

User Guide

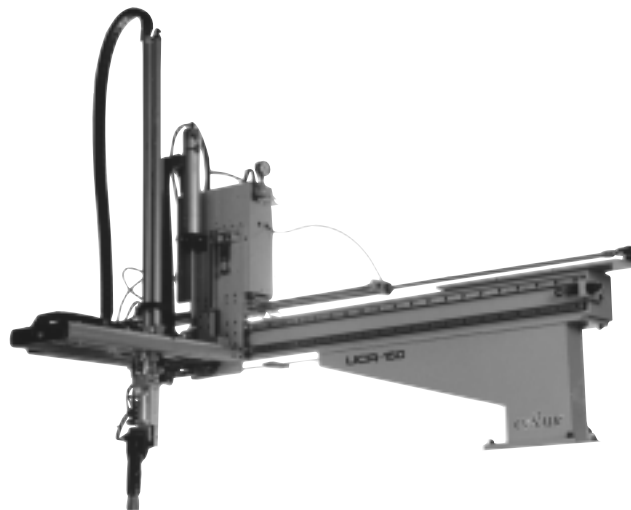
UCR-150L Robot with PC-E IV control

Installation

Operation

Maintenance

Troubleshooting



*Instant Access
Parts and Service
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UGR003/0800

Record your equipment's model and serial number(s) and the date you received it in the spaces provided.

It is important to record the model and serial number(s) of your equipment and the date you received it in the User Guide. Our service department uses this information, along with the manual number, to provide help for the specific equipment you installed.

Keep this User Guide and all manuals, engineering prints and parts lists together for documentation of your equipment.

Date:
Document Number: UGR003/0900
Serial number(s):
Model number(s):
Power Specifications: Amps Volts Phase Cycle

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INTRODUCTION

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PURPOSE OF THE USER GUIDE

This User Guide describes the Conair UCR-150L Robot with the PC-E IV control, and explains step-by-step how to install, operate, maintain and repair this equipment.

Before installing this product, please take a few moments to read the User Guide and review the diagrams and safety information in the instruction packet. You also should review manuals covering associated equipment in your system. This review won't take long, and it could save you valuable installation and operating time later.

HOW THE USER GUIDE IS ORGANIZED

Symbols have been used to help organize the User Guide and call your attention to important information regarding safe installation and operation.



Symbols within triangles warn of conditions that could be hazardous to users or could damage equipment. Read and take precautions before proceeding.



Numbers within shaded squares indicate tasks or steps to be performed by the user.



A diamond indicates the equipment's response to an action performed by the user.



An open box marks items in a checklist.



A shaded circle marks items in a list.

YOUR RESPONSIBILITY AS A USER

You must be familiar with all safety procedures concerning installation, operation and maintenance of this equipment. Responsible safety procedures include:

- Thorough review of this User Guide, paying particular attention to hazard warnings, appendices and related diagrams.
- Thorough review of the equipment itself, with careful attention to voltage sources, intended use and warning labels.
- Thorough review of instruction manuals for associated equipment.
- Step-by-step adherence to instructions outlined in this User Guide.

We design equipment with the user's safety in mind. You can avoid the potential hazards identified on this machine by following the procedures outlined below and elsewhere in the User Guide.

 **ATTENTION:
READ THIS SO NO
ONE GETS HURT**



WARNING: Improper installation, operation, or servicing may result in equipment damage or personal injury.

This equipment should only be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial plate.



WARNING: Voltage hazard.

This equipment is powered by alternating current, as specified on the machine serial tag and data plate.

A properly sized conductive ground wire from the incoming power supply must be connected to the chassis ground terminal inside the electrical enclosure. Improper grounding can result in severe personal injury and erratic machine operation.

Always disconnect and lock out the incoming main power source before opening the electrical enclosure or performing non-standard operating procedures such as routine maintenance. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while power is on.



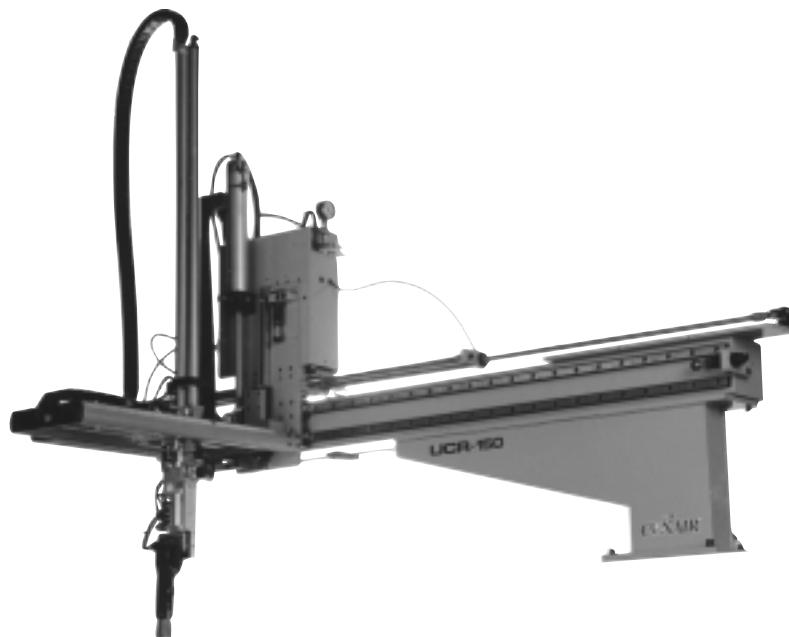
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WHAT IS THE UCR-150L ROBOT?

The Conair UCR-150L Robot is a pneumatic robot that removes the sprue/part from the injection molding machine. The UCR-150L minimizes injection machine pause time with a fast take-out time (1.5 second) by utilizing the slide cylinder in addition to the main arm cylinder.

The robot is mounted on a fixed platen on the injection mold machine. When the mold-open-complete signal goes from the mold machine to the robot controller, the strip frame slides down at the same time the main cylinder arm enters the mold area; the gripper grips the sprue/part and removes the item to a designated area. When the arm moves outside the mold area the robot can release the sprue/part with or without the optional second descent.



TYPICAL APPLICATIONS

Conair UCR-150L Robot is ideal for applications requiring quick, consistent part removal. The robot exchanges signals via the SPI interface on the mold machine to ensure predictable, constant cycle times. This feature avoids setup problems and allows accurate time quoting for production and maintenance schedules.

Use the UCR-150L Robot to eliminate common problems:

- inconsistent cycle times
- improper part/sprue separation
- unsafe sprue/part removal

Choose Conair UCR-150L Robot when you want a low cost, easily maintained robot. The UCR-150L Robot has a long vertical stroke (950 mm) that allows easy adjustment to an injection mold machine. The robot does not have a swing in/swing out movement; rather it transverses the beam. Maximum payload with standard gripper is 4.4 lb. (2 Kg), and without gripper, 6.6 lb. (3 Kg).

LIMITATIONS

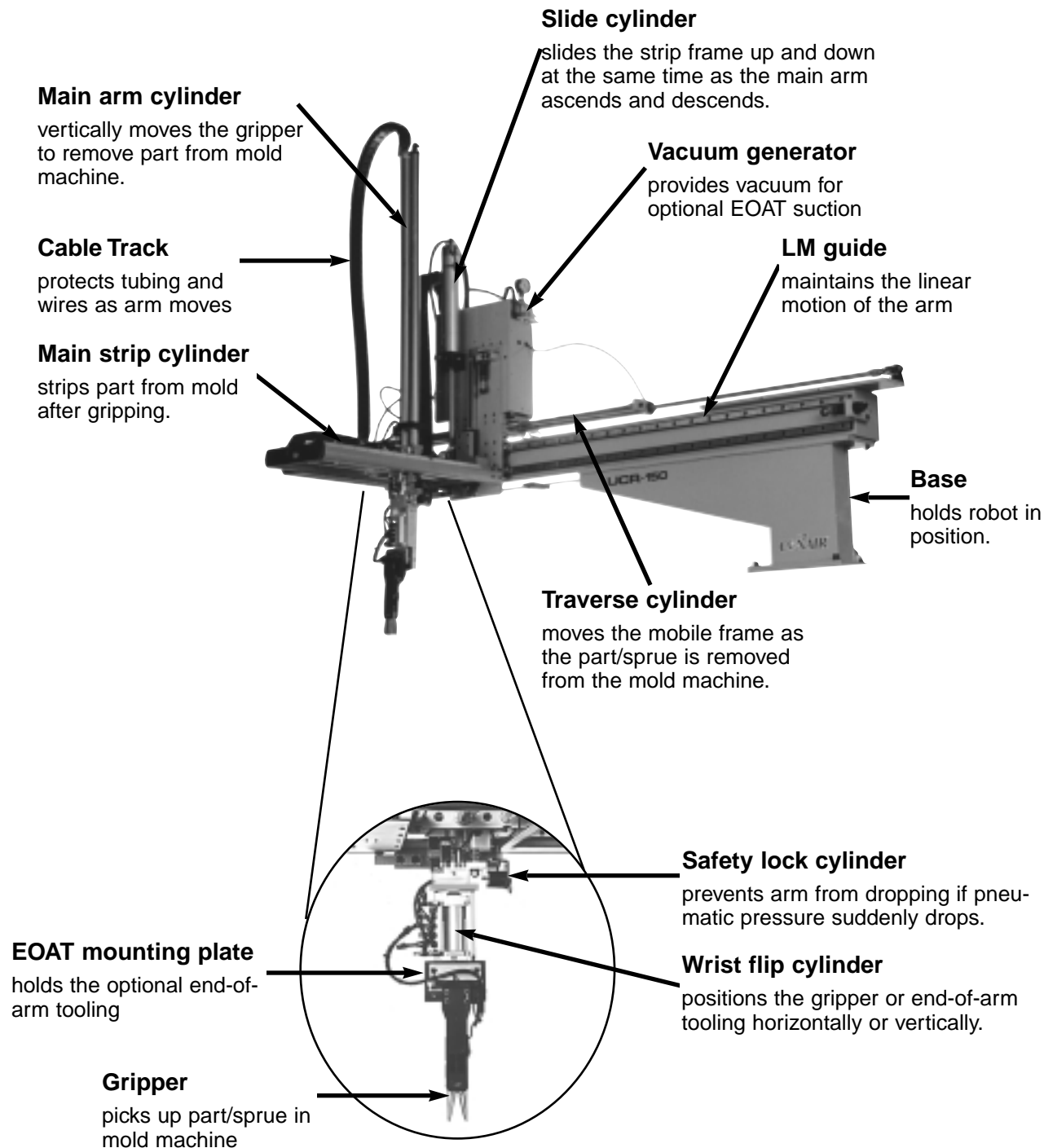
The UCR-150L Robot exchanges signals via the SPI interface on the mold machine. The hand control provides the buttons for controlling and monitoring the robot. From the hand control you can:

- monitor the input/output status
- set and adjust cycle timers in both manual and automatic mode
- adjust mode
- operate/stop the robot manually
- operate the robot automatically
- store programs

The robot receives the signal from the mold machine to remove the sprue/part. The robot arm moves into the mold area, grips the part, raises out of the mold and places the part in a specific location. The robot sends a signal to the mold machine to begin the next cycle. Each robot is equipped with a part verification switch to stop the molding machine if a sprue/part is missed.

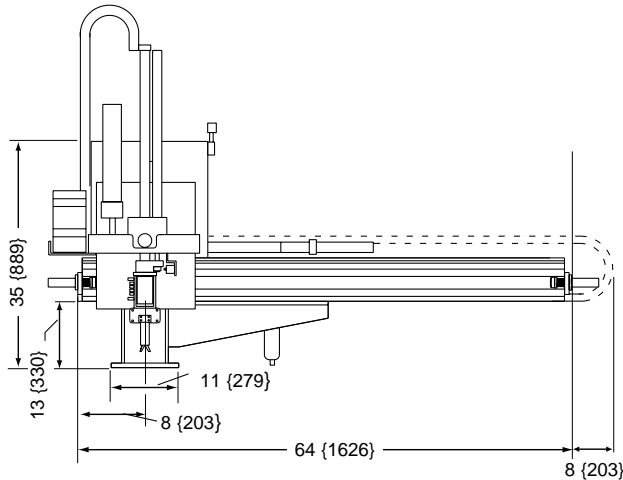
HOW THE UCR-150L ROBOT WORKS

UCR-150L ROBOT FEATURES

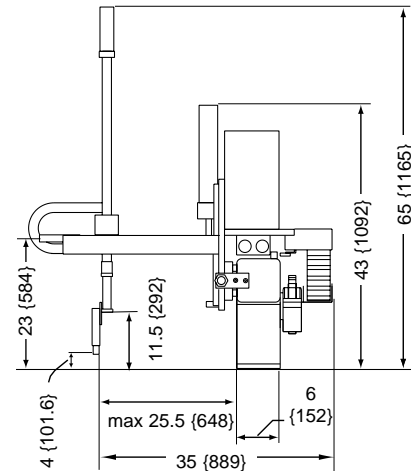


SPECIFICATIONS

Front view

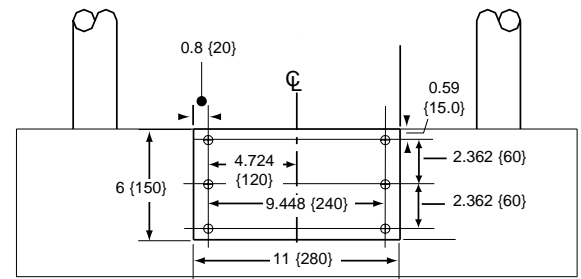


Side view



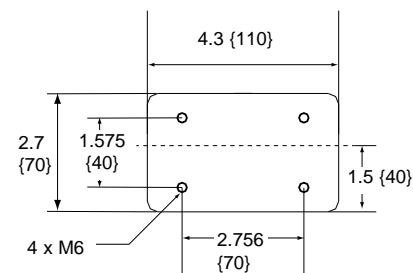
MODEL	UCR-150L	
Performance characteristics		
Molding Machine Size	up to 300 ton	
Minimum take out time seconds	1.5	
Minimum cycle time seconds	8	
Maximum payload with sprue grip lb {kg}	4.4 {2}	
Dimensions inches {mm}		
Height	65 {1651}	
Width	88 {2235}	
Depth	46 {1168}	
Distance from face of platen (min-max)	25.5 - 6.5 {647-165}	
Gripper center to top of platen	4 {102}	
Tooling plate center to top of platen	11.5 {292}	
Main arm vertical stroke	37 {950}	
Main arm horizontal stroke	47 {1200}	
Main arm strip stroke	5 {125}	
Wrist flip	90°	
Weight lb {kg}		
Shipping weight	635 {288}	
Installed weight (without control box)	485 {220}	
Electrical Requirements amps		
110V/1 phase/ 50 or 60 Hz	running	peak
	0.5	20
240V/1 phase or 3 phase/50 or 60 Hz	0.25	10
Utility requirements		
Air consumption ft ³ {l/min}	8 {232}	
Working air pressure psi {bar}	80 {5.5}	
Maximum air pressure psi {bar}	100 {6.9}	

MOUNTING TO STATIONARY PLATEN



6 bolt holes 1/2 inch - 13 tap, 1.25 deep

BASIC TOOLING PATTERN



SPECIFICATION NOTES:

Maximum payload increases to 6.6 lb {3 kg} when the sprue grip tooling is removed.

Specifications may change without notice. Check with a Conair representative for the most current information.

OPTIONAL EQUIPMENT

Available options include:

- **Extended strip stroke**
Extends the kick stroke motion for deep draw parts (typically used with end-of-arm tooling)
- **End-of-arm tooling**
Used for light duty part removal.

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UNPACKING THE BOXES

The UCR-150L Robot comes fully assembled in a single crate.



CAUTION: Lifting

To avoid personal injury or damage to the robot, lift the robot using a forklift or hoist with straps that have been positioned at the robot's center of gravity.

- 1 Carefully uncrate the robot and its components.**
- 2 Remove all packing material,** protective paper, tape, and plastic. Compare contents to the shipping papers to ensure that you have all the parts.
- 3 Carefully inspect all components to make sure** no damage occurred during shipping. If any damage is found, notify the shipping agent immediately. Check all wire terminal connections, bolts, and any other electrical connections, which may have come loose during shipping.
- 4 Record serial numbers and specifications** in the blanks provided on the back of the User Guide's title page. This information will be helpful if you ever need service or parts.

You are now ready to begin installation.

CAUTIONS AND WARNINGS



CAUTION: Moving the Robot

When you receive the robot, the swing arm is bolted to prevent movement. Leave the bolt in place until the robot is mounted on the press. Remove after mounting.



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All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

PREPARING FOR INSTALLATION

Plan the location. Make sure the area where the robot is installed has the following:

- **A grounded power source.** Check the robot's serial tag for the correct amps, voltage, phase, and cycle. All wiring should be completed by qualified personnel and comply with your region's electrical codes.
- **Air pressure source.** The robot requires a working pressure of 80 PSI and a maximum pressure of 100 PSI for gripping and vacuum release.
- **Clearance for safe operation and maintenance.** Make sure there is enough clearance around the robot for movement, maintenance and servicing. Be sure the robot has proper clearance to avoid structures, utilities, overhead cranes, material hoppers and loading pipes, as well as other machines and equipment. Be sure that the maximum envelope is clearly marked and protected from entry by personnel during operation. The maximum envelope is the volume of space encompassing the maximum designed movement of ALL robot parts, including the end of arm tooling, work piece and attachments.

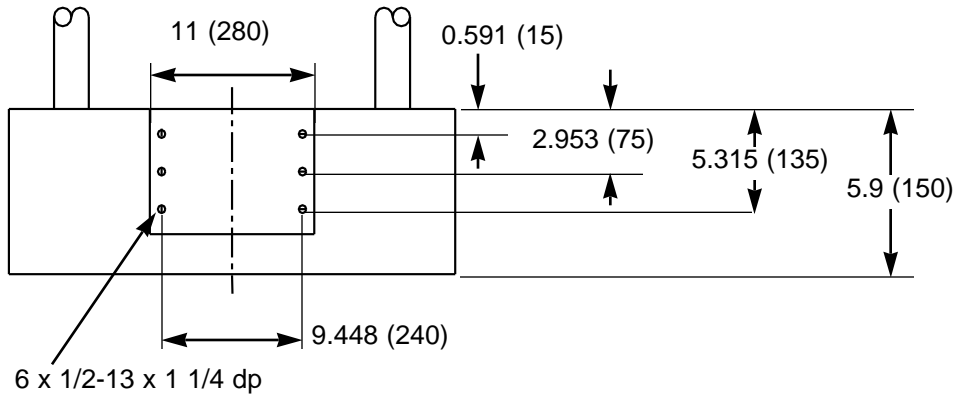
Perform the installation in the following order:

- Prepare the platen.**
- Move the robot into position** on the platen and attach.
- Connect the robot cables.**
- Adjust the grip and strip movement WITHOUT air pressure** (manually move the arm).
- Attach air line and apply pressure.**
- Make adjustments to the robot** (grip, speed, etc.)
- Run robot in manual mode**, making any adjustments needed to prevent damage to the robot, mold machine, and parts. Check interface to assure that mold machine does not close on robot arm.
- Run robot in automatic mode.** Do this step only after robot has been thoroughly tested in the manual mode to prevent damage to equipment and parts.

Drill holes in the stationary (fixed) platen to accept the robot using the mounting pattern for the UCR-150L.

PREPARING THE PLATEN

Mounting pattern for the UCR-150L Robot*.



*Dimensions shown are inches (mm). Machine flat spacer mounting surface.

POSITIONING THE ROBOT



CAUTION: Lifting

To avoid personal injury or damage to the robot, lift the robot using a hoist. Place the straps around the swing shaft between the strip frame and the base.

1

Use a sling to lift the robot.

Place a sling under both ends of the beam and under the traverse arm.

2

Move the robot into position.

Carefully hoist the robot into position on the platen.

3

Secure the robot to the platen with the supplied screws, lock washers, and flat washers.

4

Remove any shipping brackets

holding the arms.

CONNECTING THE ROBOT



WARNING: Electrical hazard

Before performing any work on this product, disconnect and lock out electrical power sources to prevent injury from unexpected energization or start-up.



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All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.



WARNING: Crushing Injury

This device has high speed moving parts that can cause crushing injuries. Keep body parts and clothing away from moving parts. Always disconnect the robot from compressed air sources before servicing.

- 1 Plug the hand-held control into the control**
box on the back of the robot.
- 2 Check to see what the power output is from**
the IMM to the robot. You need to tap wires so that power can go to the IMM SPI half 30 and 31:

IMPORTANT: Always refer to the wiring diagrams that came with your robot before making electrical connections. The diagrams show the minimum size main power cable required for your robot, and the most accurate electrical component information.

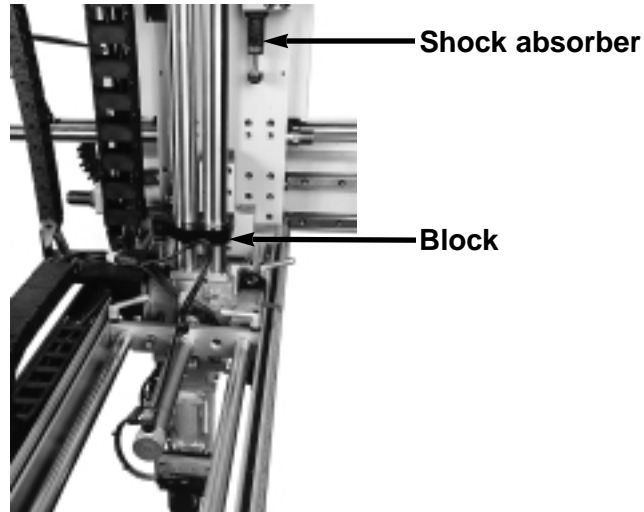
For IMM Output		
Voltage:	Choose:	Place into:
110VAC / 1 phase	1 neutral wire and 1 hot wire	Place into Positions 30 and 31 of SPI IMM half connector.
240VAC / 1 phase	1 ground wire 1 L wire 1 N wire	Place L and N wires into Positions 30 and 31 of SPI IMM half connector (in any order) do not wire Ground wire.
240VAC / 3 phase	X, Y, and Z wires or R, S, and T wires (depends on your IMM)	Choose any two wires and connect into Positions 30 and 31 of the IMM SPI half connector.

- 3 Connect the SPI connector cable into the**
SPI connector on the robot control box and to the SPI
connector on the mold machine.

SETTING GRIPPER POSITION

Set the gripper position before attaching and turning on the air pressure. To set the lowest position for the gripper:

- 1** Open the mold.
- 2** Hold the main arm and loosen the arm height adjustment screws on the block. Slide block down cylinders.



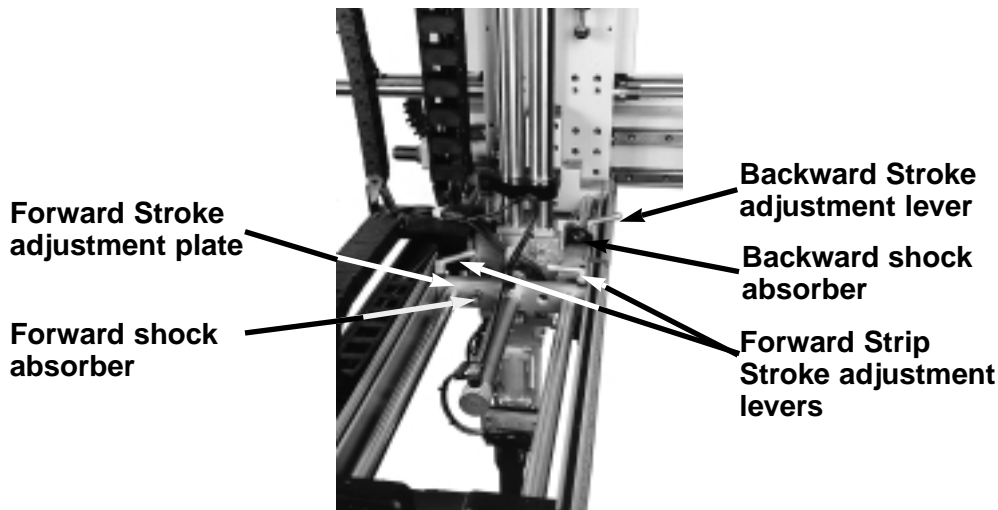
If you need to adjust the gripper height any time after installation, always be sure to disconnect and drain the air pressure before making the adjustment.

- 3** Set the gripper height to the sprue by manually moving the arm down. Do not use the hand control. Do this without any air pressure.
- 4** Tighten the adjustment screws on the block securely.
- 5** Set the maximum height the arm can move vertically by adjusting the shock absorber. Tighten lock-nut on shock.

Set the strip positions before connecting the air pressure line to prevent damage to the equipment. To set the distance the strip stroke moves forward and backward:

SETTING STRIP POSITIONS

- 1 Open the mold.**
- 2 Loosen the Forward and Backward Stroke adjustment levers.**



- 3 Move the Forward Stroke adjustment plate** by hand away from the main arm.
- 4 Move the main arm to the sprue grip position.**
- 5 Push the Forward Stroke adjustment plate** toward the arm until the forward shock absorber is completely set. Tighten locknut on shock.
- 6 Lock the Forward Stroke adjustment levers.**
This is the Strip Forward position.
- 7 Move the main arm to the strip back position.**
Make sure the strip stroke is longer than the distance needed for your application.
- 8 Lock the Backward Stroke adjustment lever.**
This is the Strip Backward position.
- 9 Move the Backward shock absorber forward** until it is completely set. Tighten locknut on the shock absorber.

If you need to adjust the strip stroke any time after installation, always be sure to disconnect and drain the air pressure before making the adjustment.

CONNECTING AIR PRESSURE

Attach the shop air line to the robot at the air line hose connection. Air pressure should be 80 PSI working pressure and 100 PSI maximum pressure. Do not connect and turn on the air until AFTER setting the gripper position and strip movement.

ADJUSTING THE SPRUE VERIFICATION SWITCH

To ensure proper part/sprue verification, adjust the LS-4 switch.

1 Press the Manual button
to place the robot in manual mode.

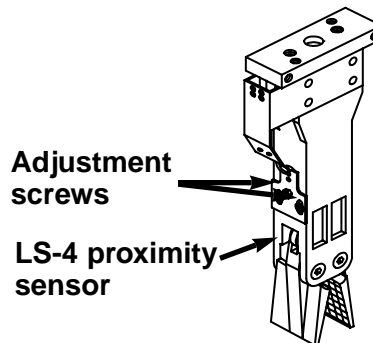


2 Press the Grip (On/Off) button
to cycle the gripper open and closed.



3 Place a sprue into the open gripper
jaws and press the Grip button to grip the sprue. The gripper should grip the sprue enough to be able to lift it, but not deform or break it.

4 Adjust the LS-4 proximity sensor if needed.
Loosen the adjustment screws and slide the sensor up or down.



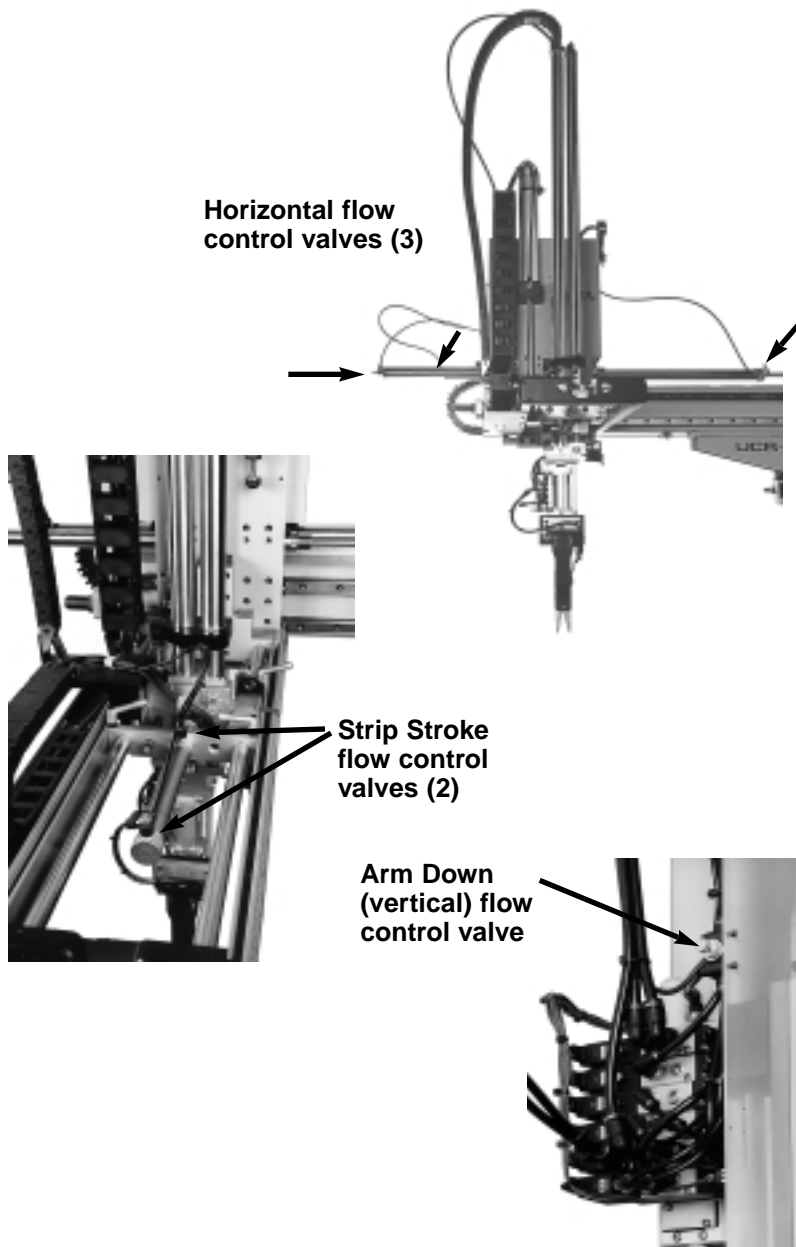
5 When adjusted, tighten the screws securely.

NOTE: Check this verification regularly to ensure the robot is correctly verifying the part/sprue removal. The gripper may need reset if the sprue diameter changes (due to mold changes). If the gripper crushes the sprue, a grip regulator can be added to decrease the pressure used to grip the sprue.

Speed control valves are used to adjust the robot speed as it moves along the axes. You can adjust the strip stroke, arm down (vertical movement), and the traverse motion (horizontal movement) by adjusting the valves.

ADJUSTING THE SPEED

Turn the valve clockwise to slow the robot. Turning the valve counter-clockwise causes the robot to speed up. Tighten the lock nut after making adjustments.



VERIFYING THE ELECTRICAL INTERFACE

The electrical interface between the robot and the injection molding machine is the most important part of the installation. The interface must function correctly to maintain the safety of the robot and the mold. As a result, the interface must be verified.



CAUTION: Equipment hazard.

The UCR-150L is designed for use with the PC-E IV control.

Do not try to use a PC-E III control with this robot. Damage will occur! Call Conair Service if you are unsure or have any questions.

The areas that must be verified as functional and correct are the motion controls and the inputs.

Verifying motion controls (permissives)

Controlling gripper movements is critical. The robot must control the following motions for safety. Check the following movements:

Electrical Diagrams are in the [Appendix](#).

- **Mold Close**

The robot must control the closing motion of the mold. If the robot is not clear of the mold area, the press must not close. Also, if the robot misses a part, the press must be stopped from closing.

- **Mold Open**

The opening of the mold must be controlled by the robot. If the arm is not in a safe area - Fully Up or Outside the press area - the injection molding machine should not be permitted to open.

- **Mold Ejection (Forward)**

The ejection of the part can be controlled by the robot. This ensures the proper placement of the robot gripper before the sprue/runner is ejected.

- **Cycle Start (optional)**

This option sends a signal from the robot to the IMM after the mold closes to tell the IMM to begin a new cycle.

Verifying the Inputs

The first four inputs must be verified. The others are optional depending on the application.

Verify the following inputs as functional and correct:

- **Mold Full Open**
This signal starts the robot into the mold area. This is a very important signal. If the robot enters, or attempts to enter the mold at the wrong time, damage to the arm and/or mold can occur.
- **Mold Full Closed**
This signal is sent to the robot when the mold is fully closed or locked up.
- **Press Gate Closed**
This signal tells the robot that the safety gate is closed.
- **Press Auto**
The robot must see this signal to cycle automatically.
- **E-Stop from IMM**
The robot monitors the emergency stop message from the IMM. If the robot senses the message from the IMM, the robot stops.
- **Reject Part**
The IMM signals the robot there is a rejected part. The robot grabs the part, strips it and immediately releases it without moving it outside.

VERIFYING THE ELECTRICAL INTERFACE

CONT'D

Electrical Diagrams are in the [Appendix](#).

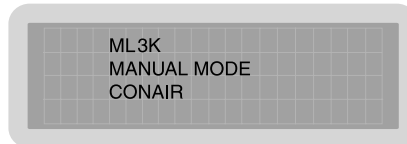
MANUAL TESTING

In manual mode you can operate the robot manually using the control buttons. To operate the robot manually:

- 1 Make sure the robot is stopped** and the mold is fully opened. Press the Stop button and verify the control displays Stop Mode.



- 2 Press the Manual button.**
The LCD displays:



The robot is now in manual mode and can be operated using the motion control buttons on the control.

Up/Down button

This button moves the main arm up and down vertically (extends and retracts). Press once to extend the arm; press again to retract. The gripper can grip in the down position, but does not grip in the up position.



Swing button

Use this button to move the arm horizontally inward and outward. The arm can traverse from the up, forward, and backward positions, but not from the down position.



Forward Strip/Backward Strip button

Press the button to strip forward; press again to strip backward.



Grip (On/Off) button

Press the Grip button to manually grip a part/sprue. Press again to release the part. The Grip button only grips the sprue when the arm is inside the mold and in the lowest position.



Before placing the robot into automatic operation, the Auto signal from the press must be present for the robot to run. To start automatic operation:

AUTOMATIC TESTING

Press the Stop button.

The robot stops. If the arm is not in the Home position, press the Manual button and move the arm to the Home position, then press the Stop button.



Press the Auto/Recycle button.

The control displays the auto mode information and the robot begins automatic cycling.



CAUTION: Equipment damage hazard.

Press the Auto/Recycle button only when the robot is stopped and in the home position. If the button is pressed at any other time in the cycle of the robot:

- The robot stops
- The alarm sounds
- The error code displays on the hand control

Press the Stop button to silence the alarm.

If the robot is not working properly at any time, turn it off immediately and refer to the Troubleshooting section of this User Guide.

If you do not encounter any problems during testing, proceed to the Operation section.

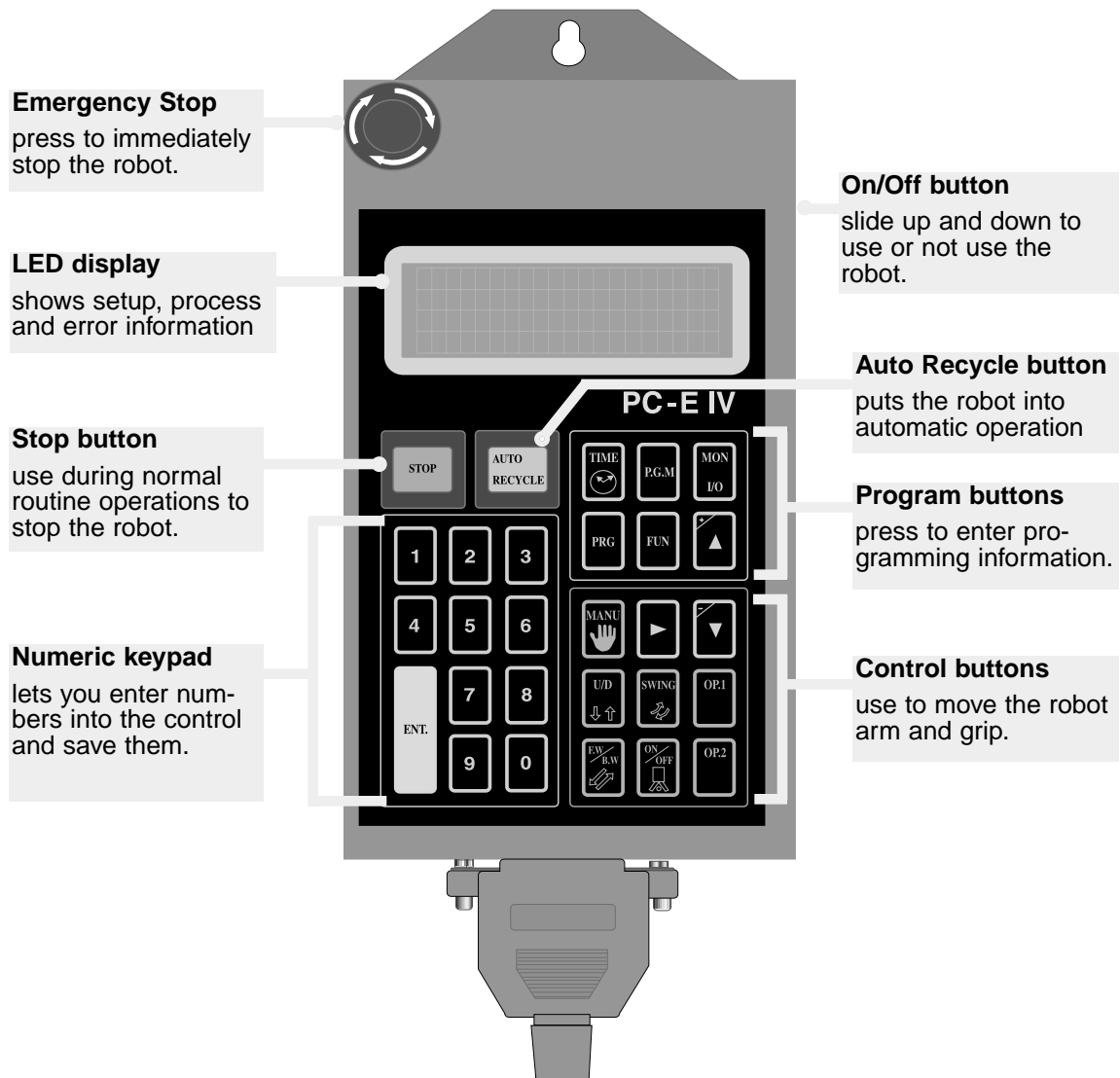


OPERATION

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- **Restarting Automatic**
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HAND CONTROL FEATURES

The robot control has several features that allow you to input setup information, monitor cutting process, and view errors.



BEFORE STARTING

Before you start daily operation of the robot, perform preventative maintenance. This includes daily, weekly, monthly and semi-annual maintenance. Maintenance procedures are described in the Maintenance section of this User's Guide.



WARNING: Be sure that power to the robot is disconnected and locked out when doing any maintenance on it. Follow all safety rules when performing any maintenance on this equipment.

The power must be on for any robot or press operations to occur. Slide the On/Off button on the side of the hand control.

STARTING THE ROBOT

Off Mode

When the On/Off button on the control is in the Off position the robot is Off position, but the hand control is still useable. The interlock signals for the mold are released. The interlocks are still monitored, however, to ensure the robot is in a safe position for opening and closing the mold. NOTE: When in the Off mode, the robot does not remove parts/sprues from the press. The operator must do this manually.

On Mode

When the On/Off button on the control is in the On position the robot runs with the press. The operator can cycle the robot in either manual mode or automatic mode.

To stop the robot from either Auto mode or Manual mode, press the Stop button.



STOPPING THE ROBOT

The LCD displays the message:



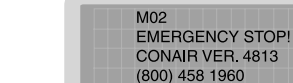
If, at any time, you need to immediately stop the robot,

1 Press the Emergency stop button.

The robot stops immediately. The control displays:



EMERGENCY STOPPING



2 Reset the control.

After the emergency is handled, reset the control by turning the E-stop button in the direction of the arrows (clockwise).

3 Press the Stop button

to place the robot in Stop mode.

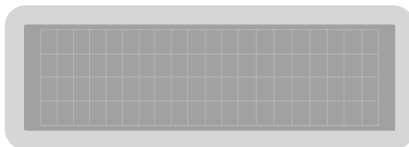


4 Continue operation by pressing the Auto/Recycle button or the Manual button.



VIEWING INFORMATION

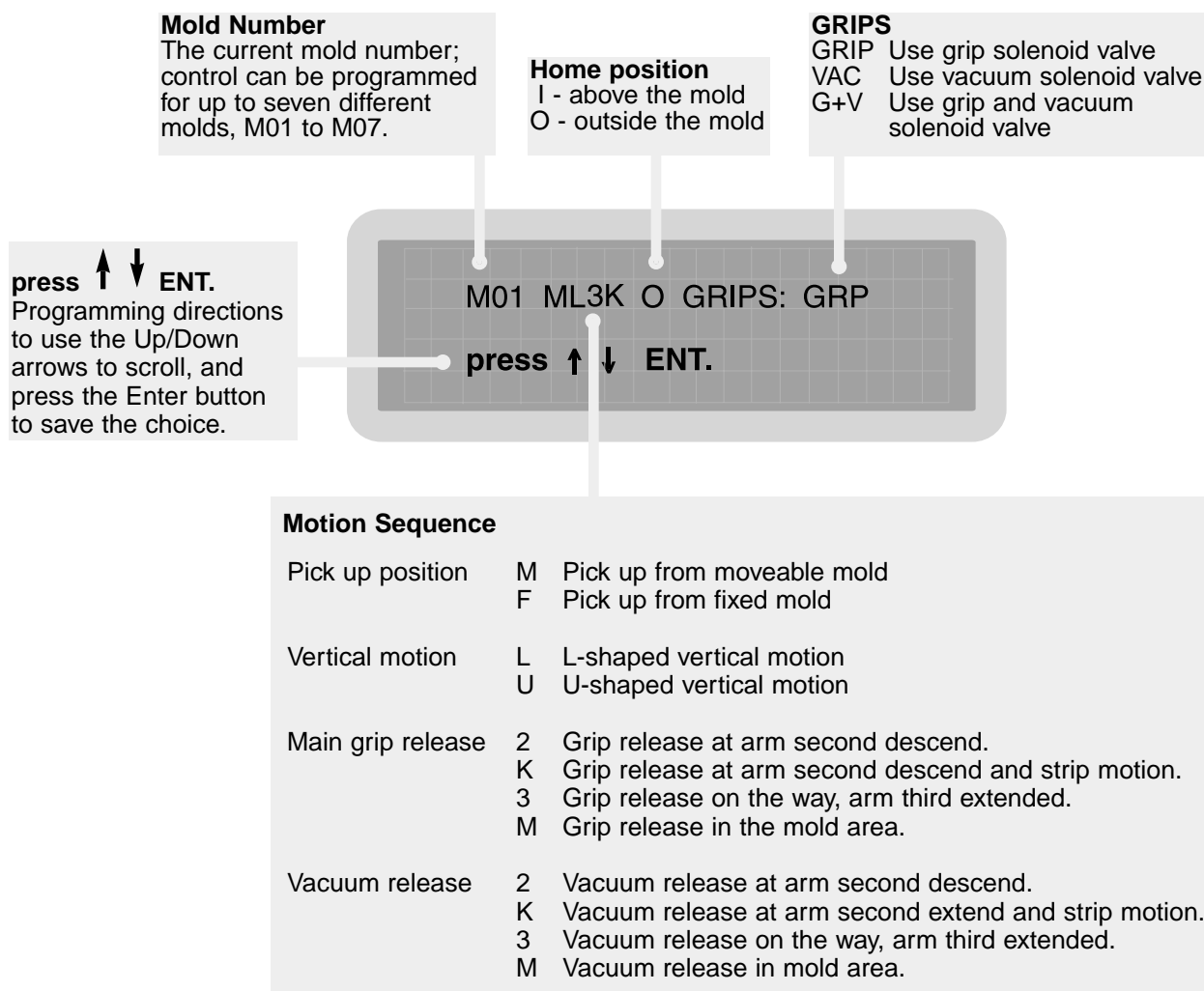
The LED displays the data you input, the status of the robot, and any error messages.



During normal operation the display provides:

- the current mold number
- the motion sequence
- current home position
- the current valve selection
- programming directions

Error codes display during an alarm or error. A typical display during normal operation is:



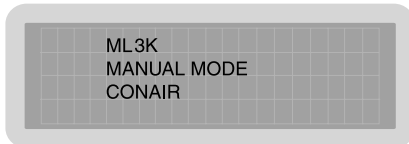
OPERATING MANUALLY

In manual mode you can operate the robot manually using the control buttons. To operate the robot manually:

- 1 Make sure the robot is stopped** and the mold is fully opened. Press the Stop button and verify the control displays Stop Mode.



- 2 Press the Manual button.** The LCD displays:



The robot is now in manual mode and can be operated using the motion control buttons on the control.

Up/Down button

This button moves the main arm up and down vertically (extends and retracts). Press once to extend the arm; press again to retract. The gripper can grip in the down position, but does not grip in the up position.



Swing button

Use this button to move the arm horizontally inward and outward. The arm can swing from the up, forward, and backward positions, but not from the down position.



Forward Strip/Backward Strip button

Press the button to strip forward; press again to strip backward.



Grip (On/Off) button

Press the Grip button to manually grip a part/sprue. Press again to release the part. The Grip button only grips the sprue when the arm is inside the mold and in the lowest position.



STARTING AUTOMATIC OPERATION

Before placing the robot into automatic operation, the Auto signal from the press must be present for the robot to run. To start automatic operation:

Press the Stop button.

The robot stops. If the arm is not in the Home position, press the Manual button and move the arm to the Home position, then press the Stop button.



Press the Auto/Recycle button.

The control displays the auto mode information and the robot begins automatic cycling.



CAUTION: Equipment damage hazard.

Press the Auto/Recycle button only when the robot is stopped and in the home position. If the button is pressed at any other time in the cycle of the robot:

- The robot stops
- The alarm sounds
- The error code displays on the hand control

Press the Stop button to silence the alarm.

You can choose any one of seven different molds, from M01 to M07. The control must be in the Stop mode.

CHOOSING THE MOLD

To choose the mold:

- 1 Press the Stop button.**
The robot stops. The control must be in the Stop mode to choose a mold.
- 2 Press the Program button.**
The current mold number is highlighted on the display.
- 3 Use the Up and Down arrows**
to move sequentially through the mold numbers, M01 to M07. Each mold number displays with each press of the arrows.
- 4 Press the Enter button.**
When the mold number you want displays, press the Enter button to choose that mold number.
- 5 Press the Stop button**
to return to the Stop mode.

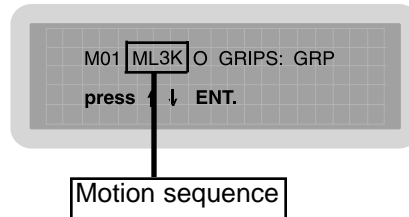


PROGRAMMING THE MOTION SEQUENCE

Before choosing the various motion sequences, be sure you have chosen the appropriate mold number (see [Choosing the Mold](#), in the Operation section).

Decide which movements you wish the robot to make. Four different movements can be programmed.

There are two choices for each of the four letters of the motion sequence.



Program the motion sequence when in the Stop mode. To program the motion sequence:

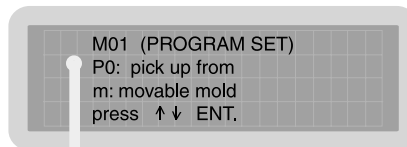
1 Press Stop button.

The control goes to Stop mode.



2 Press Program button.

The current motion sequence information displays.



Motion Sequence			
P0	Pick up position	M	Pick up from moveable mold
		F	Pick up from fixed mold
P1	Vertical motion	L	L-shaped vertical motion
		U	U-shaped vertical motion
P2	Main grip release	2	Grip release at arm second descend.
		K	Grip release at arm second descend and strip motion.
		3	Grip release on the way, arm third extended.
		M	Grip release in the mold area.
P3	Vacuum release	2	Vacuum release at arm second descend.
		K	Vacuum release at arm second extend and strip motion.
		3	Vacuum release on the way, arm third extended.
		M	Vacuum release in mold area.

PROGRAMMING THE MOTION SEQUENCE

CONT'D

3 Use the Up and Down arrows to move sequentially through the mold sequence positions. Each mold sequence position underlines each time the Up or Down arrow is pressed.



4 Use the Forward arrow to toggle between the choices for that motion sequence position. Each time the arrow is pressed, the cursor moves to the next letter/number and underlines it.



5 Continue to move through the motion sequence positions using the Up/Down arrows and the Forward arrow until you make all your choices.

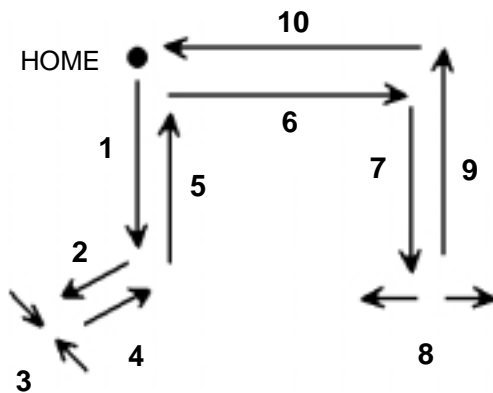
6 Press the Enter button. After making all of your choices for the motion sequence, press the Enter button to program your choice.



7 Press the Stop button. To continue, press the Stop button.



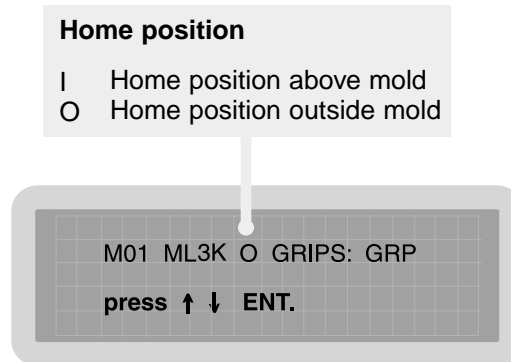
Basic Motion Sequence



- | | |
|-------------|--|
| HOME | Home position (start, standby position) |
| 1 | Strip frame slide down and main arm descends (mold open) |
| 2 | Strip forward |
| 3 | Grip |
| 4 | Strip backward. |
| 5 | Main arm ascends and strip frame slides up. |
| 6 | Arm traverses outward and wrist flip moves to horizontal position. |
| 7 | Strip frame slides down and main arm descends. |
| 8 | Grip releases part. |
| 9 | Arm ascends and strip frame slides up. |
| 10 | Arm traverses inward and wrist flip moves to vertical position. |
| ● | Arm returns to Home position. |

PROGRAMMING HOME, GRIP AND VACUUM POSITIONS

After choosing the mold number (see [Choosing the Mold](#), in the Operation section), and programming the motion sequence (see [Programming the Motion Sequence](#) in the Operation section), you need to program the home, grip, and vacuum positions.



To program the Home, Grip and Vacuum positions:

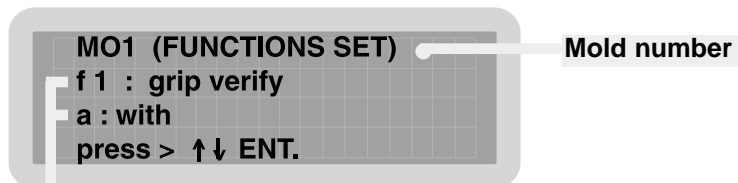
1 Press the Stop button.

The control goes to Stop mode.



2 Press the Function button.

The current settings display for the chosen mold number.



Grip and Vacuum selections

f0: Grip solenoid	a with
	b without
f1: Grip verify	a with switch
	b without switch
f2: Vacuum solenoid	a without
	b with
f3: Vacuum verify	a with switch
	b without switch
f4: Home position	a above mold
	b outside mold

3 Choose the function and settings you want for the mold number listed on the display.

4 Use the Up and Down arrows to scroll through the functions, f0 through f4. The current function is highlighted.

5 Use the right arrow to choose the setting (a, b). The current function choice is highlighted.

6 Press the Enter button.
After you make your choices press the Enter button to program your choices.

7 Press the Stop button to continue.



PROGRAMMING HOME, GRIP AND VACUUM POSITIONS CONT'D

MONITORING INPUT/OUTPUT

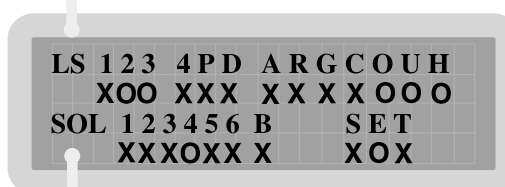
You can monitor the status of all input and output signals between the robot and the injection molding machine. The input/output display can be viewed when the robot is in Automatic mode or Manual mode.

To view input/output, press the Monitor Input/ Output button (Mon I/O). The LCD displays input information (LS) and output information (SOL) and X shows which switches/valves are OFF and O shows which ones are ON.



Inputs

LS1	Move outward end proximity switch
LS2	Move inward end proximity switch
LS3	Main arm retract end (arm up) and Slide cylinder retract end proximity switch
LS4	Part (grip) verification switch
LSP	Vacuum switch
LSD	Main arm descent end proximity switch (option)
LSA	Press in Auto signal
LSR	Rejected part signal (option)
LSG	Gate guard signal
LSC	Mold fully closed signal
LSO	Mold fully open signal
LSU	Robot ON/OFF signal
LSH	Robot home position signal



Outputs

SOL1	Move outward solenoid valve
SOL2	Move inward solenoid valve
SOL3	Main arm extend/retract and Slide cylinder retract solenoid valve
SOL4	Strip forward-backward solenoid valve
SOL5	Main arm grip solenoid valve
SOL6	Vacuum solenoid valve
SOLB	Option solenoid valve
SOLS	Mold area free; permit clamp motion output
SOLE	Permit ejector forward output
SOLT	Emergency stop from robot output

Press the Mon I/O button again to return to the previous control display.

SETTING TIMER VALUES

The robot allows you to set time delays for:

- arm movements
- part ejection
- grip
- cycle monitor
- options
- alarms

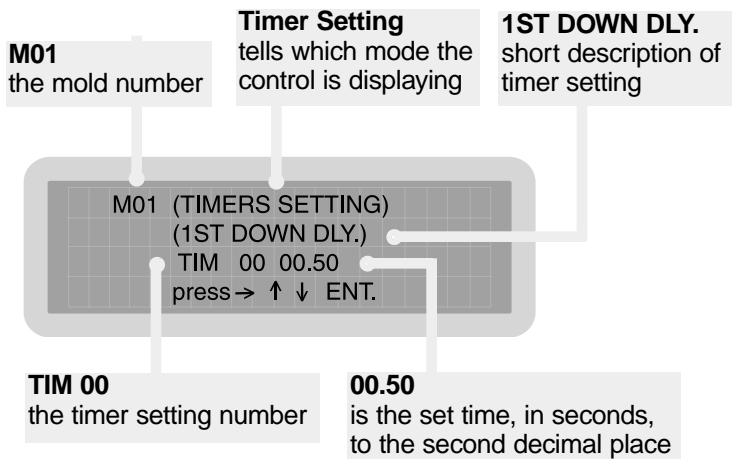
Up to 15 different timers can be set and changed while the robot is in operation, or when the robot is stopped. Timers can be fine tuned while the robot is running in Automatic.

To view and set the timer settings:

- 1 Press the Time button.**
The current timer settings display, one at a time, on the display.



- 2 Press the Up and Down buttons to** scroll through the timer settings. The timer setting displays as:



- 3 Press the Forward button**
The cursor displays under the first number to move the cursor to the next digit on the screen.



- 4 Enter the new timer value.**
Press the number for the timer value you want to set. The cursor moves to the next digit automatically.

For the table of timer settings, see Choosing Timer Settings, in the Operation section.

- 5 Press the Enter button.**
The control accepts the entries and returns to the previous display screen.



CHOOSING TIMER SETTINGS

Timer Setting	Description	LCD Displays
TIM00	First down delay	TIMERS SETTING 1ST DOWN DLY. TIM00 ##.##
TIM 01	Eject delay timer	TIMERS SETTING EJECTOR DLY. TIM01 ##.##
TIM 02	Strip forward delay timer	TIMERS SETTING STRIP F/W DLY. TIM02 ##.##
TIM 03	Grip delay timer	TIMERS SETTING V+G ON DLY. TIM03 ##.##
TIM 04	Strip backward delay timer	TIMERS SETTING STRIP B/W DLY. TIM04 ##.##
TIM 05	Arm first retract delay timer	TIMERS SETTING 1 ST UP DLY. TIM05 ##.##
TIM 06	Grip or vacuum release delay timer	TIMERS SETTING V/G 1 OFF DLY. TIM06 ##.##
TIM 07	Arm second retract delay timer	TIMERS SETTING 2ND UP DLY. TIM07 ##.##
TIM 08	Cycle time monitor timer	TIMERS SETTING CYCLE TIM DLY. TIM08 ##.##
TIM 09	Strip forward delay timer after arm retract motion	TIMERS SETTING STRIP O/W DLY. TIM09 ##.##
TIM 10	Optional delay timer	TIMERS SETTING OPTION DLY. TIM10 ##.##
TIM 11	Optional delay timer	TIMERS SETTING OPTION DLY. TIM11 ##.##
TIM 12	Grip or vacuum second release delay timer	TIMERS SETTING V/G 2 OFF DLY. TIM12 ##.##
TIM 13	Third arm retract delay timer	TIMERS SETTING 3RD UP DLY. TIM13 ##.##
TIM 14	Optional timer	TIMERS SETTING OPTION DLY. TIM14 ##.##
TIM 15	Alarm Off delay timer	TIMERS SETTING ALARM OFF DLY. TIM15 ##.##

ADJUSTING TRAVERSE MOVEMENT

When changing to a new mold, the traverse (horizontal) movement of the arm may need adjusted. To adjust the traverse movement:

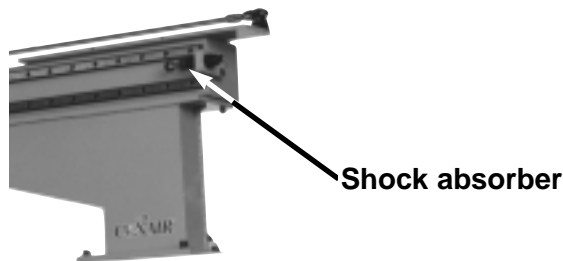
- 1 Press the Manual button on the control to place the robot in manual mode.**
- 2 Move the main arm to the Home position** using the control buttons.
- 3 Lower the main arm into the open mold and** see if the grip is centered over the mold. If it is not, you need to adjust the traverse movement.
- 4 Retract the main arm to the Home position.** This locks the main arm vertically.
- 5 Turn off the air pressure to the robot and** drain the air.



EQUIPMENT DAMAGE

Always turn off and drain air from the robot before adjusting the traverse movement. Damage can occur to equipment!

- 6 Adjust the shock absorber until it is set** completely against the arm and the arm is centered vertically over the sprue. Lock the shock absorber by tightening the locknut.



- 7 Connect the air line and turn air on.**
- 8 Using the manual control buttons, extend the** main arm and grip. Check alignment with the mold and sprue. If alignment is incorrect, repeat steps 4 - 7 until alignment is correct.
- 9 Press the Mon I/O button on the control.** The Home input (LSH) should be ON (O). If it is OFF (X) move the Home actuator on the back of the traverse beam until the Home input registers ON.

RESTARTING AUTOMATIC OPERATION

To restart the automatic operation cycle when the robot stops due to a part/sprue pickup failure:

- 1 Press the Stop button.



CAUTION: Clearing mold area.

It is the responsibility of the operator to check and clear the mold area is clear after a missed parts condition. Follow all warnings and precautions for the mold machine before removing parts.

Do not enter maximum envelope area while machine is operating.

- 2 Open the safety door and verify that there is no part/sprue in the mold. If there is, remove it manually.

- 3 Press the Manual button.




- 4 Use the Motion Control buttons to return the main arm to the home position.



- 5 Start the mold machine in Auto mode.

- 6 Press the Auto/Recycle button on the hand control. The robot begins automatic operation and the LCD displays the Auto Mode message:



ML3K 0 GRIPS: GRP
AUTO MODE
CONAIR

ANSWERING AN ALARM

When an error occurs during operation, the robot stops, an alarm sounds and the error code displays on the hand control. Press the Stop button to silence the alarm. Go to the [Troubleshooting](#) section to correct any problems.

MAINTENANCE

- ***Maintenance Features5-2***
- ***Warnings and Cautions5-2***
- ***Preventative Maintenance***
 - Schedule5-4***
- ***Checking Electrical***
 - Connections5-6***

MAINTENANCE FEATURES

The UCR-150L Robot models need regular, scheduled maintenance for peak performance. Among the features that require maintenance are:

- Mechanical parts
- Electrical parts

WARNINGS AND CAUTIONS

To maintain the best performance of the robot, it must be inspected regularly. Maintenance includes a daily, weekly, quarterly, and semi-annual (every 6 months) schedule.

Use this maintenance schedule as a guide. You may need to shorten the time of the maintenance schedule, depending on how often you use the robot.

Follow all precautions and warnings when working on the equipment.



WARNING: Improper installation, operation, or servicing may result in equipment damage or personal injury.

This equipment should only be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

Be sure the robot has proper clearance to avoid structures, utilities, overhead cranes, material hoppers and loading pipes, as well as other machines and equipment.

Be sure that the maximum envelope is clearly marked and protected from entry by personnel during operation. The maximum envelope is the volume of space encompassing the maximum designed movement of ALL robot parts, including the end of arm tooling, work piece and attachments.



WARNING: Voltage Hazard

This equipment is powered by alternating current, as specified on the machine serial tag and data plate.

Device must be properly grounded. Improper grounding can result in severe personal injury and erratic machine operation.

Always disconnect and lock out the incoming main power source to the robot before performing non-standard operating procedures such as routine maintenance. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while power is on.

All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial plate.



WARNING: High speed moving parts.

Do not enter maximum envelope area while machine is operating. The maximum envelope is the volume of space encompassing the maximum designed movement of ALL robot parts, including the end of arm tooling, work piece and attachments.

Do not operate machine unless interlocks/safety devices are in place and function properly.

Robot may drop load. Do not walk under robot/load. Failure to follow instructions could result in injury.

PREVENTATIVE MAINTENANCE SCHEDULE

To maintain the best performance, follow this maintenance schedule.

● Daily

- Inspecting filter regulator unit**
Check the bowl for water and contamination and for correct pressure.
- Checking hoses and cables**
Check for kinks, cuts, and tears. Replace as needed.
- Inspecting shock absorbers and cushions**
Make sure they are operating smoothly.
- Checking gripper return spring**
Check that the gripper return spring is operating properly.
- Checking residue buildup**
Inspect the shafts and gripper for buildup of plastic residue. Clean as necessary.
- Checking interlock functions**
Make sure the interlock functions are working properly.
- Checking part verification**
Check that the parts verification is working properly.

● Weekly, or as often as needed.

- Inspecting fittings and mounting hardware**
Check all fittings, screws, and component mounting hardware for tightness. Tighten as needed.
- Checking gripper mounting screw**
Check the gripper mounting screw for tightness. Tighten as needed.
- Inspecting grease fittings**
Check grease fittings and grease with lithium soap grease No. 1 or 2, as needed.
- Checking the safety latch cylinder**
Make sure the safety latch cylinder is working properly.
- Testing the Emergency Stop button**
Verify that the emergency stop works properly.

PREVENTATIVE MAINTENANCE SCHEDULE

- Checking angle of rotation**
Check for correct angle of rotation of the arm. Adjust as necessary.
- Checking timer settings**
Check that settings have not changed. Adjust as needed.
- Verifying sequence**
Check that robot is performing the correct sequences. Correct as needed.

● Monthly

- Inspecting the filter regulator**
Check that the filter regulator is set at the correct pressure. Check the filter and clean or replace it as needed.
- Checking the solenoid valves**
Check that the solenoid valves are working properly. Replace as needed.
- Inspecting the gripper for wear**
Check the gripper fingers for wear. Replace as needed.
- Checking the exhaust filter**
Check the filter and clean or replace it as needed.
- Examining the suction cups**
Inspect the suction cups and replace if worn or damaged.
- Inspecting electrical terminals**
Check all electrical terminals for tightness; adjust as needed. See [Checking Electrical Connections](#), in the Maintenance section.
- Checking all electrical cables**
Inspect all electrical cables for cuts and abrasions. Replace as needed.
- Inspecting hand pendant display**
Check to make sure no LCD display is functioning correctly. Replace as needed.

CHECKING ELECTRICAL CONNECTIONS



WARNING: Electrical hazard

Before performing any work on this product, disconnect and lock out electrical power sources to prevent injury from unexpected energization or start-up.



WARNING: Improper installation, operation, or servicing may result in equipment damage or personal injury.

This equipment should only be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

Electrical Diagrams are in the [Appendix](#).

- 1 Be sure the main power is disconnected** and the robot is locked out. Always disconnect and lock out the main power source before opening the unit or servicing.
- 2 Open the electrical enclosure.**
- 3 Inspect all wires and connections.**
Look for loose wires, burned contacts, and signs of overheated wires. Have a qualified electrician make any necessary repairs or replacements.
- 4 Close the electrical enclosure door.**
- 5 Inspect the exterior power cords.**
Cords should not be crimped, exposed, or rubbing against the frame. If the interface cable or hand pendant cable runs along the floor, make sure it is not positioned where it could rest in pooling water or could be run over and cut by wheels or casters.

TROUBLESHOOTING

- *Before Beginning*6-2
- *A Few Words of Caution*6-2
- *Identifying the Cause of a Problem*6-2
- *Answering an Alarm*6-3
- *The Robot Does Not Cycle*6-4
- *The Mold is Not Working Properly*6-5
- *The Arm is Not Working Properly*6-6
- *The Strip Motion is Not Working*6-7
- *There is No Horizontal Motion*6-8
- *The Gripper Does Not Work*6-9
- *There is No Vacuum*6-10

BEFORE BEGINNING

You can avoid most problems by following the recommended installation, operation and maintenance procedures outlined in this User Guide. If you have a problem, this section will help you determine the cause and tell you how to fix it.

Find any wiring, parts, and assembly diagrams that were shipped with your equipment. These are the best reference for correcting a problem. The diagrams will note any custom features or options not covered in this User Guide.

Verify that you have all instructional materials related to the robot. Additional details about troubleshooting and repairing specific components are found in these materials.

Check that you have manuals for other equipment connected in the system. Troubleshooting may require investigating other equipment attached to, or connected with the robot.

A FEW WORDS OF CAUTION



WARNING: Improper installation, operation, or servicing may result in equipment damage or personal injury.

This equipment should only be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed and adjusted by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.



WARNING: Electrical hazard

Before performing maintenance or repairs on this product, disconnect and lock out electrical power sources to prevent injury from unexpected energization or start-up.

IDENTIFYING THE CAUSE OF A PROBLEM

The Troubleshooting section covers problems directly related to the operation and maintenance of the robot. This section does not provide solutions to problems that originate with other equipment. Additional troubleshooting help can be found in manuals supplied with the other equipment.

When an error occurs during operation, the robot stops, an alarm sounds and the error code displays on the hand control. Press the Stop button to silence the alarm. Check this table for a description of the error:

ANSWERING AN ALARM

Error Display	Area of problem
LS1 SWITCH ERROR OR NOT ACTUATED CHECK LS1 SWITCH	LS-1 swing-out proximity switch error or the switch was not actuated.
LS2 SWITCH ERROR OR NOT ACTUATED CHECK LS2 SWITCH	LS-2 swing-in proximity switch error or the switch was not actuated.
LS3 SWITCH ERROR OR NOT ACTUATED CHECK LS3 SWITCH	LS-3 arm-up proximity switch error or the switch was not actuated.
LS4 SWITCH ERROR OR NO PARTS VERIF. CHECK LS4 SWITCH	LS-4 part (grip) verification switch error or the switch was not actuated.
TIMER#08 ERROR CYCLE TIM EXCEEDED CHECK TIM 08	The Timer 08 cycle time is over.
LSO SWITCH ERROR OR INTERUP. SIGNAL CHECK LSO SWITCH	LS-0 mold fully open switch error.
LSD SWITCH ERROR OR NOT ACTUATED CHECK LSD SWITCH	LS-D arm descend end proximity switch error or the switch was not actuated.
LSG SWITCH ERROR OR NOT ACTUATED CHECK LSG SWITCH	LS-G safety gate signal error.
LSP SWITCH ERROR OR NOT ACTUATED CHECK LSP SWITCH	LS-P vacuum verification switch error or the switch was not actuated.
LSH SWITCH ERROR OR NOT IN HOME CHECK LSH SWITCH	LS-H robot home position switch error or robot not at home position.

THE ROBOT DOES NOT CYCLE

There are several reasons the robot does not cycle. You need to check electrical connections, fuses, and the automatic setting.

Symptom	Possible cause	Solution
◆ The robot does not cycle.	Electrical connections are not correct.	Check that: <ul style="list-style-type: none"><input type="checkbox"/> The robot is plugged into a power source.<input type="checkbox"/> The main power source is on.<input type="checkbox"/> The interface cables are connected.<input type="checkbox"/> The fuses are good.<input type="checkbox"/> The power to the press is on.
	◆ Automatic operation is not available.	The press is not set for auto.
	The robot is not in Home position.	Return the robot to Home using the Manual button on the hand control.

The common problems you will see with the mold are that it will not close or it will not open. You need to check settings and electrical connections.

THE MOLD IS NOT WORKING PROPERLY

Symptom	Possible cause	Solution
◆ The mold does not close.	The arm is not in the full up position, or at the swing outward end.	Check the Arm Up (LS-3) and Swing Outward End (LS-1) switches and adjust as needed.
	The safety interlock is on.	Check the output and wiring.
	The part verification signal is not working.	Check that the part verification is on. Replace the switch if necessary.
	The optional cycle start signal is not working.	Check the output and wiring.
◆ The mold does not open.	The arm is not in the full up position, or at the swing outward end.	Check the Arm Up (LS-3) and Swing Outward End (LS-1) switches and adjust as needed.
	The safety interlock is on.	Check the output and wiring.

THE ARM IS NOT WORKING PROPERLY

The problems you will see with the arm is that it will not extend or retract properly. Check electrical wiring, switches, valves, and air lines.

Symptom	Possible cause	Solution
◆ There is no arm extension (no arm down).	There is no air pressure.	Check air supply to the robot. Check for leaks.
	The mold is not fully open.	Check that the interface wiring is correct.
	The robot is not swung fully in or fully out.	Check the LS-1 and LS-2 switches and adjust as necessary.
	Vertical stroke adjustment block is set too low.	Loosen stroke adjustment block and set higher to correct stroke.
	The arm down flow control is shut off.	Adjust the down speed control; replace as needed.
	The main arm solenoid valve is not functioning.	Replace the main arm solenoid valve.
	The air lines/seals are damaged or leaking.	Check air lines and seals; replace as needed.
◆ There is no arm retraction (no arm up).	There is no air pressure.	Check air supply to the robot.
	The up solenoid is not functioning.	Replace the up solenoid valve.

When the strip is not working properly, it does not move forward or backward. You need to adjust the strip speed control, replace the valve, or check the air lines.

STRIP MOTION IS NOT WORKING

Symptom	Possible cause	Solution
◆ There is no strip forward motion.	There is no air pressure.	Check air supply to the robot. Check for leaks.
	Strip stroke adjustment set too short.	Check strip stroke adjustment for proper distance.
	The strip forward speed control is shut off.	Adjust the strip forward speed control; replace as needed.
	The strip valve is not functioning.	Check the strip valve and replace as needed.
	The air lines/seals are damaged or leaking.	Check air lines and seals and replace as needed.
◆ There is not strip backward motion.	There is no air pressure.	Check air supply to the robot. Check for leaks.
	Strip stroke adjustment set too short.	Check strip stroke adjustment for proper distance.
	The strip backward speed control is shut off.	Adjust the strip backward speed control; replace as needed.
	The strip valve is not functioning.	Check the strip valve and replace as needed.
	The air lines/seals are damaged or leaking.	Check air lines and seals and replace as needed.

THERE IS NO HORIZONTAL MOTION

Causes for the no horizontal motion are due to switches and air lines. Check switches and check for air leaks.

Symptom	Possible cause	Solution
◆ The swing does not move.	There is no air pressure.	Check the air supply to the robot.
	The arm is not in the full up position.	Check the arm up switch and adjust as needed.
	The swing inhibitor devices used during shipping is still attached.	Remove the swing bracket and the screws used during shipping. See Positioning the Robot , in the Installation section.
	Part verification is not on (during Auto mode).	Check and adjust the verification switches as needed.
	The swing flow controls are shut off.	Adjust the swing speed control; replace as needed.
	The air lines/seals are damaged or leaking.	Check air lines and seals and replace as needed.

When the gripper does not grab the sprue, check the solenoid, switches, and the air lines.

THE GRIPPER DOES NOT WORK

Symptom	Possible cause	Solution
◆ The gripper does not work.	There is no air pressure.	Check the air supply; adjust as needed.
	The arm is not in mold or extended over gate (during Manual mode).	Extend the arm in the mold or over gate area.
	The grip solenoid is not working properly.	Replace the grip solenoid.
	The air lines/seals are damaged or leaking.	Check air lines and seals and replace as needed.
	The part/sprue is sticking to the mold.	Adjust the ejector stroke. Correct the mold problem.
	Main grip is not selected in Program mode.	Place grip on in Program mode.
	Gripper is faulty.	Check gripper for broken spring or cracked housing. Replace as needed.

THERE IS NO VACUUM

When the vacuum is not working, check settings, air line problems, and bad solenoids.

Symptom	Possible cause	Solution
◆ There is no vacuum.	The air pressure is incorrect.	Check the air pressure. Adjust as needed.
	The mode setting is incorrect.	Set the mode for vacuum.
	The vacuum solenoid is not working properly.	Replace the vacuum solenoid.
	The air lines/seals are damaged or leaking.	Check the air lines and seals and replace as needed.
	The part/sprue is sticking to the mold.	Adjust the ejector stroke. Correct the mold problem.

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

WE'RE HERE TO HELP

To contact Customer Service personnel, call:



From outside the United States, call: 814-437-6861

HOW TO CONTACT CUSTOMER SERVICE

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

If you do have a problem, please complete the following checklist before calling Conair:

- Make sure you have all model, serial and parts list numbers for your particular equipment. Service personnel will need this information to assist you.
- Make sure power is supplied to the equipment.
- Make sure that all connectors and wires within and between the robot and related components have been installed correctly.
- Check the troubleshooting guide of this manual for a solution.
- Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
- Check that the equipment has been operated as described in this manual.
- Check accompanying schematic drawings for information on special considerations.

BEFORE YOU CALL ...

Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Departments for a nominal fee.

EQUIPMENT GUARANTEE

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to repairing or replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

PERFORMANCE WARRANTY

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

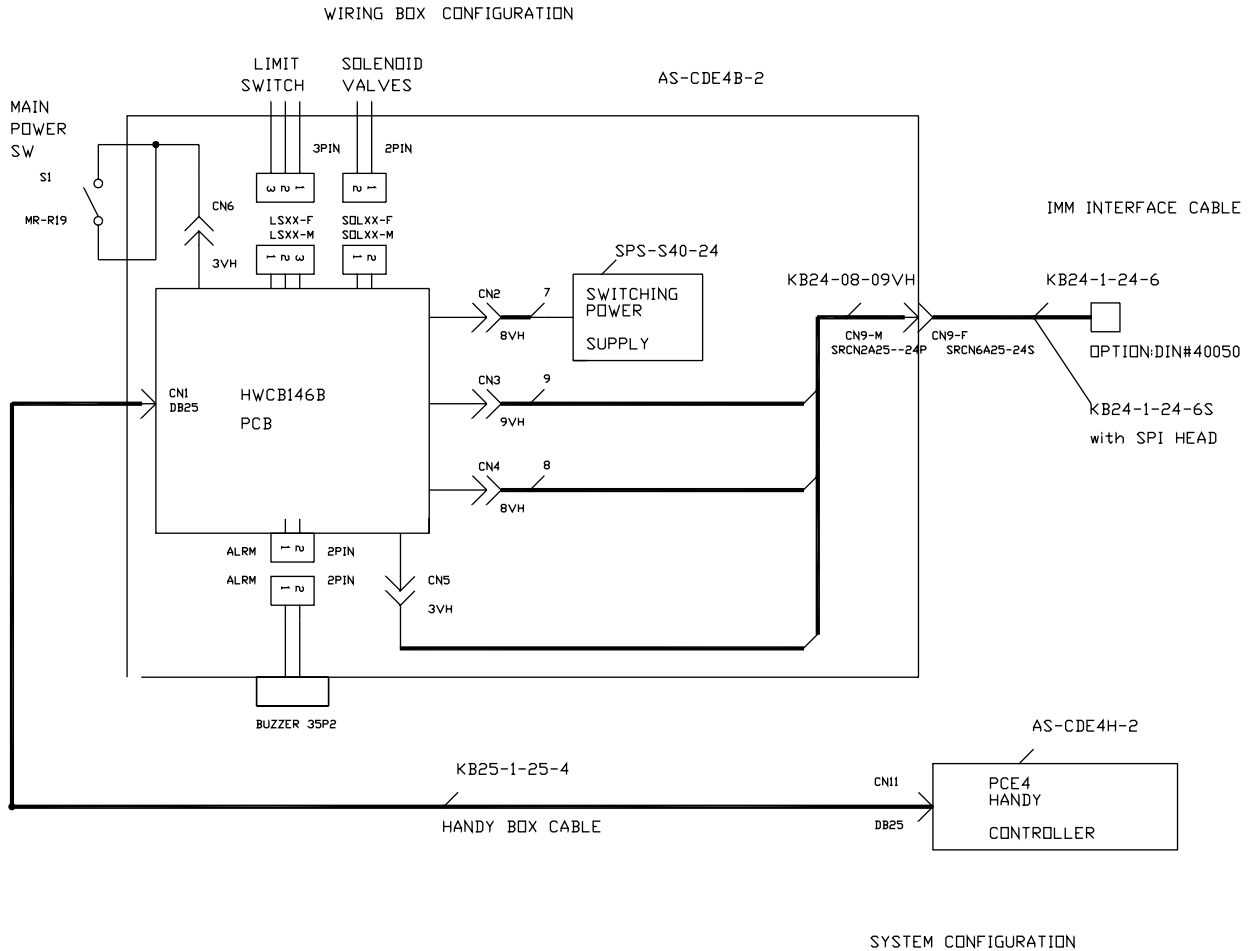
Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

WARRANTY LIMITATIONS

Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.

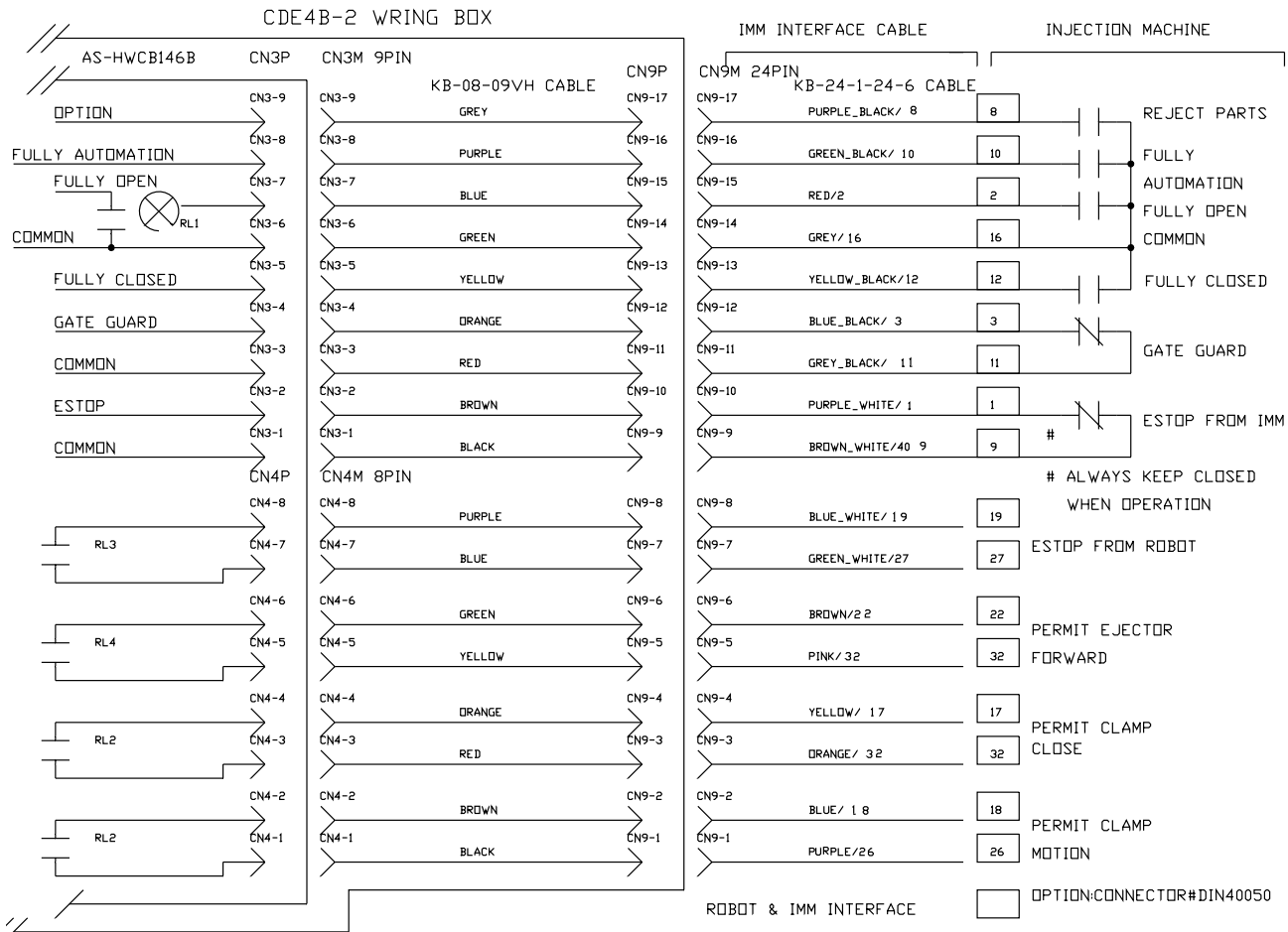
System Configuration PC-E IV Control

ELECTRICAL DIAGRAMS



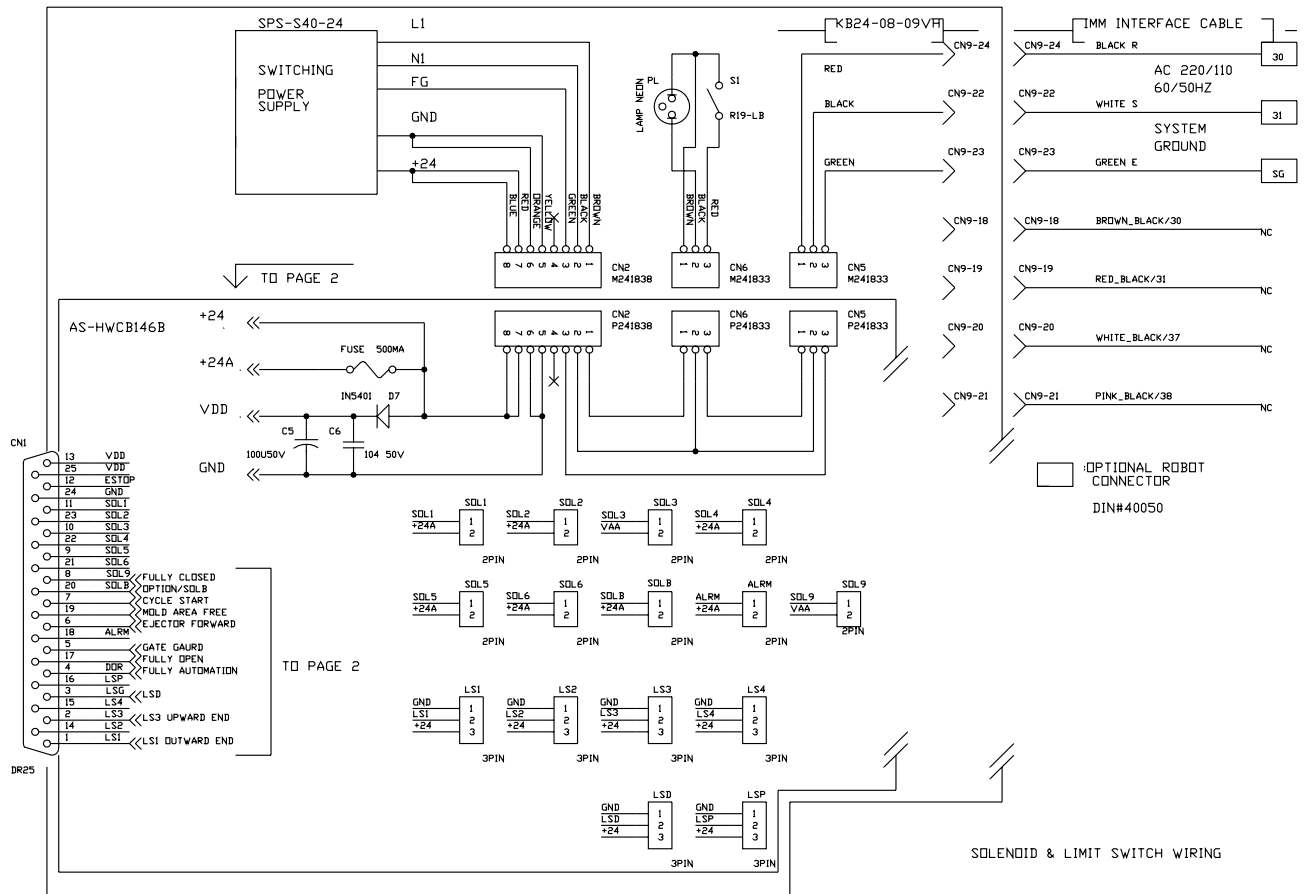
ELECTRICAL DIAGRAMS

Robot and IMM Interface PC-E IV Control



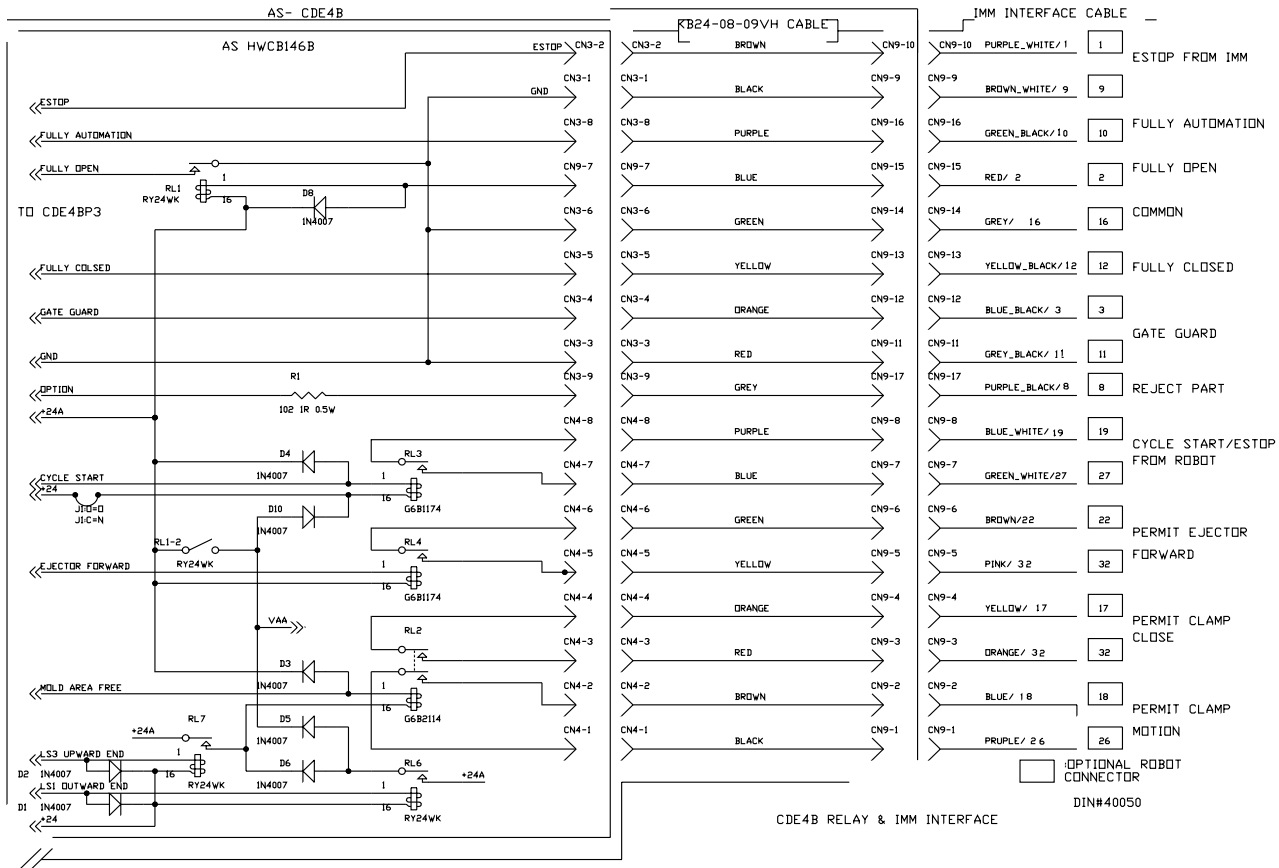
Solenoid and Limit Switch Wiring PC-E IV Control

ELECTRICAL DIAGRAMS



ELECTRICAL DIAGRAMS

Relay and IMM Interface PC-E IV Control

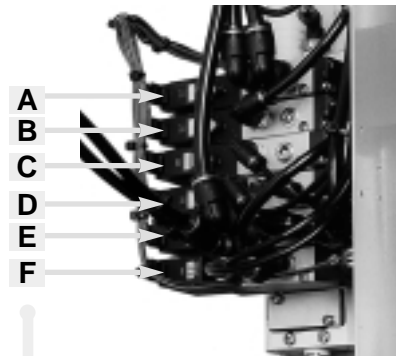




CAUTION: Equipment damage hazard

Only manually set and operate these solenoid valves when the mold is fully open. This solenoid valves will operate and the pneumatic circuit changes irrespective of the conditions of the other solenoid valves and the mold machine. Manually operation the solenoid valves make the safety interlock if effective. Damabe to the robot and mold can occur and injury to the operator can occur if the mold is not fully open when setting and operating the solenoid valves.

SOLENOID VALVES



- A** Slide cylinder, up/down
- B** Vacuum (optional)
- C** Main arm grip
- D** Strip Cylinder (forward/backward)
- E** Main arm cylinder (ascend/descend)
- F** Traverse cylinder (outward/inward)

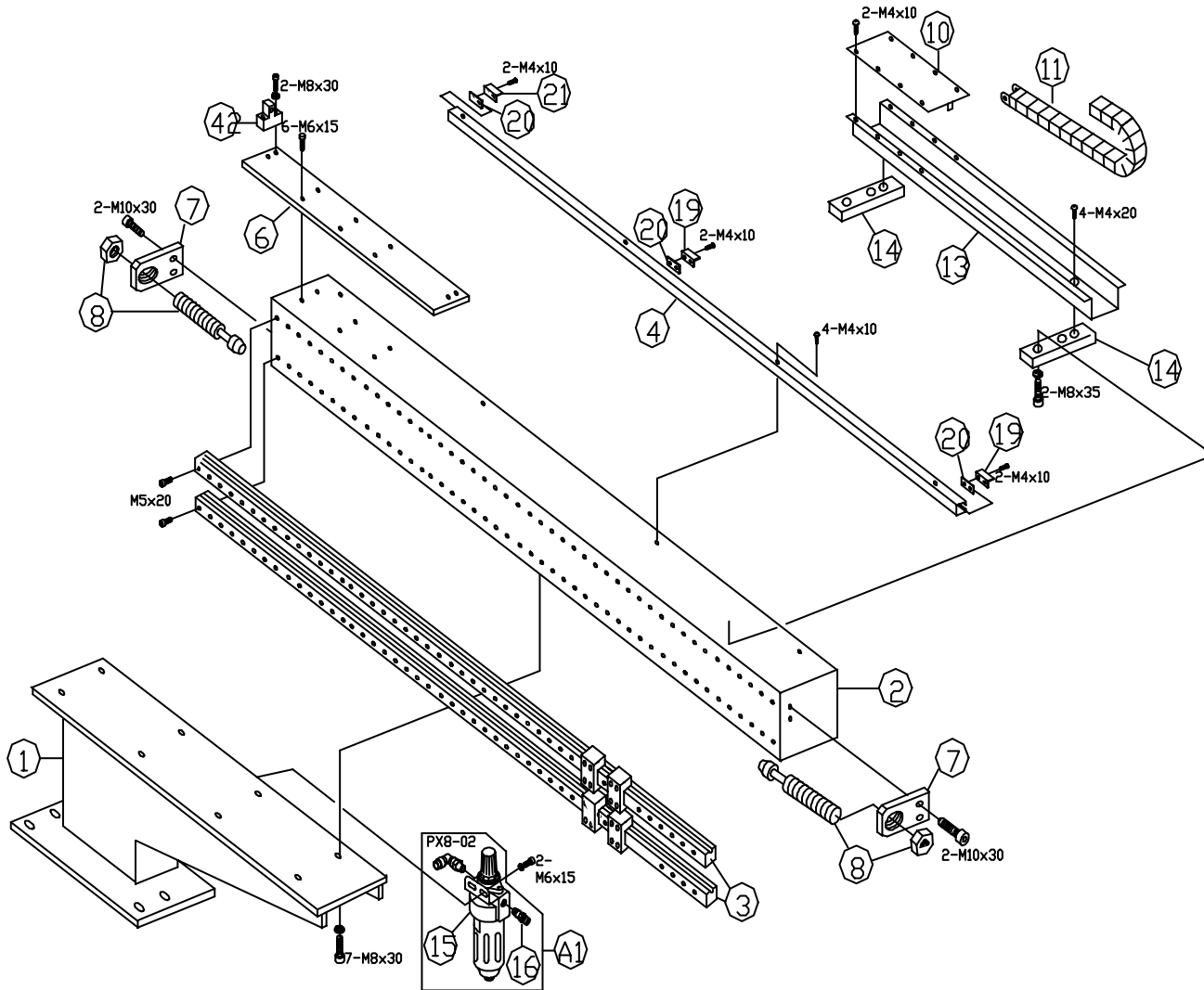


PARTS/DIAGRAMS

- **Base**P/D-2
- **Traverse Cylinder**P/D-4
- **Valve**P/D-6
- **Valve Parts**P/D-8
- **Slide Base**P/D-10
- **Strip Cylinder**P/D-12
- **Main Arm**P/D-14
- **Main Arm Slide Unit**P/D-16
- **Main Cylinder**P/D-18
- **Wrist Flip**P/D-20
- **Wrist Flip Cylinder**P/D-22
- **Grip Assembly**P/D-24
- **Gripper**P/D-26
- **Controller**P/D-28

PARTS/LISTS

Base

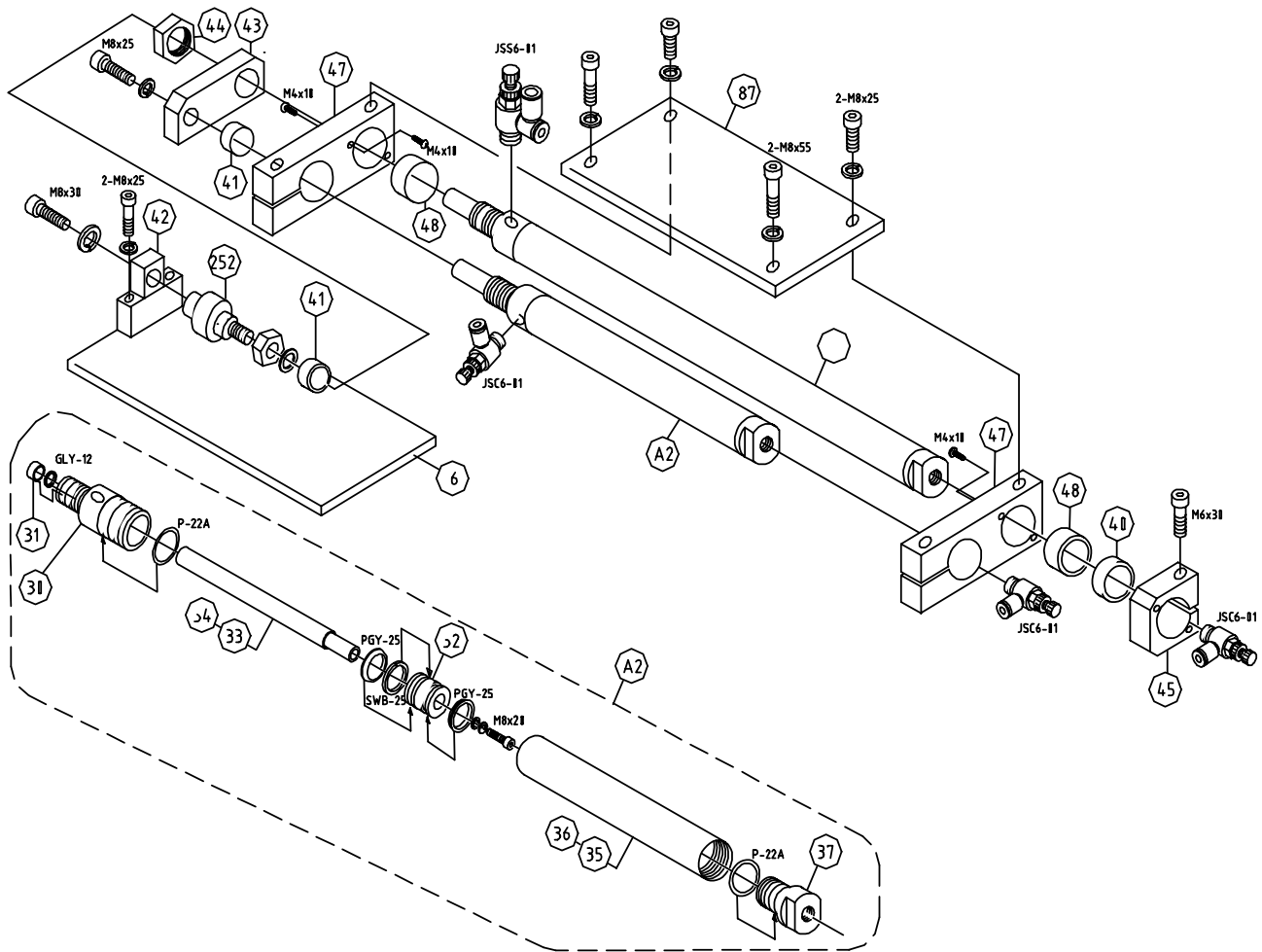


Base

Ref.	Part No.	Description	Quantity
A1	20A9020	Filter Regulator Assembly	1
1R	20A0321	Base (operator side release)	1
1L	20A0331	Base (rear side release)	1
2	20A0071	Traverse Beam	1
3	LM25B130	LM Guide, Beam Axes	2
4	20A0361	Rail, Mounting, LS Actuator	1
6	20A0091	Plate, Protect, LM-Guide	1
7	20A0111	Bracket, Mounting., Beam Shock	2
8	KBM11-25-2	Shock Absorber	2
10	20A0295	Plate, Holder, Cable Track	1
11	HPC-50	Cable Track, Beam	42
13	20A0311	Tray, Cable Track	1
14	20A0231	Arm, Support, Guide Rail	2
15	CKD-W3	Filter Regulator	1
16	1/4-9.5S	Fitting, Hose Joint	1
19	20A0261	Actuator, LS-9	2
20	20A0271	Nut, Fix, LS Actuator	3
21	20A0281	Actuator, LS-2	1
42	20A0121	Block, Joint, Beam Cylinder Rod	1
	PX8-02	Fitting	1

PARTS/LISTS

Traverse Cylinder

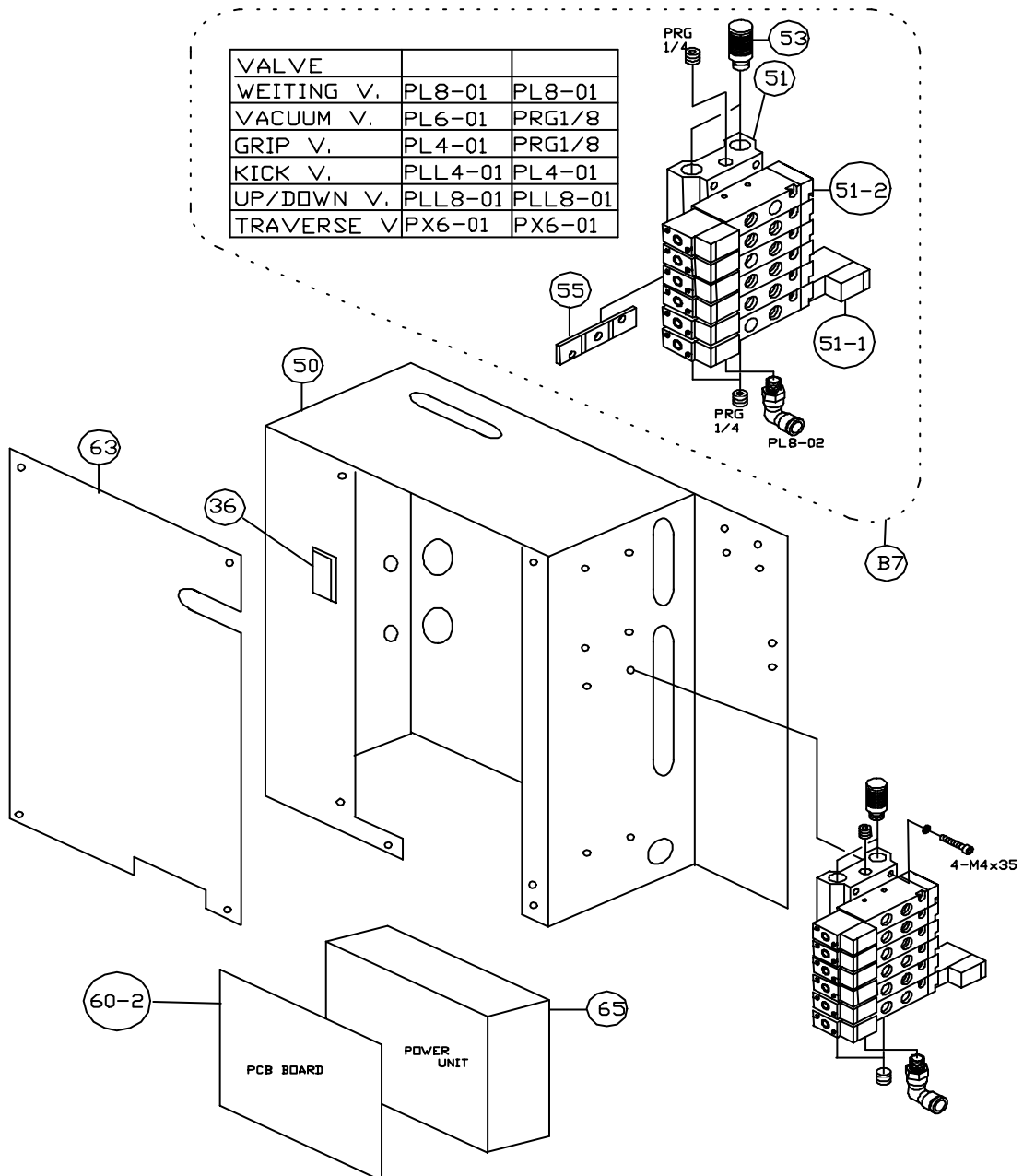


Traverse Cylinder

Ref.	Part No.	Description	Quantity
A2	20A9000	Assembly, Traverse Cylinder, Fixed	1
	20A9010	Assembly, Traverse Cylinder, Moveable	1
6	20A0091	Plate, Protect, LM-Guide	1
30	20A0011	Cap, Front, Traverse Cylinder	1
31	DM121810	Bush	1
32	20A0021	Piston, Traverse Cylinder	1
33	20A0031	Rod, Traverse Cylinder, fixed	1
34	20A0032	Rod, Traverse Cylinder, moveable	1
35	20A0041	Pipe, Traverse Cylinder, fixed	1
36	20A0042	Pipe, Traverse Cylinder, moveable	1
37	20A0051	Cap, Rear, Traverse Cylinder	1
40	20A0101	Cushion, Rubber	1
41	11D0191	Cushion Rubber, B	2
42	20A0121	Block, Joint, Traverse Cylinder Rod	1
43	20A0131	Block, Joint, Traverse Cylinder	1
44	AN05	Nut, Fix, Traverse Cylinder	1
45	20A0141	Stopper, Traverse Cylinder, 30 dia.	1
47	20A0171	Bracket, Support, Traverse Cylinder	2
48	20A0181	Bush, Hold, Traverse Cylinder	2
87	20A0341	Base, Support, Slide Base	1
252	FJ0018	Free Joint	1
	GLY-12	Seal	1
	P-22A	Seal	2
	PGY-25	Seal	2
	SWB-25	Wear Ring	1
	JSC6-01	Speed Controller	3
	JSS6-01	Speed Controller	1

PARTS/LISTS

Valve

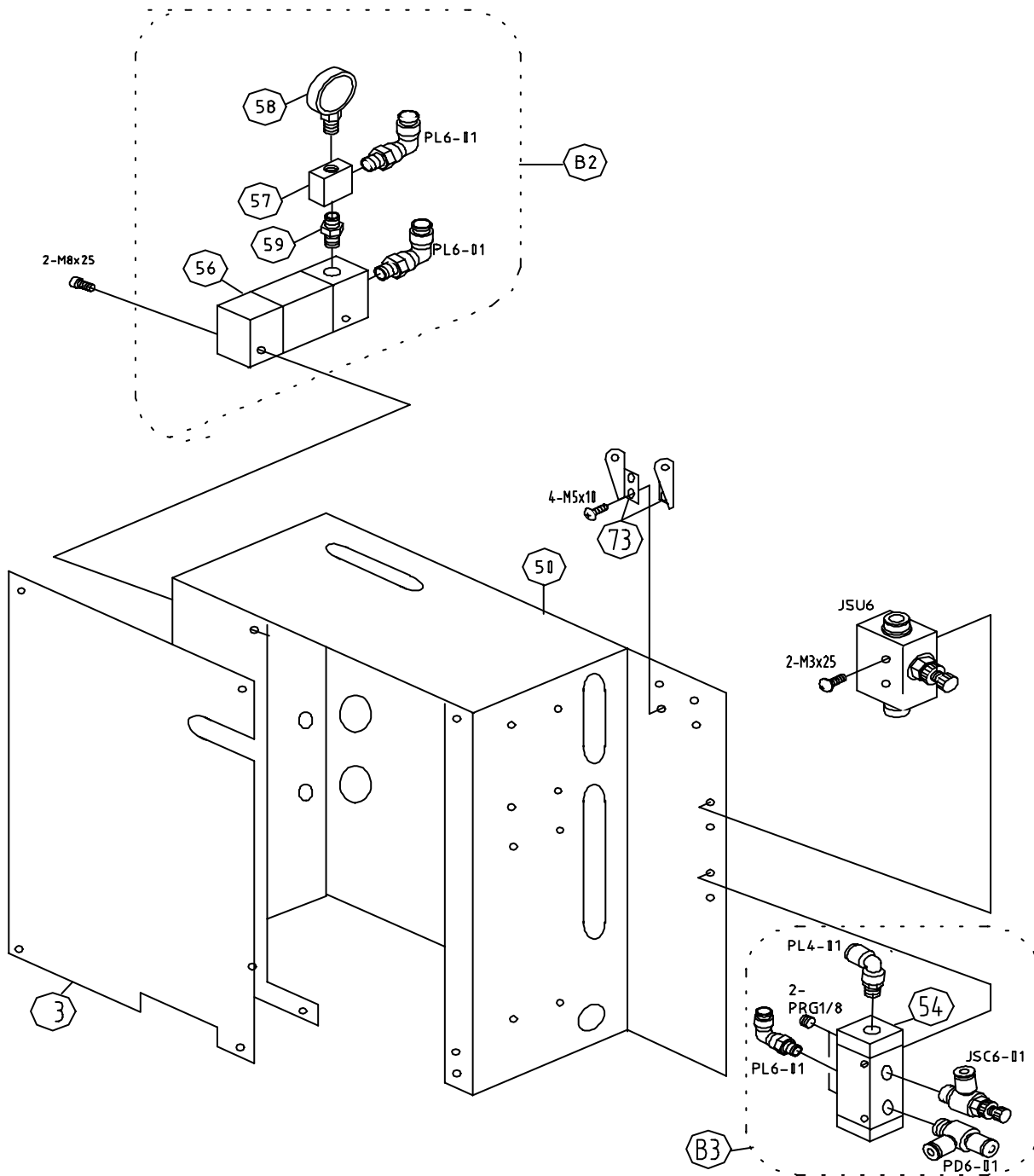


Valve

Ref.	Part No.	Description	Quantity
B7	20B9065	Assembly, Valve/Fitting	1
36	MR-R19	Switch, On/Off, OBO	1
50	20B0121	Case, Valve Bank	1
51	180MF7	Base, Mount, Valve	1
51-1	180-4E2	Valve	1
51-2	180-4E1	Valve	5
53	SL-02	Muffler	1
55	VC0021	Spacer, Grip Valve	1
60-2	20B9001SP	Assembly, I/O Relay Board	1
63	20B0135	Cover, Case, Valve Bank	1
65	SPS-S40-24	Power Supply Unit	1
	SR-02	Silencer	2
	PL4-01	Fitting	3
	PL6-01	Fitting	1
	PL8-02	Fitting	1
	PLL8-02	Fitting	2
	PLL6-01	Fitting	1
	PAX4-01	Fitting	1
	PD6-01	Fitting	1
	PL8-01	Fitting	2

PARTS/LISTS

Valve Parts

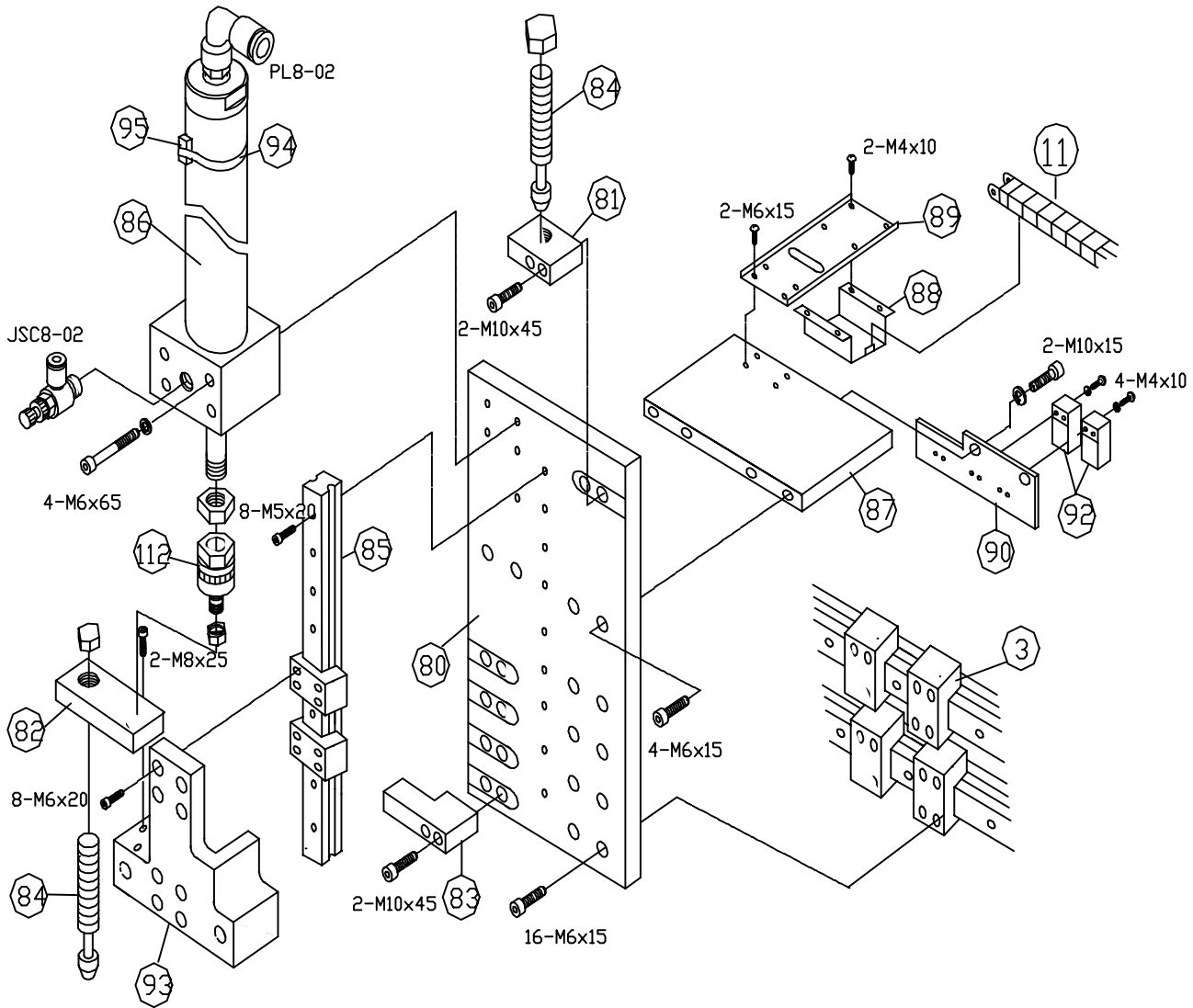


Valve Parts

Ref.	Part No.	Description	Quantity
B2	20B9002	Assembly, Vacuum Unit	1
B3	20B9003	Valve Assembly, Second Down Seed	1
50	20B0121	Case, Valve Bank	1
54	BN-4AV43-8A	Mechanical Valve	1
56	AV-10H3.5J	Generator, Vacuum	1
57	MF1011	Manifold	1
58	VG-01	Pressure Gauge	1
59	SK-401	Connector, Air	1
73	U3-FA1	Bracket, Fix, Cable Track	2
	PL6-01	Fitting	2
	JSU6	Speed Controller	1
	JSC6-01	Speed Controller	1
	PD6-01	Fitting	1
	PL6-01	Fitting	1
	PL4-01	Fitting	1

PARTS/LISTS

Slide Base

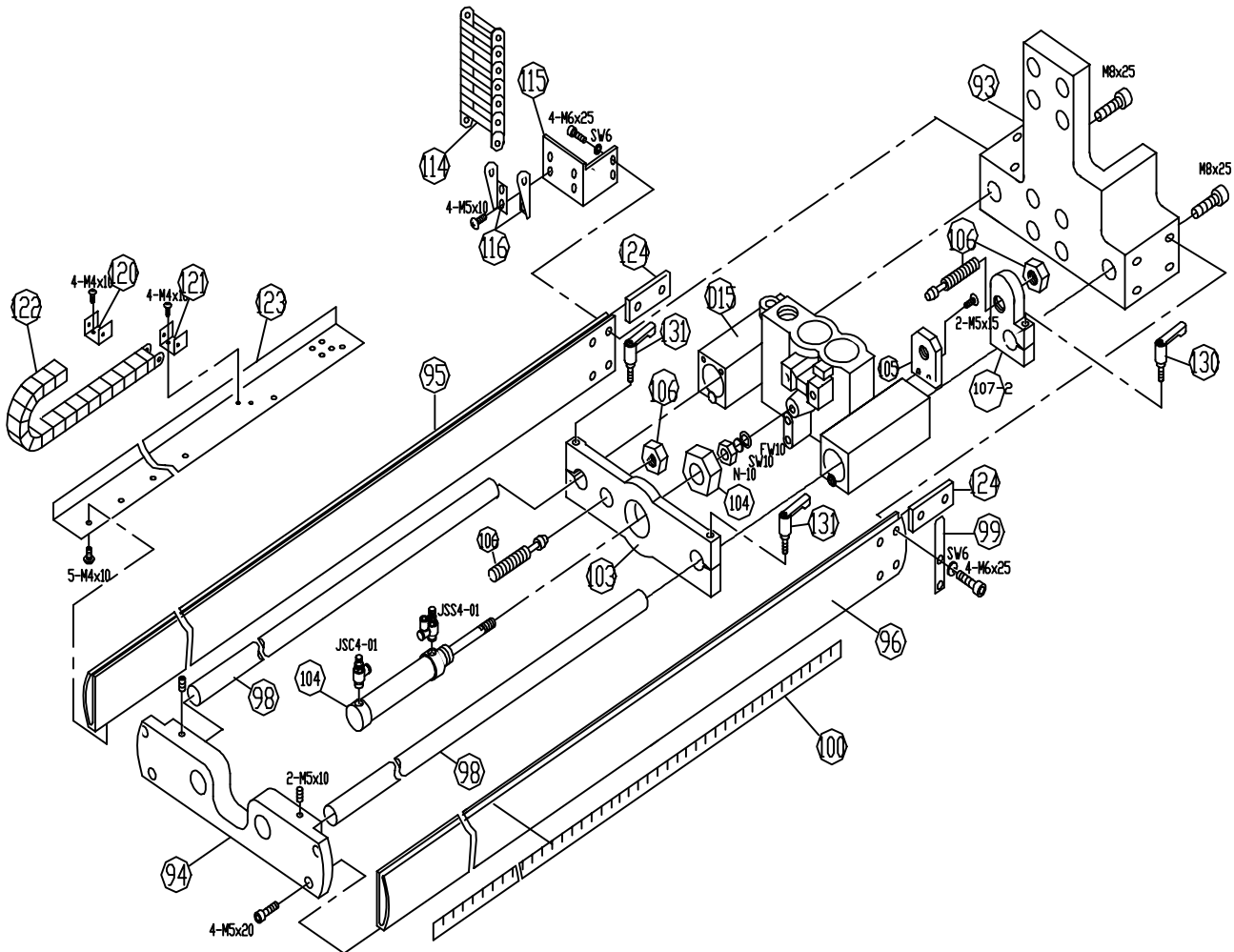


Slide Base

Ref.	Part No.	Description	Quantity
11	LCS R-50	Cable Track	35
80	20C0011	Slide Base	1
81	20C0021	Shock Absorber Holder, Upper	1
82	20C0031	Holder, Slide Down Shock	1
83	20C0041	Bracket, Stop, Slide Down	1
84	KBM11-25-2	Shock Absorber	1
85	LM25B46	LM-Guide	1
86	DAC50X250	Cylinder	1
87	20A0341	Plate, Support, Slide Base	1
88	20A0201	Bracket, Holder, Cable Tack	1
89	20A0381	Arm Mounting, Cable Track Holder	1
90	20A0351	Plate, Mounting, Proximity Switch	1
93	20C0101	Base, Strip Frame	1
94	YSA10DC-50B	Band, Fix	1
95	YSA10DC	Proximity Switch	1
112	FJ1014	Floating Joint	1
113	LS-04N	Proximity Switch	1
	PL8-02	Fitting	1
	JSC8-02	Speed Controller	1

PARTS/LISTS

Strip Cylinder

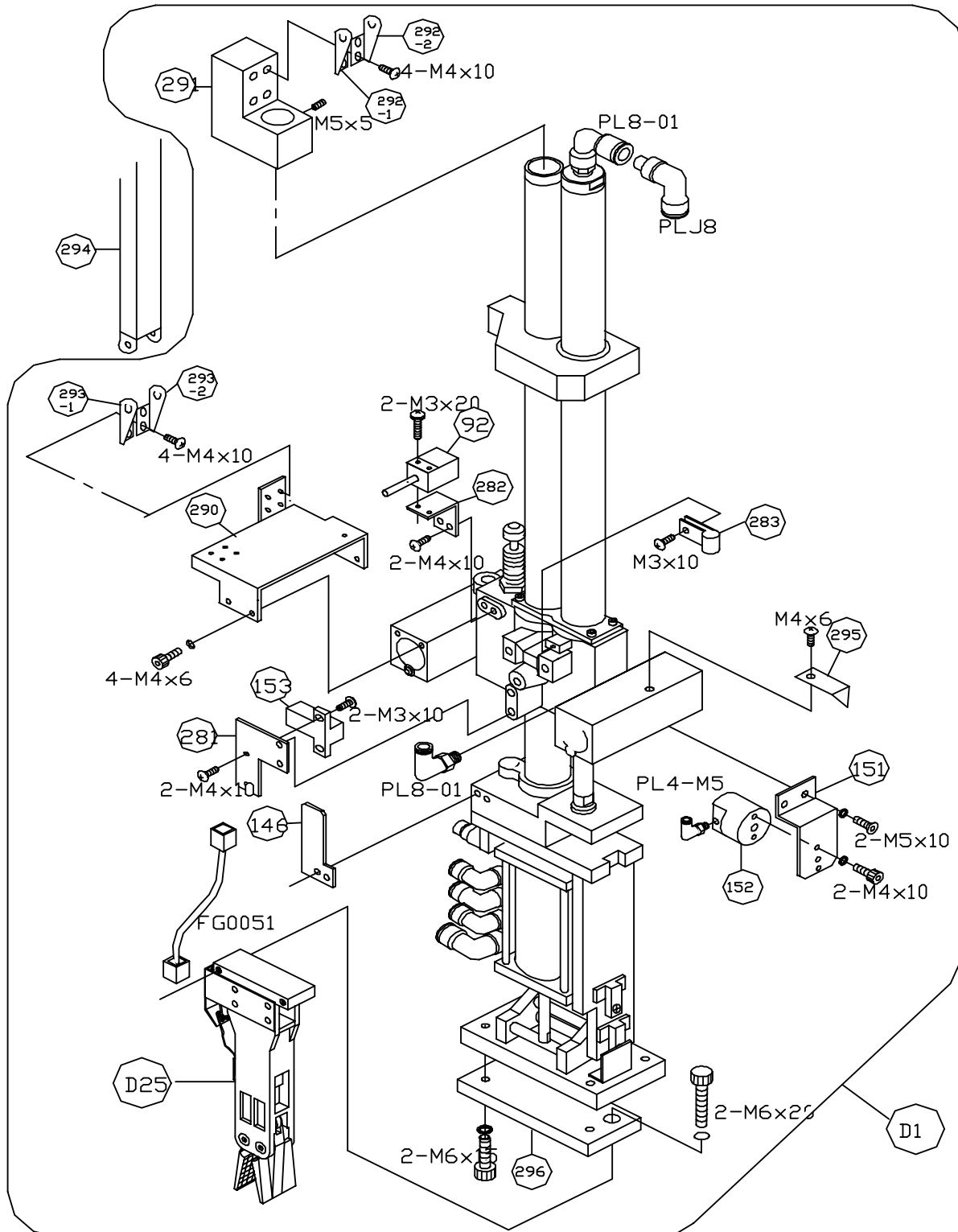


Strip Cylinder

Ref.	Part No.	Description	Quantity
D15	20D9220	Assembly, Holder, Main Arm	1
			1
93	20C0101	Base, Strip Frame	1
94	10C0192	Plate, Front, Strip Frame	1
95	10C0211	Side Plate A, Strip Frame	1
96	100221	Side Plate B, Strip Frame	1
98	20C0121	Shaft, Strip Slide, 20 dia	1
99	20C0251	Actuator, Frame Up End	
100	1C0081	Label, Measure	1
103	20C0221	Support, Plate, Strip Cylinder	1
104	DAC25X125	Cylinder	1
105	10C0141	Bracket B, Shock Absorber Mounting	1
106	SC1415-2	Shock Absorber	1
107-2	1C0101	Bracket, Stop, Shock Absorber	1
114	LSC R-50	Cable Track	1
115	20C0211	Bracket, Cable Track Mount	1
116	U3-MA0-LS	Bracket Fixed, Cable Track (L)	1
	U3-MA0-RS	Bracket Fixed, Cable Track	1
120	2KR002M	Bracket, Strip Cable Track	1
121	2KR002F	Bracket, Strip Cable Track	
122	PR2715R50	Cable Track, Strip Axis	1
123	20KR1011	Support, Strip Cable Track	2
124	1KR1011	Spacer, Side Plate	1
130	H06-40	Clamp Lever	1
131	H06-40	Clamp Lever	1
			1
	JSC4-01	Speed Controller	
	JSS4-01	Speed Controller	

PARTS/LISTS

Main Arm

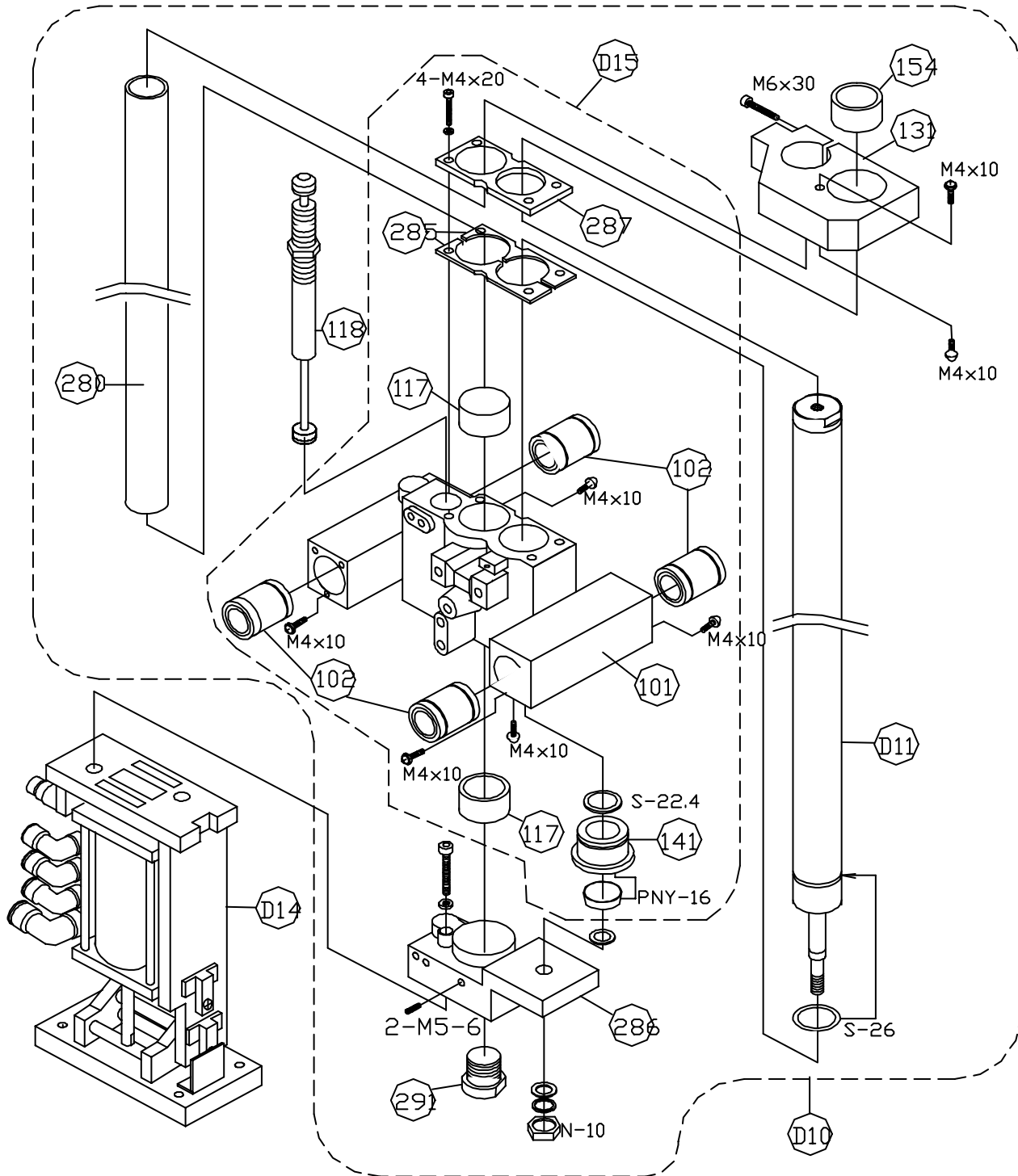


Main Arm

Ref.	Part No.	Description	Quantity
D11	20D9001L	Assembly, Main Arm, L = 700	1
D25	D9191	Assembly, Gripper W/LS-4	1
92	PS-05NE	Proximity Switch	2
146	10D0961	Actuator, LS-3	1
148	TANSI16P	Terminal, P6	1
151	20D0501	Bracket, Mounting, Main Cylinder Lock	1
152	CL12-5	Main Arm Lock Cylinder	1
153	LS-04NV	Proximity Switch	1
281	20D0491	Plate, Mounting, LS-3	1
282	20C0161	Plate, Mounting, LS-11	1
283	NK-8N	Vinyl Code Clip (S)	1
290	2KR0041	Plate, Mounting, Cable Track	1
291	2KR0051	Bracket, Vertical Cable Track	1
292-1	U2-FA0-LS	Bracket, Cable Track, FL	1
292-2	U2-FA0-RS	Bracket, Cable Track, FR	1
293-1	U2-MA0-LS	Bracket, Cable Track, ML	1
293-2	U2-MA0-RS	Bracket, Cable Track, MR	1
294	PR2018R45	Cable Track, Vertical	29
295	C0131	Indicator, Strip Stroke	1
296	GR0051	Plate, Mounting, Gripper	1
	PC8-01	Fitting	1
	P;6-01	Fitting	1
	PL4-M5	Fitting	1

PARTS/LISTS

Main Arm Slide Unit

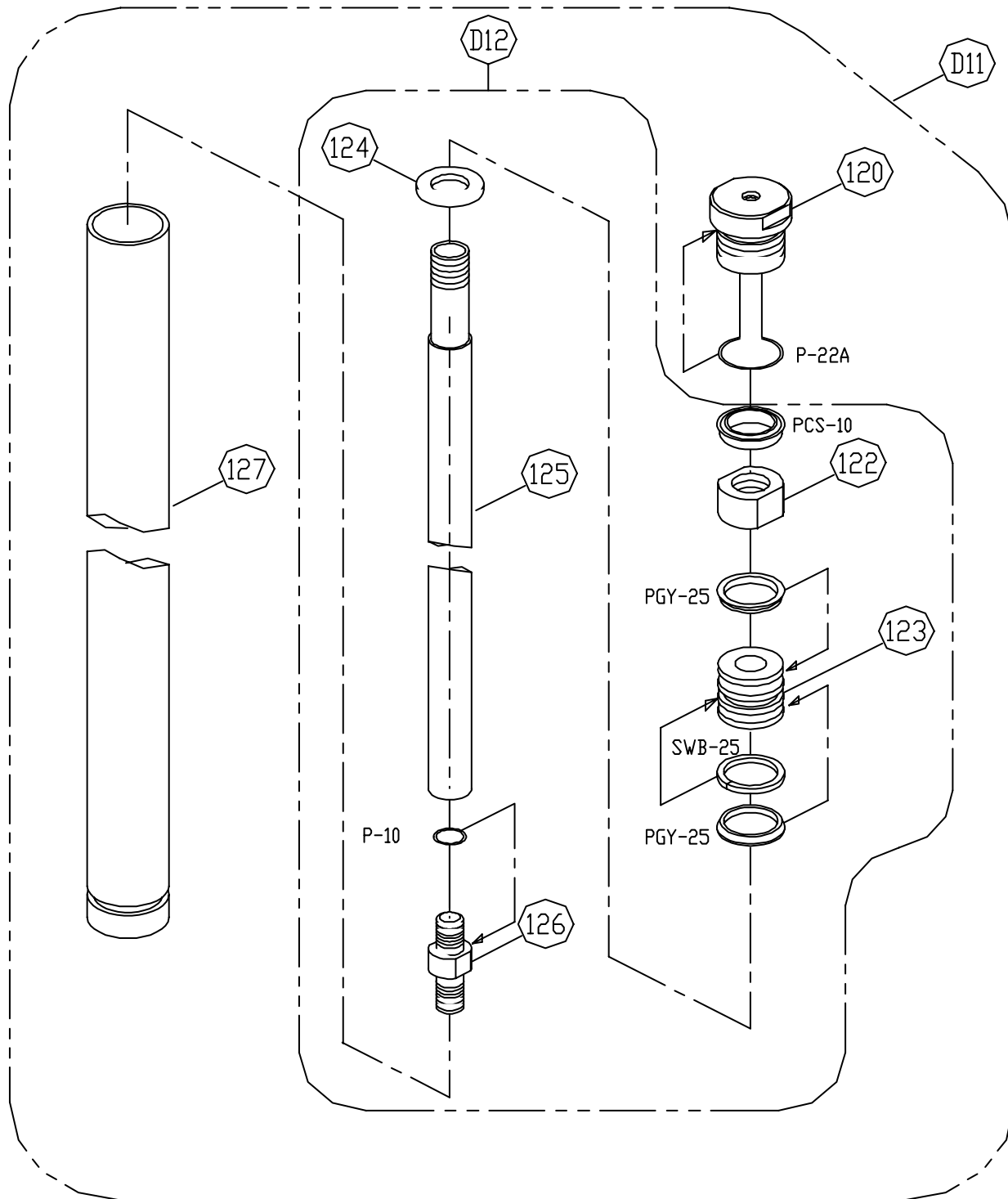


Main Arm Slide Unit

Ref.	Part No.	Description	Quantity
D10	20D9031	Assembly, Main Arm without Wrist	1
D11	20D9060	Assembly, Main Cylinder, L=700	1
D14	20D13-1	Assembly, Wrist Flip Unit	1
D15	20D9220	Assembly, Holder, Main Arm	1
101	20C0241	Holder, Main Arm	1
102	LM20UU	Bearing, Strip Slide	4
117	1D0171	Bushing, Main Metal	2
118	SCD2035-2	Bushing, Main Rod	1
131	21D0201	Stopper, Main Arm	1
141	D0231	Bushing, Main Rod	1
154	21D0571	Bushing, Main Metal	1
280	21D0112	Pipe, Slide, Main Arm, L=700	1
285	21D0171	Plate, Hold, Main Cylinder	2
286	21D0502	Block, Mounting, Main Slide	1
287	21D0181	Plate, Support, Main Cylinder	1
291	21D0121	Cap, Slide Pipe	1
	S-22.4	Seal	1
	S-26	Seal	1

PARTS/LISTS

Main Cylinder

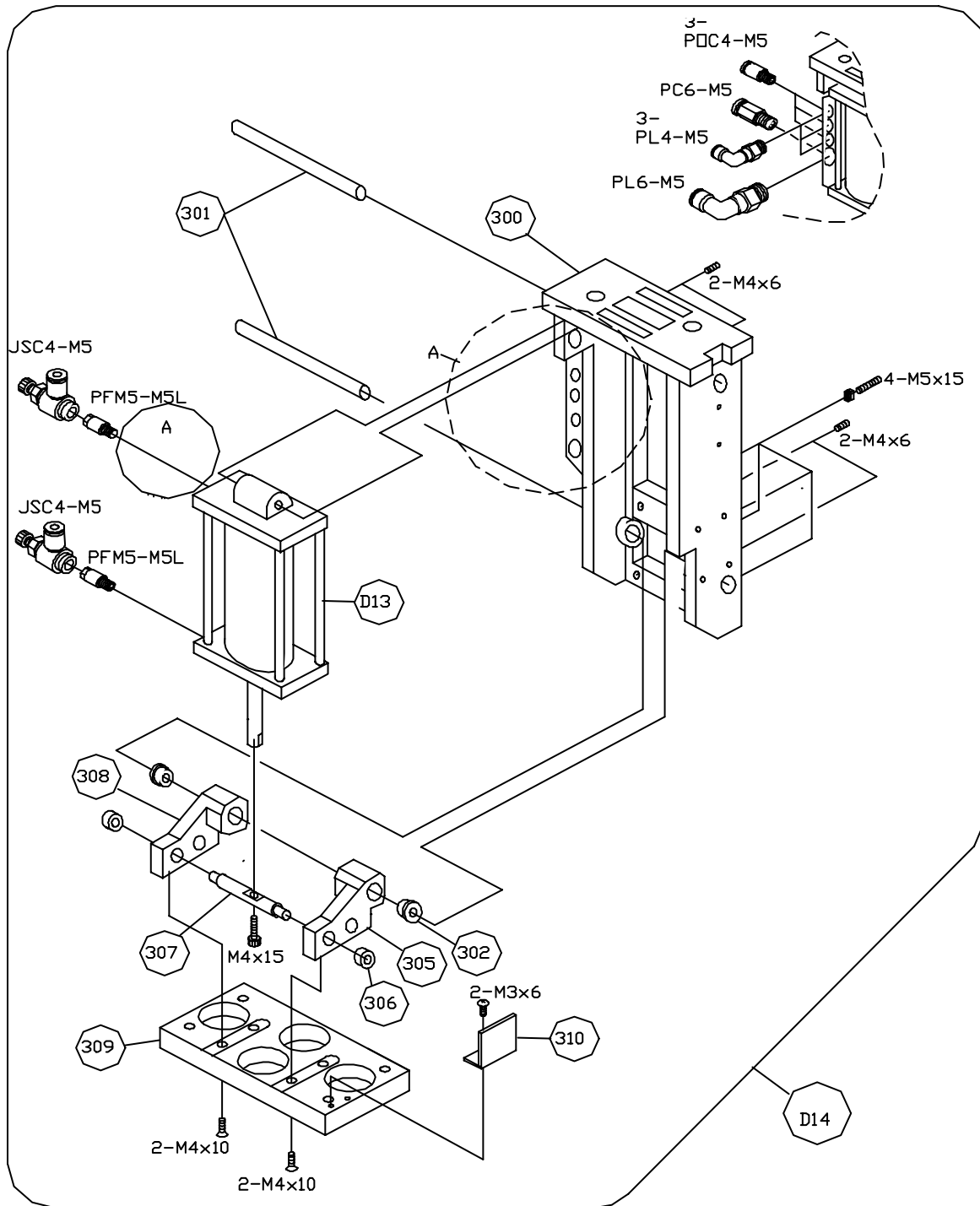


Main Cylinder

Ref.	Part No.	Description	Quantity
D11	20D9060	Main Cylinder Assembly, L=700	1
D12	20D9065	Assembly, Rod and Piston	
120	20A0055	Main Cap, Main Cylinder	1
122	D1151	Nut, Air Cushion	1
123	D0041	Piston, Main Cylinder	1
124	D0051	Collar, Piston, Main Cylinder	1
125	20D0061	Rod, Main Cylinder, L=700	1
126	D0081	Cap, Main Rod End	1
127	21D0241	Pipe, Main Cylinder, L=700	1
	PCS-10	Seal	1
	PGY-25	Seal	2
	SWB-25	Wear Ring	1
	P-10	Seal	1
	P-22A	Seal	1

PARTS/LISTS

Wrist Flip

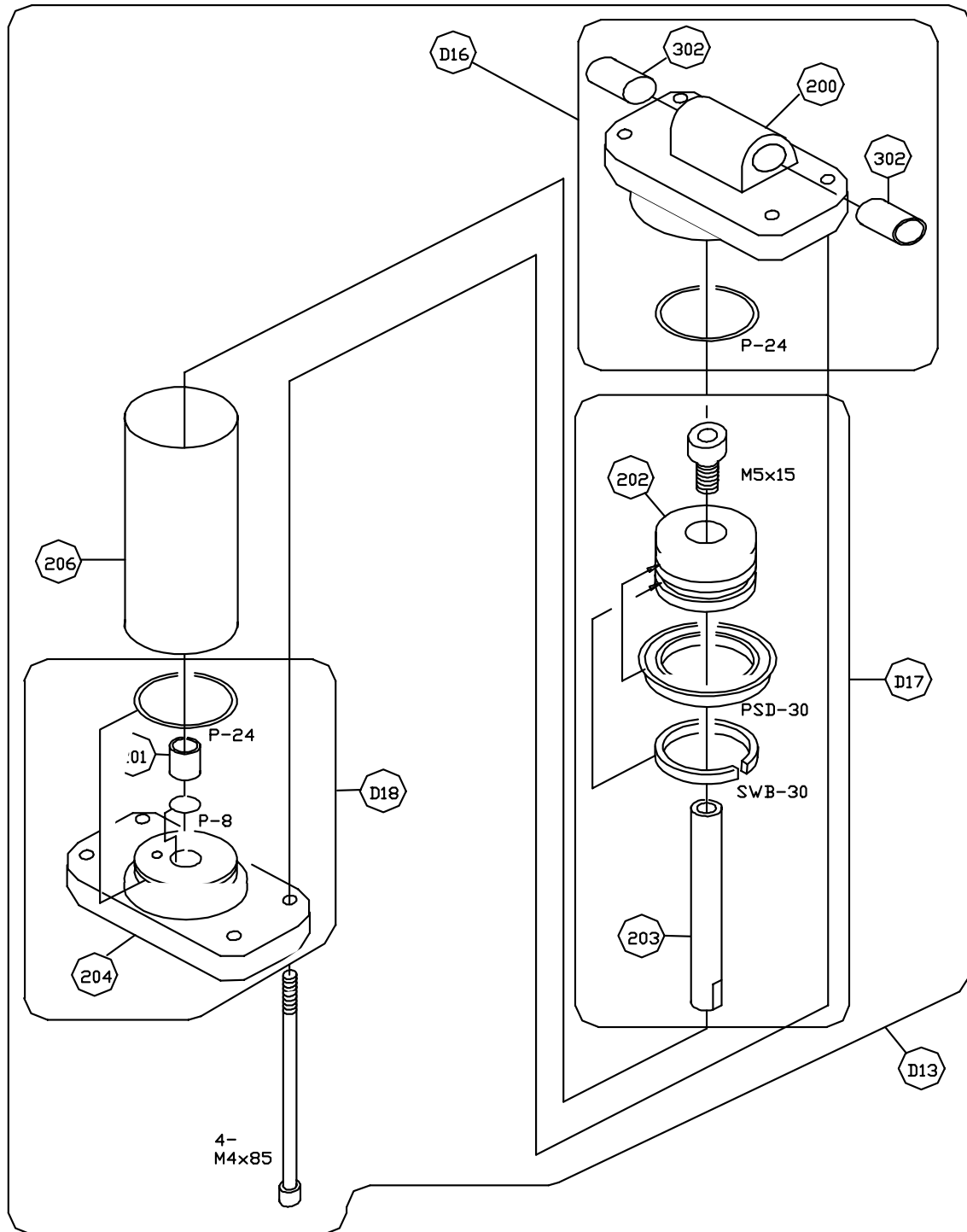


Wrist Flip

Ref.	Part No.	Description	Quantity
D13	20D9021	Assembly, Wrist Cylinder	1
D14	20D13-1	Assembly, Wrist Unit	1
148	TANSI6P	Terminal, P6	1
153	LS-04NV	Proximity Switch, LS-04NV	2
300	20D0471	Housing, Wrist Unit	1
301	20D0441	Shaft, Pivot, Wrist Cylinder, (A)	2
302	20FC011	Collar	2
305	20D0261	Bracket, Arm Swing (A)	1
306	DM0606FB	Bushing	2
307	20D0281	Shaft, Wrist Cylinder End (B)	1
308	20D0262	Bracket, Arm Swing (B)	1
309	20D0271	Plate, Mounting, EOAT	1
310	200331	Actuator, LS	1
	POC4-M5	Fitting	3
	PL4-M5	Fitting	3
	PL6-M5	Fitting	1
	PFM5	Fitting	2
	JSC4-M5	Speed Controller	2

PARTS/LISTS

Wrist Flip Cylinder

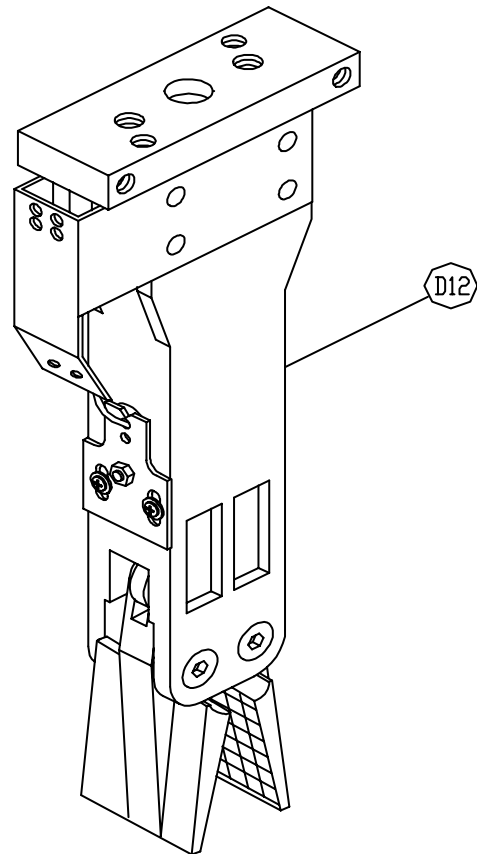


Wrist Flip Cylinder

Ref.	Part No.	Description	Quantity
D13	20D9021	Assembly, Wrist Cylinder	1
D16	20D9050	Assembly, Cap, Rear, Wrist Cylinder	1
D17	20D9040	Assembly, Piston Rod, Wrist Cylinder	1
D18	20D9130	Assembly, Cap, Front, Wrist Cylinder	1
200	20D0451	Cap, Rear, Wrist Cylinder	1
201	DM081210	Bushing	1
202	20D0191	Piston, Wrist Cylinder	1
203	20D0201	Rod, Wrist Cylinder	1
204	20D0461	Cap, Front, Wrist Cylinder	1
206	20D0221	Pipe, Wrist Cylinder	1
302	DM0810FB	Bushing	2
	P-24	Seal	3
	PSD-30	Packing	1
	SWB-30	Wear Ring	1
	P-8	Seal	1

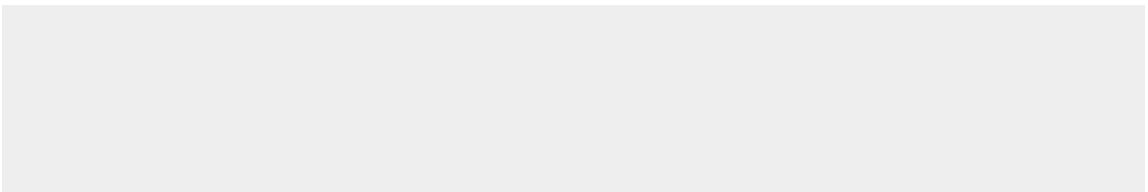
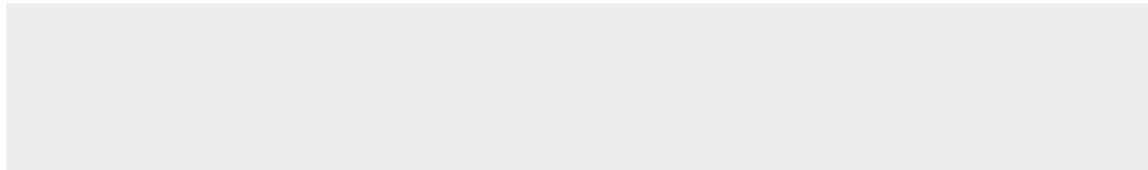
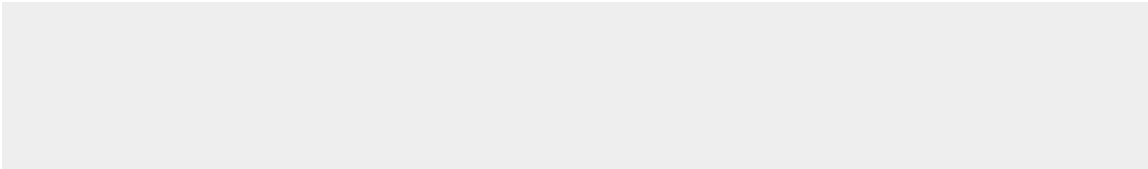
PARTS/LISTS

Gripper Assembly



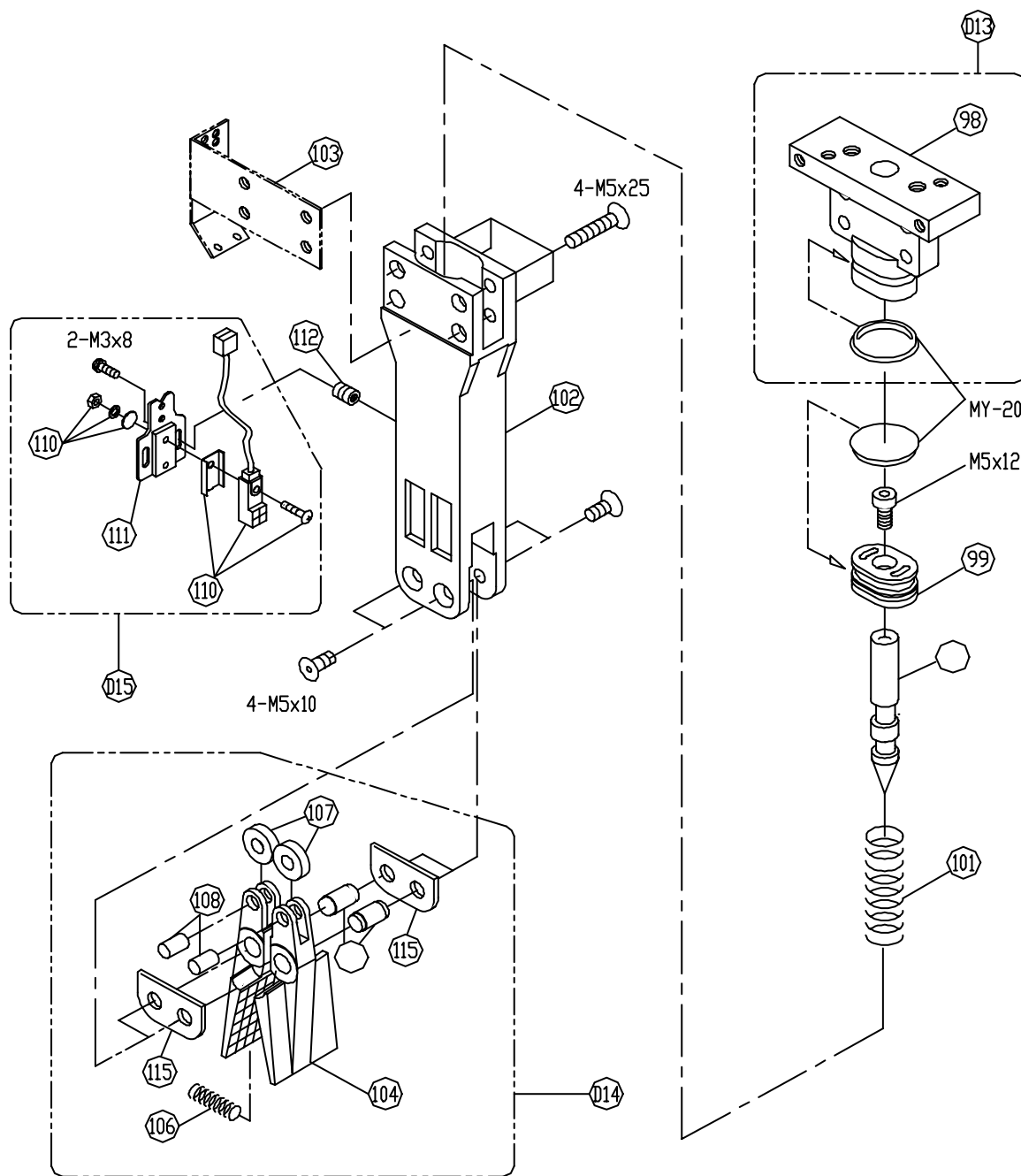
Gripper Assembly

Ref.	Part No.	Description	Quantity
D12	D9191	Assembly, Gripper, with LS-4	1



PARTS/LISTS

Gripper

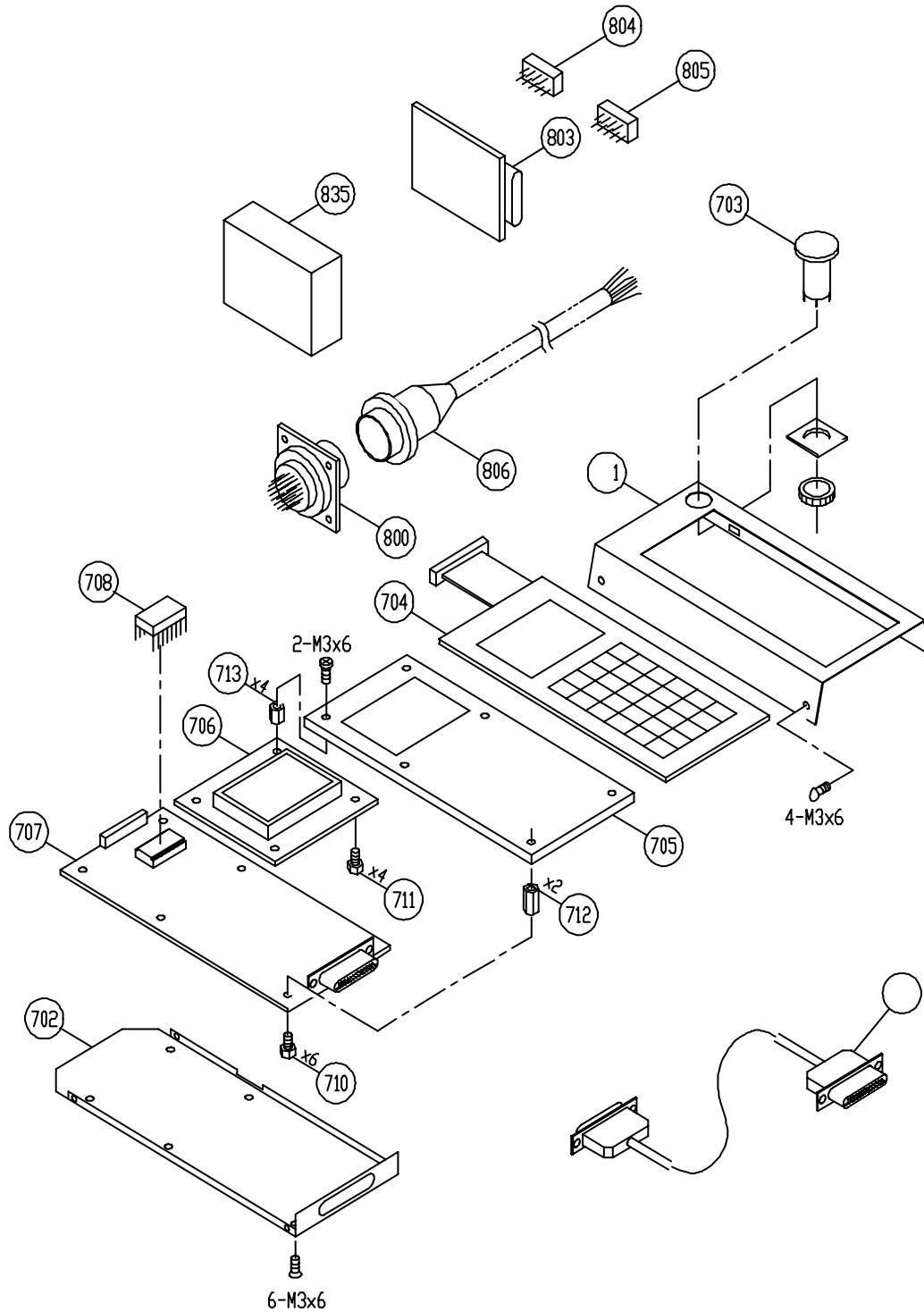


Gripper

Ref.	Part No.	Description	Quantity
D13	D9230	Assembly, Finger Cap	1
D14	D9220	Set, Fingers	1
D15	D9211	Set, Proximity and Mounting, LS-4	1
98	D0841	Block, Mounting, Gripper	1
99	D0591	Piston, Gripper	1
100	D0873	Wedge, Gripper with ver.	1
101	D0621	Spring, Return, Piston	1
102	D0881	Body, Gripper with ver.	1
103	D0661	Bracket, Cable Cover, LS-5	1
104	D0671	Finger, Gripper	1
106	D1161	Spring, Finger Open	1
107	D0681	Roller, Finger, Gripper	2
108	D0691	Pin, Finger Roller, Gripper	2
109	D0702	Collar, with Flange, Gripper	2
110	GXL-8F	Switch, Proximity	1
111	D0902	Plate, Mounting, Proximity Switch	1
112	8130030	Metal Insert, Mounting, LS-4	2
115	GR0011	Plate, Support, Finger	2
	MY-20	Seal	2

PARTS/LISTS

Controller



Controller

Ref.	Part No.	Description	Quantity
35	SPS-S40-24	Power Supply Unit, Max Rax	1
701	HC1001	Upper Cover, Pendant	1
702	HC1011	Lower Cover, Pendant	1
703	AB6-V	Switch, Emergency Stop	1
704	KEY-G1205A	Keyboard Panel, PCE-IV	1
705	HC1021	Plate, Keyboard Support	1
706	LCM-20X4	LCSD Display with Board	1
707	HW-CB116B	PCB, Pendant-CNT. Electrical	1
708	ROM	ROM	1
709	KB25-1-25-4	Cable/Connector to Robot	1
710	HC1031	Screw A	6
711	HC1041	Screw B	4
712	HC1051	Spacer C	2
713	HC1061	Spacer D	4
800	KB24-09-08VH	Connector, 24P	1
803	20B9001SP	I/O Electrical Board	1
804	G6B-1174P	Relay A	2
805	51SB24T	Relay B	5
806	KB24-1-24-6	Cable/ Connector to Press, 6m (std)	1
806	KB24-1-24-8	Cable/ Connector to Press, 8m (option)	1
	CNT-00051	Controller, PCE-IV	1



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