



IRP600 7Axis Fanuc - XY Linear Transport & Installation Manual - Version 2, Release 4



Zeeko Ltd

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1 Introduction

Dear Customer,

This Transport and Installation manual describes all steps you must take for transportation and installation of the IRP600 machine.

Please take time to read the manual carefully. Pay attention to the instructions for this manual given on this and the next page.

With the aid of this manual, you can perform the following steps:

- ❖ Systematically prepare for the installation of the machine
- ❖ Transport and Install the machine safely
- ❖ Connect the machine correctly

Always keep this manual in the immediate vicinity of the machine. That way, it will always be available for consultation.

In addition to the Transport and Installation manual, the user documentation is comprised of the following:

- ❖ Operation manual
- ❖ Software manuals
- ❖ Maintenance manual

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2 Instruction for this Manual

The following signs indicate safety or general instructions throughout the text:



Caution

Imminent Danger which can cause loss of life, serious injuries or extensive damage.



Warning

Potentially dangerous situation which may cause loss of life, serious injuries or damage.



Attention

Potentially dangerous situation which may cause injuries or damage.



Note!

Application instructions and other useful or important information.

3 Installation Requirements

This section covers the following topics:

- 3.1 Work Space Requirements
- 3.2 Space Requirements
- 3.3 Service Connections

3.1 Work Space Requirements

Workspace Requirements can be further divided into:

- 3.1.1 Floor Requirements
- 3.1.2 Room Temperature
- 3.1.3 Storage of the Polishing Fluid (Lubricant)
- 3.1.4 Electromagnetic Influence

3.1.1 Floor Requirements

- ❖ The installation area for the machine should be self-supporting and level (floor unevenness 3mm/m² max)
- ❖ The conditions must be such that the machine can rest completely on all 3 levelling elements on the floor.
- ❖ When selecting the installation area, avoid placing the machine on a step, drain or the like.
- ❖ Contact areas for machine feet but be smooth and level to ensure even contact and weight distribution.
- ❖ Total weight of machine itself is 8000 kg (this does not include peripheral equipment such as SMU, chiller, platform, etc.).
- ❖ The floor should be capable of supporting a pressure at the 3 contact positions of 165,000 kg / m²

3.1.2 Room Temperature

- ❖ The room temperature must be between 60°F (15°C) and 95°F (35°C).
- ❖ The change in temperature must not exceed 2°C per day.
- ❖ The relative humidity should not exceed 80%.
- ❖ If necessary, adequate air conditioning should be provided.

3.1.3 Storage of the Polishing Fluids

- ❖ Observe all regulations regarding the storage of the polishing fluids.

3.1.4 Electromagnetic Influence

- ❖ Interference by other electrical installations (high frequency) must be avoided.

3.2 Space Requirements

The installation area of the machine should be an area measuring approximately 4000mm x 4000mm according to the installation plan shown below (figure 1). The overall height of the machine is 3m and a clearance of at least 1m above the machine may be required for maintenance work.

This area comprises:

- ❖ The installation area of the machine
- ❖ Work area of at least 1m all around the machine



Note!

The above distances should be checked for compliance with local Health and Safety regulations.

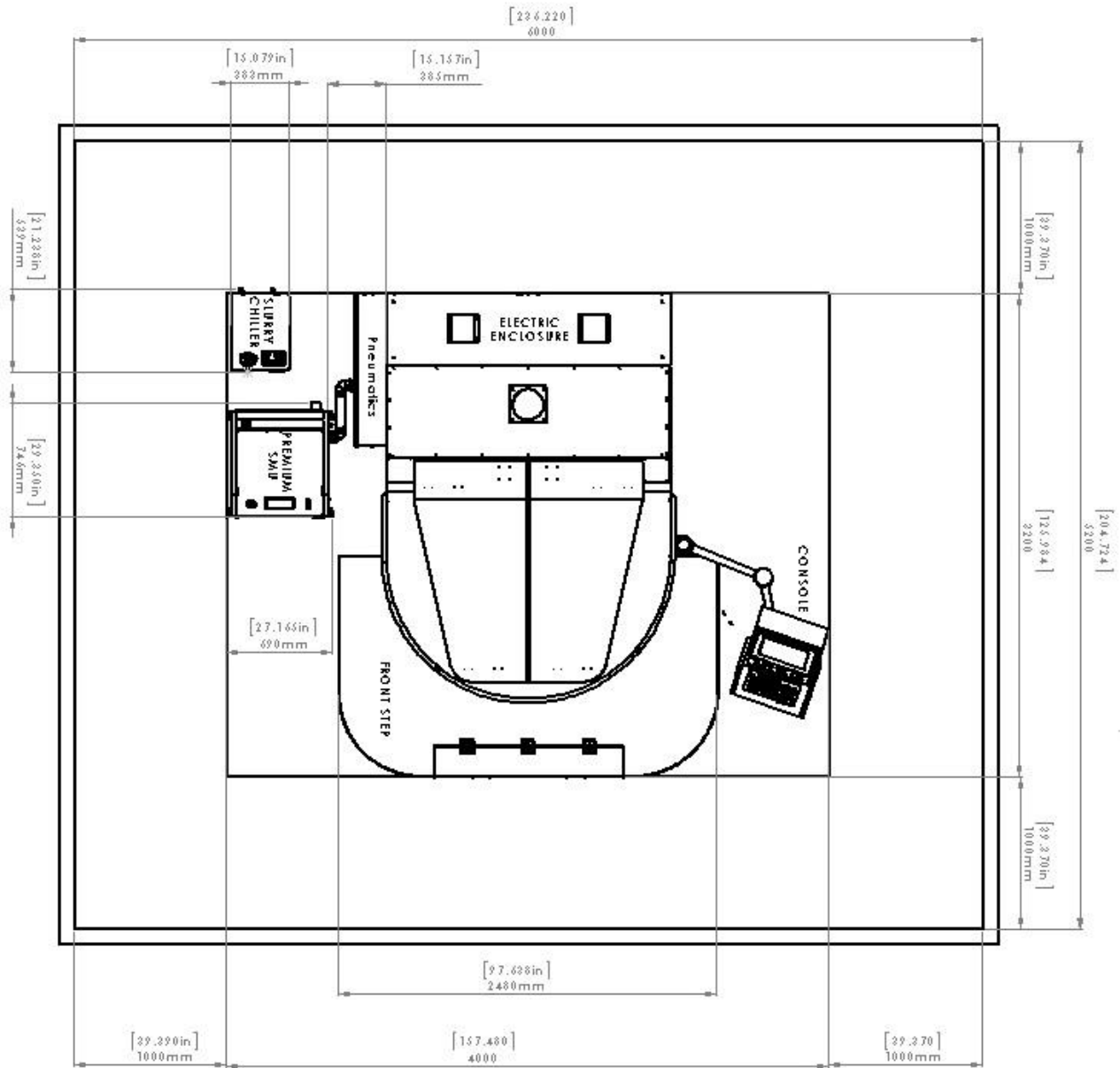


Figure 1. Space Requirements for the IRP600 machine (Top View)

3.3 Service Connections

The supply connections required are:

- 3.3.1 Power Supply
- 3.3.2 Compressed Air

3.3.1 Power Supply

The supply is pre-set to **420 VAC, +/-5% (50/60Hz, 3PH+PE-plug)**, depending on the customers mains power supply. The installed load is **15kVA**. The estimated maximum heat dissipation that occurs is 1200BTU.

The main power in connector is located on the right-hand side of the cabinet.

The main isolator switch is located on the rear of the electrical cabinet. (See Fig.6)



Attention

The machine must only be plugged into a socket which has a protective earth conductor.

3.3.2 Compressed Air

The pressure at the compressed air supply must be a minimum of 6 bar. Although the main regulator is set to 4 bar or less, 6 bar is required to fully actuate the main on/off valve.

The supply line is equipped with a shut-off valve and adequate water trap.

The compressed air line is connected on the left-hand side of the machine towards the rear by means of a 12mm nylon hose/tube.

3.3.3 Chiller Requirements

The **maximum** chiller system pressure through the machine should be no more than 3 BAR (43.5 PSI / 0.3 MPa). The recommended pressure is 1 BAR (14.5 PSI / 0.1 MPa).

12 mm push fit connections are pre-installed on the machine for the chiller input and output pipes.

4 Delivery

Machine and control cabinet are delivered as one unit.

The total weight of the machine with packaging is 10,000Kg.

Dimensions of machine with packaging are 3280 mm x 2440 mm x 3210 mm (Height).

Pallet is constructed from ISPM-15 Heat Treated plywood.



Attention

Please observe all instructions for transport of the machine, if you are responsible for unloading.

5 Advice for Transportation

- 5.1 Taking delivery
- 5.2 Transporting the Machine
- 5.3 Lifting the Machine on / from pallet



Attention

The Transport and Installation of the machine must strictly be carried out only in the presence of Zeeko personnel.



Attention

Only competent and qualified personnel should operate the forklifts, hoists and ceiling transport and pulley systems.

5.1 Taking Delivery

Once the machine has arrived at its destination, it should be removed from the travelling crate and a visual inspection performed to ensure that no damage has occurred in transit and that all necessary items are included.



Attention

Immediately notify the carrier and Zeeko Ltd of any transit damages and other defects, e.g. missing items.

5.2 *Transporting the Machine*

The machine should then be positioned whilst still on the transportation pallet.



Safety instructions for transport with a fork lift:

In order to minimise the risk of the machine tipping:

The machine **MUST ONLY** be transported on the pallet.

The machine **MUST ONLY** be positioned with a fork lift or approved skate.

The lift truck must have a minimum lifting capacity of 10 tonnes.

The lift truck forks must be at least 1700mm long.

Note the centre of gravity shown in figure 2.

The lorry and the fork lift must always be on level ground.

The machine weights approximately 10,000 kg (with packing and box).

Only qualified personnel should perform transport, lifting and positioning of the machine.



DO NOT LIFT THE MACHINE BY THE 20 mm HOLES IN THE SIDE OF THE GRANITE BASE (SEVERE DAMAGE WILL BE CAUSED!)



Please note the centre of gravity in figure 2.



The pallet must be lifted by using the fork lift zones marked in figure 3.



Figure 2. Centre of Gravity

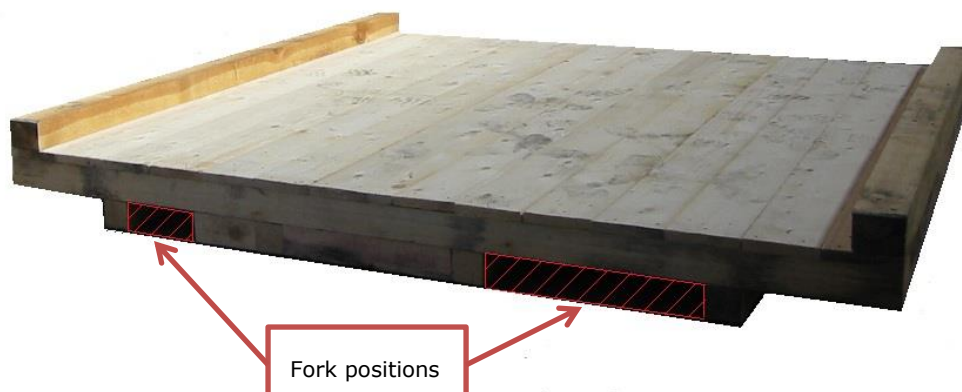


Figure 3. Pallet Fork Lift Zones

To move the machine on its pallet to the location in which it is to be installed:
Move the forks of the lift truck or fork lift as far as possible under the pallet.
Slowly lift the pallet and carefully move it to the installation site.

5.3 *Lifting the Machine*

Lifting Machine off pallet and into position:


- 5.3.1 Lifting the Machine from the Pallet onto Skates
- 5.3.2 Lowering the Machine from Skates onto the Floor

5.3.1 Prepare the Installation Area

Once a suitable installation area has been determined and is compliant with the installation requirements as explained in section 4:

Mark the installation area


- ❖ Consider and mark the positions for the levelling elements




Note! **The installation area must be clean and level (see section 0).**

Place the machine with the three levelling elements on the planned position


5.3.2 Lifting the Machine from the Pallet onto Skates



Note! **DO NOT LIFT THE MACHINE USING THE 20 mm HOLES IN THE SIDE OF THE GRANITE BASE (SEVERE DAMAGE WILL BE CAUSED!)**




Attention **The machine can be lifted off the pallet but MUST NOT BE TRANSPORTED WITHOUT THE PALLET. There is a risk of the machine tipping over and of damage to the levelling feet.**



When lifting the machine, please consider the centre of gravity as shown in figure 2.

Remove straps and wooden packaging blocks from around the machine.

- ❖ Approach the machine from the side with a lift truck or forklift.



The machine must be lifted in the forklift zones marked in figure 4. Otherwise there is a risk of the machine tipping over.

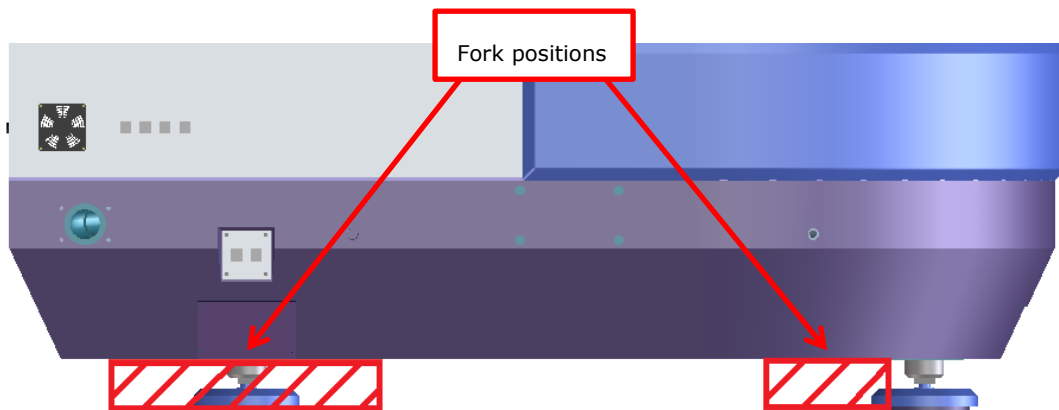


Figure 4. Forklift Zones

- ❖ Move the forks of the lift truck or forklift as far as possible under the machine.

Slowly lift the machine clear of the pallet.

Remove the pallet.

Position four sets of skates beneath the machine in the recommended configuration as shown in figure 5 and, if possible, lock them in position.

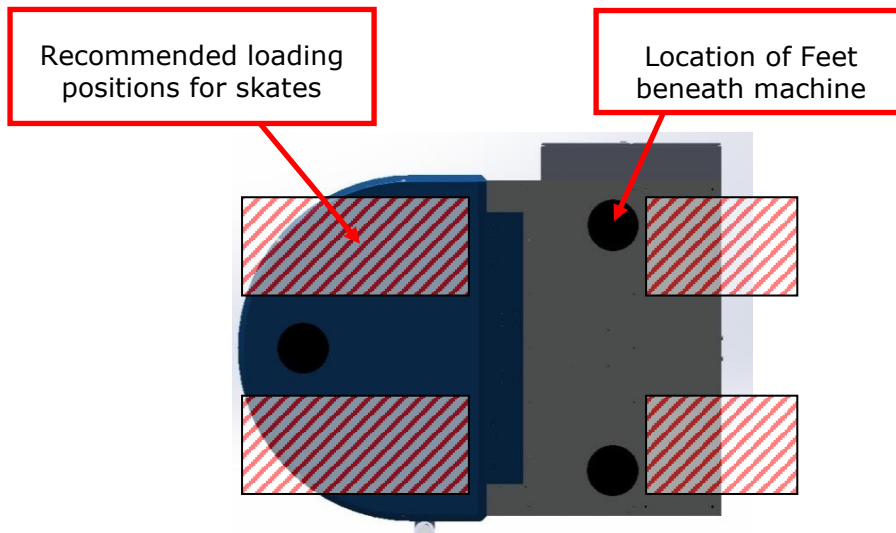



Figure 5. Skate Load Zones


Gently lower the machine until the skates are fully and safely supporting the machine.



Attention

Ensure the skates are secure in their positions and the weight is therefore distributed between all of the skates. Loose skates risk damaging the machine.

When the machine is safely supported, the skates may be unlocked if necessary and used to transport the machine to a desired location.



Attention

At all times, there should be at least one person accompanying each set of skates.

5.3.3 Lowering Machine from Skates to Floor

Move the forks of the lift truck or forklift as far as possible under the machine at the forklift zones noted in Figure 4.



The machine must be lifted in the fork lift zones marked in figure 4. Risk of Tipping Over!




The machine MUST ONLY be lifted and NOT TRANSPORTED without the pallet or skates. Risk of Tipping Over!

Slowly lift the machine clear of the skates.

Remove skates.

Gently lower machine to the floor.



If hydraulic skates are used, the skates can be lowered simultaneously until the feet are in contact with the floor, provided the skates have a minimum height below 130mm

Without the use of a forklift:

Provided the skates can be lowered to below 130mm, have each skate operator slowly and simultaneously lower each set of skates.

Ensure the feet come into contact with the ground at the same time.

Remove the skates once lowered.



Ensure the feet come into contact with the ground at the same time. Uneven weight distribution could damage the machine.

If the skates cannot be lowered below 130mm, a set of jacking stands which can be lowered below 130mm must be utilised.

Firstly, lower the skates to their minimum height.

Ideally, four stands should be used, positioned below the machine to provide optimal stability. However, this may be difficult due to the current position of the skates.



Warning

The stands MUST be positioned in a safe and stable configuration. Failure to do so could cause the machine to tip over.

Once safely positioned, raise the jacks simultaneously until they come into contact with the base of the machine at the same time



Attention

Ensure the stands come into contact with the ground at the same time. Uneven weight distribution could damage the machine.

When the weight has been relieved from the skates, they can be safely removed.

Simultaneously lower the jacking stands until the feet come into contact with the ground simultaneously.



Attention

Ensure the feet come into contact with the ground at the same time. Uneven weight distribution could damage the machine.

6 Installation

6.1 Remove Transit Brackets

- ❖ Remove any further packaging.
- ❖ Remove the transit brackets.

The IRP600 has four sets of transit brackets. These orange brackets hold the moving parts of the machine in position whilst the machine is in transit. The transit brackets for the IRP600 hold in place:

- The roof opening on the top of the machine
- The console on the side of the machine
- The Y-C Transit Bracket
- The X-C Transit Bracket

6.2 Adjusting the Machine

- ❖ Position an engineer's spirit level (20 µm / division) on the C-axis table and use this to level the machine by adjusting the threaded bars on the 3 levelling positions. Ensure that the machine is level in both the x- and y-directions.
- ❖ Once the machine has been levelled, screw the lock nuts down onto the base to tighten threaded pins and tighten them.
- ❖ Once the lock nuts are secured, re-check the levels of the machine to ensure it has been accurately aligned.

7 Connection

- ⊕ 7.1 Connecting the Polishing Fluid System
- ⊕ 7.2 Connecting the Compressed Air Supply
- ⊕ 7.3 Electrical Connection

7.1 Connecting the Polishing Fluid System

Connecting the Polishing Fluid System:

- ⊕ 7.1.1 Connecting the Polishing Fluid Supply Hose(s)
- ⊕ 7.1.2 Connecting the Polishing Fluid Drain Hose

7.1.1 Connecting the Polishing Fluid Supply Hose(s)

The machine is delivered with a polishing fluid supply hose.

Connect the hose to the appropriate connection adapter of the machine (see Figure 8).

Connect the other end of the hose to SMU unit.

7.1.2 Connecting the Polishing Fluid Drain Hose

The machine is delivered with a fluid drain pipe assembly

Connect the drain pipe assembly to the machine and to the SMU (see Figure 10)

7.2 Connecting the Compressed Air Supply

The compressed air supply can be connected with an adequate standard type air hose.

7.3 Electrical Connection

Setting the Mains Voltage:



Work on electrical parts and equipment must only be done by a qualified electrician or by duly trained personnel under the instruction and supervision of a qualified electrician, in accordance with electro-technical rules and regulations.

The machine should be equipped with a 32A Euro-plug (3-pole + N + PE). This must be supplied by the customer and fitted in line with the local electrical regulations at the site.

The cable is supplied with the machine.



Note!

The machine can generally be operated at various mains voltages as per indicated on the Rating Plate:

400V/50/60*cps: 3 – PE +/- 5%

415V/50/60*cps: 3 – PE +/- 5%

The machine is designed for 3-phase current operation.

If the mains voltage supply is not the same as that specified on the rating plate, the supply must be changed to correspond with the machine mains voltage. Please refer to the specifications given in the wiring diagram and the information given on the input transformer.



Attention

Only qualified personnel must carry out this operation.



Attention

After changing the connection to a different mains voltage, note down the correct mains voltage on the rating plate!



Figure 6. Main isolator switch in the "OFF" position

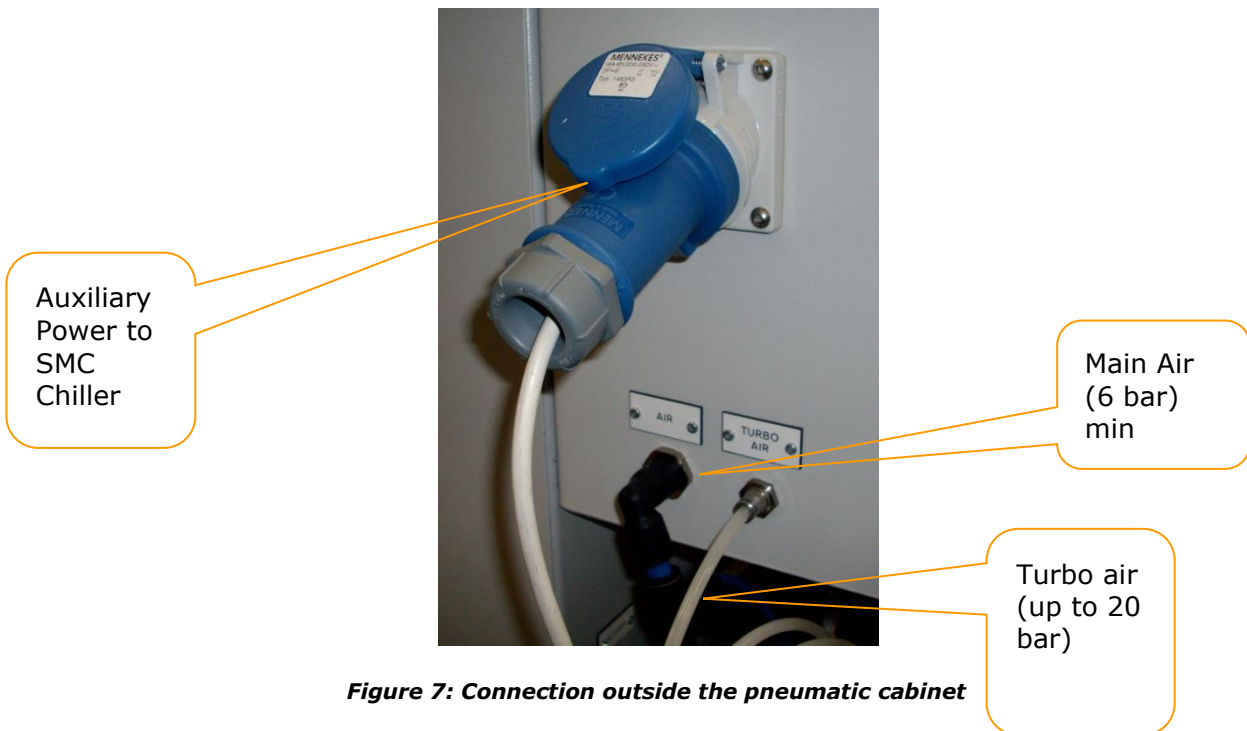


Figure 7: Connection outside the pneumatic cabinet



Figure 8: Supply connections to IRP600 machine

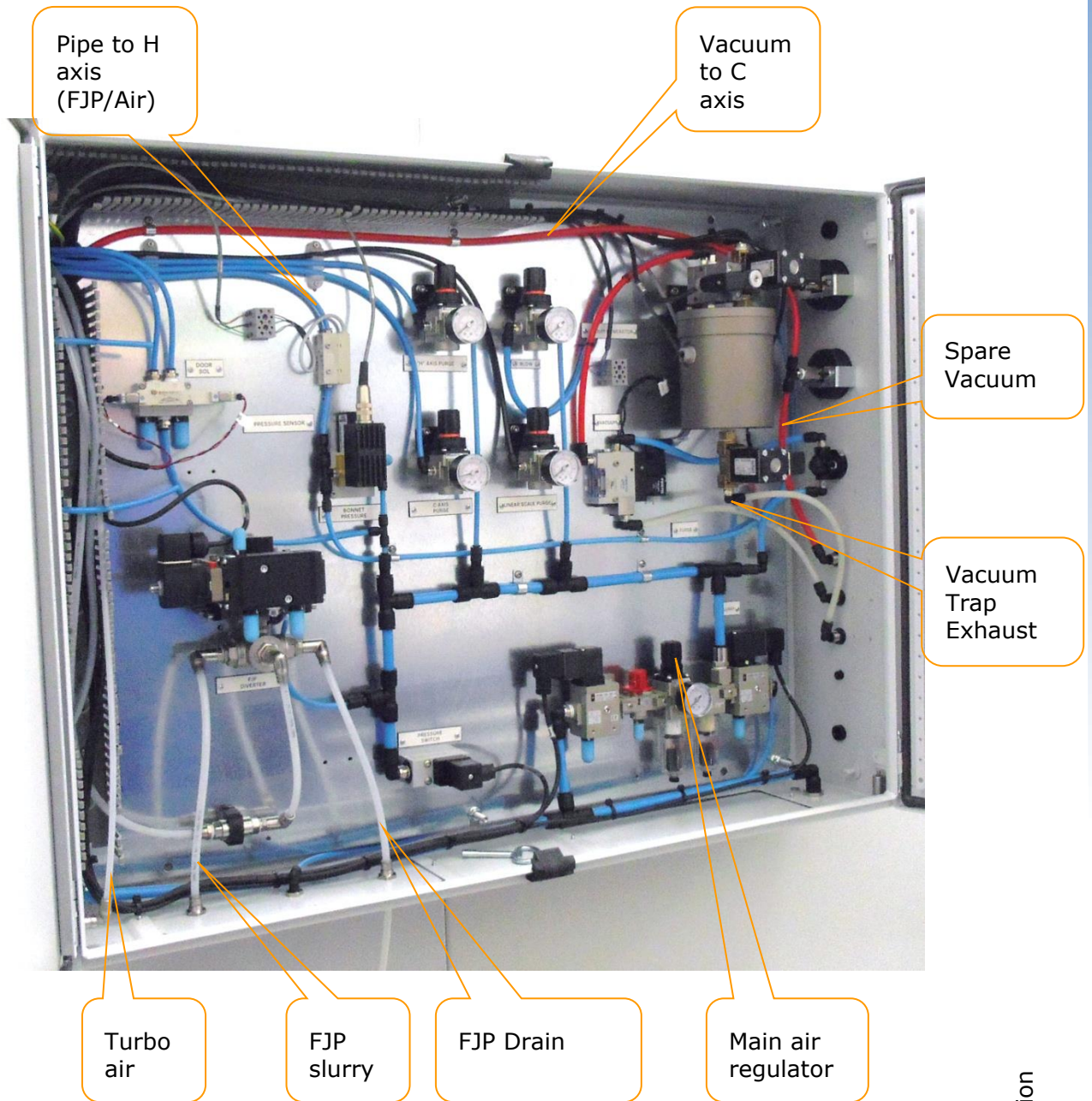


Figure 9: Pneumatic cabinet

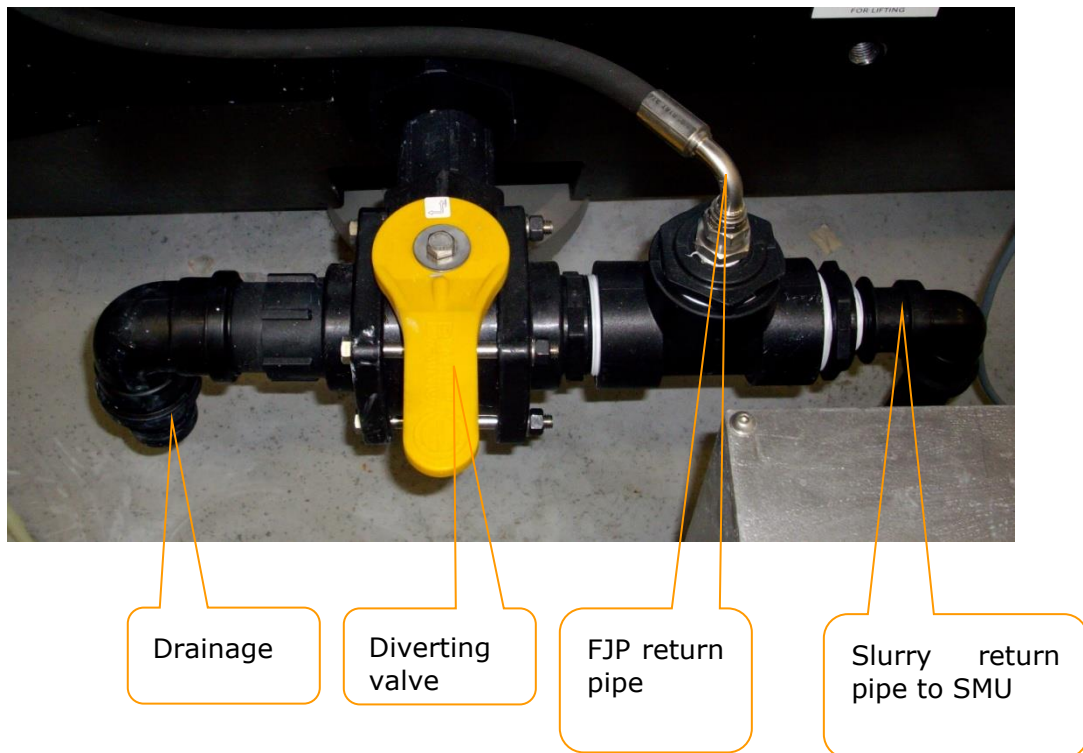


Figure 10: Return fluid connection between polishing enclosure and pump

7.3.1 Polishing Fluid Supply

The polishing fluid supply hose is connected at mid-height at the left-hand side of the machine via the external slurry on/off valve. (See fig.8)

7.3.2 Polishing Fluid Return

The return hose is connected to the machine via a 50mm hose connection at low-height at the left-hand side of the machine.