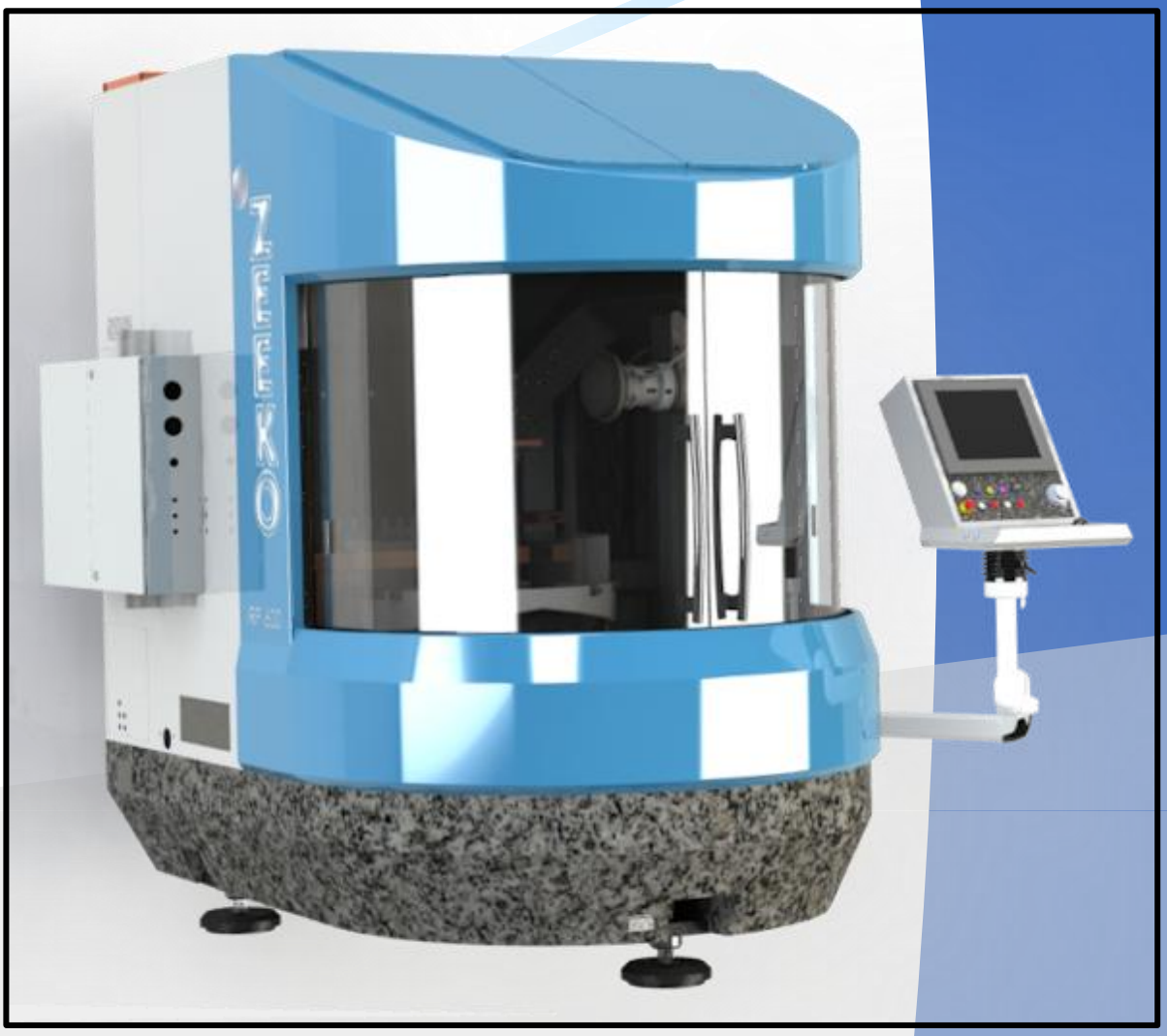
ZEEKO

Maintenance Manual



IRP600

Version 2, Rev b

Feb 2024

Contents

1: Preface

Dear Customer,

This Maintenance Manual details the procedures required for the regular maintenance of your IRP600 machine.

Please take the time to read this manual carefully and pay attention to the safety considerations and safety instructions in this manual.

The maintenance manual is structured such that the jobs are grouped according to
their maintenance intervals:

- Maintenance jobs to be completed daily.
- Maintenance jobs to be completed weekly.
- Maintenance jobs to be completed monthly.
- General Maintenance jobs to be completed as necessary.

The maintenance manual is also structured in a way that depicts the skill level required to carry out the different maintenance tasks.

Always keep this manual in the immediate vicinity of the machine so that it is always available for consultation.

We wish you success and great results with your IRP600.

Zeeko LTD

2: Safety considerations

The following signs may be used throughout the manual to depict areas of safety or general instruction. Please make yourself aware of these signs and take careful consideration when carrying out the specified assembly, installation or maintenance tasks.

WARNING: *Identifies a potentially dangerous situation which may cause loss of life or serious injury.*

ATTENTION: *Signifies a potentially dangerous situation which may cause injury or serious damage.*

NOTE: *Identifies application or assembly instructions and other useful and important information.*

TIP: *Specifies information that could be useful and save you unnecessary time and effort.*

Skill Level: *Specifies information relating to the various skill levels required to perform certain operations.*

Prohibition: *Do not spray with water from a pressure washer or high-pressure hose*

3: Safety instructions

ATTENTION: *Press the "EMERGENCY STOP" button before carrying out any maintenance work in the work chamber.*

ATTENTION: *Read the Manual carefully and always perform maintenance work at the required maintenance intervals. Observe all safety instructions for each task and comply with all local health and safety regulations.*

Maintenance work (except cleaning) should only be performed by qualified maintenance personnel or will be carried out by a Zeeko approved service agents.

- Read all instructions for working with electrical equipment when cleaning and maintenance jobs are performed.
- The machine must be switched off when carrying out certain maintenance jobs.
- Read the instructions for each maintenance job and ensure instructions are fully adhered to.
- Use lint-free cloths when cleaning inside the work chamber and guard windows.
- After cleaning check all screwed connections for signs of leaks and ensure that they are tight. Rectify all issues immediately.
- Always correctly tighten any screwed connections which may have been loosened for maintenance or repair purposes.
- If safety devices/guards are removed for any set-up, maintenance or repair procedure, they must be remounted immediately after completion of the work. Ensure that all such devices are functioning properly.
- Always dispose of consumables and any other auxiliary substances or parts in a safe and environmentally sound manner, in line with local regulations.

4: Skill level guidelines

The following table shows the skill levels required for operating and maintaining the machine: *See Table 1 - The skill levels required for operating and maintaining the machine.*

Skill Level	Operation and Function
U = Unskilled	Basic cleaning, supervised set-up and maintenance. Must not operate the machine.
SS = Semi-Skilled	Basic daily inspection and cleaning of machine, machine set-up for operations, operating machine (push-button operations only).
S = Skilled	Machine set-up for operations, operating machine, maintenance and basic programming.
FS = Fully Skilled	As skilled and fully trained in programming.

Table 1 - The skill levels required for operating and maintaining the machine

NOTE: *The above table displays the skill levels required for operating and maintaining the machine. These will be used throughout the manual to ensure the correct personnel are assigned to the correct procedure.*

5: Daily maintenance

5.1: Cleaning the work chamber

SKILL LEVEL: *Semi-Skilled (SS)*

Prohibition: *Avoid the use of excessive water pressure and avoid spraying at any joint faces between the work chamber and the enclosure. DO NOT use a pressure washer or high-pressure hose, this could cause slurry to penetrate the seals.*

To clean the work chamber, proceed as follows: See Figure 1 - Work chamber.

1. Press the Red 'EMERGENCY STOP' button.
2. Ensure the air supply is ON, and the H & C Axis purges are operating.
3. Connect the polishing fluid drain pipe to a separate container.
4. Clean the Work Chamber, the Virtual Pivot assembly and the C-axis with water and a clean sponge or soft brush.
5. Wipe all parts dry with a clean lint-free cloth.

Figure 1 - Work chamber

5.2: Cleaning the guard windows

SKILL LEVEL: *Semi-Skilled (SS)*

NOTE: *Do not use harsh cleansers on the guard panes, as this may cause damage to the plastic or may cause the plastic surface to discolour.*

To clean the Guard Windows, proceed as follows: *See Figure 2 - Guard windows.*

1. Press the “EMERGENCY STOP” button.
2. Clean the guard window panes with water.
3. Wipe the guard windows dry with a clean cloth.

Figure 2 - Guard windows

NOTE: *When the “EMERGENCY STOP” is pressed, the machine is powered down. If the guard windows are moved, they must be returned to their original home positions before resetting the machine.*

5.3: Check polishing fluid pipes and pneumatic pipes for leaks

SKILL LEVEL: *Semi-Skilled (SS)*

1. Press the “EMERGENCY STOP” button.
2. The pneumatics/hydraulics cabinet is located at the rear of the machine. See *Figure 3 - Pneumatics / hydraulics cabinet.*
3. Visually inspect the polishing fluid pipes for leaks.
4. Visually inspect the pneumatic pipes for leaks.

Figure 3 - Pneumatics / hydraulics cabinet

NOTE: *If there are polishing fluid or pneumatic leaks, please refer to trained maintenance staff.*

5.4: Checking the water and water mist separator

SKILL LEVEL: *Semi-Skilled (SS)*

The Air Service Unit is located in the pneumatics/hydraulics cabinet.
See Figure 4 - Air service unit.

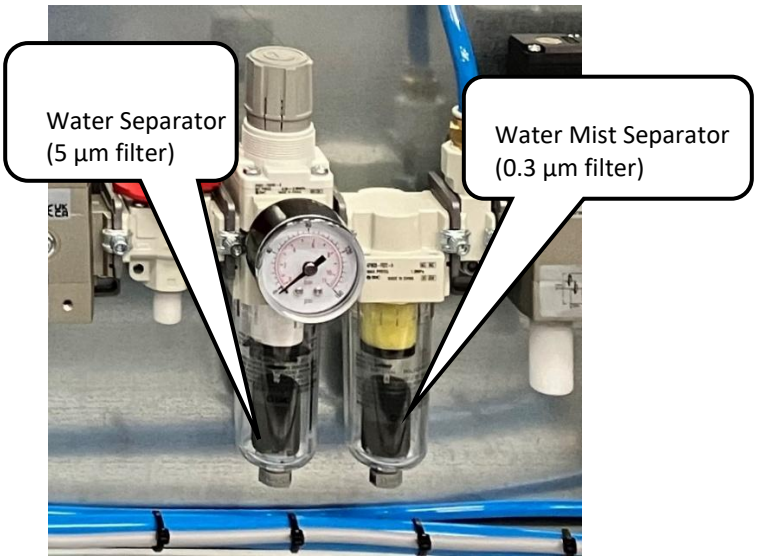


Figure 4 - Air service unit

The water separator is located on the pneumatic panel in the pneumatics/hydraulics cabinet.

5. Press the “EMERGENCY STOP” button.
6. Open the pneumatics/hydraulics cabinet, located at the rear of the machine.
7. Visually inspect the level of condensate in the Water and Mist Separator.
8. Manually empty the condensate in the Separator by releasing the valve at the bottom of the Separators.

NOTE: *The residue container underneath the Water and Water Mist Separator must be checked and emptied each day.*

5.5: Checking the pneumatic settings

1. Press the ‘EMERGENCY STOP’ button.
2. Open the pneumatics/hydraulics cabinet.
3. Check the pressure gauges to confirm the settings are correct for the process.

5.6: Daily visual checks

1. Ensure drainage is free from blockage and connections are secure.

2. Ensure the air pressure is connected and working correctly.
3. Ensure the SMU/Centrifuge system is in working order and is connected securely.
4. Ensure the chiller unit is connected and good working order.

6: Weekly maintenance

6.1: Cleaning the outer surfaces

SKILL LEVEL: *Semi-Skilled (SS)*

Clean the processing residue and any other dirt from all painted services using a damp cloth.

TIP: *Do not use any alcohol-based cleaning fluids on the painted surfaces of the machine as these may damage the paintwork.*

7: Monthly maintenance

7.1: Check the work chamber interlocks

SKILL LEVEL: *Semi-Skilled (SS)*

1. Put the machine into “Manual” mode.
2. Open the enclosure doors.
3. Observe that the “DOOR” status display on the GUI is RED. See *Figure 5 - 'DOOR' status display.*

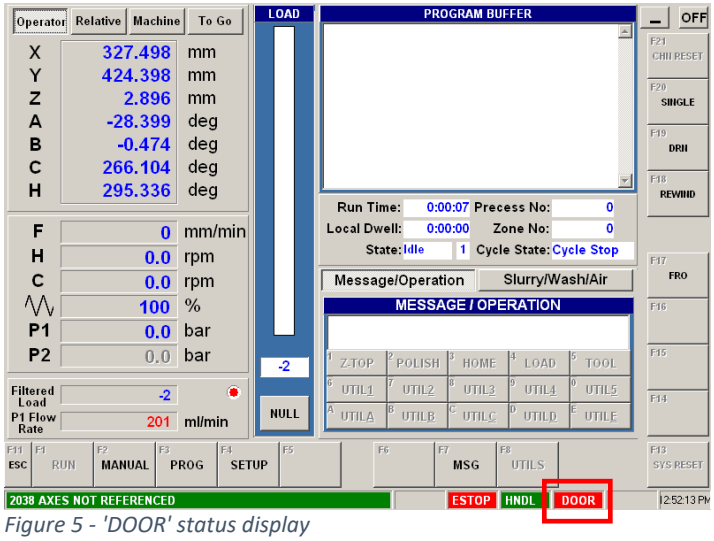


Figure 5 - 'DOOR' status display

4. Put the machine into “Auto” mode.
5. Close ALL work chamber guards.
6. Check that ALL guards are locked.
7. Observe that both guard LEDs are extinguished.

ATTENTION: *If either of the LEDs are not extinguished, please refer to trained maintenance staff. The machine must not be operated with defective work chamber interlocks!*

8. Put the machine into “Manual” mode to open the chamber doors.
9. Put the machine back into “Auto” mode.
10. Select the “MDI” tab on the “GUI MAIN” menu.
11. Type “M03 S100” at the “MDI” command line and then press “Enter”. *See Figure 6 - MDI command line.*
12. Press the “CYCLE START” button situated on the side of the console.

13. The GUI should report the error “Guard not locked and closed \ Cycle start inhibited”.
14. Observe that both guard LEDs are illuminated.

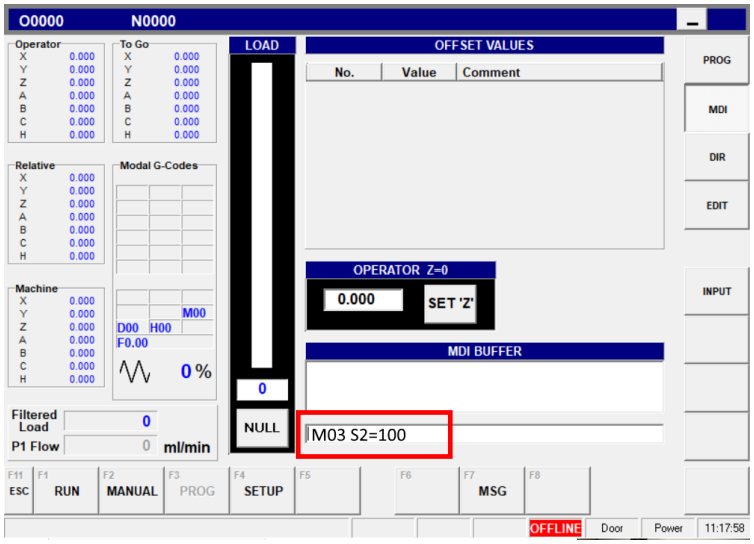


Figure 6 - MDI command line

7.2: Monthly visual checks

Visual inspection of the following items should be done on a monthly basis.

1. Bellows – Ensure no tears or rips have occurred in the bellows.
2. Window guards – Check for scratches, cracks or chips to the guards.
3. Check locks are all in working order.
4. Check panels are secure and not damaged.
5. Check the bonnets for wear and tear or damage.
6. Check electrical cables are not damaged and electrical test dates are in date.

ATTENTION: *Any damages should be immediately reported to ZEEKO direct or to a ZEEKO approved agent.*

8: General maintenance

8.1: Adjusting and setting the virtual pivot

SKILL LEVEL: *Semi-Skilled (SS)*

The virtual pivot is set by Zeeko personnel at the factory and will not need resetting under normal working conditions. In the event of a collision taking place the virtual pivot has adjustments available both mechanically and by the software correction facility. The virtual pivot can be checked in the following way:

NOTE: *Only trained personnel can check the virtual pivot.*

1. Clamp the virtual pivot setting tool into the H-axis.
2. Position the probe of a clock on the centerline of the VP ball with the magnetic base fitted to the C axis.
3. A variation of 20 µm or less is acceptable when rotating the B axis through ± 90 ° from the “Home” position.
4. A variation of 20 µm or less is acceptable when rotating the A axis through ± 120 ° from the “Home” position.

8.2: Greasing the ball screws and linear guideways of the axes

- Zeeko recommends that the ball screws and linear guideways of the machine be re-greased every 6-12 months dependent upon usage.

NOTE: Only Zeeko trained personnel should grease the ball screws and linear guideways of the machine.

- If required, a service contract can be set up with Zeeko to have us perform this maintenance for you. Please contact Zeeko if you wish to discuss this.

8.3: External units

1. Clean the external Units in line with the applicable manuals.
2. Wipe over units to remove, dust grease etc.

8.4: Changing the fuses

WARNING: *Identifies a potentially dangerous situation which may cause loss of life, serious injury or serious damage.*

1. Switch the machine completely off at the “MAIN ISOLATOR” switch.
2. Completely isolate the machine electrically by unplugging from the main supply.

   The electrical cabinet is located at the lower rear of the machine.
3. Open the electrical cabinet.
4. Locate the 3-phase fuse holder labelled “3F1”. See *Figure 7 - 3F1 fuse holder.*

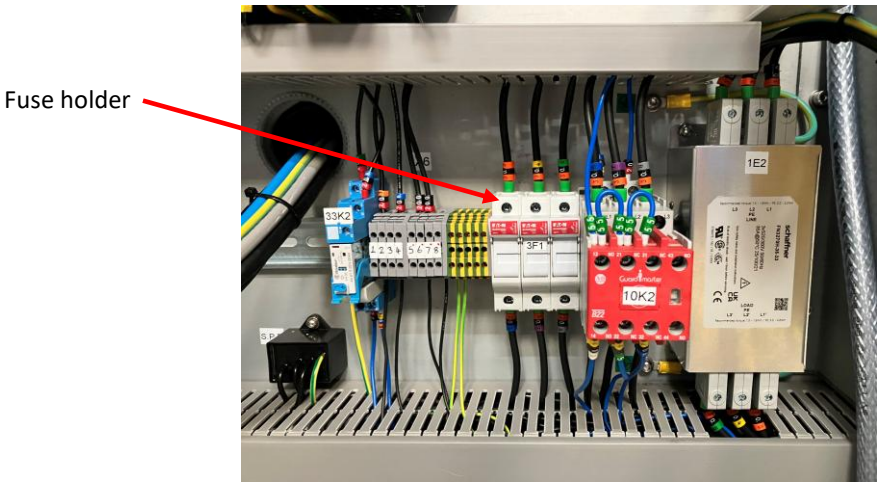


Figure 7 - 3F1 fuse holder

5. Replace the fuses with 10 x 38 mm gG S/I 16 A 500 v cartridge fuses.