# ACER

# OPERATION MANUAL

## Conversational CNC Lathe

## Model: ATL 1740

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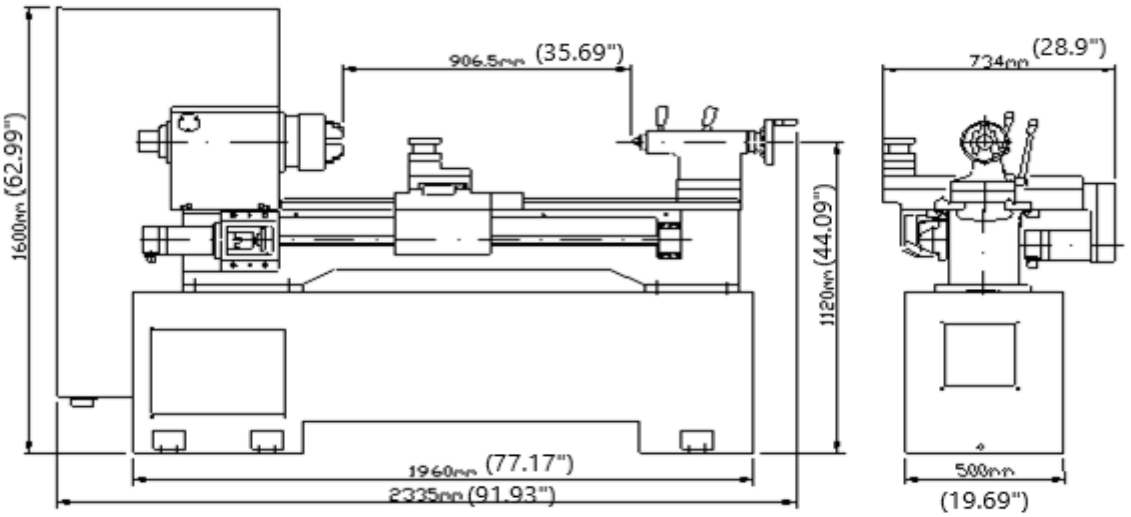
Revised: 5/20/20

# CONTENT

# 1. SPECIFICATION




| MODEL | ATL 1740 |
|---|---|
| Swing over bed | 440mm (17.32") |
| Center height | 220mm (8.66") |
| Swing over cross slide | 240mm (9.45") |
| Distance between centers | 1000mm (39.37") |
| Width of bed | 300mm (11.81") |
| Spindle speed | L:93~750RPM,H:751~2600RPM |
| Spindle range | Automatic 2 Speeds |
| Spindle nose | D1-6 |
| Spindle nose taper | MT #6 |
| Spindle bore | 55mm (2.1654") |
| Longitudinal travel(Z axis) | 1000mm (39.37") |
| Cross slide travel(X axis) | 280mm (11.02") |
| Tailstock quill diameter | 52mm (2.05") |
| Tailstock quill travel | 150mm (5.91") |
| Quill taper | MT #4 |
| Spindle motor | 7.48/10.47HP (5.5/7.5KW) |
| X lead screw | 20 X P5.0 C5 |
| X axis motor | 1.4KW (1.90HP) |
| Z lead screw | 2 X P5.0 C5 |
| Z axis motor | 1.4KW (1.90HP) |
| Coolant pump motor | 1/8HP |
| X/Z axis cutting feed rate | 5M/min (196.85"/min) |
| X/Z axis rapid traverse | 10M/min (393.7"/min) |
| Machine weight(N.W) | 1,750kgs (3,850 lbs) |
| Machine weight(G.W) | 1,900kgs (4,180 lbs) |

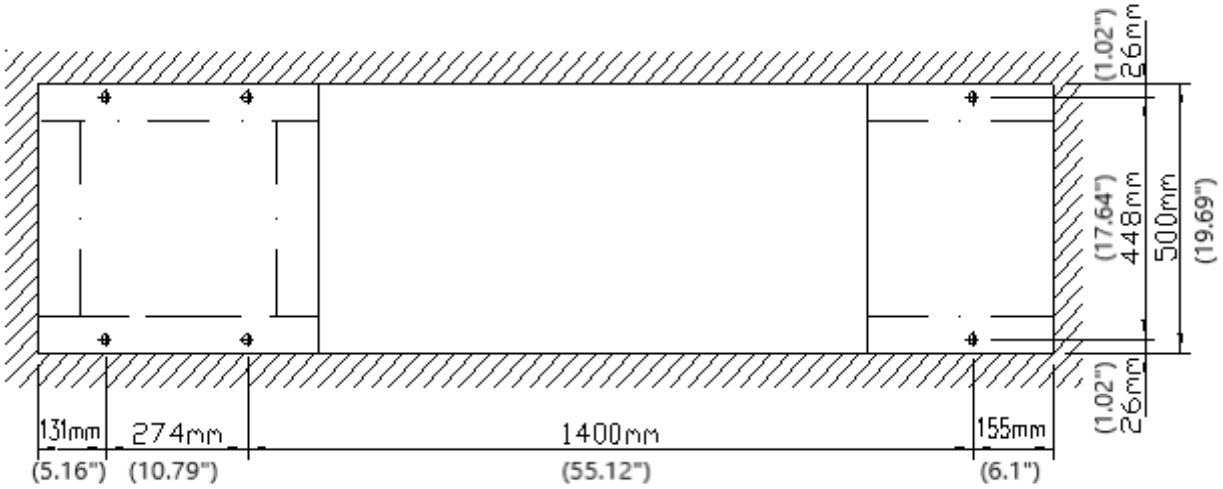
# 2. TRANSPORTATION / INSTALLATION

PREPARATION FOR USE

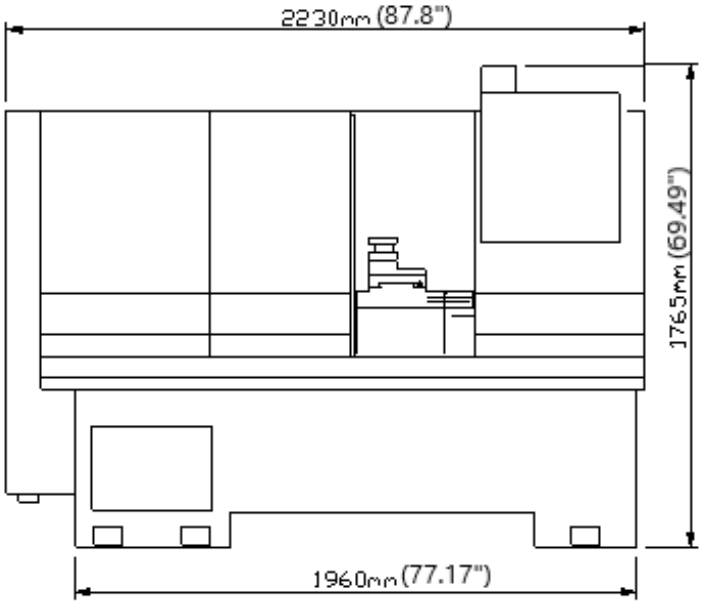
* * * * * * * * * * * * * * * * * * *

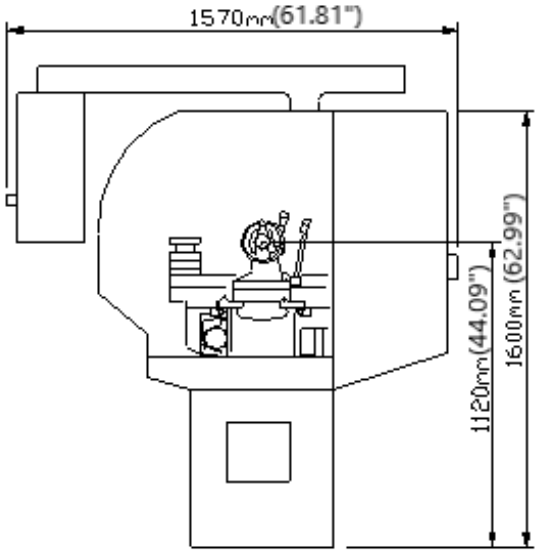
## FOUNDATION & ITS MAP

A SPECIAL FOUNDATION IS NOT ESSENTIAL FOR THIS MACHINE. HOWEVER, IT IS ADVISABLE TO PLACE ON A CONCRETE FLOOR, CARE SHOULD BE TAKEN TO SEE THAT IT IS ADEQUATELY SUPPORTED AND FREE FROM VIBRATION. IF THE MACHINE IS TO BE PLACED ON AN SECOND FLOOR, LOCATE IT DIRECTLY OVER A SUPPORTING BEAM OR CLOSER TO GRINDERS TO EASE ANY VIBRATION GENERATED BY NEARBY MACHINES.




FUNDATION DIAGRAM



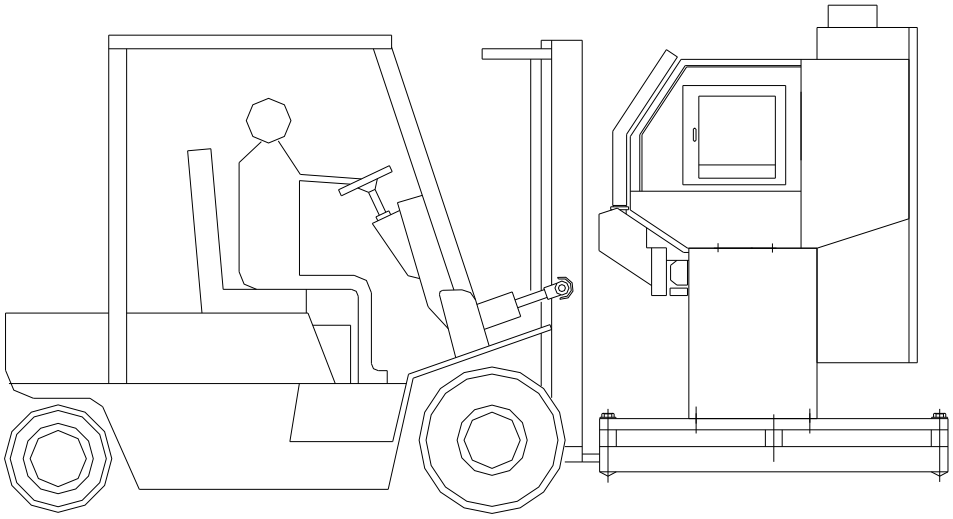



## MOVING AND SELECTING LOCATION FOR MACHINE

FOR BEST RESULTS FROM ANY LATHE, IT IS IMPORTANT THAT THE ZONE SELECTED FOR ITS LOCATION SHOULD BE WELL-LIGHTED, AS DRY AS POSSIBLE, AND AS FREE AS POSSIBLE FROM VIBRATION.

THE MACHINE SHOULD BE LOCATED SO THAT ADEQUATE SPACE IS PROVIDED FOR OPERATION OF MAXIMUM WORKPIECE, AS WELL AS THE SPACE REQUIRED FOR MAKING ADJUSTMENTS. A MINIMUM OF 43” (1100mm) CLEARANCE SPACE SHOULD BE PROVIDED AT THE ENDS AND REAR OF THE LATHE AND AT LEAST 39.37” (1000mm) AT THE FRONT FOR THE OPERATOR.

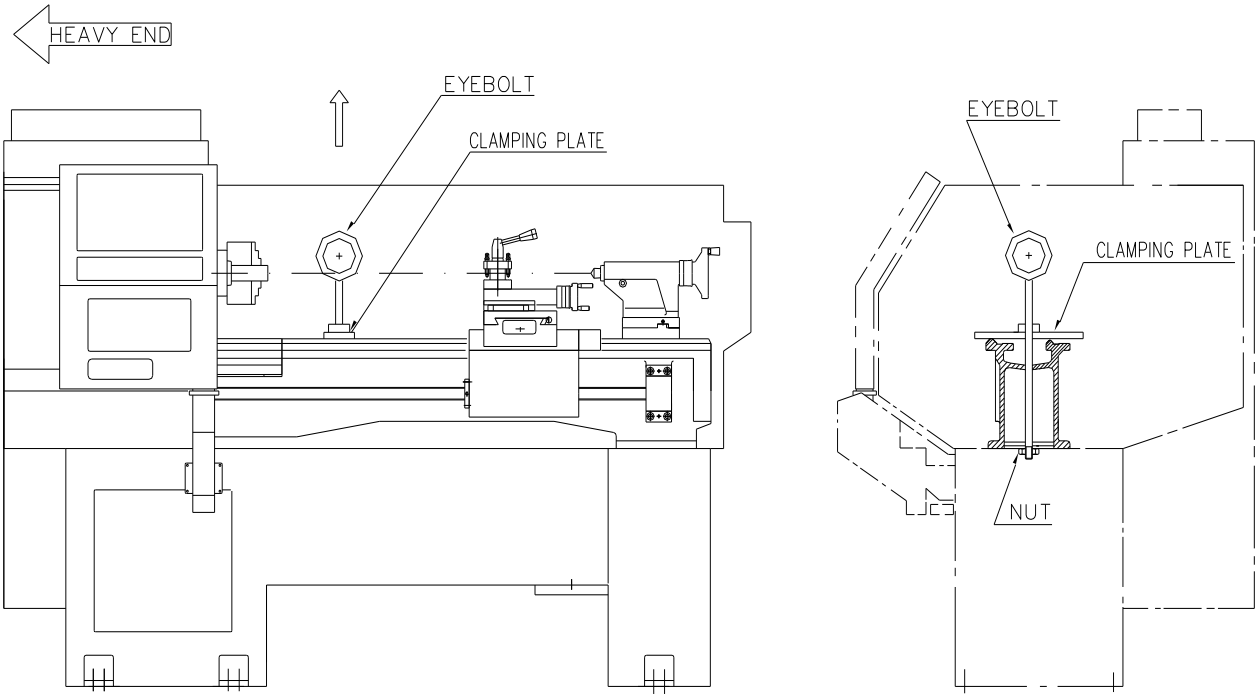
BEFORE LOCATING THE LATHE, PLEASE MOVE MACHINE WITH A FORKLIFT AS SHOWN BELOW FIGURE.



THE FORKLIFT SHOULD BE AT LEAST 5,000 LBS (2.5 TONS) IN CAPACITY, AND LIFT PALLET AS SHOWN.

## REMOVE LATHE FROM PALLET

REMOVE LATHE FROM PALLET WITH AN OVERHEAD CRANE. AN EYEBOLT AS SHOWN IN THE FIGURE MUST BE MADE BEFORE MAKING THE LIFT. CAPACITY OF THE CRANE MUST BE OVER 7,000 LBS (3.5 TONS) TO ENSURE SAFETY MOVEMENT.




## CLEANING BEFORE OPERATION

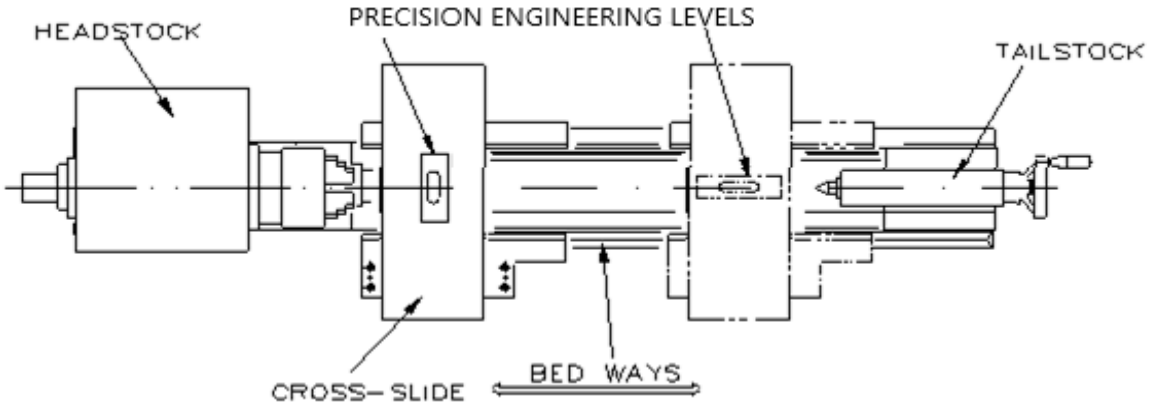
MACHINE'S BEDWAYS AND MANY COMPONENTS ARE COATED WITH COSMOLINE BEFORE OCEAN SHIPMENT. PLEASE USE RAGS AND CLEANING SOLUTION SUCH AS WD-40 TO CLEAN UP THE MACHINE. THIS MUST BE DONE BEFORE OPERATION TO REDUCE DAMAGE TO THE CONTACTING SURFACE AND DECREASE THE CHANCE TO HAVE AN INACCURATE CUTTING WORKPIECE.

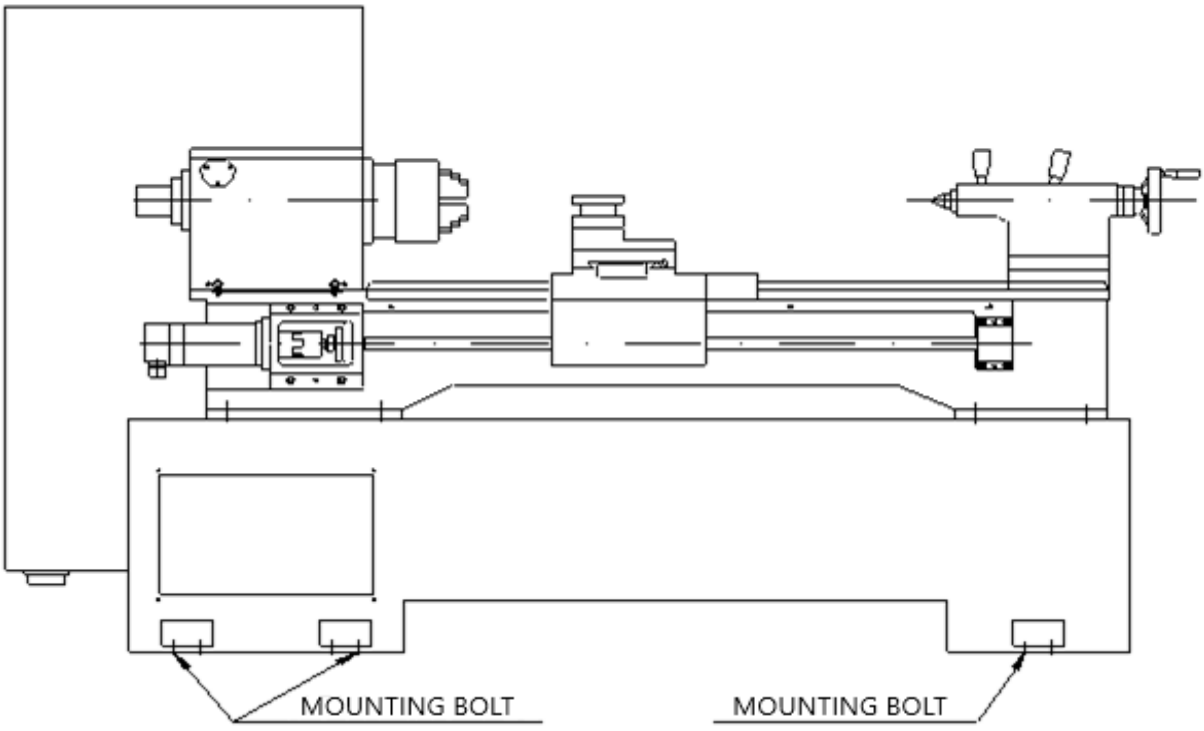
# 3. INSTALLATION LEVELING

LOCATE THE MACHINE ON A SOLID FOUNDATION, ALLOWING SUFFICIENT AREA ALL AROUND FOR EASY WORKING AND MAINTENANCE (SEE FOUNDATION PLAN). THE LATHE MAY BE USED FREE-STANDING OR BOLTED TO THE FOUNDATION GROUND.

FREE-STANDING: POSITION LATHE ON FOUNDATION AND ADJUST EACH OF THE SIX MOUNTING BOLTS TO TAKE EQUAL SHARE OF THE LOAD. THEN USING TWO ENGINEERING PRECISION LEVELS ON THE BEDWAYS ADJUST THE BOLTS TO LEVEL UP THE MACHINE. PERIODICALLY CHECK BED LEVELNESS TO ENSURE CONTINUING ACCURACY OF THE LATHE.

FIXED INSTALLATION: POSITION LATHE OVER SIX BOLTS (M16x50mm. DIAM.) SET INTO THE FOUNDATION TO CORRESPOND WITH HOLES IN THE MOUNTING FEET. ACCURATELY LEVEL THE MACHINE, AND THEN TIGTEN HOLD-DOWN BOLTS. RE-CHECK BED LEVELNESS.

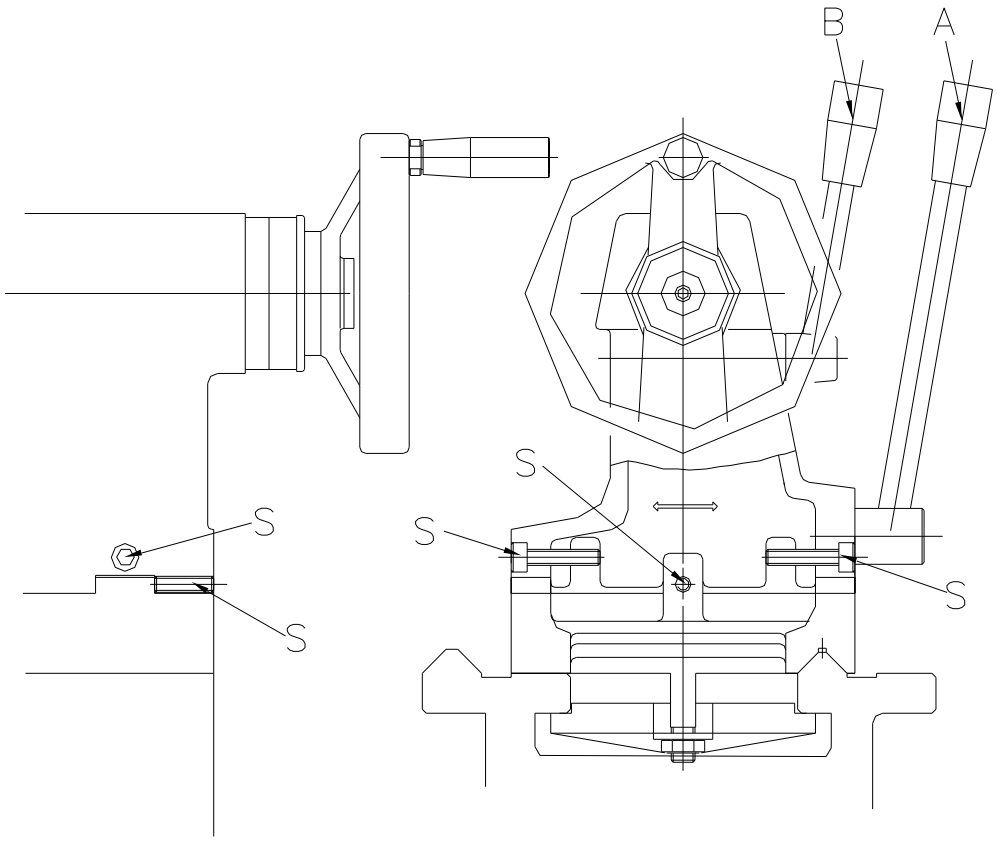


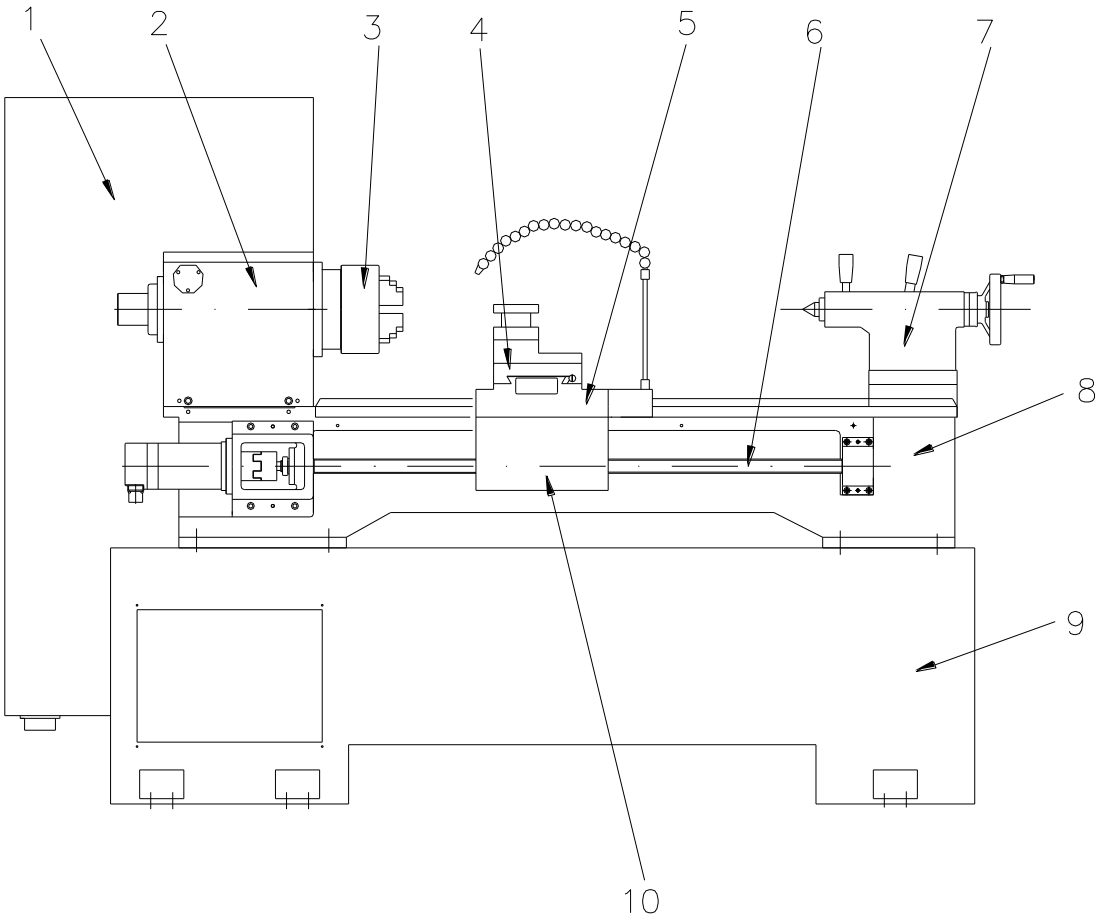
# 4. TAILSTOCK

TAILSTOCK HAS FREE MOVEMENT ALONG THE BEDWAY BY UNLOCKING THE CLAMP LEVER (A). THE TAILSTOCK QUILL IS LOCKED BY LEVER (B).

THE TAILSTOCK CAN BE SET-OVER FOR PRODUCTION OF SHALLOW TAPERS OR FOR RE- ALIGNMENT, RELEASE THE CLAMPING LEVER (A) AND ADJUST SCREW (S) AT EACH SIDE OF THE BASE TO MOVE TAILSTOCK LATERALLY ACROSS THE BASE. RETIGHTENING AND CHECKING AFTER ADJUSTMENT OF SET-OVER.

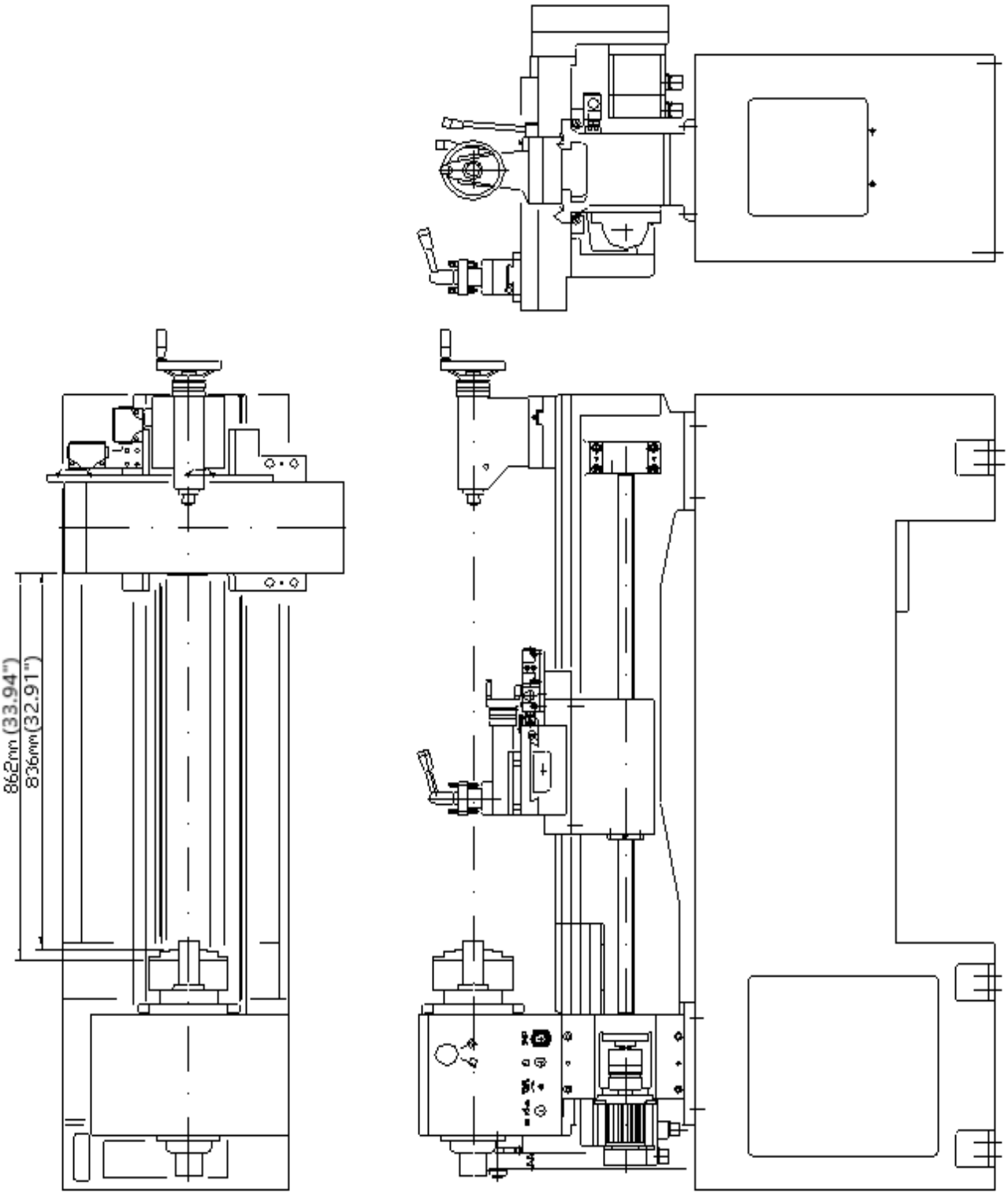


# 5. LATHE CONTROL DESCRIPTION

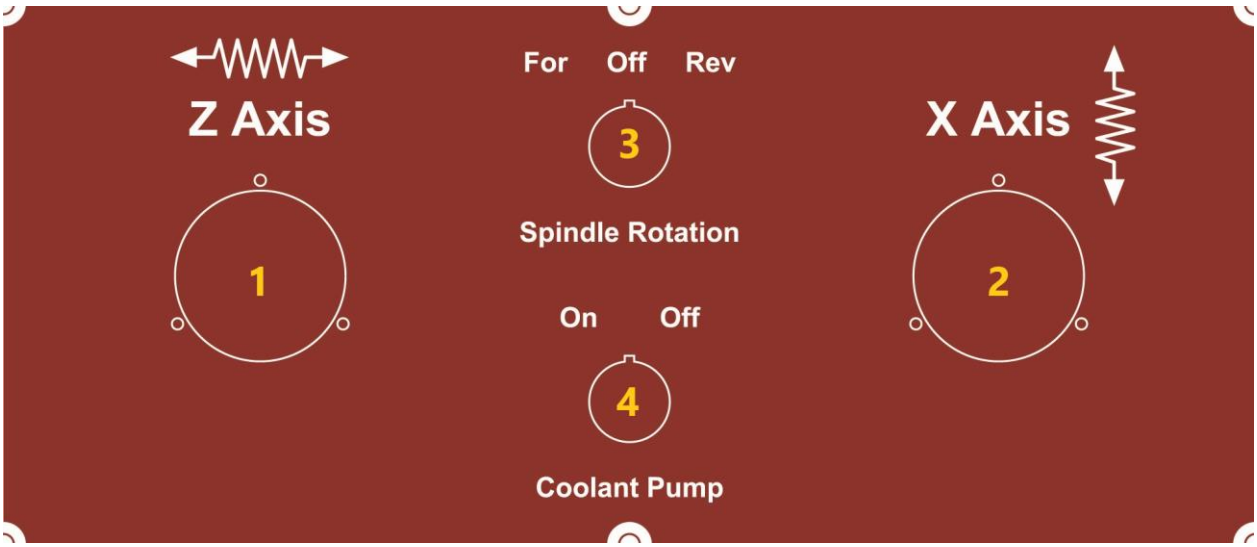



1. ELECTRIC CABINET
2. HEADSTOCK
3. SPINDLE
4. CROSS SLIDE
5. SADDLE
6. BALL SCREW
7. TAILSTOCK
8. BED
9. MACHINE BASE
10. APRON

# 5-1. MACHINE OPERATION CAPACITY



# 5-1. MACHINE CONTROL PANELS & INFORMATION




1. Z AXIS MANUAL PULSE GENERATOR
2. X AXIS MANUAL PULSE GENERATOR
3. FORWARD REVERSE SWITCH
4. COOLANT PUMP ON/OFF

SECOND PANEL


1. OVER TRAVEL RELEASE BUTTON
2. TURRET TOOL CHANGE (OPTIONAL)
3. CHUCK CLAMP/RELEASE (OPTIONAL)
4. WORK LIGHT ON & OFF
5. DOOR GUARD RELEASE
6. SERVO MOTOR ON
7. SERVO MOTR OFF
8. EMERGENCY BUTTON

NOTE: MAIN CONTROL PANEL: PLEASE REVIEW ATTACHED CNC CONTROL OPERATION MANUAL FOR FURTHER DETAILED EXPLANATION.

## CNC Teaching_In Lathe

**CNC : *FAGOR 8055i-FL/ TC***
**Half-Key / 10.4" Color TFT LCD**
**USB + Ethernet + RS232C Interface**

**Driver : FAGOR Servo Driver System;**
**Spindle Driver/Motor: SCD2.35-C0-0-B-NR / FS5-A055-S5C1-A**
**X Axis Driver/Motor: ACSD 16H / FKM42.30A.E3.100.11**
**Z Axis Driver/Motor: ACSD 16H / FKM42.30A.E3.100.11**

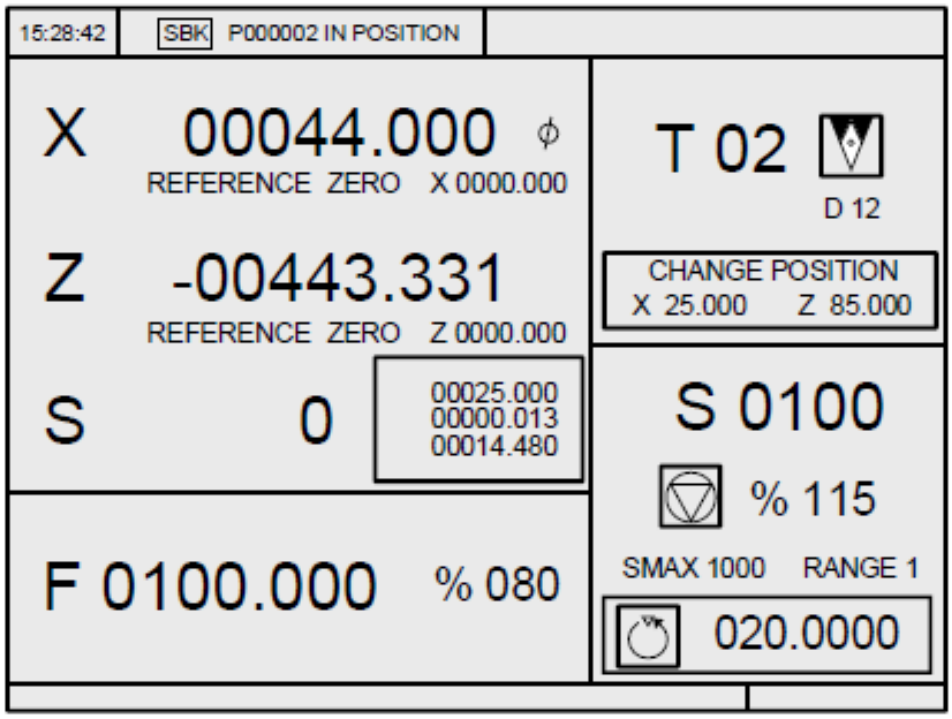
**Machine Specification:**
**2 Axes + Portable Hand wheels**

**Power Up:**
**Check the main power voltage: AC 230V, 23.12Amp**
**Check the power phase: L1, L2, L3**
**Check the earth connection: PE**

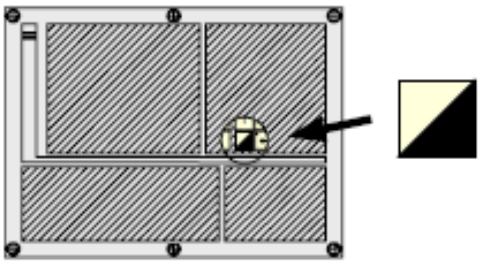
**Add the Oil:**
**Check the axial lubrication unit's oil level.**

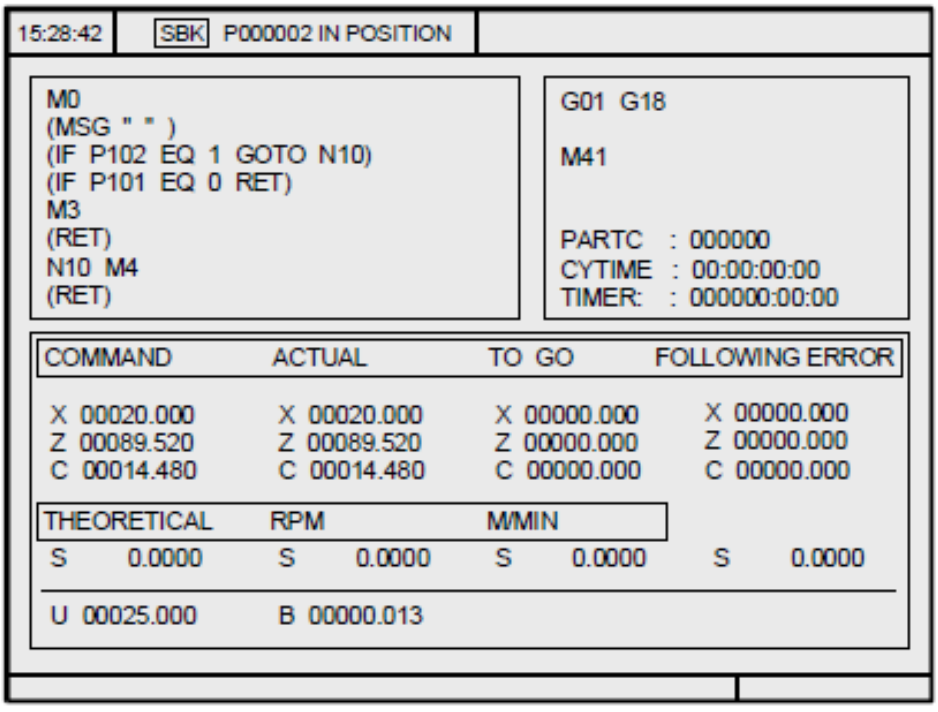
## Machine Operation:

**Start-Up**
**1. Release the E-stop Button (operator panel)**
**2. Press the "ESC" key to clear errors or alarms messages : CNC Ready**
**4. Press the "Servo On" button: Servo Power On**
**5. Manual moving the 2-axes to safety area**
**6. Machine need to Home Search: X→Z**
**7. Turret Home Search: T1→Start**



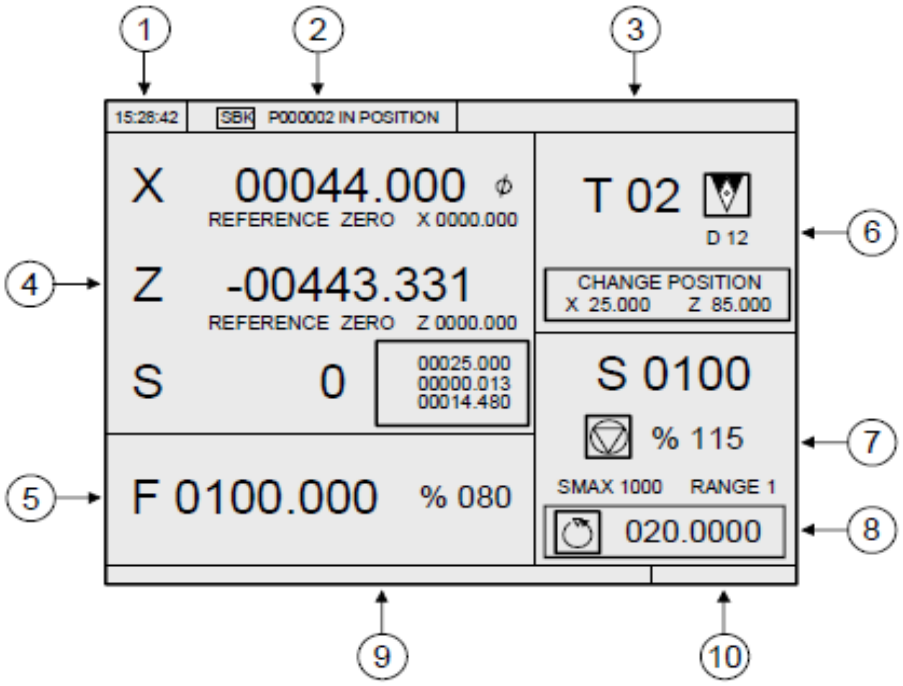

When pressing the [TWO-COLOR] key, the CNC shows the special screen of the TC mode.





## Standard screen of the TC mode

The standard screen of the TC mode offers the following data:




1. Clock.
2. This window may show the following data:

   SBK when “single block” execution mode is selected.

   DNC when the DNC mode is active.

   P..... number of the program currently selected.

   Message "In position" - "Execution" - "Interrupted" - "RESET".

   PLC messages.
3. This window shows the CNC messages.
4. This window may show the following data:

   X, Z coordinates of the axes. The Ø symbol indicates that the axis is working in diameter.

   In small characters, the axis coordinates referred to machine reference zero. These values are useful when letting the user define a tool change point (see zone 6) The CNC shows this data when text 33 of program 999997 has not been defined.

   The coordinates of the auxiliary axes that are defined.

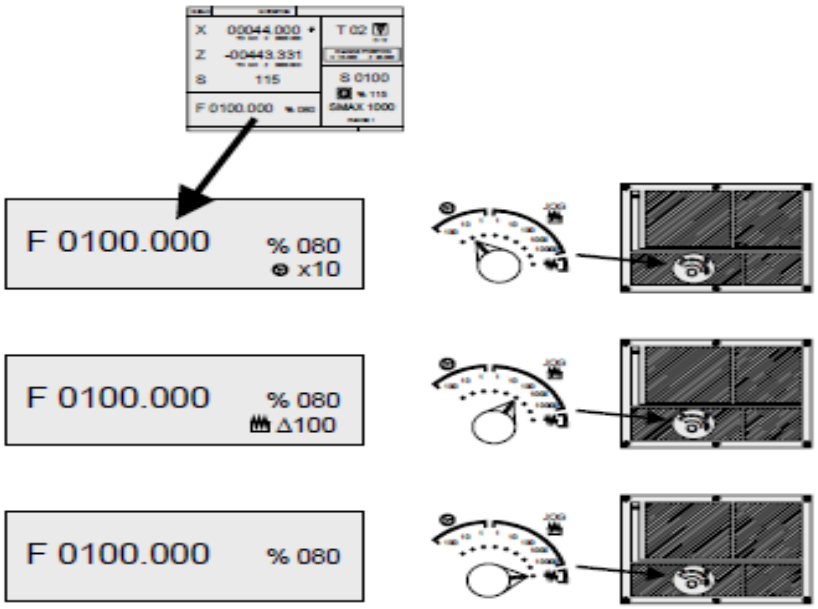
   The "C" axis will only be displayed when it is enabled (G15) and may be governed manually with the jog keys [C+] and [C-]. Being the X-C plane active, the coordinates shown correspond to the transformed coordinates; not to the machine coordinates.

   The actual spindle rpm (S symbol) or the actual rpm of the second spindle (S2 symbol).
5. The information shown in this window depends on the position of the left switch.

   In all cases, it shows the axis feedrate "F" currently selected and the % of F being applied.

   When feed-hold is active, the color of the feedrate value changes.

Here are all the possible cases.




6. This window shows, in large characters, the selected tool number "T" and, in small characters, the "D" offset associated with the tool. If the tool number and the offset number are the same, the CNC will not show the "D" value. The window also shows a drawing of the location code (shape) associated with the tool.

   This window also shows the coordinates of the tool change point referred to machine reference zero. The CNC does not show this window when text 47 of program 999997 has not been defined.

7. This window shows everything related to the spindle:

   The theoretical turning speed that is selected; "S" value when constant turning speed and "CSS" value when working at constant surface speed.

   The spindle status. It is represented with an icon and may be turning clockwise, counterclockwise or stopped.

   The % of spindle speed being applied.

   The maximum spindle rpm.

   The active spindle speed gear (range). The CNC does not show this data when text 28 of program 999997 has not been defined.

8. Spindle angular increment when working in spindle orientation mode.

9. When accessing a work cycle, this window shows the help text associated with the selected icon.

   That help text must be defined in program P999997 and edited in the desired language. See chapter *"1 General concepts"*.

10. Reserved.

### *Displaying the active PLC messages*

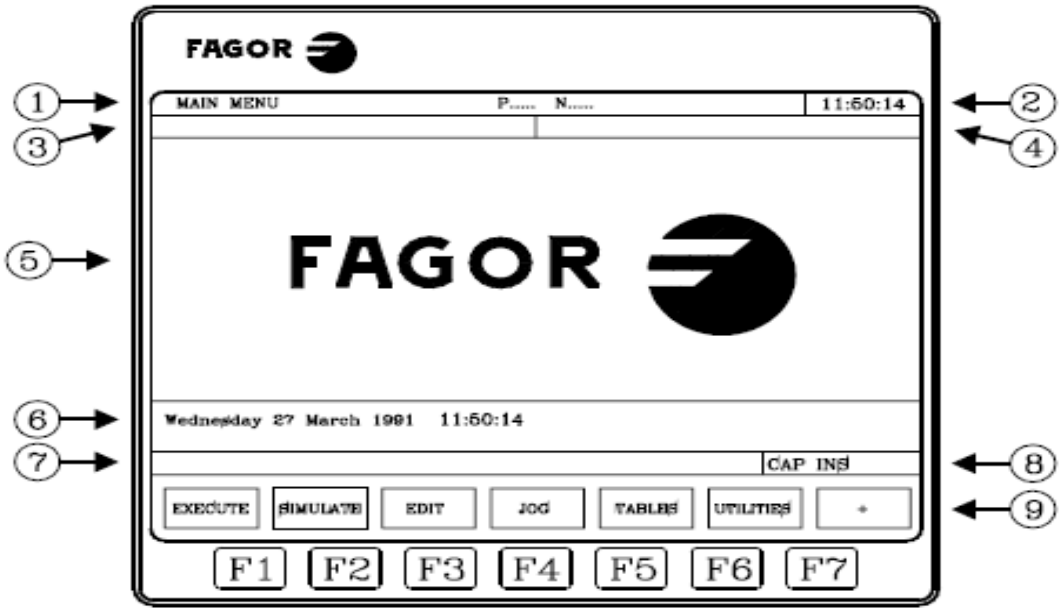
At the screen, press [+] of the alphanumeric keyboard, the CNC shows a window with all the active PLC messages. Besides, this window is also displayed whenever there is a program in execution.

The [⬆] [⬇] [PAGE UP] [PAGE DOWN] keys are used to move around the messages. The [ESC] key is used to close the window.

The window is only displayed when there are more than one active message.

# ISO-MODE

The monitor is divided into the following areas or display windows:




1. This window indicates the selected operating mode, as well as the program number and the number of the active block. The program status is also indicated (in execution or interrupted) and if the DNC is active.
2. This window indicates the time in the " hours : minutes : seconds".
3. This window displays the messages sent to the operator from the part program or via DNC.

   The last message received will be shown regardless of where it has come from.
4. This window will display messages from the PLC.

   If the PLC activates two or more messages, the CNC will always display the one with the highest priority, which is the message with the smallest number. In this way, MSG1 will have the highest priority and MSG255 will have the lowest.

   In this case the CNC will display the character + (plus sign), indicating that there are more messages activated by the PLC, it being possible to display them if the ACTIVE MESSAGE option is accessed in the PLC mode.

   In this window the CNC will also display the character * (asterisk), to indicate that at least one of the 256 user-defined screens is active.

   The screens which are active will be displayed, one by one, if the ACTIVE PAGES option is accessed in the PLC mode.
5. Main window.

   Depending on the operating mode, the CNC will show in this window all the information necessary.

   When a CNC or PLC error is produced the system displays this in a superimposed horizontal window.

   The CNC will always display the most important error. The CNC will show the [→] key to indicate that another less important error has also occurred and to press this key to view its message. The CNC will show the [→] key to indicate that another more important error has also occurred and to press this key to view its message.
6. Editing window.

   In some operating modes the last four lines of the main window are used as editing area.

7. CNC reports window. (errors detected in edition, nonexistent program, etc.).
8. This window shows the following information:

| | |
|---|---|
| SHF | Indicates that the [SHIFT] key has been pressed to activate the second function of the keys.<br><br>For example, if the [9] key is pressed after the [SHIFT] key, the CNC will understand that the "$" character is required. |
| CAP | This indicates capital letters ([CAPS] key). The CNC will understand that capital letters are required whenever this is active. |
| INS/REP | Indicates if it is insert mode (INS) or substitution (REP) mode. It is selected by means of the [INS] key. |
| MM/INCH | Indicates the unit system (millimeters or inches) selected for display. |

9. Shows the different options which can be selected with soft-keys F1 thru F7.

## M-Codes Function Table for FAGOR 8055i-TC

| | |
|---|---|
| **M00** | **Program Stop** |
| **M01** | **Optional Program Stop** |
| **M02** | **Program End** |
| **M03** | **Spindle CW** |
| **M04** | **Spindle CCW** |
| **M05** | **Spindle Stop** |
| **M08** | **Coolant On** |
| **M09** | **M8 Coolant Off** |
| **M10** | **Spindle Chuck/Collector Close** |
| **M11** | **Spindle Chuck/Collector Open** |
| **M12** | **Tailstock_Quill Forward** |
| **M13** | **Tailstock_Quill Backward** |
| **M41** | **Gear L Changed** |
| **M42** | **Gear H Changed** |
| **M19** | **Spindle Orientation** |
| **M30** | **Program End** |
| **M77** | **Manual Tool Changed Mode** |
| | |
| | |
| | |

# The lists of the PLC-Parameters for operator to Setup different operation mode

Please change the CNC operating mode to **ISO-Mode** (8055iT-Mode) by push the **“SHIFT”+”ESC”** keys, then go into the “**Machine Parameters**” function tables. The “PLC Parameter” is under the “Machine Parameter” groups.

**CNC PLC Parameters: P2 (Home Searching Function)**
**P2 = 0 (Default Value)**
Once the machine power is turn-on, you don’t finish “Home Search” function, the “Cycle Start” key inhibited and the CNC can’t execute M, S, and T functions.
**P2 = 1**
Once the machine is power-on, no the “Home Search”, but you want to execute M, S and T functions.

**CNC PLC Parameters: P3 (M00/M01 Function)**
**P3 = 0 (Default Value)**
**P3 = 1**
M00/M01 function enables the door interlock unlocked.

**CNC PLC Parameters: P4 (Turret Function)**
**P4 = 0**
It’s to disable turret Function
**P4= 1**
Enable turret (T8) Function

**CNC PLC Parameters: P5 (Auto Gear Changed Function)**
**P5 = 0 (Default Value)**.
The machine had not installed the Auto Gear Changed Function
**P5 = 1 (Default Value)**.
Enable Auto Gear Changed Function.

**CNC PLC Parameters: P6 (Hydraulic Chuck Function)**
**P6 = 0 (Default Value)**
The machine had not installed the hydraulic chuck function.
**P6 = 1**
It’s to set up the hydraulic chuck function to the machine without sensors.

**CNC PLC Parameters: P7 (Hydraulic Tail-Quill Function)**

**P7 = 0 (Default Value)**

The machine had not installed the hydraulic tail-quill function.

**P7 = 1**

It's to set up the hydraulic tail-quill function.

**CNC PLC Parameters: P8 (Chip Conveyor Function)**

**P8 = 0 (Default Value)**

The machine had not installed the Chip Conveyor function.

**P8 = 1**

It's to set up the Chip Conveyor function.

**CNC PLC Parameters: P9 (Spindle Orientation Function)**

**P9 = 0**

The machine had not installed the Spindle Orientation function.

**P9 = 1 (Default Value)**

It's to set up the Spindle Orientation function.

**CNC PLC Parameters: P10 (Portable Handwheels Function)**

**P10 = 0 (Default Value)**

The machine had not installed the Portable handwheel function.

**P10 = 1**

It's to set up the Portable handwheel function.

**CNC PLC Parameters: P11&P12 (Axes Lubricated Pump Function)**

**P11= 15** (Seconds): The Lubricated Pump Turning Period.

**P12= 30** (Minutes): Deactivate The Lubricated Pump Turning Period.

**CNC PLC Parameters: P13 (Hydraulic Chuck Function)**

**P13 = 3** (Seconds): The chuck open/close time period.

The PLC timer is control hydraulic chuck close and open function.

**For examples:**

While the machine is executing the chuck close (**M10**) or open (**M11**) function, it can control close or open time period by the PLC timer.

**CNC PLC Parameters: P14 (Hydraulic Tail-Quill Function)**

**P14 = 3** (Seconds): The quill forward/backward time period.

The PLC timer is control tail stock-quill forward and backward function.

**For examples:**

While the machine is executing the quill of the tail stock forward (**M12**) or backward (**M13**) function, it can control the forward or backward time period by the PLC timers.

**CNC PLC Parameters: P15 (Gear1 Minimum Speed)**

**P15 = 60 (rpm)**

**Set up the Spindle minimum speed allowed to turn in the low gear level.**

**CNC PLC Parameters: P16 (Gear2 Minimum Speed)**

**P16 = 300 (rpm)**

**Set up the Spindle minimum speed allowed to turn in the high gear level.**

# Trouble shooting for FAGOR 8055i TC

## Errors Messages:

**1. X-AXIS DRIVER ALARMS**
**2. Z-AXIS DRIVER ALARMS**
**3. SPINDLE DRIVER ALARMS**
**Cause:**
The FAGOR digital driver's system & servomotors (X, Z and S) had some errors or alarms issued.
**Trouble shooting:**
Check the driver's status, it would show checksum codes by the "8-Segament Led Displayer" on the each driver. The list of errors and warning codes, you can reference to the manual of the "FAGOR Servo Driver System".
In the manual has troubleshooting and solution.

**4. HYDRAULIC MOTOR OVERLOADS**
**Cause:**
The hydraulic-pump motor is turning over current then the motor overload relay tripped.
**Trouble shooting:**
Check the hydraulic-pump motor if turning in correctly direction.
Check the hydraulic oil if it is not enough, let the pump motor dry running.
Check the pump motor cable & connector if it had the short-circuited condition.

**5. GEAR MOTOR OVERLOADS**
**Cause:**
The Gear motor is turning over current then the motor overload relay tripped.
**Trouble shooting:**
Check the Gear motor if turning in correctly direction.
Check the Gear motor cable & connector if it had the short-circuited condition.

**6. GEAR CHANGE OVERTIMES**
**Cause:**
When the CNC is executing automatic gear changed function, it had not finished inside the 30 seconds period.
**Trouble shooting:**
Check the gear level sensors, gear motor and wiring of the gear changed device if they are working correctly.

**7. TURRET MOTOR OVERLOADS**

**8. TURRET MOTOR OVERTEMP**

**Cause:**

The turret motor is turning over current and makes the turret motor over heat then the motor overload relay jump and motor temperature sensor (PTC) signals an excess temperature of motor coils.

**Trouble shooting:**

Check the PTC sensor, motor and wiring of the turret if they are working correctly.

Check the turret motor if it is turning in correctly.

Check the motor voltage if it is on the normal range.

Check the turret motor cable & connector if it had the short-circuited or power phase loss condition.

**9. TURRET COUNTING SENSOR MISSING**

**10. TURRET CHANGE OVERTIMES**

**11. TURRET HOMINGING OVERTIMES**

**Cause:**

Tool changed is not finished by the external E-Stop, CNC Errors and other alarms make the tool-changed failure and not finished inside 20 seconds.

**Trouble shooting:**

Please reference to the turret manual and check the turret sensors, turret solenoids and wiring of the turret if they are working correctly.

Push the “E-Stop” button again, then release the “E-Stop” button and push the “Reset” key to reset the CNC. After the CNC in the ready condition, make the tool-changed by the MDI mode and the CNC would be making the turret “Home return”

**12. CHUCK CLAMPING OVERTIMES**

**13. CHUCK UNCLAMPING OVERTIMES**

**Cause:**

When the CNC is executing the chuck clamping\open function, it isn’t finish inside 5 seconds.

**Trouble shooting:**

Check the chuck sensors, hydraulic solenoids and hydraulic pressure of the hydraulic chuck devices if they are working correctly.

**14. SPINDLE STOP (CHUCK NOT READY)**

**Cause:**

The spindle is prohibited while the hydraulic chuck not ready position.

**Trouble shooting:**

Check the sensors of the chuck to confirm correctly condition position.

Check the hydraulic chuck if it is working correctly.

**15. SPINDLE STOP (GEAR NOT ENGAGED)**

**Cause:**

The spindle is prohibited while the gear not engaged or not in gear range position.

**Trouble shooting:**

Check the sensors of the gear to confirm correctly condition position.

Check the gear motor if it is working correctly.

# Alarms Messages:

**1. SPINDLE CHUCK GUARD OPEN**

**Cause:**

When the spindle chuck guard is open, the CNC would stop the machine running immediately and launch this message.

**Trouble shooting:**

Close the chuck guard and check this limit switch.

Chuck guard must be closed in order to be able to start the spindle.

**2. TAILSTOCK LIMIT TOUCH**

**Cause:**

When the z-axis are travel over soft limit and touch the limit switch.

**Trouble shooting:**

Move the tailstock back to the safety area.

Move z axis (-) direction and leave the limit switch.

**3. Z+ TRAVEL LIMIT**

**4. Z- TRAVEL LIMIT**

**5. X+ TRAVEL LIMIT**

**6. X- TRAVEL LIMIT**

**Cause:**

When axes travel over soft limit and touch the limit switches or executing tool probing cycle and tool touch the probe. The CNC had limit the axes moving only in the right direction.

**Trouble shooting:**

If axes had touched the limit switches need to keep push the “O.T” button to

Bypass the travel limit. Push “Control Ready” button, then moving the axes in the correctly direction into the safety travel area.

**7. GEAR CHANGE TO "L"**

**8. GEAR CHANGE TO “M” (NA)**

**9. GEAR CHANGE TO “H”**

**Cause:**

The gear change operation has repetitively for different speed range.

When the gear-head go into the correct position, this message would disappear.

**10. PRG S TOO LOW**

**Cause:**

The spindle is prohibited while command speed is lower than minimum speed limit of the each gear level.

**Trouble shooting:**

Put new speed command then to run spindle again.

**11. PRESS "ENTER" TO CONFIRM**

**12. PRESS "CYCLE START" TO RUN**

**Cause:**

It is mean the CNC executing the manual spindle's gear changed function, the CNC launch these messages in the different modes. When the gears are engaged to the correct related position, you need to press the key to reconfirm
the gear is changed ready, then these messages would be disappeared.

**13. AXES LUBE. OIL-LEVEL LOW ALARMS**

**Cause:**

Slide lube level is low refill oil tank.

1. Under the manual-mode, the CNC can't execute any command and the key "Cycle Start" is no function (Inhibit).
2. During CNC in the executing-mode, the CNC would change to the "Single-Block" mode and into the "Feed Hold" condition, waiting this alarm take out, then press "Cycle Start" key to restart the programs and the CNC functions.
3. Under the "Lubrication-low" condition happen 15 minutes; the CNC would go into the "Stop" condition.

**Trouble shooting:**

Refill oil up to maximum-level.
If tank oil level is okay then please call for service.

**14. NO SPINDLE SPEED VALUES**

**Cause:**

It means no spindle speed command while push the "**CW**" or "**CCW**" keys or executing the "M3" or "M4" function to turning the spindle.

**Trouble shooting:**

Key in the spindle speed value and maximum speed, and the message would
be disappeared and can turning the spindle.

## 15. COOLANT PUMP OVERLOADS

**Cause**

This indicates that the coolant motor has pump or is faulty. Relay inside panel has tripped, service or trained personnel should investigate if problem persists.

**Trouble shooting:**

Checking the coolant-pump if it is turning in correctly direction.
Checking the coolant water if it is not enough, let the pump motor dry running.
Checking the pump cable, connector if it had the short-circuited happen condition.
Reset the motor breaker (overload) inside the electrical cabinet.

## 16. DOOR OPEN (COOLANT-OFF)

**Cause:**

Under door-open in the manual-mode, limit the axes speed and the rapid feed, spindle speed and coolant pump would be inhibited.
The axes' feed can be limited by the "Axis Parameter(**P75**)" values independently.
The spindle speed can be limited by the "Spindle Parameter (**P66**)" values.
If you want to disable these speed limited, setup the PLC parameter (**P3 = 0**).

**Trouble shooting:**

Close the door guards, this message would disappear and some speed limits would be cancelled.

## 17. DOOR OPEN CAN'T CYSTART (AUTO)

**Cause:**

This is a guard interlocks protection function. Under the automatic mode, must be close the guard.

1. During the CNC in the executing-mode you can press the "**Cycle_Stop**" key to stop the CNC, then push key "Spindle Stop" to stop spindle turning. Then push the "Door-Release" key to open the door.
2. Under the door open, the axes, coolant pump and chip-conveyor function would be immediate stop and into the "**Feed hold**" condition, and the spindle speed down to lower speed turning.
3. While the CNC is executing "M00, M01, M02, M30", the door interlock would be released automatic.

**Trouble shooting:**

Close the door guards, this message would disappear then press the "Cycle Start" key to continue run the program.

**18. PUSH “SERVO ON”**

**Cause:**

The driver system and CNC in the ready status, waiting power supply to the FAGOR driver power-supply. After the power-supply system go into “BUS ON” status and green led on display, this alarm message immediately disappeared.

**Trouble shooting:**

Please push the “Servo On” button on operator panel.

**19. CHIP CONVEYOR MOTOR OVERLOADS**

**Cause:**

This indicates that the chip conveyor motor has turnning or is faulty. Relay inside panel has tripped, service or trained personnel should investigate if problem persists.

**Trouble shooting:**

Check mechanical function of the chip-conveyor if it had some troubles.

Clean the chips in the conveyor are too much let motor can’t run smoothly..

Reset the overload relay inside the electrical cabinet.

**20. CHUCK MUST BE CLAMPING**

**21. CHUCK MUST BE UNCLAMPING**

**Cause:**

After correct clamping of the work piece in the chuck one of the drawbar position sensors which detect that the drawbar is at one end or the other of its stroke has detected the drawbar. This would normally indicate that correct clamping has not been attained.

The CNC detect the alarms and launch these messages, then inhibit the spindle turning.

**Trouble shooting:**

Check the sensors, hydraulic solenoids of the chuck drawbar open\close if they are working correctly.

Check the chuck mechanical function if it had some troubles to let the drawbar working correctly.

Execute the **M10/M11**function, or use foot pad to close or open the chuck.

**22. CHUCK NOT READY CAN'T CYSTART**

**Cause:**

Proceed by closing/open the chuck and restarting.

If the chuck is already closed or open, then there is a problem with the chuck drawbar sensors.

While the hydraulic chuck clamping parts and sensors aren't correctly, it must be open and clamping work piece again.

The CNC detect the alarms and launch this message, inhibit the machine from running.

**Trouble shooting:**

Check the sensors, hydraulic solenoids of the spindle chuck-clamping device if they are working correctly.

Check the spindle mechanical clamping function if it had some troubles to let the chuck clamping working correctly.

**23. SPINDLE RUNING CHUCK CAN'T UN/CLAMPING**

**Cause:**

This is displayed if the operator tries to move the chuck/drawbar when the spindle is running or spindle orientation (**M19**) is active.

When the spindle is turning, the hydraulic chuck function would be inhibited.

The CNC detect the alarms and launches this message, inhibit the function working properly.

**24. SPINDLE RUNING TAIL-QUILL CAN'T MOVING**

**Cause:**

This is displayed if the operator tries to move the tail quill when the spindle is running or spindle orientation (**M19**) is active.

When the spindle is turning, the hydraulic tail quill function would be inhibited.

The CNC detect the alarms and launch this message, inhibit the function working properly.

**25. M01STOP FUNCTION ACTIVED**

**Cause:**

Under the automatic mode, the CNC had executed the "**M01**" function and the M01-function key is on status. At the moment, the machine and coolant water would be immediate stop and the door-interlock would be released automatic then go into the "M01 stop" condition.

**Trouble shooting:**

Close the door, press the "Cycle Start" or "Reset" keys and this message would be disappeared.

**26. BLOCKSKIP1 FUNCTION ACTIVED**

**Cause:**

When you press the “**Block Skip**” key, the PLC sets these signals at a high logic level to tell the CNC that the block skip condition “/ ” , “/1” is met, therefore, the blocks which have the block skip condition will not be executed..

**Trouble shooting:**

Press the “**Block Skip**” key again to cancel this function, this message would be disappeared.

**27. FEED HANDWHEEL FUNCTION ACTIVED**

**Cause:**

When you press the “**Feed Hand Wheel**” key, the PLC sets these signals at a high logic level to tell the CNC that the Feed Hand wheel condition. It is possible to use the machine hand wheels to control that federate.

This way, the machining federate will depend on how fast the hand wheel is turned.

**Trouble shooting:**

Press the “**Feed Hand Wheel**” key again to cancel this function, this message would be disappeared.

**29. TURRET IS HOMING**

**Cause:**

It is mean the CNC executing the turret T1 search function, the CNC launch this message. When the turret goes to the T1 position, this message would disappear.

**28. TURRET MUST BE HOME RETURN**

**30. TURRET IS NOT CLAMPING**

**31. TURRET PARITY ERRORS**

**Cause:**

This is generated when the turret has been unclamped for too long.

This indicates that the turret is either obstructed or faulty.

No or wrong feedback from turret, call service.

**Trouble shooting:**

Reference to the turret manual and check the turret position sensors, hydraulic solenoids and wiring of the turret if they are working correctly.

**32. TOOL REQUESTED NOT IN TURRET**

**Cause:**

Sometimes, you want to use another tool in the manual tool post.

Tool number command is not in the turret position. The CNC detect alarms and launches this message.

**33 HOME SEARCH NOT DONE**

**Cause:**

When power on the machine every time, not make the machine home search.

**Trouble shooting:**

Executing the “Home Search” function and finished, this message would be disappear.

If you don’t finish 2-axes reference return, the CNC would be inhibited the “Cycle Start” key.

If you need to use the “Cycle Start” key under the “Home Search Not Done”

**34. CHUCK SENSORS STICKY ALARMS**

**35. CHUCK SENSORS MISSING ALARMS**

**Cause:**

It’s mean the spindle chuck open\close accessory not in the ready condition.

The CNC detect the alarms and launch this message, inhibit the spindle turning.

**Trouble shooting:**

Check the sensors of the spindle chuck open\close device if they are working correctly.

Check the signals of the chuck open\close sensors if they had feedback to the CNC.

**36. GEAR NOT ENGEAGED**

**Cause:**

It is mean the CNC executing the spindle’s gear changed function, the CNC launch this message. When the gear-head go into the correct position, this message would be disappeared.

**Trouble shooting:**

Check the gear-level sensors and gear motor function if they are working correctly.

Check some mechanical device of the spindle gear-change if it had some troubles

**37. SPINDLE LUBE. PUMP OVERLOADS**

**Cause:**

This indicates that the spindle oil pump motor has running or is faulty’.

Relay inside panel has tripped.

**Trouble shooting:**

Check the spindle oil-pump if it had any trouble.

Check the spindle oil if it is not enough, let the pump motor dry running.

Check the spindle oil pump turning direction, if it is correctly.

**38. FEED OVERRIDE = 0%**

**Cause:**

It indicated the axes feeder rate potential meter is switch to “0%” position.

**39. AXES LUBE. OIL PRESSURE LOW ALARMS**

**Cause:**

When the axes lubricated pump is activated and oil pressure can’t reach the normal then the PLC issued this alarms.

**Trouble shooting:**

Check oil level in slide oil tank.

Checking the oil tube or pipe of the lubrication had broken or loosened happen.

**40. SPINDLE RUN SWITCH NOT OFF**

**Cause:**

It indicated the manual spindle CW/CCW switch not switch to “Off” position and the CNC issued this message to inform operator to switch to off position, and then it will allow to run the spindle.

# 2th Control Panel Function-Key Definition:


**M01 Function Key**

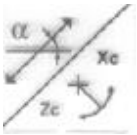
**Block Skip1 Function Key**

**“Feed Hand Wheel” Function Key**

**The Spindle Jogging Function Key**

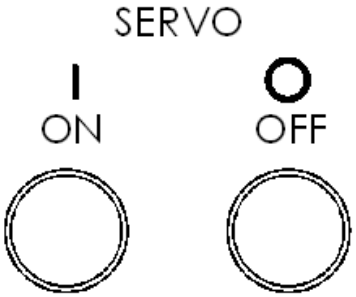
**The Turret Home Return Mode Function Key**


**The Path Hand Wheel (Linear) Function Key**




**The Path Hand Wheel (Arc) Function Key**

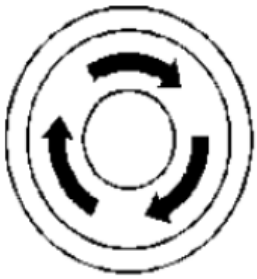

**The switch for the machine's work lamp powers on/off function.**




**The two buttons to turn on/off the power of the driver's system, if had turn-on the machine and the CNC is ready you must push the Servo-On button to enable the driver system with led illuminated. The other, if the machine had any alarms or errors issued, the CNC would be cut-off the power of the driver's system immediately, the LED of the Servo-On button would be turn-off.**

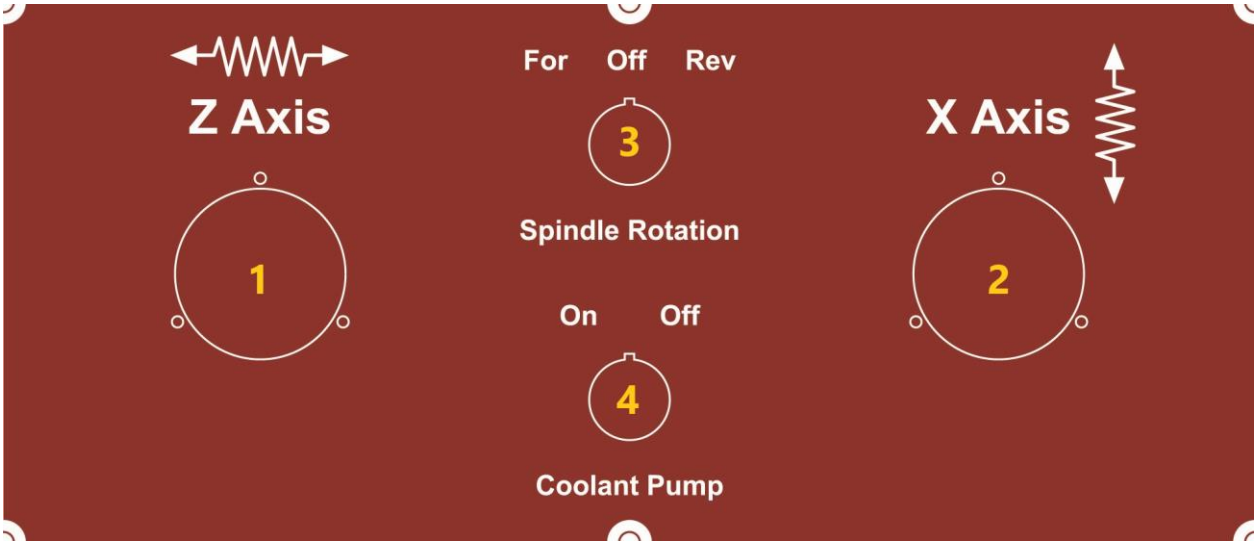

**Over Travel Release button switch function**

EMERGENCY



**The Emergency-Stop button is designed for any dangerous or trouble condition to push this button to prevent any accident to occur.**

## 3th Control Panel Function-Key Definition:




**1. Z AXIS MANUAL PULSE GENERATOR**
**2. X AXIS MANUAL PULSE GENERATOR**
**3. FORWARD REVERSE SWITCH**
**4. COOLANT PUMP ON/OFF**

# 6. ELECTRICAL DIAGRAM & ITS PARTS LIST

**To order parts, please have the following information ready:**

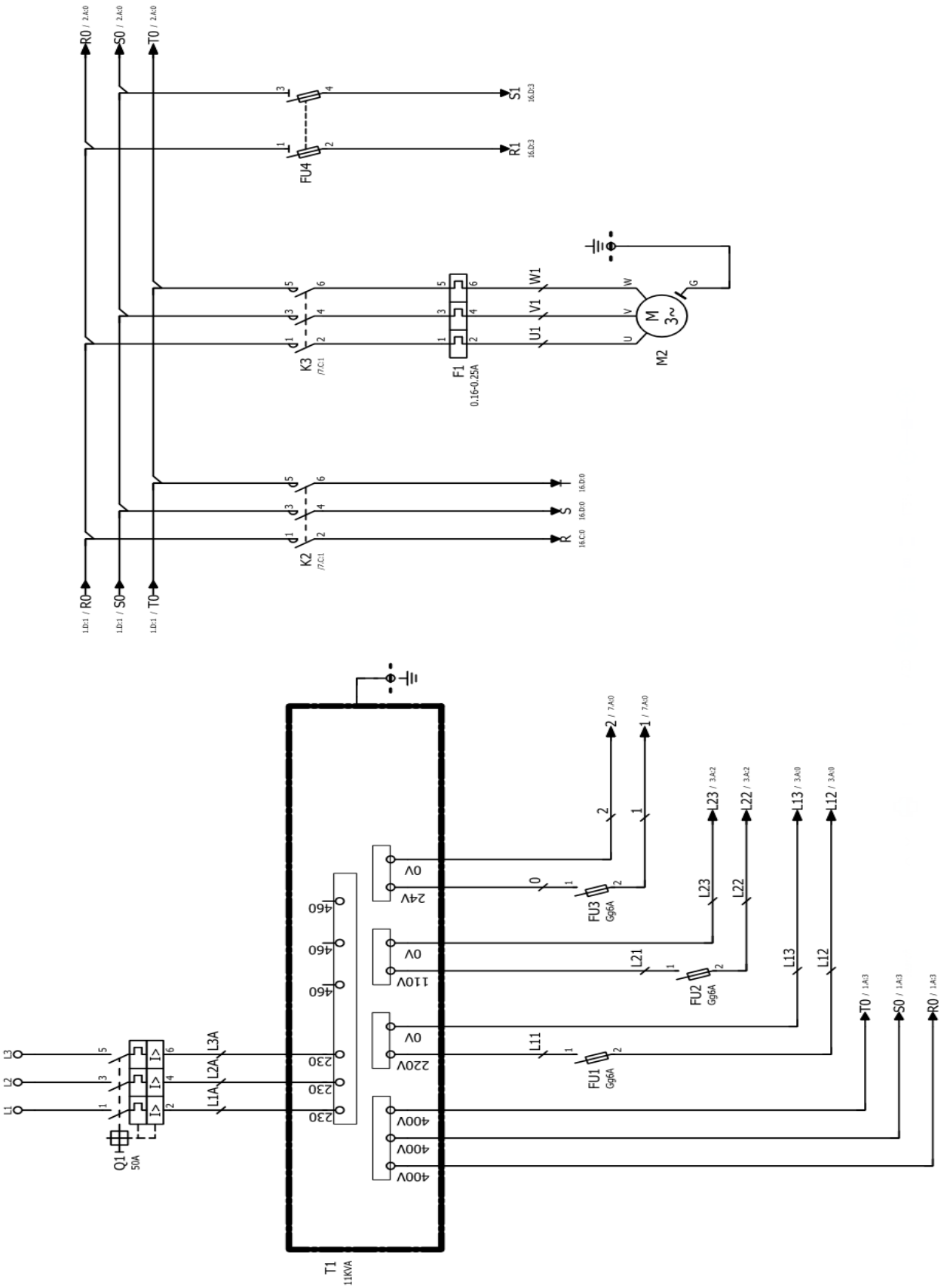
1. **Year of production**
2. **Model and serial number**
3. **Item number and description**
4. **Quantity**

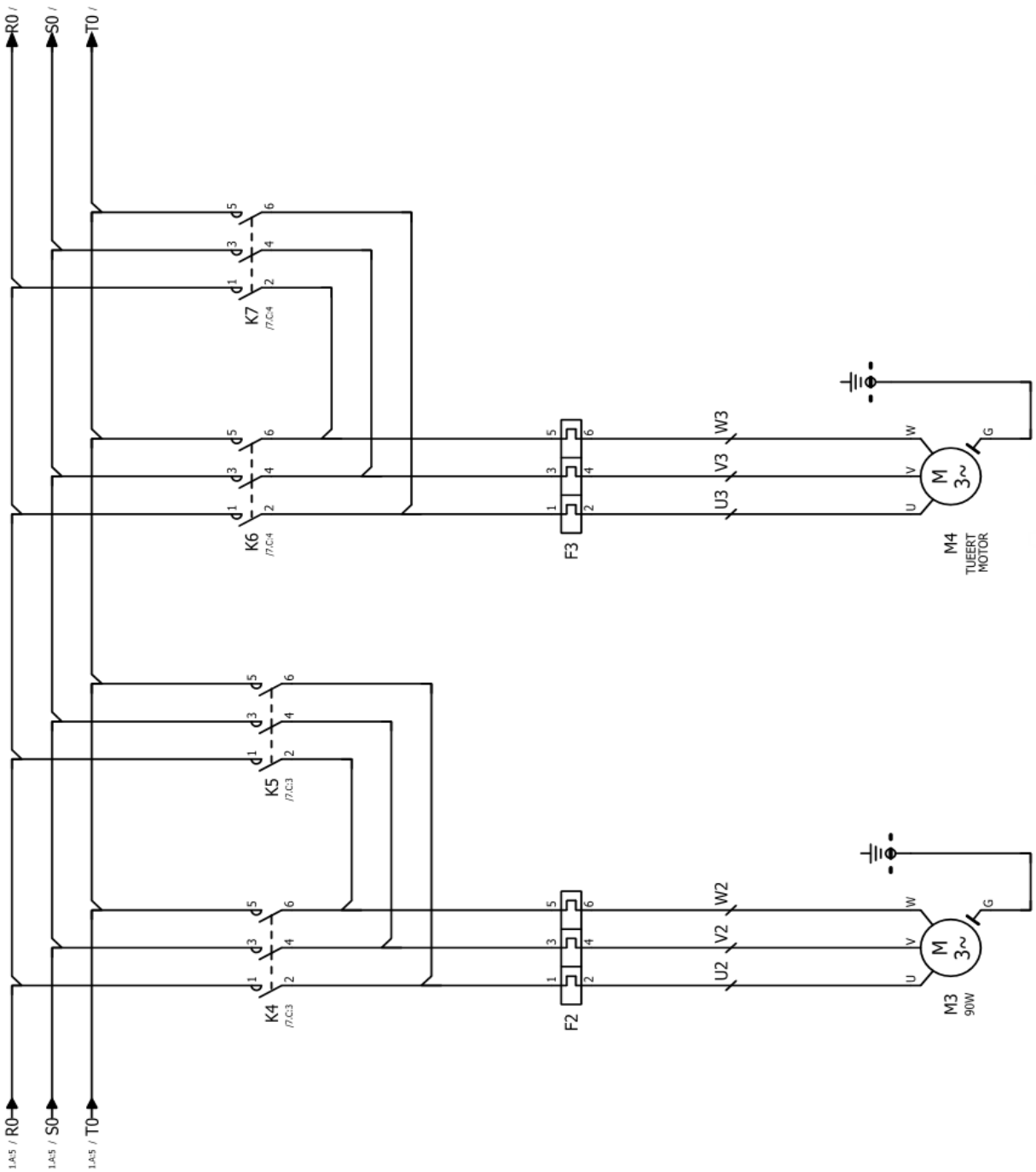
**Before operation, please carefully study the Fagor 8055i CNC control and programming manuals. It is crucial to understand the movement of the axes before taking an actual cut with the machine. Damaging the machine is easy if wrong command is executed. Please do be careful with this CNC lathe, because it is damageable just like much other machinery! Please do study and read the programming manuals from Fagor Automation. Thank you!**

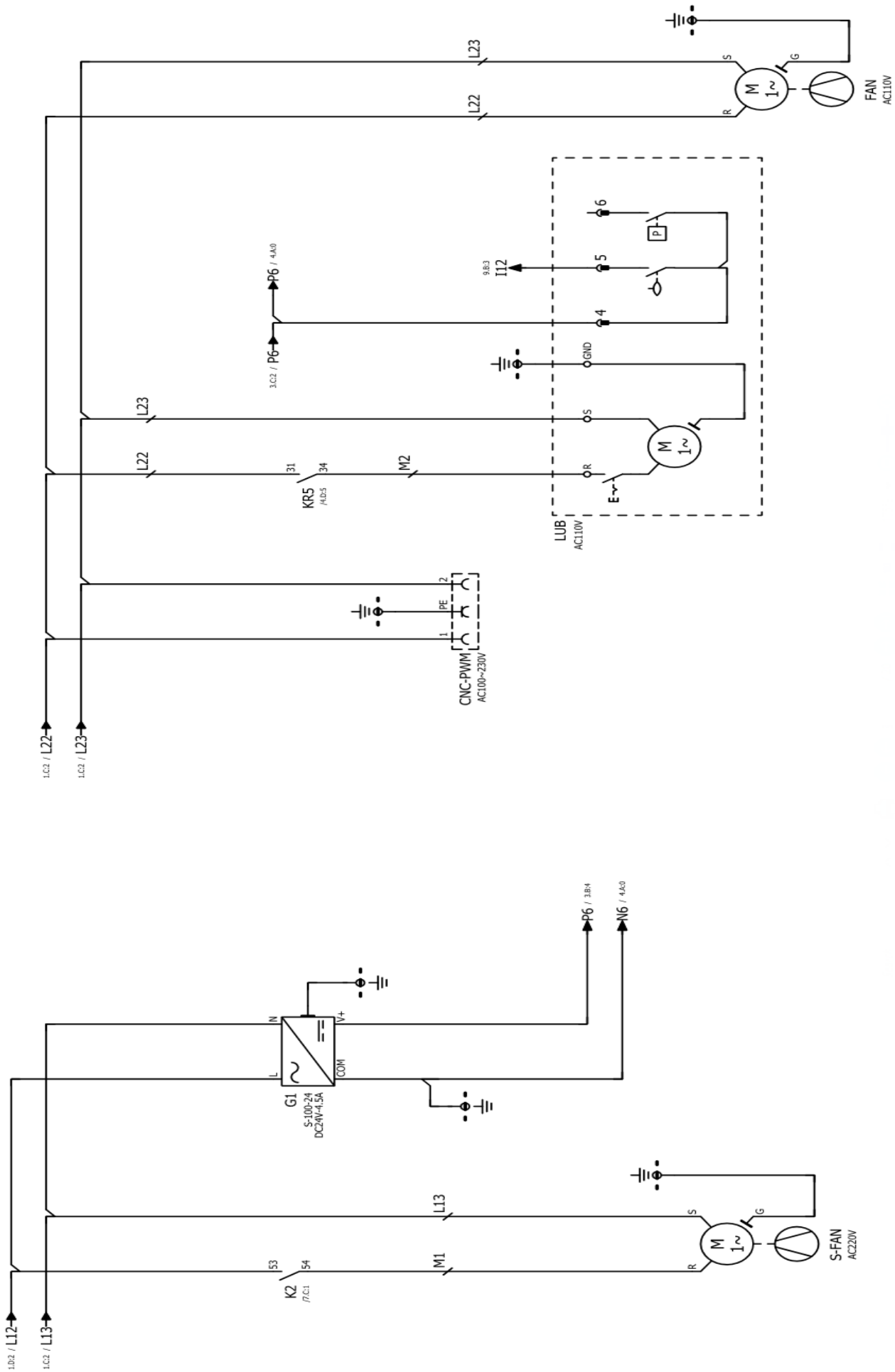
**Note: If the machine is shipped with CNC control, in order to get its parts information, please refer to the supplied control manuals to find the correct part number and specification. And please contact the original control manufacturer for the ordering instructions.**

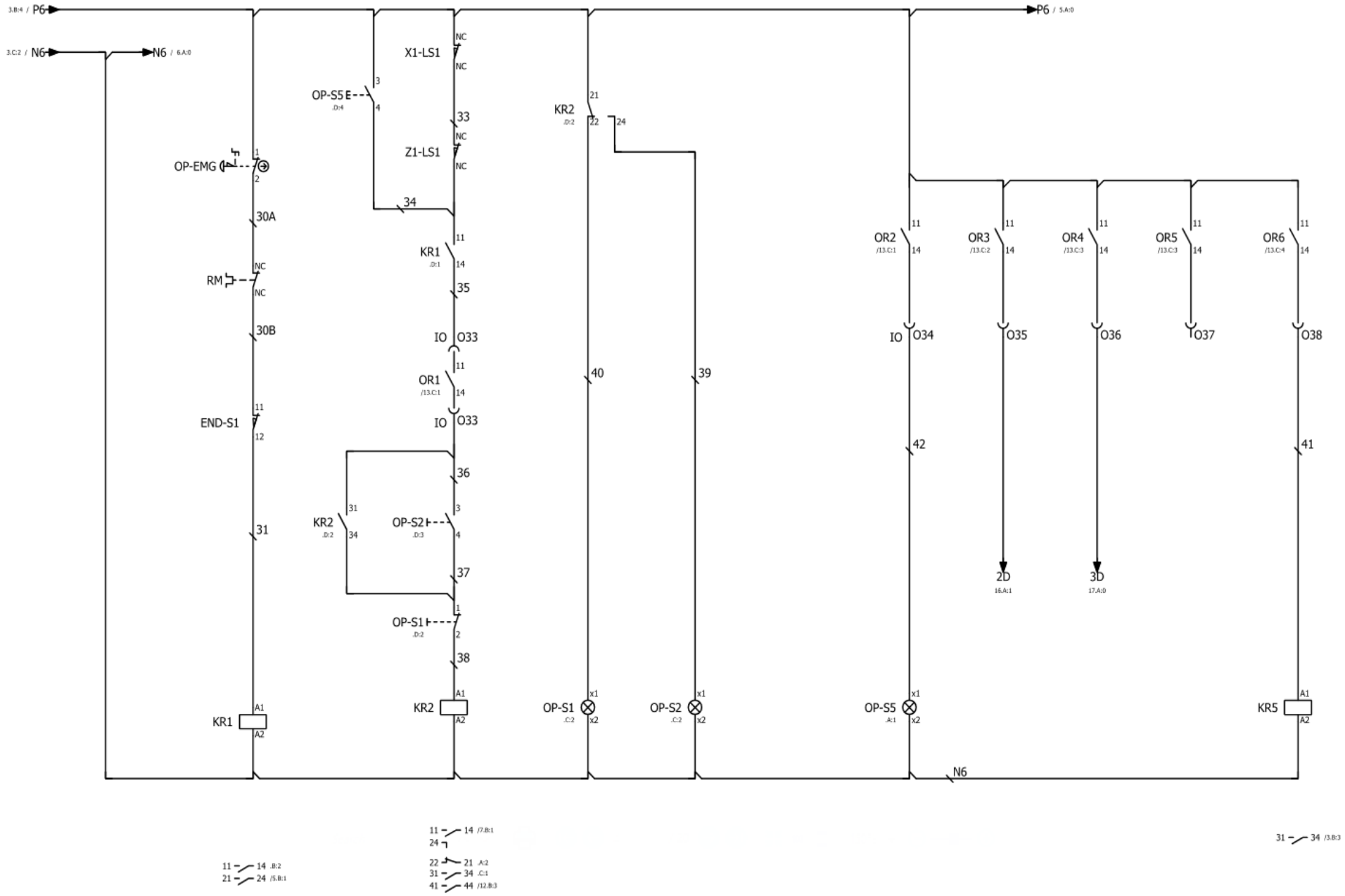
*****Troubleshooting on the control? Please contact control manufacturer's service department, they can get your question solved and get you going quickly. Any other question, please contact our service department. The phone numbers are listed at the front page of the manual. Or please visit our websites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

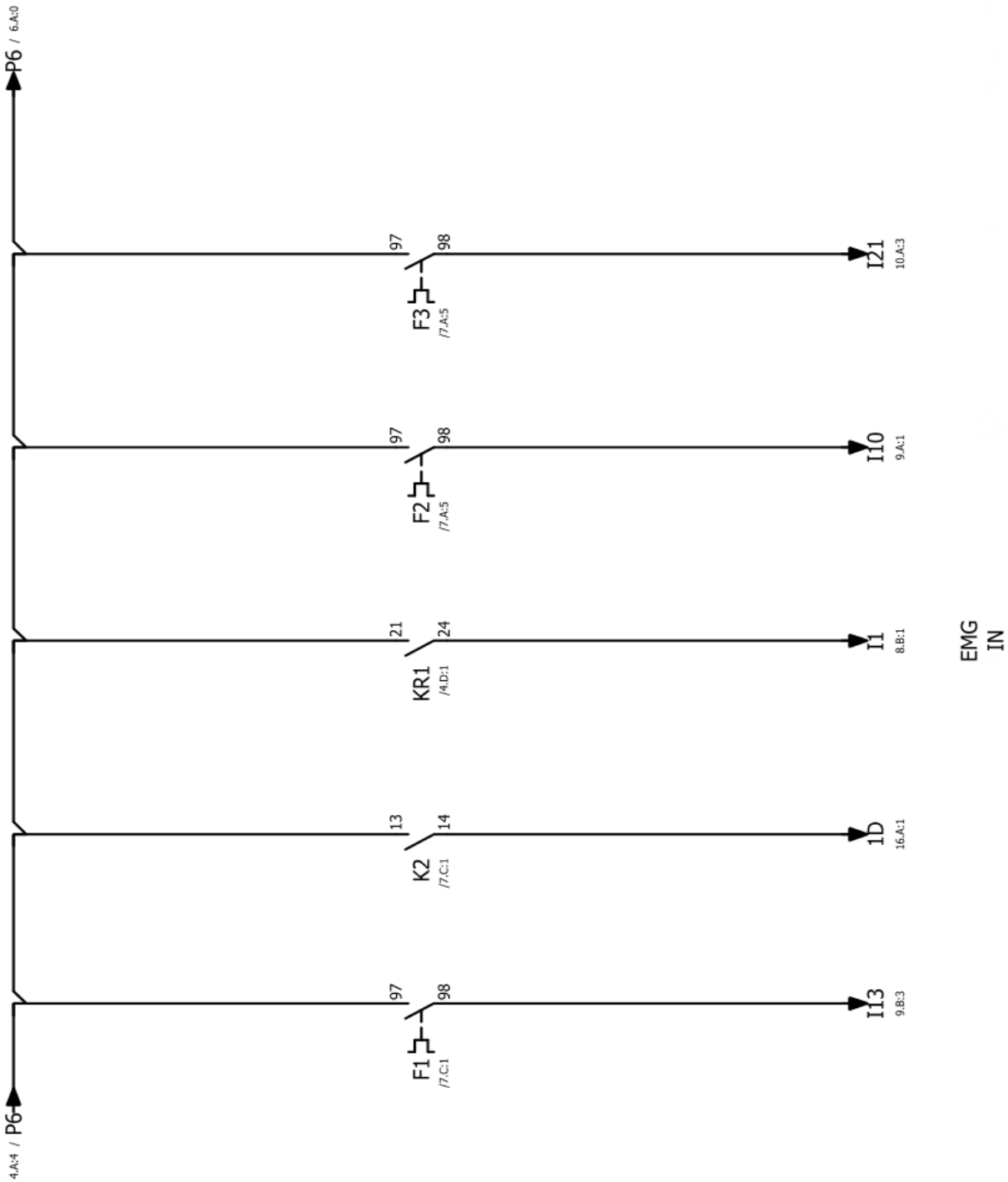
# 6-1. ELECTRICAL CONTROL DIAGRAM

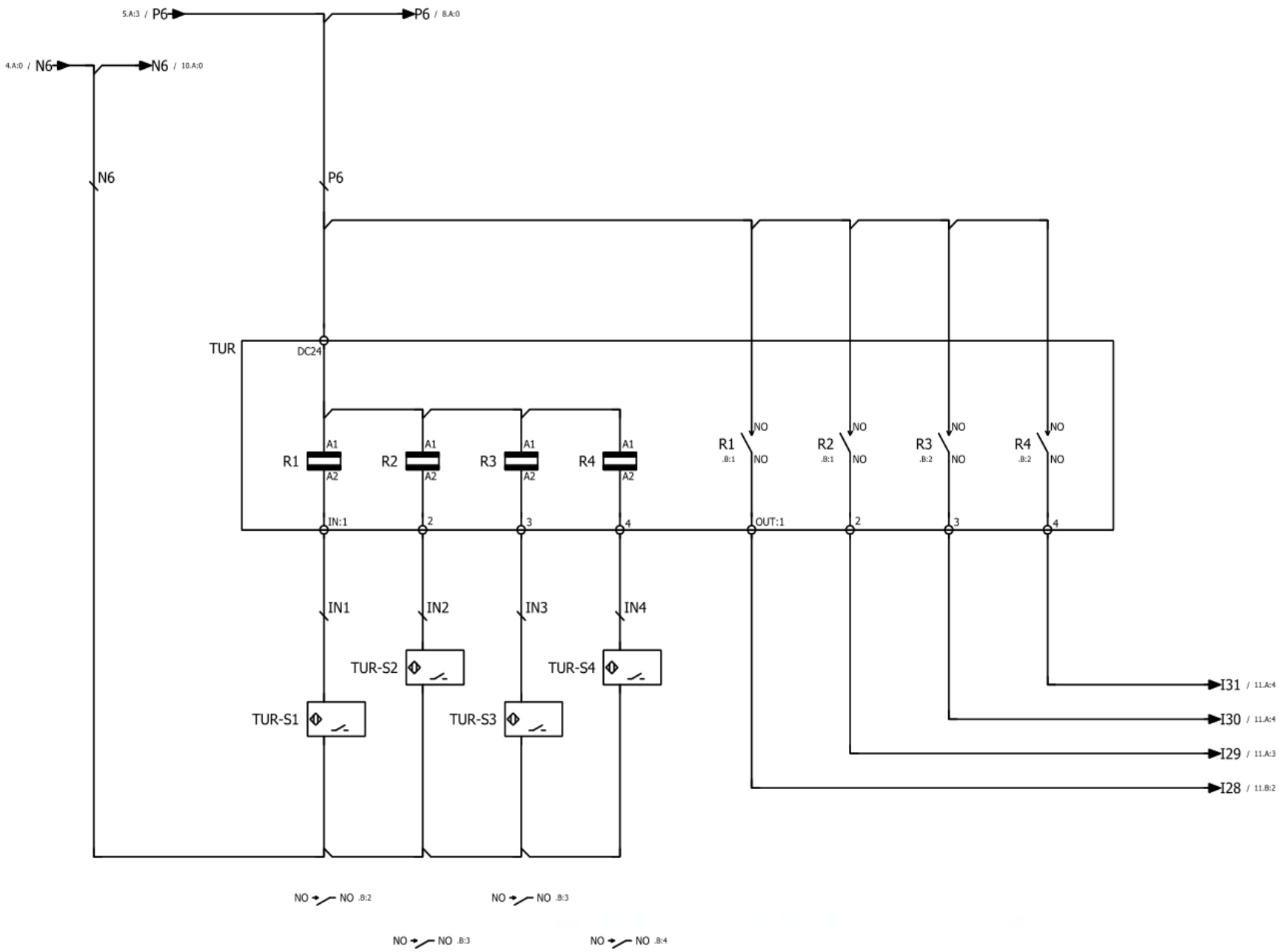


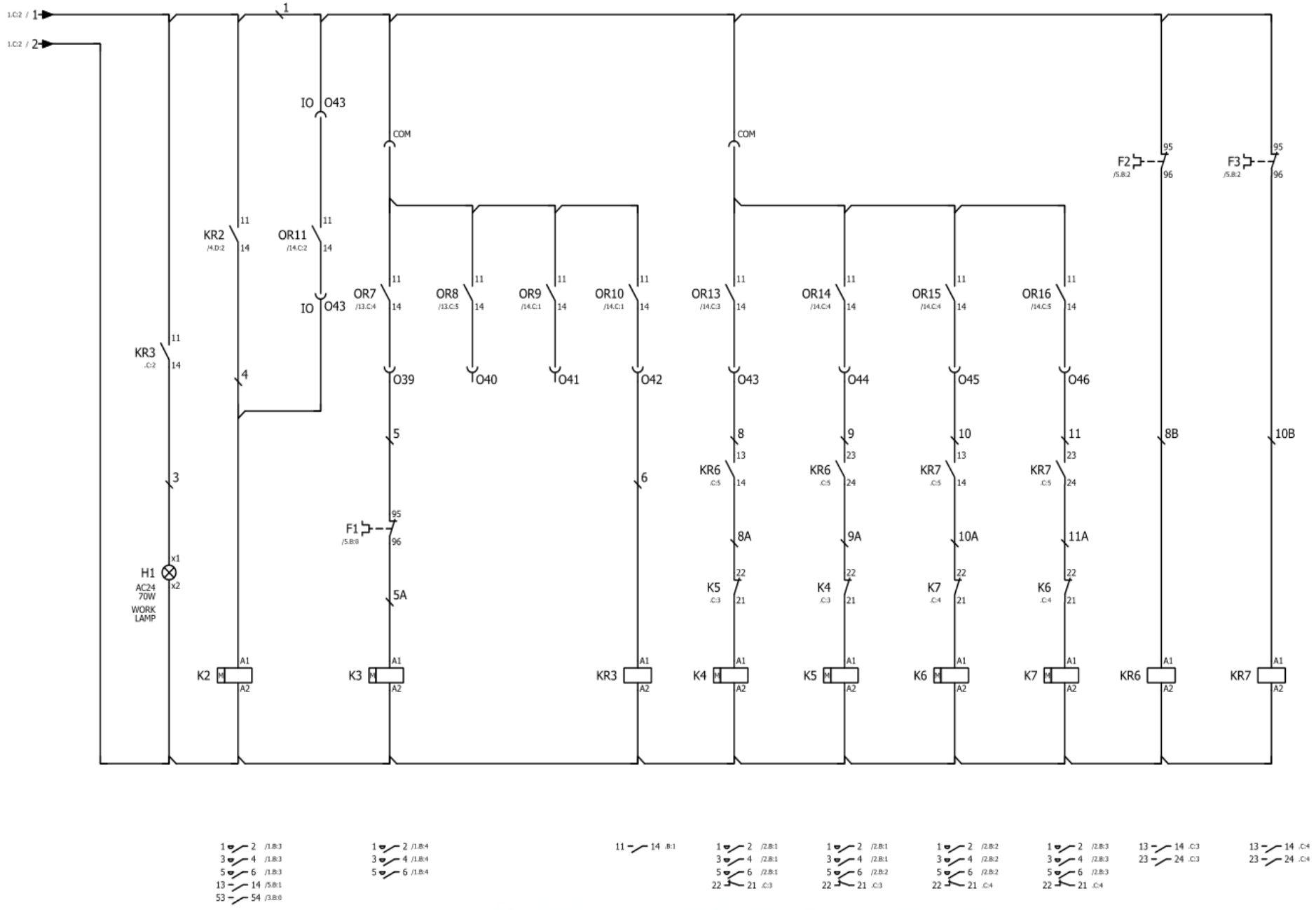

R0
S0
T0
K7
K6
K5
K4
F3
F2
W3
V3
U3
W2
V2
U2
M
3~
M4
TUEERT
MOTOR
M3
90W

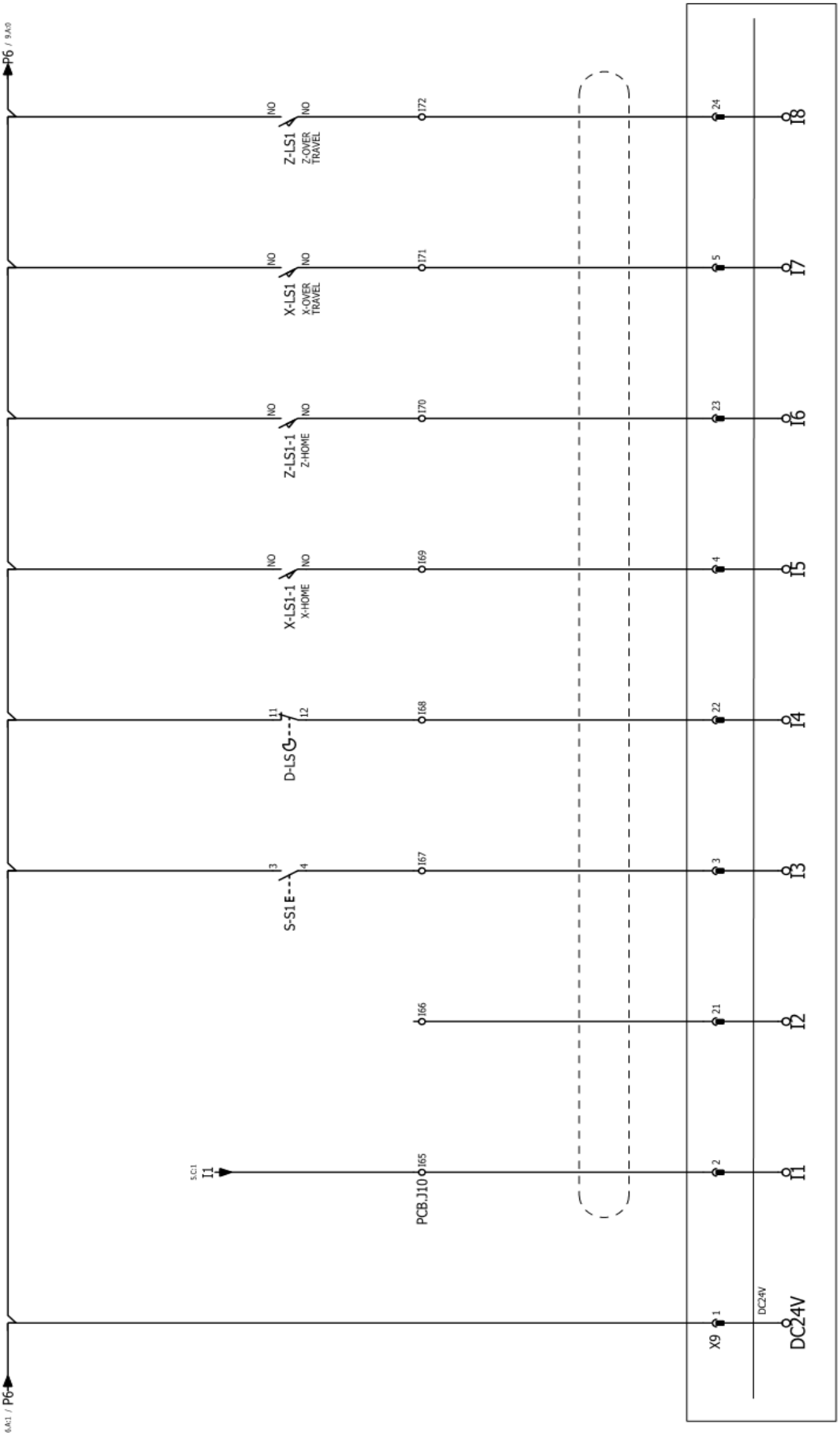

L23
L22
FAN
AC110V
P6 / 4.A.0
I12
9.B.3
P6
1.C.2 / P6
GND
L23
L22
31
34
KR5
/4.D.5
M2
LUB
AC110V
PE
CNC-PWM
AC100~230V
1.C.2 / L22
1.C.2 / L23
P6 / 3.B.4
N6 / 4.A.0
IN
V+
L
COM
G1
S-100-24
DC24V-4.5A
L13
S-FAN
AC220V
53
54
K2
/7.C.1
M1
1.D.2 / L12
1.C.2 / L13

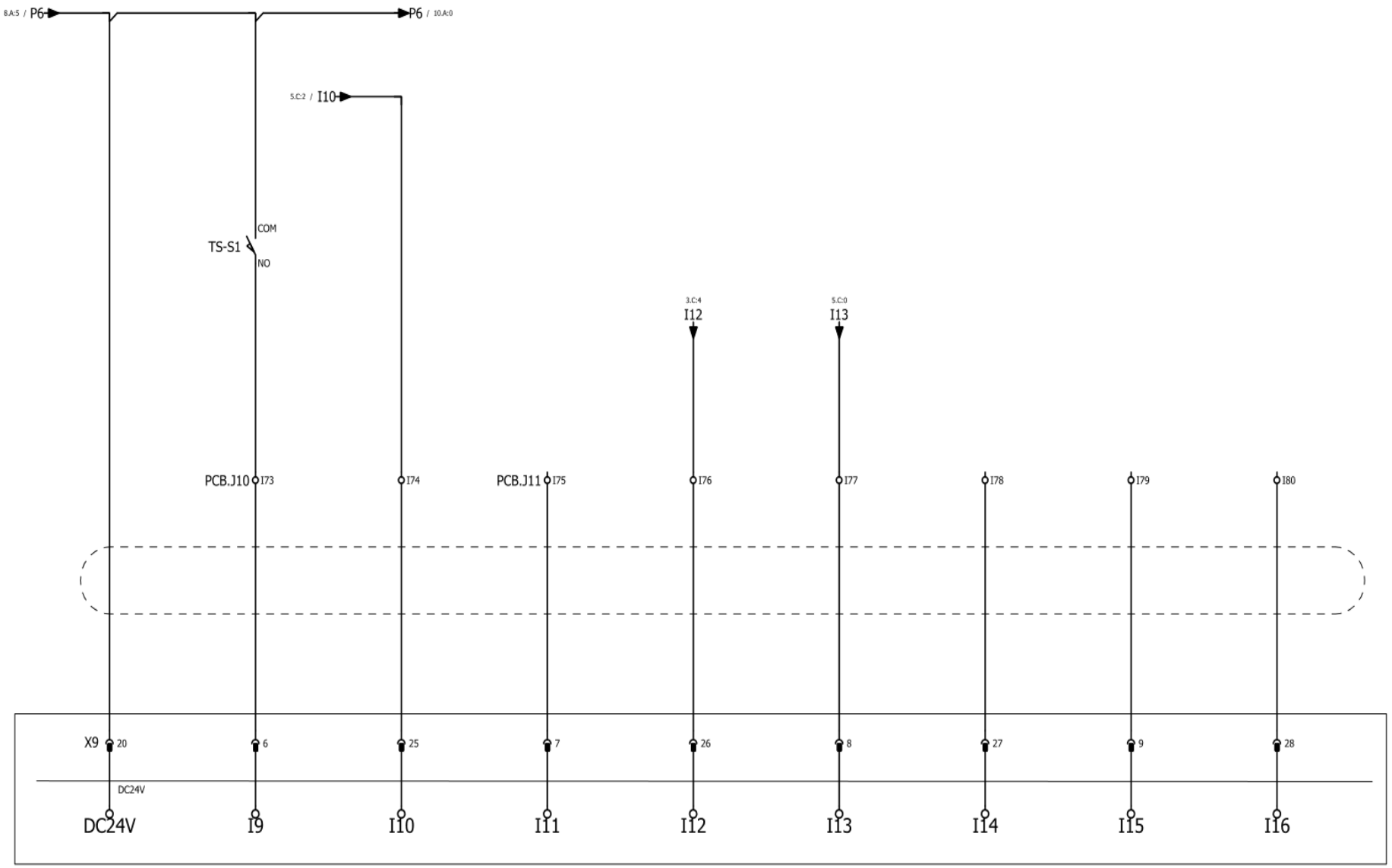

3.B:4 / P6
3.C:2 / N6
N6 / 6.A:0
P6 / 5.A:0
X1-LS1
Z1-LS1
OP-S5
OP-EMG
RM
END-S1
KR1
KR2
OP-S1
OP-S2
OR1
OR2
OR3
OR4
OR5
OR6
IO
O33
O34
O35
O36
O37
O38
30A
30B
31
34
35
36
37
38
39
40
41
42
2D
16.A:1
3D
17.A:0
11 14 /7.B:1
24
22 21 .A:2
31 34 .C:1
41 44 /12.B:3
11 14 .B:2
21 24 /5.B:1
31 34 /3.B:3


4.A:4 / P6
P6 / 6.A:0
F1
/7.C:1
97
98
I13
9.B:3
K2
/7.C:1
13
14
1D
16.A:1
KR1
/4.D:1
21
24
I1
8.B:1
F2
/7.A:5
97
98
I10
9.A:1
F3
/7.A:5
97
98
I21
10.A:3
EMG
IN


5.A:3 / P6
P6 / 8.A:0
4.A:0 / N6
N6 / 10.A:0
N6
P6
TUR
DC24
R1
R2
R3
R4
A1
A2
IN:1
2
3
4
NO
R1 .B:1
R2 .B:1
R3 .B:2
R4 .B:2
OUT:1
IN1
IN2
IN3
IN4
TUR-S1
TUR-S2
TUR-S3
TUR-S4
I31 / 11.A:4
I30 / 11.A:4
I29 / 11.A:3
I28 / 11.B:2
NO NO .B:2
NO NO .B:3
NO NO .B:3
NO NO .B:4

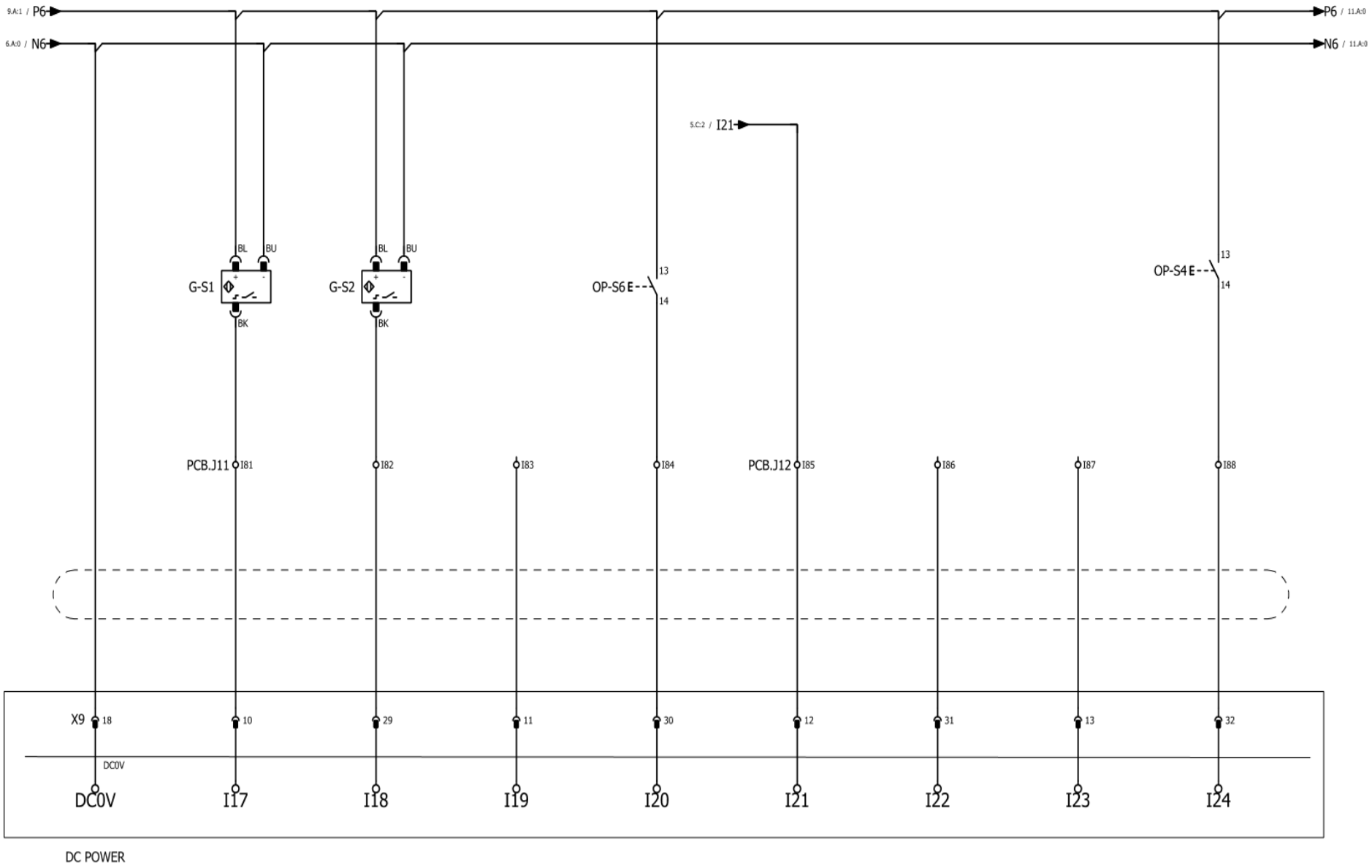

1.C:2 / 1
1.C:2 / 2
IO O43
COM
KR2 /4.D:2
OR11 /14.C:2
OR7 /13.C:4
OR8 /13.C:5
OR9 /14.C:1
OR10 /14.C:1
OR13 /14.C:3
OR14 /14.C:4
OR15 /14.C:4
OR16 /14.C:5
F2 /5.B:2
F3 /5.B:2
KR3 .C:2
O39
O40
O41
O42
O43
O44
O45
O46
F1 /5.B:0
H1
AC24
70W
WORK
LAMP
K2
K3
KR3
K4
K5
K6
K7
KR6
KR7
8B
10B


X9-INPUT
P6 / 9.A:9
6.A:1 / P6
NO
Z-LS1
Z-OVER TRAVEL
X-LS1
X-OVER TRAVEL
Z-LS1-1
Z-HOME
X-LS1-1
X-HOME
D-LS
S-S1E
5.C:1
I1
PCB.J10
X9
DC24V
I1
I2
I3
I4
I5
I6
I7
I8


8.A:5 / P6
P6 / 10.A:0
5.C:2 / I10
COM
TS-S1
NO
3.C:4
I12
5.C:0
I13
PCB.J10
I73
I74
PCB.J11
I75
I76
I77
I78
I79
I80
X9
20
6
25
7
26
8
27
9
28
DC24V
DC24V
I9
I10
I11
I12
I13
I14
I15
I16

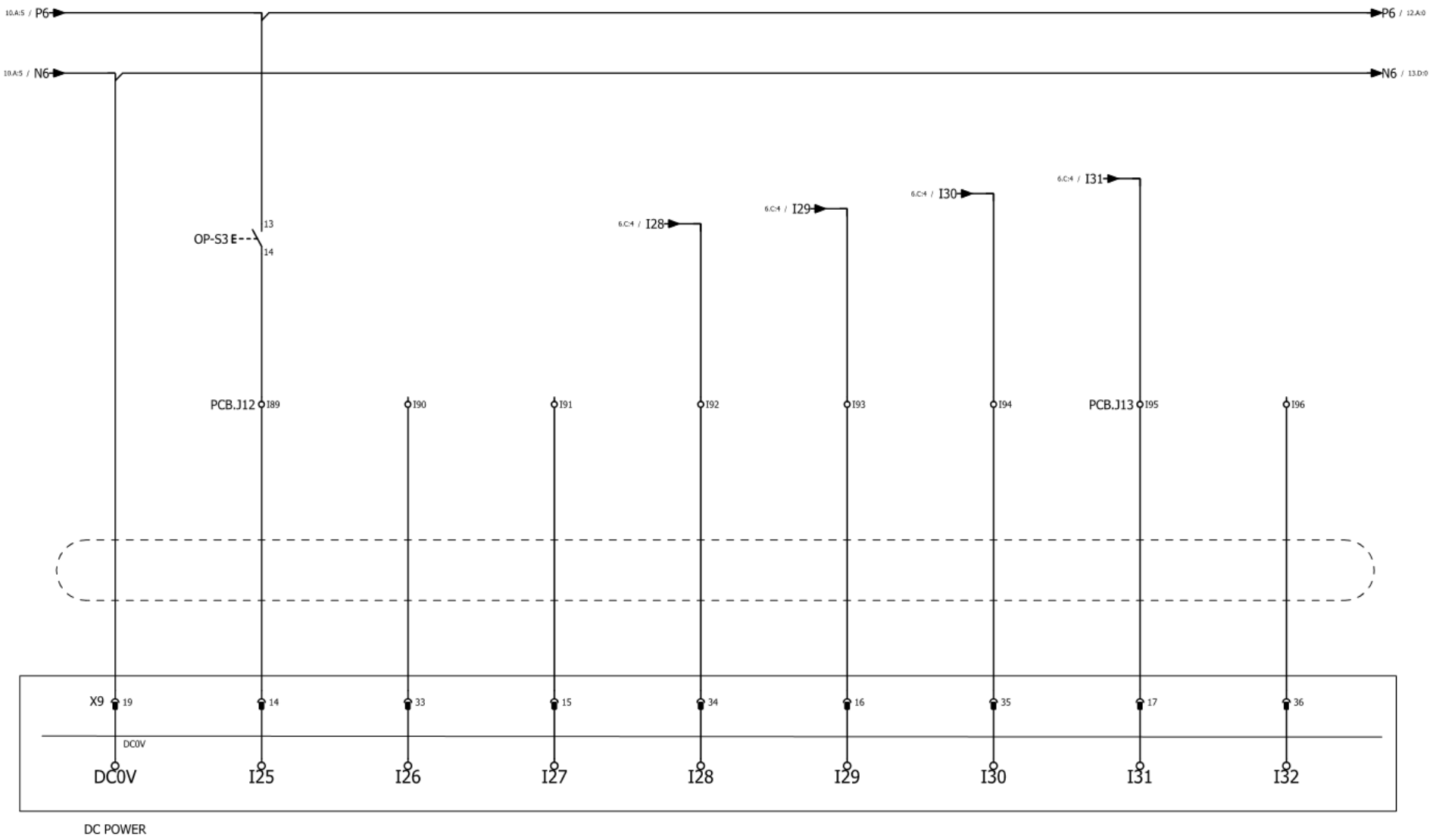
X9-INPUT

/8.C:0


9.A:1 / P6
6.A:0 / N6
P6 / 11.A:0
N6 / 11.A:0
5.C:2 / I21
BL
BU
BK
G-S1
G-S2
OP-S6E
OP-S4E
13
14
PCB.J11
PCB.J12
I81
I82
I83
I84
I85
I86
I87
I88
X9
18
10
29
11
30
12
31
13
32
DC0V
I17
I18
I19
I20
I21
I22
I23
I24
DC POWER

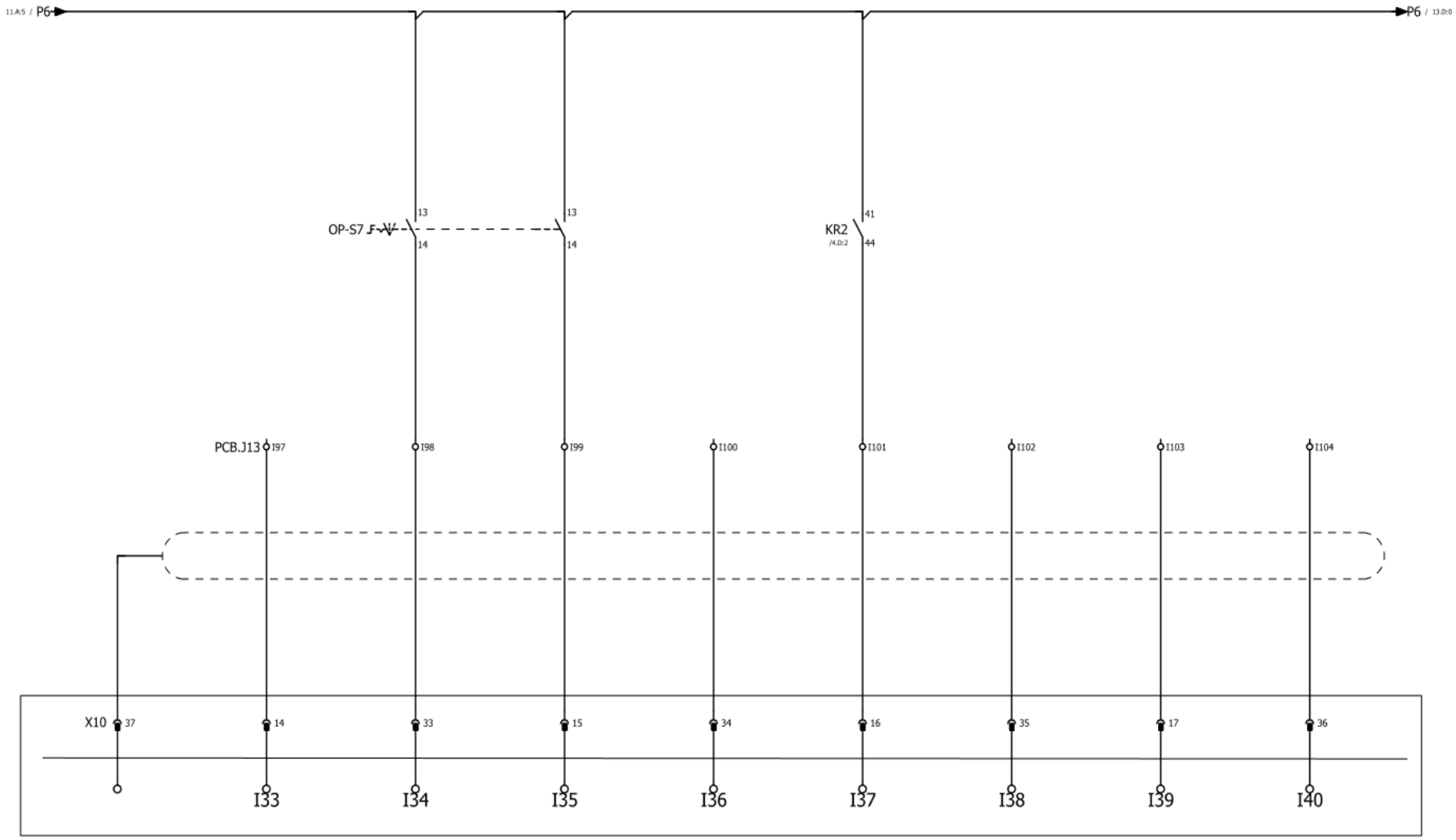
# X9-INPUT

/B.C:0


10.A:5 / P6
P6 / 12.A:0
10.A:5 / N6
N6 / 13.D:0
OP-S3
13
14
6.C:4 / I28
6.C:4 / I29
6.C:4 / I30
6.C:4 / I31
PCB.J12
I89
I90
I91
I92
I93
I94
PCB.J13
I95
I96
X9
19
14
33
15
34
16
35
17
36
DC0V
DC0V
I25
I26
I27
I28
I29
I30
I31
I32
DC POWER

X9-INPUT

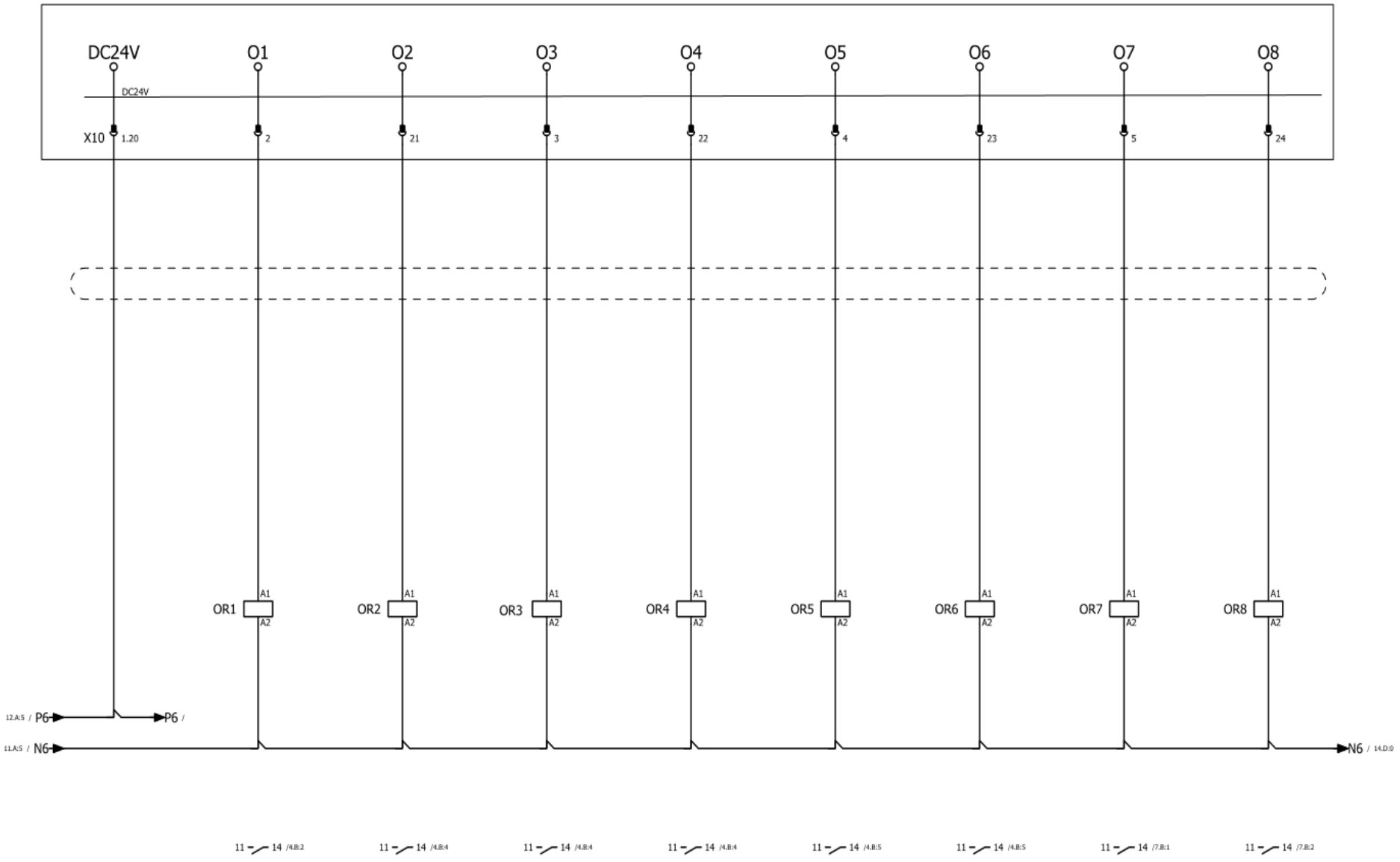
/B.C:0


11.A:5 / P6
P6 / 13.D:0
OP-S7
13
14
13
14
KR2
/4.D:2
41
44
PCB.J13
I97
I98
I99
I100
I101
I102
I103
I104
X10
37
14
33
15
34
16
35
17
36
I33
I34
I35
I36
I37
I38
I39
I40

X10-INPUT

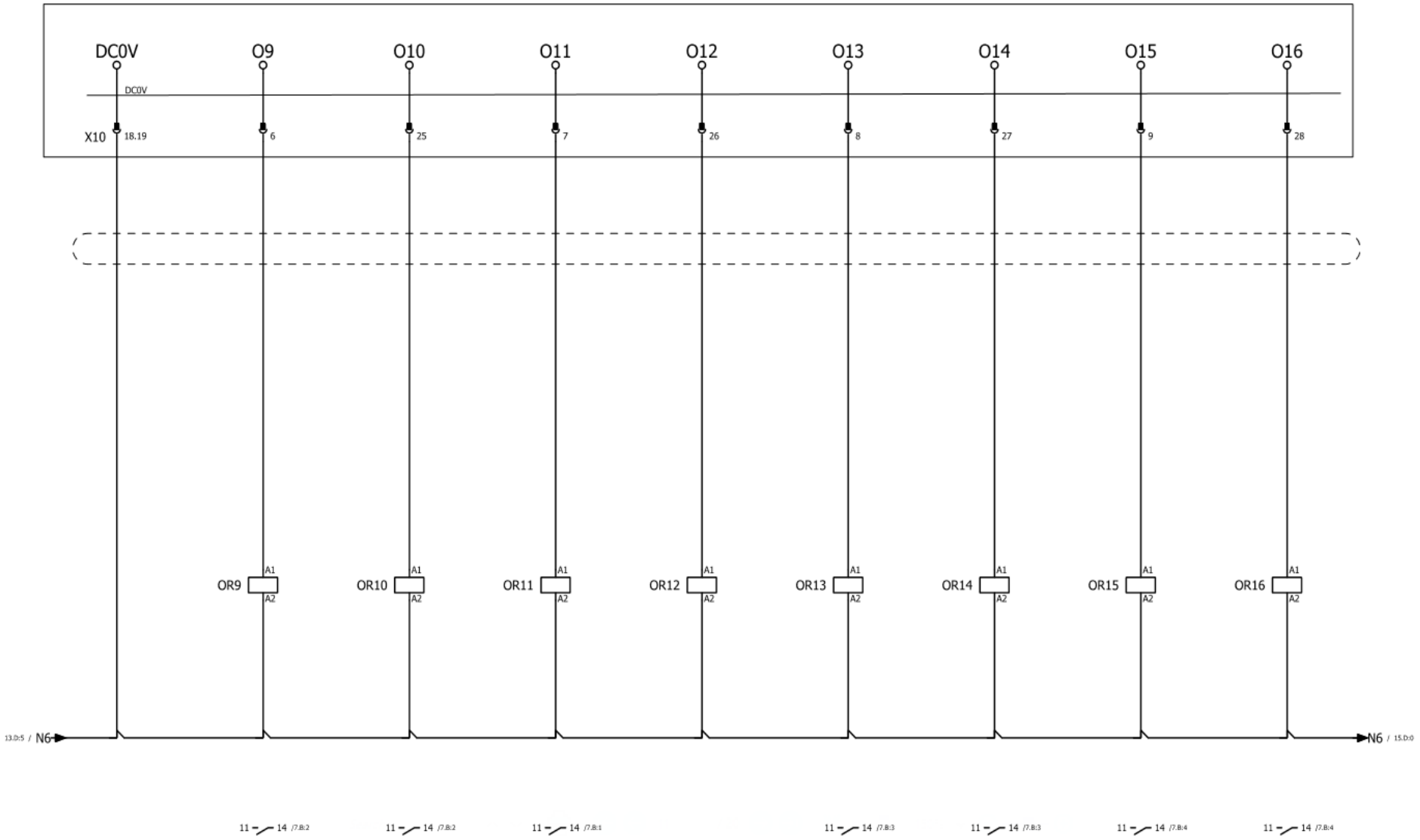
# X10-OUTPUT

/14.A:0 /15.A:0



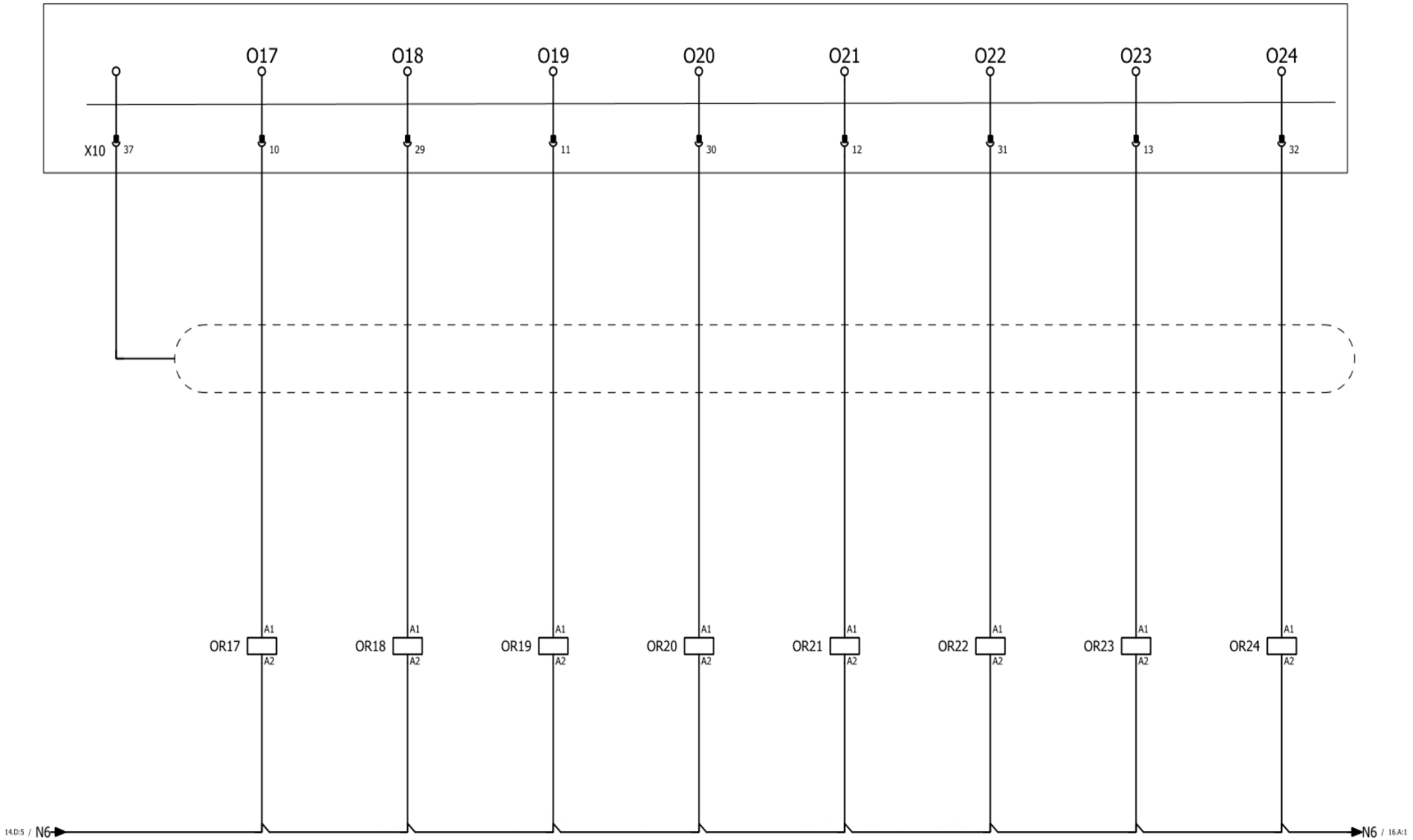
# X10-OUTPUT

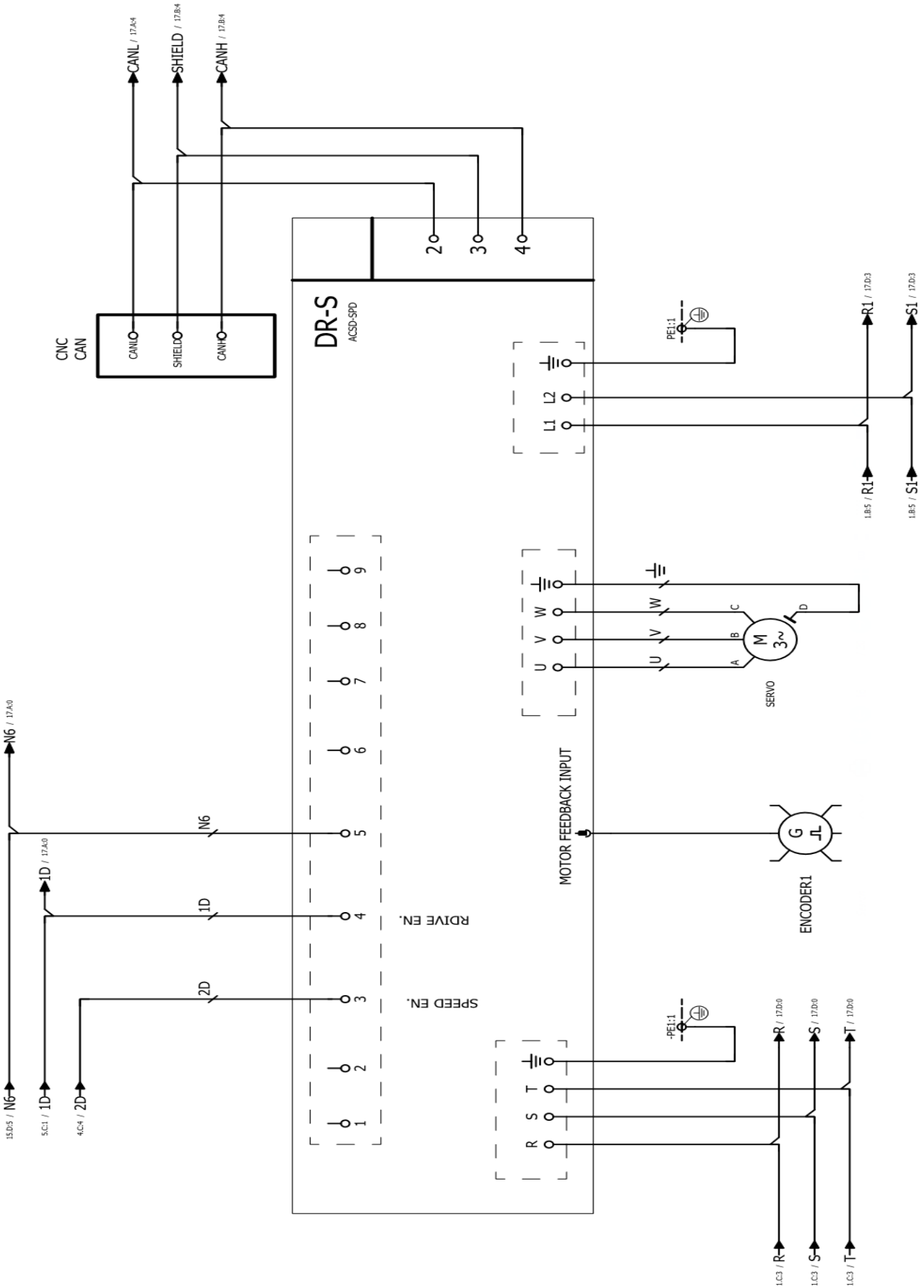
/13.A:0

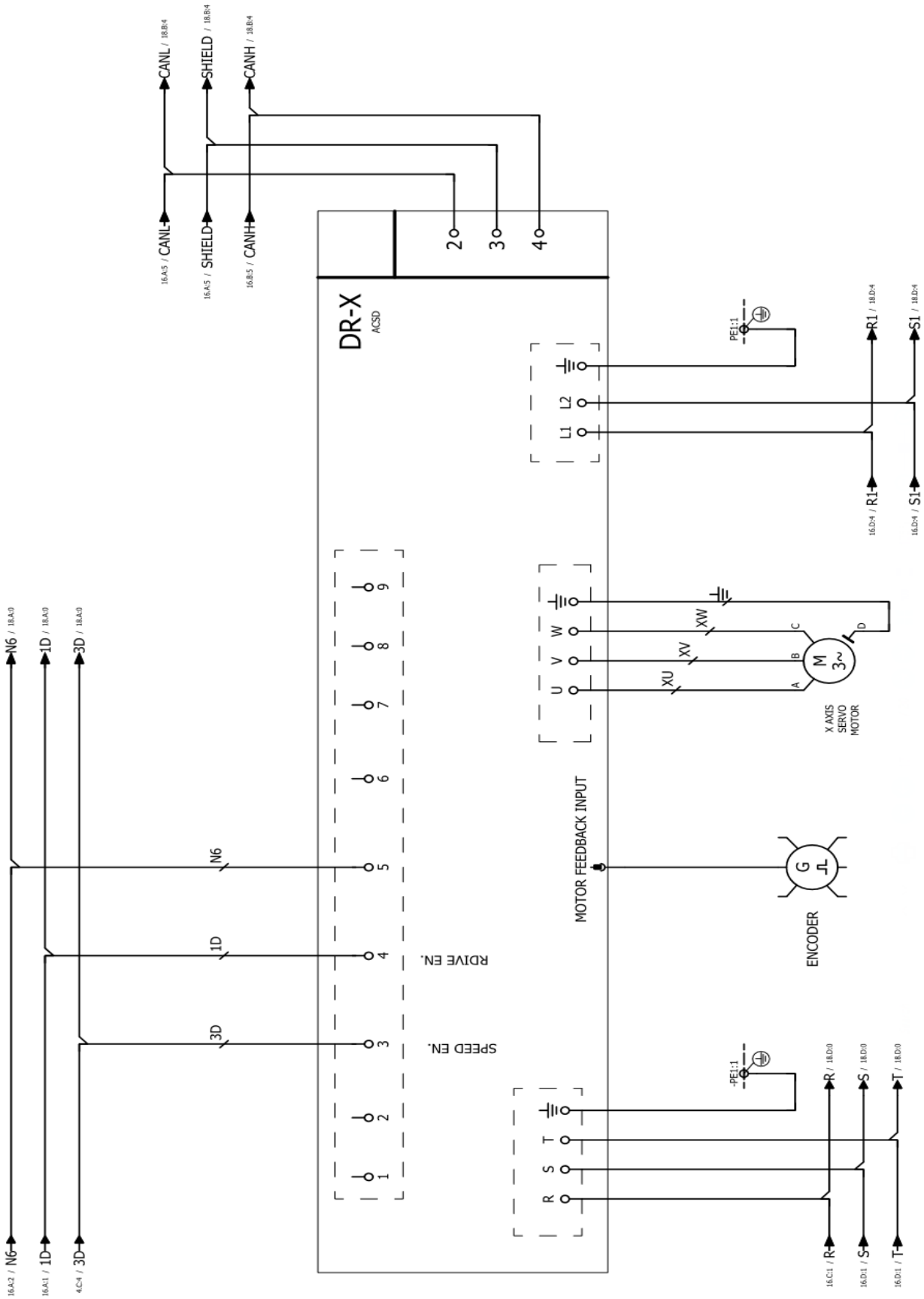


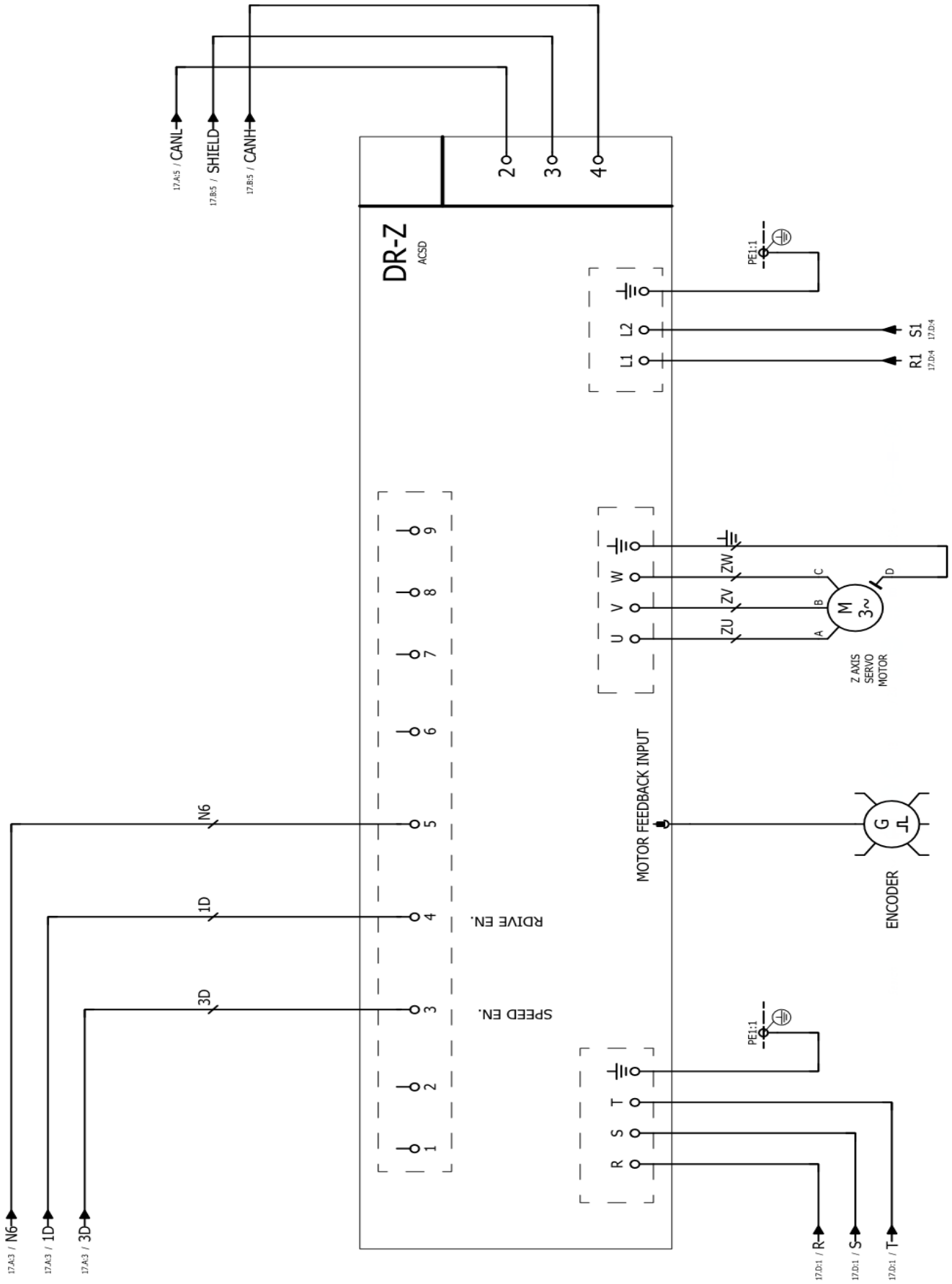
# X10-OUTPUT

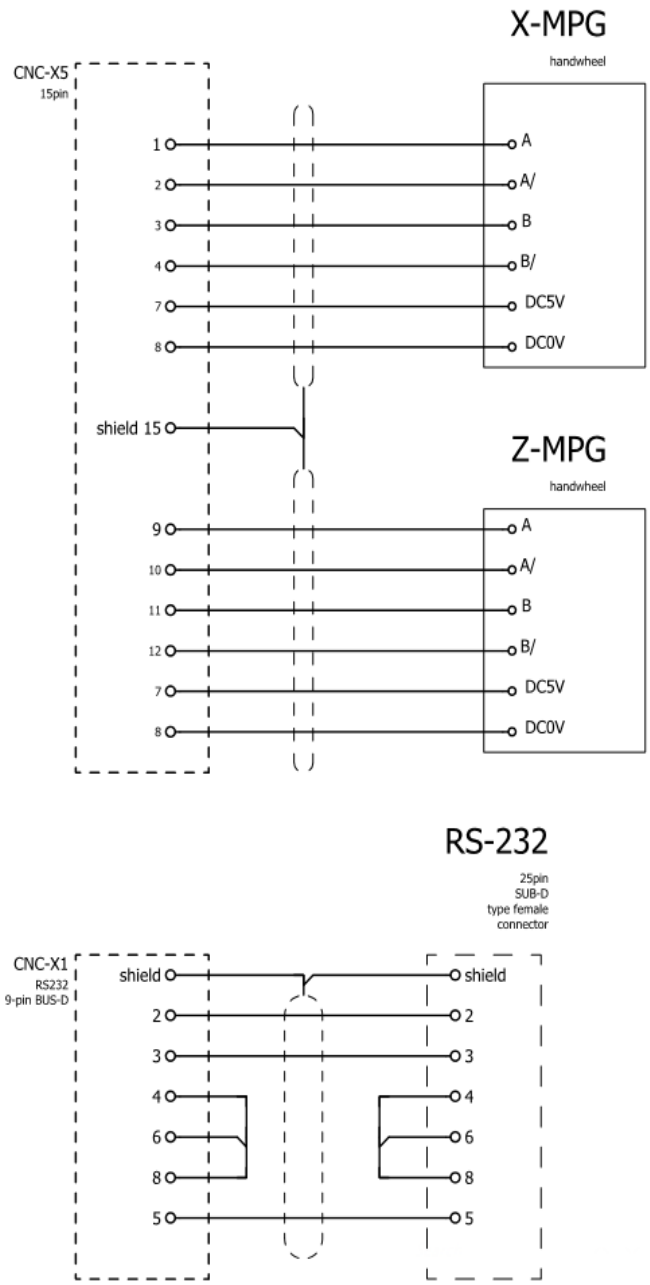
/13.A:0



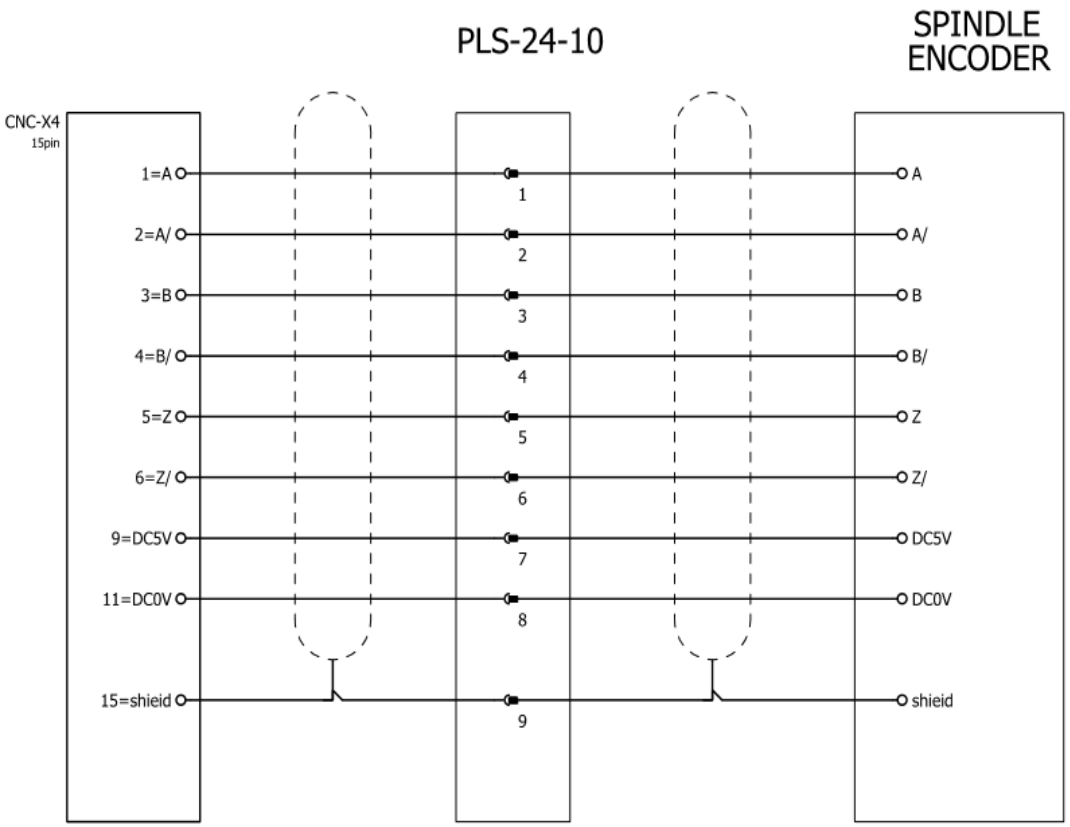

CANL / 17.A:4
SHIELD / 17.B:4
CANH / 17.B:4
CNC
CAN
CANL
SHIELD
CANH
DR-S
ACSD-SPD
2
3
4
PE1:1
L1
L2
R1 / 17.D:3
S1 / 17.D:3
1.B:5 / R1
1.B:5 / S1
U
V
W
M
3~
A
B
C
D
SERVO
MOTOR FEEDBACK INPUT
G
ENCODER1
N6 / 17.A:0
1D / 17.A:0
2D
15.D:5 / N6
5.C:1 / 1D
4.C:4 / 2D
N6
1D
2D
RDIVE EN.
SPEED EN.
1
2
3
4
5
6
7
8
9
R
S
T
PE1:1
R / 17.D:0
S / 17.D:0
T / 17.D:0
1.C:3 / R
1.C:3 / S
1.C:3 / T


CANL / 18.B:4
SHIELD / 18.B:4
CANH / 18.B:4
16.A:5 / CANL
16.A:5 / SHIELD
16.B:5 / CANH
2
3
4
DR-X
ACSD
PE1:1
L1
L2
R1 / 18.D:4
S1 / 18.D:4
16.D:4 / R1
16.D:4 / S1
U
V
W
XU
XV
XW
A
B
C
D
M
3~
X AXIS
SERVO
MOTOR
MOTOR FEEDBACK INPUT
G
ENCODER
N6 / 18.A:0
1D / 18.A:0
3D / 18.A:0
N6
1D
3D
1
2
3
4
5
6
7
8
9
SPEED EN.
RDIVE EN.
R
S
T
PE1:1
R / 18.D:0
S / 18.D:0
T / 18.D:0
16.A:2 / N6
16.A:1 / 1D
4.C:4 / 3D
16.C:1 / R
16.D:1 / S
16.D:1 / T


17.A5 / CANL
17.B5 / SHIELD
17.B5 / CANH
2
3
4
DR-Z
ACSD
PE1:1
L2
L1
S1
17.D:4
R1
17.D:4
ZW
ZV
ZU
W
V
U
C
B
A
D
M
3~
Z AXIS
SERVO
MOTOR
MOTOR FEEDBACK INPUT
G
ENCODER
N6
1D
3D
RDIVE EN.
SPEED EN.
1
2
3
4
5
6
7
8
9
R
S
T
PE1:1
17.A3 / N6
17.A3 / 1D
17.A3 / 3D
17.D:1 / R
17.D:1 / S
17.D:1 / T


X-MPG
handwheel
CNC-X5
15pin
1
2
3
4
7
8
A
A/
B
B/
DC5V
DC0V
shield 15
Z-MPG
handwheel
9
10
11
12
7
8
A
A/
B
B/
DC5V
DC0V

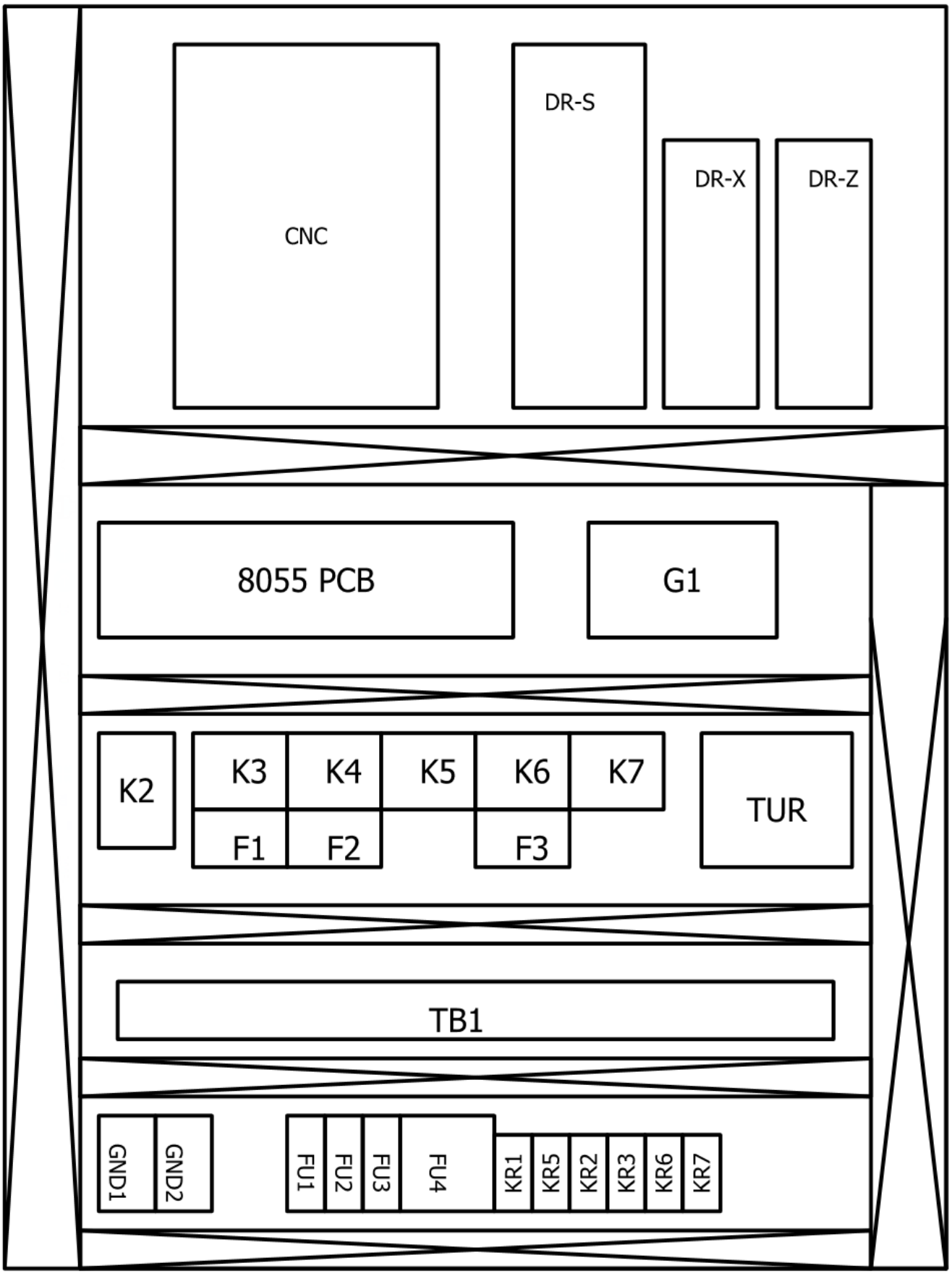

RS-232
25pin
SUB-D
type female
connector
CNC-X1
RS232
9-pin BUS-D
shield
2
3
4
6
8
5
shield
2
3
4
6
8
5


PLS-24-10
SPINDLE
ENCODER
CNC-X4
15pin
1=A
2=A/
3=B
4=B/
5=Z
6=Z/
9=DC5V
11=DC0V
15=shield
1
2
3
4
5
6
7
8
9
A
A/
B
B/
Z
Z/
DC5V
DC0V
shield

| PARTS LIST OF ELECTRIC COMPONENTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| CODE NO | PARTS NAME | SPEC | Q'TY | BRAND | REMARKS | | |
| Q1 | MAIN SWITCH BREAKER | EZC100B 3050 | 1 | Schneider | POWER | CE | |
| T1 | TRANSFORMER | 11KVA | 1 | S.H | CONTROL | CE | |
| K2 | CONTACTOR | LC1 D25 B7 | 1 | Schneider | SERVO DRIVE POWER | CE | UL |
| K3 | CONTACTOR | LC1 D09 B7 | 1 | Schneider | COOLANT PUMP | CE | UL |
| K4 | CONTACTOR | LC1 D09 B7 | 1 | Schneider | GERA MOTOR CW | CE | UL |
| K5 | CONTACTOR | LC1 D09 B7 | 1 | Schneider | GERA MOTOR CCW | CE | UL |
| K6 | CONTACTOR | LC1 D09 B7 | 1 | Schneider | TUEERT MOTOR CW | CE | UL |
| K7 | CONTACTOR | LC1 D09 B7 | 1 | Schneider | TUEERT MOTOR CCW | CE | UL |
| F1 | O.L RELAY | LR3D 02 | 1 | Schneider | COOLANT MOTOR | CE | UL |
| F2 | O.L RELAY | LR3D 05 | 1 | Schneider | GERA MOTOR | CE | UL |
| F3 | O.L RELAY | LR3D 05 | 1 | Schneider | TUEERT MOTOR CW | CE | UL |
| FU1 | FUSE | 058 08+Gg6A | 1 | LEGRAND | CONTROL(AC-220V) | CE | |
| FU2 | FUSE | 058 08+Gg6A | 1 | LEGRAND | CONTROL(AC-110V) | CE | |
| FU3 | FUSE | 058 08+Gg6A | 1 | LEGRAND | CONTROL(AC-24V) | CE | |
| FU4 | FUSE | 058 28+Gg6A | 1 | LEGRAND | SERVO DRIVE CONTROL POWER | CE | |
| G1 | DC POWER SUPPLY | S-100-24 | 1 | MW | I/O CONTROL POWER | CE | RU |
| KR1 | RELAY | SJ2S-07L+RJ2S-CL-D24 | 1 | IDEC | EMERGENCY OK | CE | RU |
| KR2 | RELAY | SY4S-05DF+RU4S-C-D24 | 1 | IDEC | SERVO ON | CE | RU |
| KR3 | RELAY | SY4S-05DF+RU4S-A-A24 | 1 | IDEC | WORK LAMP ON | CE | RU |
| KR5 | RELAY | SJ2S-07L+RJ2S-CL-D24 | 1 | IDEC | AXES LUBE. ON | CE | RU |
| KR6 | RELAY | SY4S-05DF+RU4S-A-A24 | 1 | IDEC | GERA MOTOR OVERLOADS | CE | RU |
| KR7 | RELAY | SY4S-05DF+RU4S-A-A24 | 1 | IDEC | TUEERT MOTOR OVERLOADS | CE | RU |
| PCB | IO CARD | 8055.PCB | 1 | J.D | CNC IN/OUTPUT | | |
| X-LS1 | LIMIT | SN02D12-502-MC1688 | 1 | EUCHNER | X AXIS HOME+OT | CE | UL |
| Z-LS1 | LIMIT | SN02D12-502-MC1688 | 1 | EUCHNER | Z AXIS HOME+OT | CE | UL |
| TS-S1 | LIMIT | SN02D12-502-MC1688 | 1 | EUCHNER | TAILSTOCK BODY TRAVEL | CE | UL |
| D-LS | LIMIT | XCK PA591 | 1 | Schneider | DOOR LOCK | CE | UL |
| END-S1 | LIMIT | QKS8 | 1 | | END GUARD LS | CE | |
| G-S1 | SENSOR | PM12-02P | 1 | FOTER | M41 _LOW-GERA SW | CE | |
| G-S2 | SENSOR | PM12-02P | 1 | FOTER | M42 _HI-GERA SW | CE | |
| FAN | FAN | KA1238HA1SAT | 2 | KAKU | Electrical box Heat rejection | CE | RU |
| OP-EMG | PUSH BUTTON | XB5AS84421B | 1 | Schneider | EMERGENCY PB. | CE | UL |
| OP-S1 | PUSH BUTTON | XB5AA42 | 1 | Schneider | SERVO OFF PB. | CE | UL |
| OP-S2 | PUSH BUTTON | XB5AW33B1 | 1 | Schneider | SERVO ON PB. | CE | UL |

| PARTS LIST OF ELECTRIC COMPONENTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| OP-S3 | PUSH BUTTON | XB5AW35B1 | 1 | Schneider | DOOR RELEASE PB. | CE | UL |
| OP-S4 | PUSH BUTTON | XB5AA31 | 1 | Schneider | WORK LAMP PB | CE | UL |
| OP-S5 | PUSH BUTTON | XB5AW36B1 | 1 | Schneider | O.T RELEASE PB. | CE | UL |
| OP-S6 | SELECTOR SW | XB5AD21 | 1 | Schneider | COOLANT SW. | CE | UL |
| OP-S7 | SELECTOR SW | XB5AD33 | 1 | Schneider | SPINDLE CW/CCW SW | CE | UL |
| HAND WHEEL | AXIS MPG | MPG-001-60 100RPM-5V OR MPG-111-80 100RPM-5V | 1 | CZ THREE | X AXIS MPG | CE | |
| HAND WHEEL | AXIS MPG | MPG-001-60 100RPM-5V OR MPG-111-80 100RPM-5V | 1 | CZ THREE | Z AXIS MPG | CE | |
| ELECTRICAL CABLE | | | | | 80%CE | | |

# 6-3. ELECTRICAL CABINET LAYOUT

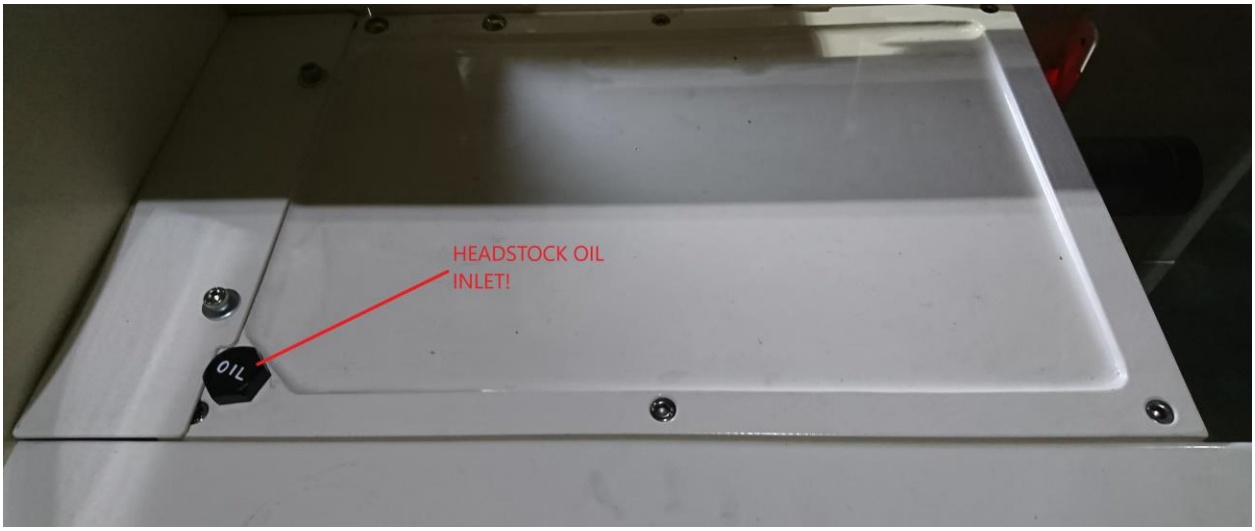


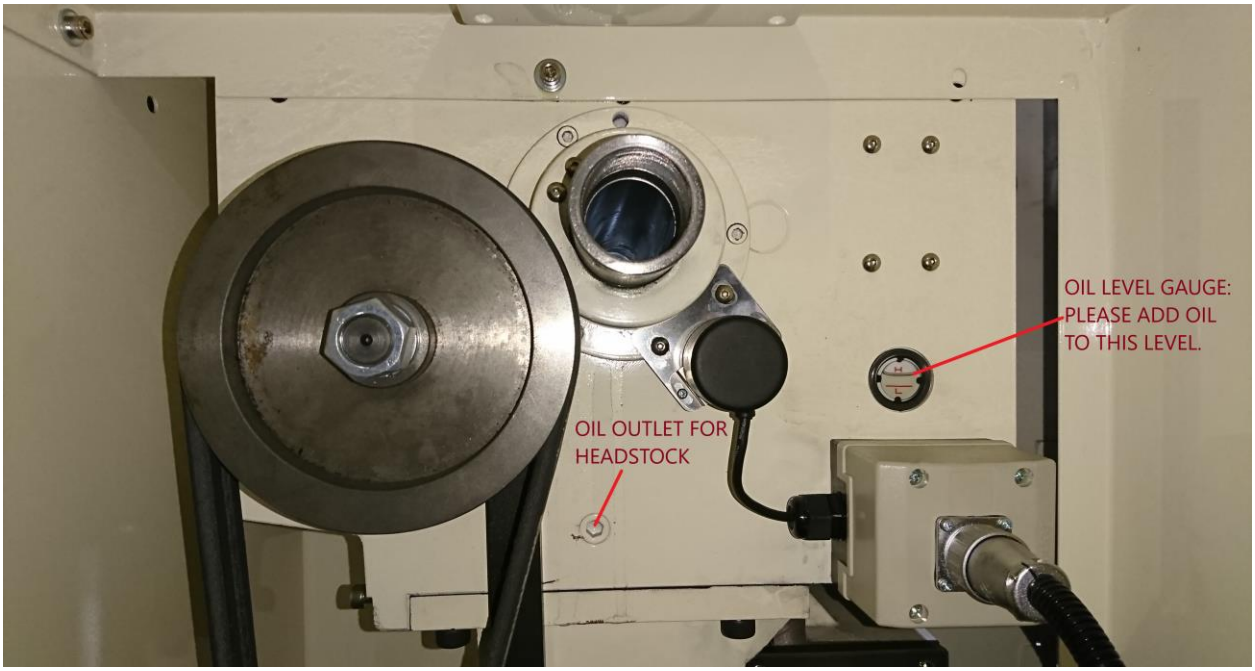
# 7. LUBRICATION & COOLANT

THERE IS SOME LUBRICATION AREAS THAT NEED TO BE TAKEN CARE OF.

1. HEADSTOCK—OIL WITHIN HEADSTOCK MUST BE REPLACE ONCE EVERY SIX MONTHS. TO DRAIN OR ADD OIL, PLEASE REVIEW PHOTO BELOW.

RECOMMENDATION OIL IS MOBIL DTE HEAVY MEDIUM OIL.




NOTE: OLDER MACHINES HAVE OIL LEVEL GAUGE IN THE FRONT END OF HEADSTOCK WHICH IS COVERED OFF BY THE SHEETMETAL SPLASH GUARD.

2. LUBRICATION PUMP—FOR LUBRICATION OIL THAT LUBRICATES SADDLE, SLIDESWAYS, ETC.

PLEASE ADD OIL TO THE LEVEL INDICATED ON THE PUMP—“MAX”. IT IS RECOMMENDED TO ADD MOBIL VACTRA #2 WAY LUBE FOR OIL.


3. TAILSTOCK—PLEASE ADD OIL INTO THE OIL NIPPLES ON THE TAILSTOCK. DO IT ONCE A DAY TO KEEP QUILL MOTION SMOOTHLY.

RECOMMENDED OIL: MOBIL VACTRA #2 WAY OIL

4. ALL SLIDING WAYS—CLEAN AND LUBRICATE WITH WAY LUBE EVERYDAY TO KEEP X & Z AXES MOVEMENT SMOOTH AND EASY.

RECOMMENDED OIL: MOBIL VACTRA #2 WAY OIL

5. COOLANT SYSTEM HAS AN EXTERNAL TANK. ITS CAPACITY IS 20.34 GALLLON OR 77 LITERS. PLEASE CHECK ONCE EVERYDAY AND FILL COOLANT TO THE TOP OF THE LEVEL GAUGE ON THE TANK IF NECESSARY!

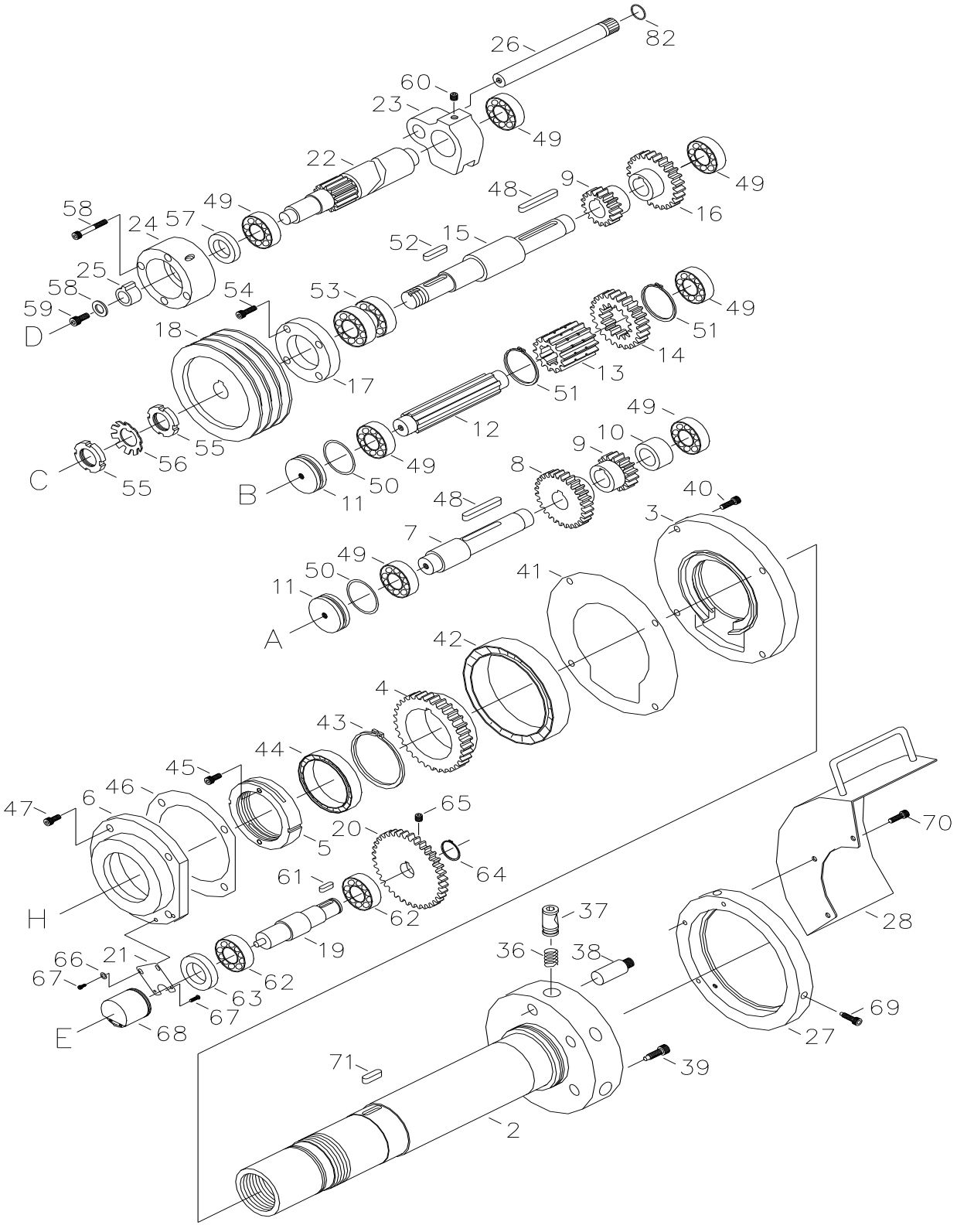
# 8. Mechanical Drawings
# &
# Parts Breakdown List

Note: When ordering parts, please be prepared with,

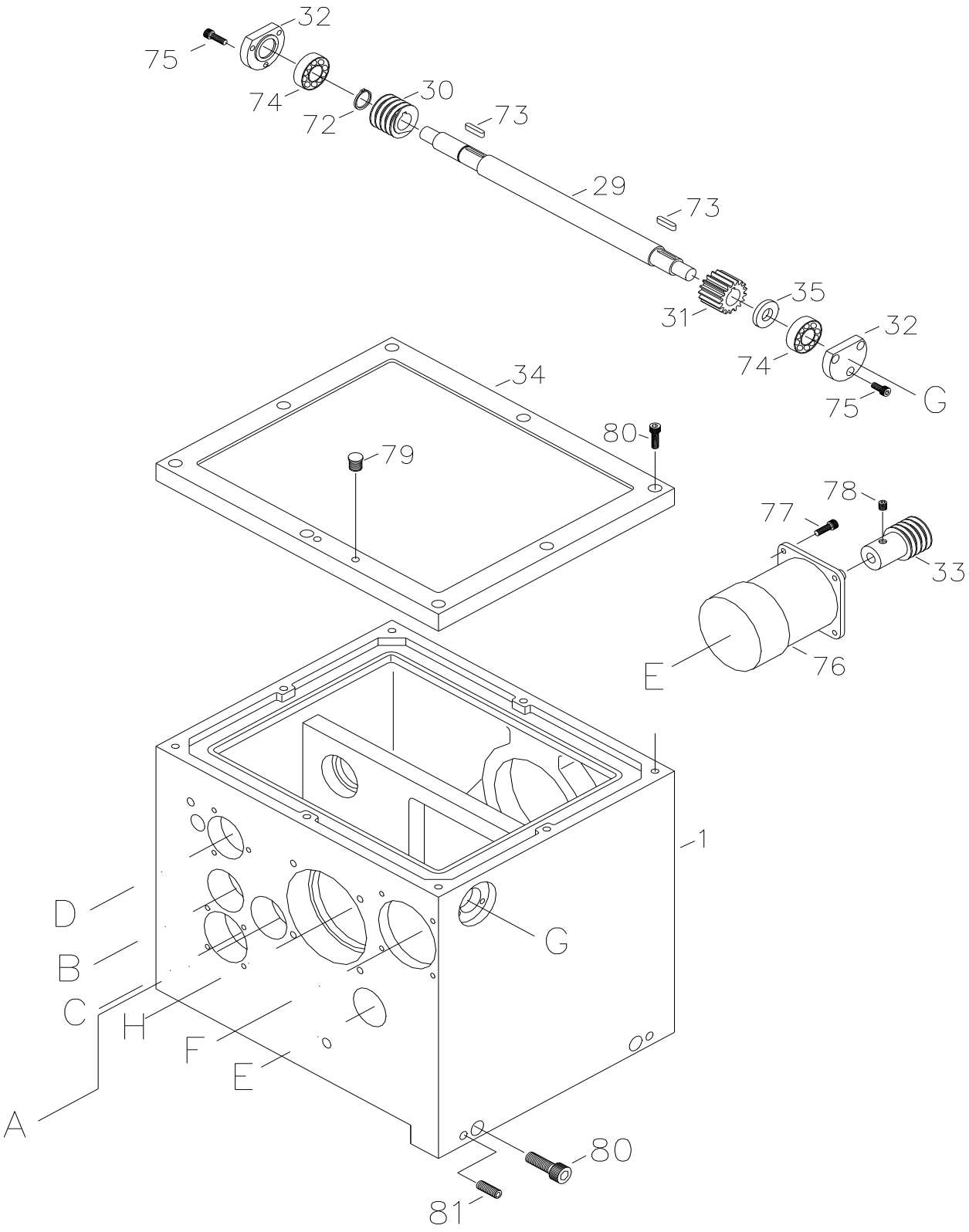
1. Machine model & serial number.
2. Item number.
3. Part number and description.
4. Year of Production.
5. Voltage & horsepower.
6. Quantity

## 8-1. HEAD STOCK (CASTING & CONTROLS)

# HEAD STOCK (CASTING & CONTROLS)



# HEAD STOCK (CASTING & CONTROLS)



# HEADSTOCK (CASTING & CONTROLS)

| REF . NO. | PART NO. | DESCRIPTION | Q' TY |
|---|---|---|---|
| 1 | 38B1001 | HEADSTOCK | 1 |
| 2 | 38B1002 | SPINDLE | 1 |
| 3 | 38B1003 | BEARING CAP | 1 |
| 4 | 38B1004 | GEAR | 1 |
| 5 | 38B1005 | NUT | 1 |
| 6 | 38B1006 | BEARING CAP | 1 |
| 7 | 38B1007 | SHAFT | 1 |
| 8 | 38B1032 | GEAR | 1 |
| 9 | 38B1009 | GEAR | 4 |
| 10 | 38B1010 | COLLAR | 1 |
| 11 | 38B1011 | PLUG | 2 |
| 12 | 38B1012 | GEAR SHAFT | 1 |
| 13 | 38B1013 | GEAR | 1 |
| 14 | 38B1014 | GEAR | 1 |
| 15 | 38B1015 | BEARING CAP | 1 |
| 16 | 38B1008 | GEAR | 1 |
| 17 | 38B1016 | BEARING CAP | 1 |
| 18 | 38B1017 | SPINDLE PULLEY | 1 |
| 19 | 38B1018 | SHAFT | 1 |
| 20 | 38B1019 | GEAR | 1 |
| 21 | 38B1020 | BEARING | 1 |
| 22 | 38B1021 | GEAR SHAFT | 1 |
| 23 | 38B1022 | FORK ARMS | 1 |
| 24 | 38B1023 | BEARING CAP | 1 |
| 25 | 38B1031 | SWITCH | 1 |
| 26 | 38B1024 | SHAFT | 1 |
| 27 | 38B1035 | CAP | 1 |
| 28 | 38B1036 | COVER | 1 |
| 29 | 38B1026 | SHAFT | 1 |
| 30 | 38B1027 | GEAR SPINDLE | 1 |
| 31 | 38B1028 | GEAR | 1 |
| 32 | 38B1029 | COVER | 2 |
| 33 | 38B1030 | GEAR SPINDLE | 1 |
| 34 | 38B1025 | COVER | 1 |
| 35 | 38B1034 | COLLAR | 1 |

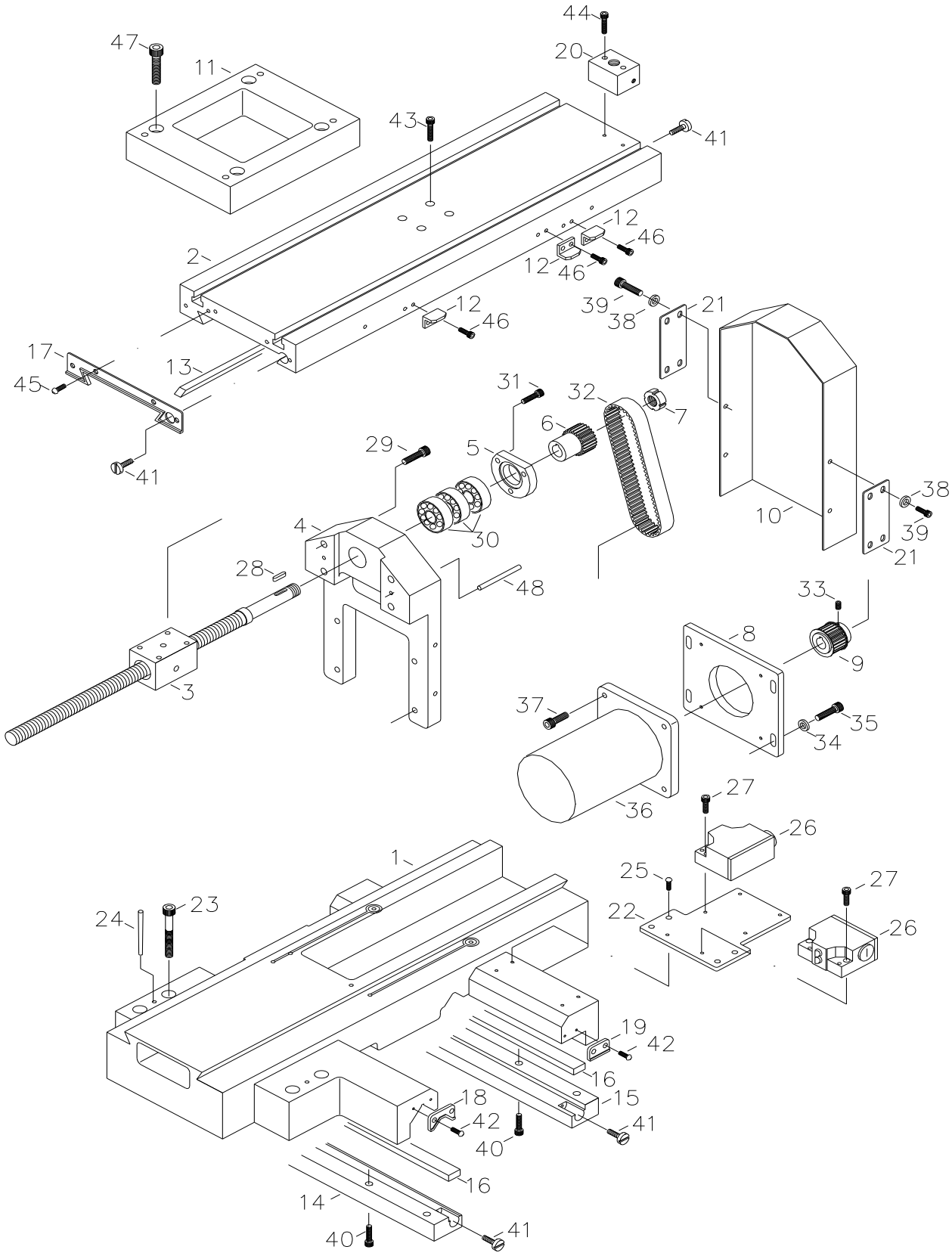
# HEADSTOCK (CASTING & CONTROLS)

| REF . NO. | PART NO. | DESCRIPTION | Q' TY |
|---|---|---|---|
| 36 | 38B1041 | SPRING | 3 |
| 37 | 38B1042 | CAMLOCK | 3 |
| 38 | 38B1043 | CAMLOCK STUD | 3 |
| 39 | 38B1044 | CAP SCREW | 3 |
| 40 | 38B1045 | CAP SCREW | 4 |
| 41 | 38B1046 | GASKET | 1 |
| 42 | 38B1047 | BEARING | 1 |
| 43 | 38B1048 | SNAP RING | 1 |
| 44 | 38B1049 | BEARING | 1 |
| 45 | 38B1050 | CAP SCREW | 4 |
| 46 | 38B1051 | GASKET | 1 |
| 47 | 38B1052 | CAP SCREW | 4 |
| 48 | 38B1053 | KEY | 2 |
| 49 | 38B1054 | BEARING | 7 |
| 50 | 38B1055 | OIL RING | 2 |
| 51 | 38B1056 | SNAP RING | 2 |
| 52 | 38B1057 | KEY | 1 |
| 53 | 38B1058 | BEARING | 2 |
| 54 | 38B1059 | CAP SCREW | 4 |
| 55 | 38B1060 | NUT | 2 |
| 56 | 38B1061 | WASHER | 1 |
| 57 | 38B1062 | COLLAR | 1 |
| 58 | 38B1063 | CAP SCREW | 4 |
| 59 | 38B1064 | CAP SCREW | 1 |
| 60 | 38B1065 | SCREW | 1 |
| 61 | 38B1066 | KEY | 1 |
| 62 | 38B1067 | BEARING | 2 |
| 63 | 38B1068 | COLLAR | 1 |
| 64 | 38B1069 | SNAP RING | 1 |
| 65 | 38B1070 | SCREW | 1 |
| 66 | 38B1071 | WASHER | 2 |
| 67 | 38B1072 | CAP SCREW | 2 |
| 68 | 38B1073 | COLLAR | 1 |
| 69 | 38B1074 | CAP SCREW | 3 |
| 70 | 38B1075 | CAP SCREW | 3 |

# HEADSTOCK (CASTING & CONTROLS)

| REF . NO. | PART NO. | DESCRIPTION | Q' TY |
|---|---|---|---|
| 71 | 38B1076 | KEY | 1 |
| 72 | 38B1077 | SNAP RING | 1 |
| 73 | 38B1078 | KEY | 2 |
| 74 | 38B1079 | BEARING | 2 |
| 75 | 38B1080 | CAP SCREW | 6 |
| 76 | 38B1081 | GEAR MOTOR | 1 |
| 77 | 38B1082 | CAP SCREW | 4 |
| 78 | 38B1083 | SCREW | 1 |
| 79 | 38B1084 | PLUG | 1 |
| 80 | 38B1085 | CAP SCREW | 10 |
| 81 | 38B1086 | SCREW | 2 |
| 82 | 38B1087 | OIL RING | 1 |

## 8-2. SADDLE & CROSS-SLIDE



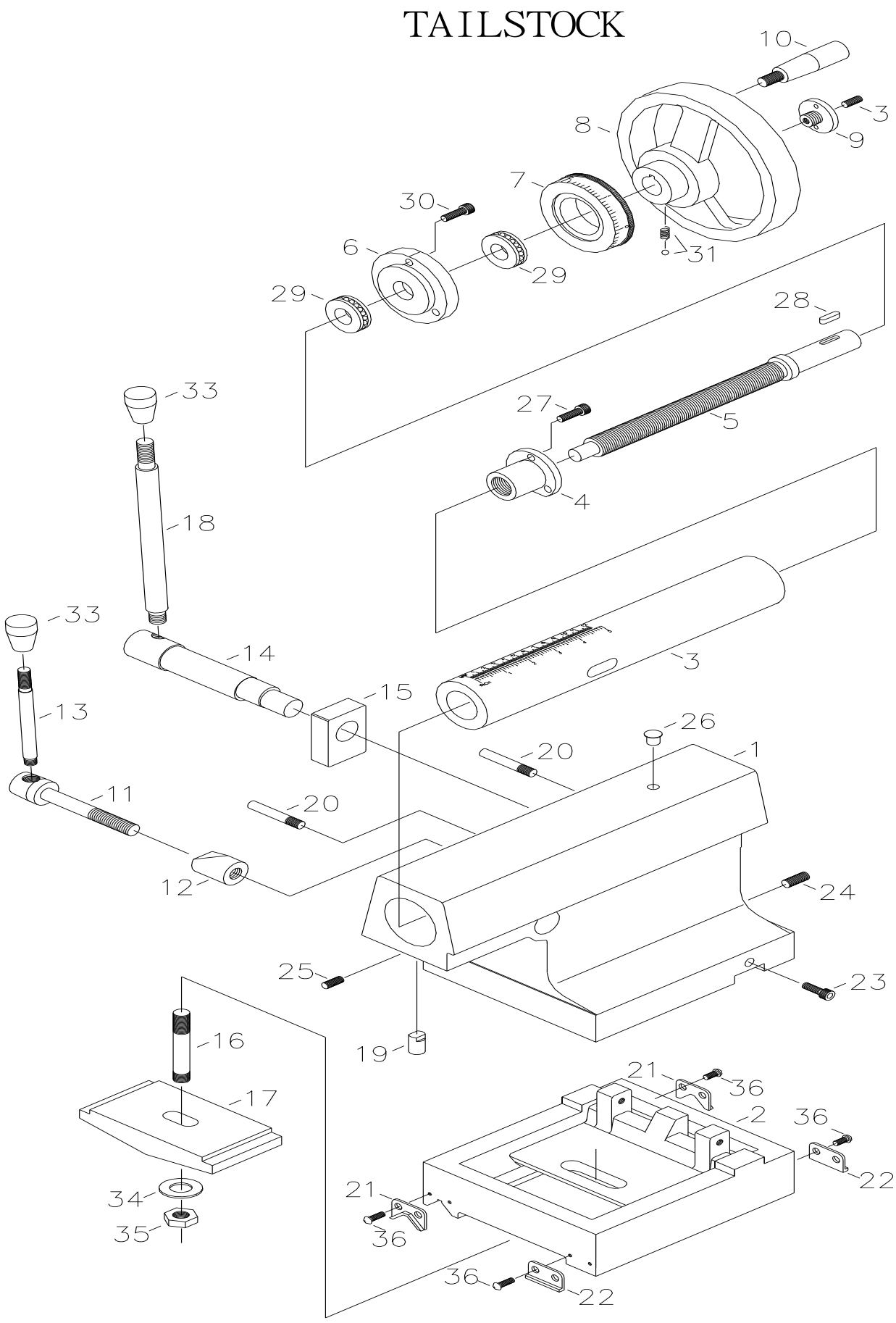
# SADDLE & CROSS - SLIDE

| REF . NO. | PART NO. | DESCRIPTION | Q' TY |
|---|---|---|---|
| 1 | 38B4001 | SADDLE CASTING | 1 |
| 2 | 38B4002 | CROSS-SLIDE | 1 |
| 3 | 38B4003 | SCREW | 1 |
| 4 | 38B4004 | BRACKET | 1 |
| 5 | 38B4005 | COVER | 1 |
| 6 | 38B4006 | PULLEY | 1 |
| 7 | 38B4007 | NUT | 1 |
| 8 | 38B4008 | WASHER | 1 |
| 9 | 38B4009 | PULLEY | 1 |
| 10 | 38B4010 | PLUG | 1 |
| 11 | 38B4011 | TOOL POST | 1 |
| 12 | 38B4012 | TOUCH BLOCK | 3 |
| 13 | 38B4016 | GIB | 1 |
| 14 | 38B4014 | GIB PLATE FRONT | 1 |
| 15 | 38B4014-1 | GIB PLATE REAR | 1 |
| 16 | 38B4015 | GIB | 2 |
| 17 | 38B4018 | WIPER | 1 |
| 18 | 38B4019 | WIPER | 2 |
| 19 | 38B4020 | WIPER | 2 |
| 20 | 38B4021 | WATER FRAME | 1 |
| 21 | 38B4022 | WASHER | 2 |
| 22 | 38B4024 | BRACKET | 1 |
| 23 | 38B4026 | CAP SCREW | 4 |
| 24 | 38B4027 | SPRING PIN | 2 |
| 25 | 38B4028 | CAP SCREW | 6 |
| 26 | 38B4029 | TRAVEL LIMIT SWITCH | 2 |
| 27 | 38B4030 | CAP SCREW | 4 |
| 28 | 38B4031 | KEY | 1 |
| 29 | 38B4032 | CAP SCREW | 4 |
| 30 | 38B4033 | BEARING | 3 |
| 31 | 38B4034 | CAP SCREW | 3 |
| 32 | 38B4035 | GEAR BELT | 1 |
| 33 | 38B4036 | SCREW | 1 |
| 34 | 38B4037 | WASHER | 4 |
| 35 | 38B4038 | CAP SCREW | 4 |

# SADDLE & CROSS - SLIDE

| REF . NO. | PART NO. | DESCRIPTION | Q' TY |
|---|---|---|---|
| 36 | 38B4039 | MOTOR | 1 |
| 37 | 38B4040 | CAP SCREW | 4 |
| 38 | 38B4041 | WASHER | 8 |
| 39 | 38B4042 | SCREW | 8 |
| 40 | 38B4043 | CAP SCREW | 8 |
| 41 | 38B4044 | SCREW | 6 |
| 42 | 38B4045 | SCREW | 8 |
| 43 | 38B4046 | CAP SCREW | 4 |
| 44 | 38B4047 | CAP SCREW | 2 |
| 45 | 38B4048 | SCREW | 4 |
| 46 | 38B4049 | SCREW | 6 |
| 47 | 38B4050 | CAP SCREW | 4 |
| 48 | 38B4051 | SPRING PIN | 2 |

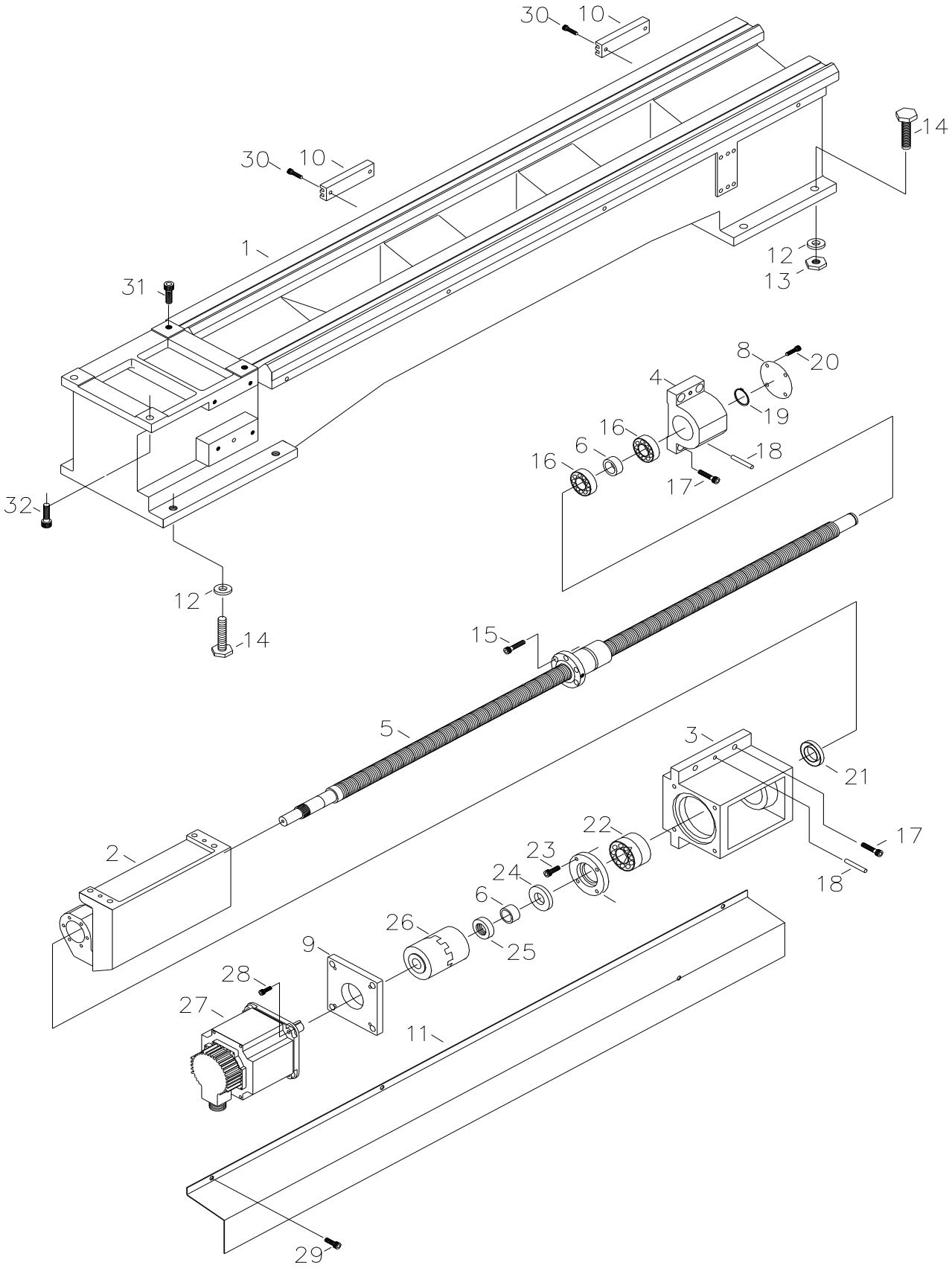
## 8-3. TAILSTOCK



# TAILSTOCK

| REF . NO. | PART NO. | DESCRIPTION | Q' TY |
|---|---|---|---|
| 1 | 38B5001 | TAILSTOCK | 1 |
| 2 | 38B5002 | BASE | 1 |
| 3 | 38B5003 | QUILL | 1 |
| 4 | 38B5004 | NUT | 1 |
| 5 | 38B5005 | FEED SCREW | 1 |
| 6 | 38B5006 | BRACKET | 1 |
| 7 | 38B5007 | DIAL RING | 1 |
| 8 | 38B5008 | HANDWHEEL | 1 |
| 9 | 38B5009 | NUT | 1 |
| 10 | 38B5010 | HANDLE | 1 |
| 11 | 38B5011 | SHAFT | 1 |
| 12 | 38B5012 | LOCKING PAD | 1 |
| 13 | 38B5013 | LEVER | 1 |
| 14 | 38B5014 | SHAFT | 1 |
| 15 | 38B5015 | PIVOT BLOCK | 1 |
| 16 | 38B5016 | CLAMP BOLT | 1 |
| 17 | 38B5017 | CLAMP PLATE | 1 |
| 18 | 38B5018 | LEVER | 1 |
| 19 | 38B5019 | PAD | 1 |
| 20 | 38B5020 | SHAFT | 2 |
| 21 | 38B5021 | WIPER | 2 |
| 22 | 38B5022 | WIPER | 2 |
| 23 | 38B5023 | CAP SCREW | 2 |
| 24 | 38B5024 | SET SCREW | 2 |
| 25 | 38B5025 | SET SCREW | 1 |
| 26 | 38B5026 | OIL NIPPLE | 1 |
| 27 | 38B5027 | CAP SCREW | 3 |
| 28 | 38B5028 | KEY | 1 |
| 29 | 38B5029 | BEARING | 2 |
| 30 | 38B5030 | CAP SCREW | 3 |
| 31 | 38B5031 | STEEL BALL & SPRING | 1 |
| 32 | 38B5032 | SET SCREW | 1 |
| 33 | 38B5033 | PVC KNOB | 2 |
| 34 | 38B5034 | WASHER | 1 |
| 35 | 38B5035 | NUT | 1 |
| 36 | 38B5036 | SCREW | 8 |

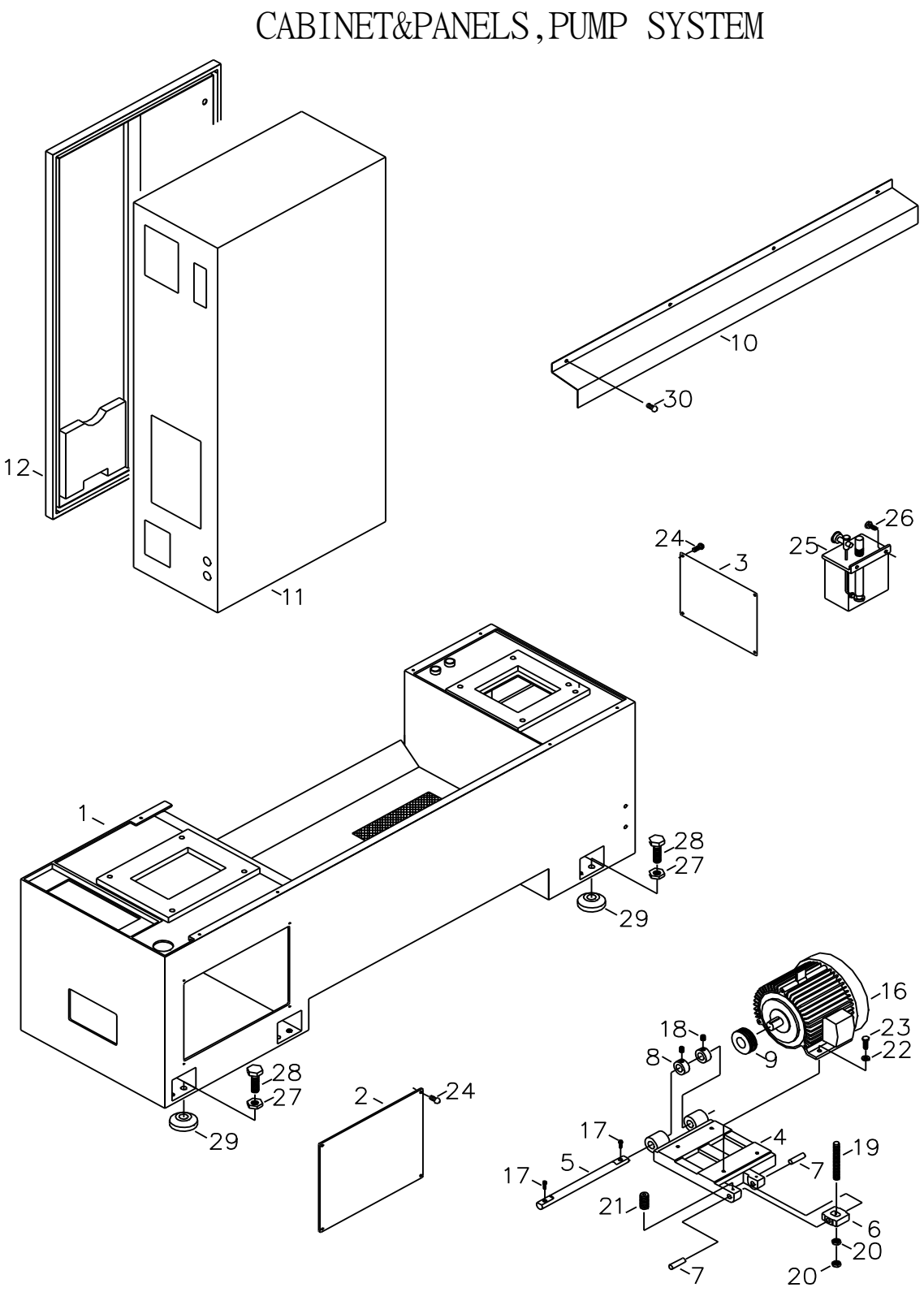
## 8-4. BED, RACKS, LEADSCREW & SHAFTS



# BED RACK LEAD SCREW & SHAFTS

| REF . NO. | PART NO. | DESCRIPTION | Q' TY |
|---|---|---|---|
| 1 | 38B6001 | BED | 1 |
| 2 | 38B6002 | CASTING | 1 |
| 3 | 38B6003 | BRACKET | 1 |
| 4 | 38B6004 | END BEARING SEAT | 1 |
| 5 | 38B6005 | BALL SCREW | 1 |
| 6 | 38B6006 | COLLAR | 1 |
| 7 | 38B6007 | COVER | 1 |
| 8 | 38B6008 | COVER | 1 |
| 9 | 38B6009 | MOTOR COVER | 1 |
| 10 | 38B6010 | TOUCH BLOCK ADJUSTING PLATE | 2 |
| 11 | 38B6011 | COVER | 1 |
| 12 | 38B6012 | WASHER | 8 |
| 13 | 38B6013 | NUT | 4 |
| 14 | 38B6014 | SCREW | 8 |
| 15 | 38B6015 | CAP SCREW | 6 |
| 16 | 38B6016 | BEARING | 2 |
| 17 | 38B6017 | CAP SCREW | 8 |
| 18 | 38B6018 | PIN | 4 |
| 19 | 38B6019 | SNAP RING | 1 |
| 20 | 38B6020 | SCREW | 4 |
| 21 | 38B6021 | COLLAR | 1 |
| 22 | 38B6022 | WASHER | 2 |
| 23 | 38B6023 | CAP SCREW | 4 |
| 24 | 38B6024 | COLLAR | 1 |
| 25 | 38B6025 | NUT | 1 |
| 26 | 38B6026 | POWER LOCK | 1 |
| 27 | 38B6027 | MOTOR | 1 |
| 28 | 38B6028 | CAP SCREW | 4 |
| 29 | 38B6029 | SCREW | 4 |
| 30 | 38B6030 | CAP SCREW | 4 |
| 31 | 38B6031 | CAP SCREW | 2 |
| 32 | 38B6032 | CAP SCREW | 2 |

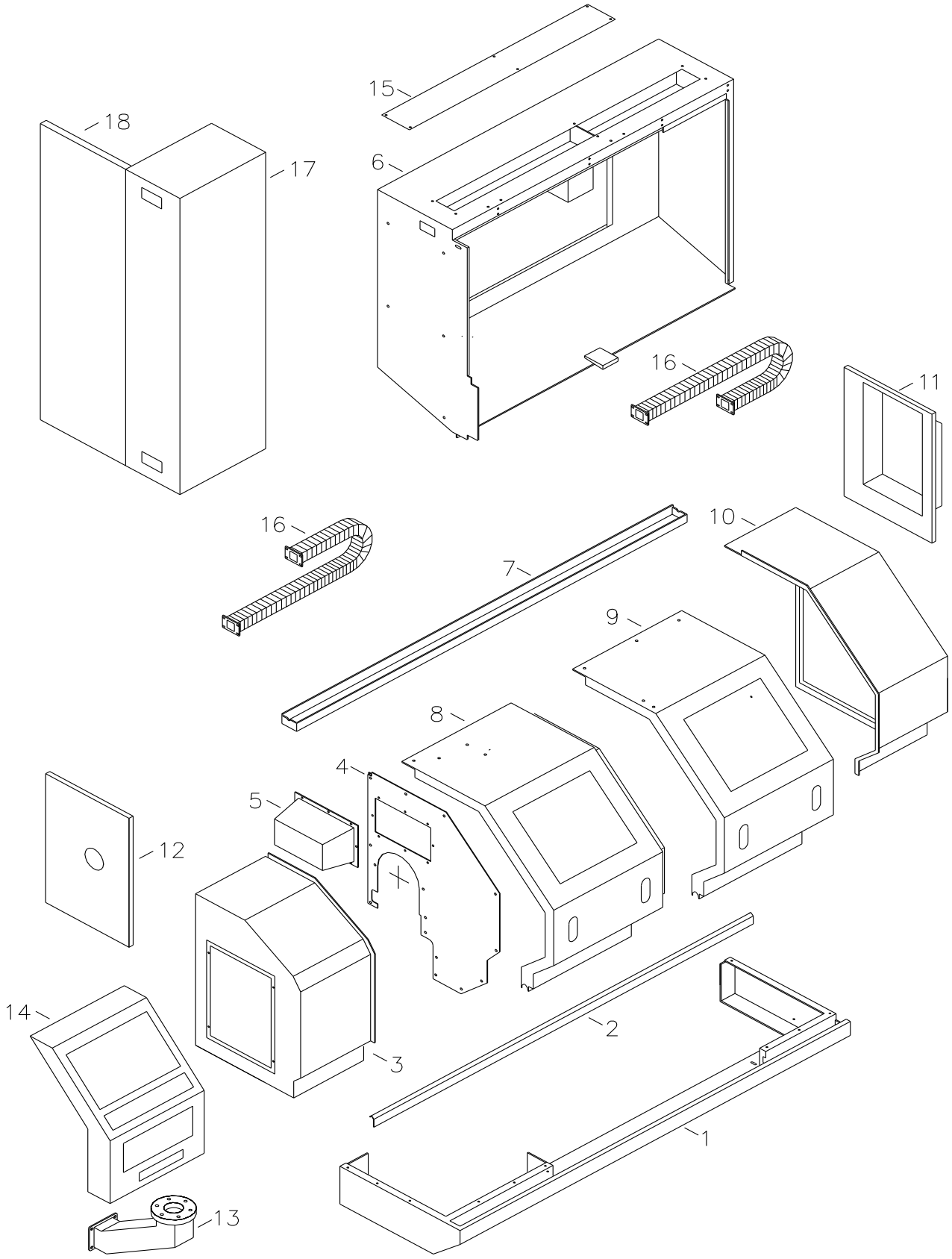
# 8-5. CABINET, PANELS & PUMP SYSTEM



# CABINET & PANELS , PUMP SYSTEM

| REF . NO. | PART NO. | DESCRIPTION | Q' TY |
|---|---|---|---|
| 1 | 38B7001 | MACHINE BASE | 1 |
| 2 | 38B7002 | COVER | 1 |
| 3 | 38B7003 | COVER | 1 |
| 4 | 38B7004 | MOTOR PLATE | 1 |
| 5 | 38B7005 | SHAFT | 1 |
| 6 | 38B7006 | WASHER | 1 |
| 7 | 38B7007 | SHAFT | 2 |
| 8 | 38B7008 | COLLAR | 2 |
| 9 | 38B7009 | MOTOR PULLEY | 1 |
| 10 | 38B7010 | COVER | 1 |
| 11 | 38B7011 | ELECTRIC CABINET | 1 |
| 12 | 38B7012 | ELECTRIC CABINET DOOR | 1 |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | 38B7016 | SPINDLE MOTOR | 1 |
| 17 | 38B7017 | SCREW | 2 |
| 18 | 38B7018 | SET SCREW | 2 |
| 19 | 38B7019 | SCREW | 1 |
| 20 | 38B7020 | NUT | 2 |
| 21 | 38B7021 | SCREW | 2 |
| 22 | 38B7022 | WASHER | 4 |
| 23 | 38B7023 | CAP SCREW | 4 |
| 24 | 38B7024 | SCREW | 8 |
| 25 | 38B7025 | OIL BOX | 1 |
| 26 | 38B7026 | CAP SCREW | 2 |
| 27 | 38B7027 | NUT | 6 |
| 28 | 38B7028 | SCREW | 6 |
| 29 | 38B7029 | WASHER | 6 |
| 30 | 38B7030 | SCREW | 4 |

## 8-6. GUARDING DISTRIBUTION DRAWING

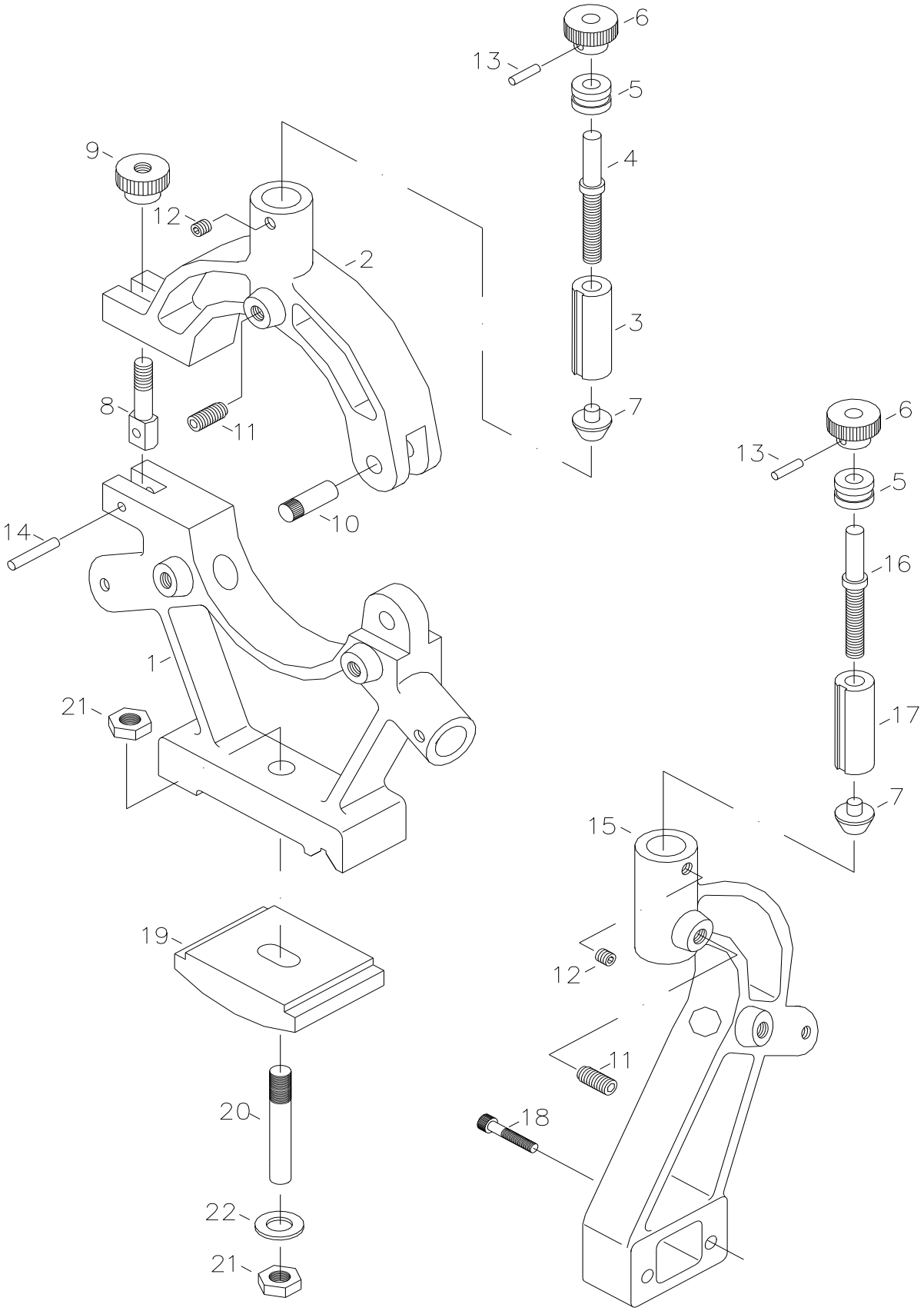


# GUARDING DISTRIBUTION DRAWING

| REF . NO. | PART NO. | DESCRIPTION | Q' TY |
|---|---|---|---|
| 1 | 38B7021 | SPLASH GUARD SUPPORT | 1 |
| 2 | 38B7032 | LOWER GUIDEWAY SEAT | 1 |
| 3 | 38B7033 | SPLASH GUARD LEFT | 1 |
| 4 | 38B7034 | SPLASH GUARD COVER | 1 |
| 5 | 38B7035 | COVER | 1 |
| 6 | 38B7036 | REAR SPLASH GUARD ENCLOSURE | 1 |
| 7 | 38B7037 | TOP GUIDEWAY SEAT | 1 |
| 8 | 38B7038 | LEFT PROTECTION DOOR | 1 |
| 9 | 38B7039 | RIGHT PROTECTION DOOR | 1 |
| 10 | 38B7040 | RIGHT PROTECTION ENCLOSURE | 2 |
| 11 | 38B7041 | RIGHT REAR DOOR | 1 |
| 12 | 38B7042 | LEFT DOOR COVER | 1 |
| 13 | 38B7043 | CONTROL BOX ARM | 1 |
| 14 | 38B7044 | CONTROL BOX | 1 |
| 15 | 38B7045 | TOP COVER | 1 |
| 16 | 38B7046 | PROTECTION CHAIN | 2 |
| 17 | 38B7011 | ELECTRIC CABINET | 1 |
| 18 | 38B7012 | ELECTRIC CABINET DOOR | 1 |

## 8-7. STEADY REST AND FOLLOW REST

# STEADY REST AND FOLLOW REST



# STEADY REST AND FOLLOW REST

| REF . NO. | PART NO. | DESCRIPTION | Q' TY |
|---|---|---|---|
| 1 | 38B9001 | CASTING | 1 |
| 2 | 38B9002 | CASTING | 1 |
| 3 | 38B9003 | SHAFT | 3 |
| 4 | 38B9004 | SPLASH GUARD | 3 |
| 5 | 38B9005 | COLLAR | 5 |
| 6 | 38B9006 | HANDLE | 5 |
| 7 | 38B9007 | SHAFT | 5 |
| 8 | 38B9008 | SCREW | 1 |
| 9 | 38B9009 | HANDLE | 1 |
| 10 | 38B9010 | SHAFT | 1 |
| 11 | 38B9011 | SET SCREW | 5 |
| 12 | 38B9012 | SET SCREW | 5 |
| 13 | 38B9013 | PIN | 5 |
| 14 | 38B9014 | PIN | 1 |
| 15 | 38B9015 | CASTING | 1 |
| 16 | 38B9016 | SCREW | 2 |
| 17 | 38B9017 | SHAFT | 2 |
| 18 | 38B9018 | CAP SCREW | 1 |
| 19 | 38B9019 | CAM SHAFT | 1 |
| 18 | 38B9018 | SCREW | 1 |
| 19 | 38B9019 | CAM SHAFT | 1 |
| 20 | 38B9020 | SCREW | 1 |
| 21 | 38B9021 | NUT | 2 |
| 22 | 38B9022 | WASHER | 1 |