MY500 JetPrinter™

Service Manual

English
This document is intended for the MY 500 JetPrinter running any version of the software.

A standard system and available optionals are covered by this document. Depending on your system configuration you may lack some of the features mentioned in the document.

Disclaimer
Hardware and software mentioned in this document are subjected to continuous development and improvement. Consequently, there may be minor discrepancies between the information in the document and the performance or design of the product. Specifications, dimensions and other statements mentioned in this document are subject to changes without prior notice.

Federal Communications Commission (FCC)
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Do not start, operate or service the machine until you have read and understood the safety chapter.

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Text Conventions

This document uses text conventions to present information in various situations. This is explained below.

Danger, Warning, Caution, and Note

In this document a particular text layout is used to make danger, warning, and caution information evident. A triangular icon identifies the type of risk and the text describes the risk.

Danger, warning, and caution information must be followed.

Assisting information, notes, have the same layout but never triangular icons.

Danger

DANGER! Danger means a potentially dangerous situation that can cause death or severe bodily injury. The icon identifies the type of risk.

Warning

WARNING! Warning means a potentially dangerous situation that can cause bodily injury or considerable damage to the system or equipment. The icon identifies the type of risk.

Caution

CAUTION! Caution means that the system or equipment can be damaged or data be lost. To distinguish caution information from warning and danger information, this icon is always an empty triangle.

Note, example 1

A note contains any type of assisting information.

Note, example 2

One type of assisting information is tips, which normally have this icon.
Italic Font

Italic font is used for software screen text (for example Parameter 1), names (for example Spare Parts Catalog), and for warning text (described in the previous section).

Bold Font

Bold font is used for particular important words (for example This must not be done in reverse order).

Menu Selections

When describing software handling, menu selections are described in the following format:

File > Page Setup > Paper Size > Portrait > OK

This example describes to open the File menu and select the Page Setup, Paper Size, and Portrait options, and finally click the OK button.

Lists

Lists of items, points to consider, or procedures that have no relative order appear in bulleted or hyphenated format like this:

• Item 1.
• Item 2.

or

– Item 1.
– Item 2.

Procedures that must be performed in a specific order appear in numbered lists like this:

1. Perform this step first.
2. Perform this step second.
1. Safety

Before starting the machine, personnel involved in the machine operation, maintenance or service must understand and follow these points:

- This machine is designed to apply solder paste and glue onto printed wiring boards. The machine must be used exclusively for this purpose and nothing else.
- The machine must be operated by qualified personnel only. Qualified personnel should meet the following qualifications:
  - Be above 18 years of age.
  - Have normal depth perception, field of vision, reaction time, manual dexterity, coordination, and no tendency to dizziness.
  - Completed operators training.
- All personnel involved in machine operation must understand the use of the emergency stop buttons. See the Emergency Stop Buttons section.
- Anyone operating this machine must obey the warning signs.
- At least one manual describing the warning signs of the particular machine type must always be kept. For instance if the machine is upgraded to a later version.
- An emergency stop button must be pressed down when a solder paste cassette is manually inserted or removed.
- If there is a risk that any unauthorized personnel may alter the system settings and thus the behavior of the machine, the logon facility for individual access rights must be used.
- Ensure that all covers and shields are intact, mounted, and closed while the machine is in operation.
- Do not disable or disengage any safety switch or sensor.
- Do not configure or modify MYDATA machines or devices without consulting MYDATA. The machines, devices or the interfaces between them might become unsafe.
- Do not use chemicals or other substances which may have any influence on the operator or other personnel involved in the machine operation.
Emergency Stop Buttons

There are two red emergency stop buttons on the machine. When an emergency stop button is pressed down, the machine will stop immediately.

![Emergency stop button above the keyboard.](image)

![Emergency stop button on the machine front.](image)

Emergency stop buttons are released by being turned clockwise.

When the front hood is lifted, a safety switch is activated and all movements in the MY500 JetPrinter are stopped immediately.

Extra, auxiliary safety buttons can be connected at the rear of the machine.

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**WARNING!** Always press down an emergency stop button before hands, fingers, tools, or other objects are entered within a shielded area, or if any hoods are opened.

Test the function of emergency stop buttons at regular intervals.
Emergency Movement of Machine Elements

If an accident has occurred and an emergency movement of a machine element is required, use the following procedure:

1. Press down an emergency stop button.
   This will disconnect the motors used to position the machine elements.
2. Move the machine element away by hand.

Safety Hoods and Devices

The following safety hoods and devices are found on the machine:

1. Hood front.
2. Hood front safety switch.
3. Front cover.
4. Side hood (one on each side of the machine).
5. Hood back.

Figure 1-3. Safety hoods and switch on a MY500.
Warning Signs

The warning signs on the machine must be observed as this machine contains fast moving parts, magnetic fields, and high voltage. The machine has warning signs placed as shown on the following pages.

At least one manual that describes the warning signs of the particular machine type must always be kept, for instance if the machine is upgraded with a later TPSys version.

Optional devices have the warning signs shown in their documents.

Number and position of each sign type is described in the following text. If a sign is missing, it must be replaced immediately. Part numbers are printed on the signs, and can also be read from this description.

All signs must be kept clean and readable.

Fast Moving Machinery

Sign 1 warns of the fast machine movement. No hands, fingers, or other objects are allowed beyond the shield. Ensure that all covers and shields are intact, mounted and closed while the machine is in operation. Do not disable or disengage any safety switch or sensor.

These signs are applied as follows:

– One sign on the left side protective shield, see Figure 1-4.
– One sign on the right side protective shield, see Figure 1-5.
Figure 1-4. Warning sign on the machine's left side hood.

Figure 1-5. Warning signs on the machine's right side hood.
Dangerous Voltage

These signs warns of electric shock. Units on which this sign is placed contain dangerous voltage levels. Power must be switched off before opening the unit. Only authorized service personnel are allowed to operate the machine when such a unit is open.

European and Canadian standards

US standards

DANGER! Always lock out and tag the main switch before opening the hoods and commencing any servicing within the machine. Always use the main switch to restart the machine or any of its components.

This sign is applied as follows:

- One sign on the front cover, see Figure 1-5.
- One sign by the power supply unit on the connection plate at the rear of the machine, see Figure 1-6.
- One sign on the inside of the connection plate, see Figure 1-7.

Figure 1-6. Warning signs at the rear of the machine.
Laser Classification

Sign 3 states the laser classification for the MY500 JetPrinter. One certification sign is applied as shown in Figure 1-6.
Magnetic Fields

Sign 4 warns for magnetic fields. One warning sign is applied as shown in Figure 1-8.

Figure 1-8. Warning signs inside the machine.
Type Plate

The type plate shows the name and address of the manufacturer, the machine type and serial number, and manufacturing date and country. An example of a type plate is shown below.

![Type Plate Image](image)

*Figure 1-9. Machine type plate.*

The type plate is found at the back of the machine, see '5' in Figure 1-6.

Noise

For the MY500 JetPrinter, the equivalent continuous sound pressure level is measured to be 68 dB(A).
Equipment Precautions

This section has to be read before handling the machine.

CAUTION! Always ensure that there are no foreign objects on the conveyor or within the X wagon and Y beam moving areas before operating the machine.

Magnetic Fields

There are permanent magnets on the Y beam and in the stone frame. They have extremely powerful magnetic fields.

Figure 1-10. Permanent magnets.

DANGER! Personnel wearing pace-makers must be careful in the vicinity of permanent magnets.

CAUTION! Do not approach permanent magnets when carrying objects made of iron, steel or nickel. The force of attraction may cause fingers to be bruised.

CAUTION! Do not wear watches in the vicinity of permanent magnets since they can be damaged.

CAUTION! Do not bring magnetic data media, check or credit cards near permanent magnets. The data on the data media may be erased by the magnetic field.
Compressed Air

This machine uses compressed air for its operation.

WARNING! Compressed air can be dangerous if handled incorrectly. Assembly, handling, or repair of pneumatic systems must be performed by trained and experienced personnel.

Solder Paste, Glue and Conditioner

Cassettes for the machine contain solder paste, which is a mixture of powder and flux. They can also contain glue. Ejectors are filled with conditioner at delivery.

WARNING! During handling and use, solder paste, glue and conditioner may be hazardous to health and to the environment. Read the Material Safety Data Sheet and warning label before usage.

Always remember that care should be taken to avoid the ingestion of chemicals. They may contain lead and other toxic materials, so gloves, safety goggles and gowns should be worn during handling, and hands should be washed afterwards.

– Observe normal standards for handling chemicals. Avoid breathing vapour. Avoid contact with skin and eyes. Wash hands before breaks and after work. Wear personal protective equipment appropriate to the task.

– Avoid breathing vapour. Avoid contact with skin and eyes. Wash hands before breaks and after work. Wear personal protective equipment appropriate to the task

Waste Disposal

Solder paste and any material with remnants of solder paste must be treated as hazardous waste. This also applies to glue.

Do not allow to get into waste water or waterways. If this occurs, inform the relevant water authority at once.

Empty containers may contain product residue.

Observe all label precautions.
Material Safety Data Sheets

The machine is shipped with various types of grease and oil. Below are references to descriptions of chemical composition and toxicity (Material Safety Data Sheets, shortened to MSDS) of these products.

If you have problems accessing the web sites referenced below, contact MYDATA support.

Greases

**GREASE PASTE OKS 270, part number K-013-0014**
MSDS is found at http://www.mydata.com, document number P-040-0137-EN. A logon user name and password may be required.

**GREASE AFA+70 THK, part number K-035-0095**
MSDS is found at http://www.mydata.com, document number P-035-0095-EN. A logon user name and password may be required.

Solder Paste

**SENJU SPARKLE PASTE OZ 2062-AC19 F13, part number L-038-0185**
MSDS is found at http://www.mydata.com, document number P-038-0010-EN. A logon user name and password may be required.

**SENJU ECOSOLDER PASTE M705-LFAC19, part number L-038-0186**
MSDS is found at http://www.mydata.com, document number P-038-0012-EN. A logon user name and password may be required.

**ALMIT SRC SN62U SS4M, part number L-038-0187**
MSDS is found at http://www.mydata.com, document number P-038-0014-EN. A logon user name and password may be required.

**ALMIT LFM-48U MDA-5, part number L-038-0188**
MSDS is found at http://www.mydata.com, document number P-038-0016-EN. A logon user name and password may be required.

Glue

**HERAEUS PD 205 A-JET**
Request MSDS from your local distributor, or the manufacturer W.C. Heraeus GmbH (http://www.4cmd.com).

Conditioner

**INDIUM C-I**
Request MSDS from your local distributor, or the manufacturer Indium Corporation of America (http://www.indium.com).
In Case of Fire

Only use carbon dioxide (CO₂) extinguishers or dry chemical extinguishers in case of fire. Under no circumstances use water, as the machine contains electronic equipment.

ESD

ESD, ElectroStatic Discharge, is one of the few things an individual can unwittingly do to damage or destroy components. Much like the shock you receive when rubbing your feet on a carpet and then touching some metal. ESD can occur when working and will cause components you touch to no longer work properly.

How To Help Prevent ESD

The following steps help reducing the chances of ESD:

- Do not touch components unless you are constantly earthed by an ESD wrist strap or you are wearing ESD shoes or ESD shoe earthing strips on an ESD floor.
- Always ensure that people, the workplace and packaging are safely earthed when handling electrostatic sensitive components.
- If the packaging is not conductive, place the modules in a conductive envelope before packaging. Use ESD bags, domestic aluminum foil or paper, for example. Never use plastic bags or film.
- Make sure not to wear any clothing that conducts a lot of electrical charge, such as a wool sweater or synthetic fibers.
- Most plastics can easily become charged and must therefore be kept away from components.
- Do not touch electronic modules unless it is absolutely necessary to do so in order to carry out other work. If it is necessary, make sure that you do not touch pins or printed conductors.

All MYDATA machines have jacks for wrist straps. They are marked with an ESD sign.
2. Installation

In this chapter you will find the following information:

- *Site Preparation* on page 2-2.
  
  Describes what is required of the site for a successful installation.

- *Installation* on page 2-7.
  
  Describes how to install the machine at the site. There is also site preparation check list on page 2-22.
Site Preparation

In this section you will find prerequisites of what is required of the site for a successful installation of a MYDATA MY500 JetPrinter. Details about the working area, environmental and electrical requirements, and regulatory compliance are given. Follow these directions to ensure a safe and proper installation, as well as ongoing operating efficiency.

Site preparation check list

1. Identify the desired location for the machine. Verify that enough space is available.
2. Verify that all environmental requirements are met, for example:
   – Temperature
   – Humidity
   – Cleanliness/airborne contaminants.
3. Verify that the floor is level and can take the weight.
4. Plan the transportation route to the installation site.
   Check that the transportation route can take the weight of the machine.
5. Verify that means for transportation and lifting are available (for instance fork lift or crane).
6. Obtain required, stable input power.
7. Obtain pneumatic air connection.
8. Arrange for electrostatic avoidance equipment.
9. Table (and chair) for offline station.

Required Working Area

Space around the machine is necessary for maintenance of the machine and optional equipment, if any. Prepare a suitable working area according to the dimensions shown in Figure 2-1, Figure 2-3 and Figure 2-4. The dimensions shown are the minimum space required for the machine with no extra options or external conveyors. To achieve a more efficient working area, add space for operating personnel and storage area for solder paste and boards.

Machine weight
The floor, on which the machine is transported and finally positioned, must support the machine weight, which is 2 000 kg net weight.
Shipping gross weight
The shipping gross weight depends on the quantity of delivered options. An usual gross weight is the machine weight plus roughly 100 kg.

The site
The floor at the machine site must be level.

It is recommended that the area at the machine site is ESD (Electrostatic Discharge) protected.

Cable for mains, tube for pneumatic air, and cable for computer network are connected to the machine at the rear (shown in Figure 2-3). The machine is delivered with two network cables. One cable, 1 m of length, for the connection of the offline station to a gateway. One cable, 30 m of length, for the connection of the MY500 JetPrinter.

CAUTION! Always make sure that the way cables and tubes are placed do not present a hazard. Always use cable ties or such to bundle them together, or place in cable channels.

The machine noise is maximum 68 dB (A).

Machine dimensions
All dimensions shown in Figure 2-1 are in mm.

Figure 2-1. Main dimensions.
Figure 2-2. Machine footprint.

Figure 2-3. Clear space required around the machine.
Figure 2-3 shows a top view over the required service area around the machine (measurements in mm). Also the position of the network and power inlets are shown in the figure. Note that there is no specific area required on the sides of the machine. It is sufficient to be able to pass around to the backside.

Figure 2-4 shows the space required above the machine.

If you have the optional Air Cooling unit, this will require a minimum distance of 400 mm to the nearest wall or machine.

Environmental Requirements

**Temperature**

Operating: $+18$ to $+30$ °C with full performance.

$+5$ to $+18$ °C and $+30$ to $+40$ °C with no guarantee of the accuracy.

Storage: $-30$ to $+65$ °C

**Relative humidity**

Operating: $<95\%$, non-condensing

Storage: $100\%$

**Altitude**

The MY500 JetPrinter is capable to operate correctly at altitudes up to 1 000 m above mean sea level.

**Dust and dirt**

The machine does not require a clean-room environment but dust and dirt must be kept as low as possible. The maintenance intervals are shortened by high temperature and dusty or dirty environment.
Electrical Requirements

Always follow the existing local, national or international regulations when installing this equipment.

Acceptable voltages (±10 %): 230/115 VAC.

Compressed Air

The pneumatic system in the machine requires compressed air. Minimum pressure required is 7 bar, maximum allowed is 10 bar.

Transporting the Machine

Whenever the machine has to be transported, avoid vibrations and impacts in order to prevent damage to the machine. It must be ensured that the machine is stable while it is being transported.

Truck transport

Remove the optional equipment and the MMI-module (i.e. the arm and tube holding the screen and keyboard) and by-pack it in a separate box.

Secure the Y beam with the transport lock, see page 2-20 for details on the lock. Fix the X wagon in position secured to the cassette exchange plate using cable ties, see Figure 2-17. To secure the X wagon do as follows:

- Position the X wagon above the cassette exchange plate.
- Draw the cable ties through the holes in the plate.
- Tighten them around the end stops of the x-wagon. The cable ties must be tight enough to ensure that the X wagon does not move.

CAUTION! Ensure that the left cable tie does not touch the camera.

To prevent dust and dirt to enter the machine you should wrap it in plastic.

Please refer to page 2-10 for details on how to lift and move the machine.

Use strong straps to secure the machine and equipment to the truck bed. The machine should be tied down to the truck bed with straps attached to the machine’s leveling feet.

Air and sea transport

For air and sea transport there is a special crate, and special locking brackets available from MYDATA.
Installation

Upon arrival the machine must be unpacked, lifted, moved to the machine site and leveled.

This section describes how to perform the installation tasks and is divided into the following main parts:

- Unpacking on page 2-9.
- Lifting the Machine on page 2-10.
- Moving and Placing the Machine on page 2-12.
- Powering on page 2-14.
- Network Connection on page 2-19.
- Software Installation on page 2-22.

Equipment

- Standard tools.
- Set of Allen Keys (mm).
- Spirit level and 70mm wrench.
- Lifting equipment.
- Calibration tools:
  - L-030-0119 Conveyor calibration card.
  - D-007-0728 Calibration ruler.
  - L-038-0193 Height reference tool.
Installation Summary

This is a summary of the installation process of a MY500 JetPrinter:

- Unpack the machine and all other packages.
- Check the ‘Shock Watch’ and ‘Tilt Watch’ gages.
- Check that all ordered parts are delivered.
- Place the machine at the desired position.
- Make sure that the machine is level, and that all machine’s feet make contact with the floor.
- Attach the desired plug to the 1 phase cable.
  Before connecting the input power verify that it is the same as the label on the back door.
- Connect air through cooling unit or optional filter unit.
  Ensure that pressure is 7 bar.
- Switch on the machine power.
- Check the voltage with the Service program.
- Use Service program to check all safety switches (hoods & emergency buttons).
- Run HardwareInstall.
- Check the surrounding equipment that follows with the machine, i.e. Light tower.
- Install the barcode scanner.
- Make a backup.
Unpacking

The machine is shipped in a wooden crate (outside Europe) and must be handled with care. It is strongly recommended that a MYDATA representative is present when the machine is unpacked.

1. Inspect the 'Shock Watch' and 'Tilt Watch' gages for activation and the crate for damages. These must be annotated on the Bill of Lading and goods received note.

2. Remove the top lid.

3. Remove the rear and front sides of the box.

4. Remove the plastic protection.

5. Remove additional packages fastened to the machine (for instance monitor, keyboard, and offline PC).

6. Release the machine from the bottom of the box.

7. Inventory all packages to ensure that the correct items are delivered according to the packing list. If not, contact your local MYDATA representative.

Items that are always included:

- Power cable.
- Monitor, keyboard and trackball.
- Offline PC (with cables).
- Spare part kit.
- Calibration tools
  - L-030-0119 Conveyor calibration card.
  - D-007-0728 Calibration ruler.
  - L-038-0193 Height reference tool.
- Operator’s manual.
- Programming manual.
- Service manual.
Lifting the Machine

To avoid tilting or damaging the machine, always lift the machine as described below. The description includes fork lift as well as crane lift.

The machine weighs 2 000 kg net.

WARNING! Lift the machine as described below. Otherwise, the machine may become damaged and the lifting may become dangerous.

Fork lift

Always lift the machine as shown in Figure 2-5.

Arrows on the machine's cover indicate the correct points where to insert the fork lift. If the fork lift is inserted anywhere else there is a risk that the machine can tip over. The center of gravity is located slightly to the left and towards the front on the machine.
Crane lift
We recommend using four flat webbing slings to lift the MY500 JetPrinter with a crane. They are slung around the leveling feet of the machine.

The slings must be able to carry 1.6 tons each when snared. This is indicated on the label on the sling, see Figure 2-6.

![Figure 2-6. Webbing sling label.](image1)

The machine's center of gravity is located near the front. Therefore, the hoisting cable should be slightly shorter at the front.

Put the slings around the leveling feet. There are no special lifting devices on the feet such as hoisting lugs. Place a piece of cardboard, or a blanket, between the machine's frame and the hoisting cables. This will protect it when the hoisting cable is stretched.

![Figure 2-7. Flat webbing slings.](image2)
Moving and Placing the Machine

Move the machine to the final position and put it on the leveling feet. You can use either a fork lift or a crane.

⚠️ CAUTION! Always ensure that the transport lock is attached before moving the machine. If not the Y wagon may be damaged, see page 2-20.

Leveling

When the machine has been placed in the final location, check the leveling as described below.

1. Place a spirit level on the machine and adjust the leveling feet until the machine is level in both directions.
2. Make sure that each leveling foot is screwed firmly against the floor so that the weight of the machine is divided equally on the four feet.
3. Check if the machine is steady by manually trying to rock the machine. If not, adjust the leveling feet.
4. Tighten the locking nut on each leveling foot.
Main Machine Connections

The main connection points are found on the back of the machine. These points are placed on the outside of the connection plate (the lower door).

This door can only be unlocked by a special key, which is provided with the machine.

WARNING! There is dangerous voltage in units behind the door. Ensure that the key is only available to trained maintenance personnel.

The main connection points are:

1. **Powering**
   This is where the mains power supply is connected, see page 2-14 for details.

2. **Pneumatic connection**
   This is where the compressed air is connected, see page 2-16 for details.

3. **Network connection**
   The Local Area Network is connected here, see page 2-19 for details.

4. **SMEMA Connectors**
   These connectors are used for the communication with external conveyors, see page 2-19 for details.

Figure 2-8. Main connections on machine backside.
Powering

MYDATA machines are set up for adequate mains supply before delivery according to the customer order. This means, that normally only the mains power needs to be connected without alterations inside the machine.

Knowing your mains power supply, you can verify that the machine is properly set up by reading on the type label.

If the mains voltage or the type of mains supply is to be changed, internal power connections in the machine must also be changed accordingly, see the next section.

---

⚠️ DANGER! The power configuration plugs should only be installed by an authorized MYDATA service engineer.

---

Electrical Configuration

⚠️ WARNING! Lock and tag, and disconnect the mains, before opening, or doing any work inside the machine.
Always ensure that the voltage labeled on the machine (close to the mains power inlet) corresponds to the mains. If not, check and when necessary replace the configuration plugs.

The machine is equipped with one mains transformer which must be configured according to the supply voltage.

---

Figure 2-9. Main power.
Electrical Connection

This machine is intended to be stationary and movable to accommodate the changing production needs of the end use factory (this is in compliance with the NEC Article 400-7 and -8).

Power Plug Connection

The machine mains transformer is connected by the mains power cord shown in Figure 2-10.

Connect the cable to the mains power. Available plug types are shown in Figure 2-11 and 2-12.

Figure 2-10. Power plug.

Figure 2-11. Power plug, US.

Figure 2-12. Power plug, Europe.
Pneumatic Connection

The pneumatic system in the machine require compressed air. Ensure that the pressure is at least 7 bar.

The pressure hose is connected to the regulator on the backside of the machine.

![Figure 2-13. Pneumatic valve on the MY500 JetPrinter.](image)

There are two optional pneumatic air units available for installation – the air cooling unit and the micro mist unit.

If any of these optional units are used, the compressed air will first be connected to these. Thereafter the air will be connected to the pneumatic valve on the MY500 JetPrinter.
Optional Air Cooling Unit

**Air connections**

Connect ‘Air in’ of the Cooling Unit to compressed air 0.8–1.0 Mpa. Maximum compressed air in temperature is +55 °C. The connection has a G ½ thread.

Connect an isolated tube to ’Air out’ of Air Dryer and to the pneumatic valve on the MY500 JetPrinter.

---

**CAUTION!** Do not use any other tube than L-030-0045, to connect the Cooling Unit with the MY500 JetPrinter. This because the MY500 JetPrinter need both dried and cooled compressed air.

---

**Electric connection**

Connect the electrical cable to an grounded outlet with a voltage of:

- – 230 V 50 Hz AC for Cooling Unit L-030-0126.
- – 115 V 60 Hz AC for Cooling Unit L-030-0127.
Drain tube
Connect the blue drain tube to handle the condensation water properly.

The drain tube comes out from the bottom side of the air dryer.

Placement of Cooling Unit
Place the Cooling Unit in an open dust free space with max ambient temperature of +40 °C.

The Cooling Unit must have a minimum distance of 0.4 m to nearest wall or machine.

Optional Micro Mist Separator Unit

*Figure 2-15. Micro mist separator unit.*

Connect ‘Air in’ of the Micro Mist Separator Unit to compressed air 0.8–1.0 Mpa.

Maximum compressed air in temperature is +35 °C. Thread of the ‘Air in’ connection is G ½.
Network Connection

MY500 JetPrinter movements are guided by a machine control software, acting on instructions in the form of machine programs (layouts). These layouts are prepared on an offline terminal, a PC, which is connected to the machine via a Local Area Network (LAN).

The network is connected onto the machine’s backside. The network cable uses RJ45 connectors.

![LAN connection](image)

*Figure 2-16. LAN connection.*

Connect the offline PC to the machine via the gateway using the network cables.

SMEMA Connection

Surface Mount Equipment Manufacturers Association (SMEMA), have standardized the mechanical and the electrical interface in the SMEMA Interface standard 1.2. Communications between surrounding surface mount equipment, and a MY500 JetPrinter is handled by SMEMA-standardized connectors.

The MY500 JetPrinter connection plate have are two SMEMA connectors – SMEMA OUT and SMEMA IN. An external equipment’s SMEMA IN is connected to the MY500 JetPrinter SMEMA OUT. SMEMA IN on the MY500 JetPrinter is connected to the SMEMA OUT on the external equipment.
Transport Lock

CAUTION! Always remove the transport lock before powering up the machine for the first time!

The Y beam and X wagon are locked in position during transport. These locks must be removed before starting the machine.

Whenever the machine is moved the Y beam and X wagon must be locked.

Remove the locks as follows:

1. Cut off and remove the cable ties holding the X wagon.

Figure 2-17. Cable ties.
2. Pull the Y beam slightly forward, and remove the lock, see 2-18.

![Figure 2-18. Transport lock.](image1)

The lock is placed behind the bottom magnet on the Y beam, but in front of the conveyor.

![Figure 2-19. Transport lock.](image2)
Software Installation

When the machine has arrived at its location in the workshop, it is time to do software installation procedures. These procedures are described in a separate installation guide.

Optional Equipment

Optional equipment, like for instance the manual load table, are provided with their own installation guides.
3. Machine Systems

This chapter contains brief descriptions of the various systems that make up the MY500 JetPrinter machine. The object is to give an orientation rather than an in-depth understanding of the systems. At the end of the chapter you will find block diagrams.

MY500 JetPrinter

With a technique inspired from computer ink jet printers, solder paste is printed, stencil less, on Printed Wiring Boards (PWBs). Applying solder paste with this technique gives more opportunities to design and manufacture PCBs in an inventive and flexible way. The jet printing process is controlled by powerful software, which enables fast changeovers and last minute changes.

Jet Printing

The jet printing system is made up of three main parts: the printer itself, the cassette and cartridge, and a computer offline terminal.

The printer itself is the machines foundation, which integrates the motion system, the positioning system as well as production conveyers.

The cassette is the heart of the system and contains the solder paste cartridge and a solder paste ejector. Its main function is to deposit solder paste onto the PWB with help of a step motor. Ink jet technology (piezo technology) is used to shoot droplets of solder paste onto the PWBs surface mount lands.

The offline terminal consists of a PC and software. The software is capable to read CAD files and transfer them into actual machine layouts. Machine movements are guided by a machine control software, acting on instructions in the form of a machine programs (layouts).

Piezo technology

With piezo technology the paste is squeezed out of the nozzle by mechanical pressure. This is made possible by a ceramic piezo crystal, which is also used in lighters. Its shape changes when it is fed by voltage. This in turn creates pressure on the paste channel, causing the paste to be expelled from the nozzle.
MY500 JetPrinter Main Parts

Outside:
1. Main switch.
2. Emergency stop buttons.
3. Touch screen.
4. Keyboard
5. Trackball
6. Front hood.
7. Front hood handle.
8. Light tower (optional).
9. USB port.
10. Front door. This door is locked.
11. Rear hood. This hood is fixed with four screws.

Figure 3-1. MY500 JetPrinter, components on the outside.
Inside:
12. Y beam.
13. X wagon.
15. Camera calibration unit.
17. Internal conveyor.
18. Electric cable harness.
Inputs and Controls

A touchscreen is used to operate the machine. A keyboard and trackball are used to input data, but can also be used to control machine operations if desired.

On the screen operating status, messages and such are displayed. There is also a signal tower which indicates the machines operational status.

Touch Screen

You can operate the MY500 JetPrinter machine by using the LCD (liquid crystal display) touch screen. Functions such as start, stop, toggle and so on are triggered when you touch the designated buttons on the screen with your finger.

Please read the following instructions carefully:

Tap the LCD touch screen gently; never use force.

Do not use a pen or any sharp object to tap the screen. This may damage the surface.

Clean the LCD touch screen with a soft cloth. If needed, dampen the cloth slightly before cleaning. Never use abrasives or cleaning solutions.

For adjustments and other information about the touch screen we refer you to the OEM user’s guide.
Keyboard

A keyboard is provided with the MY500 JetPrinter. It acts as the standard input tool for the JPSys software. It can also control the system in a normal Windows way if so desired. For more information on how to use a keyboard to control Windows we refer you to the Microsoft Windows help or user’s guide.

Trackball

A trackball is provided for you to operate the standard mouse pointer on the screen. In some windows this may be the most suitable alternative. The trackball can also be used to control the system. In this case the system will behave like any ordinary Windows program.

The trackball and keyboard cannot be disabled.

Barcode Scanner

A barcode scanner is provided for the registration of manufacturer's barcodes on cartridges.
Framework

To be able to withstand high stresses, from accelerating movements, the frame of the printer is made in a heavy stone-epoxy composite material. This is a mineral casting mixed with epoxy. Mineral casting have outstanding dampening, high rigidity and ensure dimensional accuracy.

The motion system, based upon a carbon fiber beam and two wagons, is located inside the stone frame. An internal conveyor for the board movements is also included. Finally there are hoods and doors attached to the framework to cover the machine components.

Figure 3-4. Stone frame.
Movement Systems

The movement system is a three-dimensional system, based upon a carbon fiber beam and two wagons. The motion system operates together with an optic positioning system.

The machine contains the following movement systems:

- X movement moves the X wagon in the X direction.
- Y movement moves the Y beam in the Y direction.
- Z movement moves the cassette interface in the Z direction.

Figure 3-5. Y beam and X wagon.
The Y Beam

The Y beam is a carbon fiber epoxy structure. This material has an advantageous combination of good mechanical properties and low weight. It is used for very stiff and light structures within sports equipment, aerospace, and medical equipment. The beam perform all movements in the Y direction.

The beam is mounted on two linear guides on the machine frame. It is powered by a magnetic, linear motor, see the *The X Wagon* section.

![Y beam](image1)

*Figure 3-6. Y beam.*

The accuracy of the beam's movement is ensured by the use of a linear encoder system. This system use a linear scale on the frame and readheads on the beam.

Be careful not to scratch or otherwise damage the surface of the linear scale. Scratching the surface may alter the machine's precision.

![Y beam linear scale](image2)

*Figure 3-7. Y beam linear scale.*
The X Wagon

On the Y beam the X wagon is attached, which generates the X movements. On the X wagon there is a solder paste cassette interface and a positioning camera.

![Figure 3-8. X wagon.](image)

The X wagon is powered by a cog-free brushless linear motor, designed for unlimited stroke (travel) servo applications. It produces smooth operation without cogging.

![Figure 3-9. Linear motor.](image)

The linear servo motor consists of a U-formed stationary magnet track and a moving coil assembly. The multi-pole magnet track is built up of alternating polarity magnets bonded to a steel plate. The coil assembly must be centered within the magnet track and guided by bearings.
The X wagons positioning accuracy is, like the Y beam's, governed by a linear encoder system. The linear scale for the X wagon is located on the Y beam.

CAUTION! Be careful not to scratch or otherwise damage the surface of the linear scale. Scratching the surface can alter the machine's precision.

X wagon main parts

On the X wagon plate the following main parts are found:

1. Circuit board hood.
2. Cassette interface.
3. Positioning camera.
Cassette interface

The cassette interface is divided into the following main parts:
1. Attachment unit.

Attachment unit

1. Attach claw.
2. Suction cups.
3. Steering blocks.
Motor unit

1. Motor unit.
2. Sleigh unit.

Figure 3-14. Motor unit main parts.
The Cassette

The solder paste cassette is made up of a holder with a motor assembly and a paste cartridge.

On the backside of the holder you will find a circuit board which connects the cassette and machine.

The cassette is a unit with intelligence. It has an electronic ID. The cassette memory stores paste type, selects machines settings, and enables fast change overs of cassettes. This enables a switch from leaded paste to leadfree in seconds.

The paste cartridge is inserted into the holder and locked in place with a shackle. The motor will feed paste in to the ejector. In the ejector there is a piezo unit which generates the force to eject solder paste. Paste spillage is sucked into a filter box.
The holder assembly
The holder assembly is the carrier of the solder paste cartridge and the interface between the machine and the cartridge. It carries the ejector assembly and the motor unit.

![Figure 3-16. Holder.](image)

The holder have the following main parts:

1. Shackle
2. End piece.
3. Holder
5. Motor assembly.
6. Connection cover.
7. Circuit board.
8. Steer pins.
The ejector
The ejector is a wear part. It requires no internal cleaning or disassembling. The ejector carry the piezo unit which generates the force needed to eject the solder paste through the ejectors nozzle.

![Figure 3-17. Ejector.](image)

The ejector main parts are:

1. Filter box connector.
2. Feeder screw.
3. Piezo unit.
4. Nozzle

The principle is that solder paste is fed into a nozzle chamber by the feeder screw. Voltage is applied to the piezo unit. The piezo hits a piston which ejects the solderpaste.

The filter box
The filter box function is to collect any waste solder paste. This will ensure that the PWB is nor contaminated with solder paste in the wrong place. The filter box is screwed on to the solder paste cartridge. It is applied before installing the cartridge into the holder.
The main parts of the filter box are:

1. Lid
2. Box

---

**WARNING!** Solder paste, during handling or use, may be hazardous to health or the environment. Read the Material Safety Data Sheet and warning label before using.

Always remember that care should be taken to avoid the ingestion of solder paste. As solder paste often contains lead and/or other toxic materials, gloves and gowns should be worn while using solder paste, and hands should be washed afterwards.

Filter boxes contain solder paste and must be treated as hazardous waste. Keep out of waterways.

Observe all label precautions.
The solder paste cartridge
The solder paste cartridge is a disposable container that is discarded after use.

Figure 3-19. Solder paste cartridge.

It has the following main parts at delivery:

1. Cap (removed when installed into the holder). Used for transport and storage when not in holder.
2. Plunger
3. Cartridge
4. Label
5. Threaded cap (removed when installed into the holder). Used for transport and storage when not in holder.

On the cartridge there is a label stating product name, product number, product group, and additional data according to J-STD-005. This information is provided in plain text as well as Code 128 bar code.

WARNING! Solder paste, during handling or use, may be hazardous to health or the environment. Read the Material Safety Data Sheet and warning label before using. Always remember that care should be taken to avoid the ingestion of solder paste. As solder paste often contains lead and/or other toxic materials, gloves and gowns should be worn while using solder paste, and hands should be washed afterwards.

Empty containers may contain product residue and must be treated as hazardous waste.

Keep out of waterways.

Observe all label precautions.
Conveyor

The board is transported into and out of the machine by an internal conveyor. This is a top reference conveyor which accept cards with the following specifications:

- Maximum PWB width and length: 508 × 508 mm.
- Minimum PWB width and length: 50 × 50 mm.
- Thickness: 0.4–7 mm.
- Maximum weight: 5 kg.

Figure 3-20. Internal conveyor.

The conveyor have one fixed side (‘1’ in Figure 3-20) and one moveable side (2) which adjusts the conveyor's width according to the loaded board.

The board is moved by conveyor bands running in the fixed and moving sides. When the board reach the position where the machine will apply the solder paste, a lifting table lift the board into position.
Manual Load Table

The intention is that the internal conveyor is connected to an external conveyor system. As an option MYDATA have a manual load table for the cases where an external conveyor system is not available.

Figure 3-21. Manual load table.
Machine Electronics

The following amplifier and control units are found in the machine behind the front hood. Block diagrams describing these units are found in the next section.

Units:

1. **PC**
   
   Runs the JPSys machine software. The PC has a motion controller board, a CAN interface board and a video frame grabber board.

The Amplifier box with a passive backplane, MOT–PBP, which connects the following boards:

2. **X–AMP**
   
   Servo amplifier for the X – motor drive.

3. **Y–AMP**
   
   Servo amplifier for the Y – motor drive.

4. **MOT–PIM**
   
   Power input module. Converts AC power to 24 VDC, which is supplied to the boards in the amplifier box through the MOT–PBP. Power is also supplied to SAF–CAN boards in the safety loop including light tower and air control electronics.

*Figure 3-22. Machine electronic units.*
5. **MOT–CTRL**
   Safety module which monitors the safety loop, and controls the X and Y motor, conveyor, piezo drive, laser and stepper motor. External safety switches can be added to the AUX EMERG connector on the back of the machine.

The Control box with a passive backplane, CTRL–PBP, which connects the following boards:

6. **CTRL–INT**
   Motion controller interface. Connected to the PC's motion controller board and connects the control box with the amplifier box.

7. **CTRL–HUB**
   CAN network hub. Connected to the PC's CAN interface board. The physical locations of the CAN bus nodes are:
   - Cassette interface (XWG–BRD).
   - Calibration station (SAF–CAN).
   - Light tower (SAF–CAN).
   - Air control (SAF–CAN).
   - Piezo drive (CTRL–PZD).
   - Conveyor (CB/CMOT)

8. **CTRL–HIP**
   Head interface module. Signals and DC power to the X wagon. Amplifier for the Z motor.

9. **CTRL–PZD**
   Piezo drive module. Converts AC power to 100–200 VDC and generates pulses for the piezo actuator.

10. **CTRL–PIM**
    Power input module. Converts AC power to 24 VDC, which is supplied to the boards in the control box through the CTRL–PBP. Safety relay for the conveyor, piezo drive, laser and stepper motor power supply.
Block Diagrams

Below you will find block diagrams for the MY500 JetPrinter.

**ZG-031-0046**

This diagram provides an overview of the connection plate on the back of the machine.

**ZG-030-0013**

This block diagram provides an overview of the electronic, safety and pneumatic system. A short description of the different subsystems is seen below:

- **Cassette**
  
  The cassette subsystem includes a cassette, a piezo drive board (CTRL-PZD), paste feed (XWG-BRD), and temperature (XWG-BRD/SAF-CAN air control node) regulation. Communication between units is done over CAN.

  Power is supplied by the amplifier box for the SAF-CAN boards and by the control box for the remaining boards. The piezo drive and stepper are kept under control by the safety system. Dispensing is triggered by an ‘Event 0’ signal from the motion system (CTRL-INT).

- **Motion**

  The motion subsystem includes a motion controller board, CTRL-INT with controller interface, motors, encoders, CTRL-HIP with Z-amplifier, amplifier box with X/Y amplifiers and safety circuitry.

- **Sensor**

  The sensor subsystem includes a video frame grabber board and a camera unit including the CAM-DIM board mounted on the X wagon. Signal chain goes from the PC through CTRL-HIP and XWG-BRD to the camera unit. Power is supplied by the control box. The laser is kept under control by the safety system.

- **Safety system**

  When an emergency stop button is pressed down the X and Y motors will brake and the power is shut off. Power to the conveyor, piezo, laser and stepper motor is also shut off. A safety switch in the front hood, which will shut off the power to the devices mentioned above when the hood is opened. External safety switches can be added to the AUX EMERG connector on the back of the machine.

  Safety relays are closed when all emergency stop buttons are released and the front hood is closed. A control whether the safety loop is closed and functional is done before the safety circuit is reset.

- **Conveyor**

  The conveyor subsystem includes a conveyor with four motors controlled by a CB/CMOT board communicating with software through the PC's CAN interface board. Power is supplied by the control box.

---

All schematics are found on the Documentations CD.
4. Adjustments

The JPSys system includes a service system. This is a tool used to calibrate and adjust the machine systems. In this manual we will not describe the service system. This chapter is only a brief orientation.

**WARNING!** The service system is intended as a tool for authorized service engineers only. Adjustments may only be performed by authorized personnel!

The service system is started from the *Exit* window. The machine must always be re-calibrated after it has been moved.
System Overview

When you start the service system you will get a system overview, see Figure 4-2. You are shown information about the machine and its software.

In a listing to the left you can select the systems you would like to test.

Figure 4-2. The system overview screen.
Screen Examples

The system is self-instructing. The initial screens are overview screens with a brief description, and information, of the system. The following screens are used to test and calibrate system and hardware. In the hardware window manual adjustments can be made. The operations are described directly in the interface.

Please see the figures below for screen examples for testing and calibrating the movement system.

Figure 4-3. The movement system overview screen.
Figure 4-4. The movement system test screen.

Figure 4-5. The movement system hardware screen.
5. Routine Maintenance

This chapter informs about preventive maintenance for the MY500 JetPrinter. The described maintenance should be performed at stated intervals. The warranty on the machine and parts applies only if these instructions are followed.

WARNING! Before commencing any maintenance, press an emergency stop button down or turn the power off.

The following maintenance work is described:

- Daily Maintenance.
- Weekly Maintenance.
- Monthly Maintenance.
- Yearly Maintenance.
- Changing Calibration Paper.
- Changing Waste Container.
- Changing Cassette Ejector.
- Lubricating X wagon Rail – 720 Operating Hours.
- Testing the Safety System.
Maintenance intervals
The intervals for daily and weekly maintenance are fixed. All other maintenance intervals are dependent on the usage of the machine.

CAUTION! The maintenance intervals apply to a clean environment and an indoor temperature of maximum 25°C. If operated in a dusty environment, or higher temperature, it is strongly recommended to perform cleaning and lubrication after half the stated time intervals.

Cleaning optics
- If the optical surface is very dusty or dirty, remove the dust and dirt using a spray can with clean air intended for optics. Other air may contain particles and grease from air pumps and valves which may be harmful to the optics.
- Clean optics by folding a clean lint-free cloth to the width of the optics. Apply a small amount of isopropyl alcohol, and gently pass the cloth over the surface. Ensure there is no film left on the surface after the use of alcohol. An alternative is to use pre-moistened cleaning towelettes, especially developed for cleaning of optics.
- Do not use abrasives or cleaning solutions!

Lubricants
Unless otherwise stated, use Shell Tellus oil and OKS 270 grease. Oil and grease should be applied just to give just a thin film.

Information about Material Safety are found in the Safety chapter.

Spare parts
Part numbers for spare parts are found in the Spare Parts Catalog.
Daily Maintenance

Equipment

- Lint-free cotton wool buds.
- Lint-free cloths.

Cassette

- Check the guide pins on the holder for wear or damage. If the guide pins are damaged, replace the holder.
- Wipe off any solder paste or dirt from the holder’s backside with a lint-free cloth.

![Figure 5-1. Guide pins and backside of Cassette holder.](image)

- Wipe off solder paste from the nozzle using a lint-free cloth and attach protective tape before placing it in a cold storage, see Figure 5-2.

![Figure 5-2. Solder paste nozzle.](image)
Machine

WARNING! Before commencing, press an emergency stop button down.

- Inspect the Cassette interface. Wipe off any solder paste using a lint-free cloth. Be careful with the connector surfaces.

![Figure 5-3. Cassette interface.](image)

- Wipe off any solder paste from the conveyor table.

![Figure 5-4. Conveyor table.](image)

- Wipe off any solder paste and glue that may have spilled onto the machine. This is especially important for glue, which may be harmful to machine parts.
Calibration Units

- Check if the cassette height calibration sensor (‘A’ in Figure 2-5) is clean and can be moved down freely. If not clean, wipe it carefully using a lint-free cloth.

⚠️ Do not use any alcohol on the calibration point!

– Check if the waste container (B) is getting full. Replace the waste container if necessary, see the MY500 JetPrinter, Service Manual.

– Check the quantity of paper (C). Reload if there is a red line on the paper’s side, see the MY500 JetPrinter, Service Manual.

– Wipe away any solder paste or dirt from the unit using a lint-free cloth. Be careful not to leave any dirt on the white calibration spots.

Figure 5-5. Calibration unit.

Figure 5-6. Camera calibration unit.
Filters

The air filter indicator ('A' in the figure) is located on one of the two air filters.

![Air filter indicator](image)

*Figure 5-7. Air filter indicator.*

If the machine is equipped with an optional Refrigerated Air Dryer unit, the air filters are located on that unit.
- Replace both the filters if the filter indicator has turned red (refer to the filter manual).

These filters must be exchanged every two years.

Optional Refrigerated Air Dryer
- Make sure the auto drain operates properly (refer to the Refrigerated Air Dryer manual).

CAUTION! A bad quality of compressed air can cause auto drain malfunction.
Weekly Maintenance

This preventive maintenance shall only be carried out by authorized service engineers.

Equipment

- Lint-free cloths.

WARNING! Before commencing, switch the power off, and lock out and tag the main switch.

Machine

- Wipe off the Y linear scale using a dry lint-free cloth. Be careful not to scratch or damage the surface.

To be able to reach the rear part of the linear scale, you must remove the rear top hood. This is done by unscrewing the hood’s four mount screws.

WARNING! Always re-attach the rear hood, using four screws, before switching the power on.
– Wipe off the X linear scale using a dry lint-free cloth. Be careful not to scratch or damage the surface.

![Figure 5-9. X linear scale.](image)

**Others**

– Wipe off the screen if needed. Use a soft cloth and dampen the cloth slightly with clean water. Do not use abrasives or cleaning solutions.

Do not use abrasives or cleaning solutions!

– Warning signs on the machine must be clean and readable. If needed, clean or replace the signs (refer to the *MY500 JetPrinter, Operator’s Manual*).
Monthly Maintenance

This preventive maintenance shall only be carried out by authorized service engineers.

Equipment

- Lint-free cloths.
- Vacuum cleaner or blow nozzle.

Machine

- Remove dust from the ventilation areas on the top back hood.
  Use a vacuum cleaner or an air blow nozzle.

Optional Refrigerated Air Dryer

- Remove dust from the ventilation area on the optional Refrigerated Air dryer. Use a vacuum cleaner or an air blow nozzle.
- Check valves for scratches, gouges, abrasion, and corrosion.
- Check tubes and valves for air leakage.
- Check tubes for twisting, flattening, or distortion.
- Check tubes for hardening, deterioration, or softness.
  Replace components as necessary. Refer to the Refrigerated Air Dryer manual.
Yearly Maintenance

This preventive maintenance shall only be carried out by authorized MYDATA service engineers. There is a specific instruction for the yearly maintenance that has to be followed.

Please contact your MYDATA Service Department to arrange for a visit by a MYDATA field service engineer.

This service will affect for example:

- Calibration of optics.
- Y beam calibration and adjustments.
- The X system.
- The internal conveyor system.
Changing Calibration Paper

This preventive maintenance shall only be carried out by authorized service engineers.

WARNING! Before commencing, switch the power off, and lock out and tag the main switch.

The solder paste cassette is calibrated every time you change it or initiate the hardware. Calibration is done by shooting a test pattern onto a roll of paper on the cassette calibration unit.

If necessary, the paper roll is replaced as follows:

Figure 5-10. Cassette calibration unit.
1. Remove the empty roll and spent paper.

2. Push a new paper roll onto the first shaft and place it in the holder. Feed the paper into the slot in the paper guide and pull it through. Be careful not to damage the metal sheet when you pull the paper through the paper guide.
3. On the other side of the paper guide, push the paper into the feeder shaft slot. Roll the wheel to secure the paper to the wheel.
Changing Waste Container

When you use the *Purge* button, the cassette will do 'dummy' shots into a waste container on the cassette calibration unit.

Check the container regularly. Change if the container is 2/3 full, otherwise solder paste may splash outside of the container when purging.

**To change the container**

Lift the container straight up and insert a new one.

---

**WARNING!** Solder paste, during handling or use, may be hazardous to health or the environment. Read the Material Safety Data Sheet and warning label before using. Always remember that care should be taken to avoid the ingestion of solder paste. As solder paste often contains lead and/or other toxic materials, gloves and gowns should be worn while using solder paste, and hands should be washed afterwards.

---

**Waste Disposal**

Solder paste and any material with remnants of solder paste in, or on, them must be treated as hazardous waste.
Changing Cassette Ejector

An ejector, at the bottom of the holder, carries the piezo unit and a nozzle. The piezo unit generates the force needed to eject the solder paste through the nozzle.

This ejector is good for 30 solder paste cartridges. After that it must be changed. To change the ejector, do as follows:

1. Loosen the two torx screws at the bottom of the holder.

![Figure 5-11. Loosening two screws.]

2. Swing the motor over towards the right.

![Figure 5-12. Swing the motor to the right.]
3. Tilt the ejector up-wards slightly.

Figure 5-13. Tilting the ejector.

4. Pull the ejector out from the holder to the left.

Figure 5-14. Pulling the ejector out.

5. Lift the ejector away from the holder.

Figure 5-15. Lifting the ejector.
6. Remove the two yellow, protective plastic caps. Slip a the ejector into the holder from the left. Push it onto the pin, see Figure 5-16.

![Figure 5-16. Slipping the ejector into the holder.](image1)

7. Push down and swing the motor back in place. Re-tighten the two torx-screws which you loosened in step 1, see Figure 5-11.

![Figure 5-17. Pushing down the motor.](image2)
Be careful not to lose the spring, highlighted in Figure 5-18, when you take a new ejector out of its packing.

In a new ejector there is a conditioner that must be removed before it can be used in production. After having changed the ejector, and inserted a cartridge, always do an *Extended Purge*. Hereby the conditioner will be replaced with fresh solder paste.
Lubricating X wagon Rail – 720 Operating Hours

This preventive maintenance shall only be carried out by authorized service engineers.

WARNING! Before commencing, switch the power off, and lock out and tag the main switch.

Every 720 hours the X-wagon rail, and bearings need to be lubricated.

![Figure 5-19. X-wagon rail and bearings.](image)

**Equipment**
- Grease gun from the spare parts kit.
- AFA lubricant, MYDATA part number K-035-0095.

**Performing**
1. Turn off the power, and lock and tag the main switch.
2. Open the machine front hood.
3. Apply a thin layer of grease on the rail, using the grease gun. Wipe away any excess grease with a lint-free cloth.
4. Move the X wagon along the rail a couple of times, to distribute the grease evenly.
5. Close the front hood.
6. Remove the lock and tag, and restart the machine.
Testing the Safety System

This maintenance shall only be carried out by authorized service engineers.

The safety system should be tested at regular intervals.

WARNING! Ensure no hands, fingers, or other objects are entered within the shielded area before the machine has stopped.

1. With the machine running a job, press the emergency stop button on the MMI. Check that the machine has stopped.

2. Release the stop button and do the same test with the emergency stop button on the machine front.

3. Release the stop button and do the same test by opening the front hood.

Testing the Safety Circuits

With the Service system you can test the safety system circuits.

1. Go to the Exit tab and select Start Service Program to enter the Service system.

2. Select Safety System in the file list to go to the safety system window.

3. Open the front hood, check that you get an indication that it is open, see the figure below.

4. Close the hood and check that the system indicates this.

5. Do the same test with all emergency stop buttons.

The safety system circuit is described in the block schematics.
Maintenance Tables

This section shows the previous described maintenance as tables that can be copied and used as service protocols.

**Daily Maintenance**

<table>
<thead>
<tr>
<th>Place</th>
<th>Maintenance action</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassette</td>
<td>̶ Inspect the cassette holder for wear or damage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>̶ Wipe off any solder paste from the holder’s backside.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>̶ Wipe off any solder paste from the nozzle.</td>
<td></td>
</tr>
<tr>
<td>Machine</td>
<td>̶ Wipe off any solder paste from the cassette interface.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>̶ Wipe off any solder paste from the Conveyor table.</td>
<td></td>
</tr>
<tr>
<td>Calibration units</td>
<td>̶ Inspect the height calibration point, clean if necessary.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>̶ Inspect the waste container, empty if necessary.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>̶ Inspect the quantity of paper. Reload if necessary.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>̶ Wipe off any solder paste from the camera calibration unit.</td>
<td></td>
</tr>
<tr>
<td>Filters</td>
<td>̶ Check the air filter indicator.</td>
<td></td>
</tr>
<tr>
<td>Optional Refrigerated Air Dryer</td>
<td>̶ Check the auto drain.</td>
<td></td>
</tr>
</tbody>
</table>

**Weekly Maintenance**

<table>
<thead>
<tr>
<th>Place</th>
<th>Maintenance action</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine</td>
<td>̶ Clean X- and Y-Linear scales.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>̶ Rear Hood closed.</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>̶ Wipe off touch screen.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>̶ Check warning signs.</td>
<td></td>
</tr>
</tbody>
</table>
Monthly Maintenance

<table>
<thead>
<tr>
<th>Place</th>
<th>Maintenance action</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine</td>
<td>Clean the ventilation areas.</td>
<td></td>
</tr>
<tr>
<td>Refrigerated Air Dryer (optional)</td>
<td>Clean ventilation area, and check connections and tubing.</td>
<td></td>
</tr>
</tbody>
</table>

720 Operating Hours

<table>
<thead>
<tr>
<th>Place</th>
<th>Maintenance action</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-wagon rail and bearings</td>
<td>Lubricate x-wagon rail and bearings.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix A – Specifications

These specifications can be changed at any time without prior notice. For updated data, please contact your MYDATA representative.

<table>
<thead>
<tr>
<th>Machine data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Noise</td>
</tr>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Width</td>
</tr>
<tr>
<td>Length*</td>
</tr>
</tbody>
</table>

*) Excluding monitor.

<table>
<thead>
<tr>
<th>Installation requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power requirements.</td>
</tr>
<tr>
<td>Power consumption.</td>
</tr>
<tr>
<td>Voltage</td>
</tr>
<tr>
<td>Air supply.</td>
</tr>
<tr>
<td>Ambient temperature.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board handling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum board size.</td>
</tr>
<tr>
<td>Minimum board size.</td>
</tr>
<tr>
<td>Board thickness range.</td>
</tr>
<tr>
<td>Board edge clearance top.</td>
</tr>
<tr>
<td>Board edge clearance bottom.</td>
</tr>
<tr>
<td>Top side clearance.*</td>
</tr>
<tr>
<td>Bottom side clearance.</td>
</tr>
<tr>
<td>Maximum board weight.</td>
</tr>
<tr>
<td>Max board warp/bow/twist.**</td>
</tr>
</tbody>
</table>

*) No objects above PWB top reference in conveyor rail.

**) 0.4 % of PWB diagonal or 2 mm, whichever is lowest.
Appendix B – About the Documentation

The documentation of the MYDATA machines comprises the following parts:

- Operator’s manual.
- Programming manual.
- Service manual.
- Spare parts catalog.

These documents are described on the following pages.
Operator's Manual

An operator’s manual is available for the MY500 JetPrinter machines. This manual is provided with each machine. The operator’s manual is available in the same languages as the JPSys software. The operator’s manual contains information to assist the operator to start and operate the system, load components and handle magazines and trays. Information about safety, daily maintenance is also included in the operator's manual.

Programming Manual

A programming manual is available for JPI version 1.5. This manual is provided with each machine. The programming manual is available in English only. The programming manual contains basic information about the creation of MY500 machine programs. Board information, such as package footprints, will be matched to preferred settings to generate solder paste patterns. This will result in movement instructions for the machine.

MYCamJP

A manual for MYCam JP is provided with each machine. The MYCam JP manual is available in English only. MYCam JP is used for the importing and processing of basic CAD data needed for programming in JPI. MYCam JP can handle various CAD-file formats and use graphics for this process.
Service Manual

A service manual is available for the MY500 machines.

This manual is provided with each machine.

The service manual is available on a CD in English only. A hard copy can be ordered from MYDATA.

The service manual contains descriptions, service instructions for the machine.

Information about safety, maintenance, and common optional devices and systems are also included in the service manual.

Spare Parts Catalog

A spare parts catalog, containing information, figures and part numbers on the most common spare and consumable parts, is available from MYDATA.

The spare parts catalog is available in English only.
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