
26	M6X1X35內六角螺絲	4
27	4.76X4.76平行鍵	1
28	M5X0.8X4止付螺絲	1
29	M5X0.8X6止付螺絲	1
30	ACER-B1-A038X軸皮帶5M-400(市購)	1
31	M5X0.8X8止付螺絲	2
32	M6平墊圈	4
33	M6X1螺帽	4
34	ACER-B1-A016XY軸滾珠螺帽	1
35	M6X1X25內六角螺絲	3
36	3X3平行鍵	1
37	5X5平行鍵	1

一般尺寸公差				單位	mm
範圍	公差	範圍	公差	材質	
0.5-6	±0.05	316-1000	±0.3	設計	張政龍 100.07.30
7-30	±0.1	1001-2000	±0.5	繪圖	張政龍 100.07.30
31-120	±0.15	2001-3000	±0.8	校對	
121-315	±0.2	3001-6000	±1	核准	

比例 1:8　圖號 ACER-B1-A04-1

圖名 X軸滾珠螺桿(GM4000M1)爆炸圖

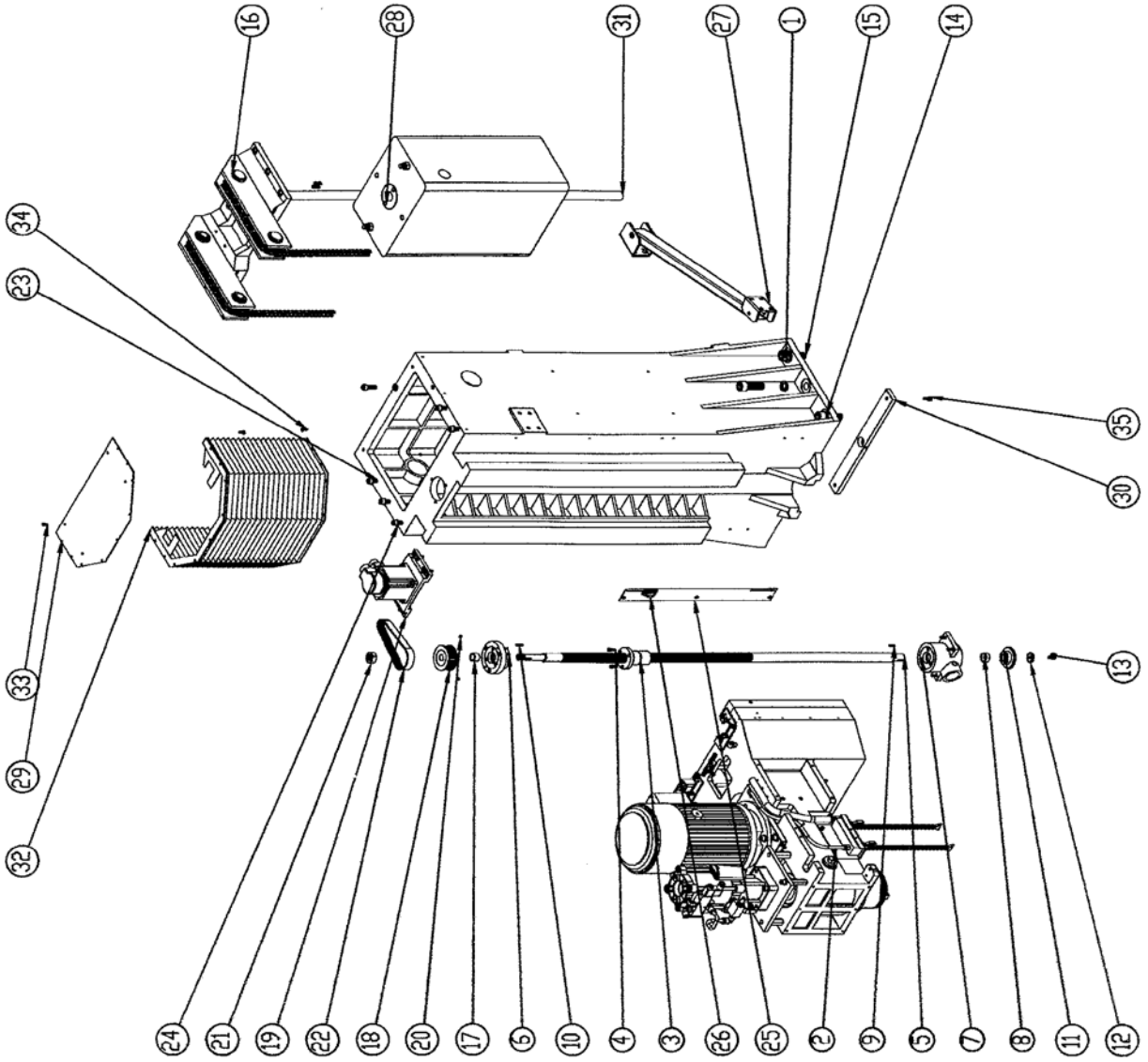
亞欽股份有限公司

Drawing #: ACER-B1-A04-1			
Item#	Part #	Description	Quantity
1	ACER-B1-A037	X Axis Servo Motor Bracket-750W	1
	ACER-B1-A037-M	X Axis Servo Motor Bracket for Mills	1
	ACER-B1-A037-1K	X Axis Servo Motor Bracket-1KW	1
	ACER-B1-A037-F	X Axis Servo Motor Bracket-Fagor Servo Motor	1
2	20TAC47B	Ball Screw Support Ball Bearing	2
3	ACER-B1-A018	Bearing Cap	2
4	M6x1x12	Socket Hd Cap Screw	6
5	M10x1.5x35	Socket Hd Cap Screw	8
6	Φ5	Roll Pin	4
7	ACER-B1-A039	X Axis Bracket Cover 1	1
	ACER-B1-A039C	X Axis Servo Motor Cover	1
8	M6x1x12RC	Round HD Cap + Screw	8
9	ACER-B1-A040	X Axis Bracket Cover 2	1
10	ACER-B1-A041	X Axis Bearing Bracket-Aluminum	1
	ACER-B1-A041C	X Axis Bearing Bracket-Cast Iron	1
11	6204ZZ	Ball Bearings (20x47x14)	2
12	ACER-B1-A019	Spacer	1
13	ACER-B1-A020	Ball Screw Pulley for 750W	1
	ACER-B1-A020-1K	Ball Screw Pulley for 1KW	1
	ACER-B1-A020-F	Ball Screw Pulley for Fagor Servo Motor	1
14	M20x1.5	Precision Lock Nut	1
15	ACER-B1-A034-54	X Axis Ball Screw Assembly for 54” Table	1
	ACER-B1-A034-50	X Axis Ball Screw Assembly for 50” Table	1
16	ACER-B1-A028	X, Y Axis Dial Holder (2014)	1
17	ACER-B1-A029	Dial (2012)	1
18	ACER-B1-A030	Dial Lock Nut (2016)	1
19	ACER-B1-A031	Handwheel (5/8"x3mm)	1
20	ACER-B1-A033	Handwheel Washer	1
21	M8x1.25x20	Socket Hd Cap Screw	1
22	ACER-B1-A032	Handle	1
23	ACER-B1-A023	Servo Motor 750W	1
	ACER-B1-A023-1K	Servo Motor 1KW	1
	ACER-B1-A023-F	Servo Motor Fagor	1
24	ACER-B1-A024	Motor Pulley for 750W	1
	ACER-B1-A024-1K	Motor Pulley for 1KW	1
	ACER-B1-A024-F	Motor Pulley for Fagor Servo Motor	1
25	M6	Spring Washer	4
26	M6x1x35	Socket Hd Cap Screw	4
27	4.76x4.76x40mm	Key	1
28	M5x0.8x4	Set Screw	1
29	M5x0.8x6	Set Screw	1

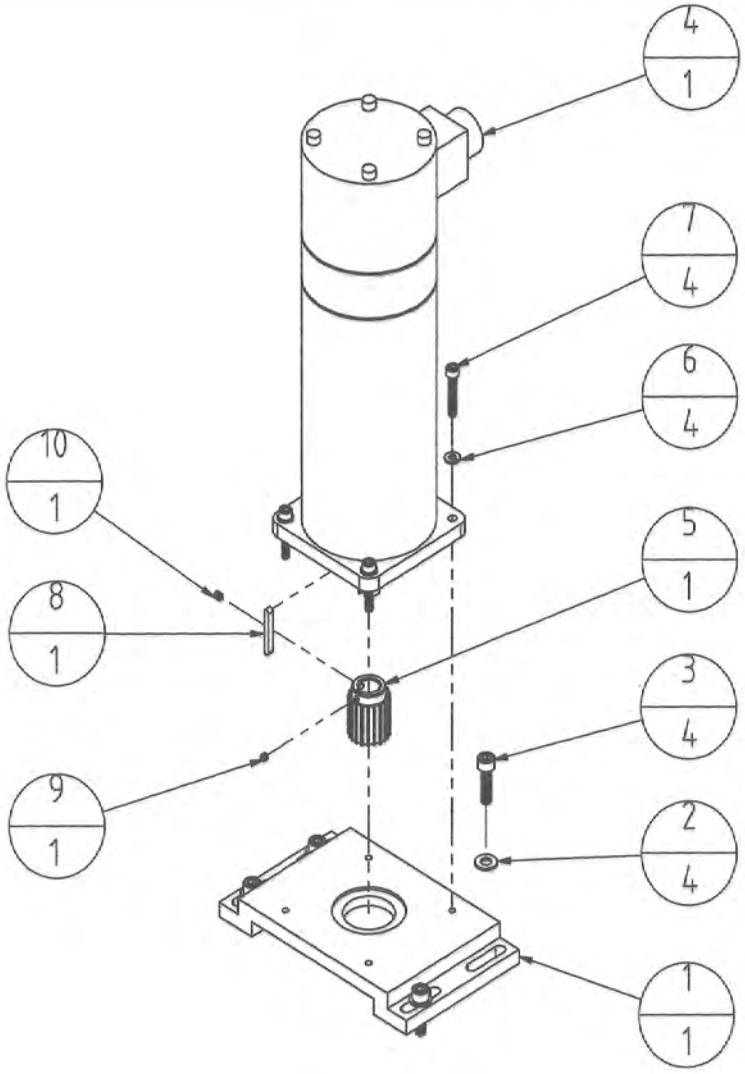
Item#	Part #	Description	Quantity
30	ACER-B1-A038	Timing Belt for 750W(5Mx400)	1
	ACER-B1-A038-1K	Timing Belt for 1KW	1
	ACER-B1-A038-F	Timing Belt for Fagor Servo Motor	1
31	M5x0.8x8	Set Screw	2
32	M6	Washer	4
33	M6x1	Hex Nut	4
34	ACER-B1-A016	X, Y Ball Screw Nut	1
35	M6x1x25	Socket Hd Cap Screw	3
36	M3x3x25	Key	1
37	M5x5x30	Key	1

11-13. ACER-B1-B01 COLUMN ASSEMBLY-BALANCING BLOCK TYPE

項次編號	零件名稱	數量
1	ACER-B1-B001立柱	1
2	ACER-B1(鏈輪型)(page6)0410	1
3	ACER-B1-B007Z軸滾珠螺帽	1
4	M6X1X20內六角螺絲	3
5	ACER-B1-B007Z軸滾珠螺桿	1
6	ACER-B1-B032軸上軸承座	1
7	ACER-B1-B047Z軸下軸承座	1
8	ACER-B1-B010大傘齒輪間隔環	1
9	5X5X20	1
10	5X5X25	1
11	ACER-B1-B011昇降傳動大傘齒輪(布膜)	1
12	ACER-B1-B012大傘齒輪鎖緊墊圈	1
13	M8X1.25X16內六角螺絲	1
14	M22彈簧墊圈	6
15	M22X2.5X75內六角螺絲	6
16	ACER-B1-E01鏈輪座	1
17	ACER-B1-A019皮帶輪間隔環	1
18	ACER-B1-E014滾珠螺桿皮帶輪	1
19	ACER-B1-E047軸電機	1
20	M5X0.8X8止付螺絲	2
21	M20X1.5軸承螺帽-1	1
22	ACER-B1-E016Z軸皮帶SM-500(布膜)	1
23	M12X1.75X40內六角螺絲	6
24	M12彈簧墊圈	6
25	ACER-B1-B029Z軸行程定位塊固定板	1
26	ACER-B1-A047行程定位塊	1
27	吊臂	1
28	ACER-B1-E03配重塊	1
29	ACER-B1-E009Z軸上滾滾蓋板上固定板	1
30	ACER-B1-E012配重塊導桿下固定板	1
31	ACER-B1-E008配重塊導桿	1
32	ACER-B1-001Z軸上滾滾蓋板(鏈輪型)	1
33	M6X1X12內六角螺絲	1
34	M6X1X16平頭內六角螺釘	2
35	M8X1.25X20內六角螺絲	1



Drawing #: ACER-B1-B01			
Item #	Part #	Description	Quantity
1	ACER-B1-B001	Column	1
2	ACER-B1-0410	Spindle Housing Assembly	1
3	ACER-B1-B007	Ball Screw Nut	1
4	M6x1x20	Socket HD Cap Screw	4
5	ACER-B1-B007	Z Axis Ball Screw	1
6	ACER-B1-B03	Z Axis Upper Bearing Seat Assembly	1
7	ACER-B1-B04	Z Axis Lower Bearing Seat Assembly	1
8	ACER-B1-B010	Spacer-long	1
9	M5x5x20	Key	1
10	M5x5x25	Key	1
11	ACER-B1-B011	Bevel Gear (4019)	1
12	ACER-B1-B012	Washer	1
13	M8x1.25x16	Socket HD Cap Screw	1
14	M24	Spring Washer	6
15	M24x2.5x75	Socket HD Cap Screw	6
16	ACER-B1-E	Roller Chain Assembly	1
17	ACER-B1-A019	Pulley Spacer	1
18	ACER-B1-A020	Ball Screw Pulley	1
19	ACER-B1-B05	Servo Motor Assembly	1
20	M5x0.8x8	Set Screw	2
21	M20x1.5	Precision Lock Nut	1
22	ACER-B1-E016	Timing Belt 5mx500	1
	ACER-B1-E016F	Timing Belt for Fagor Servo Motor	1
23	M12X1.75X40	Socket HD Cap Screw	6
24	M12	Spring Washer	6
25	ACER-B1-B029	Z Axis Travel Locating Plate	1
26	ACER-B1-A047	Axis Positioning Block	2
27	ACER_B--F01	Control Arm Assembly	1
28	ACER-B1-E006	Balancing Block	1
29	ACER-B1-E009	Top Cover Locating Plate	1
30	ACER-B1-E012	Balancing Block Shaft Guiding Plate	1
31	ACER-B1-E008	Block Guiding Rod	1
32	ACER-B1-001	Z Axis Upper Accordion Cover	1
33	M6x1.0x12	Socket HD Cap Screw	4
34	M6x1.0x16	Round HD Cap Screw	18
35	M8x1.25x20	Socket HD Cap Screw	2



項次編號	零件檔案名稱	數量
1	ACER-B1-A022馬達法蘭座(YZ軸GM4000M1)	1
2	M8平墊圈	4
3	M8X1.25X30內六角螺絲	4
4	ACER-B1-A023GM4000M1伺服馬達(市購)	1
5	ACER-B1-A024GM4000M1馬達皮帶輪	1
6	M6彈簧墊圈	4
7	M6X1X35內六角螺絲	4
8	4.76X4.76平行鍵	1
9	M5X0.8X4止付螺絲	1
10	M5X0.8X6止付螺絲	1

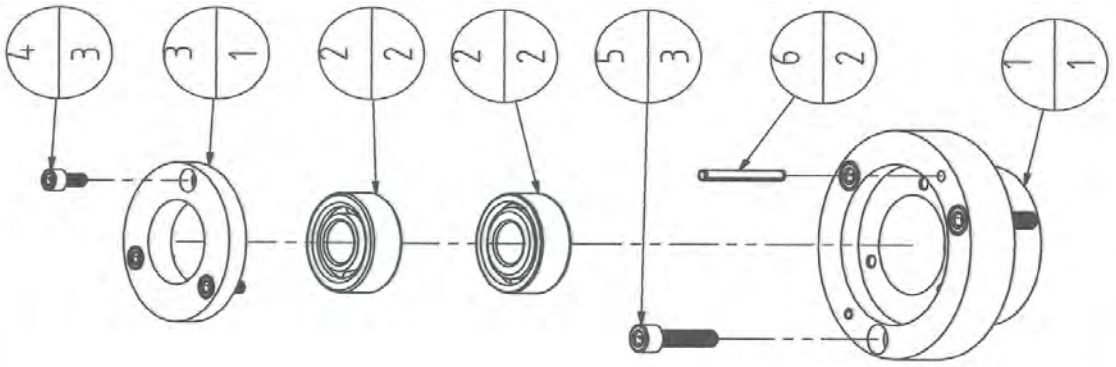
變更記錄				一般尺寸公差				單位	mm	數量	1/台	比例	1:5	圖號	ACER-B1-B05
標記	修改內容	修改者	日期	範圍	公差	範圍	公差	材質	"		日期	投影		圖名	Z軸電機爆炸圖
1				0.5-6	±0.05	316-1000	±0.3	設計	張政龍		100.07.30				
2				7-30	±0.1	1001-2000	±0.5	繪圖	張政龍		100.07.30				
3				31-120	±0.15	2001-3000	±0.8	校對							
4				121-315	±0.2	3001-6000	±1	核准							

亞欽股份有限公司

Drawing #: ACER-B1-B05			
Item #	Part #	Description	Quantity
1	ACER-B1-A022	Motor Plate	1
	ACER-B1-A022-F	Motor Plate for Fagor Servo Motor	1
2	M8	Washer	4
3	M8x1.25x30	Socket Hd Cap Screw	4
4	ACER-B1-A023	Z Axis Servo Motor	1
	ACER-B1-A023-F	Z Axis Fagor Servo Motor	1
5	ACER-B1-A024	Motor Pulley	1
	ACER-B1-A024-F	Motor Pulley for Fagor Servo Motor	1
6	M6	Spring Washer	4
7	M6x1x35	Socket Hd Cap Screw	4
8	M4.76x4.76x40	Key	1
9	M5x0.8x4	Set Screw	1
10	M5x0.8x6	Set Screw	1

11-15. ACER-B1-B03　Z AXIS UPPER BEARING SEAT ASSEMBLY

項次編號	零件檔案名稱	數量
1	ACER-B1-B008Z軸上軸承座	1
2	20TAC47B(20X47X15)	2
3	ACER-B1-A018軸承蓋(市購)	1
4	M6X1X12內六角螺絲	3
5	M8X1.25X30內六角螺絲	3
6	5X40	2



標記	變更修改內容記錄	修改者	日期
1			
2			
3			
4			

一般尺寸公差			
範圍	公差	範圍	公差
0.5-6	±0.05	316-1000	±0.3
7-30	±0.1	1001-2000	±0.5
31-120	±0.15	2001-3000	±0.8
121-315	±0.2	3001-6000	±1

單位	mm	數量	1/台	日期
材質				
設計	張政龍			100.07.30
繪圖	張政龍			100.07.30
校對				
核准				

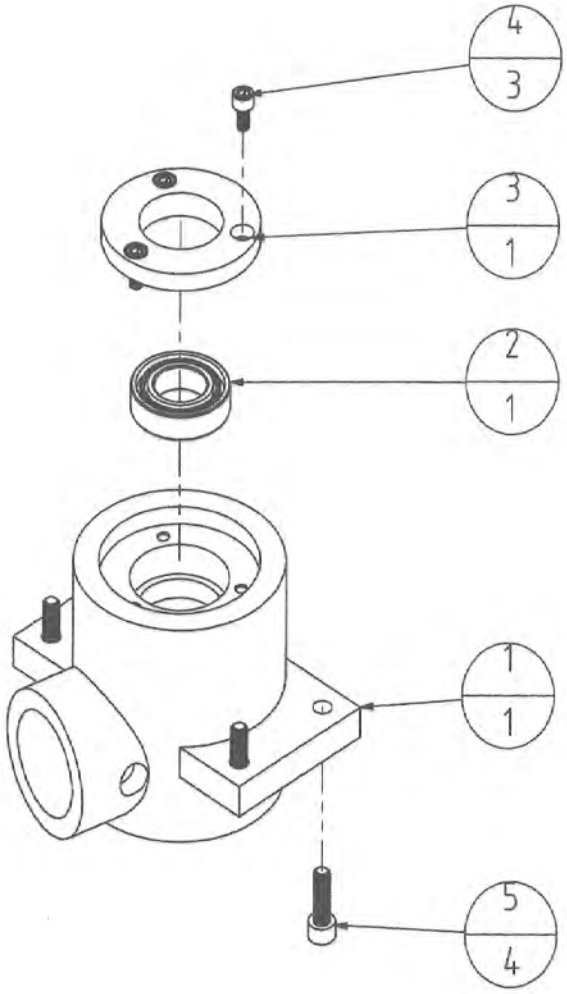
比例 1:2　投影

圖號 ACER-B1-B03

圖名 Z軸上軸承座爆炸圖

亞欽股份有限公司

Drawing #: ACER-B1-B03			
Item #	Part #	Description	Quantity
1	ACER-B1-B008	Z Axis Upper Bearing Seat	1
2	20TAC47B	Ball Screw Support Bearing	2
3	ACER-B1-A018	Bearing Retaining Cover	1
4	M6x1x12	Socket HD Cap Screw	3
5	M8x1.25x30	Socket HD Cap Screw	3
6	M5x40	Roll Pin	2



項次編號	零件檔案名稱	數量
1	ACER-B1-B009Z軸下軸承座	1
2	6005(25X47X12)	1
3	ACER-B1-A018軸承蓋(市購)	1
4	M6X1X12內六角螺絲	3
5	M8X1.25X25內六角螺絲	4

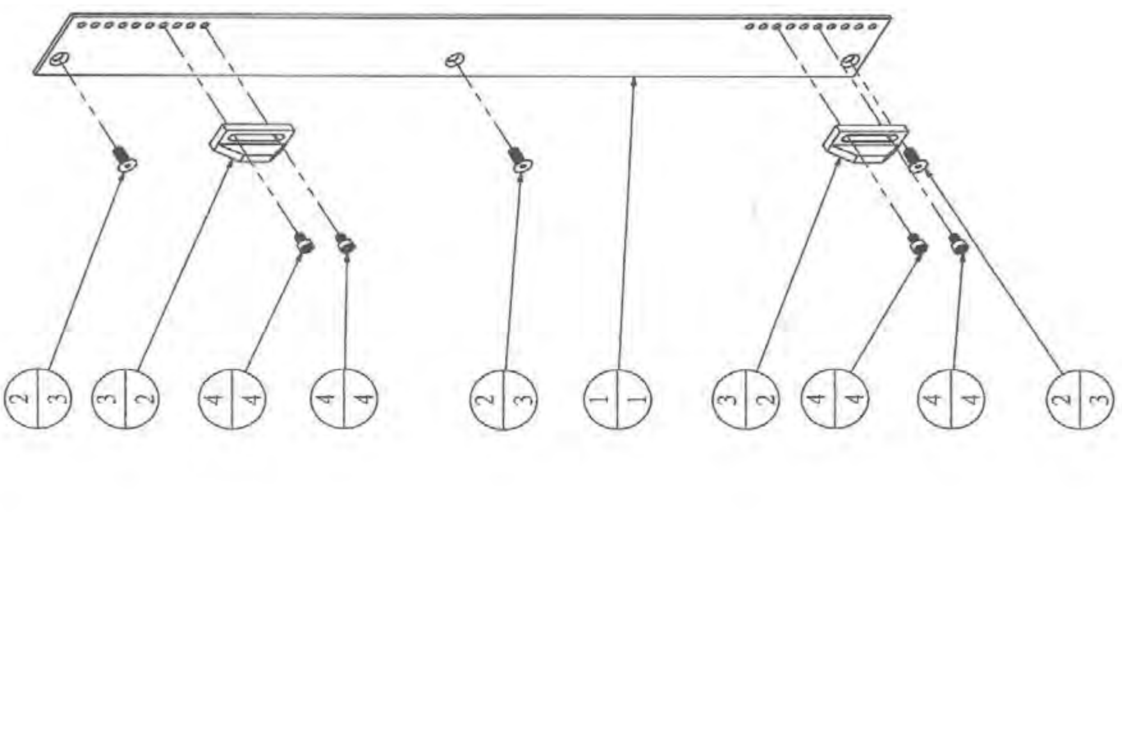
變更記錄				一般尺寸公差				單位	mm	數量	1/台	比例	1:3	圖號	ACER-B1-B04
標記	修改內容	修改者	日期	範圍	公差	範圍	公差	材質			日期				
1				0.5-6	±0.05	316-1000	±0.3	設計	張政龍		100.07.30	投影		圖名	Z軸下軸承座爆炸圖
2				7-30	±0.1	1001-2000	±0.5	繪圖	張政龍		100.07.30				
3				31-120	±0.15	2001-3000	±0.8	校對							
4				121-315	±0.2	3001-6000	±1	核准							

亞欽股份有限公司

Drawing #: ACER-B1-B04			
Item #	Part #	Description	Quantity
1	ACER-B1-B009	Z Axis Lower Bearing Seat	1
2	6005ZZ	Ball Bearing (25x47x12)	1
3	ACER-B1-A018	Bear Retaining Cap	1
4	M6x1x12	Socket HD Cap Screw	3
5	M8x1.25x25	Socket HD Cap Screw	4

11-17. ACER-B1-B08   Z AXIS TRAVEL LIMIT ASSEMBLY

項次編號	零件檔案名稱	數量
1	ACER-B1-B029Z軸行程定位塊固定板	1
2	M6X1X12平頭內六角螺釘	3
3	ACER-B1-A047行程定位塊	2
4	M5X0.8X8內六角螺絲	4



ACER-B1-B08

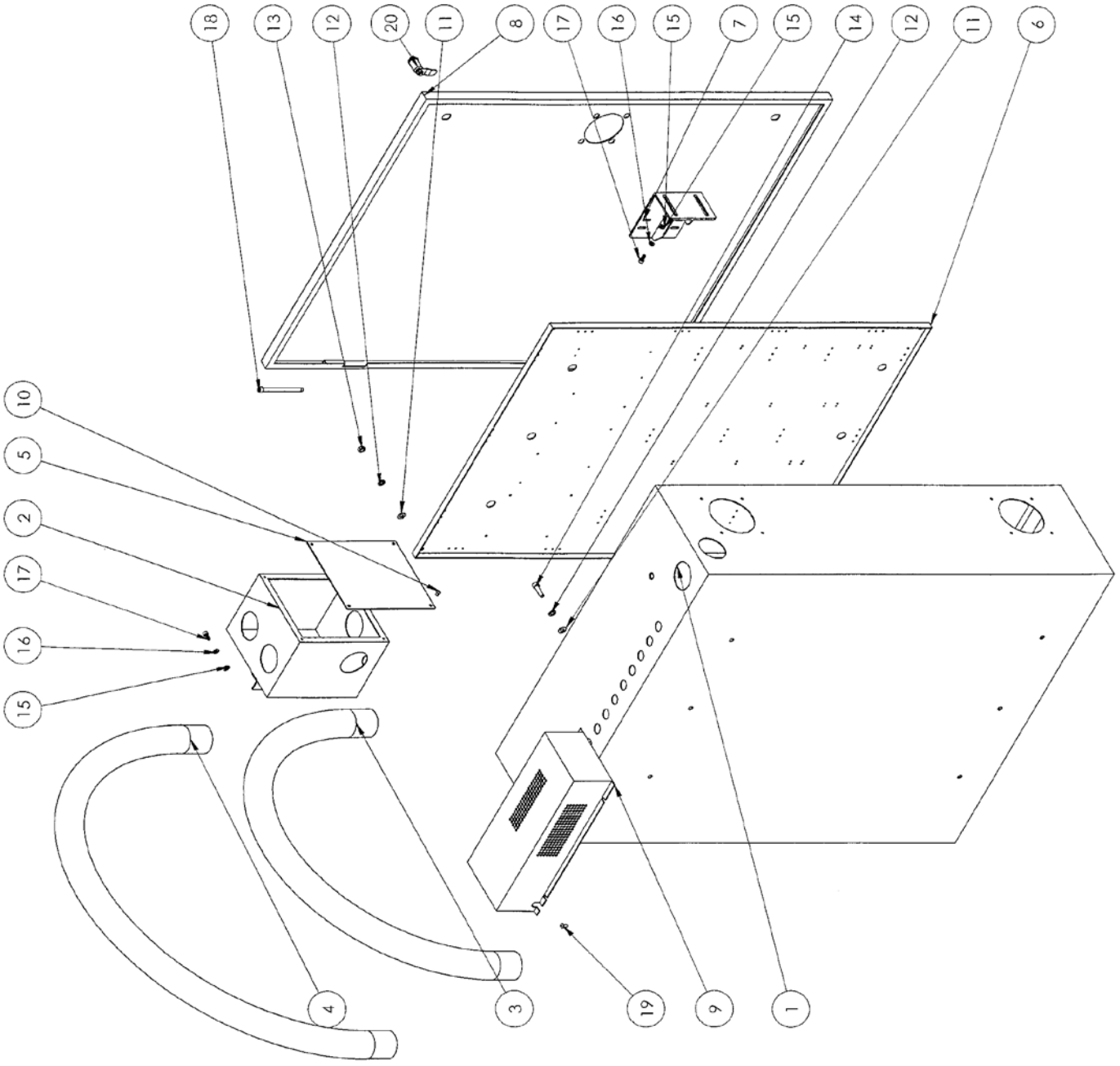
Z軸行程定位塊固定板爆炸圖

亞欽股份有限公司

Drawing #: ACER-B1-B08			
Item #	Part #	Description	Quantity
1	ACER-B1-B029	Z Axis Traveling Locating Plate	1
2	M6x1x12F	Flat Hd Socket Cap Screw	3
3	ACER-B1-A047	Axis Positioning Block	2
4	M5x0.8x8	Socket HD Cap Screw	4

11-18. ELECTRIC CABINET ASSEMBLY

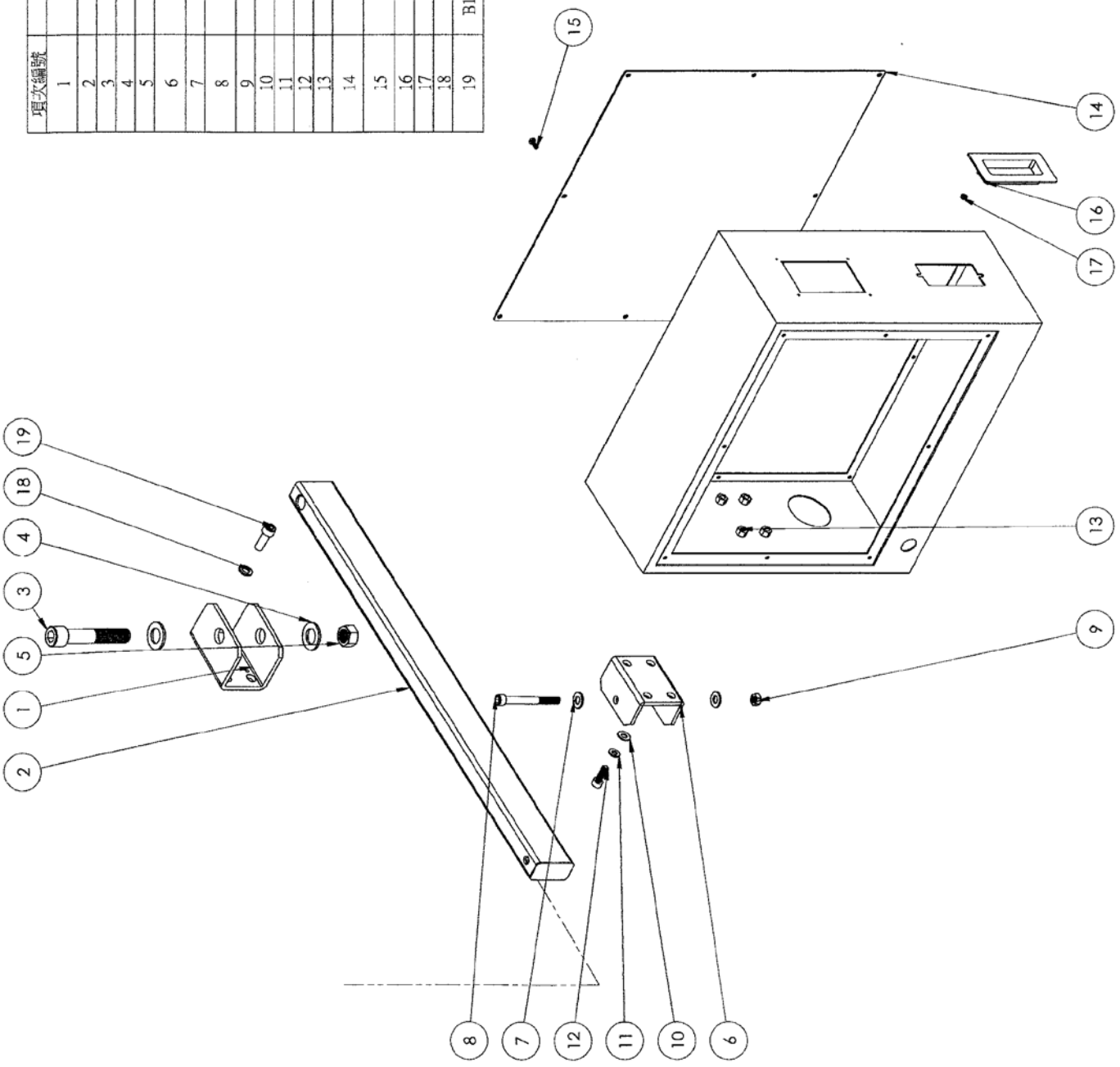
項次編號	零件名稱	數量
1	ACU-A01_電氣箱	1
2	ACU-B09_主軸線槽	1
3	固管-B	1
4	固管-A	1
5	ACU-B10_主軸線槽蓋板	1
6	ACU-A03-配電盤	1
7	ACU-A04-開關固定座	1
8	ACU-A02_背蓋箱門	1
9	ACU-A14_散熱電扇蓋	1
10	B18.3.4M - 5 x 0.8 x 8 SBHCS --C	1
11	M8平墊圈	2
12	M8彈簧墊圈	2
13	M8螺帽	1
14	B18.3.1M - 8 x 1.25 x 30 Hex SHCS -- 30CHX	1
15	B18.22M - Plain washer, 6 mm, narrow	2
16	M6彈簧墊圈	2
17	M6X1X15內六角螺絲	2
18	100mm_長後管-B	1
19	B18.3.4M - 6 x 1.0 x 12 SBHCS --C	1
20	C-402	1



Item #	Part #	Description	Quantity
1	ACU-A01	Electric Cabinet-Main Body for Delta Servo Motor	1
	ACU-A01F	Electric Cabinet-Main Body for Fagor Servo Motor	1
2	ACU-B09	Junction Joint Box	1
3	ACU-001	Wire Collection Tubing	2
4	ACU-002	Tubing Joint	4
5	ACU-B10	Joint Box Cover	1
6	ACU-A03	Electric Component Plate	1
	ACU-A03F	Electric Component Plate for Fagor Servo System	1
7	ACU-A04	Power Switch Locating Bracket	1
8	ACU-A02	Electric Cabinet-Cover	1
9	ACU-A14	Braking Resistor Cover	1
10		M5x0.8x8 Round Head Socket Cap Screw	4
11		M8 Flat Washer	10
12		M8 Spring Washer	10
13		M8 Hex Nut	4
14		M8x1.25x30 Socket Head Cap Screw	6
15		M6 Flat Thin Washer	4
16		M6 Spring Washer	4
17		M6x1x15 Socket Head Cap Screw	4
18	ACU-003	Hinge Roll Pin	2
19		M6x1.0x12 Round Head Socket Cap Screw	4
20	ACU-004	Door Lock Set	2

11-19. CONTROL BOX ASSEMBLY

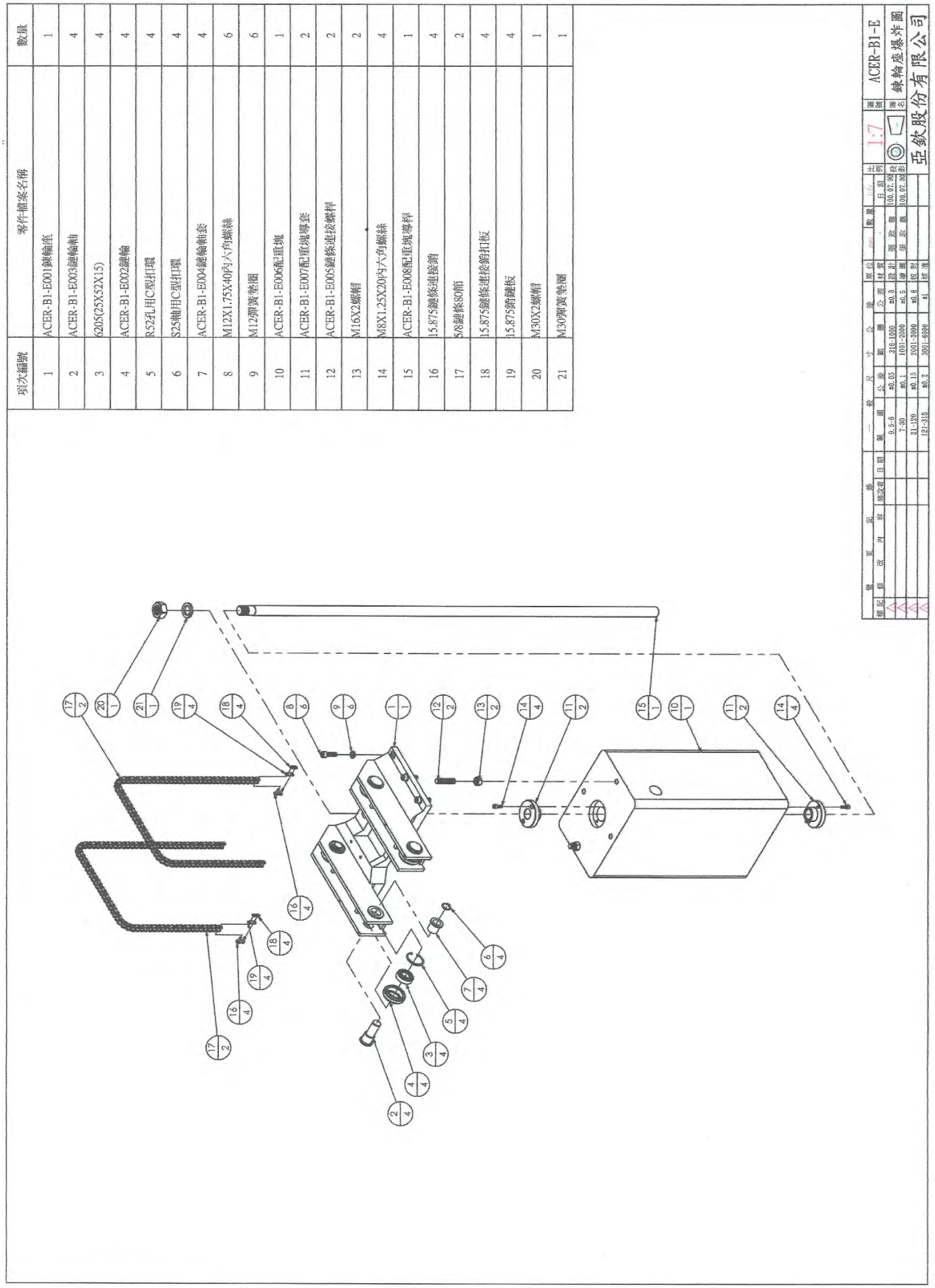
項次編號	零件名稱	數量
1	ACER-B1-F001吊臂固定板	1
2	ACER-B1-F002吊臂	1
3	六分圓頭內六角螺絲	1
4	M20平墊圈	2
5	6-10UNC鎖帽	1
6	ACER-B1-F003控制器固定板	1
7	M10平墊圈	2
8	3'-16UNCX88.9內六角螺絲	1
9	3'-16UNC鎖帽	1
10	M8平墊圈	1
11	M8彈簧墊圈	1
12	M8X1.25X25內六角螺絲	1
13	ACER-B1-F004_操作箱	1
14	ACER-B1-F005_控制箱後蓋	1
15	M5X0.8X12圓頭內六角蝶釘	1
16	四角取手-508	1
17	AM-M4-C	1
18	M10彈簧墊圈	1
19	B18.3.1M - 10 x 1.5 x 30 Hex SHCS -- 30CHX	1



Item #	Part #	Description	Quantity
1	ACER-B1-F001	Control Arm Locating Bracket-Column Side	1
2	ACER-B1-F002A	Control Arm for ATM 1054, 1050	1
3		3/4"x 4" Socket Head Cap Screw	1
4		M20 Flat Washer	1
5		3/4" Hex Nut	1
6	ACER-B1-F003	Control Arm Locating Bracket-Panel Side	1
7		M10 Flat Washer	2
8		3/8"x16UNCx88.9 Socket Head Cap Screw	1
9		3/8"x16UNC Hex Nut	1
10		M8 Flat Washer	4
11		M8 Spring Washer	4
12		M8x1.25x25 Socket Head Cap Screw	4
13	ACER-B1-F004	Control Box	1
	ACER-B1-F004F	Control Box for Fagor Control	1
14	ACER-B1-F005	Control Box Cover	1
15		M5x0.8x12 Round Head Socket Cap Screw	8
16	ACU-010	Handle Hinge 508	1
17	AM-M4-C	Screw Nut	2
18		M10 Spring Washer	4
19		M10x1.5x30 Socket Head Cap Screw	4

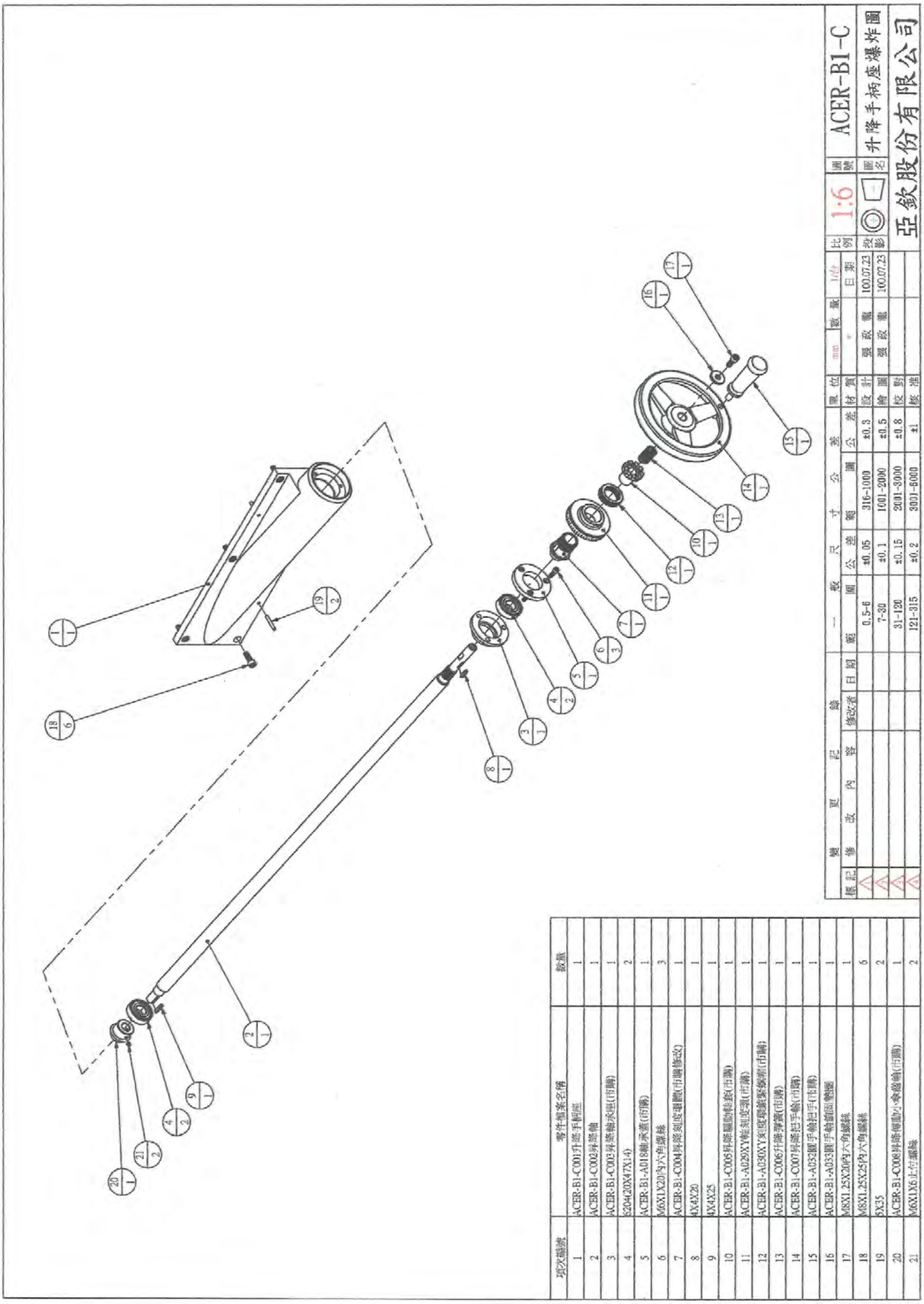
11-20. ACER-B1-E ROLLER CHAIN ASSEMBLY

項次編號	零件檔案名稱	數量
1	ACER-B1-E001鏈輪座	1
2	ACER-B1-E003鏈輪軸	4
3	6205(25X52X15)	4
4	ACER-B1-E002鏈輪	4
5	R52孔用C型扣環	4
6	S25軸用C型扣環	4
7	ACER-B1-E004鏈輪軸套	4
8	M12X1.75X40內六角螺絲	6
9	M12彈簧墊圈	6
10	ACER-B1-E006配重塊	1
11	ACER-B1-E007配重塊導套	2
12	ACER-B1-E005鏈條連接螺桿	2
13	M16X2螺帽	2
14	M8X1.25X20內六角螺絲	4
15	ACER-B1-E008配重塊導桿	1
16	15.875鏈條連接銷	4
17	5/8鏈條80節	2
18	15.875鏈條連接銷扣板	4
19	15.875銷鏈板	4
20	M30X2螺帽	1
21	M30彈簧墊圈	1



Drawing #: ACER-B1-E			
Item #	Part #	Description	Quantity
1	ACER-B1-E001	Chain Roller Seat	1
2	ACER-B1-E003	Roller Shaft	4
3	6205ZZ	Ball Bearings (25x52x15)	4
4	ACER-B1-E002	Roller Wheel	4
5	R52	C Type Snap Ring	4
6	S25	C Type Snap Ring	4
7	ACER-B1-E004	Roller Shaft Sleeve	4
8	M12x1.75x40	Socket Hd Cap Screw	6
9	M12	Spring Washer	6
10	ACER-B1-E006	Balancing Block	1
11	ACER-B1-E007	Shaft Sleeve	2
12	ACER-B1-E005	Chain Connecting Screw	2
13	M16x2	Hex Nut	2
14	M8x1.25x20	Socket Hd Cap Screw	4
15	ACER-B1-E008	Block Guiding Rod	1
16	15.875	Chain Dowel Pin	4
17	5/8"	Chain with 70 sections plus two halfs	2
18	15.875	Chain Connecting Plate	4
19	15.875	Chain Slip Plate	4
20	M30x2	Hex Nut	1
21	M30	Spring Washer	1

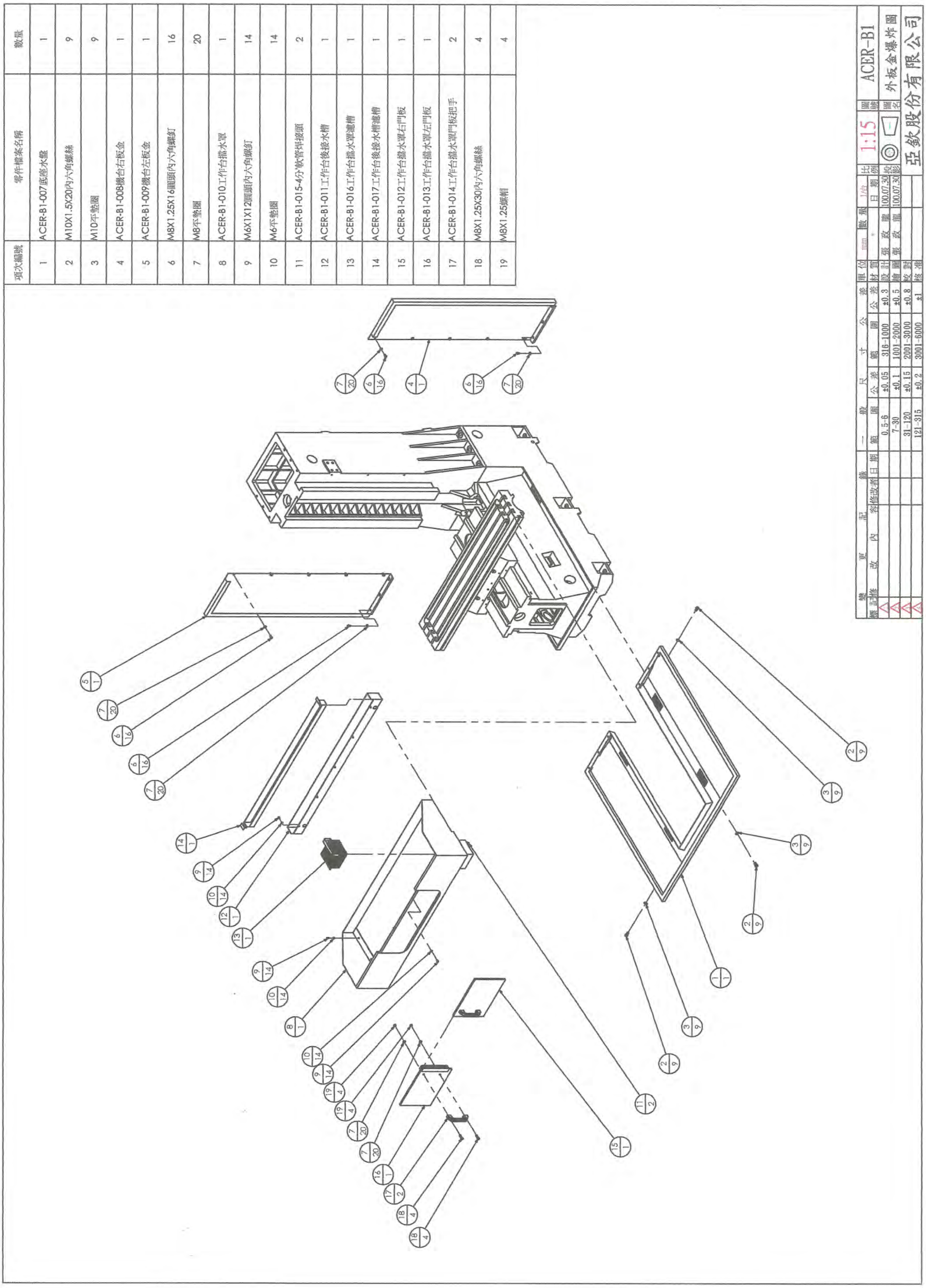
11-21. ACER-B1-C   ELEVATION CRANK ASSEMBLY



項次編號	零件檔案名稱	數量
1	ACER-B1-C001升降手柄座	1
2	ACER-B1-C002昇降軸	1
3	ACER-B1-C003昇降軸承座(市購)	1
4	6204(20X47X14)	2
5	ACER-B1-A018軸承蓋(市購)	1
6	M6X1X20內六角螺絲	3
7	ACER-B1-C004昇降刻度環體(市購修改)	1
8	4X4X20	1
9	4X4X25	1
10	ACER-B1-C005昇降驅動軸套(市購)	1
11	ACER-B1-A029XY軸刻度環(市購)	1
12	ACER-B1-A030XY刻度環鎖緊螺帽(市購)	1
13	ACER-B1-C006升降彈簧(市購)	1
14	ACER-B1-C007昇降把手輪(市購)	1
15	ACER-B1-A032圓手輪把手(市購)	1
16	ACER-B1-A033圓手輪鎖固墊圈	1
17	M8X1.25X20內六角螺絲	1
18	M8X1.25X25內六角螺絲	6
19	5X35	2
20	ACER-B1-C008昇降傳動小傘齒輪(市購)	1
21	M6X1X6止付螺絲	2

Drawing #: ACER-B1-C			
Item #	Part #	Description	Quantity
1	ACER-B1-C001	Elevation Handle Bracket	1
2	ACER-B1-C002	Elevation Shaft	1
3	ACER-B1-C003	Bearing Cap (4006)	1
4	6204ZZ	Ball Bearing (20x47x14)	2
5	ACER-B1-A018	Bearing Retaining Ring (2011)	1
6	M6x1x20	Socket HD Cap Screw	3
7	ACER-B1-C004	Dial Holder (4011)	1
8	M4x4x20	Key	1
9	M4x4x25	Key	1
10	ACER-B1-C005	Gear Shaft Clutch Insert (4013)	1
11	ACER-B1-A029	Dial (4010)	1
12	ACER-B1-A030	Dial Lock Nut (2016)	1
13	ACER-B1-C006	Spring	1
14	ACER-B1-C007	Handwheel	1
15	ACER-B1-A032	Handle	1
16	ACER-B1-A033	Washer	1
17	M8x1.25x20	Socket HD Cap Screw	1
18	M8x1.25x25	Socket HD Cap Screw	6
19	M5x35	Roll Pin	2
20	ACER-B1-C008	Bevel Gear (4014)	1
21	M6x1x6	Set Screw	2

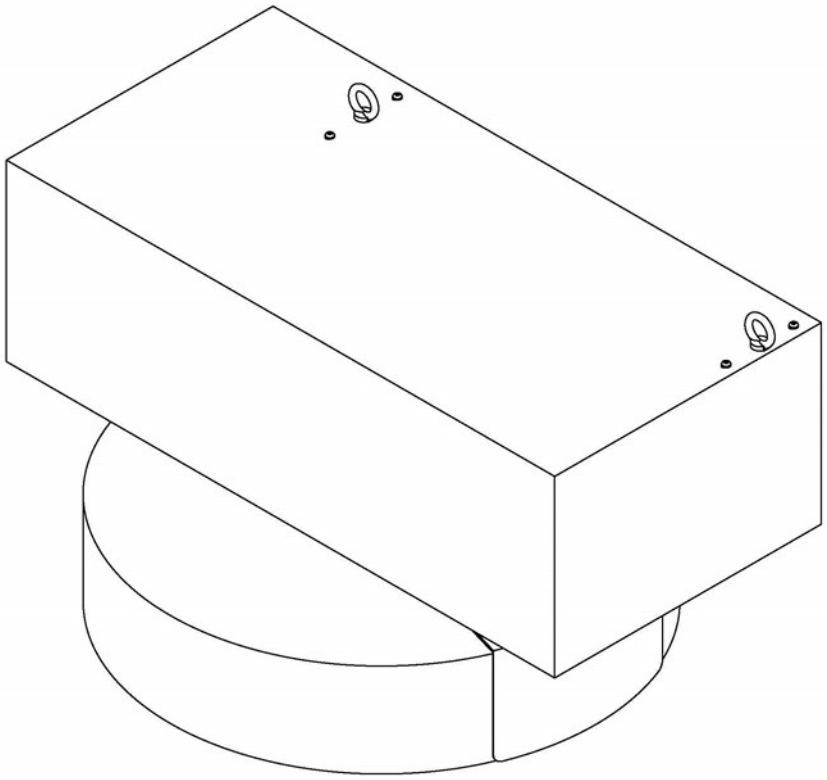
11-22. ACER-B1 SHOWN WITH OPTIONAL ACCESSORIES



項次編號	零件檔案名稱	數量
1	ACER-B1-007底座水盤	1
2	M10X1.5X20內六角螺絲	9
3	M10平墊圈	9
4	ACER-B1-008機台右板金	1
5	ACER-B1-009機台左板金	1
6	M8X1.25X16圓頭內六角螺釘	16
7	M8平墊圈	20
8	ACER-B1-010工作台擋水罩	1
9	M6X1X12圓頭內六角螺釘	14
10	M6平墊圈	14
11	ACER-B1-015-4分"軟管焊接頭	2
12	ACER-B1-011工作台後接水槽	1
13	ACER-B1-016工作台擋水罩濾槽	1
14	ACER-B1-017工作台後接水槽濾槽	1
15	ACER-B1-012工作台擋水罩右門板	1
16	ACER-B1-013工作台擋水罩左門板	1
17	ACER-B1-014工作台擋水罩門板把手	2
18	M8X1.25X30內六角螺絲	4
19	M8X1.25螺帽	4

Drawing #: ACER-B1 with Optional Accessories			
Item #	Part #	Description	Quantity
1	ACER-B1-007	Chip & Coolant Pan	1
2	M10x1.5x20	Socket HD Cap Screw	9
3	M10	Washer	9
4	ACER-B1-008	Column Side Splash Guard-Right	1
5	ACER-B1-009	Column Side Splash Guard-Left	1
6	M8x1.25x16R	Socket HD Round Cap Screw	16
7	M8	Washer	20
8	ACER-B1-010-54	Table Splash Guard for 54” Table	1
	ACER-B1-010-50	Table Splash Guard for 50” Table	1
9	M6x1.25x16R	Socket HD Round Cap Screw	14
10	M6	Washer	14
11	ACER-B1-015	1/2" Nozzle Fitting	2
12	ACER-B1-011	Table Splash Guard Back Reservoir	1
13	ACER-B1-016	Chip Collecting Pan	1
14	ACER-B1-017	Table Splash Guard Collecting Pan	1
15	ACER-B1-012-54	Splash Guard Door-Right for 54” Table	1
	ACER-B1-012-50	Splash Guard Door-Right for 50” Table	1
16	ACER-B1-013-54	Splash Guard Door-Left for 54” Table	1
	ACER-B1-013-50	Splash Guard Door-Left for 50” Table	1
17	ACER-B1-014	Door Handle	2
18	M8x1.25x30	Socket HD Cap Screw	4
19	M8x1.25	Hex Nut	4

Ya-Gin Machine Tool Manufacturing Inc.



#30/40 DRUM AND UMBRELLA TYPE AUTOMATIC TOOL CHANGER HYG-308/408

AUTOMATIC TOOL CHANGER

OPERATION MANUAL

No.101, Lane 506, Seng-Tso Rd., Seng-Karng District,

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Website: www.acerlinks.com

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#30/40 DRUM AND UMBRELLA TYPE AUTOMATIC TOOL CHANGER
HYG-308/408 OPERATION MANUAL

AUTOMATIC

TOOL CHANGER

HYG-308/408

OPERATION MANUAL

MECHANICAL SPECIFICATION

1.	Number of Tools	HYG-308	HYG-408
2.	Max. Tool Weight	5 KG	8 KG
3.	Max. Tool Diameter	120mm	120mm
4.	Max. Tool Length	200mm	300mm
5.	Tool-tool Time	1.35sec (60HZ)	7.0sec (60HZ)
6.	Pattern of Selecting Tool	Bi-directional random tool selection	Bi-directional random tool selection
7.	Input Voltage	AC220V3Ø 60HZ /380V 3Ø 50HZ	AC220V3Ø 60HZ /380V 3Ø 50HZ
8.	Input Pressure	5~6Kg/cm2	5~6Kg/cm2

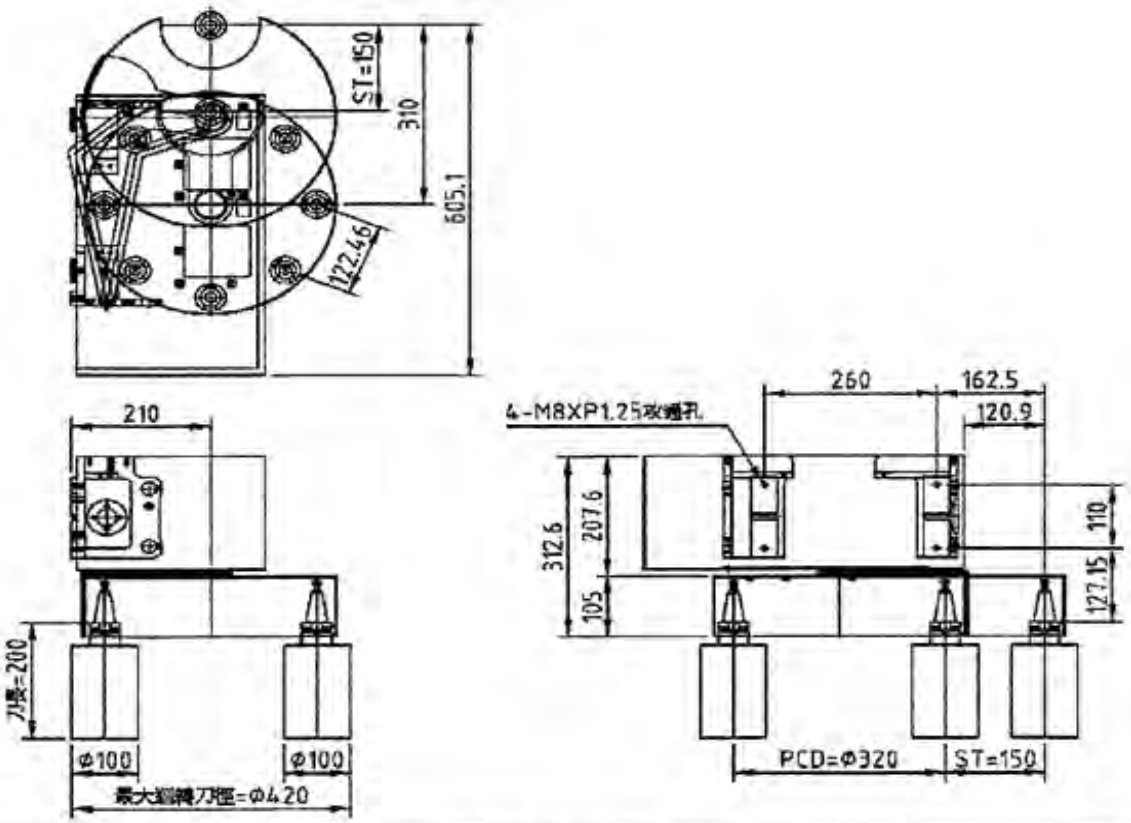
DIMENSIONAL DRAWING

ACER ATC

Customer Confirmation Figure	客戶 Customer		機種 Machine Model	

刀庫型式 Magazine Spec.	HYG-308 (30# X BT)	換刀分割時間 Mag. Indexing Time	50Hz	1.6 sec	60Hz	1.35 sec
刀套規格 Pocket Spec.	BT30#	氣缸往復時間 Cylinder Reciprocating Time	2.0 sec			
刀盤直徑 Cutter Diameter	320 mm	最大刀徑 Maximum Tool Dia.	MAX: Φ120			
刀庫淨重 Magazine Weight	40 KG	刀具重量 Tool Weight (Kgf)	MAX: 5		TOTAL: 40	

客戶編號	建興編號	品名	刀套	刀臂	電壓	頻率	顏色



配件表 Accessories

1.	7.
2.	8.
3.	9.
4.	10.
5.	11.
6.	12.

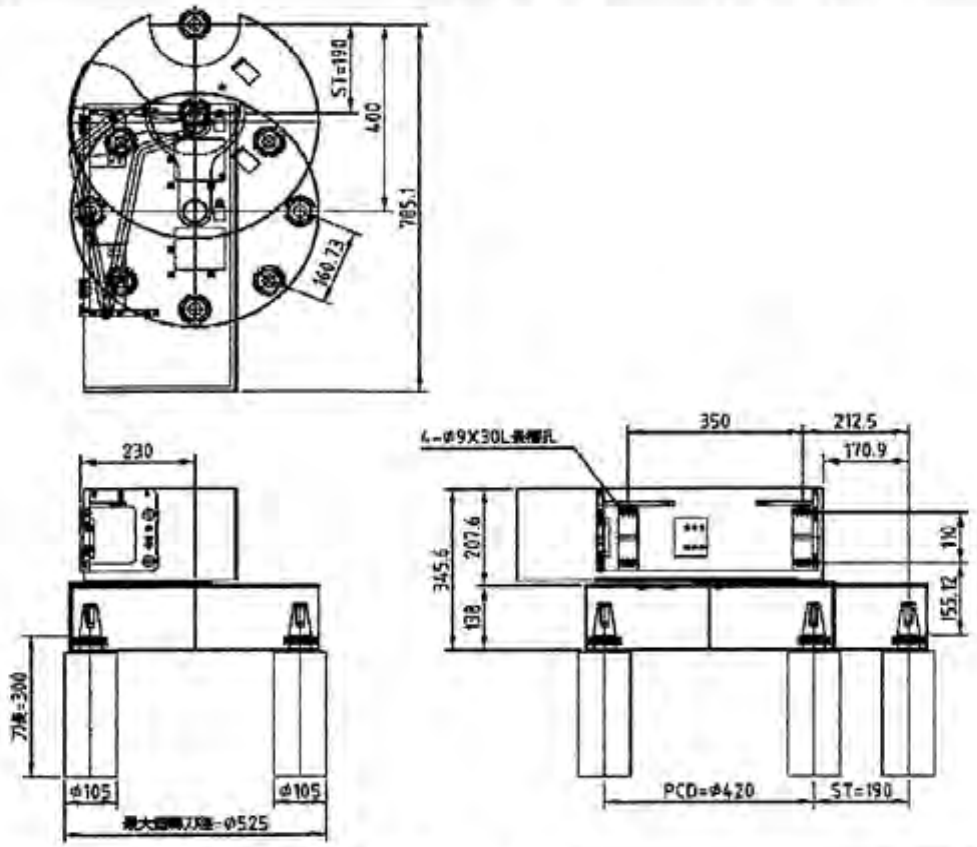
客戶確認 Customer Confirm: _____ 繪圖者 Designer: _____

確認日期 Confirm Date: _____ 繪圖日期 Draw Date: _____

ACER ATC

Customer Confirmation Figure	客戶 Customer		機種 Machine Model	
刀庫型式 Magazine Spec.	HYG-409 (40# X BT)	單刀分割時間 Mag. Indexing Time	50Hz 1.6 sec	60Hz 1.35 sec
刀套規格 Pocket Spec.	BT40,CAT40,DIN40	氣缸往復時間 Cylinder Reciprocating Time	2.0 sec	
刀盤直徑 Cutter Diameter	420 mm	最大刀徑 Maximum Tool Dia.	MAX:φ105	
刀庫淨重 Magazine Weight	KG	刀具重量 Tool Weight (Kgf)	MAX:8	TOTAL:64

客戶編號	錶頭編號	品名	刀套	刀臂	電壓	頻率	顏色



配件表 Accessories	
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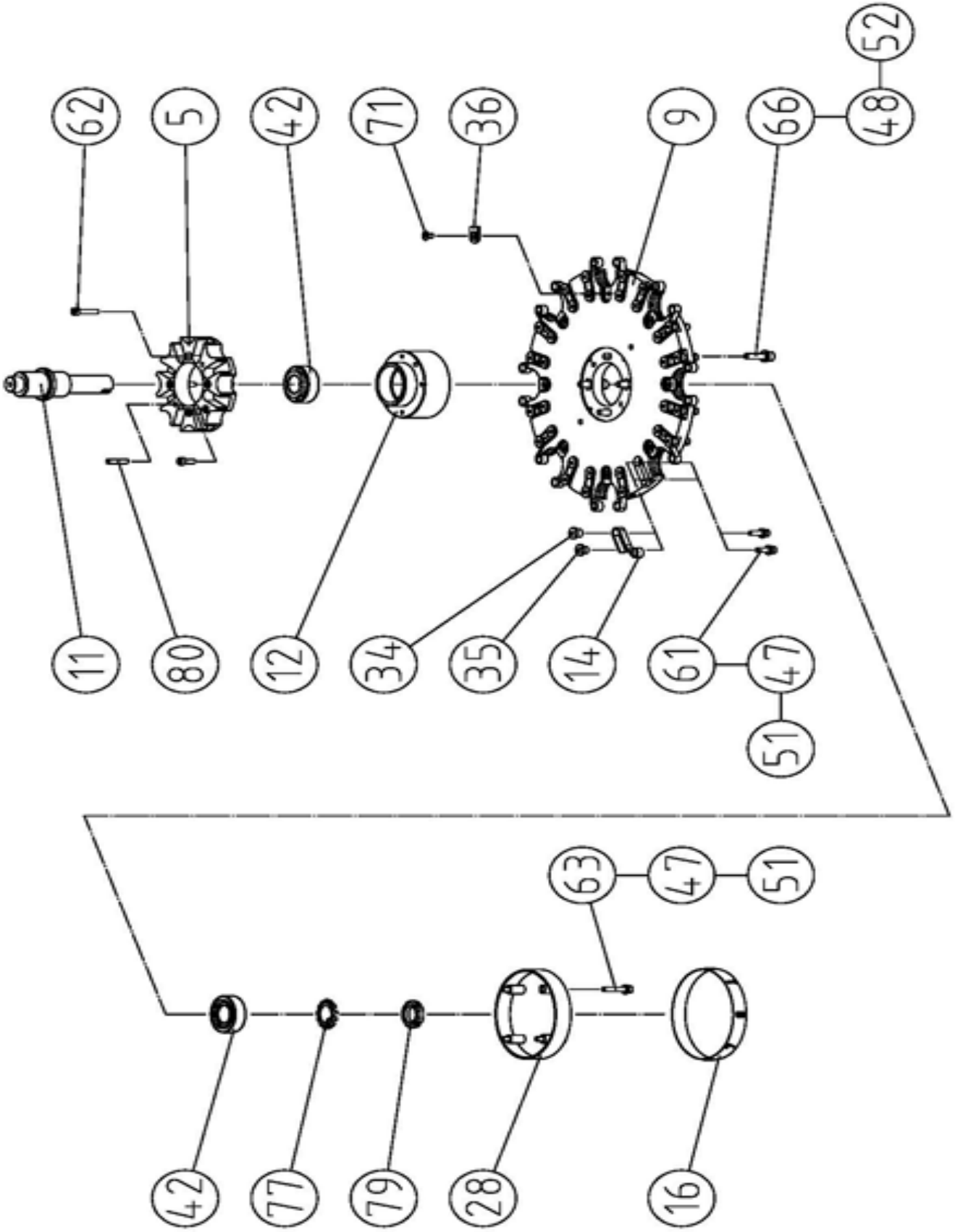
3.	9.
4.	10.
5.	11.
6.	12.

客戶確認 Customer Confirm: _____ 繪圖者 Designer: _____

確認日期 Confirm Date: _____ 繪圖日期 Draw Date: _____

PARTS LIST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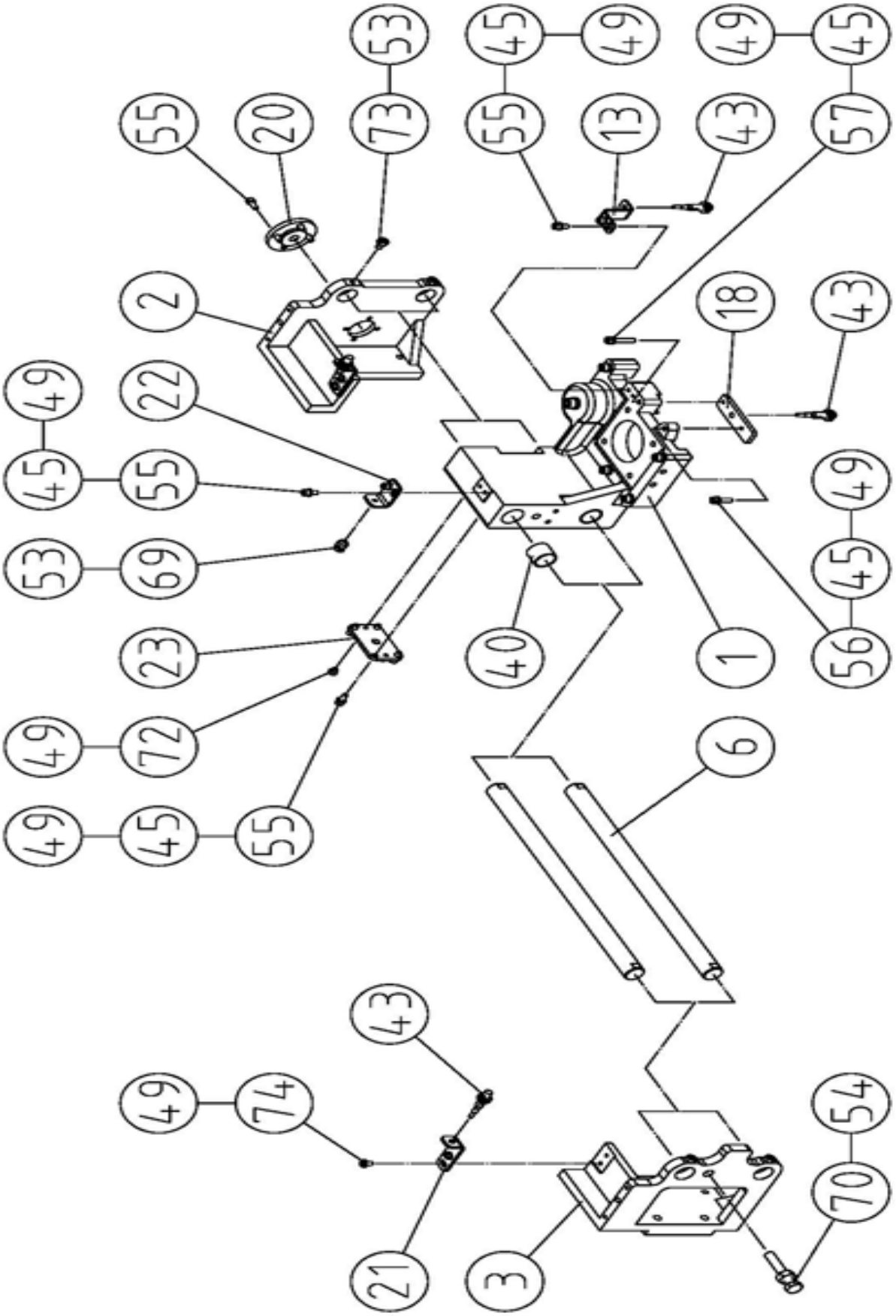
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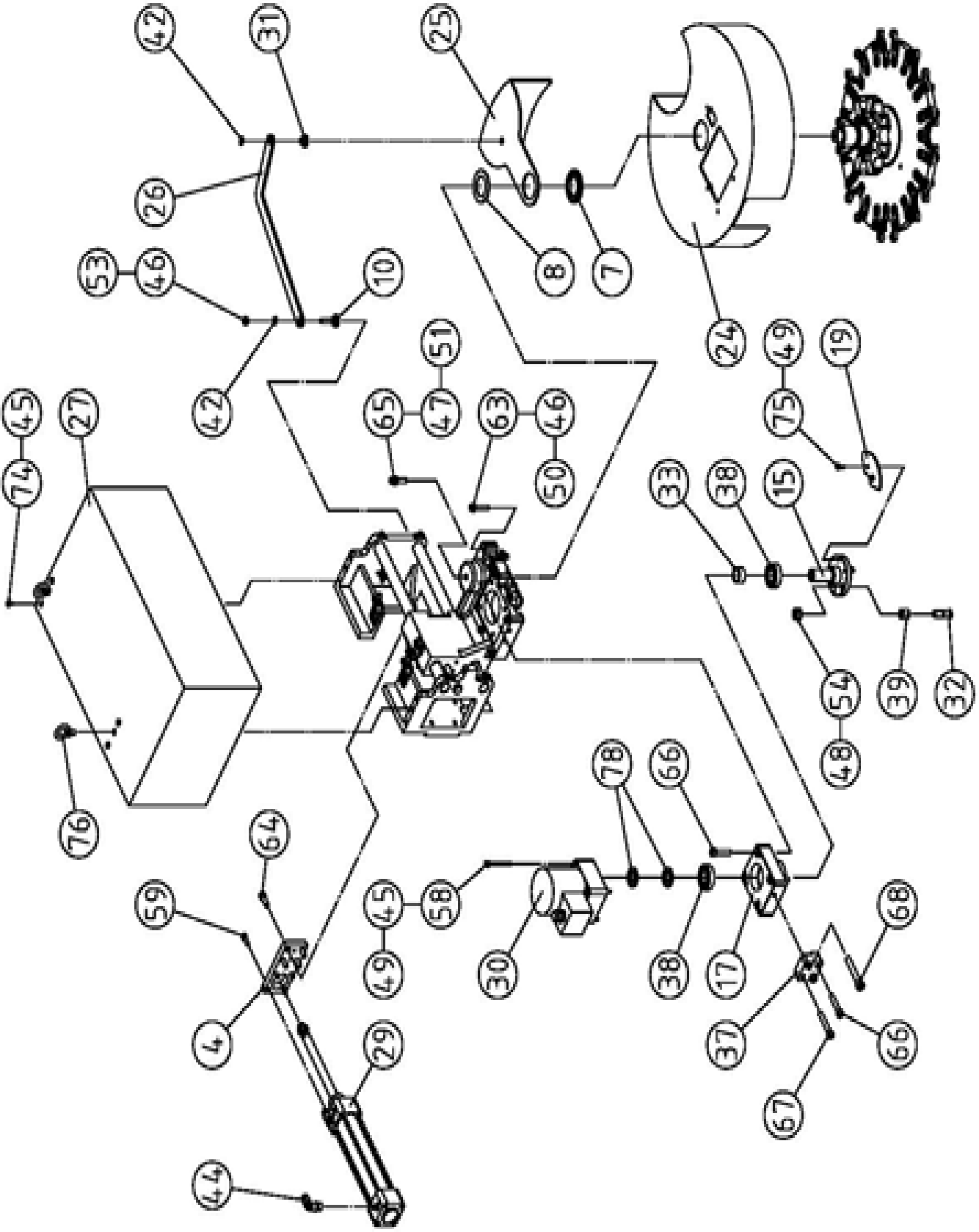
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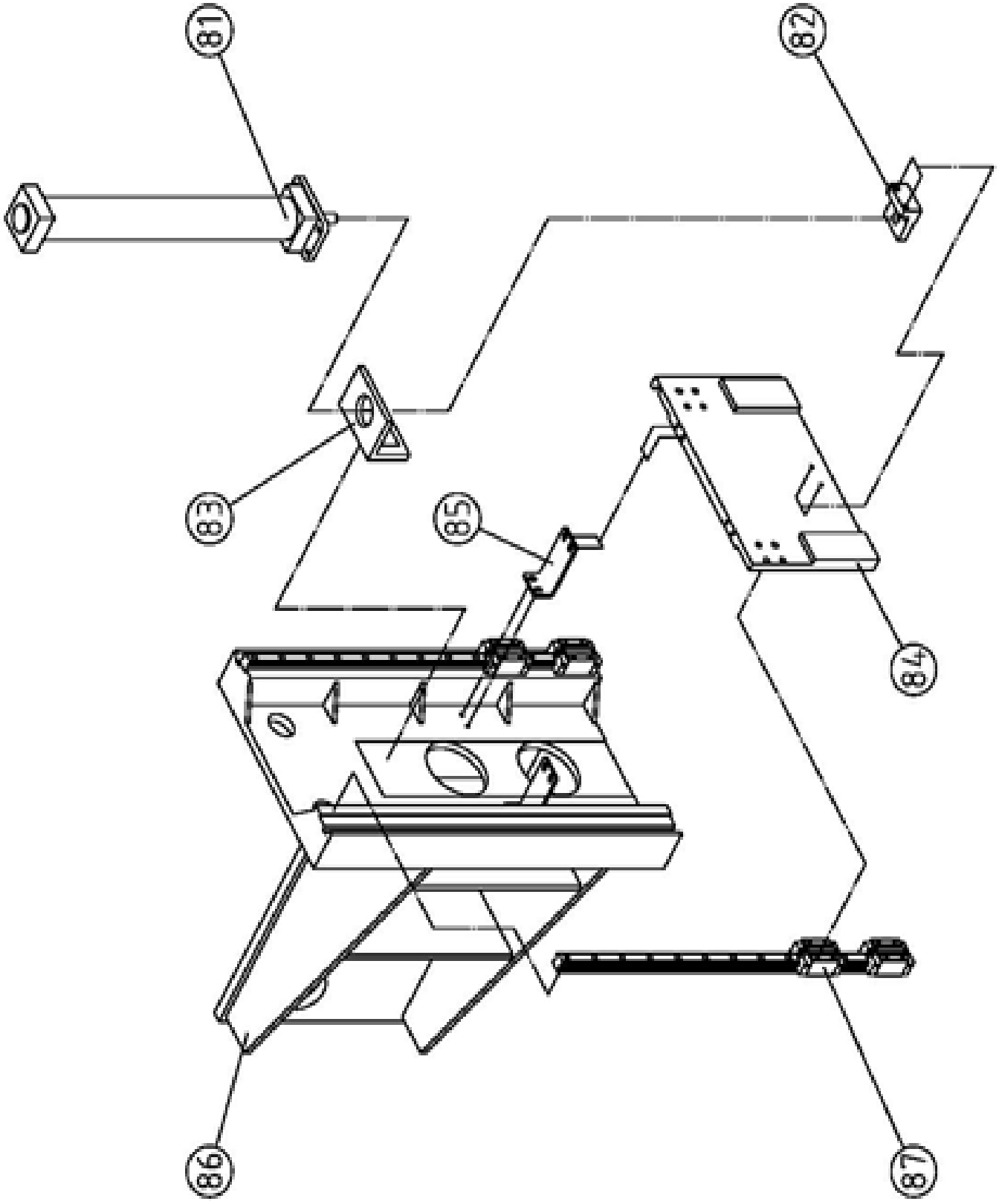
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		MODEL	HYG-308/408	ASSEM.PART NO.		
		DATE	2013.08.01	ASSEM.DWG. NAME	斗笠式刀庫 (DRUM & UMBRELLA TYPE AUTOMATIC TOOL)	
NO.	PART NO.	NAME	DESCRIPTION	SPECIFICATION /MATERIAL	QUANTITY	REMARK
1	GA-31000010	滑座本體	Slide rest body for 8 tools	FC25	1	
	GA-41000050		Slide rest body for 12 tools		1	
2	GA-31000020	固定本體(右)	Fixed body (right)	SS41	1	
3	GA-31000030	固定本體(左)	Fixed body (left)	SS41	1	
4	GA-32000010	氣缸固定板	Air cylinder fixed plate for 8 tools	SS41	1	
	GA-42000320		Air cylinder fixed plate for 12 tools	SS41	1	
5	GA-32000020	分度盤 8T	Dividing dial 8T	SS41	1	
	GA-42000310		Dividing dial 12T	SS41	1	
6	GA-32000030	滑桿	Slider bar for 8 tools	鍍銘棒	2	Travel 150mm
	GA-32000270		Slider bar for 12 tools	鍍銘棒	2	Travel 190mm
7	GA-32000040	心軸墊片	Rod pad	塑鋼	1	
8	GA-32000050	心軸壓片	Rod flake	塑鋼	1	
9	GA32000060	刀盤 BT30-8T	Disk BT40-8T	鋁 5052	1	
	GA42000300		Disk BT40-12T	鋁 5052	1	
10	GA32000070	拉桿固定軸	Pull rod fixed axis	SS41	1	
11	GA-32000080	刀盤心軸	Disk rod for 8 tools	S45C	1	
	GA-32000220		Disk rod for 12 tools	S45C	1	
12	GA-32000090	軸承座	Bearing seat for 8 tools	S45C	1	
	GA-32000230		Bearing seat for 12 tools	S45C	1	
13	GA-32000100	原點近接固定座	Origin proximity fixed plate	SPHC	1	
14	GA-32000110	夾刀彈簧	Tool spring for 8 tools	SWP	16	
	GA-42000120		Tool spring for 12 tools	SWP	16	
15	GA-32000120	刀盤驅動軸	Disk drive shaft for 8 tools	S45C	1	
	GA-42000350		Disk drive shaft for 12 tools	S45C	1	
16	GA-32000130	銘板(8T)	Nameplate(8T)	AL	1	
	GA-42000360		Nameplate(12T)	AL	1	

		MODEL	HYG-308/408	ASSEM.PART NO.		
		DATE	2013.08.01	ASSEM.DWG. NAME	斗笠式刀庫 (DRUM & UMBRELLA TYPE AUTOMATIC TOOL)	
NO.	PART NO.	NAME	DESCRIPTION	SPECIFICATION /MATERIAL	QUANTITY	REMARK
17	GA-32000140	馬達座	Motor holder for 8 tools	FC25	1	
	GA-42000340		Motor holder for 12 tools	FC25	1	
18	GA-32000150	近接開關座	Proximity sensor holder	SPHC	1	
19	GA-32000170	定位片	Fixed position piece	SPHC	1	
20	GA-32000180	氣缸固定座	Air cylinder fixed holder	SS41	1	
21	GA-32000190	磁簧開關定位座 1	Magnetic reed switch fixed holder 1	SPHC	2	
22	GA-32000200	磁簧開關定位座 2	Magnetic reed switch fixed holder 2	SPHC	1	
23	GA-32000210	本體蓋板	Body flange	SPHC	2	
24	GA-34000010	外罩鈑金	Cover itakane for 8 tools	SPHC	1	
	GA-44000190		Cover itakane for 12 tools	SPHC	1	
25	GA-34000020	活動門鈑金	Dodge gate itakane	SPHC	1	
26	GA-34000030	活動門拉桿	Dodge gate pull rod	SPHC	1	
27	GA-34000040	刀庫外罩	Tool magazine cover for 8 tools	SPHC	1	
	GA-44000180		Tool magazine cover for 12 tools	SPHC	1	
28	GA-34000050	號碼牌鈑金	Number card itakane for 8 tools	SPHC	1	
	GA-44000210		Number card itakane for 12 tools	SPHC	1	
29	GA-36000010	氣缸	Air cylinder for 8 tools	MCQV2-11-40-150	1	Travel 150mm
	GA-46000090		Air cylinder for 12 tools	MCQV2-11-50-190M	1	Travel 190mm
＊30	GA-36000050	微型馬達減速機	Mini motor gear reducer	CGMT25-B06(25W/1:25)	1	
＊30	GA-36000060	微型馬達減速機	Mini motor gear reducer	CGMT25-B06(25W/1:25)	1	
＊30	GA-36000070	微型馬達減速機	Mini motor gear reducer	CGMT25-B06(25W/1:25)	1	
	GA-36000170		Mini motor gear reducer for 12 tools	CGMT36-B06(36W/1:36)	1	220V/380V

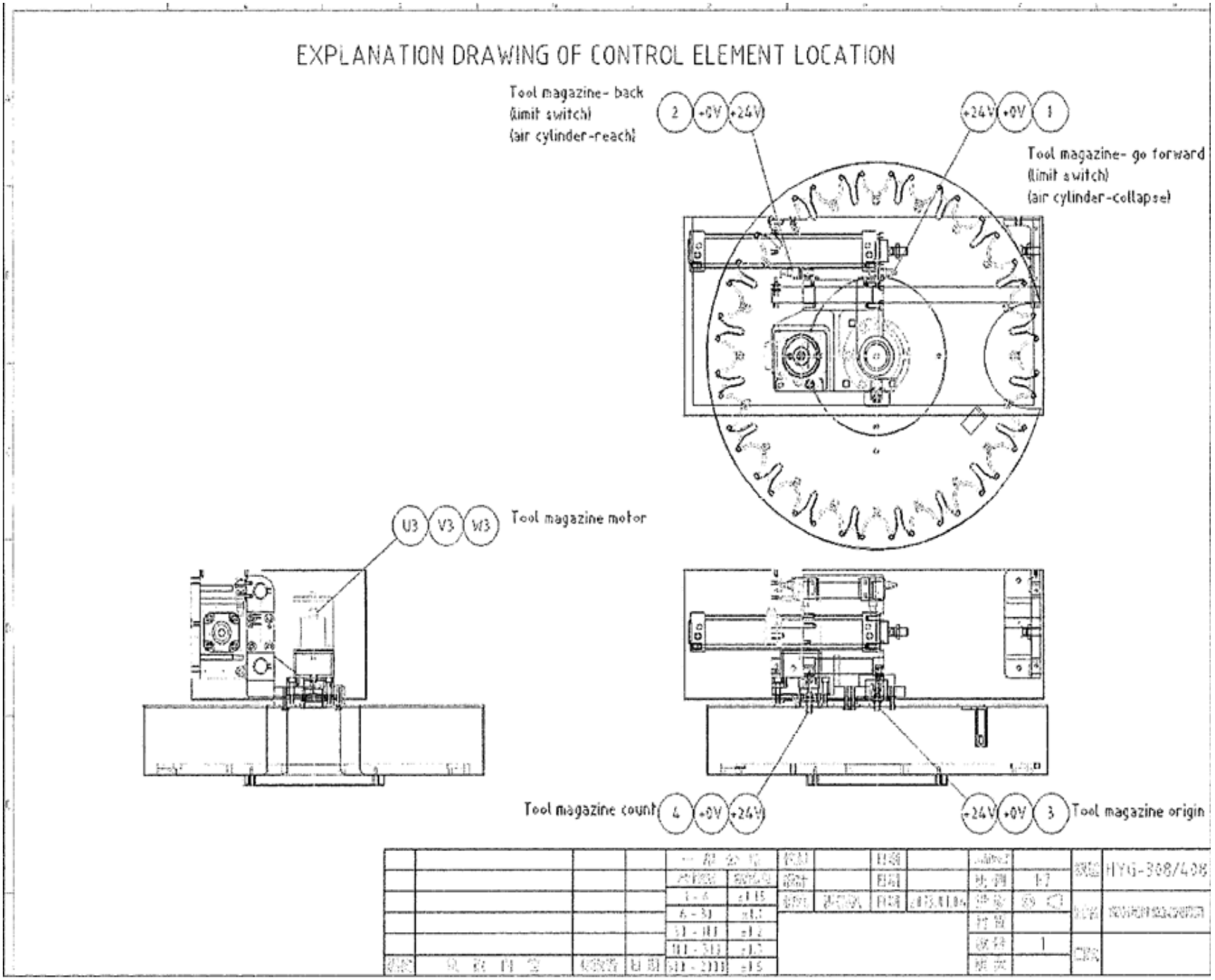
		MODEL	HYG-308/408	ASSEM.PART NO.		
		DATE	2013.08.01	ASSEM.DWG. NAME	斗笠式刀庫 (DRUM & UMBRELLA TYPE AUTOMATIC TOOL)	
NO.	PART NO.	NAME	DESCRIPTION	SPECIFICATION /MATERIAL	QUANTITY	REMARK
31	GA-42000060	門蓋固定軸	Kier door fixed axis	SPHC	1	
32	US-42000050	軸套心軸	Bushing rod	SCM440	1	
33	US-42000080	隔環	Spacer ring	S45C	1	
34	US-42000090	彈簧銷套 1	Spring pin bush	S45C	16	
35	US-42000100	彈簧銷套 2	Spring pin bush	S45C	16	
36	US-42000150	定位鍵	Key	SPHC	8	
37	ZA-41000020	調整塊	Adjusted piece	SS41	1	
38	BA0006004ZZ	深槽滾珠軸承	Deep groove ball bearing	6004ZZ	2	
39	BF012016165	軸承	bushing	IKO IRT-1216-1	1	
40	BL022025020	自潤軸承	Self lubricating bearing	Ø30xØ34x20L	4	LFB-2220
41	BN000032205	斜角滾柱軸承	Roller bearing	32205	2	
42	CA000000S10	軸用 C 型扣	“C”snap ring	S-10	2	
43	EA000000005	SENSOR		E2E-X1R5F1	4	
44	JA008000104	90 度快速接頭	90∘quick coupling	Ø8-1/4"	2	
45	WA000000005	彈簧墊圈	Spring washer	M5	24	
46	WA000000006	彈簧墊圈	Spring washer	M6	41	
47	WA000000008	彈簧墊圈	Spring washer	M8	5	
48	WA000000010	彈簧墊圈	Spring washer	M10	1	
49	WB000000500	平墊圈	Flat washer	M5	26	
50	WB00000600	平墊圈	Flat washer	M6	40	
51	WB000000800	平墊圈	Flat washer	M8	5	
52	WC005080050	六角螺帽	Hex. nut	M5XP0.8X4T	4	
53	WC006100050	六角螺帽	Hex. nut	M6XP1.0X5T	6	
54	WC010015080	六角螺帽	Hex. nut	M10XP1.5X8T	2	
55	WD005008012	六角承窩螺栓	Hex. socket head screw	M5XP0.8X12L	16	
56	WD005008020	六角承窩螺栓	Hex. socket head screw	M5XP0.8X20L	1	
57	WD005008030	六角承窩螺栓	Hex. socket head screw	M5XP0.8X30L	1	
58	WD005008060	六角承窩螺栓	Hex. socket head screw	M5XP0.8X60L	4	
59	WD006010016	六角承窩螺栓	Hex. socket head screw	M6XP1.0X16L	5	

		MODEL	HYG-308/408	ASSEM.PART NO.		
		DATE	2013.08.01	ASSEM.DWG. NAME	斗笠式刀庫 (DRUM & UMBRELLA TYPE AUTOMATIC TOOL)	
NO.	PART NO.	NAME	DESCRIPTION	SPECIFICATION /MATERIAL	QUANTITY	REMARK
60	WD006010020	六角承窩螺栓	Hex. socket head screw	M6XP1.0X20L	32	
61	WD006010030	六角承窩螺栓	Hex. socket head screw	M6XP1.0X30L	4	
62	WD006010035	六角承窩螺栓	Hex. socket head screw	M6XP1.0X35L	4	
63	WD006010040	六角承窩螺栓	Hex. socket head screw	M6XP1.0X40L	4	
64	WD008125020	六角承窩螺栓	Hex. socket head screw	M8XP1.25X20L	4	
65	WD008125030	六角承窩螺栓	Hex. socket head screw	M8XP1.25X30L	5	
66	WD008125040	六角承窩頭螺栓	Hex. socket head screw	M8XP1.25X40L	6	
67	WD008125050	六角承窩頭螺栓	Hex. socket head screw	M8XP1.25X50L	1	
68	WD010015060	六角承窩頭螺栓	Hex. socket head screw	M10XP1.5X60L	2	
69	WE06010012A	外六角螺栓	Hex. head screw	M6XP1.0X12L	1	
70	WE10015060A	外六角螺栓	Hex. head screw	M10XP1.5X60L	1	
71	WF006010010	六角孔平頭螺栓	Flat head screw	M6XP1.0X10L	8	
72	WG005008010	止付螺栓	Set screw	M5XP0.8X10L	4	
73	WG006010016	止付螺栓	Set screw	M6XP1.0X16L	4	
74	WH005080010	圓頭螺栓	Oval socket head screw	M5XP0.8X10L	8	
75	WH005080016	圓頭螺栓	Oval socket head screw	M5XP0.8X16L	2	
76	WK000000008	吊環	Hand ring	M8	2	
77	WL00000AW05	防鬆墊圈	Bearing lock washer	AW05	1	
78	WM00000AN04	鎖緊螺帽	Bearing lock nut	AN04 M20xP1.0	2	
79	WM00000AN05	鎖緊螺帽	Bearing lock nut	AN05 M25xP1.5	1	
80	XD000006030	平行銷	Straight pin	Ø6x30L	2	
81	GA-46000080	氣缸	Air cylinder for 250mm travel	CUMAQHNR63X500	1	
	GA-46000080L		Air cylinder for 500mm travel		1	
82	GA-42000260	氣缸固定座	Cylinder locating plate	SS41	1	

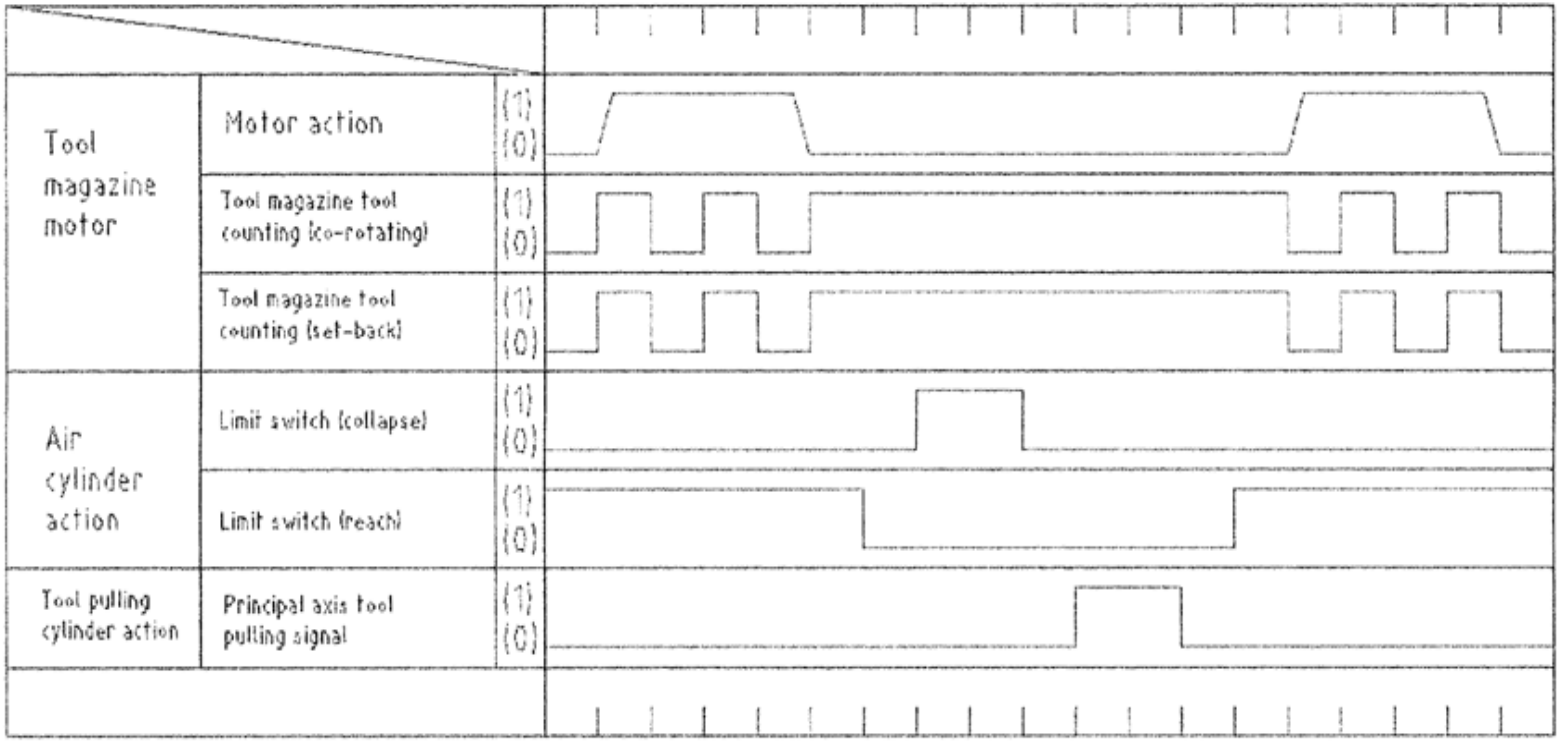
		MODEL	HYG-308/408	ASSEM.PART NO.		
		DATE	2013.08.01	ASSEM.DWG. NAME	斗笠式刀庫 (DRUM & UMBRELLA TYPE AUTOMATIC TOOL)	
NO.	PART NO.	NAME	DESCRIPTION	SPECIFICATION /MATERIAL	QUANTITY	REMARK
83	GA-42000250	氣缸心軸固定座	Cylinder shaft locating plate	SS41	1	
84	GA-45000100	介面座固定板	ATC sliding plate	SS41	1	
85	GA-44000160	出貨固定板	Shipping locating plate	SPHC	2	
86	GA-45000090	介面座	ATC column locating bracket	SS41	1	
87	GA-ACER090	線軌	Linear guideway		2	

ELECTRIC CONTROL AND AIR COMPRESSOR UNIT

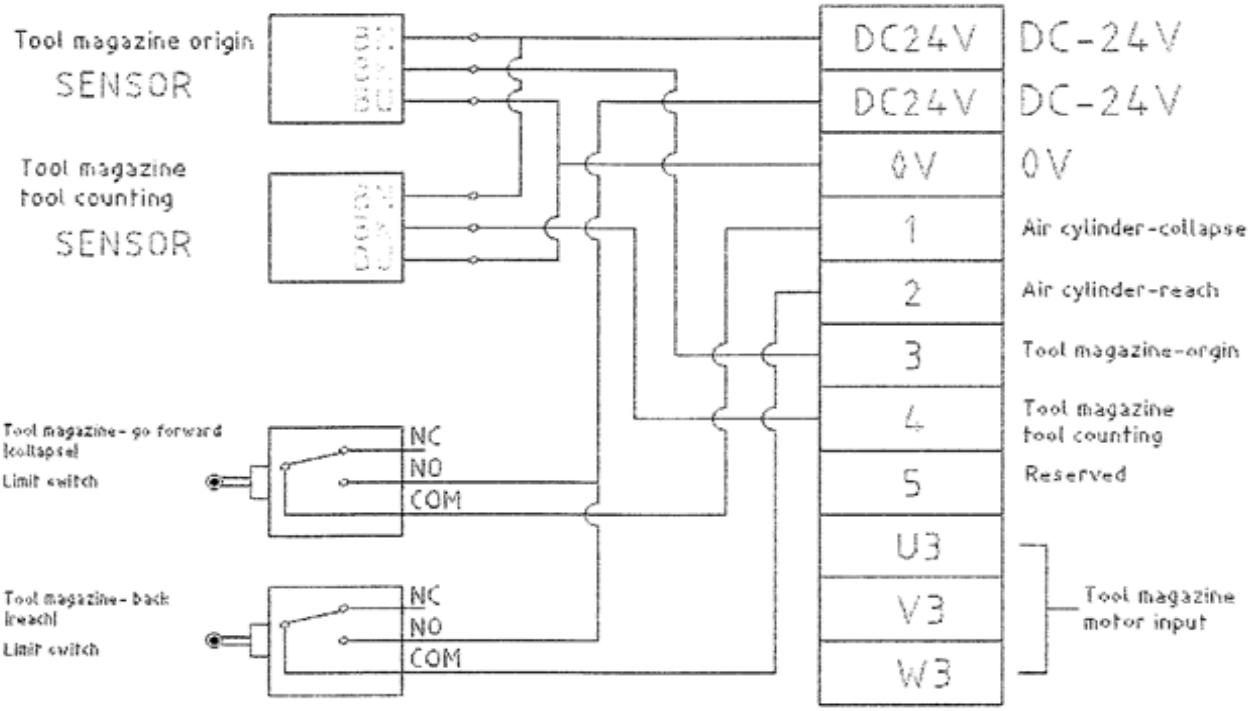
EXPLANATION DRAWING OF CONTROL ELEMENT LOCATION



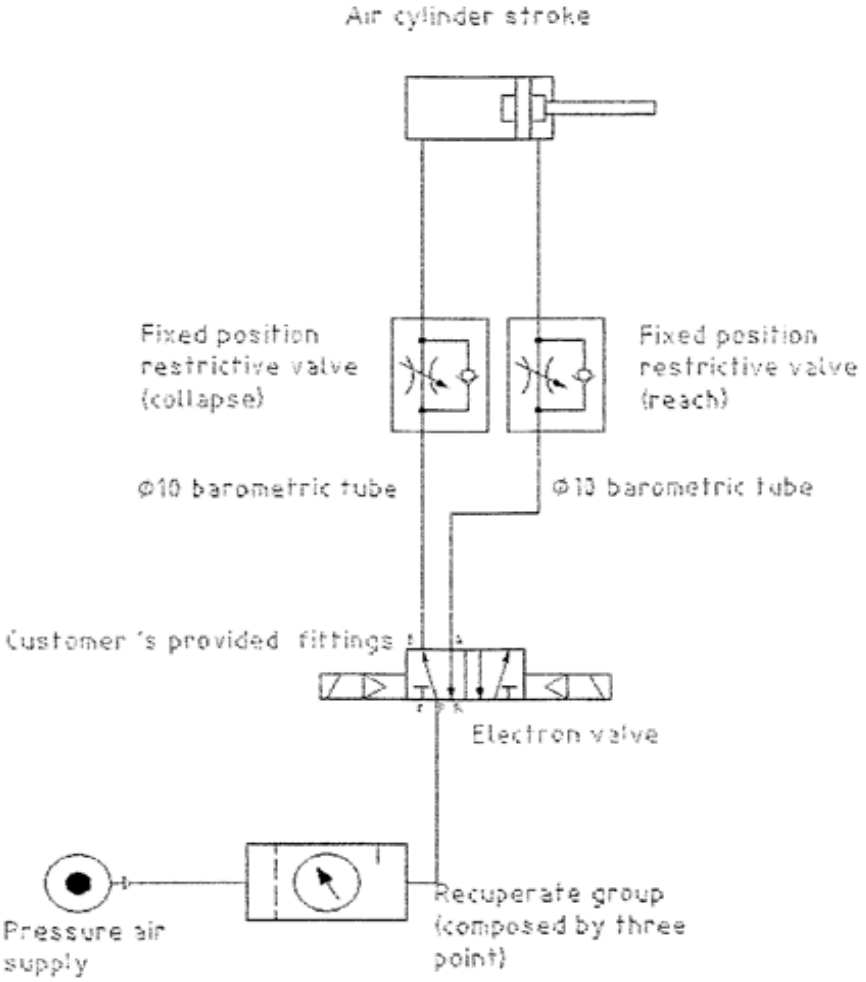
MOTION SEQUENCE OF #40 DRUM & UMBRELLA TYPE TOOL MAGAZINE



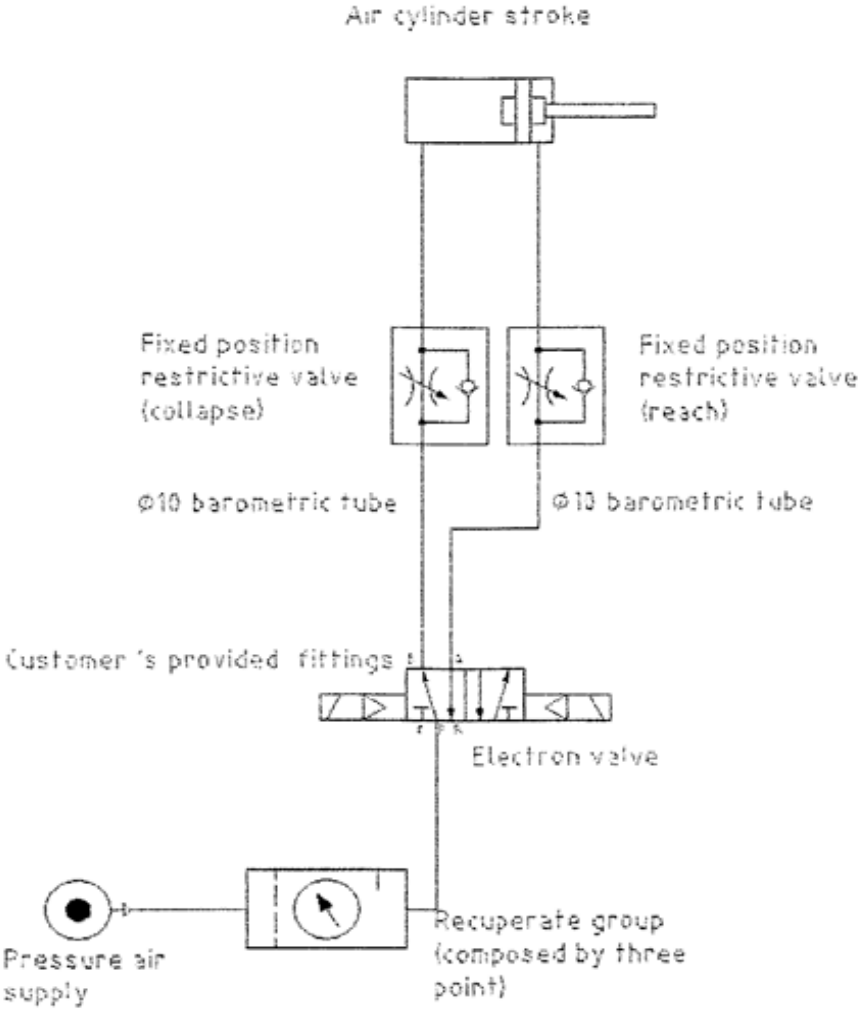
WIRING DIAGRAM FOR #50 DRUM & UMBRELLA TYPE TOOL MAGAZINE



CIRCUIT DIAGRAM OF PRESSURE



CIRCUIT DIAGRAM OF PRESSURE



10. ELECTRICAL DIAGRAM & ITS PARTS LIST

*****Two versions of electrical diagram are produced. Please match and read the diagram before trouble-shooting the machine.**

1. **Circuit Diagram with DRO**
2. **Circuit Diagram without DRO**

*****Essentially the two systems use the same component part list and electrical cabinet layout. The only difference on the two systems is the circuitry of the diagram. Please make a note of this. Thanks!**

ACER

Circuit Diagram with DRO

For ATM 1054 & ATM 1050 with ATC

Taiwan: Ya-Gin Machine Tool Manufacturing Inc.
No. 101, 506 Lane, Seng-Tso Road
Seng Karng District, Taichung City, Taiwan
Tel: 886-4-2520-4120 Fax: 886-4-2520-4123

CA: Springwood Industrial, Inc.
2320 E. Valencia Drive
Fullerton, CA 92831
Tel: 714-871-5558 Fax: 714-871-5554

NJ: Klim Industrial, Inc.
244 N. Randolphville Rd.
Piscataway, NJ 08854
Tel: 732-752-9100 Fax: 732-752-9101

Revised 4/29/15

YA GIN MACHINE TOOL MANUFACTURING INC.

Tel +886-4-25204120
Fax +886-4-25204123

Company / Customer	
Plant designation	e Mill
Drawing number	MX-0
Commission	

Manufacturer (Company)	YA GIN MACHINE TOOL MANUFACTURING INC.
Path	
Project name	ACER-Fagor-8055i-MX-0
Make	
Types	
Mounting site	
Responsible for project	
Part feature	

Created for
Edited on 2015/04/01 from (abbr.) Mark Number of pages 46

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DIN_INV_30_1

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	ORT	18	PLC I/O INPUT CIRCUIT3(I97~I104)		2015/04/01	Mark
	ORT	19	PLC I/O INPUT CIRCUIT4(I65~I72)		2015/04/01	Mark
	ORT	20	PLC I/O INPUT CIRCUIT5(I73~I80)		2015/04/01	Mark
	ORT	21	PLC I/O INPUT CIRCUIT6(I81~I88)		2015/04/01	Mark
	ORT	22	PLC I/O INPUT CIRCUIT7(I89~I96)		2015/04/01	Mark
	ORT	23	Lube Unit Circuit		2015/04/01	Mark
	ORT	24	4th Axis Connection		2015/04/01	Mark
	ORT	25	MPG INTERFACE		2015/04/01	Mark
	ORT	26	CNC X4&X8 interface		2015/04/01	Mark
	ORT	27	X Axis Driver Connection(Linear Encoders)		2015/04/10	Mark
	ORT	28	Y Axis Driver Connection(Linear Encoders)		2015/04/10	Mark
	ORT	29	Z Axis Driver Connection(Linear Encoders)		2015/04/10	Mark
	ORT	30	4 Axis Driver Connection		2015/04/01	Mark
	ORT	31	Spindle Amplifier connection		2015/04/01	Mark
	ORT	32	RS232C CONNECTION		2015/04/01	Mark

Parts usage indication

DIN_TNP_30

Part number	Quantity	Designation	Model number	Manufacturer	DT	Function text	X-ref.
PYF14B-E	1	Relay socket		OMRON	-K202		+ORT/8.03
8055B	1	40 inputs & 24 output relay		YSM	-U1		+ORT/9.00
8055B	1	16 inputs & 8 output relay		YSM	-U2		+ORT/9.00
ASD-B2-1021-B	1	1KW		DELTA	-U105	Z AMPLIFER	+ORT/4.06
MY2NJ	1	DC24		OMRON	-K205		+ORT/31.03
BC62E0C-010	1	2P 10A		FUJI	-F103	4A	+ORT/2.05
BC62E0C-004	1	2P 4A		FUJI	-F102		+ORT/2.04
CU-40	1	220V 50/60Hz		Teco	-K101	CONTACT FOR AMPLIFIER	+ORT/6.02
ASD-B2-1021-B	1	1KW		DELTA	-U106	4 AMPLIFER	+ORT/24.00
PYF08B-E	1	Relay socket		OMRON	-K205		+ORT/31.03
PYF08B-E	1	Relay socket		OMRON	-K1		+ORT/12.01
ASD-B2-0721-B	1	750W		DELTA	-U103	X AMPLIFIER	+ORT/4.04
TR-0N	1	0.64-0.96A		FUJI	-F1	0.6~1A	+ORT/3.01
TR-0N	1	0.36-0.54A		FUJI	-F2	0.3~0.6A	+ORT/3.01
MY2NJ	1	DC24		OMRON	-K1		+ORT/12.01
VFS11-2037PM-AN	1	3PH-200V-3.7KW		Toshiba	-U102	SPINDLE AMPLIFER	+ORT/31.04
LC1E0601M6	1	220V 50/60Hz 2.2kw 1b		SCHNEI	-KM1	COOLANTMOTOR切削水	+ORT/6.01
MY4NJ	1	DC24		OMRON	-K202		+ORT/8.03
ASD-B2-0721-B	1	750W		DELTA	-U104	Y AMPLIFER	+ORT/4.05
NES-100-24	1			Meanwell	-G1	POWER SUPPLYFOR CONTROLLER	+ORT/4.00
MBK61-01	1	1P 1A		FUJI	-F105		+ORT/5.01
MBK63-10	1	3P 10A		FUJI	-F101		+ORT/2.03
S-150-24	1			Meanwell	-G2	POWER SUPPLYFOR I/O	+ORT/4.02

PLC

DIN_SPS_DIA

Project ACER-Fagor-8055i-Bed-A1.02

PLC designation	I/O	Page	Function text	Rack	Module	DT	Terminal
+ORT-U150	0V	+ORT/11.05	External Power Input				X9:18
+ORT-U150	0V	+ORT/11.06	External Power Input				X9:19
+ORT-U150	0V	+ORT/10.03	External Power Input				X2:18
+ORT-U150	0V	+ORT/10.04	External Power Input				X2:19
+ORT-U150	24V	+ORT/11.01	External Power Input				X7:1
+ORT-U150	24V	+ORT/11.02	External Power Input				X7:20
+ORT-U150	24V	+ORT/10.01	External Power Input				X2:1
+ORT-U150	24V	+ORT/10.02	External Power Input				X2:20
+ORT-U150	0V	+ORT/11.03	External Power Input				X2:18
+ORT-U150	0V	+ORT/11.04	External Power Input				X2:19
+ORT-U150	O1	+ORT/12.01	Emergency stop output				X2:2
+ORT-U150	O2	+ORT/12.02	X DRIVE ENABLE				X2:21
+ORT-U150	O3	+ORT/12.03	Y DRIVE ENABLE				X2:3
+ORT-U150	O4	+ORT/12.04	Z DRIVE ENABLE				X2:22
+ORT-U150	O5	+ORT/12.05	M3 SPINDLE FORWARD				X2:4
+ORT-U150	O6	+ORT/12.06	M4 SPINDLE REVERSE				X2:23
+ORT-U150	O7	+ORT/12.07	A DRIVE ENABLE				X2:5
+ORT-U150	O8	+ORT/12.08	A AXIS UNCLAMP				X2:24
+ORT-U150	O33	+ORT/13.01	SPINDLE CONTROL BY CNC ANALOG VAR.				X7:2
+ORT-U150	O34	+ORT/13.02	SPINDLE CONTROL BY MANUAL EXTERNAL V.R.				X7:21
+ORT-U150	O35	+ORT/13.03	COOLANT PUMP ON				X7:3
+ORT-U150	O36	+ORT/13.04	AIR BLOW ON				X7:22
+ORT-U150	O37	+ORT/13.05	Z BRAKE RELEASE				X7:4
+ORT-U150	O38	+ORT/13.06	MPG ON LED				X7:23
+ORT-U150	O39	+ORT/13.07	LUBE PUMP ON BY CNC				X7:5

PLC

DIN_SPS_DIA

Project ACER-Fagor-8055i-Bed-A1.02

PLC designation	I/O	Page	Function text	Rack	Module	DT	Terminal
+ORT-U150	O40	+ORT/13.08	SPINDLE COARS STOP				X7:24
+ORT-U150	O41	+ORT/14.01	SPINDLE FAS STOP				X7:6
+ORT-U150	O42	+ORT/14.02					X7:25
+ORT-U150	O43	+ORT/14.03					X7:7
+ORT-U150	O44	+ORT/14.04					X7:26
+ORT-U150	O45	+ORT/14.05					X7:8
+ORT-U150	O46	+ORT/14.06					X7:27
+ORT-U150	O47	+ORT/14.07	SPINDLE SERVO ON				X7:9
+ORT-U150	O48	+ORT/14.08	TOOL UNCLAMP SOLENOID				X7:28
+ORT-U150	O49	+ORT/15.01	ATC MAGAZINE IN TO SPINDLE				X7:10
+ORT-U150	O50	+ORT/15.02	ATC MAGAZINE OUT OF SPINDLE				X7:29
+ORT-U150	O51	+ORT/15.03	TOOL MAGAZINE C.W.				X7:11
+ORT-U150	O52	+ORT/15.04	TOOL MAGAZINE C.C.W.				X7:30
+ORT-U150	O53	+ORT/15.05	SPINDLE ORIENTATION BY CNC M19				X7:12
+ORT-U150	O54	+ORT/15.06	SPINDLE INDEX(ORT)BY INVERTER M29				X7:31
+ORT-U150	O55	+ORT/15.07	ATC MAGAZINE UP/HIGH SOL.				X7:13
+ORT-U150	O56	+ORT/15.08	ATC MAGAZINE DOWN/LOW SOL.				X7:32
+ORT-U150	I1	+ORT/16.01	Emergency Stop Input				X2:10
+ORT-U150	I2	+ORT/16.02	SPINDLE FAULT				X2:29
+ORT-U150	I3	+ORT/16.03	X DRIVE OK.=1				X2:11
+ORT-U150	I4	+ORT/16.04	Y DRIVE OK.=1				X2:30
+ORT-U150	I5	+ORT/16.05	Z DRIVE OK.=1				X2:12
+ORT-U150	I6	+ORT/16.06	A DRIVE OK.=1				X2:31
+ORT-U150	I7	+ORT/16.07	X AXIS HOME/LIMIT+SWITCH,N.C.				X2:13
+ORT-U150	I8	+ORT/16.08	X AXIS LIMIT-SWITCH,N.C.				X2:32

PLC

DIN_SPS_DIA

Project ACER-Fagor-8055i-Bed-A1.02

PLC designation	I/O	Page	Function text	Rack	Module	DT	Terminal
+ORT-U150	I9	+ORT/17.01	Y AXIS HOME/LIMIT+SWITCH,N.C.				X2:14
+ORT-U150	I10	+ORT/17.02	Y AXIS LIMIT-SWITCH,N.C.				X2:33
+ORT-U150	I11	+ORT/17.03	Z AXIS HOME/LIMIT+SWITCH,N.C.				X2:15
+ORT-U150	I12	+ORT/17.04	Z AXIS LIMIT-SWITCH,N.C.				X2:34
+ORT-U150	I13	+ORT/17.05	A AXIS HOME SWITCH,N.C.				X2:16
+ORT-U150	I14	+ORT/17.06	A AXIS UNCLAMP,N.O.				X2:35
+ORT-U150	I15	+ORT/17.07	A AXIS CLAMP,N.O.				X2:17
+ORT-U150	I16	+ORT/17.08	REMOTE START/STOP				X2:36
+ORT-U150	I97	+ORT/18.01	X AXIS SELECTION				X7:14
+ORT-U150	I98	+ORT/18.02	Y AXIS SELECTION				X7:33
+ORT-U150	I99	+ORT/18.03	Z AXIS SELECTION				X7:15
+ORT-U150	I100	+ORT/18.04	A AXIS SELECTION				X7:34
+ORT-U150	I101	+ORT/18.05	X1 RESOLUTION				X7:16
+ORT-U150	I102	+ORT/18.06	X10 RESOLUTION				X7:35
+ORT-U150	I103	+ORT/18.07	X100 RESOLUTION				X7:17
+ORT-U150	I104	+ORT/18.08	HANDWHEEL ENABLE				X7:36
+ORT-U150	I65	+ORT/19.01	SPINDLE HIGH GEAR SWITCH				X9:2
+ORT-U150	I66	+ORT/19.02	SPINDLE BRAKE LEVER				X9:21
+ORT-U150	I67	+ORT/19.03	SPINDLE MANUAL FORWARD SWITCH				X9:3
+ORT-U150	I68	+ORT/19.04	SPINDLE MANUAL REVERSE SWITCH				X9:22
+ORT-U150	I69	+ORT/19.05	SPINDLE CONTROL BY CNC				X9:4
+ORT-U150	I70	+ORT/19.06	SPINDLE SPEED ARRIVE				X9:23
+ORT-U150	I71	+ORT/19.07	SPINDLE ZERO SPEED=0,ROTATE=1				X9:5
+ORT-U150	I72	+ORT/19.08	COOLANT OVERLOAD				X9:24
+ORT-U150	I73	+ORT/20.01	LUBE LEVEL LOW=1,HIGH OK=0				X9:6

PLC

DIN_SPS_DIA

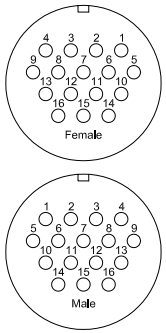
Project ACER-Fagor-8055i-Bed-A1.02

PLC designation	I/O	Page	Function text	Rack	Module	DT	Terminal
+ORT-U150	I74	+ORT/20.02					X9:25
+ORT-U150	I75	+ORT/20.03	ATC MAGAZINE TOOL SENSOR				X9:7
+ORT-U150	I76	+ORT/20.04					X9:26
+ORT-U150	I77	+ORT/20.05					X9:8
+ORT-U150	I78	+ORT/20.06					X9:27
+ORT-U150	I79	+ORT/20.07					X9:9
+ORT-U150	I80	+ORT/20.08					X9:28
+ORT-U150	I81	+ORT/21.01					X9:10
+ORT-U150	I82	+ORT/21.02					X9:29
+ORT-U150	I83	+ORT/21.03					X9:11
+ORT-U150	I84	+ORT/21.04					X9:30
+ORT-U150	I85	+ORT/21.05	Spindle Index(ORT)by Inverter OK by M29				X9:12
+ORT-U150	I86	+ORT/21.06	TOOL CLAMP SWITCH				X9:31
+ORT-U150	I87	+ORT/21.07	TOOL UNCLAMP SWITCH				X9:13
+ORT-U150	I88	+ORT/21.08	MANUAL TOOL UNCLAMP PUSH BUTTON				X9:32
+ORT-U150	I89	+ORT/22.01	AIR PRESSURE DETECT SWITCH				X9:14
+ORT-U150	I90	+ORT/22.02	MAGAZINE MOTOR OVERLOAD,NC				X9:33
+ORT-U150	I91	+ORT/22.03	ATC MAGAZINE COUNTING SENSOR				X9:15
+ORT-U150	I92	+ORT/22.04	ATC MAGAZINE HOME SENSOR				X9:34
+ORT-U150	I93	+ORT/22.05	ATC MAGAZINE OUT/SAFE				X9:16
+ORT-U150	I94	+ORT/22.06	ATC MAGAZINE IN/SPINDLE				X9:35
+ORT-U150	I95	+ORT/22.07	ATC MAGAZINE UP FOR MACHING				X9:17
+ORT-U150	I96	+ORT/22.08	ATC MAGAZINE DOWN FOR TOOL CHANGE				X9:36

DIN_STP_25

Pin-chart diagram

Connector	+ORT-11X1		
Pin target	Contact	Socket target	Page/path
+ORT-U158-B1:A	1	+ORT-U150-X5:1	+ORT/25.06
+ORT-U158-B1:B	2	+ORT-U150-X5:3	+ORT/25.07
+ORT-U158-B1:0V	3	+ORT-U150-X5:11	+ORT/25.07
+ORT-U158-B1:5V	4	+ORT-U150-X5:9	+ORT/25.07
+ORT-U158-B1:/A	5	+ORT-U150-X5:2	+ORT/25.07
+ORT-U158-S2:2	6	+ORT-U150:I11	+ORT/25.01
+ORT-U158-S2:3	7	+ORT-U150:I13	+ORT/25.01
+ORT-U158-S2:COM	8	+ORT-X9:24V	+ORT/25.02
+ORT-U158-B1:/B	9	+ORT-U150-X5:4	+ORT/25.07
+ORT-U158-S1:2	10	+ORT-U150:I3	+ORT/25.03
+ORT-U158-S1:3	11	+ORT-U150:I5	+ORT/25.02
+ORT-U158-S1:4	12	+ORT-U150:I7	+ORT/25.02
+ORT-U158-S1:5	13	+ORT-U150:I9	+ORT/25.02
+ORT-U158-H1:K	15	+ORT-X9:0V	+ORT/25.04
+ORT-U158-H1:A	16	+ORT-U150:O2	+ORT/25.03



Front Page:+INV/9

Next Page: +INV/11

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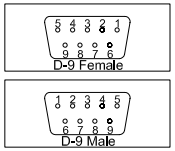
			Check.		Machine Name: e Mill		Pin-chart diagram: +ORT-11X1	A1.02	Current Page 10
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.

DIN_STP_25

Pin-chart diagram

Connector	+ORT-U106-CN2		
Pin target	Contact	Socket target	Page/path
+ORT-U116-X2:L	CASE	+ORT-U116-X2:N	+ORT/24.02
	4	+ORT-U116-X2:A	+ORT/24.02
	5	+ORT-U116-X2:B	+ORT/24.02
	6	+ORT-U116-X2:R	+ORT/24.02
	7	+ORT-U116-X2:R	+ORT/24.02
+ORT-U116-X2:S	8	+ORT-U116-X2:S	+ORT/24.02



Front Page:+INV/10

Next Page: +INV/12

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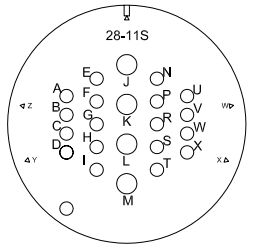
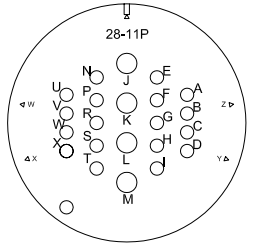
			Check.		Machine Name: e Mill		Pin-chart diagram: +ORT-U106-CN2		Current Page 11
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02	Total Page: 46 Pg.

DIN_STP_25

Pin-chart diagram

Connector	+ORT-U116-X1		
Pin target	Contact	Socket target	Page/path
+ORT-U116-S1:13	A	+ORT-U1-CN27:24V	+ORT/24.06
+ORT-U116-S1:14	B	+ORT-U1-CN27:I72	+ORT/24.06
+ORT-U116-S2:14	C	+ORT-U1-CN27:I73	+ORT/24.06
+ORT-U116-M1:	J	+ORT-U106:U	+ORT/24.06
+ORT-U116-M1:	K	+ORT-U106:V	+ORT/24.06
+ORT-U116-M1:	L	+ORT-U106:W	+ORT/24.06
+ORT-U116-M1:	M	+ORT-U106:PE	+ORT/24.06
+ORT-U116-Y1:A1	N	+ORT-U1:	+ORT/24.06
+ORT-U116-Y1:A2	P	+ORT-X9:0V	+ORT/24.06
+ORT-U116-S3:11	R	+ORT-U1-CN28:24V	+ORT/24.06
+ORT-U116-S3:12	S	+ORT-U1-CN28:I94	+ORT/24.06





Front Page:+INV/11

Next Page: +INV/13

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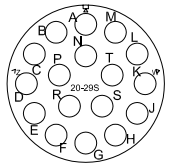
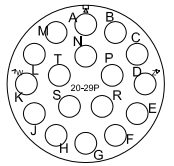
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.

DIN_STP_25

Pin-chart diagram

Connector	+ORT-U116-X2		
Pin target	**Contact**	**Socket target**	**Page/path**
	A	+ORT-U106-CN2:4	+ORT/24.06
	B	+ORT-U106-CN2:5	+ORT/24.06
	C		+ORT/24.06
	D		+ORT/24.06
	F		+ORT/24.06
	G		+ORT/24.06
	L	+ORT-U106-CN2:CASE	+ORT/24.06
	N	+ORT-U106-CN2:CASE	+ORT/24.06
+ORT-U106-CN2:6	R	+ORT-U106-CN2:7	+ORT/24.06
+ORT-U106-CN2:8	S	+ORT-U106-CN2:8	+ORT/24.06





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Next Page: +INV/14

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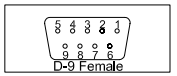
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.

DIN_STP_25

Pin-chart diagram

Connector	+ORT-U156-X1		
Pin target	Contact	Socket target	Page/path
	1		+ORT/32.05
	2	+ORT-U150-X1:3	+ORT/32.05
	3	+ORT-U150-X1:2	+ORT/32.05
+ORT-U156-X1:6	4	+ORT-U156-X1:8	+ORT/32.05
	5	+ORT-U150-X1:5	+ORT/32.05
	6	+ORT-U156-X1:4	+ORT/32.05
	7		+ORT/32.05
	8	+ORT-U156-X1:4	+ORT/32.05
	CASE	+ORT-U150-X1:CASE	+ORT/32.05



Front Page:+INV/13

Next Page: +INV/15

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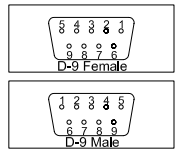
			Check.		Machine Name: e Mill		Pin-chart diagram: +ORT-U156-X1	A1.02	Current Page 14
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.

DIN_STP_25

Pin-chart diagram

Connector	+ORT-U150-X1		
Pin target	**Contact**	**Socket target**	**Page/path**
	1		+ORT/32.04
	2	+ORT-U156-X1:3	+ORT/32.04
	3	+ORT-U156-X1:2	+ORT/32.04
	4	+ORT-U150-X1:6	+ORT/32.04
	5	+ORT-U156-X1:5	+ORT/32.04
+ORT-U150-X1:4	6	+ORT-U150-X1:8	+ORT/32.04
	7		+ORT/32.04
	8	+ORT-U150-X1:6	+ORT/32.04
	CASE	+ORT-U156-X1:CASE	+ORT/32.04



Front Page:+INV/14

Next Page: +ORT/1

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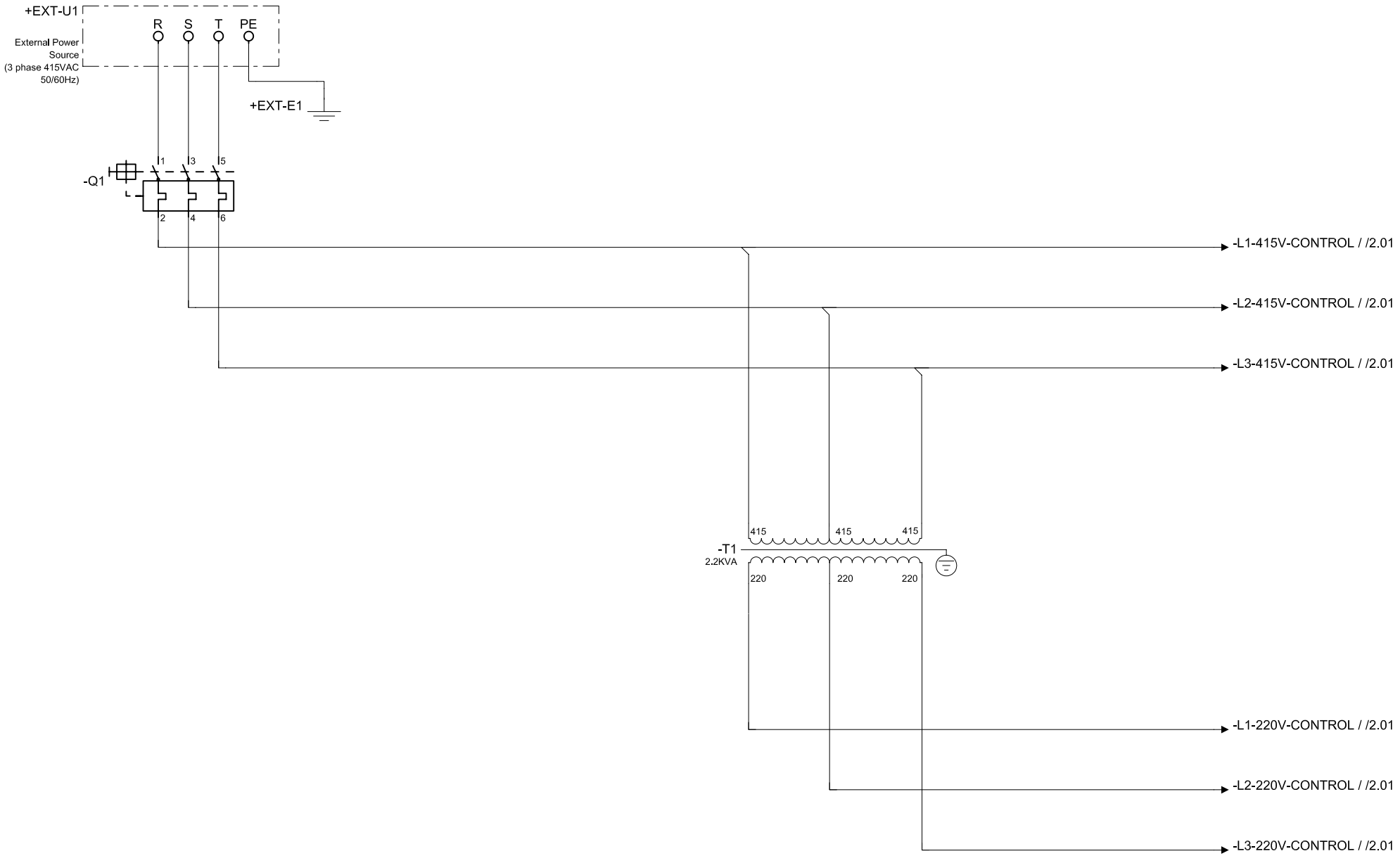
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02	Total Page: 46 Pg.



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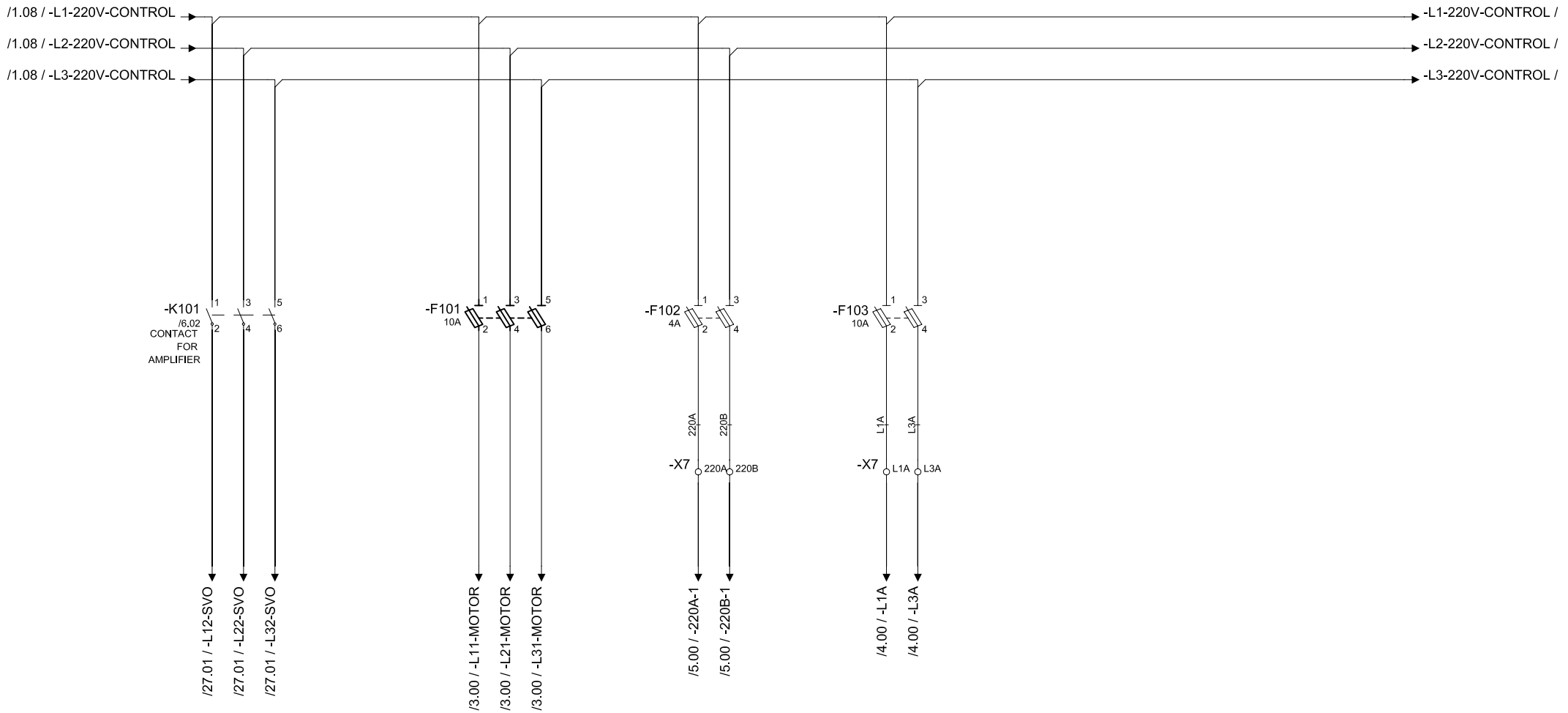
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by	A1.02	Current Page 1
							POWER IN CIRCUIT		Total Page: 46 Pg.



Front Page:+ORT/1

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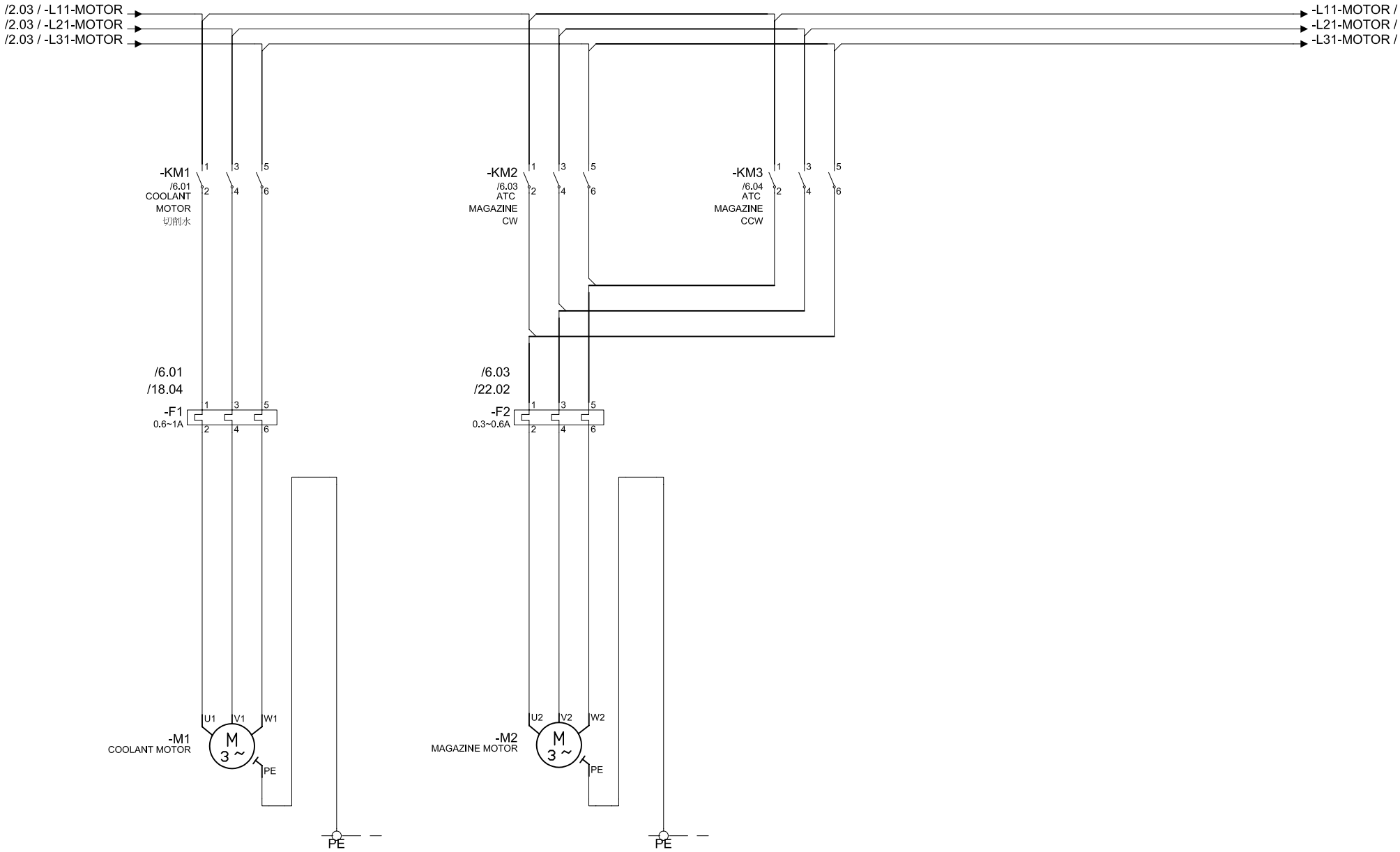
			Check.		Machine Name: e Mill		A1.02	Current Page 2
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Total Page: 46 Pg.

PAGE DESCRIPTION:

3 PHASE 220VAC CONTROL CIRCUIT1



Front Page:+ORT/2

Next Page: +ORT/4

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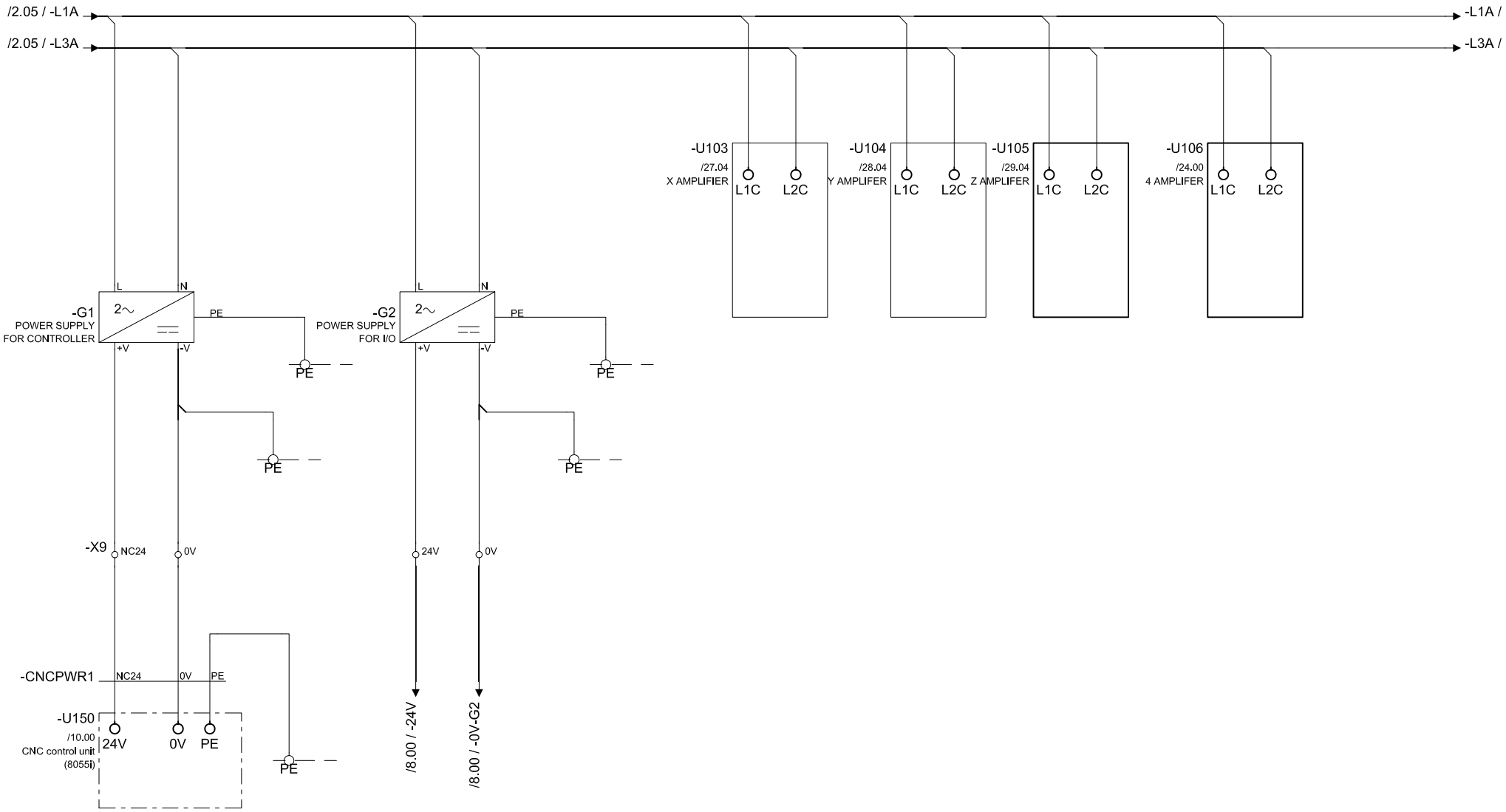
			Check.		Machine Name: e Mill		3 PHASE 220VAC MOTOR CONTROL CIRCUIT-1	A1.02	Current Page 3
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.



Front Page:+ORT/3

Next Page: +ORT/5

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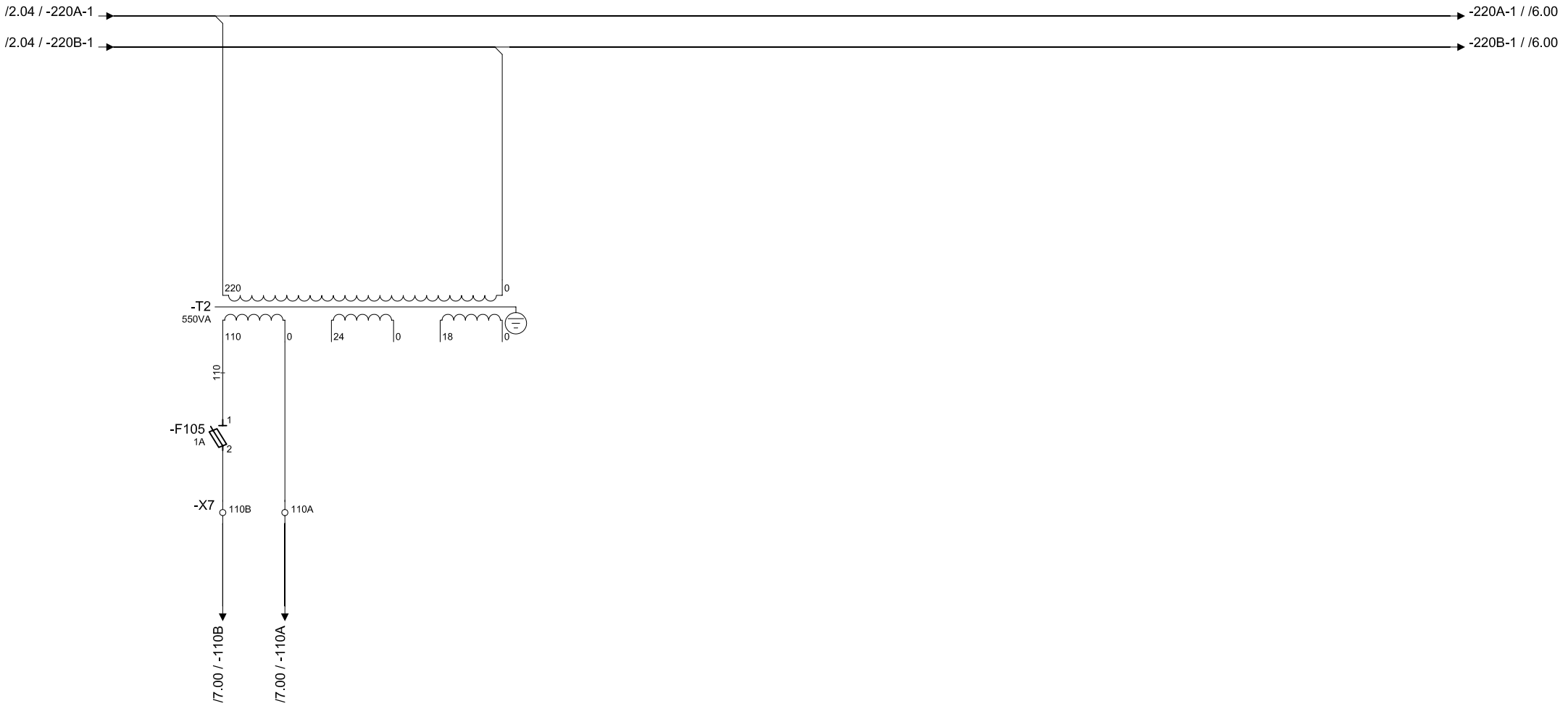
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02

PAGE DESCRIPTION:

AC220VAC CONTROL CIRCUIT-1



Front Page:+ORT/4

Next Page: +ORT/6

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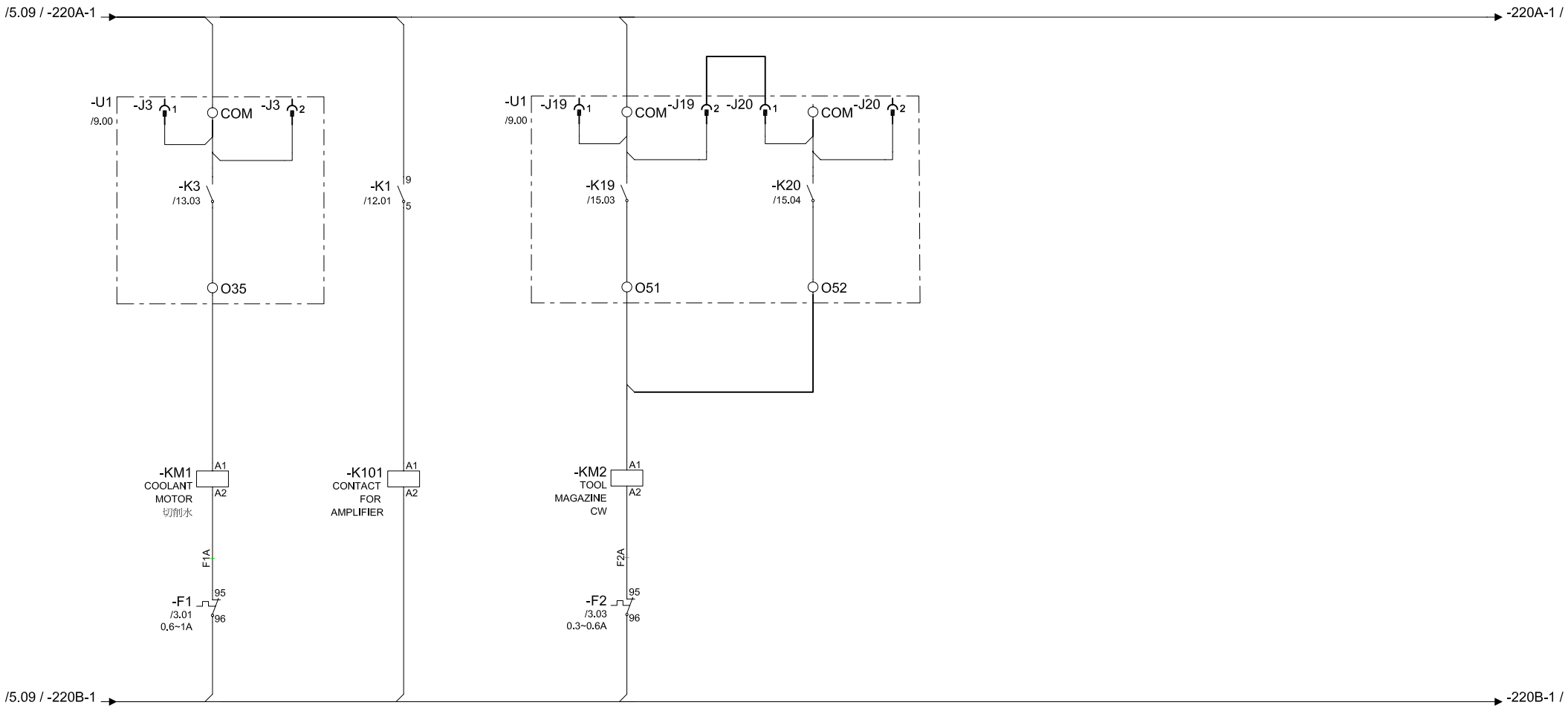
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.



1 — 2 /3.01
3 — 4 /3.01
5 — 6 /3.01

1 — 2 /2.01
3 — 4 /2.01
5 — 6 /2.01

1 — 2 /3.03
3 — 4 /3.03
5 — 6 /3.03

Front Page:+ORT/5

Next Page: +ORT/7

			Date	2015/04/01			PAGE DESCRIPTION:	+
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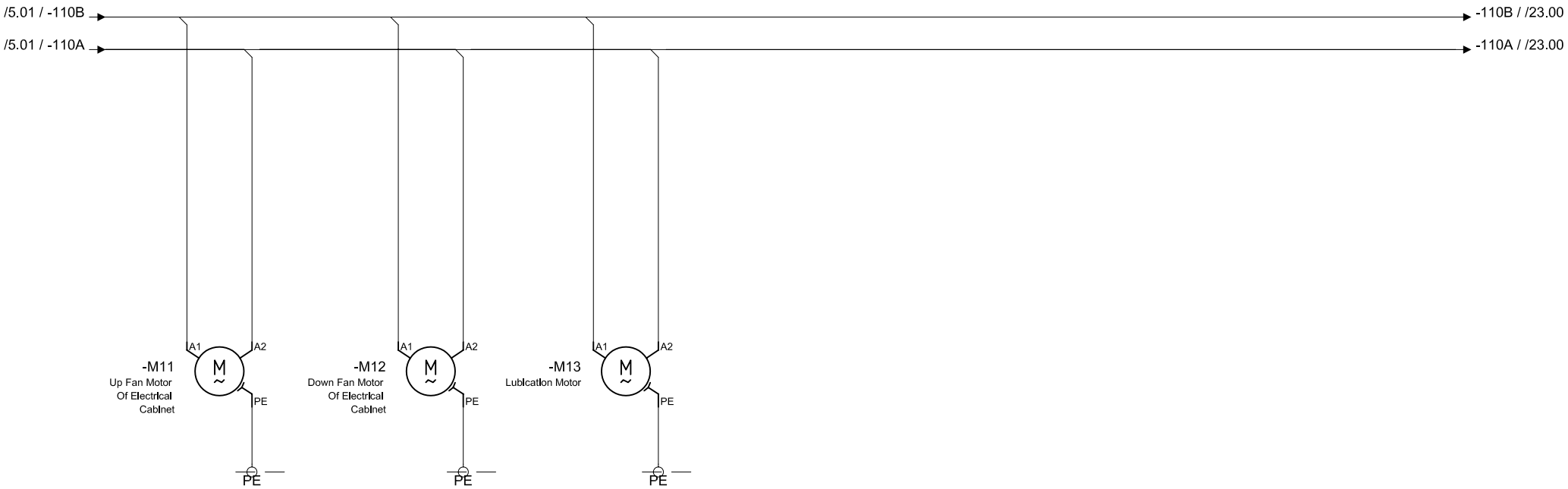
			Check.		Machine Name: e Mill		AC220VAC CONTROL CIRCUIT-3	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 6 / Total Page: 46 Pg.



Front Page:+ORT/6

Next Page: +ORT/8

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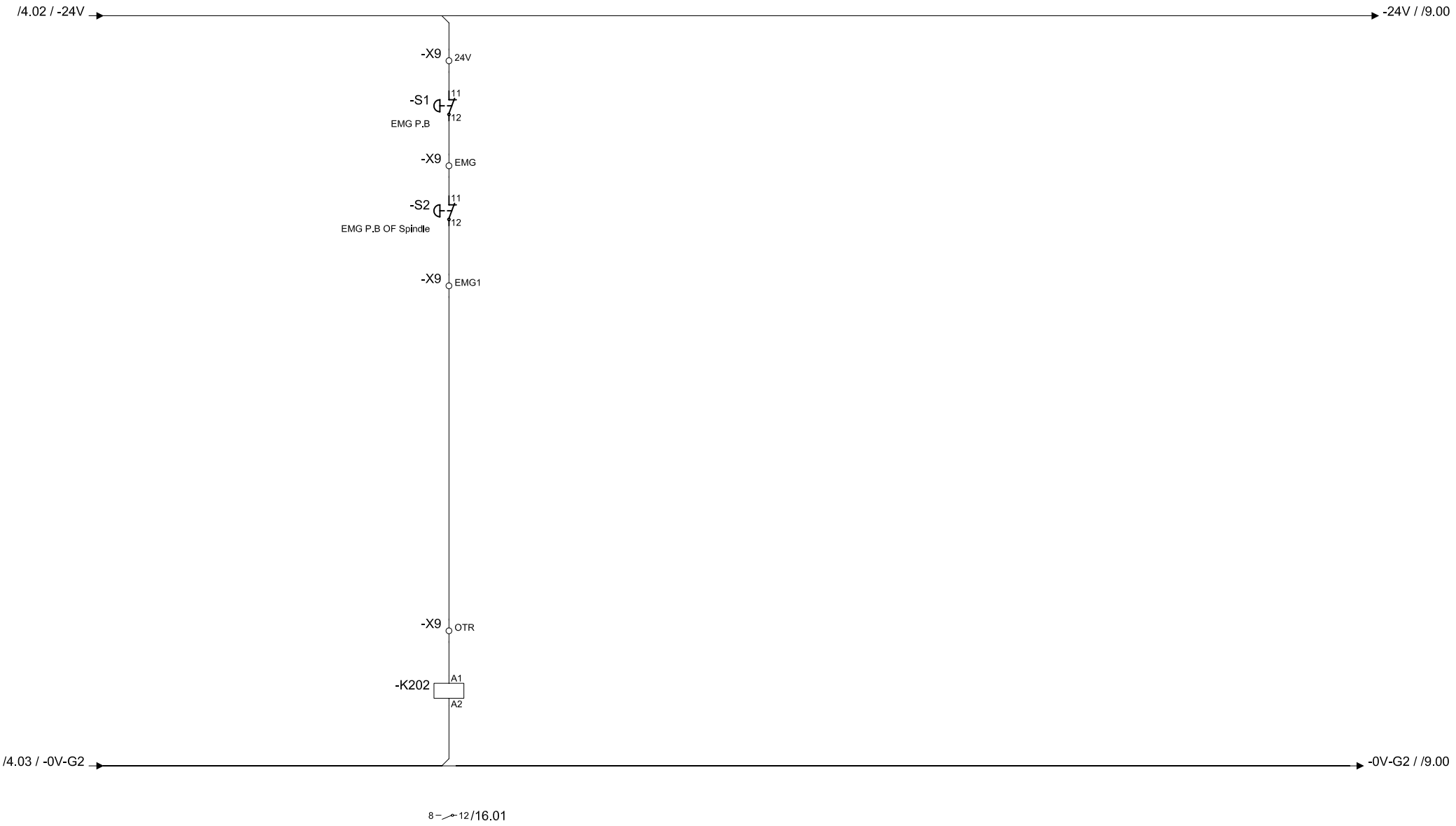
			Check.		Machine Name: e Mill		AC220VAC CONTROL CIRCUIT-4	A1.02	Current Page 7
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.



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Next Page: +ORT/9

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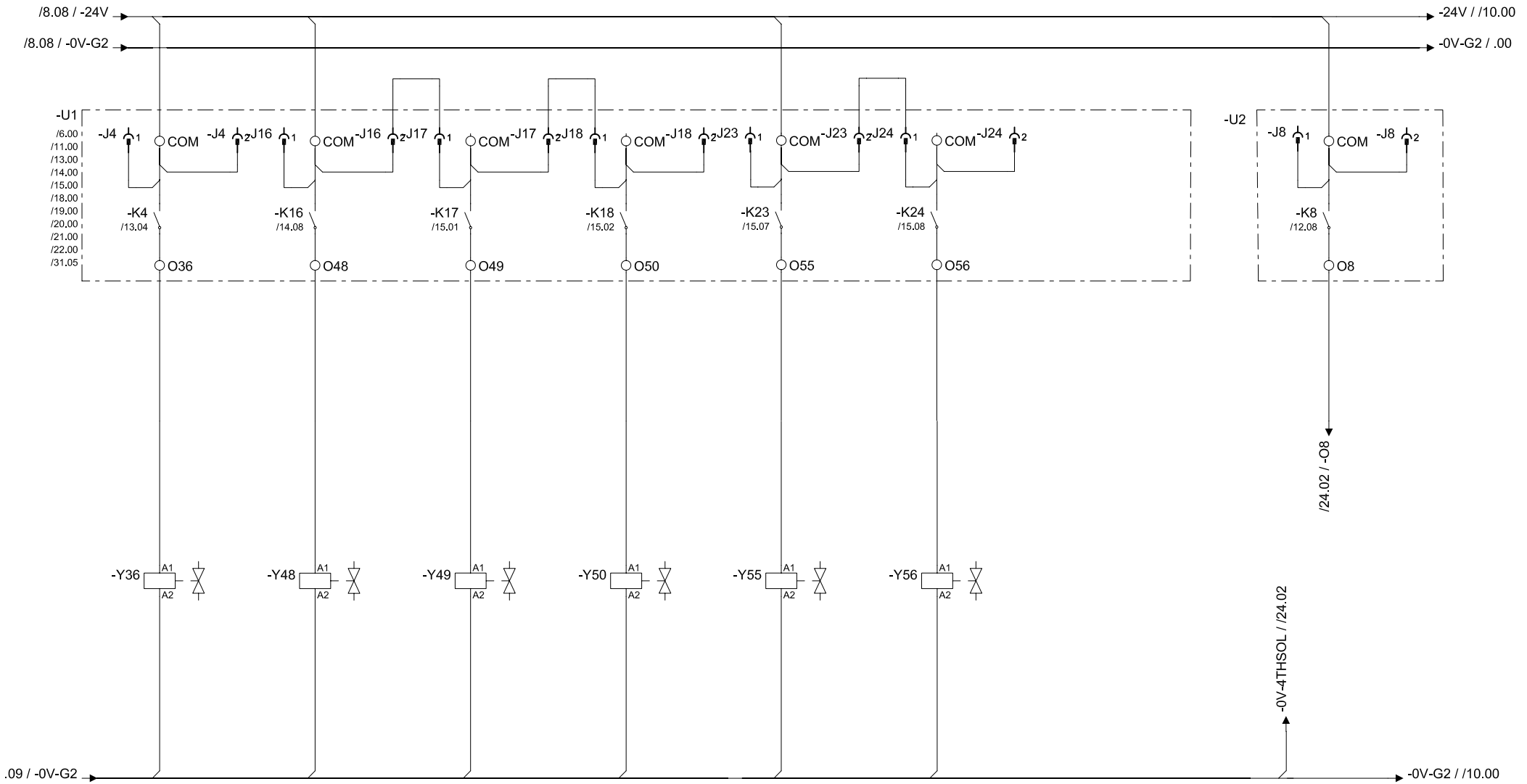
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Emergency stop circuit-1	A1.02



Front Page:+ORT/8
Next Page: +ORT/10

			Date	2015/04/01			PAGE DESCRIPTION:	+
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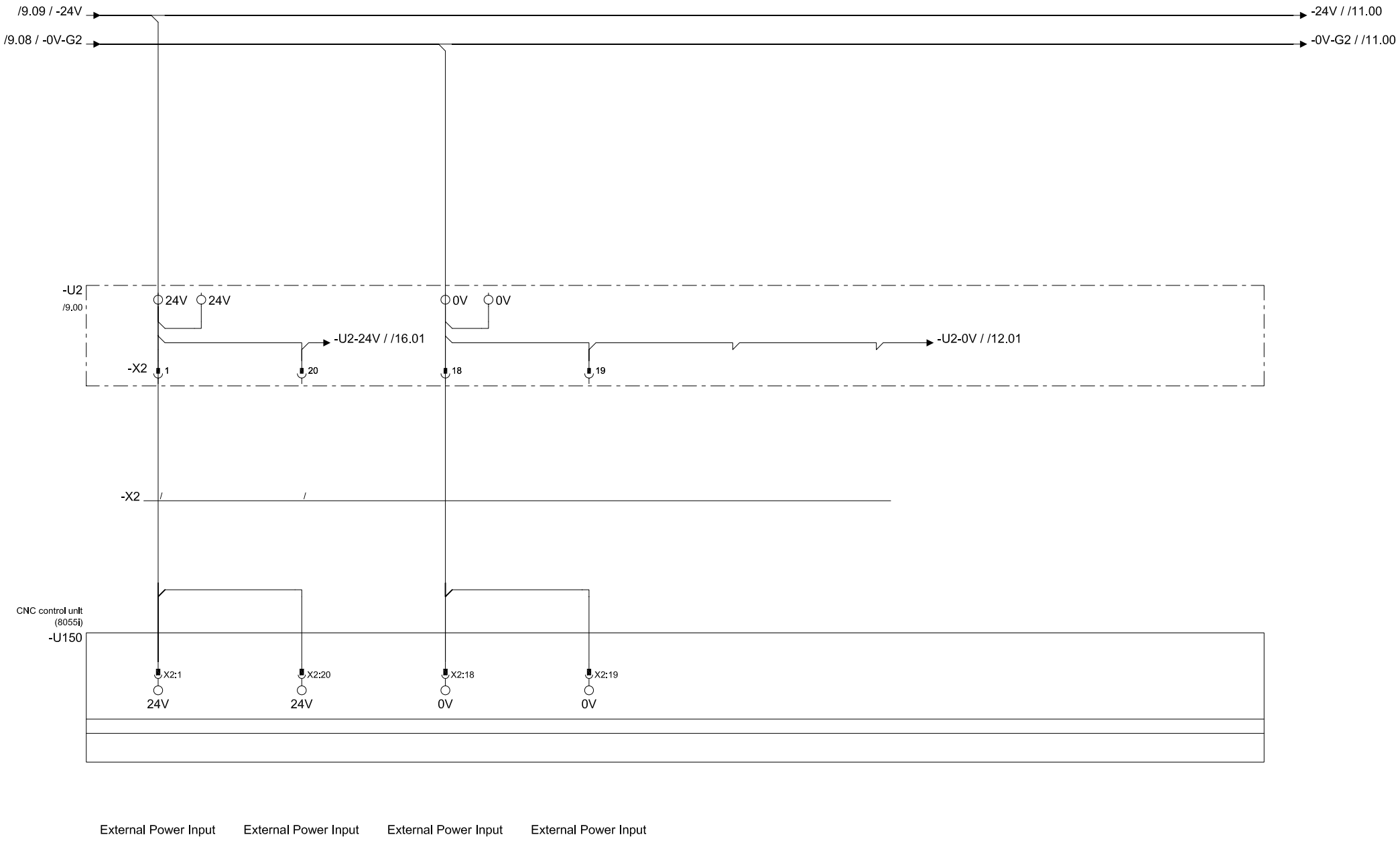
			Check.		Machine Name: e Mill		DC 24V CIRCUIT1	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 9 / Total Page: 46 Pg.



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Next Page: +ORT/11

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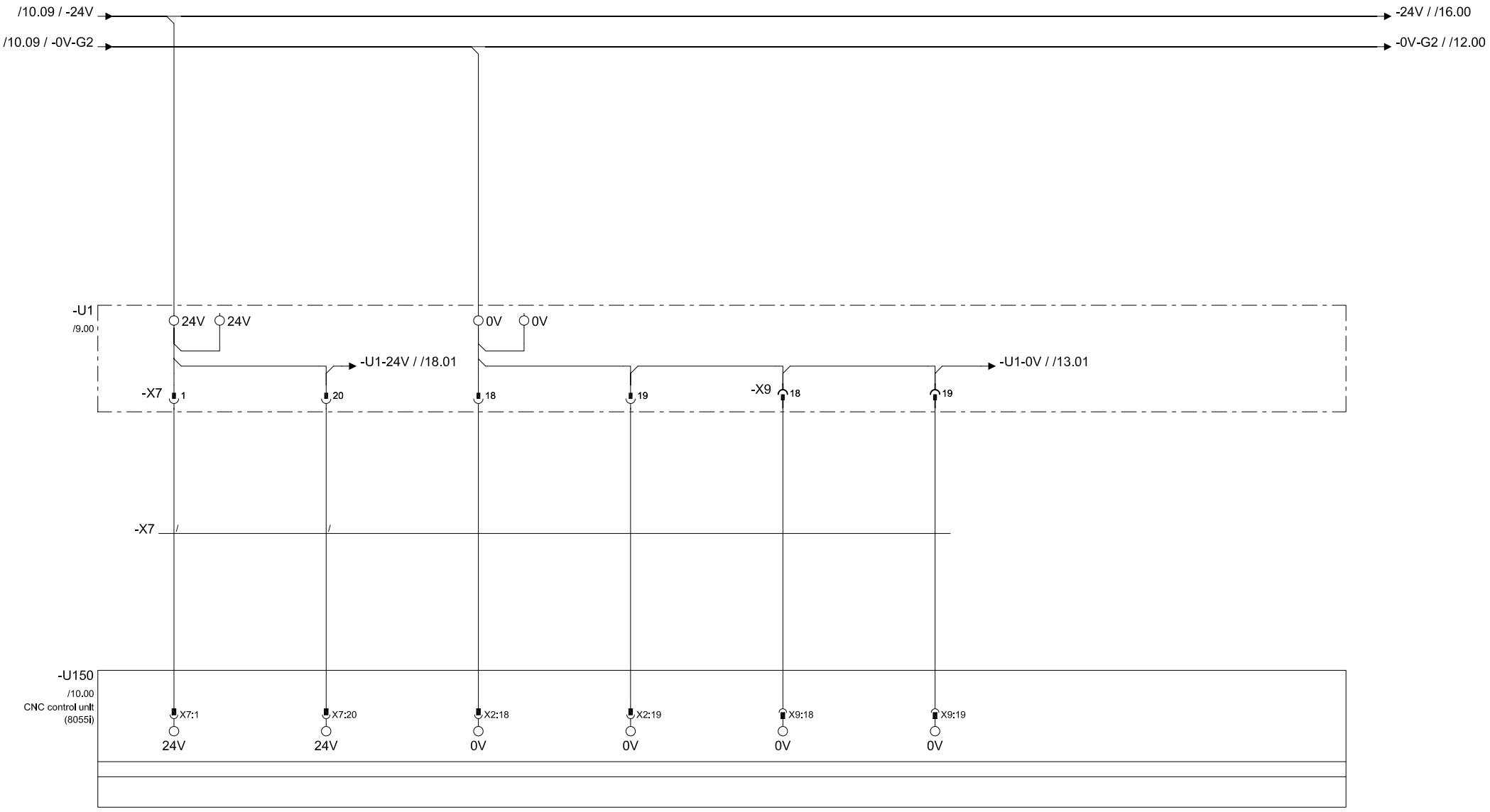
			Check.		Machine Name: e Mill		IO common connection-1 for X2	
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02



External Power Input External Power Input External Power Input External Power Input External Power Input External Power Input

Front Page:+ORT/10

Next Page: +ORT/12

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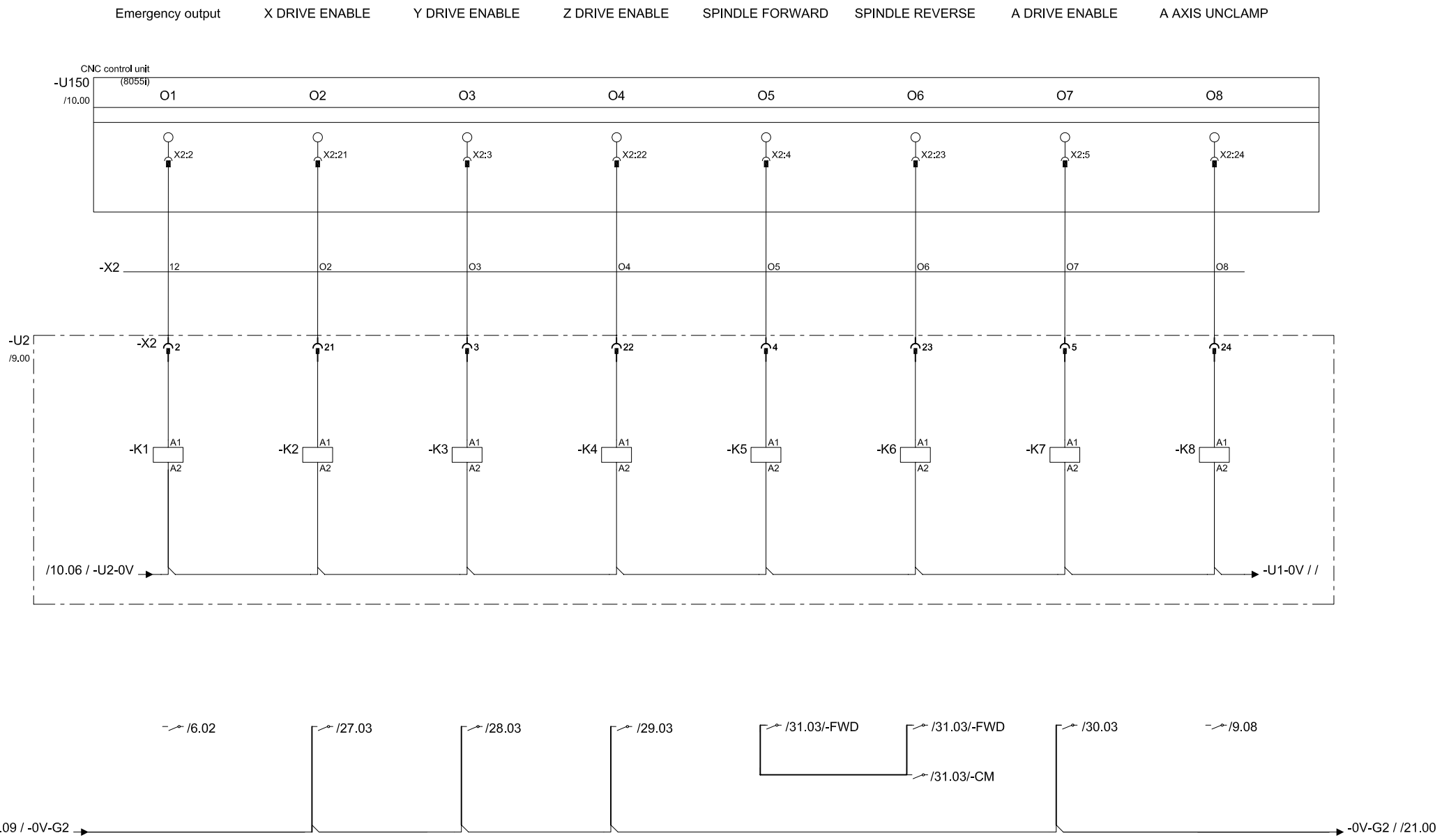
			Check.		Machine Name: e Mill		IO common connection-2 for X7&X9	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 11 / Total Page: 46 Pg.



Front Page:+ORT/11

Next Page: +ORT/13

			Date	2015/04/01			PAGE DESCRIPTION:	+
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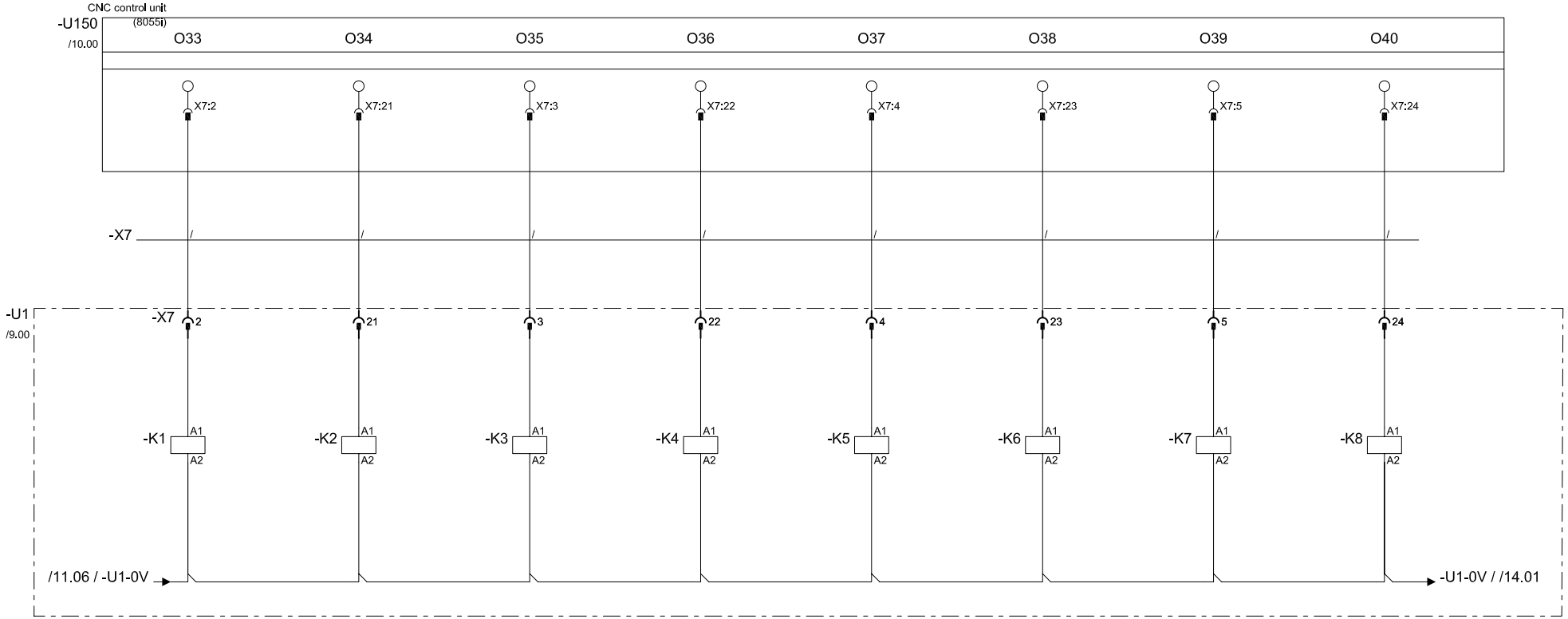
			Check.		Machine Name: e Mill		PLC I/O OUTPUT CIRCUIT1(O1~O8)	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 12 / Total Page: 46 Pg.

COOLANT PUMP AIR BLOW MPG ON LED



/6.01 /9.01 /25.03

Front Page:+ORT/12
Next Page: +ORT/14

			Date	2015/04/01			PAGE DESCRIPTION:	+
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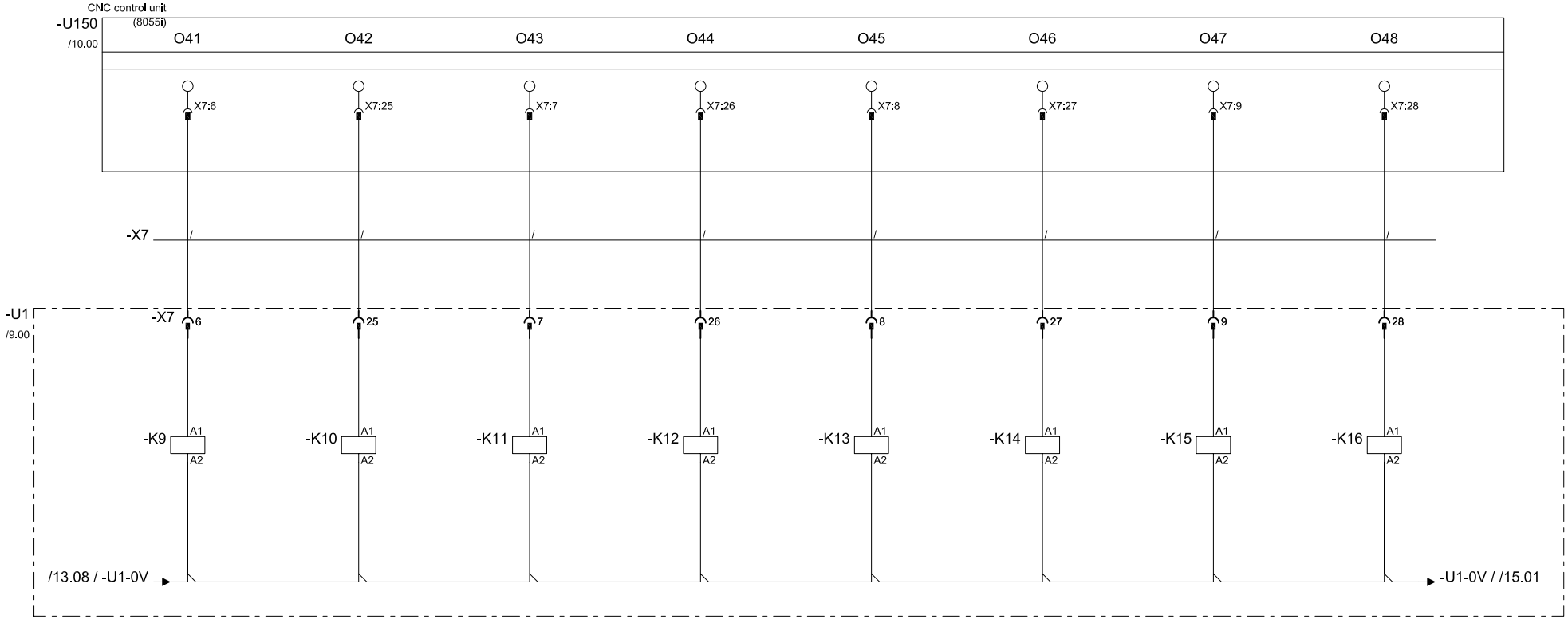
			Check.		Machine Name: e Mill		PLC I/O OUTPUT CIRCUIT2(O33~O40)	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 13 / Total Page: 46 Pg.

SPINDLE SERVO ON TOOL UNCLAMP



/31.03/-X1

/31.03/-CM

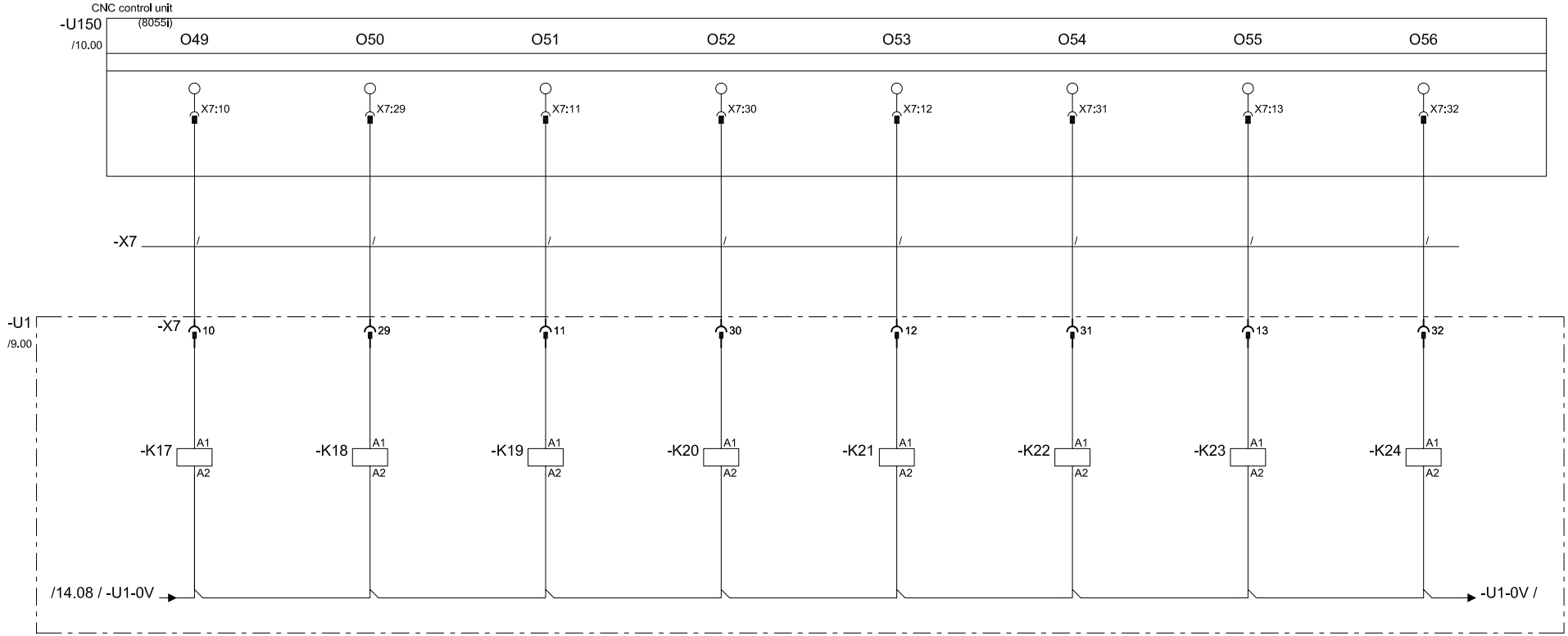
/9.02

Front Page:+ORT/13

Next Page: +ORT/15

			Date	2015/04/01			PAGE DESCRIPTION:	+
			Edit.	Mark				Location:ORT
			Check.		Machine Name: e Mill		PLC I/O OUTPUT CIRCUIT3(O41~O48)	
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02

ATC MAG. IN | ATC MAG. OUT | TOOL MAG. CW | TOOL MAG. CCW | SPINDLE ORIENT. | SPINDLE INDEX | ATC MAG. UP | ATC MAG. DOWN



/9.03 | /9.04 | /6.03 | /6.04 | /31.03/-X6 | /31.03/-X2 | /9.05 | /9.06

/31.03/-CM

Front Page:+ORT/14

Next Page: +ORT/16

			Date	2015/04/01			PAGE DESCRIPTION:	+
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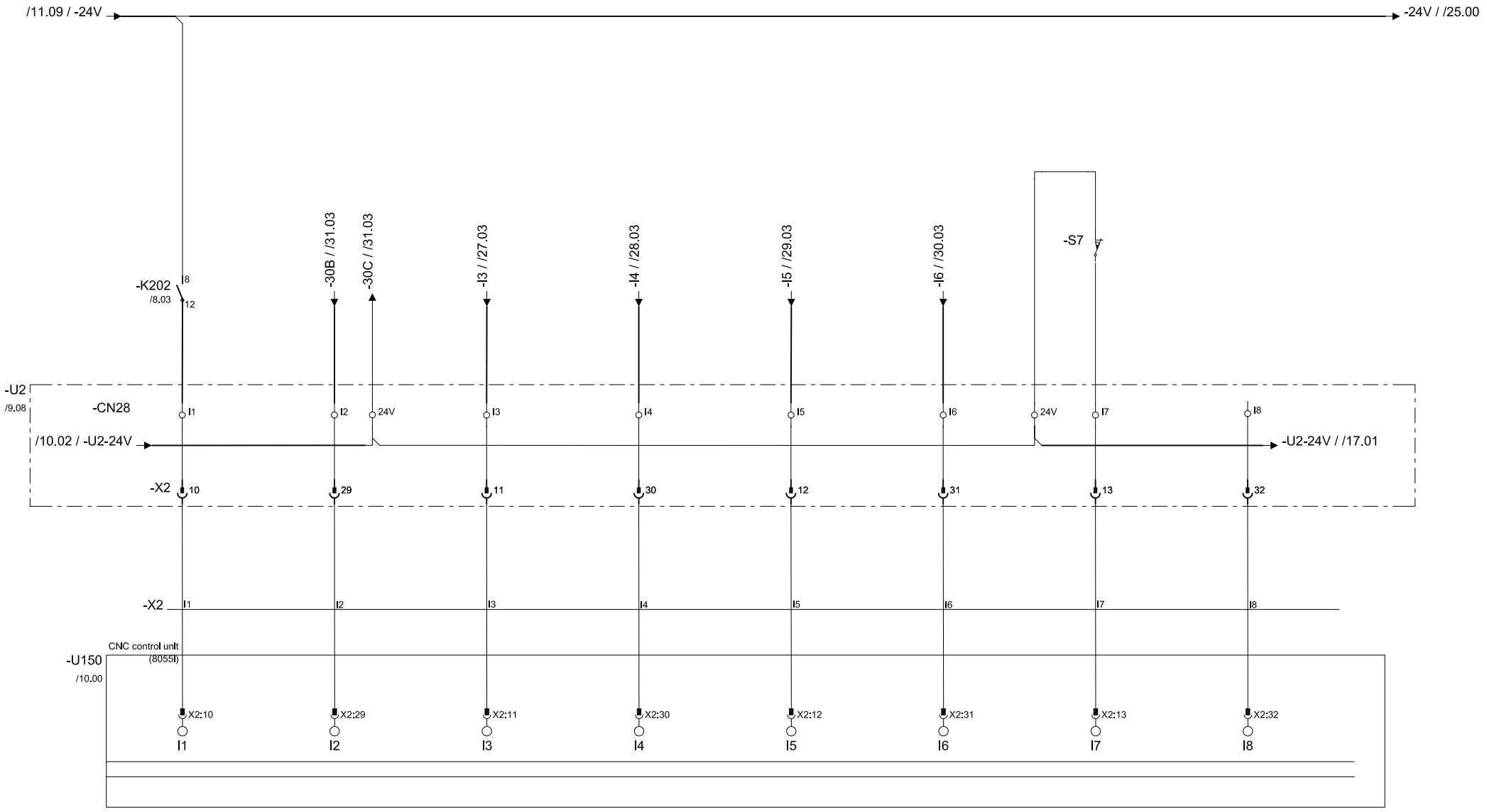
			Check.		Machine Name: e Mill			A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 15 / Total Page: 46 Pg.

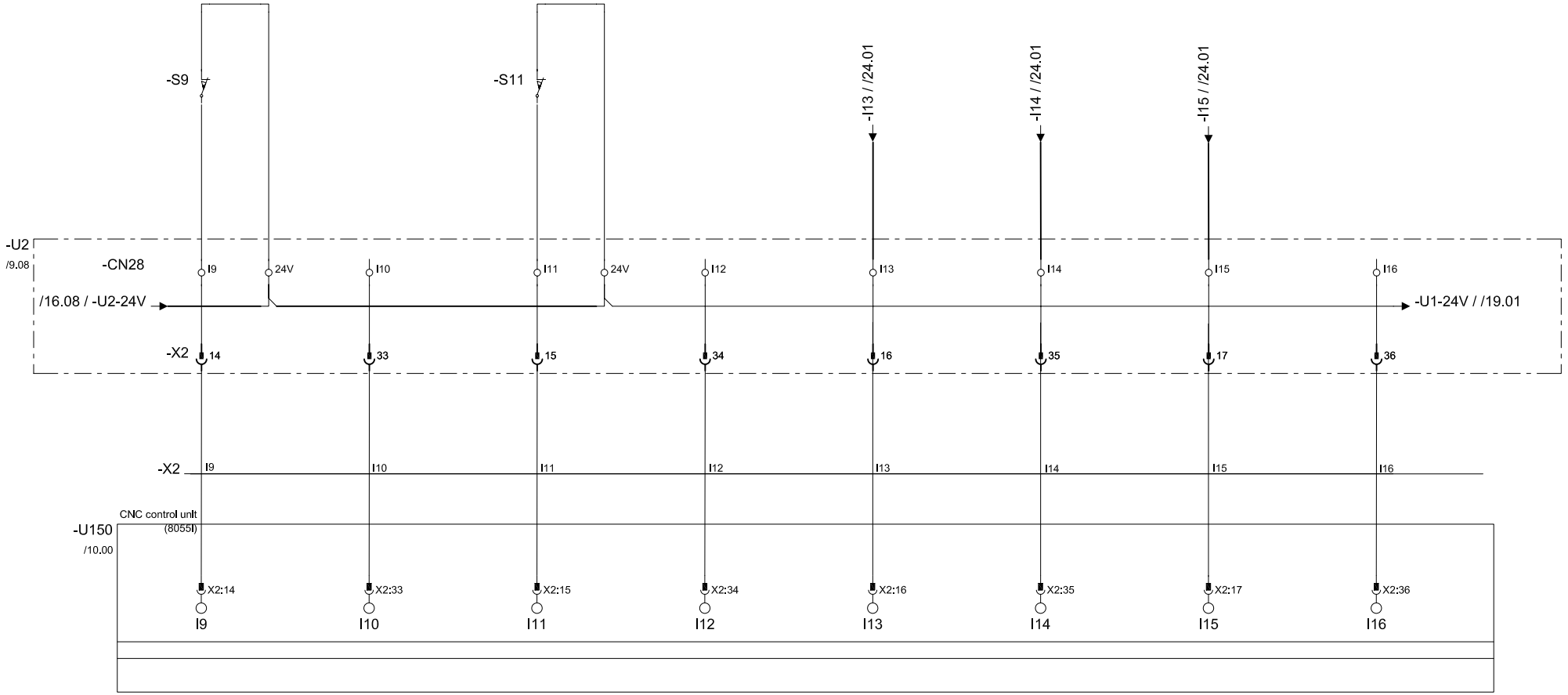


Emergency Input | SPINDLE FAULT | X DRIVE OK. | Y DRIVE OK. | Z DRIVE OK. | A DRIVE OK. | X AXIS HOME | X AXIS L.S.

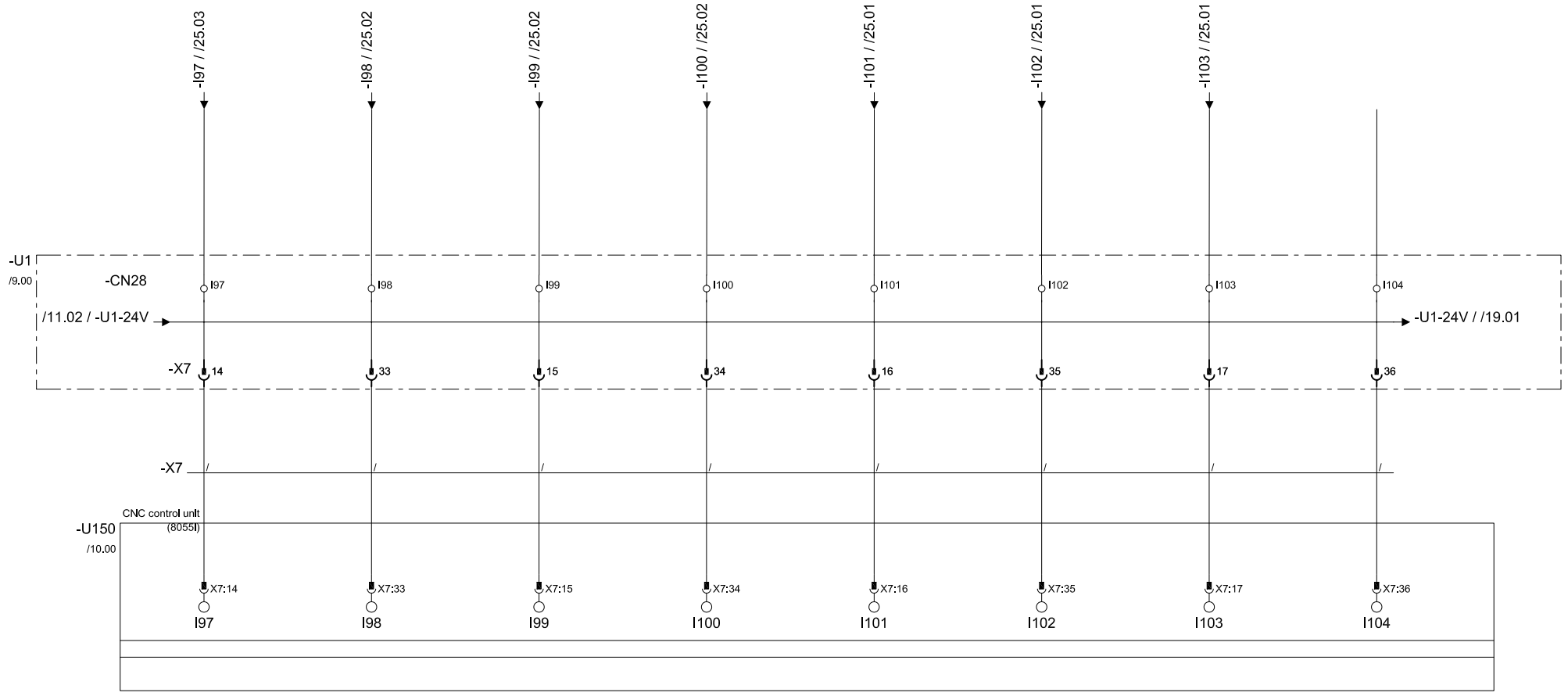
Front Page:+ORT/15

Next Page: +ORT/17

			Date	2015/04/01			+	
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill	PAGE DESCRIPTION: PLC I/O INPUT CIRCUIT1(I1~I8)	A1.02	Current Page 16
Modification	Date	Name	Standard		Origin / Crea. for	Crea. by Mark		Total Page: 46 Pg.



Y AXIS HOME | Y AXIS L.S. | Z AXIS HOME | Z AXIS L.S. | A AXIS HOME | A AXIS UNCLAMP | A AXIS CLAMP

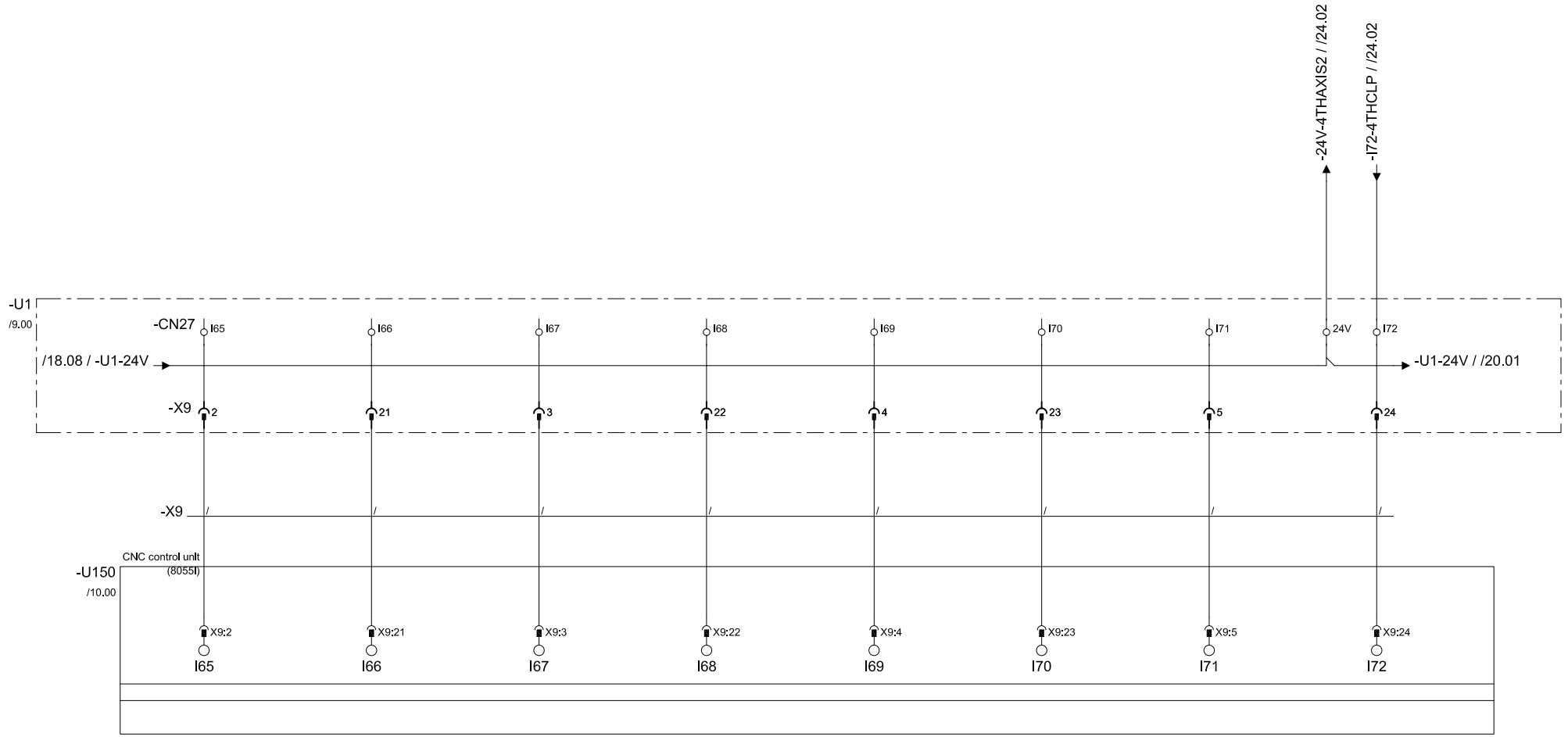


X SELECTION | Y SELECTION | Z SELECTION | A SELECTION | X1 RESOLUTION | X10 RESOLUTION | X100 RESOLUTION | HANDWHEEL ENABLE

Front Page:+ORT/17

Next Page: +ORT/19

			Date	2015/04/01			+	
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill		A1.02	Current Page 18
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by mark	PAGE DESCRIPTION: PLC I/O INPUT CIRCUIT3(I97~I104)	Total Page: 46 Pg.



SPINDLE SPEED ARRIVE SPINDLE ZERO SPEED COOLANT OVERLOAD

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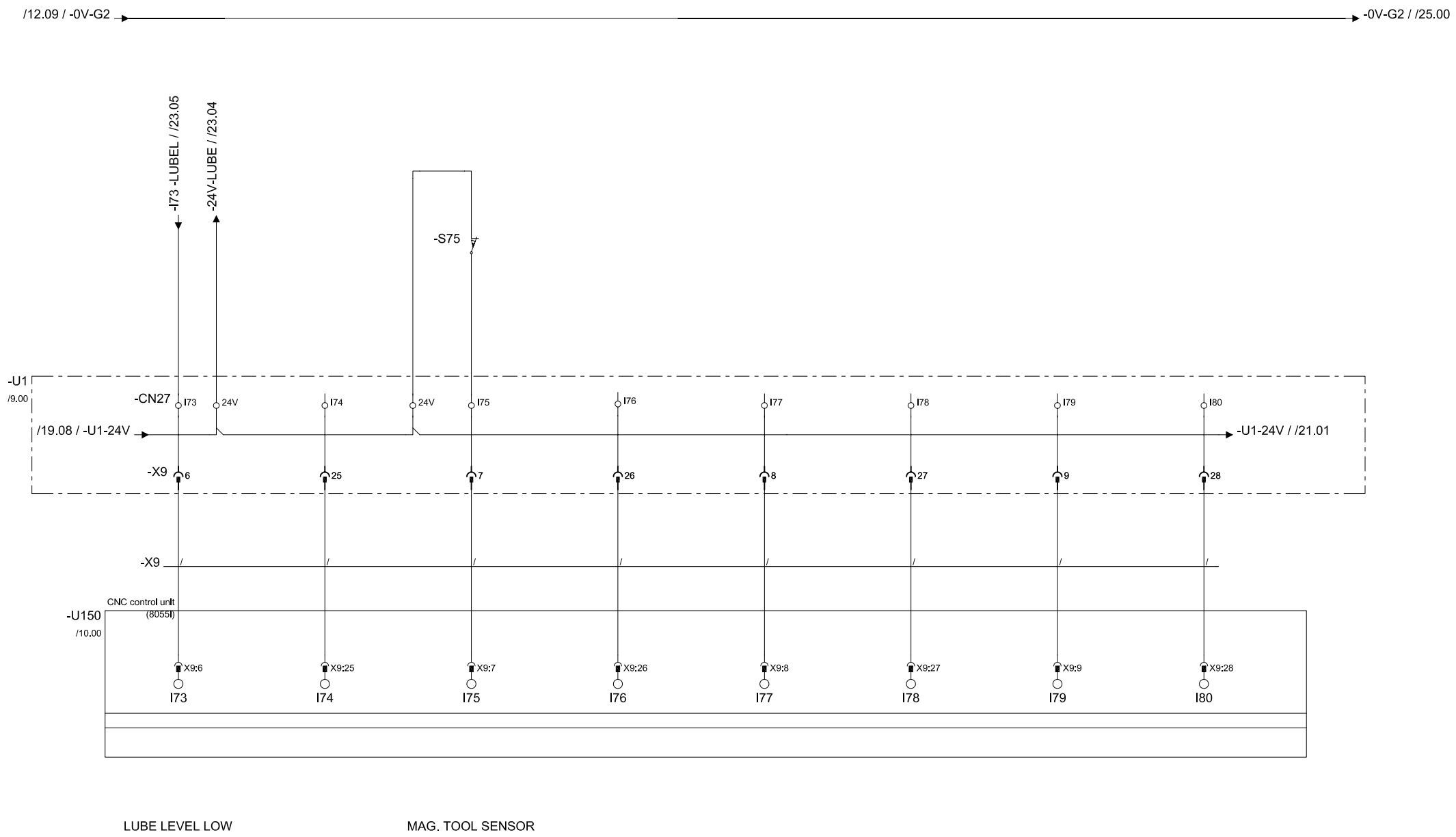
			Date	2015/04/01			+	
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill		A1.02	Current Page 19
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Total Page: 46 Pg.

PAGE DESCRIPTION:

PLC I/O INPUT CIRCUIT4(I65~I72)



LUBE LEVEL LOW

MAG. TOOL SENSOR

Front Page:+ORT/19

Next Page: +ORT/21

			Date	2015/04/01			PAGE DESCRIPTION:	+
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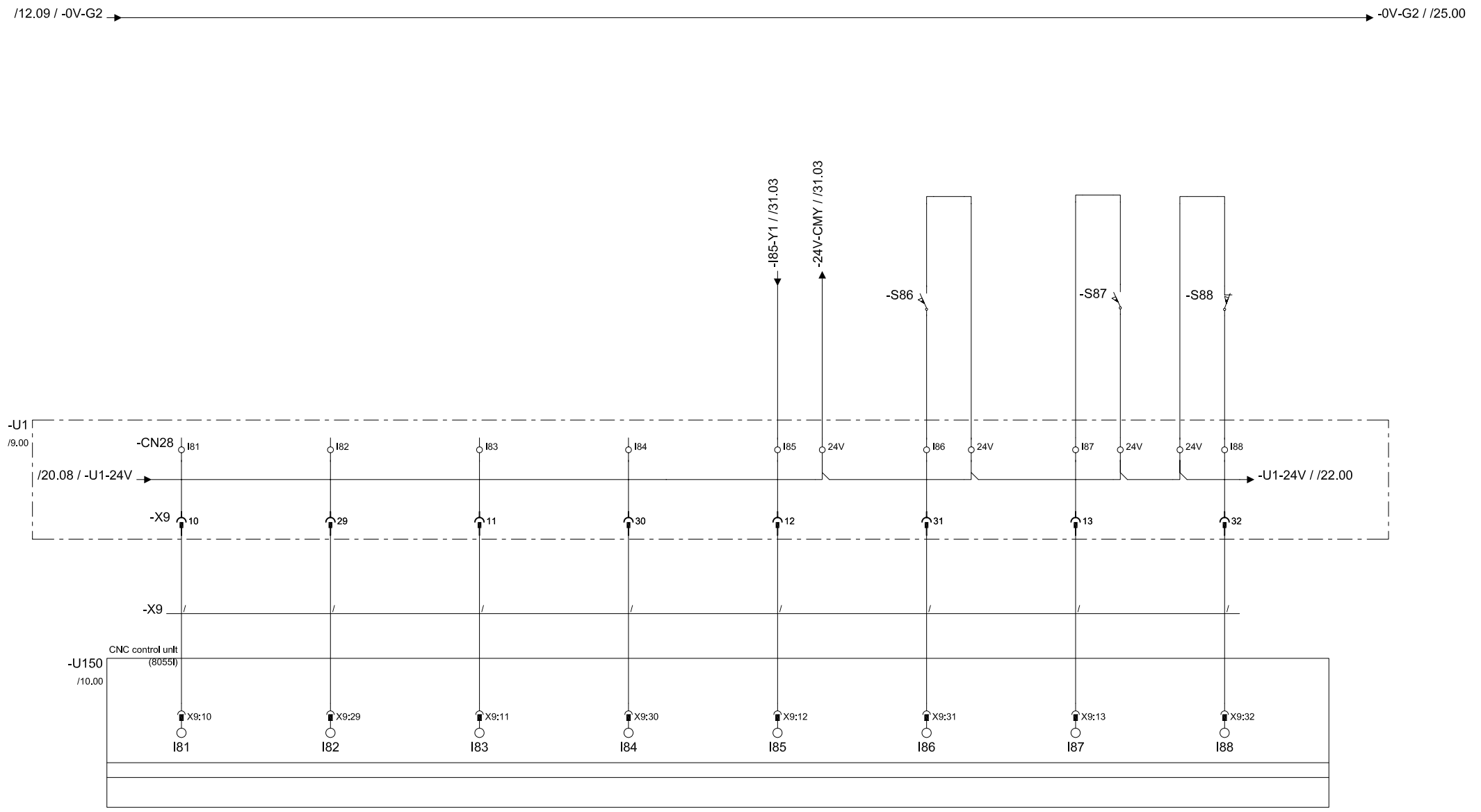
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02



SPINDLE INDEX TOOL CLAMP TOOL UNCLAMP MANUAL TOOL UNCLAMP P.B.

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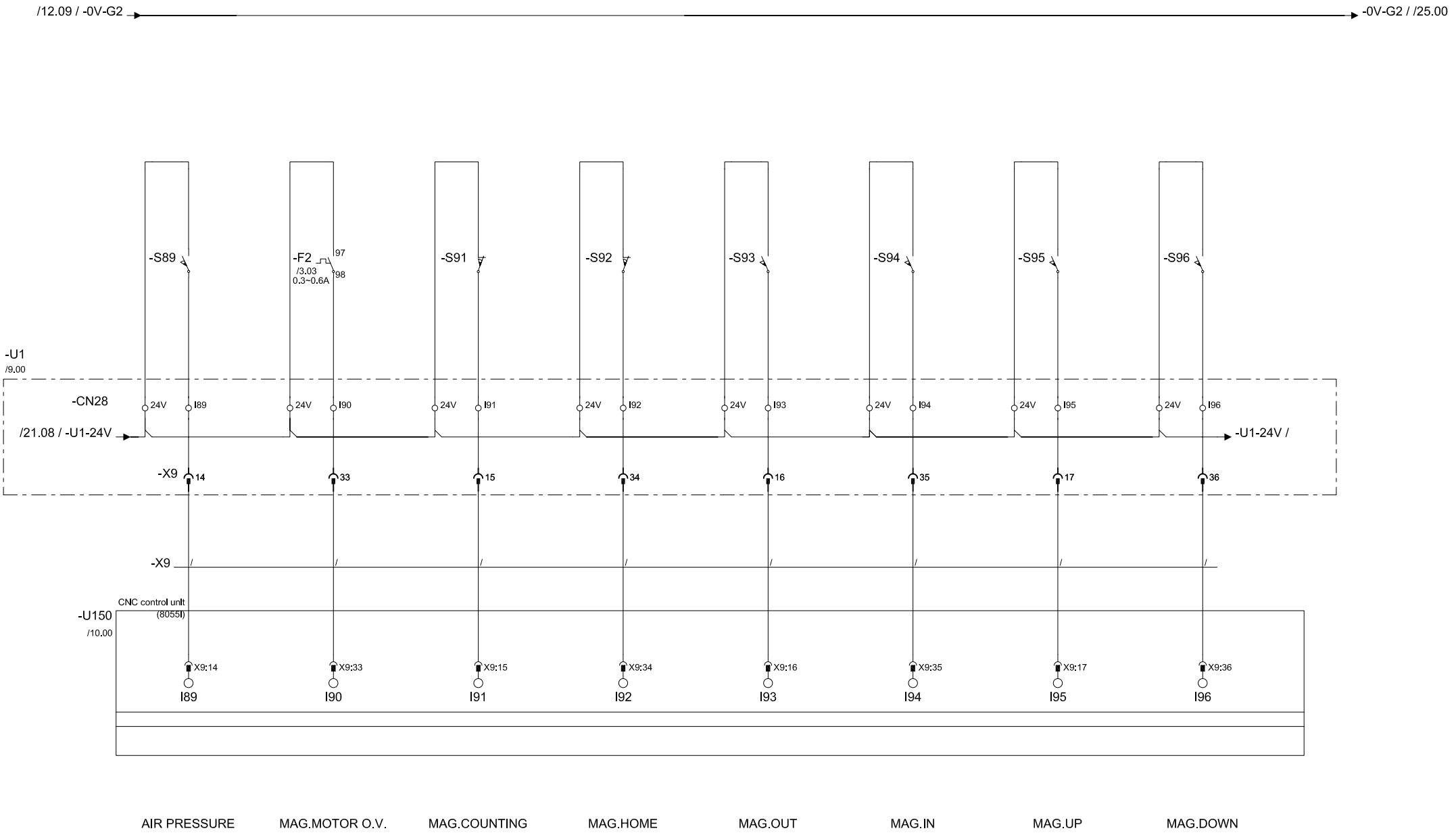
Next Page: +ORT/22

			Date	2015/04/01			+	
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill		A1.02	Current Page 21
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	PAGE DESCRIPTION: PLC I/O INPUT CIRCUIT6(I81~I88)	Total Page: 46 Pg.



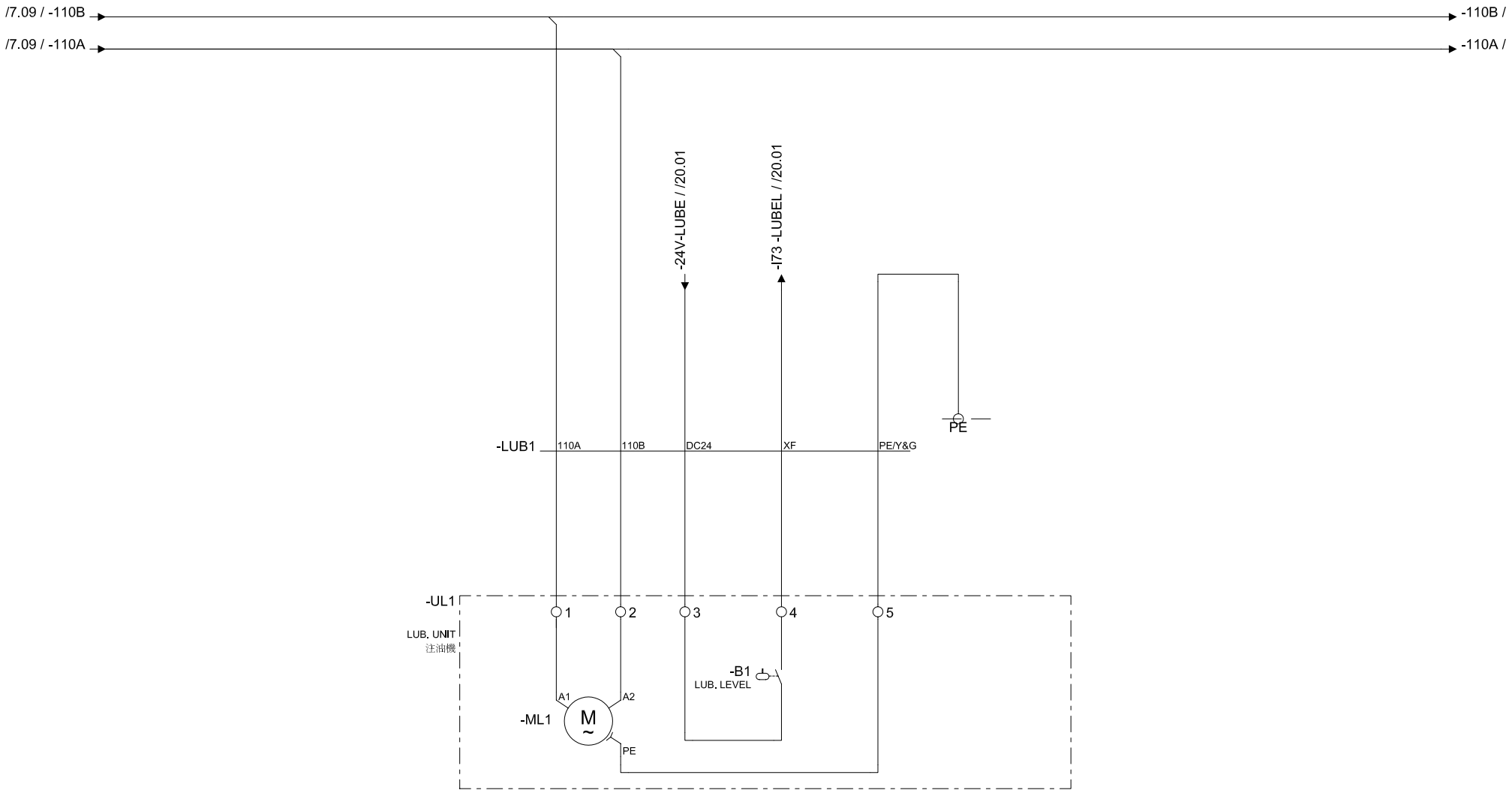
Front Page:+ORT/21

Next Page: +ORT/23

			Date	2015/04/01			+	
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill		A1.02	Current Page 22
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Total Page: 46 Pg.

PAGE DESCRIPTION:

PLC I/O INPUT CIRCUIT7(I89~I96)



Front Page:+ORT/22

Next Page: +ORT/24

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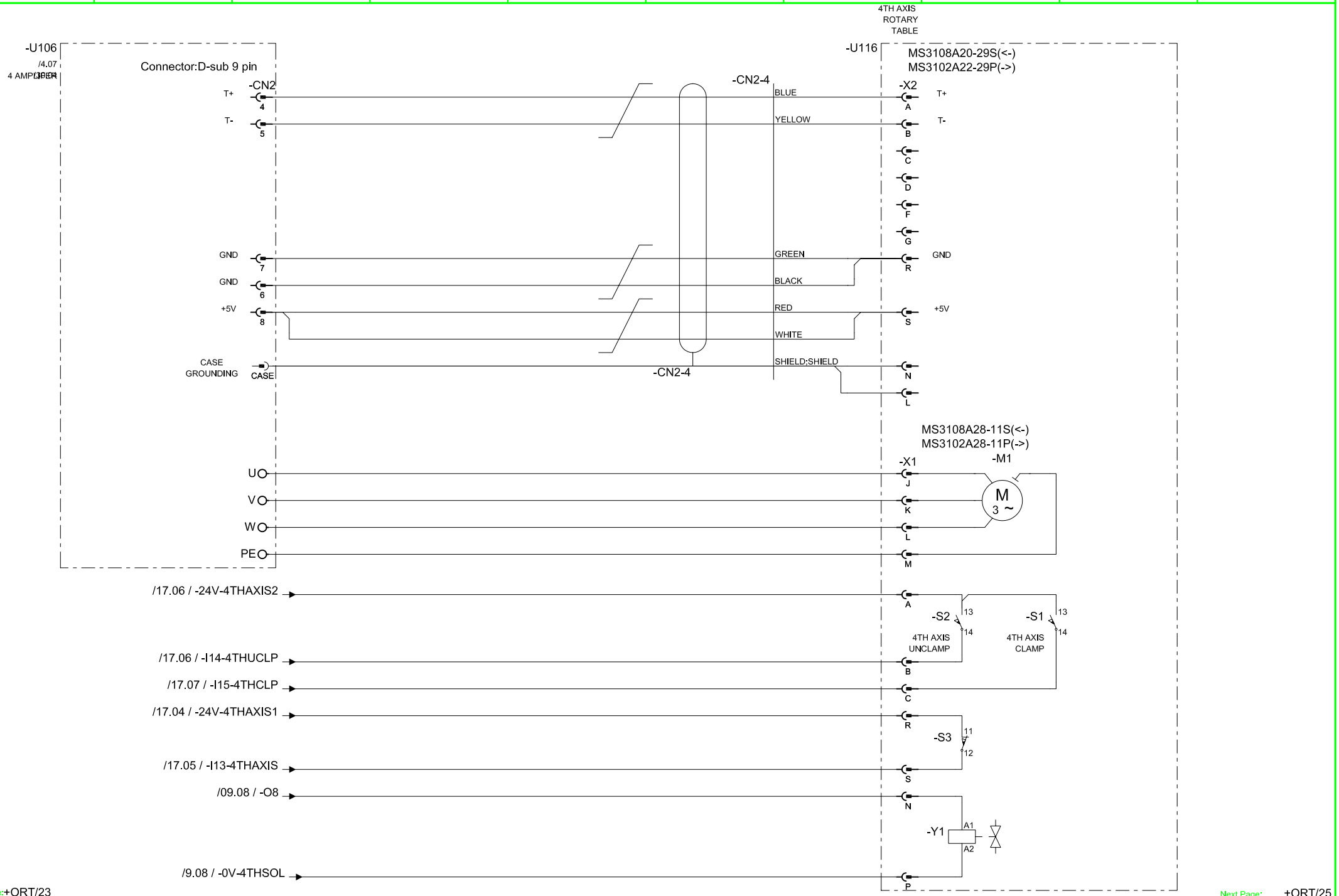
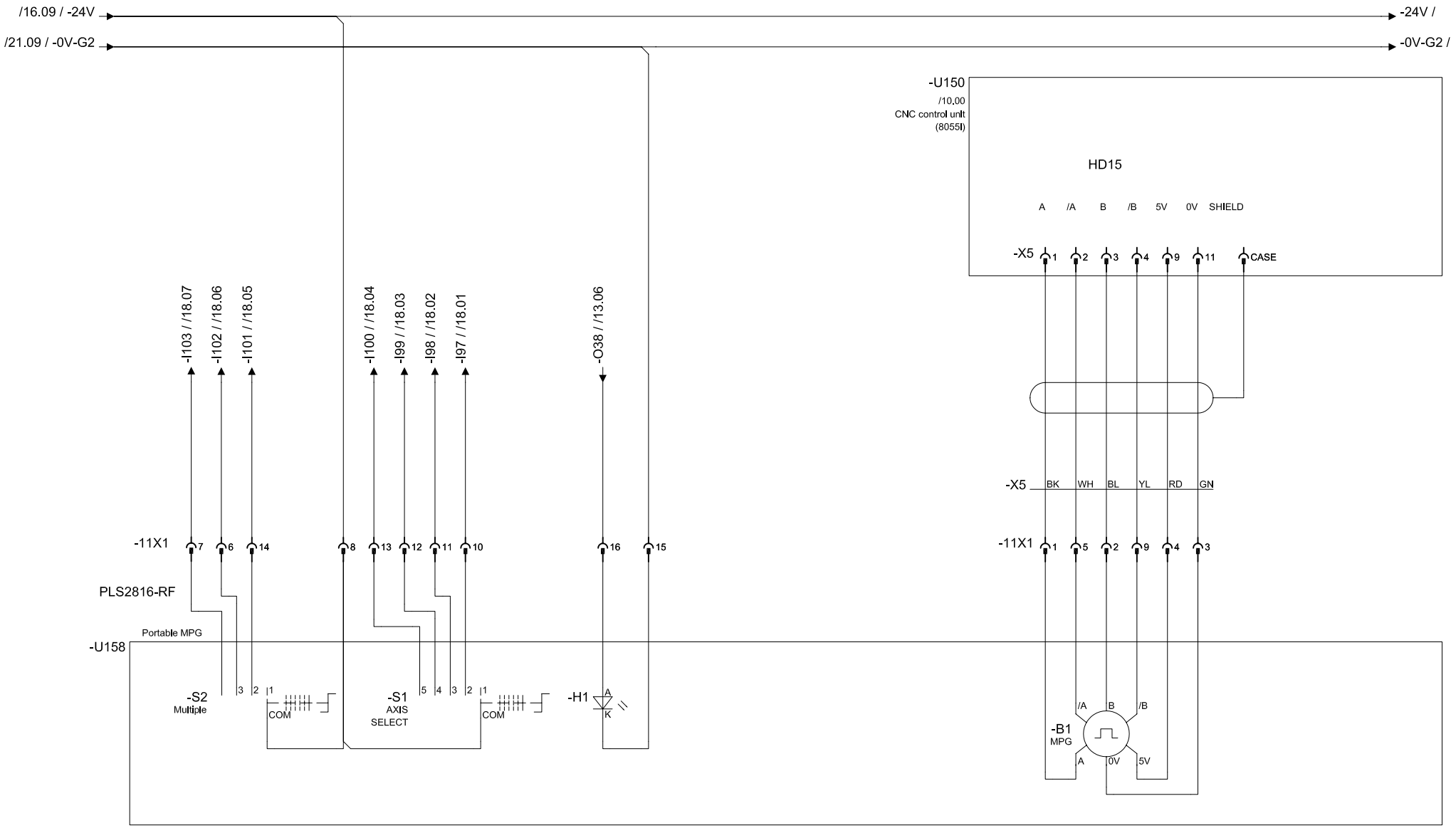
			Check.		Machine Name: e Mill				
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Lube Unit Circuit	A1.02



Front Page:+ORT/23

Next Page: +ORT/25

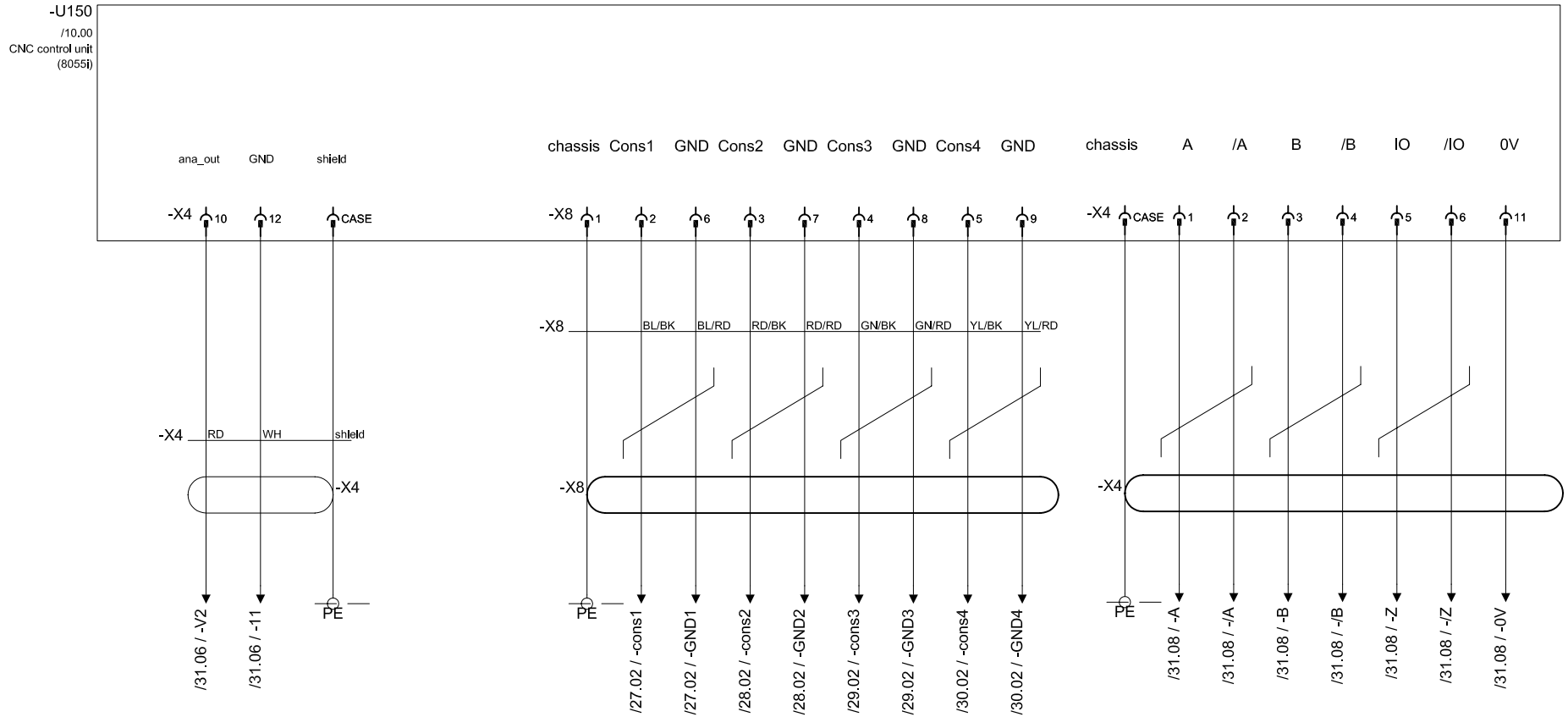
			Date	2015/04/01			+	
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill			
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	PAGE DESCRIPTION: 4th Axis Connection	A1.02	Current Page 24
										Total Page: 46 Pg.



Front Page:+ORT/24

Next Page: +ORT/26

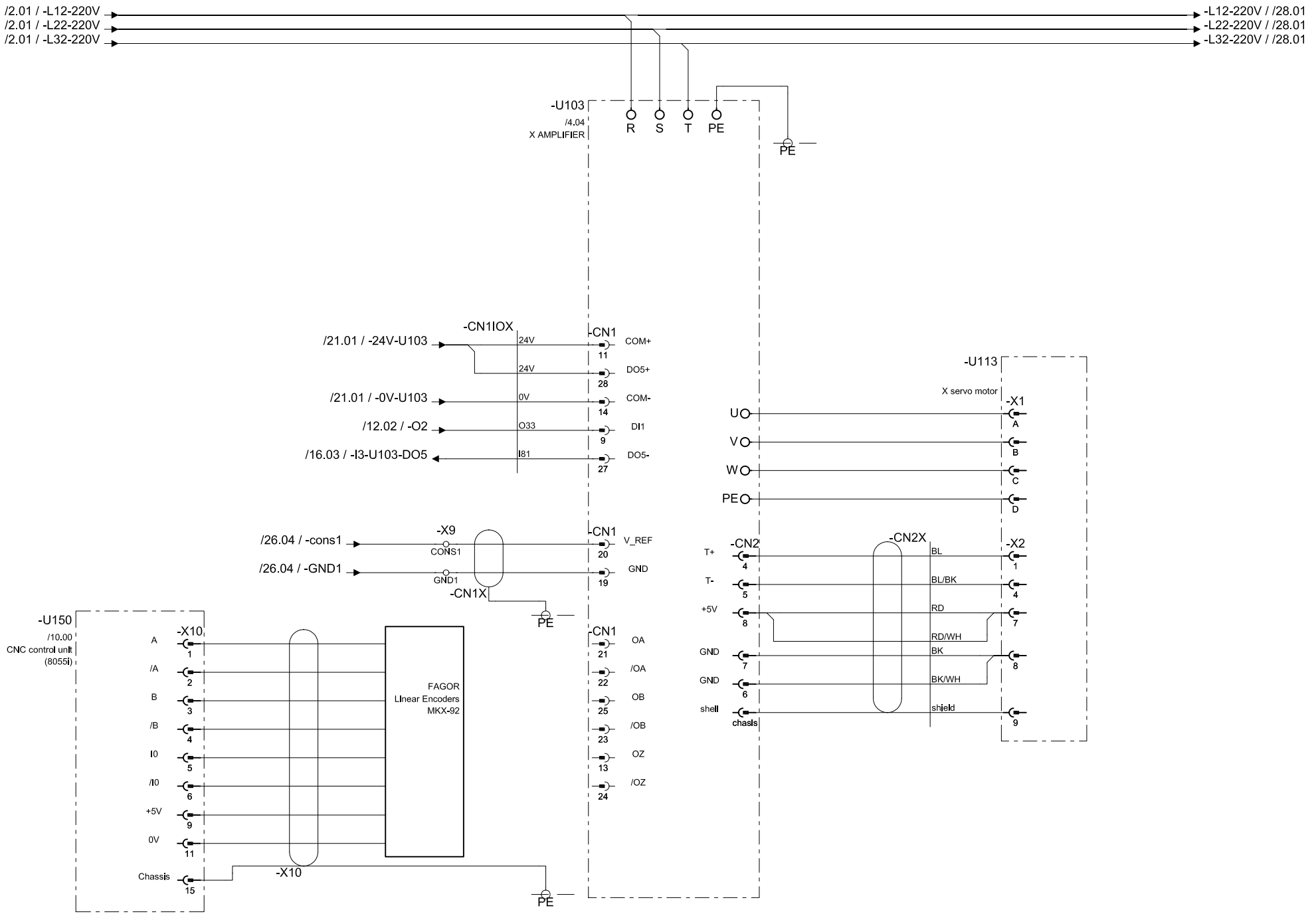
			Date	2015/04/01			PAGE DESCRIPTION:	+
			Edit.	Mark				Location:ORT
			Check.		Machine Name: e Mill		MPG INTERFACE	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 25 / Total Page: 46 Pg.



Front Page:+ORT/25

Next Page: +ORT/27

			Date	2015/04/01			PAGE DESCRIPTION:	+
			Edit.	Mark				Location:ORT
			Check.		Machine Name: e Mill		CNC X4&X8 interface	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 26 / Total Page: 46 Pg.



Front Page:+ORT/26

Next Page: +ORT/28

			Date	2015/04/10			PAGE DESCRIPTION:	+
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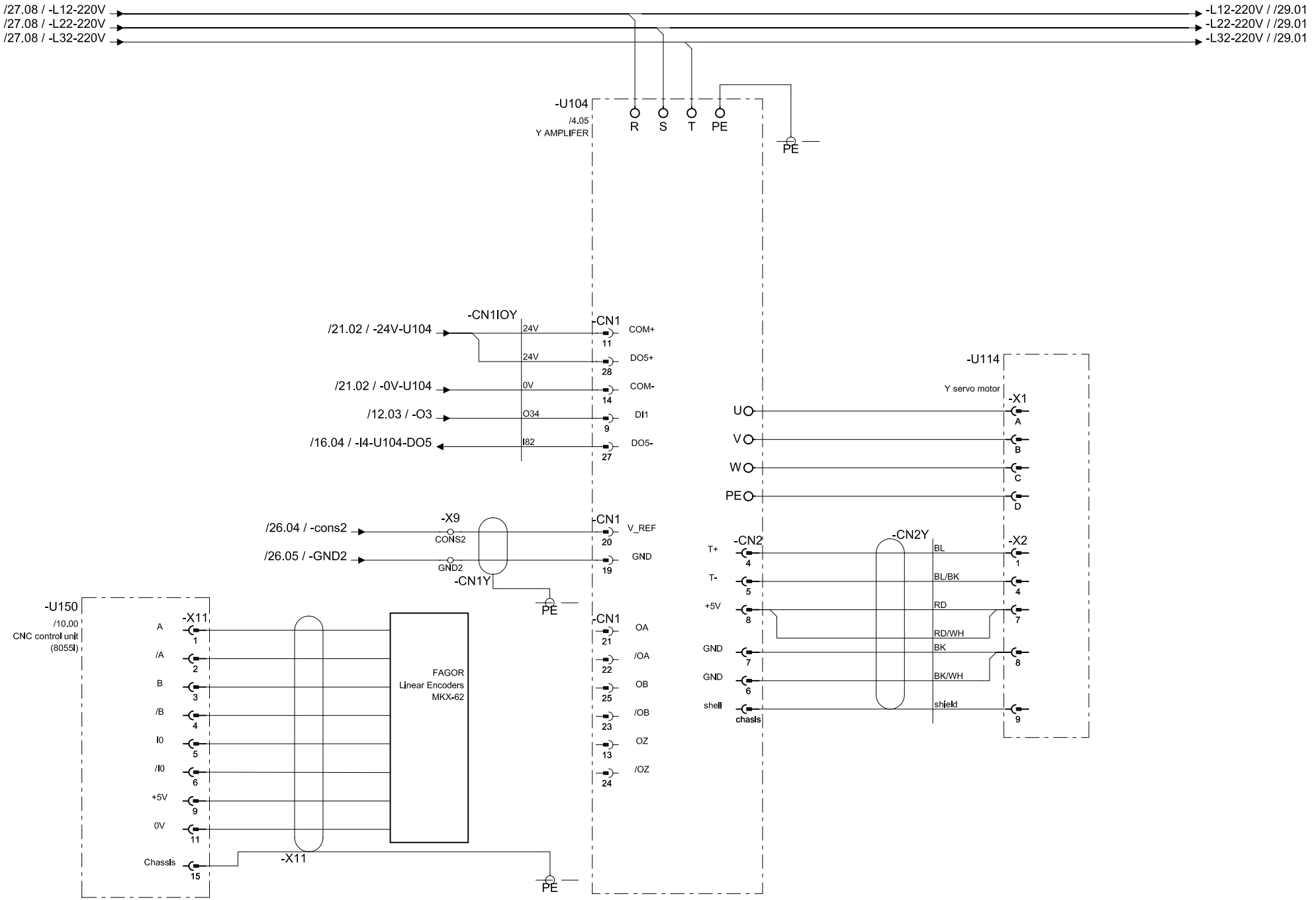
			Check.		Machine Name: e Mill		X Axis Driver Connection(Linear Encoders)	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 27 / Total Page: 46 Pg.



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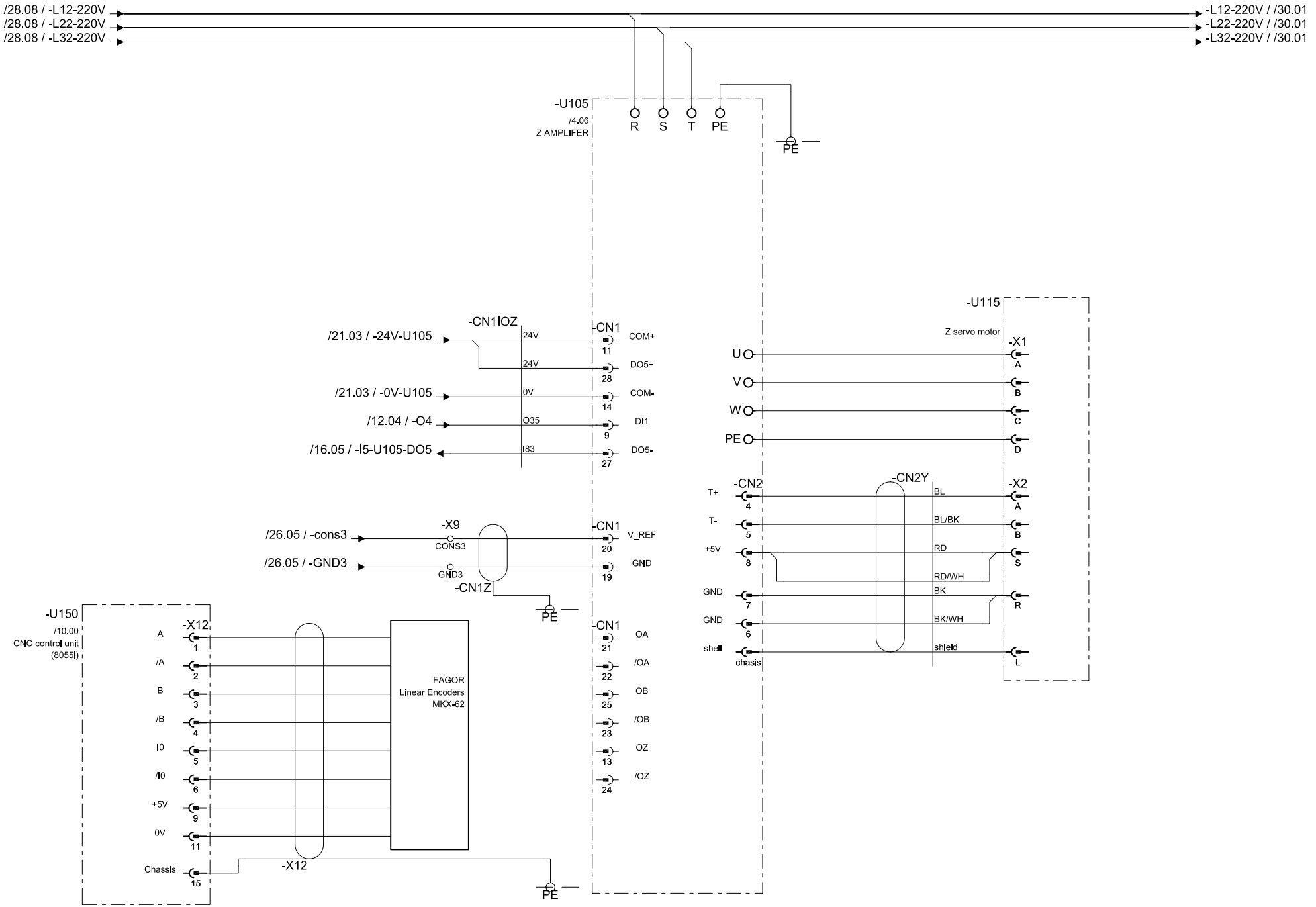
			Date	2015/04/10				+
			Edit.	Mark				Location:ORT
			Check.		Machine Name: e Mill			
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02

PAGE DESCRIPTION:
Y Axis Driver Connection(Linear Encoders)



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Next Page: +ORT/30

			Date	2015/04/10			PAGE DESCRIPTION:	+
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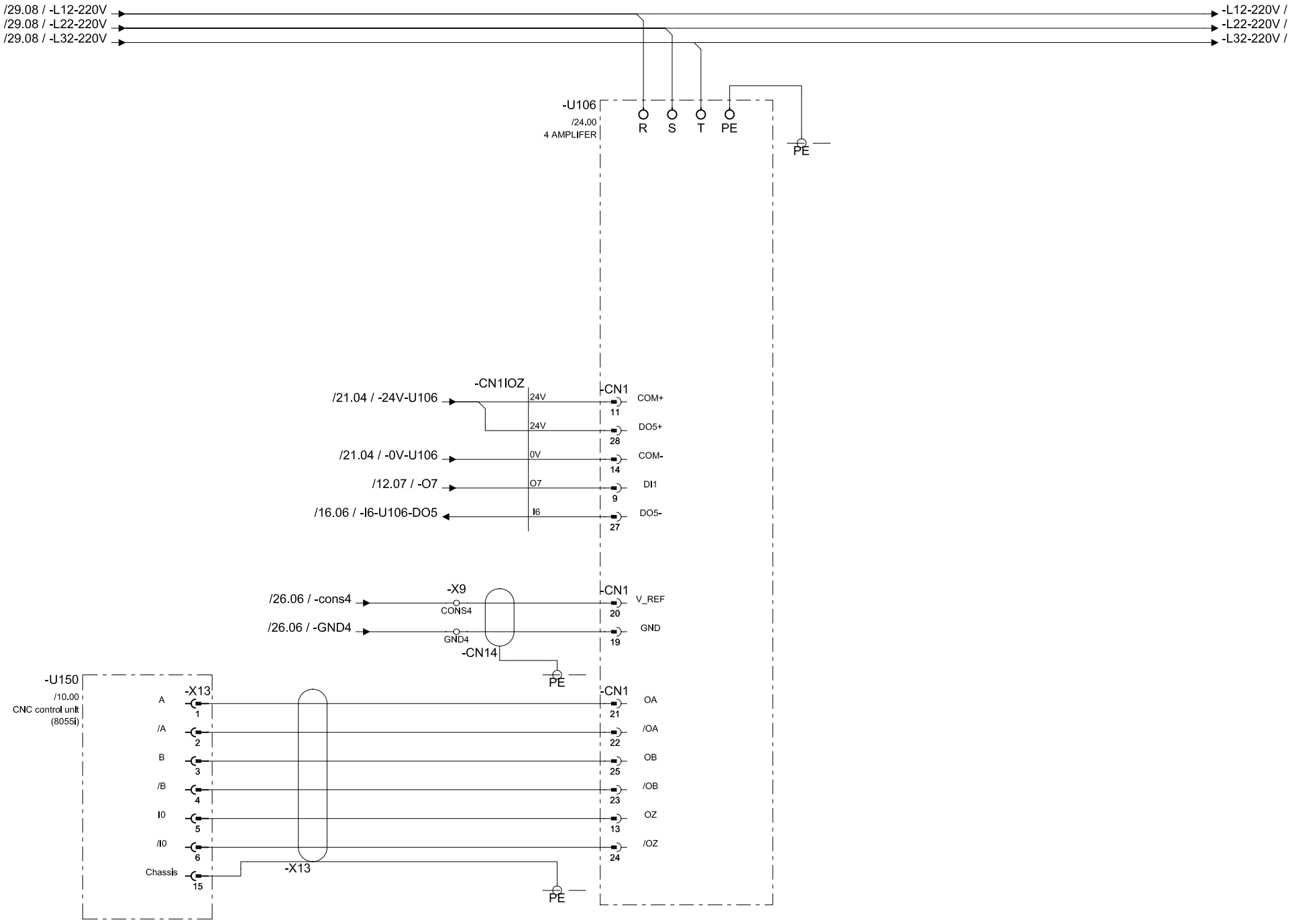
			Check.		Machine Name: e Mill		Z Axis Driver Connection(Linear Encoders)	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 29 / Total Page: 46 Pg.



Front Page:+ORT/29

Next Page: +ORT/31

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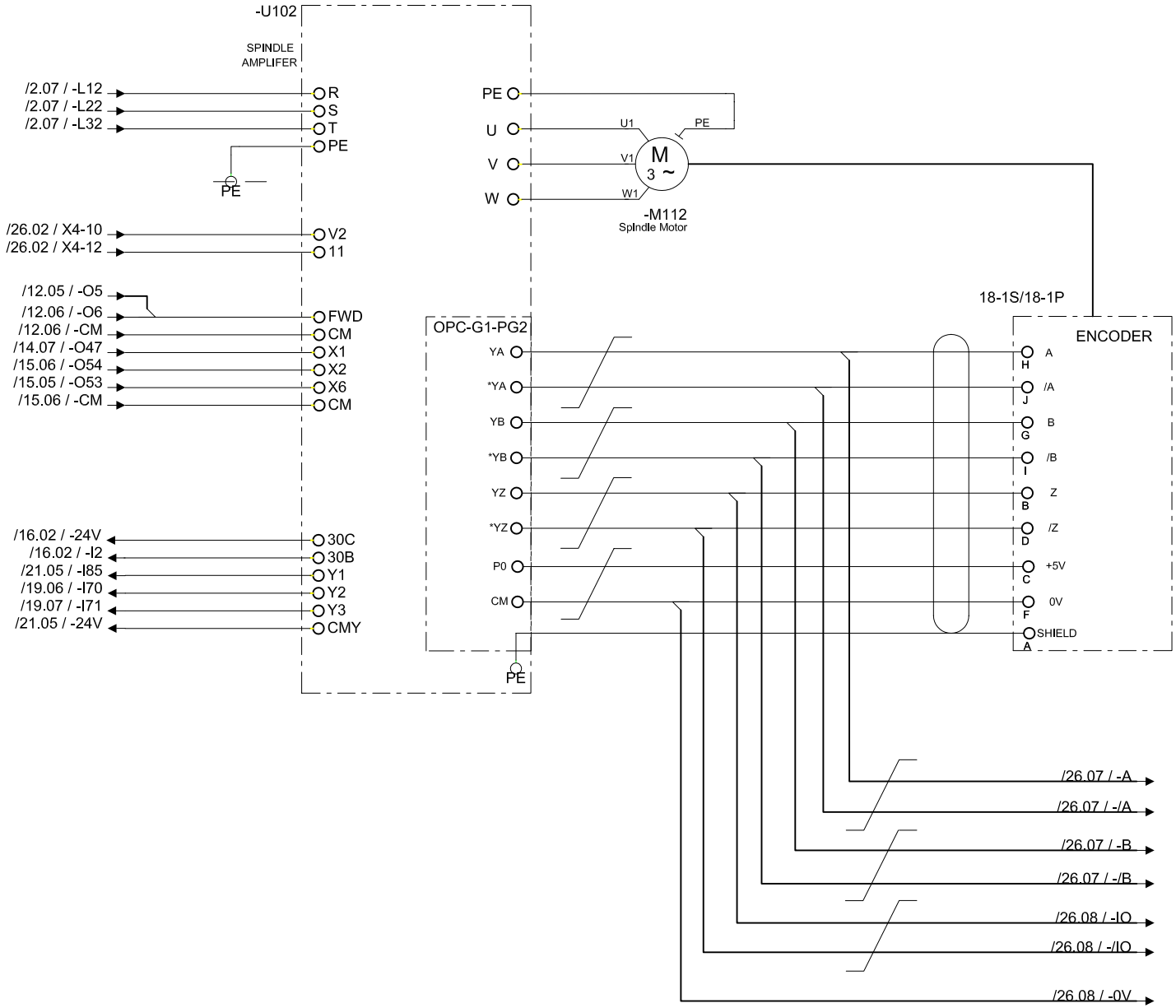
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 30
								Total Page: 46 Pg.



Front Page:+ORT/30

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			Date	2015/04/01			PAGE DESCRIPTION:	+
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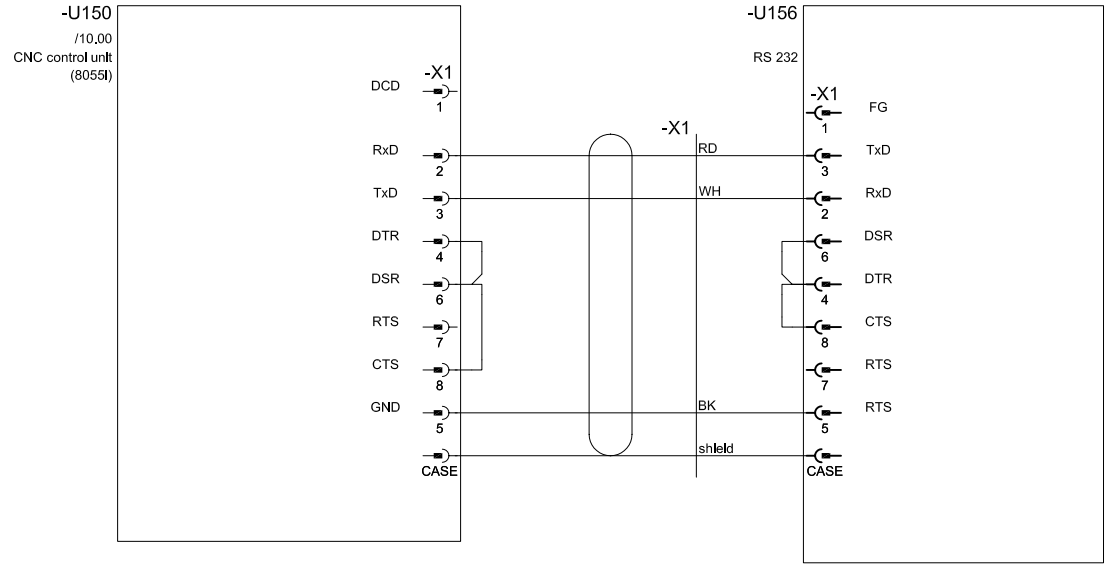
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Spindle Amplifier connection	A1.02	Current Page 31
										Total Page: 46 Pg.



			Date	2015/04/01				+
			Edit.	mark				Location:ORT
			Check.		Machine Name: e Mill			
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by mark	A1.02

PAGE DESCRIPTION:

RS232C CONNECTION

ACER

Circuit Diagram without DRO

For ATM 1054 & ATM 1050 with ATC

Taiwan: Ya-Gin Machine Tool Manufacturing Inc.
No. 101, 506 Lane, Seng-Tso Road
Seng Karng District, Taichung City, Taiwan
Tel: 886-4-2520-4120 Fax: 886-4-2520-4123

CA: Springwood Industrial, Inc.
2320 E. Valencia Drive
Fullerton, CA 92831
Tel: 714-871-5558 Fax: 714-871-5554

NJ: Klim Industrial, Inc.
244 N. Randolphville Rd.
Piscataway, NJ 08854
Tel: 732-752-9100 Fax: 732-752-9101

Revised 4/29/15

YA GIN MACHINE TOOL MANUFACTURING INC.

Tel +886-4-25204120
Fax +886-4-25204123

Company / Customer	
Plant designation	e Mill
Drawing number	MX-0
Commission	

Manufacturer (Company)	YA GIN MACHINE TOOL MANUFACTURING INC.
Path	
Project name	ACER-Fagor-8055i-MX-0
Make	
Types	
Mounting site	
Responsible for project	
Part feature	

Created for
Edited on 2015/04/01 from (abbr.) Mark Number of pages 46

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DIN_INV_30_1

Parts usage indication

DIN_TNP_30

Part number	Quantity	Designation	Model number	Manufacturer	DT	Function text	X-ref.
PYF14B-E	1	Relay socket		OMRON	-K202		+ORT/8.03
8055B	1	40 inputs & 24 output relay		YSM	-U1		+ORT/9.00
8055B	1	16 inputs & 8 output relay		YSM	-U2		+ORT/9.00
ASD-B2-1021-B	1	1KW		DELTA	-U105	Z AMPLIFER	+ORT/4.06
MY2NJ	1	DC24		OMRON	-K205		+ORT/31.03
BC62E0C-010	1	2P 10A		FUJI	-F103	4A	+ORT/2.05
BC62E0C-004	1	2P 4A		FUJI	-F102		+ORT/2.04
CU-40	1	220V 50/60Hz		Teco	-K101	CONTACT FOR AMPLIFIER	+ORT/6.02
ASD-B2-1021-B	1	1KW		DELTA	-U106	4 AMPLIFER	+ORT/24.00
PYF08B-E	1	Relay socket		OMRON	-K205		+ORT/31.03
PYF08B-E	1	Relay socket		OMRON	-K1		+ORT/12.01
ASD-B2-0721-B	1	750W		DELTA	-U103	X AMPLIFIER	+ORT/4.04
TR-0N	1	0.64-0.96A		FUJI	-F1	0.6~1A	+ORT/3.01
TR-0N	1	0.36-0.54A		FUJI	-F2	0.3~0.6A	+ORT/3.01
MY2NJ	1	DC24		OMRON	-K1		+ORT/12.01
VFS11-2037PM-AN	1	3PH-200V-3.7KW		Toshiba	-U102	SPINDLE AMPLIFER	+ORT/31.04
LC1E0601M6	1	220V 50/60Hz 2.2kw 1b		SCHNEI	-KM1	COOLANTMOTOR切削水	+ORT/6.01
MY4NJ	1	DC24		OMRON	-K202		+ORT/8.03
ASD-B2-0721-B	1	750W		DELTA	-U104	Y AMPLIFER	+ORT/4.05
NES-100-24	1			Meanwell	-G1	POWER SUPPLYFOR CONTROLLER	+ORT/4.00
MBK61-01	1	1P 1A		FUJI	-F105		+ORT/5.01
MBK63-10	1	3P 10A		FUJI	-F101		+ORT/2.03
S-150-24	1			Meanwell	-G2	POWER SUPPLYFOR I/O	+ORT/4.02

PLC

DIN_SPS_DIA

Project ACER-Fagor-8055i-Bed-A1.02

PLC designation	I/O	Page	Function text	Rack	Module	DT	Terminal
+ORT-U150	0V	+ORT/11.05	External Power Input				X9:18
+ORT-U150	0V	+ORT/11.06	External Power Input				X9:19
+ORT-U150	0V	+ORT/10.03	External Power Input				X2:18
+ORT-U150	0V	+ORT/10.04	External Power Input				X2:19
+ORT-U150	24V	+ORT/11.01	External Power Input				X7:1
+ORT-U150	24V	+ORT/11.02	External Power Input				X7:20
+ORT-U150	24V	+ORT/10.01	External Power Input				X2:1
+ORT-U150	24V	+ORT/10.02	External Power Input				X2:20
+ORT-U150	0V	+ORT/11.03	External Power Input				X2:18
+ORT-U150	0V	+ORT/11.04	External Power Input				X2:19
+ORT-U150	O1	+ORT/12.01	Emergency stop output				X2:2
+ORT-U150	O2	+ORT/12.02	X DRIVE ENABLE				X2:21
+ORT-U150	O3	+ORT/12.03	Y DRIVE ENABLE				X2:3
+ORT-U150	O4	+ORT/12.04	Z DRIVE ENABLE				X2:22
+ORT-U150	O5	+ORT/12.05	M3 SPINDLE FORWARD				X2:4
+ORT-U150	O6	+ORT/12.06	M4 SPINDLE REVERSE				X2:23
+ORT-U150	O7	+ORT/12.07	A DRIVE ENABLE				X2:5
+ORT-U150	O8	+ORT/12.08	A AXIS UNCLAMP				X2:24
+ORT-U150	O33	+ORT/13.01	SPINDLE CONTROL BY CNC ANALOG VAR.				X7:2
+ORT-U150	O34	+ORT/13.02	SPINDLE CONTROL BY MANUAL EXTERNAL V.R.				X7:21
+ORT-U150	O35	+ORT/13.03	COOLANT PUMP ON				X7:3
+ORT-U150	O36	+ORT/13.04	AIR BLOW ON				X7:22
+ORT-U150	O37	+ORT/13.05	Z BRAKE RELEASE				X7:4
+ORT-U150	O38	+ORT/13.06	MPG ON LED				X7:23
+ORT-U150	O39	+ORT/13.07	LUBE PUMP ON BY CNC				X7:5

PLC

DIN_SPS_DIA

Project ACER-Fagor-8055i-Bed-A1.02

PLC designation	I/O	Page	Function text	Rack	Module	DT	Terminal
+ORT-U150	O40	+ORT/13.08	SPINDLE COARS STOP				X7:24
+ORT-U150	O41	+ORT/14.01	SPINDLE FAS STOP				X7:6
+ORT-U150	O42	+ORT/14.02					X7:25
+ORT-U150	O43	+ORT/14.03					X7:7
+ORT-U150	O44	+ORT/14.04					X7:26
+ORT-U150	O45	+ORT/14.05					X7:8
+ORT-U150	O46	+ORT/14.06					X7:27
+ORT-U150	O47	+ORT/14.07	SPINDLE SERVO ON				X7:9
+ORT-U150	O48	+ORT/14.08	TOOL UNCLAMP SOLENOID				X7:28
+ORT-U150	O49	+ORT/15.01	ATC MAGAZINE IN TO SPINDLE				X7:10
+ORT-U150	O50	+ORT/15.02	ATC MAGAZINE OUT OF SPINDLE				X7:29
+ORT-U150	O51	+ORT/15.03	TOOL MAGAZINE C.W.				X7:11
+ORT-U150	O52	+ORT/15.04	TOOL MAGAZINE C.C.W.				X7:30
+ORT-U150	O53	+ORT/15.05	SPINDLE ORIENTATION BY CNC M19				X7:12
+ORT-U150	O54	+ORT/15.06	SPINDLE INDEX(ORT)BY INVERTER M29				X7:31
+ORT-U150	O55	+ORT/15.07	ATC MAGAZINE UP/HIGH SOL.				X7:13
+ORT-U150	O56	+ORT/15.08	ATC MAGAZINE DOWN/LOW SOL.				X7:32
+ORT-U150	I1	+ORT/16.01	Emergency Stop Input				X2:10
+ORT-U150	I2	+ORT/16.02	SPINDLE FAULT				X2:29
+ORT-U150	I3	+ORT/16.03	X DRIVE OK.=1				X2:11
+ORT-U150	I4	+ORT/16.04	Y DRIVE OK.=1				X2:30
+ORT-U150	I5	+ORT/16.05	Z DRIVE OK.=1				X2:12
+ORT-U150	I6	+ORT/16.06	A DRIVE OK.=1				X2:31
+ORT-U150	I7	+ORT/16.07	X AXIS HOME/LIMIT+SWITCH,N.C.				X2:13
+ORT-U150	I8	+ORT/16.08	X AXIS LIMIT-SWITCH,N.C.				X2:32

PLC

DIN_SPS_DIA

Project ACER-Fagor-8055i-Bed-A1.02

PLC designation	I/O	Page	Function text	Rack	Module	DT	Terminal
+ORT-U150	I9	+ORT/17.01	Y AXIS HOME/LIMIT+SWITCH,N.C.				X2:14
+ORT-U150	I10	+ORT/17.02	Y AXIS LIMIT-SWITCH,N.C.				X2:33
+ORT-U150	I11	+ORT/17.03	Z AXIS HOME/LIMIT+SWITCH,N.C.				X2:15
+ORT-U150	I12	+ORT/17.04	Z AXIS LIMIT-SWITCH,N.C.				X2:34
+ORT-U150	I13	+ORT/17.05	A AXIS HOME SWITCH,N.C.				X2:16
+ORT-U150	I14	+ORT/17.06	A AXIS UNCLAMP,N.O.				X2:35
+ORT-U150	I15	+ORT/17.07	A AXIS CLAMP,N.O.				X2:17
+ORT-U150	I16	+ORT/17.08	REMOTE START/STOP				X2:36
+ORT-U150	I97	+ORT/18.01	X AXIS SELECTION				X7:14
+ORT-U150	I98	+ORT/18.02	Y AXIS SELECTION				X7:33
+ORT-U150	I99	+ORT/18.03	Z AXIS SELECTION				X7:15
+ORT-U150	I100	+ORT/18.04	A AXIS SELECTION				X7:34
+ORT-U150	I101	+ORT/18.05	X1 RESOLUTION				X7:16
+ORT-U150	I102	+ORT/18.06	X10 RESOLUTION				X7:35
+ORT-U150	I103	+ORT/18.07	X100 RESOLUTION				X7:17
+ORT-U150	I104	+ORT/18.08	HANDWHEEL ENABLE				X7:36
+ORT-U150	I65	+ORT/19.01	SPINDLE HIGH GEAR SWITCH				X9:2
+ORT-U150	I66	+ORT/19.02	SPINDLE BRAKE LEVER				X9:21
+ORT-U150	I67	+ORT/19.03	SPINDLE MANUAL FORWARD SWITCH				X9:3
+ORT-U150	I68	+ORT/19.04	SPINDLE MANUAL REVERSE SWITCH				X9:22
+ORT-U150	I69	+ORT/19.05	SPINDLE CONTROL BY CNC				X9:4
+ORT-U150	I70	+ORT/19.06	SPINDLE SPEED ARRIVE				X9:23
+ORT-U150	I71	+ORT/19.07	SPINDLE ZERO SPEED=0,ROTATE=1				X9:5
+ORT-U150	I72	+ORT/19.08	COOLANT OVERLOAD				X9:24
+ORT-U150	I73	+ORT/20.01	LUBE LEVEL LOW=1,HIGH OK=0				X9:6

PLC

DIN_SPS_DIA

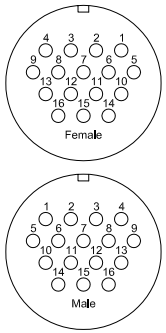
Project ACER-Fagor-8055i-Bed-A1.02

PLC designation	I/O	Page	Function text	Rack	Module	DT	Terminal
+ORT-U150	I74	+ORT/20.02					X9:25
+ORT-U150	I75	+ORT/20.03	ATC MAGAZINE TOOL SENSOR				X9:7
+ORT-U150	I76	+ORT/20.04					X9:26
+ORT-U150	I77	+ORT/20.05					X9:8
+ORT-U150	I78	+ORT/20.06					X9:27
+ORT-U150	I79	+ORT/20.07					X9:9
+ORT-U150	I80	+ORT/20.08					X9:28
+ORT-U150	I81	+ORT/21.01					X9:10
+ORT-U150	I82	+ORT/21.02					X9:29
+ORT-U150	I83	+ORT/21.03					X9:11
+ORT-U150	I84	+ORT/21.04					X9:30
+ORT-U150	I85	+ORT/21.05	Spindle Index(ORT)by Inverter OK by M29				X9:12
+ORT-U150	I86	+ORT/21.06	TOOL CLAMP SWITCH				X9:31
+ORT-U150	I87	+ORT/21.07	TOOL UNCLAMP SWITCH				X9:13
+ORT-U150	I88	+ORT/21.08	MANUAL TOOL UNCLAMP PUSH BUTTON				X9:32
+ORT-U150	I89	+ORT/22.01	AIR PRESSURE DETECT SWITCH				X9:14
+ORT-U150	I90	+ORT/22.02	MAGAZINE MOTOR OVERLOAD,NC				X9:33
+ORT-U150	I91	+ORT/22.03	ATC MAGAZINE COUNTING SENSOR				X9:15
+ORT-U150	I92	+ORT/22.04	ATC MAGAZINE HOME SENSOR				X9:34
+ORT-U150	I93	+ORT/22.05	ATC MAGAZINE OUT/SAFE				X9:16
+ORT-U150	I94	+ORT/22.06	ATC MAGAZINE IN/SPINDLE				X9:35
+ORT-U150	I95	+ORT/22.07	ATC MAGAZINE UP FOR MACHING				X9:17
+ORT-U150	I96	+ORT/22.08	ATC MAGAZINE DOWN FOR TOOL CHANGE				X9:36

DIN_STP_25

Pin-chart diagram

Connector	+ORT-11X1		
Pin target	Contact	Socket target	Page/path
+ORT-U158-B1:A	1	+ORT-U150-X5:1	+ORT/25.06
+ORT-U158-B1:B	2	+ORT-U150-X5:3	+ORT/25.07
+ORT-U158-B1:0V	3	+ORT-U150-X5:11	+ORT/25.07
+ORT-U158-B1:5V	4	+ORT-U150-X5:9	+ORT/25.07
+ORT-U158-B1:/A	5	+ORT-U150-X5:2	+ORT/25.07
+ORT-U158-S2:2	6	+ORT-U150:I11	+ORT/25.01
+ORT-U158-S2:3	7	+ORT-U150:I13	+ORT/25.01
+ORT-U158-S2:COM	8	+ORT-X9:24V	+ORT/25.02
+ORT-U158-B1:/B	9	+ORT-U150-X5:4	+ORT/25.07
+ORT-U158-S1:2	10	+ORT-U150:I3	+ORT/25.03
+ORT-U158-S1:3	11	+ORT-U150:I5	+ORT/25.02
+ORT-U158-S1:4	12	+ORT-U150:I7	+ORT/25.02
+ORT-U158-S1:5	13	+ORT-U150:I9	+ORT/25.02
+ORT-U158-H1:K	15	+ORT-X9:0V	+ORT/25.04
+ORT-U158-H1:A	16	+ORT-U150:O2	+ORT/25.03



Front Page:+INV/9

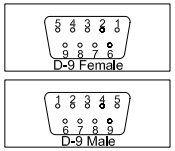
Next Page: +INV/11

			Date	2015/04/01			PAGE DESCRIPTION:		+
			Edit.	Mark					Location:INV
			Check.		Machine Name: e Mill		Pin-chart diagram: +ORT-11X1	A1.02	Current Page 10
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.

DIN_STP_25

Pin-chart diagram

Connector	+ORT-U106-CN2		
Pin target	Contact	Socket target	Page/path
+ORT-U116-X2:L	CASE	+ORT-U116-X2:N	+ORT/24.02
	4	+ORT-U116-X2:A	+ORT/24.02
	5	+ORT-U116-X2:B	+ORT/24.02
	6	+ORT-U116-X2:R	+ORT/24.02
	7	+ORT-U116-X2:R	+ORT/24.02
+ORT-U116-X2:S	8	+ORT-U116-X2:S	+ORT/24.02



Front Page:+INV/10

Next Page: +INV/12

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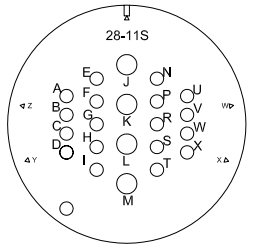
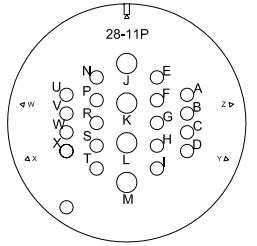
			Check.		Machine Name: e Mill		Pin-chart diagram: +ORT-U106-CN2		Current Page 11
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02	Total Page: 46 Pg.

DIN_STP_25

Pin-chart diagram

Connector	+ORT-U116-X1		
Pin target	Contact	Socket target	Page/path
+ORT-U116-S1:13	A	+ORT-U1-CN27:24V	+ORT/24.06
+ORT-U116-S1:14	B	+ORT-U1-CN27:I72	+ORT/24.06
+ORT-U116-S2:14	C	+ORT-U1-CN27:I73	+ORT/24.06
+ORT-U116-M1:	J	+ORT-U106:U	+ORT/24.06
+ORT-U116-M1:	K	+ORT-U106:V	+ORT/24.06
+ORT-U116-M1:	L	+ORT-U106:W	+ORT/24.06
+ORT-U116-M1:	M	+ORT-U106:PE	+ORT/24.06
+ORT-U116-Y1:A1	N	+ORT-U1:	+ORT/24.06
+ORT-U116-Y1:A2	P	+ORT-X9:0V	+ORT/24.06
+ORT-U116-S3:11	R	+ORT-U1-CN28:24V	+ORT/24.06
+ORT-U116-S3:12	S	+ORT-U1-CN28:I94	+ORT/24.06





Front Page:+INV/11

Next Page: +INV/13

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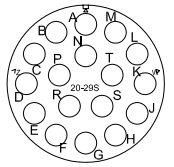
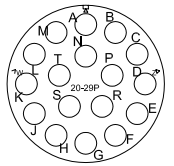
			Check.		Machine Name: e Mill		Pin-chart diagram: +ORT-U116-X1	A1.02	Current Page 12
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.

DIN_STP_25

Pin-chart diagram

Connector	+ORT-U116-X2		
Pin target	**Contact**	**Socket target**	**Page/path**
	A	+ORT-U106-CN2:4	+ORT/24.06
	B	+ORT-U106-CN2:5	+ORT/24.06
	C		+ORT/24.06
	D		+ORT/24.06
	F		+ORT/24.06
	G		+ORT/24.06
	L	+ORT-U106-CN2:CASE	+ORT/24.06
	N	+ORT-U106-CN2:CASE	+ORT/24.06
+ORT-U106-CN2:6	R	+ORT-U106-CN2:7	+ORT/24.06
+ORT-U106-CN2:8	S	+ORT-U106-CN2:8	+ORT/24.06





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Next Page: +INV/14

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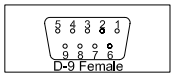
			Check.		Machine Name: e Mill		Pin-chart diagram: +ORT-U116-X2	A1.02	Current Page 13
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.

DIN_STP_25

Pin-chart diagram

Connector	+ORT-U156-X1		
Pin target	Contact	Socket target	Page/path
	1		+ORT/32.05
	2	+ORT-U150-X1:3	+ORT/32.05
	3	+ORT-U150-X1:2	+ORT/32.05
+ORT-U156-X1:6	4	+ORT-U156-X1:8	+ORT/32.05
	5	+ORT-U150-X1:5	+ORT/32.05
	6	+ORT-U156-X1:4	+ORT/32.05
	7		+ORT/32.05
	8	+ORT-U156-X1:4	+ORT/32.05
	CASE	+ORT-U150-X1:CASE	+ORT/32.05



Front Page:+INV/13

Next Page: +INV/15

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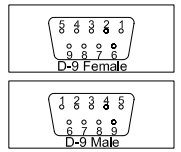
			Check.		Machine Name: e Mill		Pin-chart diagram: +ORT-U156-X1	A1.02	Current Page 14
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.

DIN_STP_25

Pin-chart diagram

Connector	+ORT-U150-X1		
Pin target	**Contact**	**Socket target**	**Page/path**
	1		+ORT/32.04
	2	+ORT-U156-X1:3	+ORT/32.04
	3	+ORT-U156-X1:2	+ORT/32.04
	4	+ORT-U150-X1:6	+ORT/32.04
	5	+ORT-U156-X1:5	+ORT/32.04
+ORT-U150-X1:4	6	+ORT-U150-X1:8	+ORT/32.04
	7		+ORT/32.04
	8	+ORT-U150-X1:6	+ORT/32.04
	CASE	+ORT-U156-X1:CASE	+ORT/32.04



Front Page:+INV/14

Next Page: +ORT/1

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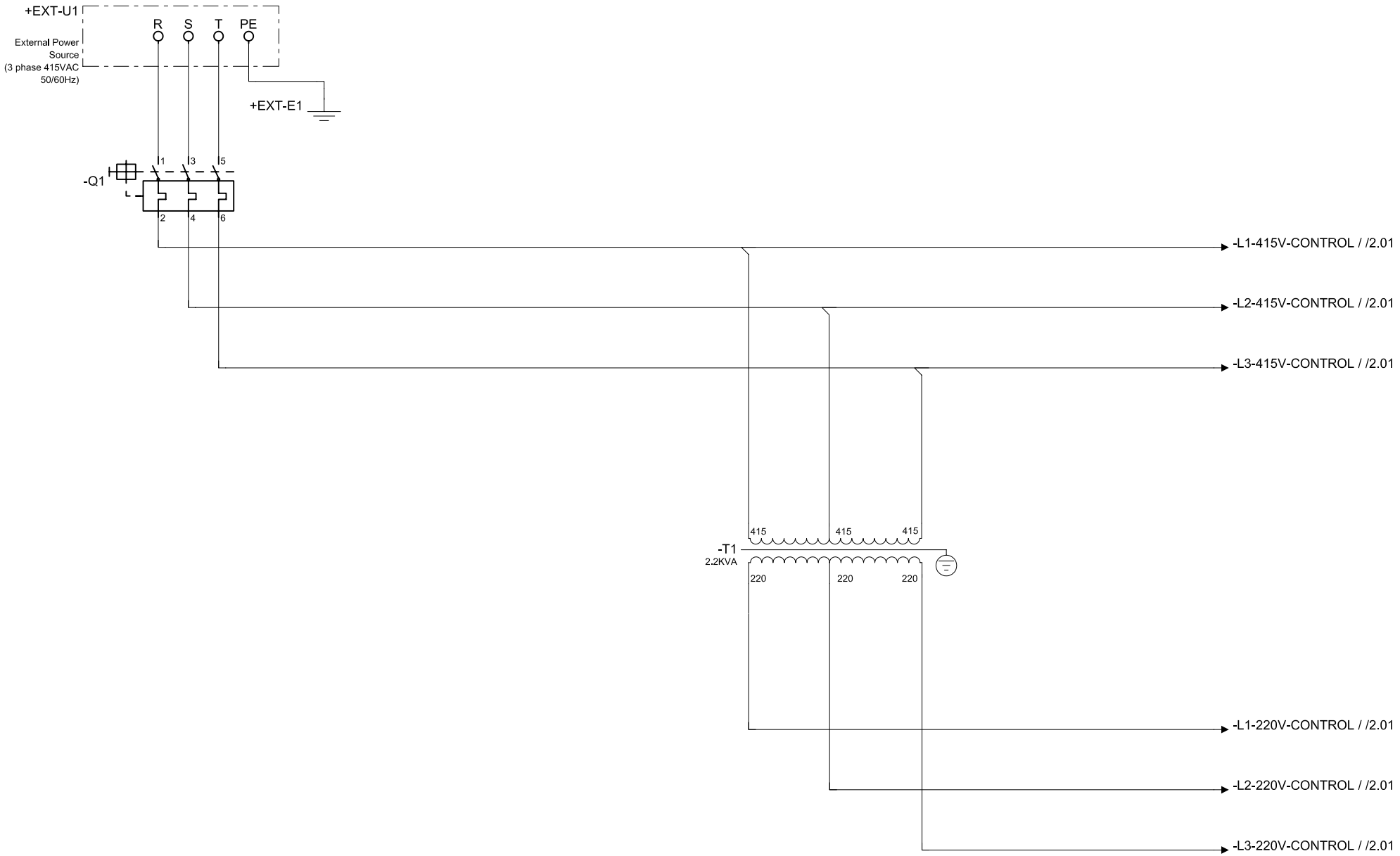
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02	Total Page: 46 Pg.



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Next Page: +ORT/2

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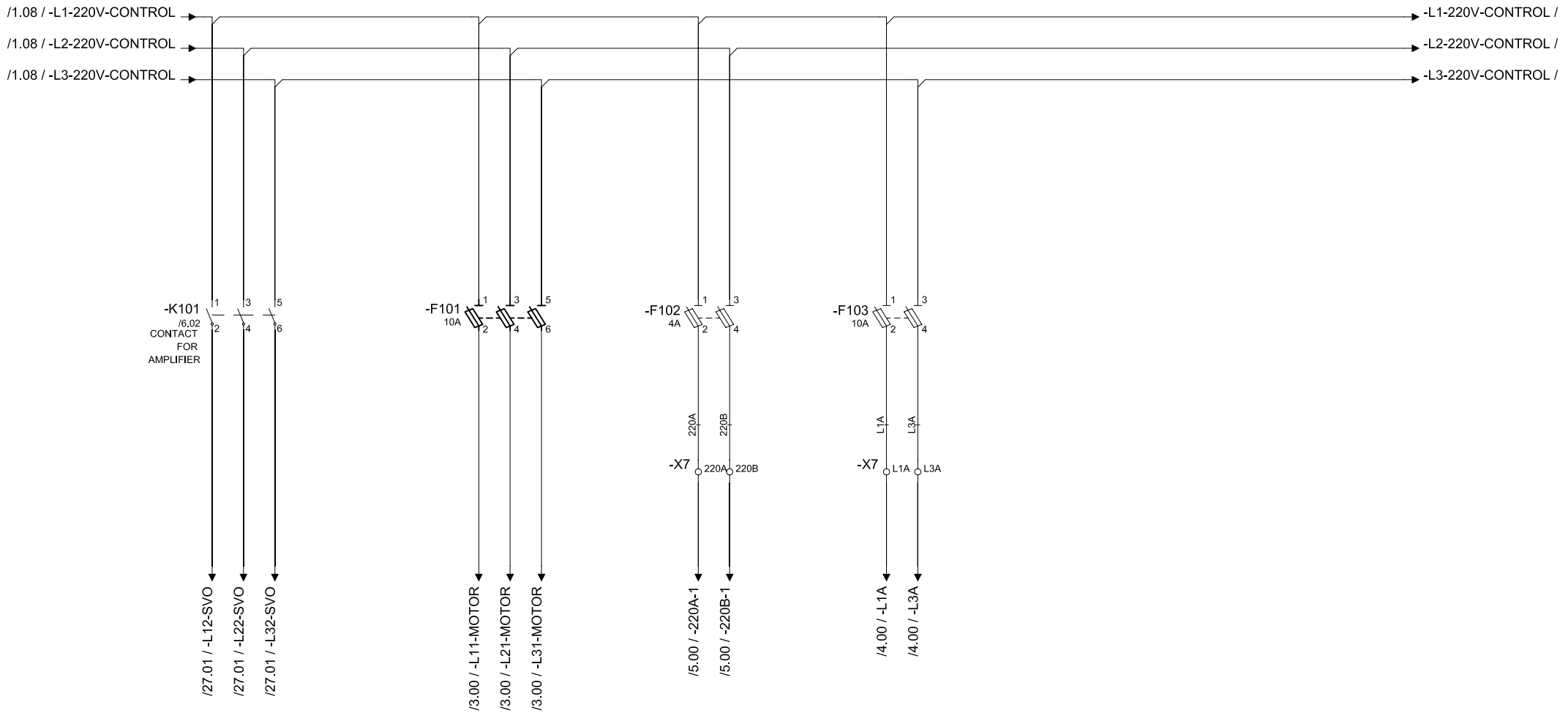
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by	A1.02	Current Page 1
							POWER IN CIRCUIT		Total Page: 46 Pg.



Front Page:+ORT/1

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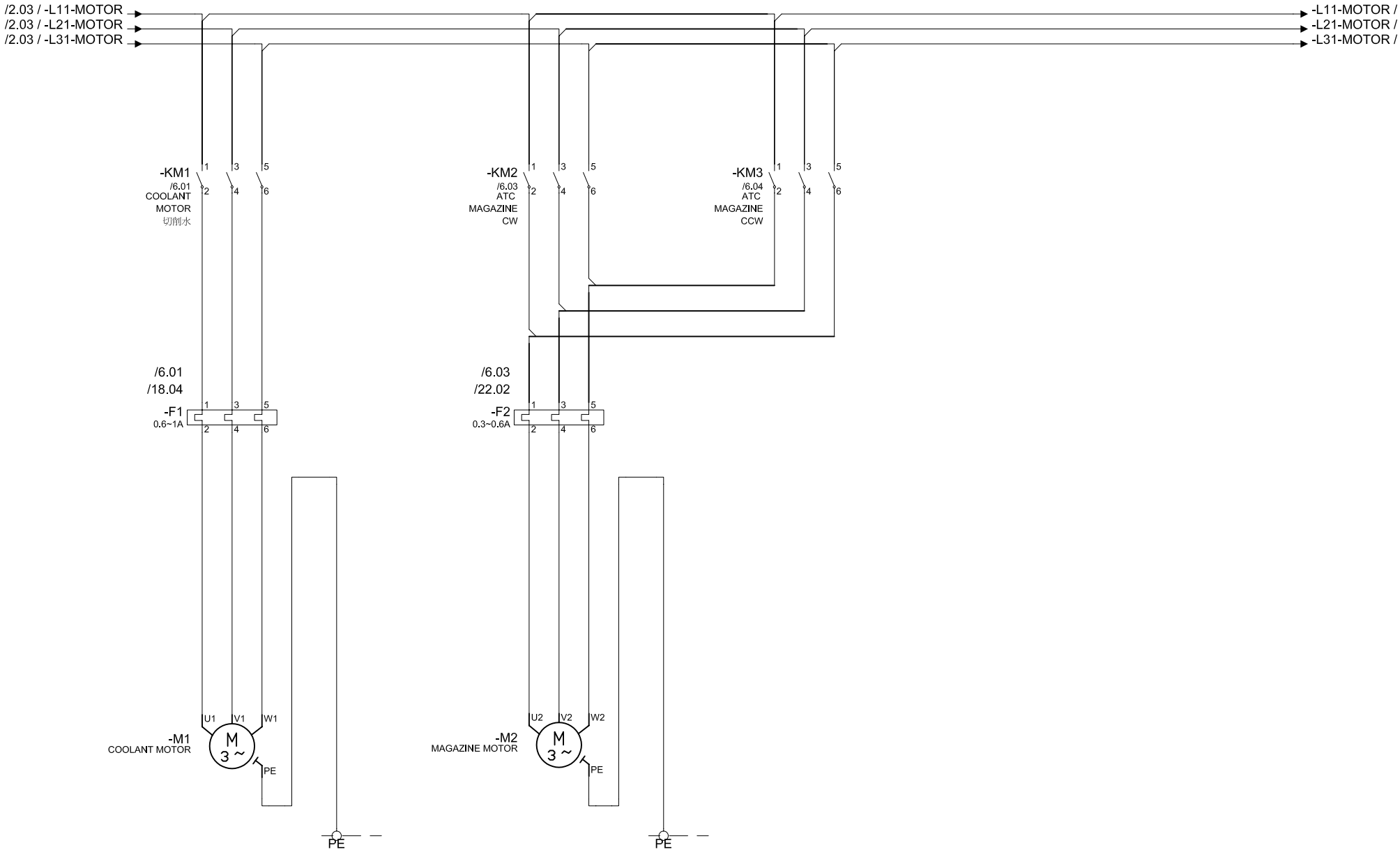
			Check.		Machine Name: e Mill		A1.02	Current Page 2
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Total Page: 46 Pg.

PAGE DESCRIPTION:

3 PHASE 220VAC CONTROL CIRCUIT1



Front Page:+ORT/2

Next Page: +ORT/4

			Date	2015/04/01			PAGE DESCRIPTION:		+
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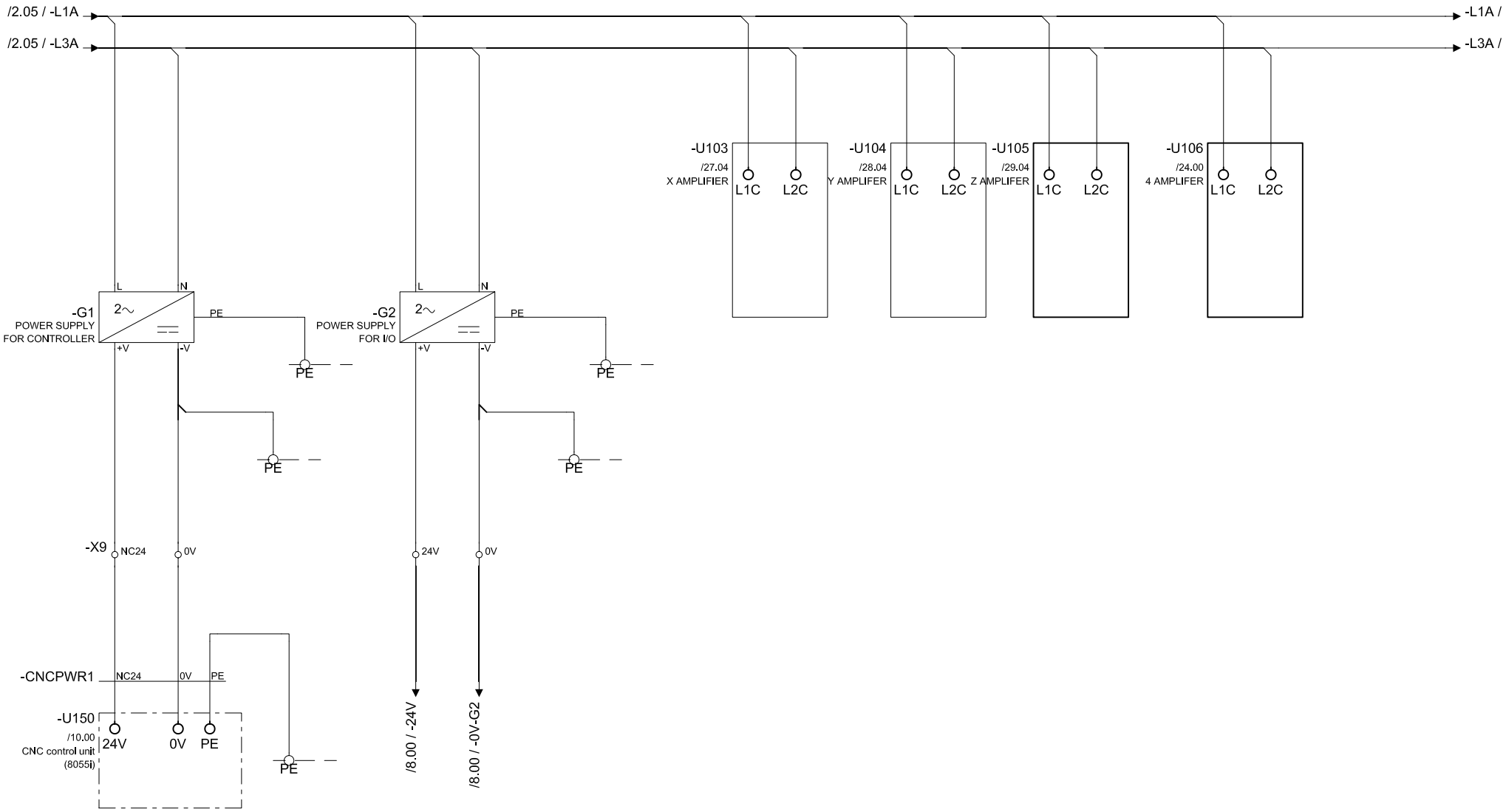
			Check.		Machine Name: e Mill		3 PHASE 220VAC MOTOR CONTROL CIRCUIT-1	A1.02	Current Page 3
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.



Front Page:+ORT/3

Next Page: +ORT/5

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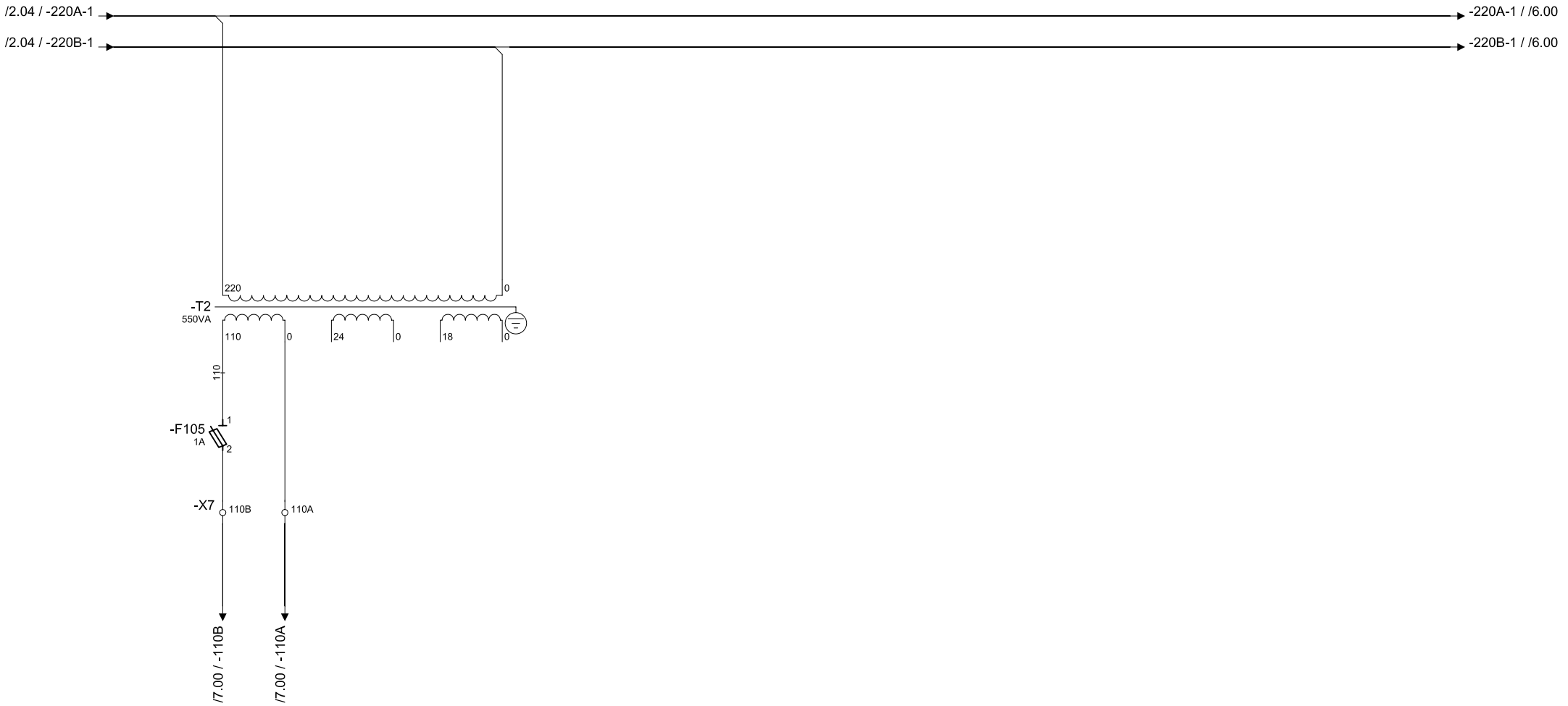
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02

PAGE DESCRIPTION:

AC220VAC CONTROL CIRCUIT-1



Front Page:+ORT/4

Next Page: +ORT/6

			Date	2015/04/01			PAGE DESCRIPTION:		+
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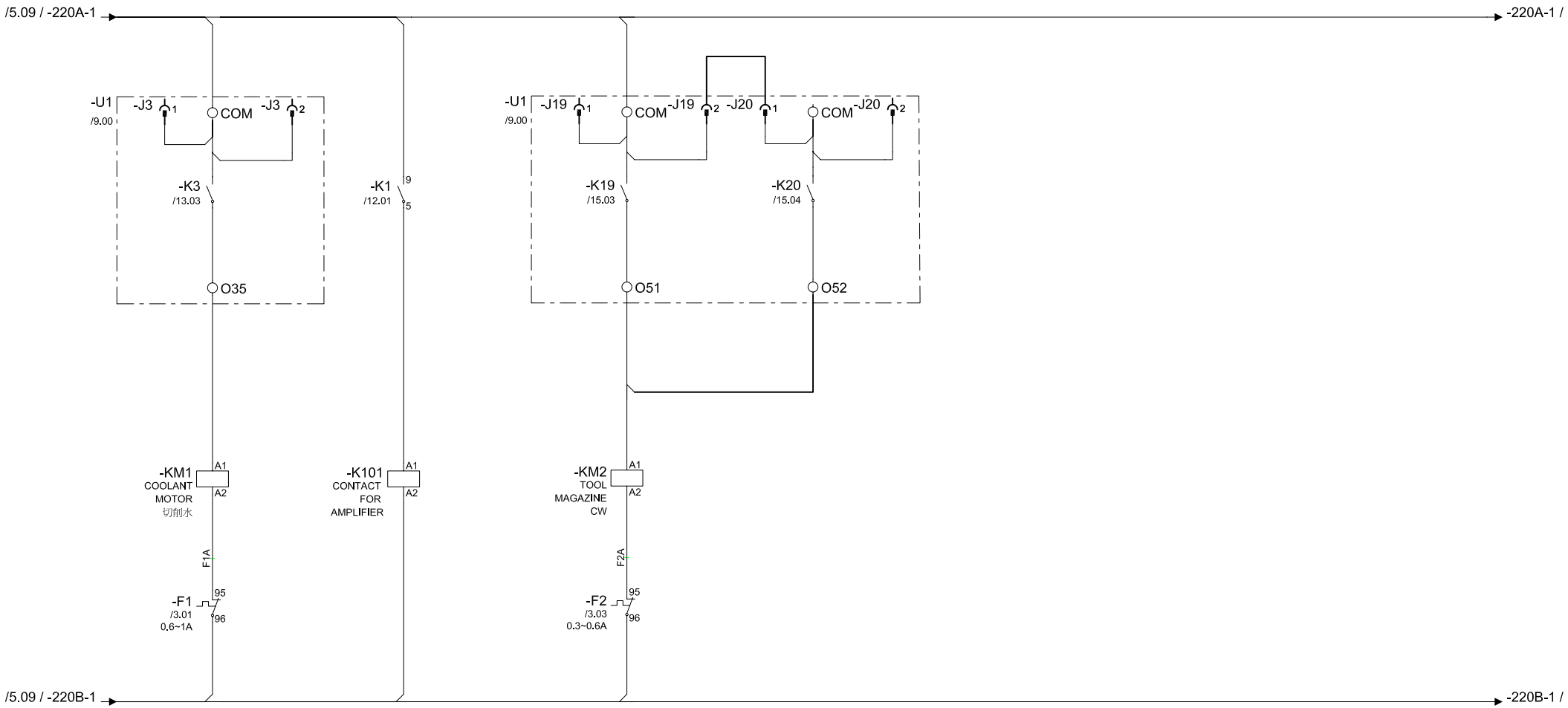
			Check.		Machine Name: e Mill		AC220VAC CONTROL CIRCUIT-2	A1.02	Current Page 5
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.



1 — 2 /3.01
3 — 4 /3.01
5 — 6 /3.01

1 — 2 /2.01
3 — 4 /2.01
5 — 6 /2.01

1 — 2 /3.03
3 — 4 /3.03
5 — 6 /3.03

Front Page:+ORT/5

Next Page: +ORT/7

			Date	2015/04/01			PAGE DESCRIPTION:	+
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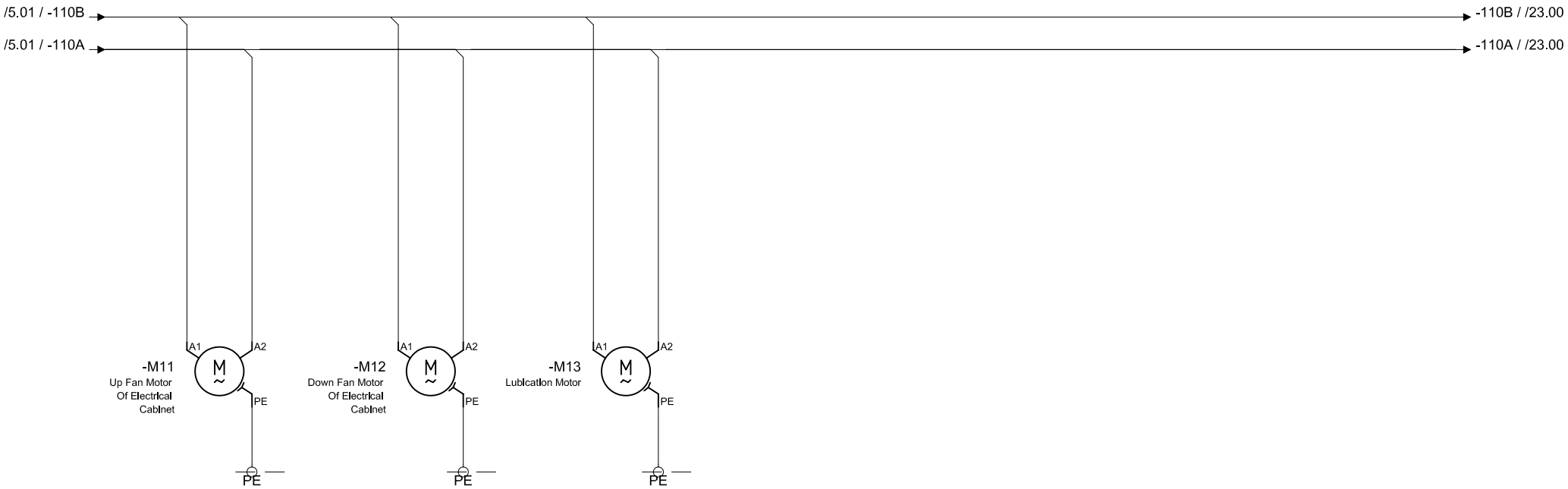
			Check.		Machine Name: e Mill		AC220VAC CONTROL CIRCUIT-3	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 6 / Total Page: 46 Pg.



Front Page:+ORT/6

Next Page: +ORT/8

			Date	2015/04/01			PAGE DESCRIPTION:	+	
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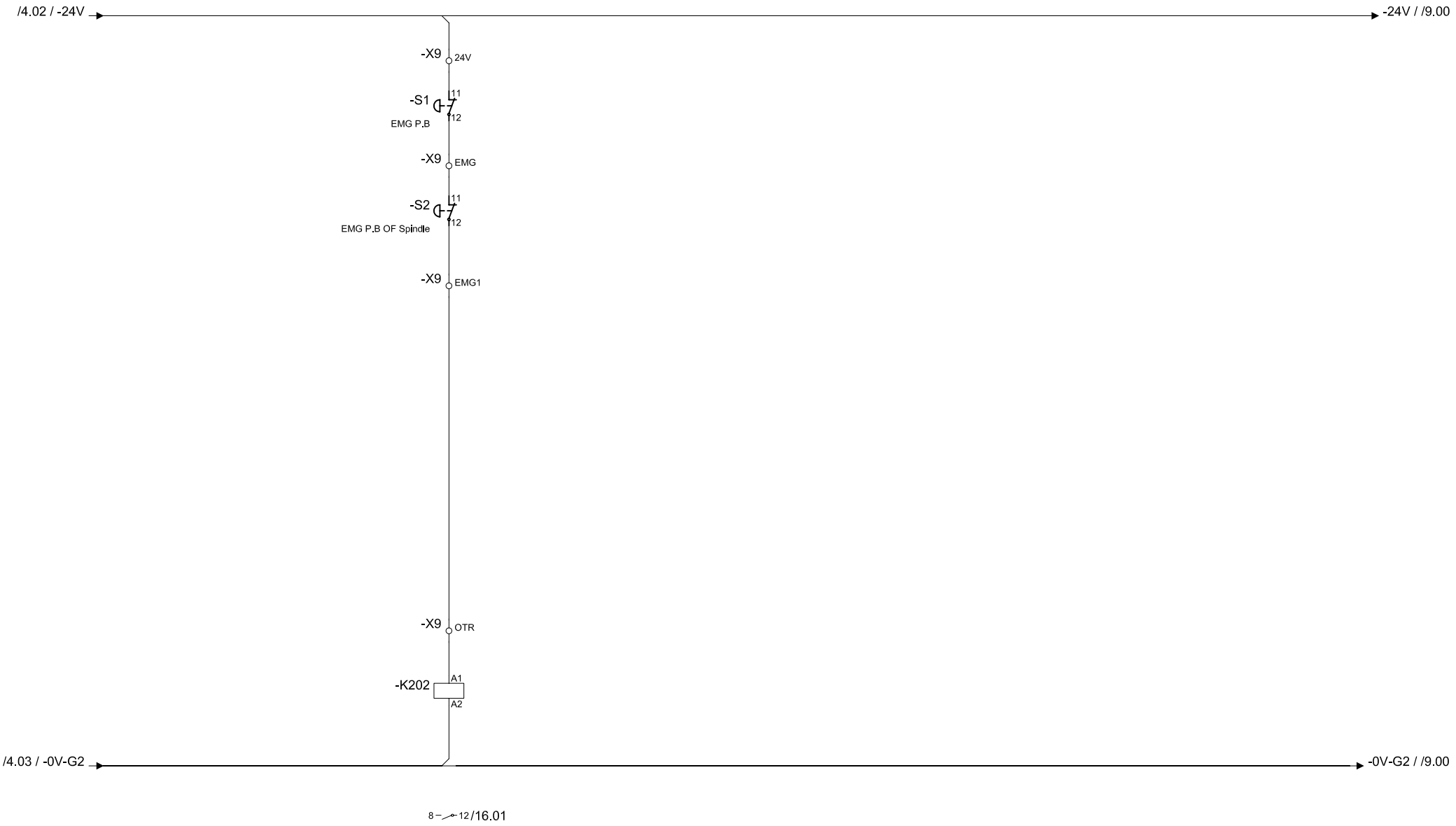
			Check.		Machine Name: e Mill		AC220VAC CONTROL CIRCUIT-4	A1.02	Current Page 7
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark		Total Page: 46 Pg.



Front Page:+ORT/7

Next Page: +ORT/9

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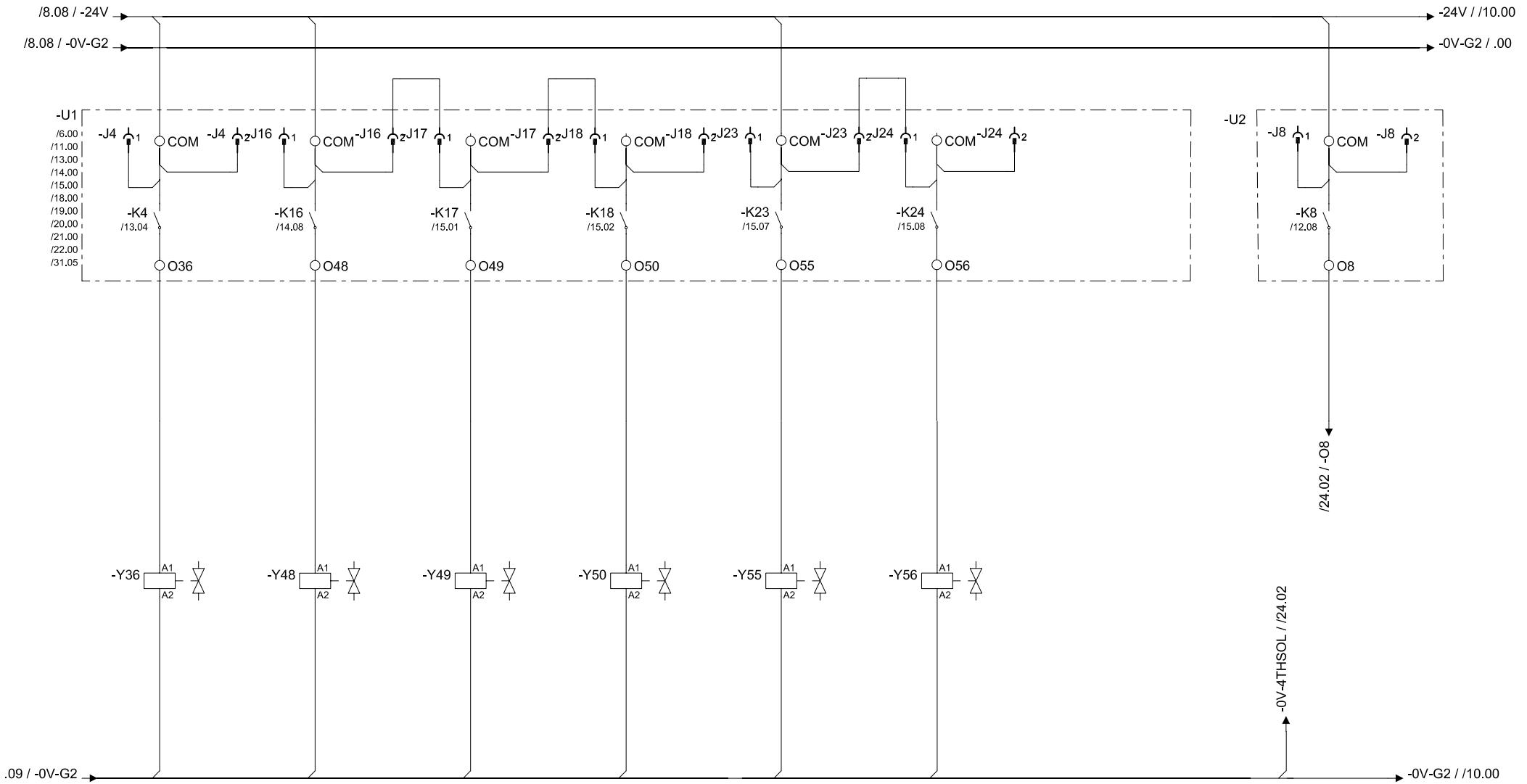
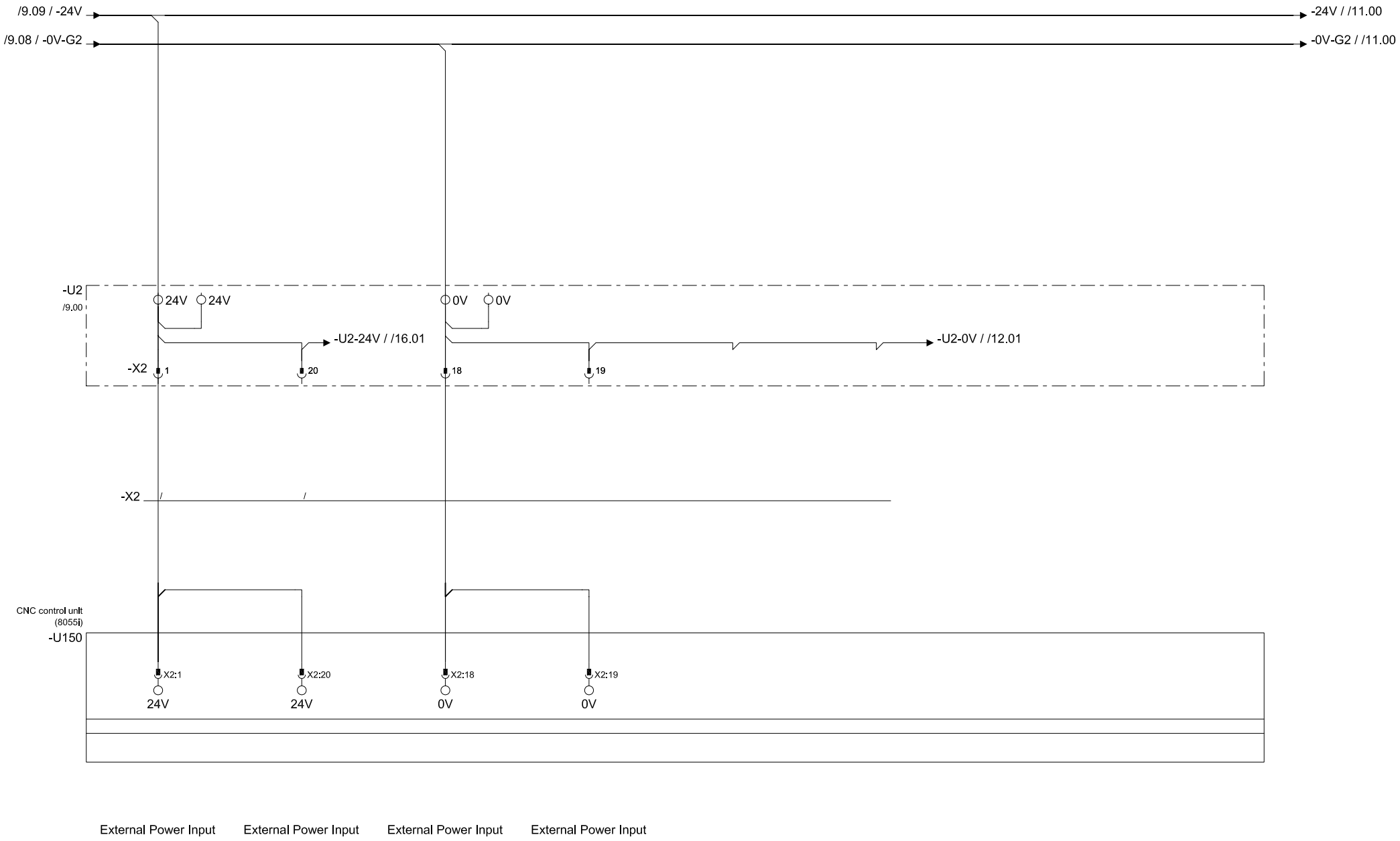
			Check.		Machine Name: e Mill				
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Emergency stop circuit-1	A1.02



Front Page:+ORT/8
Next Page: +ORT/10

			Date	2015/04/01			PAGE DESCRIPTION:	+
			Edit.	Mark				Location:ORT
			Check.		Machine Name: e Mill		DC 24V CIRCUIT1	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 9 / Total Page: 46 Pg.



Front Page:+ORT/9

Next Page: +ORT/11

			Date	2015/04/01			PAGE DESCRIPTION:	+
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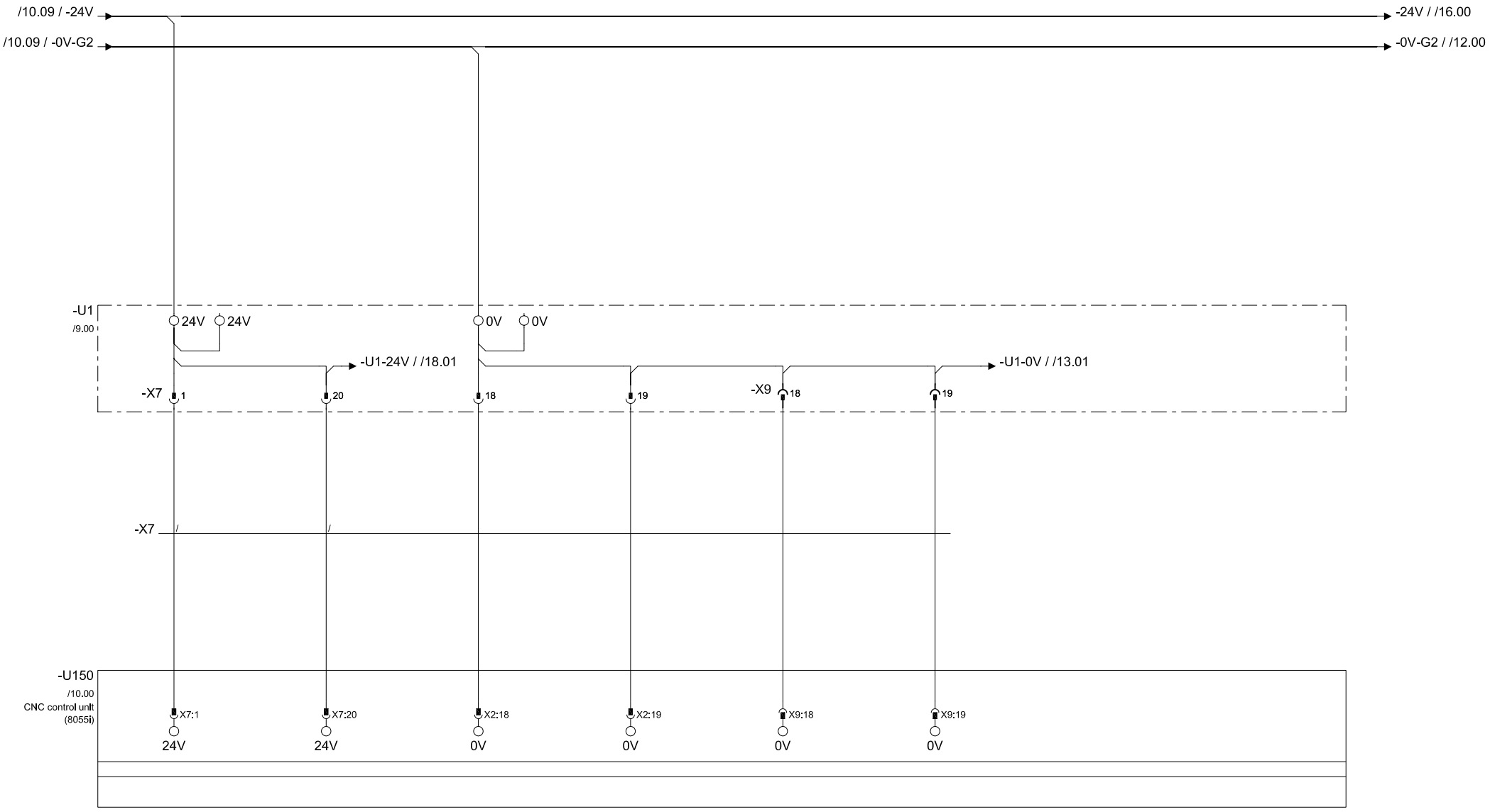
			Check.		Machine Name: e Mill		IO common connection-1 for X2	
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02

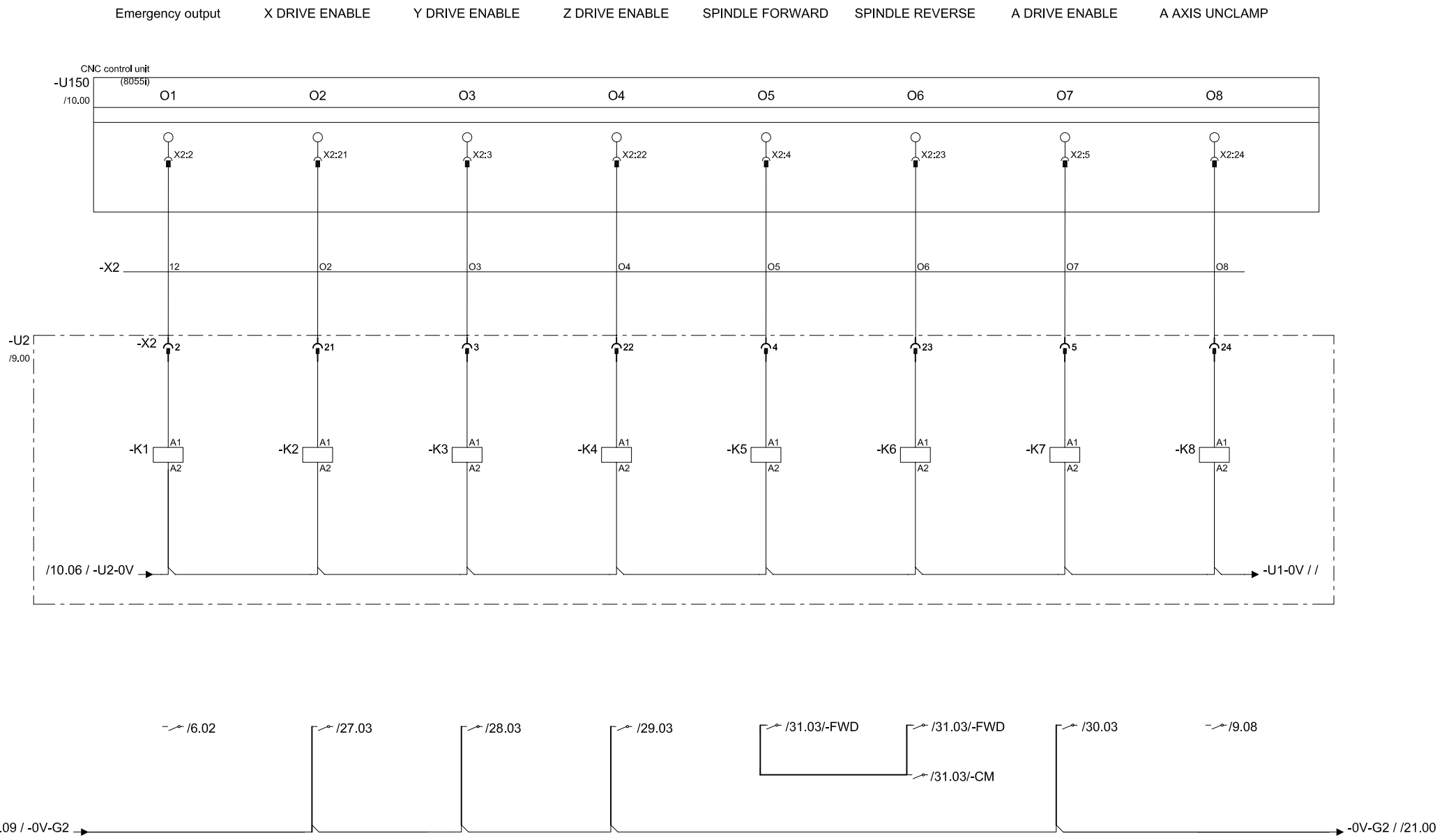


External Power Input External Power Input External Power Input External Power Input External Power Input External Power Input

Front Page:+ORT/10

Next Page: +ORT/12

			Date	2015/04/01			PAGE DESCRIPTION:	+
			Edit.	Mark				Location:ORT
			Check.		Machine Name: e Mill		IO common connection-2 for X7&X9	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 11 / Total Page: 46 Pg.



Front Page:+ORT/11

Next Page: +ORT/13

			Date	2015/04/01			PAGE DESCRIPTION:	+
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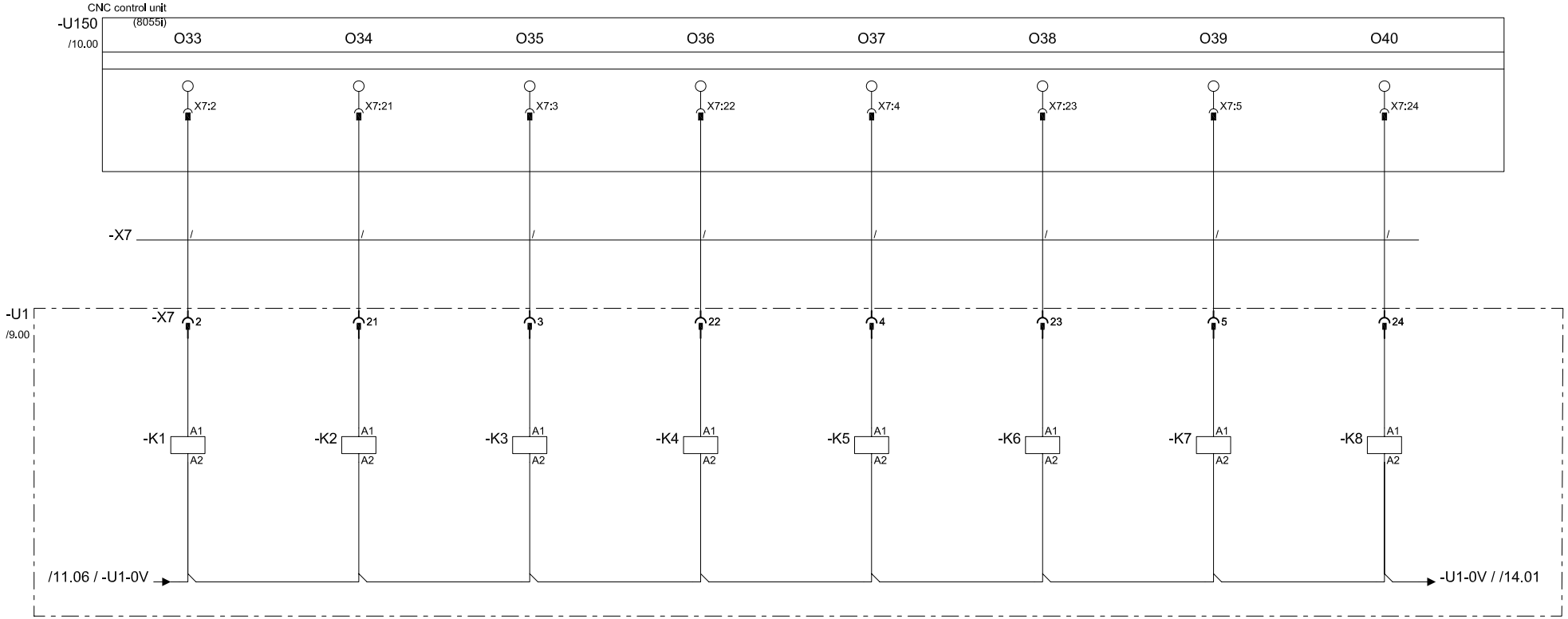
			Check.		Machine Name: e Mill		PLC I/O OUTPUT CIRCUIT1(O1~O8)	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 12 / Total Page: 46 Pg.

COOLANT PUMP AIR BLOW MPG ON LED

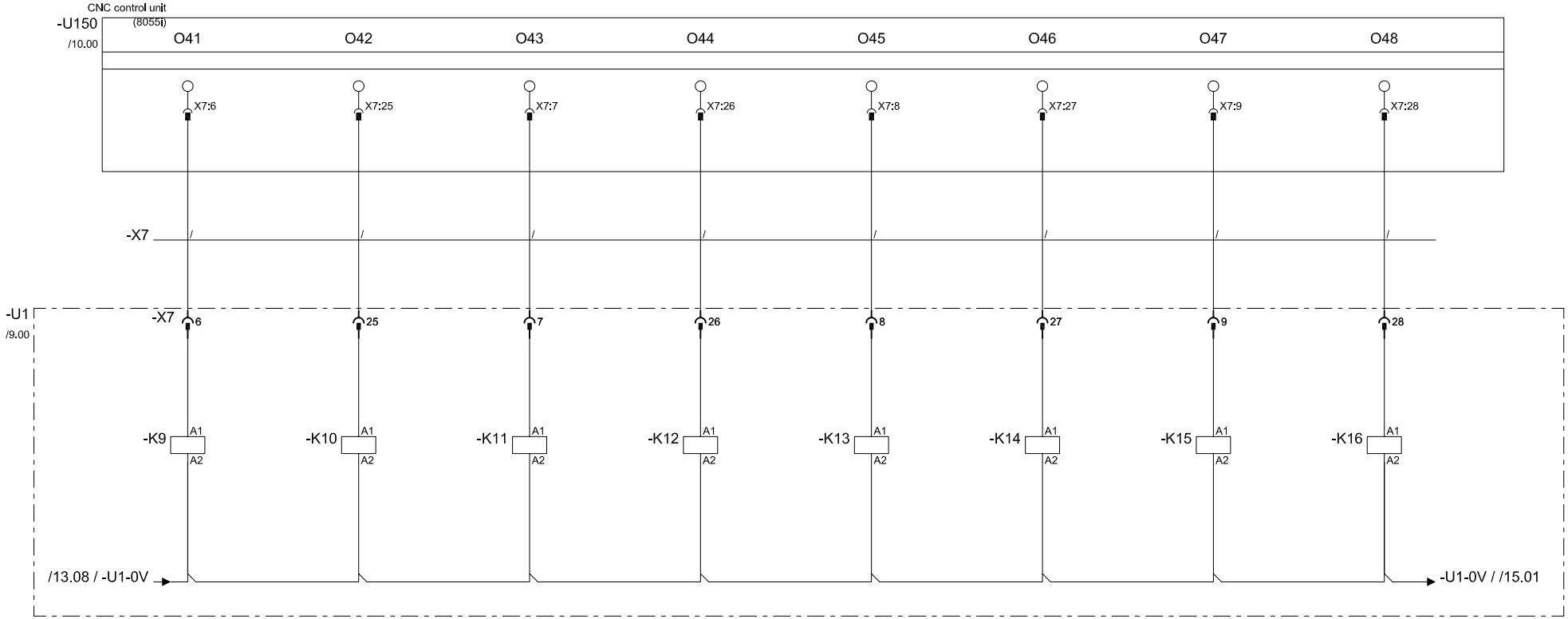


/6.01 /9.01 /25.03

Front Page:+ORT/12
Next Page: +ORT/14

			Date	2015/04/01			PAGE DESCRIPTION:	+
			Edit.	Mark				Location:ORT
			Check.		Machine Name: e Mill		PLC I/O OUTPUT CIRCUIT2(O33~O40)	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 13 / Total Page: 46 Pg.

SPINDLE SERVO ON TOOL UNCLAMP



/31.03/-X1

/31.03/-CM

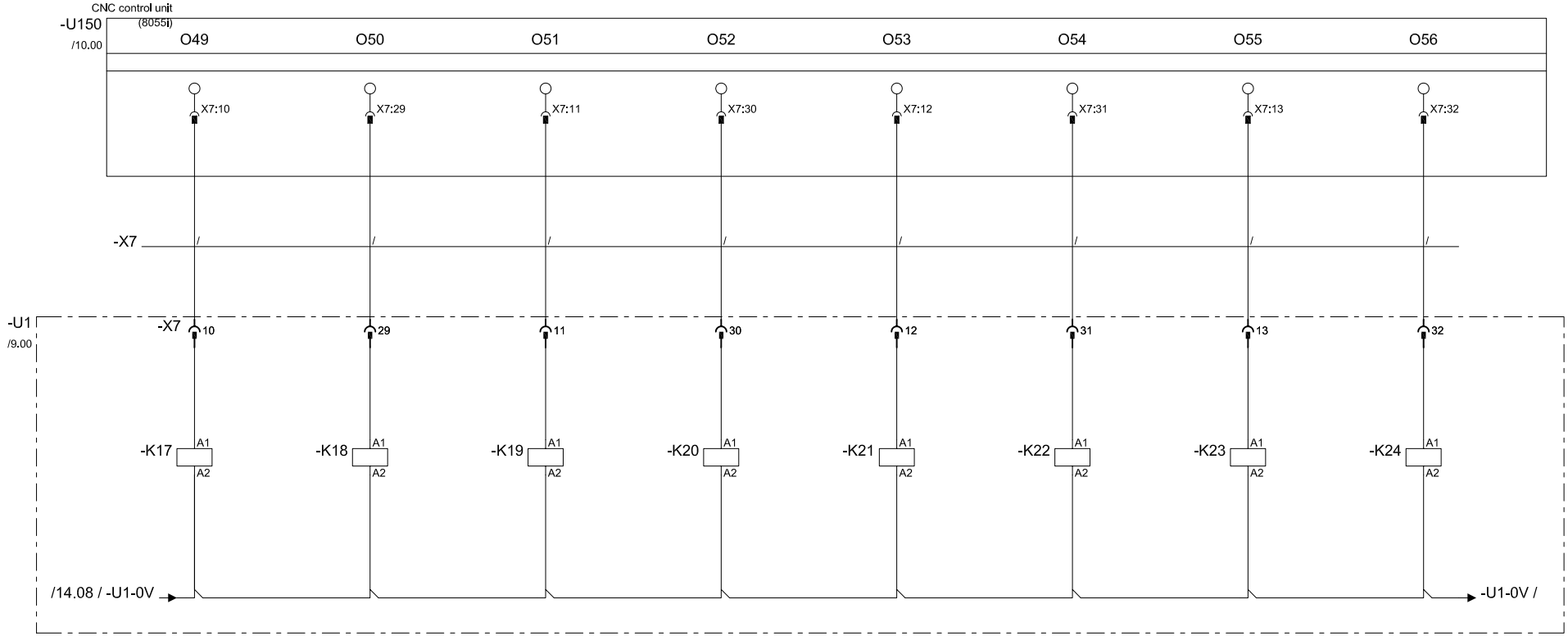
/9.02

Front Page:+ORT/13

Next Page: +ORT/15

			Date	2015/04/01			PAGE DESCRIPTION:	+
			Edit.	Mark				Location:ORT
			Check.		Machine Name: e Mill		PLC I/O OUTPUT CIRCUIT3(O41~O48)	
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02

ATC MAG. IN | ATC MAG. OUT | TOOL MAG. CW | TOOL MAG. CCW | SPINDLE ORIENT. | SPINDLE INDEX | ATC MAG. UP | ATC MAG. DOWN



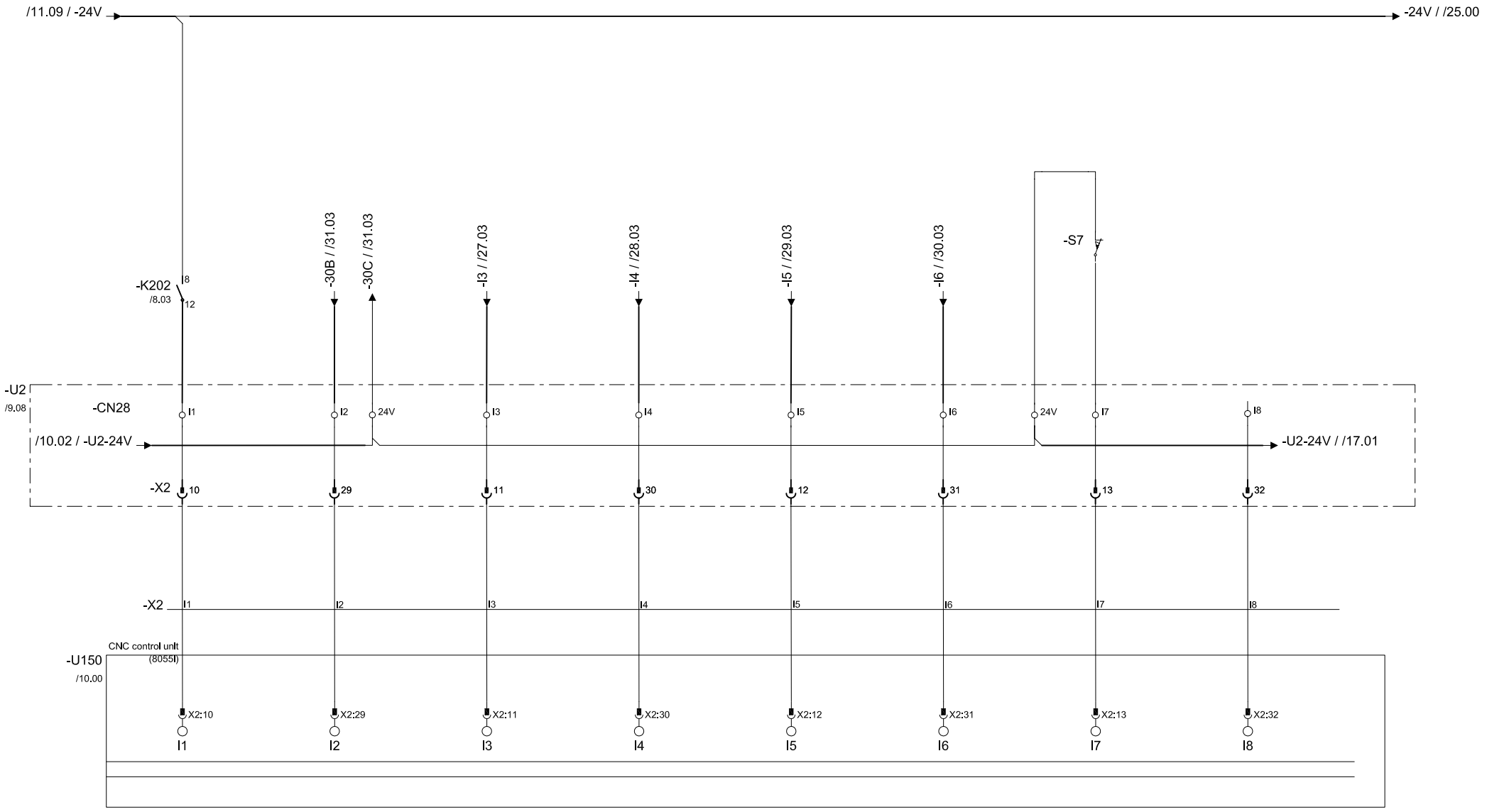
/9.03 | /9.04 | /6.03 | /6.04 | /31.03/-X6 | /31.03/-X2 | /9.05 | /9.06

/31.03/-CM

Front Page:+ORT/14

Next Page: +ORT/16

			Date	2015/04/01			PAGE DESCRIPTION:	+
			Edit.	Mark			PLC I/O OUTPUT CIRCUIT4(O49~O56)	Location:ORT
			Check.		Machine Name: e Mill			A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 15 / Total Page: 46 Pg.

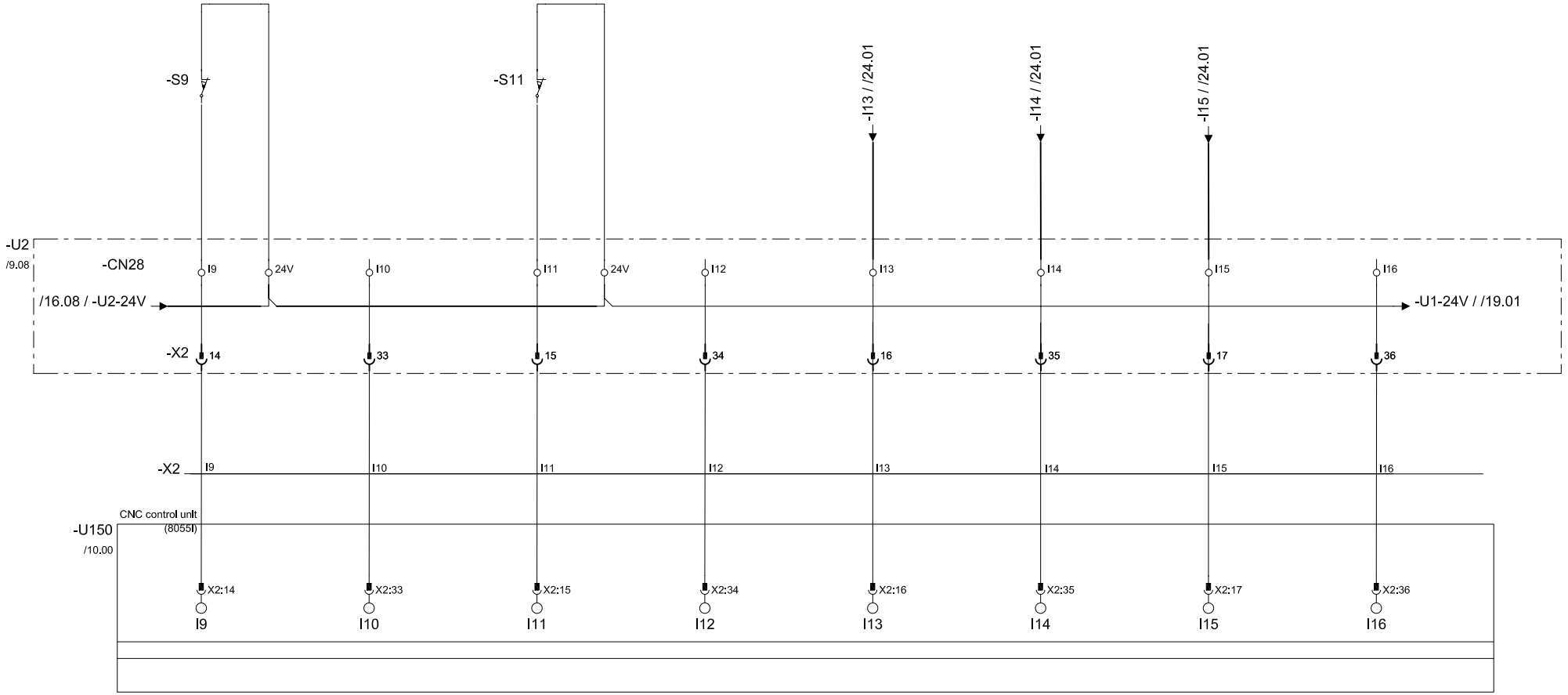


Emergency Input | SPINDLE FAULT | X DRIVE OK. | Y DRIVE OK. | Z DRIVE OK. | A DRIVE OK. | X AXIS HOME | X AXIS L.S.

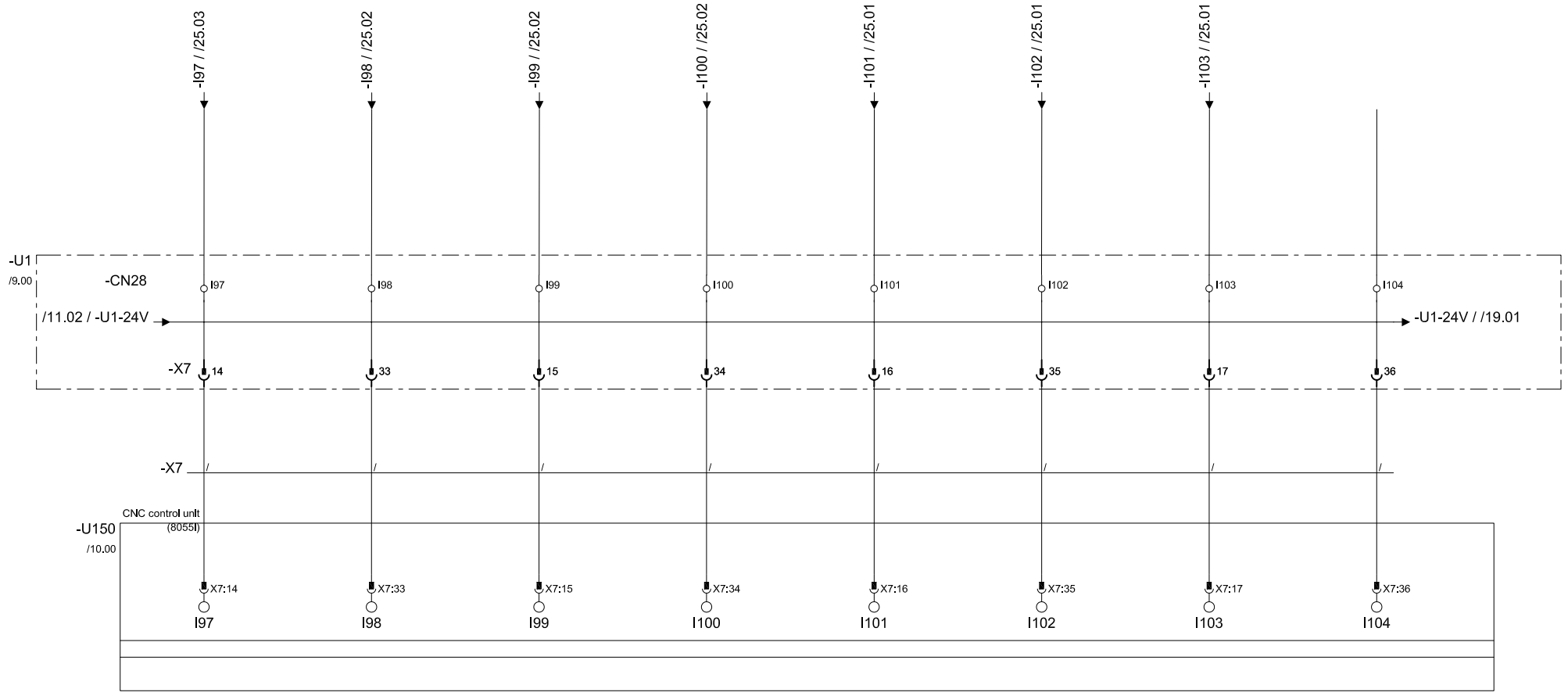
Front Page:+ORT/15

Next Page: +ORT/17

			Date	2015/04/01			+	
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill	PAGE DESCRIPTION: PLC I/O INPUT CIRCUIT1(I1~I8)	A1.02	Current Page 16
Modification	Date	Name	Standard		Origin / Crea. for	Crea. by Mark		Total Page: 46 Pg.



Y AXIS HOME | Y AXIS L.S. | Z AXIS HOME | Z AXIS L.S. | A AXIS HOME | A AXIS UNCLAMP | A AXIS CLAMP

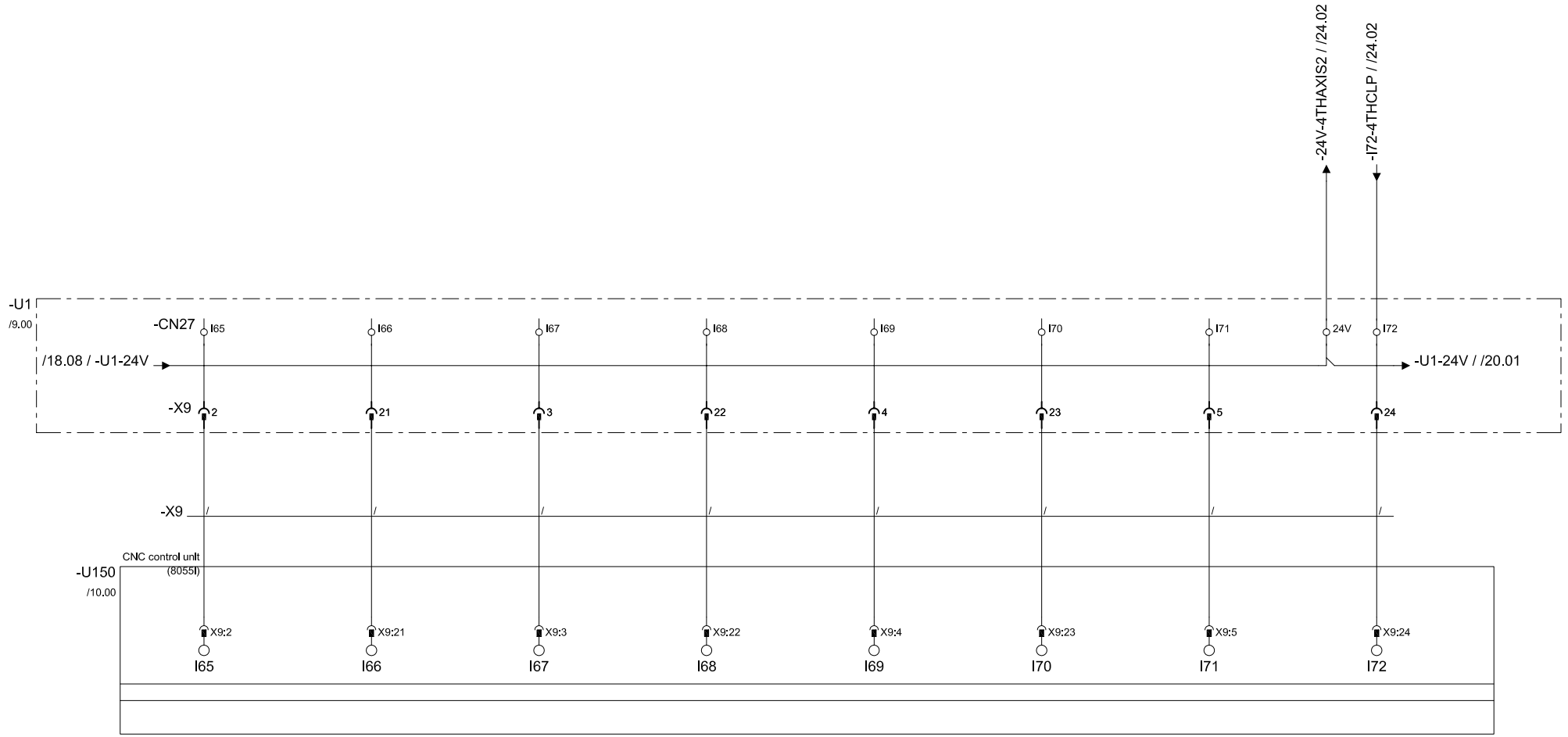


X SELECTION | Y SELECTION | Z SELECTION | A SELECTION | X1 RESOLUTION | X10 RESOLUTION | X100 RESOLUTION | HANDWHEEL ENABLE

Front Page:+ORT/17

Next Page: +ORT/19

			Date	2015/04/01			+	
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill		A1.02	Current Page 18
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by mark	PAGE DESCRIPTION: PLC I/O INPUT CIRCUIT3(I97~I104)	Total Page: 46 Pg.



SPINDLE SPEED ARRIVE SPINDLE ZERO SPEED COOLANT OVERLOAD

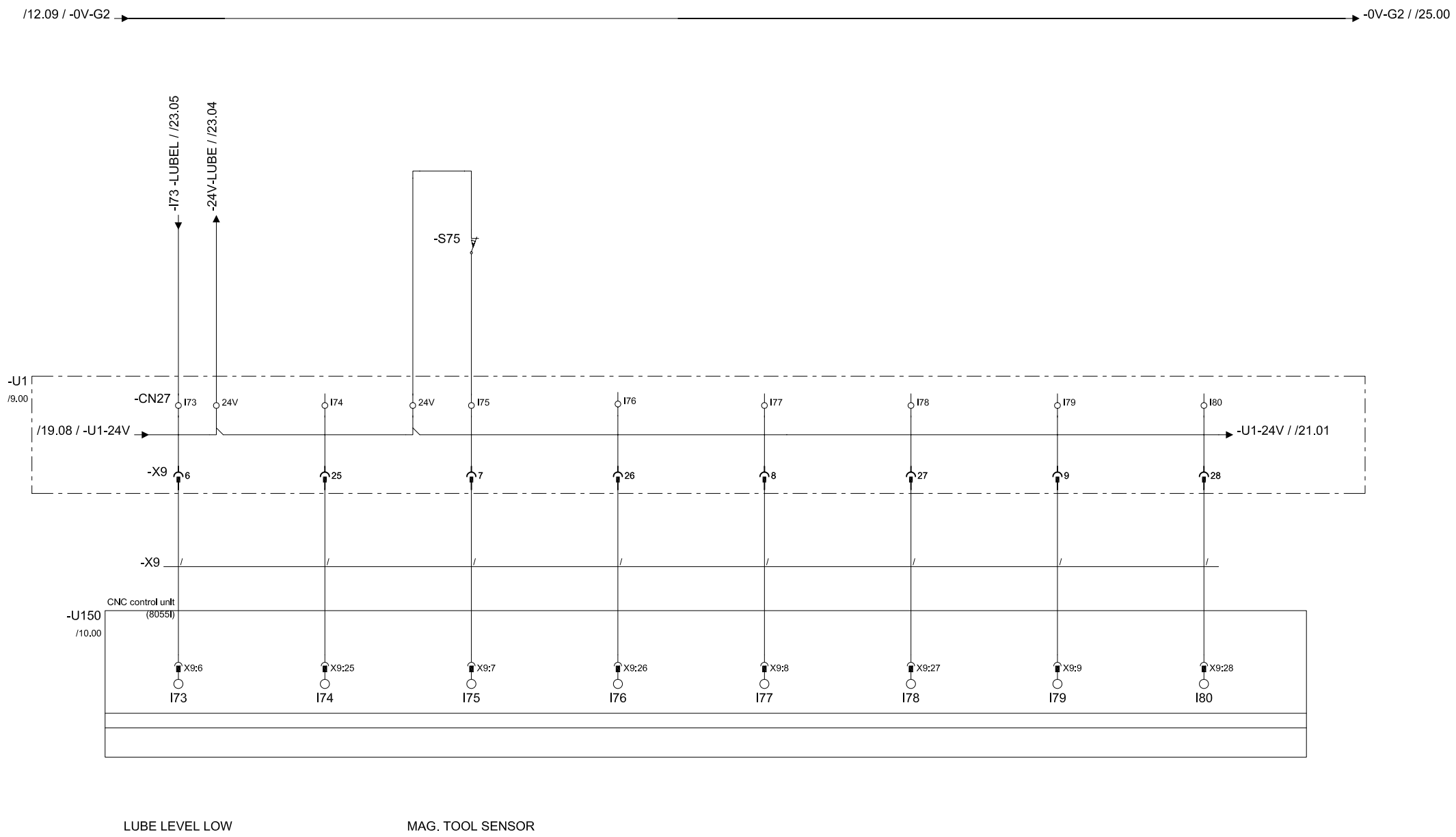
Front Page:+ORT/18

Next Page: +ORT/20

			Date	2015/04/01			+	
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill		A1.02	Current Page 19
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Total Page: 46 Pg.

PAGE DESCRIPTION:

PLC I/O INPUT CIRCUIT4(I65~I72)



LUBE LEVEL LOW

MAG. TOOL SENSOR

Front Page:+ORT/19

Next Page: +ORT/21

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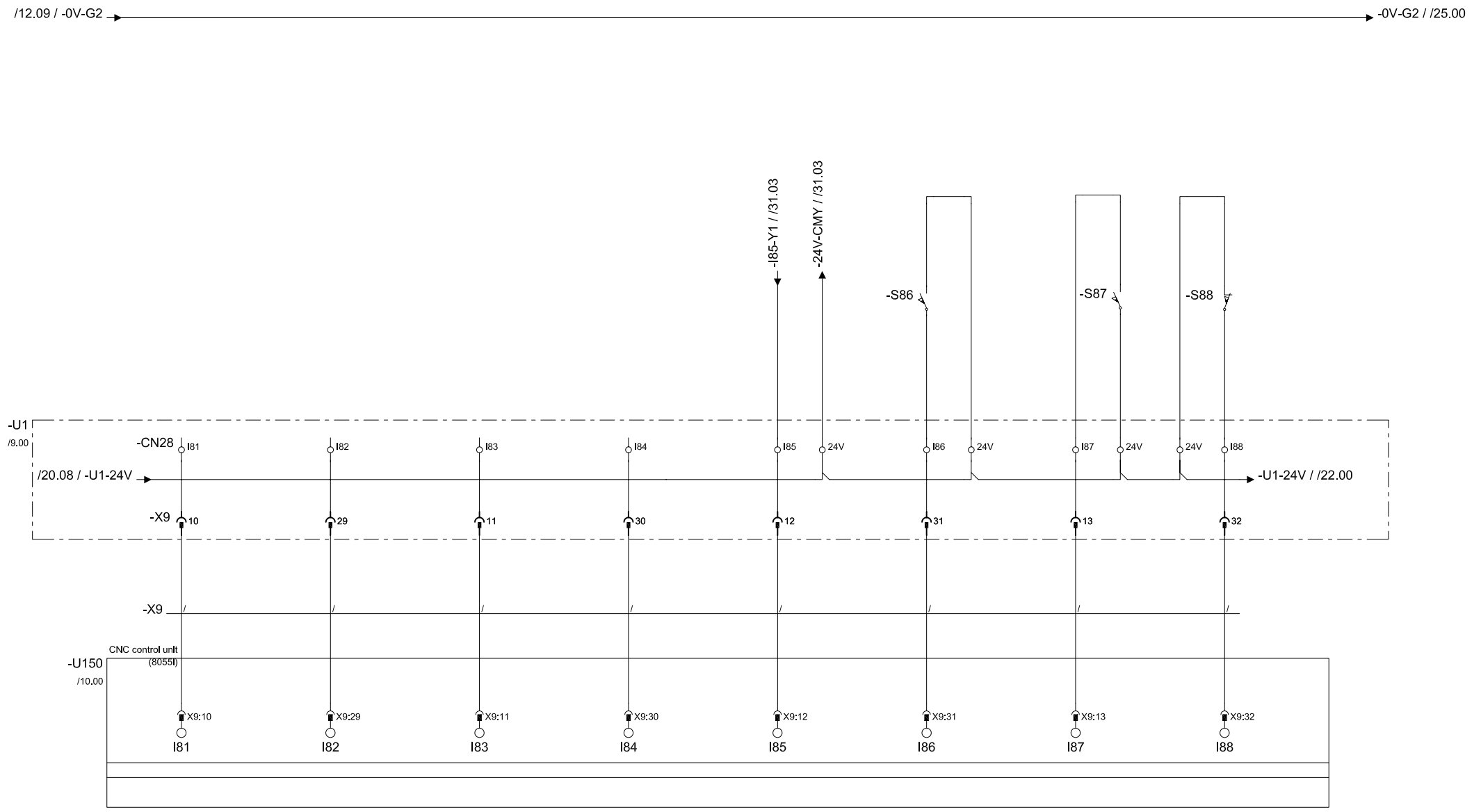
			Check.		Machine Name: e Mill		PLC I/O INPUT CIRCUIT5(I73~I80)	
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	A1.02

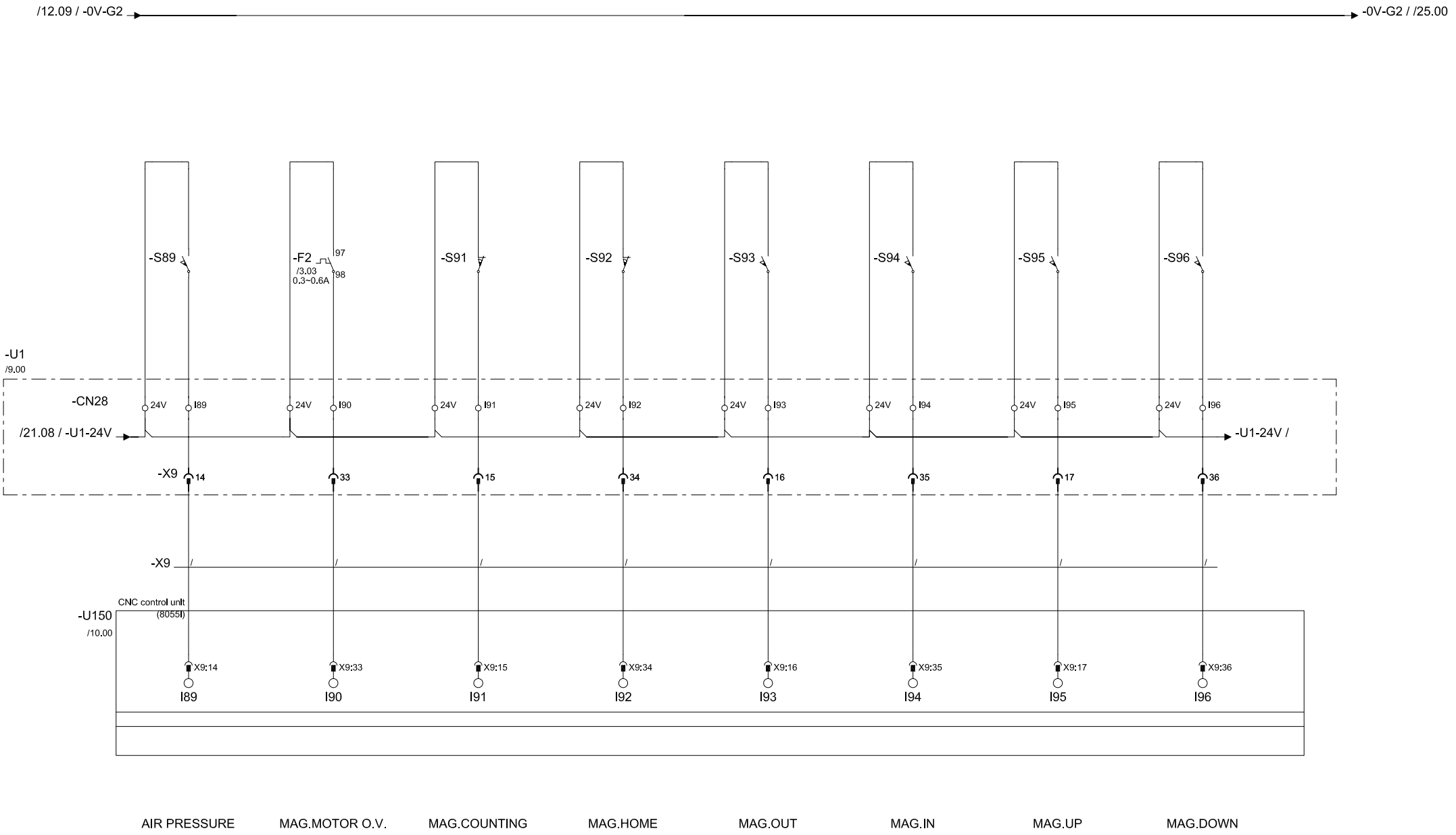


SPINDLE INDEX TOOL CLAMP TOOL UNCLAMP MANUAL TOOL UNCLAMP P.B.

Front Page:+ORT/20

Next Page: +ORT/22

			Date	2015/04/01			+	
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill		A1.02	Current Page 21
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	PAGE DESCRIPTION: PLC I/O INPUT CIRCUIT6(I81~I88)	Total Page: 46 Pg.



Front Page:+ORT/21

Next Page: +ORT/23

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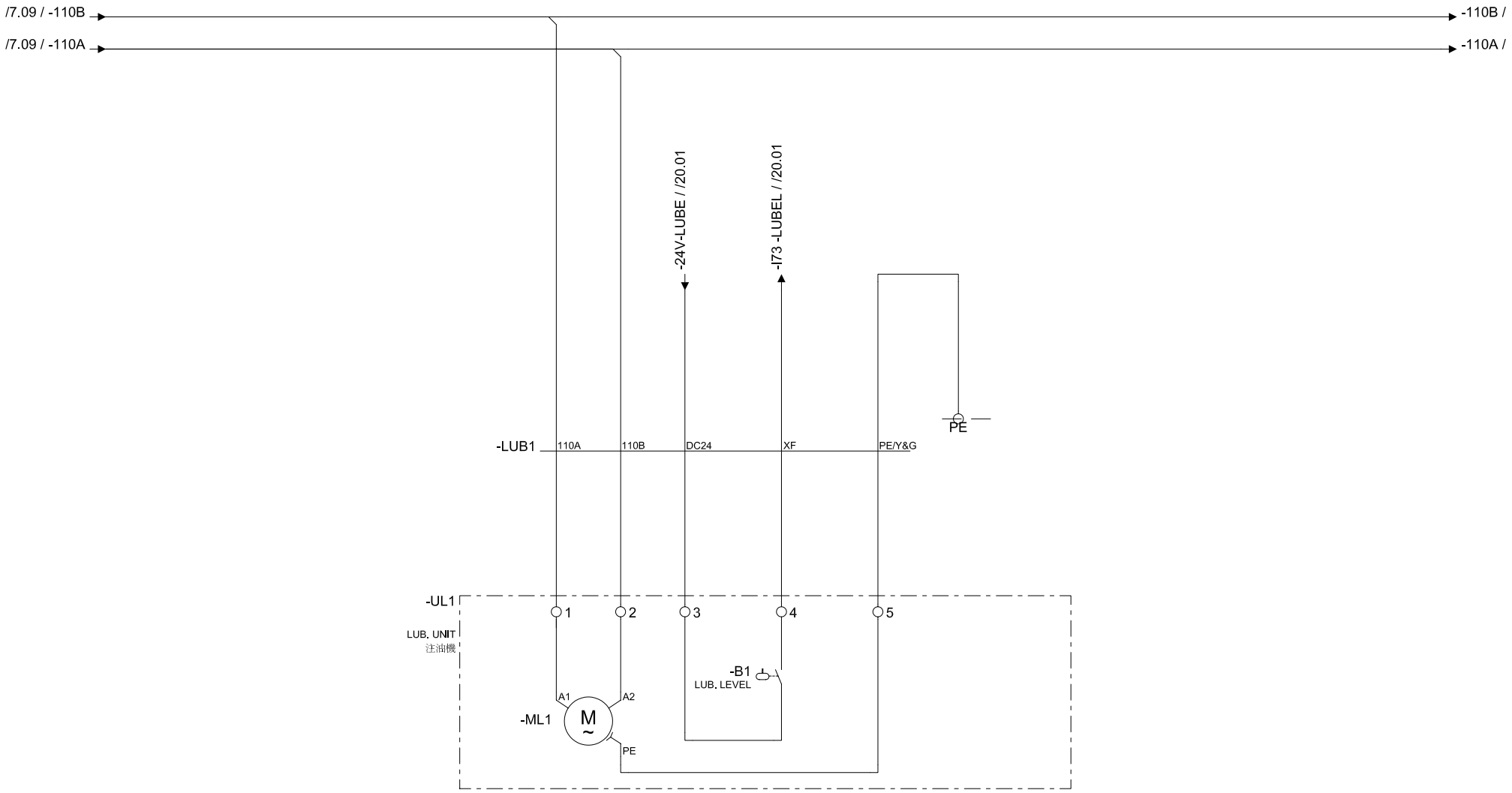
			Edit.	Mark			Location:ORT	
			Check.		Machine Name: e Mill		A1.02	Current Page 22
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Total Page: 46 Pg.

PAGE DESCRIPTION:

PLC I/O INPUT CIRCUIT7(I89~I96)



Front Page:+ORT/22

Next Page: +ORT/24

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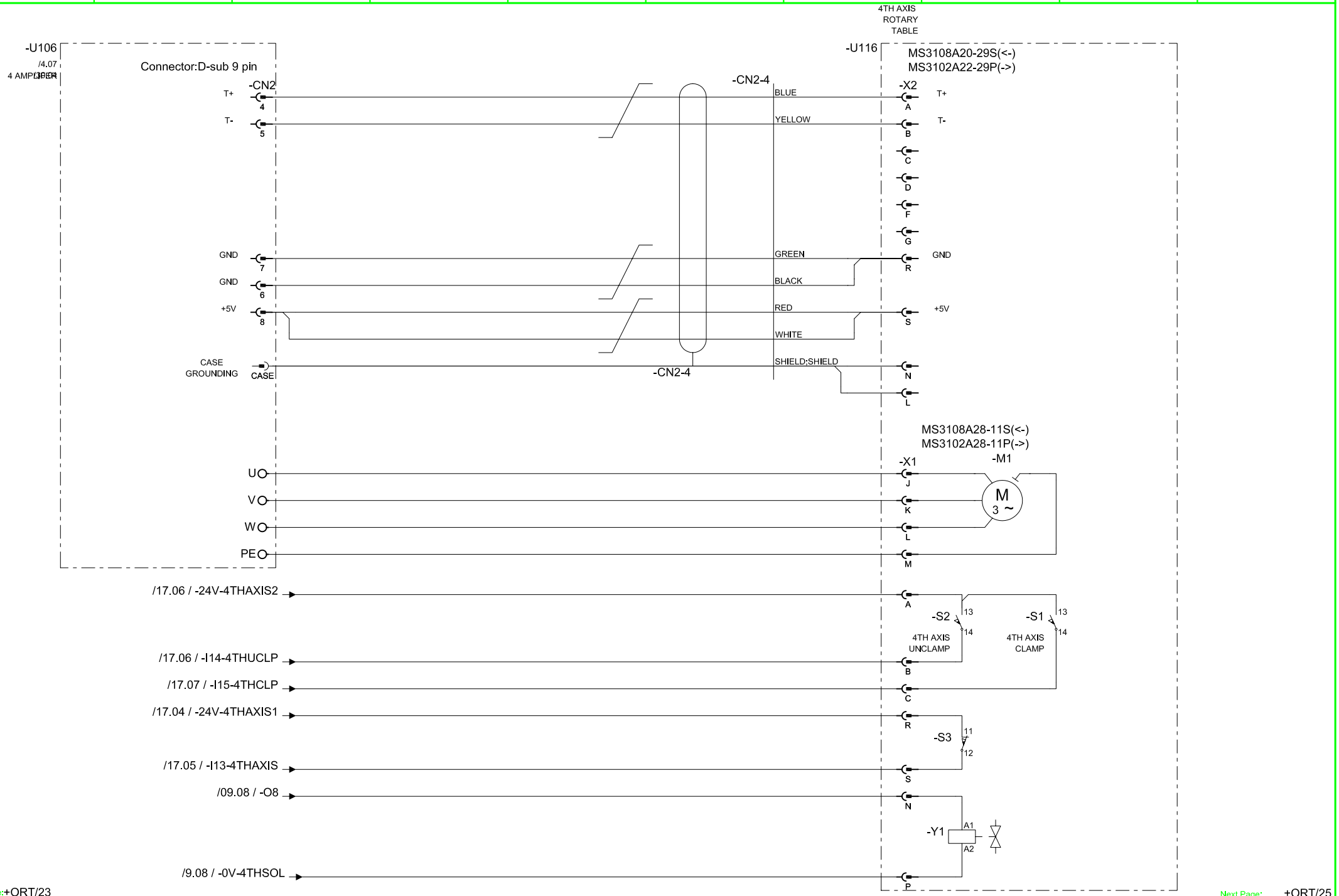
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Lube Unit Circuit	A1.02



Front Page:+ORT/23

Next Page: +ORT/25

			Date	2015/04/01			+	
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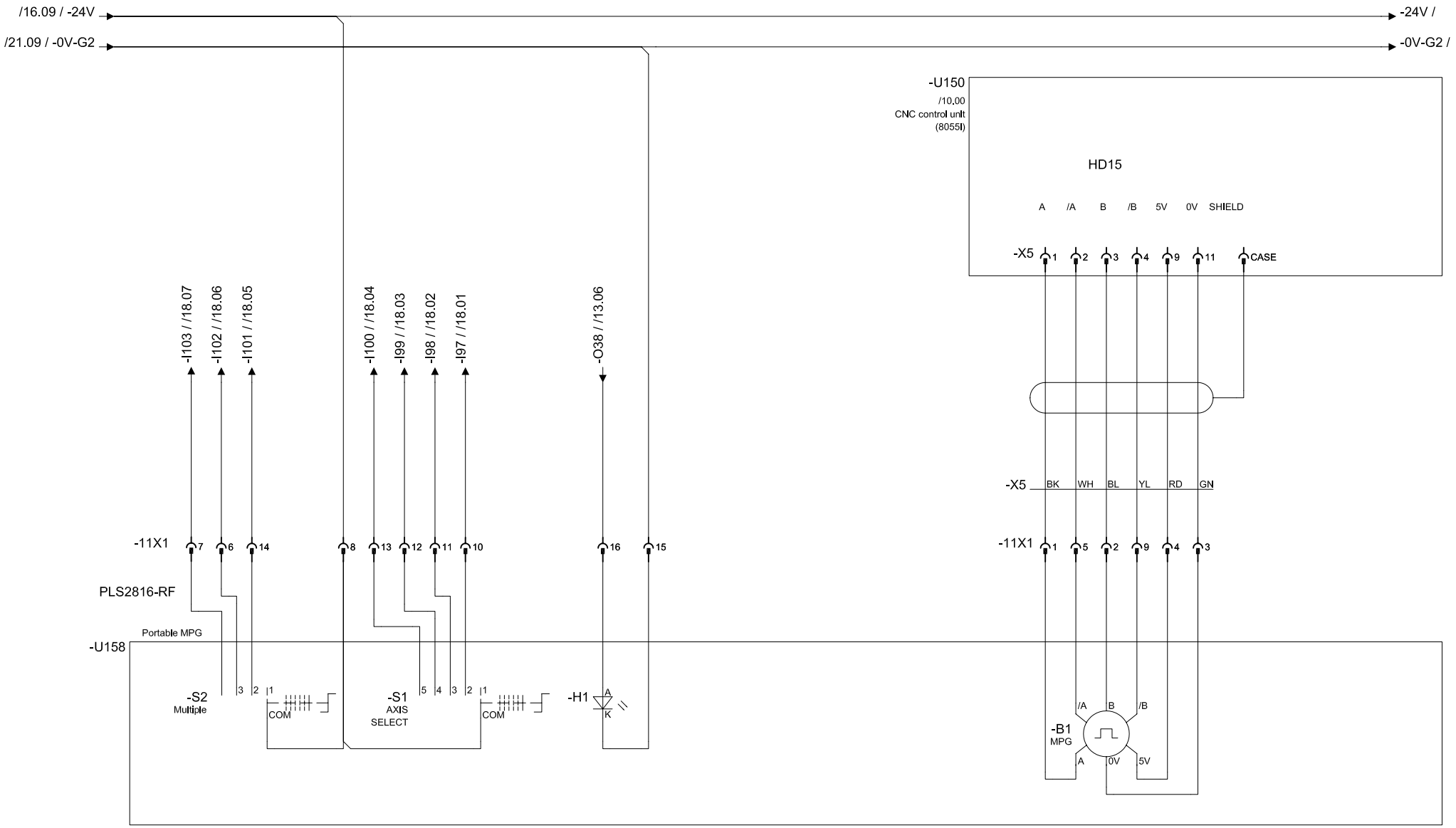
			Check.		Machine Name: e Mill			
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	PAGE DESCRIPTION: 4th Axis Connection	A1.02	Current Page 24
										Total Page: 46 Pg.



Front Page:+ORT/24

Next Page: +ORT/26

			Date	2015/04/01			PAGE DESCRIPTION:	+
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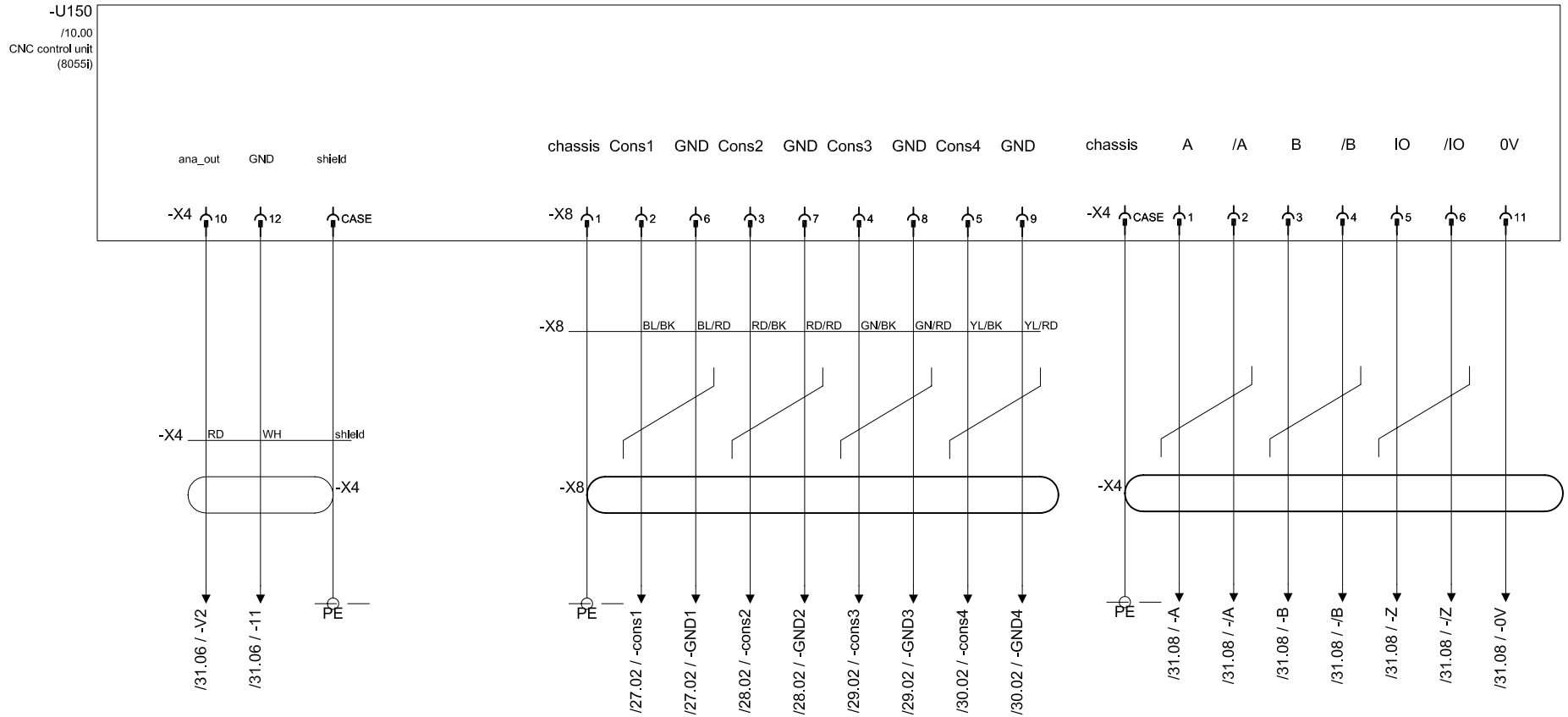
			Check.		Machine Name: e Mill		MPG INTERFACE	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 25 / Total Page: 46 Pg.



Front Page:+ORT/25

Next Page: +ORT/27

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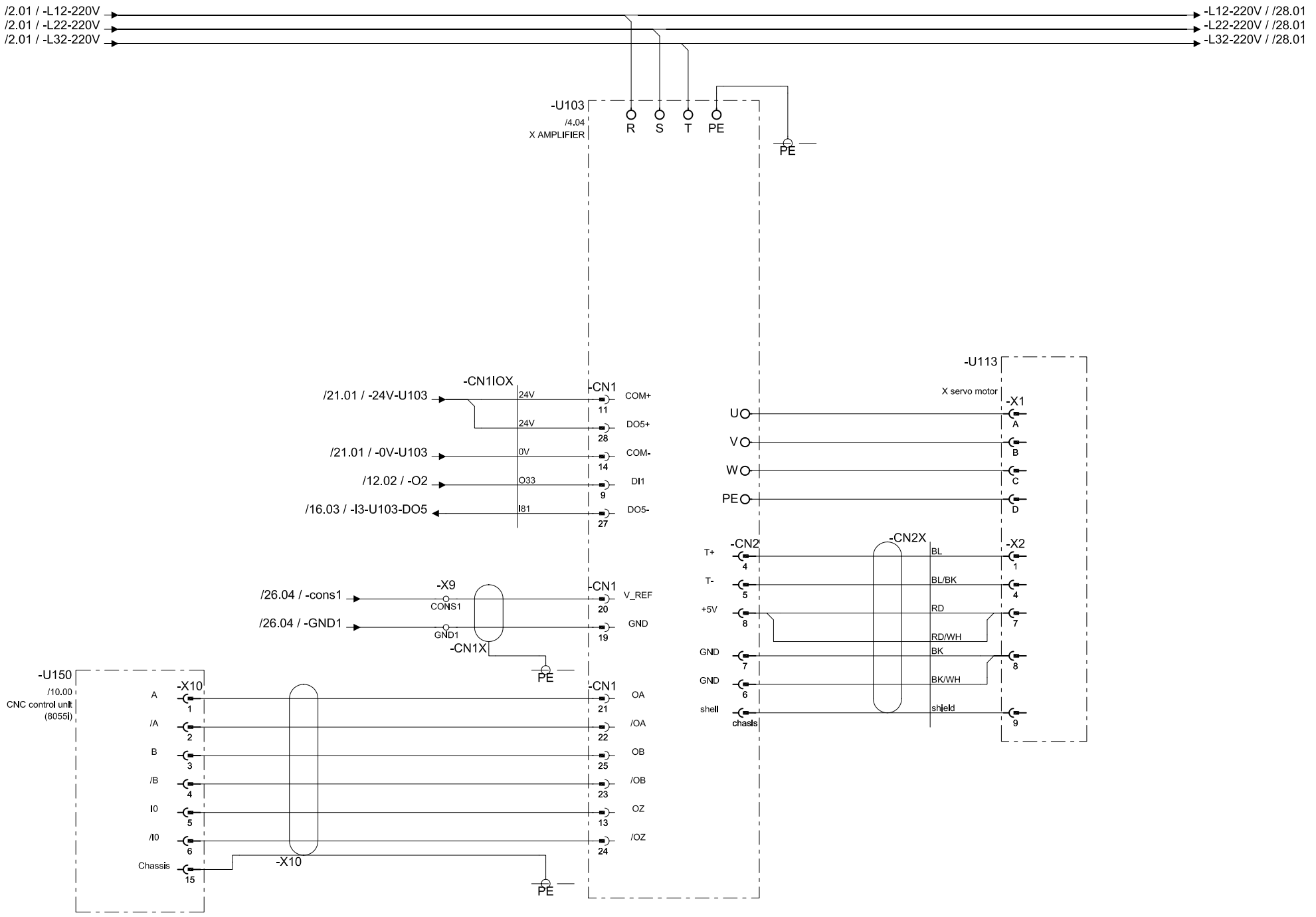
			Check.		Machine Name: e Mill		CNC X4&X8 interface	A1.02
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 26 / Total Page: 46 Pg.



Front Page:+ORT/26

Next Page: +ORT/28

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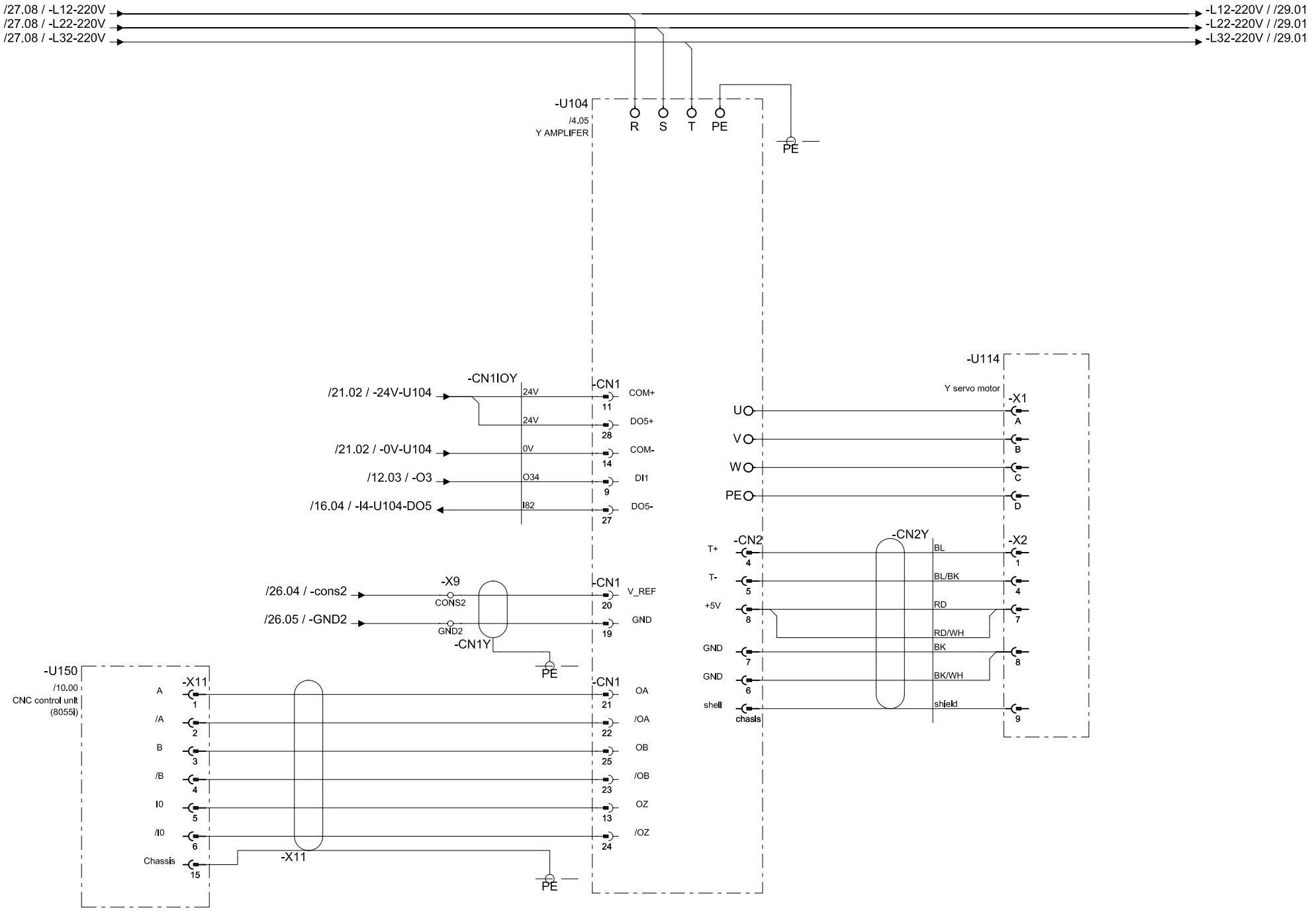
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 27
								Total Page: 46 Pg.



Front Page:+ORT/27

Next Page: +ORT/29

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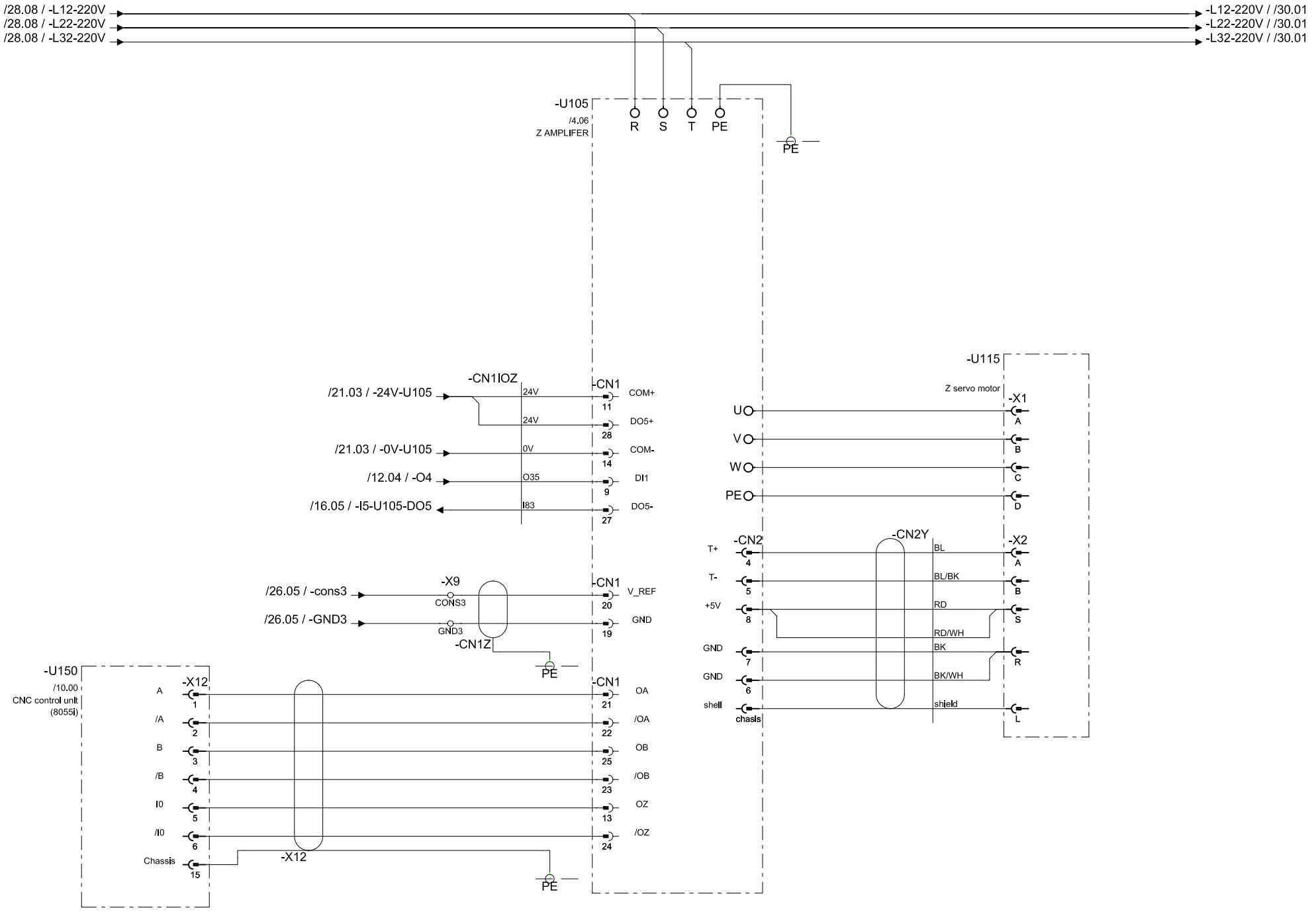
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	PAGE DESCRIPTION: Y Axis Driver Connection	Total Page: 46 Pg.



Front Page:+ORT/28

Next Page: +ORT/30

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Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 29
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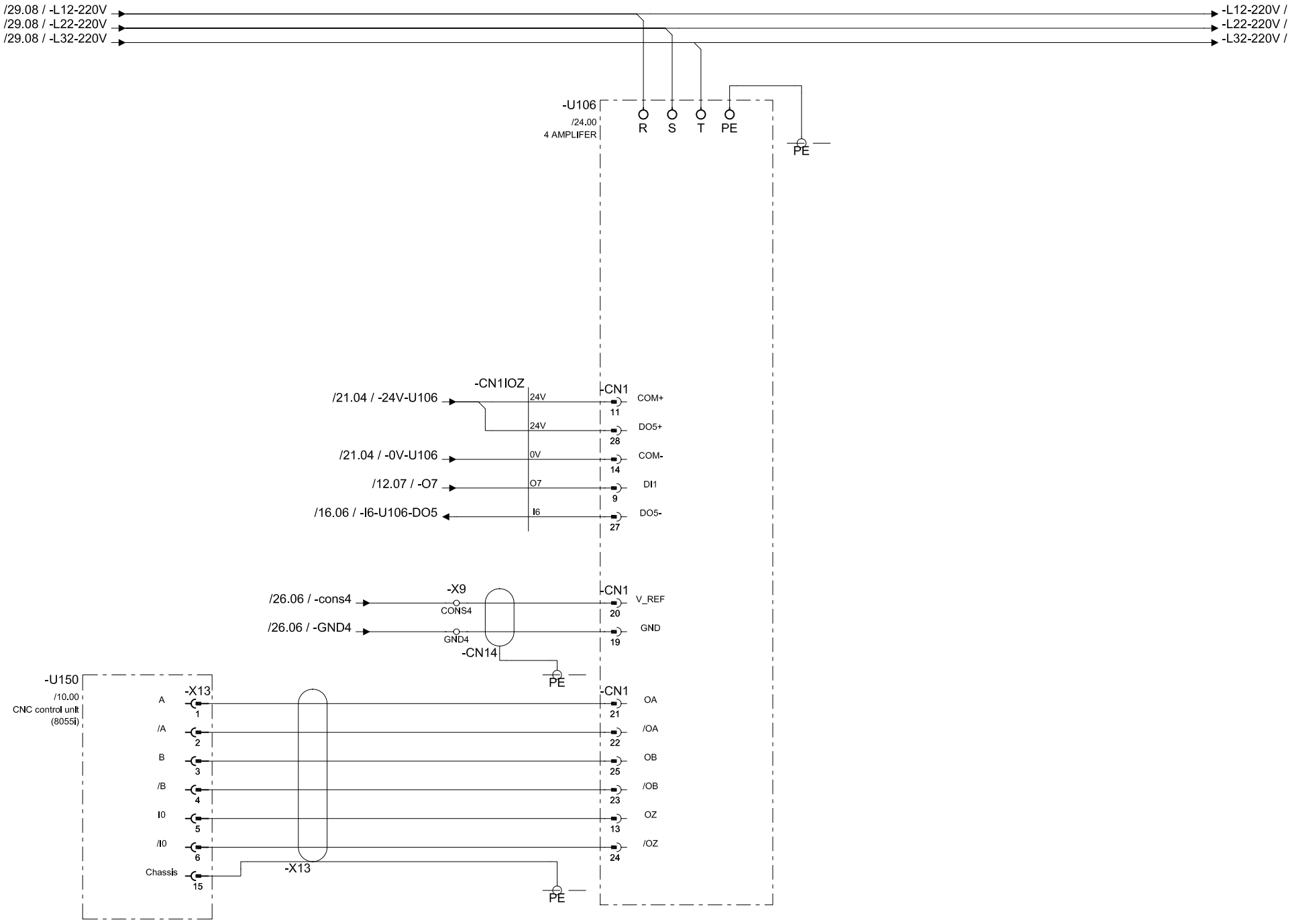

Front Page:+ORT/29

Next Page: +ORT/31

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Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Current Page 30
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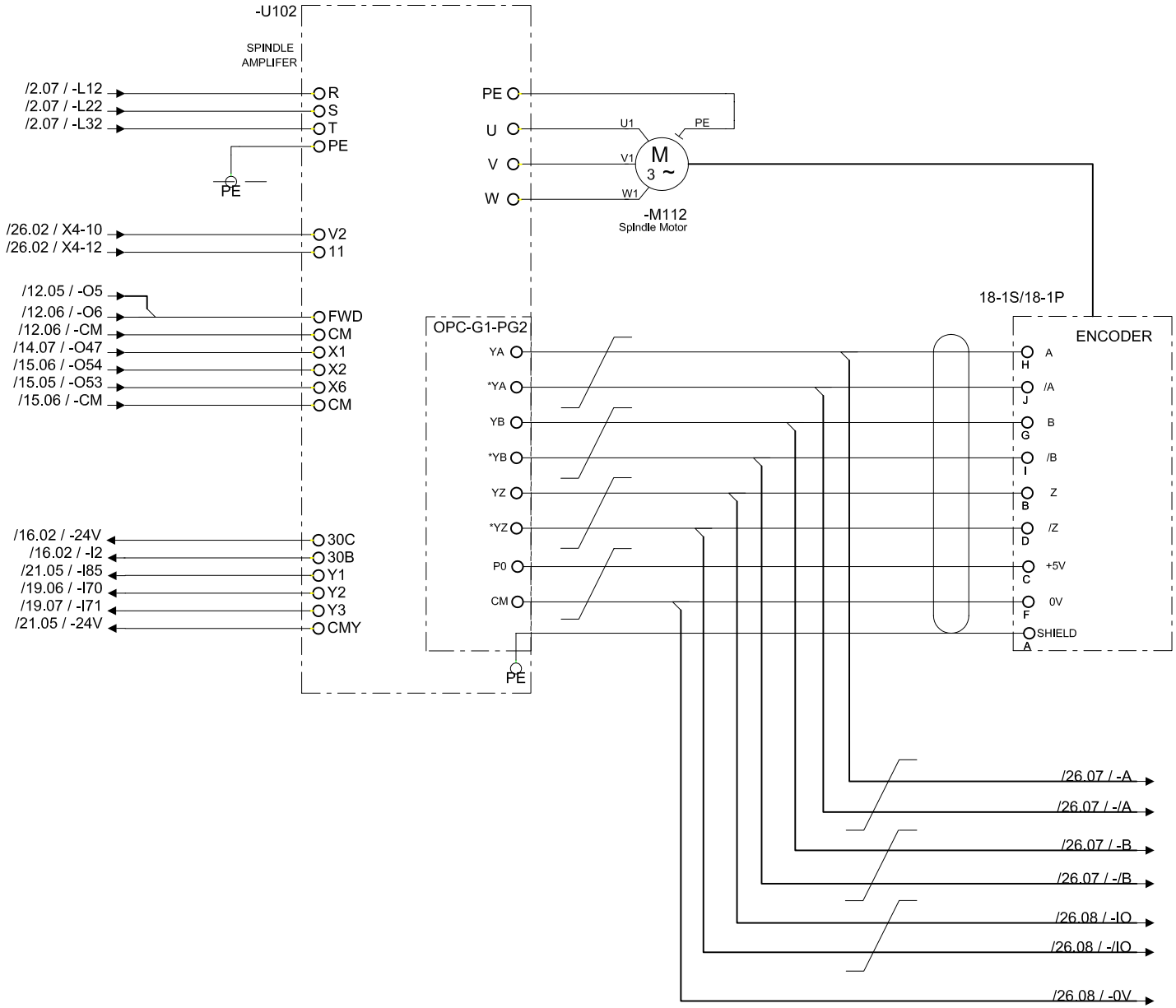

Front Page:+ORT/30

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Modification	Date	Name	Standard		Origin	Crea. for	Crea. by Mark	Spindle Amplifier connection	A1.02	Current Page 31
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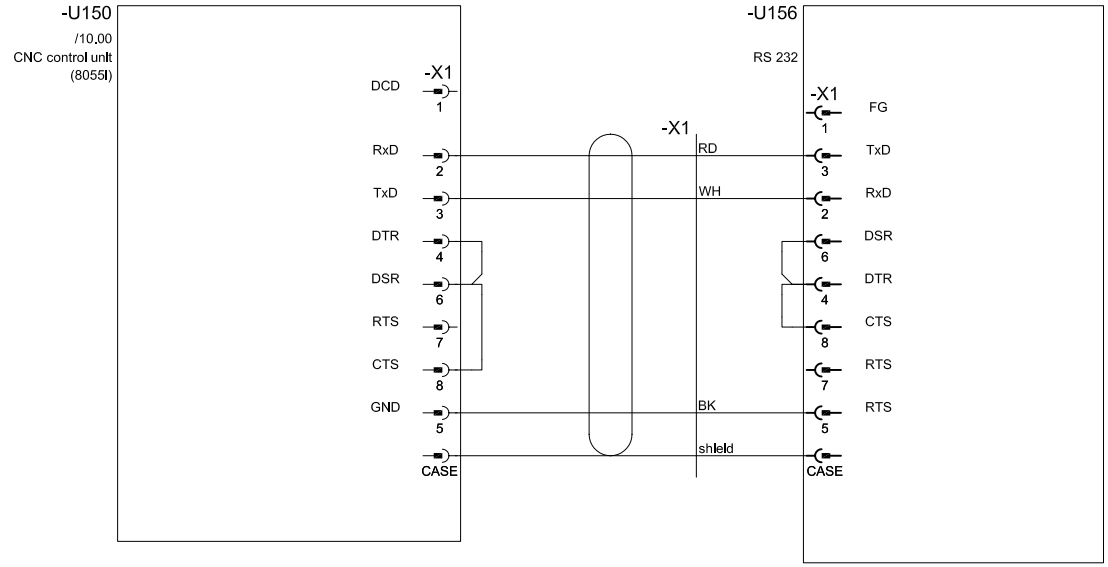

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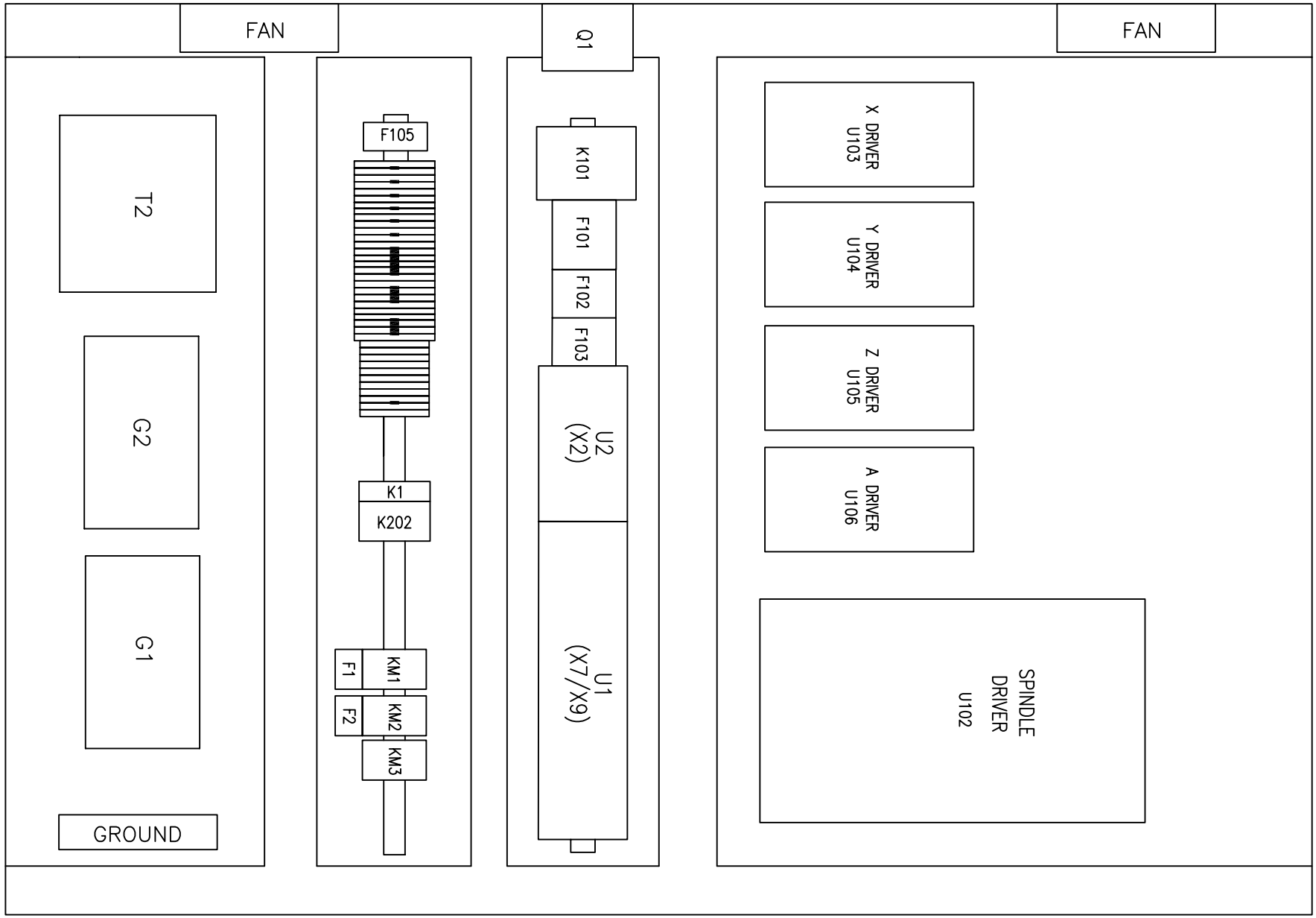
Modification	Date	Name	Standard		Origin	Crea. for	Crea. by mark	A1.02

PAGE DESCRIPTION:

RS232C CONNECTION



MACHINE	DESIGNER	DRAWER	DESCRIPTION	VER	PAGE
ATM1054	MARK	MARK	ELECTRIC CABINET LAYOUT	01	
8055i	2015/04/16	2015/04/16			A0-3

ATM-1054 Electrical Part List				
Item Mark	Description	Specification	QTY	Brand Name
K101	Magnectic Contactor	CU-40 AC220V	1	TECO
	Contactor Lock	SZ-RM/CCC	1	FUJI
KM1	Magnectic Contactor	SC-03 220V 3A1a	1	FUJI
KM2	Magnectic Contactor	SC-03 220V 3A1a	1	FUJI
KM3	Magnectic Contactor	SC-03 220V 3A1a	1	FUJI
F2	Overload Relay	TRON 0.3-0.5A	1	FUJI
F1	Overload Relay	TRON 0.63-0.96A	1	FUJI
G1	Enclosed Switching Power Supply	SE150-24	1	MW
G2	Enclosed Switching Power Supply	SE100-24	1	MW
Q1	Power Supply Disconnect	BW53EAG 3P50A	1	FUJI
Q1	Power Supply Disconnect Handle	BZ-6N10D	1	FUJI
	Terminal End	ZDU2.5/3AN	27	WEI
	Terminal End Plate	ZAP/TW2 DB	10	WEI
	Terminal End	ZDU2.5	11	WEI
	Terminal End Plate	ZAP/TW1	2	WEI
	Terminal End Short	ZQV2.5/2	7	WEI
	Terminal End Short	ZQV2.5/4	2	WEI
	Terminal End Short	ZQV2.5/6	1	WEI
GROUND	Ground End Plate	WJ9010(10P)	1	
T2	Transformer	550VA	1	
F101	Circuit Protection Unit	BC63E0C-006	1	FUJI
F102	Circuit Protection Unit	BC62E0C-004	1	FUJI
F103	Circuit Protection Unit	BC62E0C-010	1	FUJI
F105	Circuit Protection Unit	BC61E0C-004	1	FUJI
K1	Relay	PYF-08A-E-T OMZ	2	OMRON
K1	Relay Seat	MY-2NJ DC24V	2	OMRON
K202	Relay	PYF-14A-E-T OMZ	1	OMRON
K202	Relay Seat	MY-4NJ DC24V	1	OMRON
U2	Transmission Board	8040-X2	1	YSM
U1	Transmission Board	8055IA	1	YSM
	MPG	HC1-1DABO-M	1	TOSOKU
	RS232-Ethernet Board	RS232-2	1	
	Tool Release Push Button	800FP-F3	1	AB
	Push Button Locating Plate	800F-ALP	1	AB
	Emergency Switch	800FP-MT44/ALP/X01	1	AB
	Contact Joint	800F-X01	1	AB
	Contact Joint	800F-X10	1	AB