SECTION D: SYSTEM INSTALLATION

General system specifications

Maximum injection capacity

The largest volume of alloy that can be injected in each cycle is dependent on the injection unit size. An AM46 machine uses either

- a 3/4 inch diameter injection unit which can inject a maximum of 5 cm^3 (0.3 in^3) of alloy.
- a 1 inch diameter injection unit which can inject a maximum of 8 cm^3 (0.5 in^3) of alloy.

Floor space required

Width:	660 mm (26 inches)
Length:	1000 mm (39 inches)
Height:	2007 mm (79 inches)
Door swing:	460 mm (18 inches) per side
	550 mm (22 inches) at rear

Note: The dimensions above do not allow for the operating head and tool. Additional space may be required as detailed on the outline and floor plan drawing found in Section K: Machine Reference Drawings.

Weight

AM46 machine:	385 kg (847 lbs.) (machine only)
Including operating head and accessories:	450 kg (990 lbs.)

Sound level

Airborne noise emission levels of 75 dB(A) (continuous) and 87 dB(C) (peak) are to be expected when operating an IMA system equipped with an CPM-5 Cable Processor Module.

System service requirements

Electrical supply

240 or 230 Volt Service

A 30 amp, nominal 240 volt AC, single phase, two wire plus ground, 60 Hz; or 30 amp, nominal 230 volt AC, single phase, two wire plus ground, 50 Hz power supply is required for the system. This electrical supply should be connected to the main breaker through the access hole on top of the electrical control enclosure.

Other voltages:

If another nominal single phase supply voltage is to be used (i.e. 208, 220, 277, 380, 400, 416, 480, 600 volt AC), a separate transformer is required.

Power conditioning

If the electrical supply is known to possess power disturbances, (i.e. surges, noise, distortion, etc.), the application of appropriate power conditioning technology is strongly recommended.

Pneumatic supply

Clean, dry air at 550 to 690 kPa (80 to 100 psig) and 0.06 m^3 (2 ft^3) per minute is required, connected to the air inlet connection on the rear of the pneumatic compartment.

Coolant supply

A coolant supply at 2 litre per minute (0.5 gpm), 275 kPa (40 psig) and approximately 20°C (68°F) is required. The coolant supply connects to the inlet labelled “supply” on the rear of the pneumatic compartment.

The pH factor of the coolant should be controlled to minimize the corrosion effect of the coolant.

Adding a rust inhibitor to the coolant should be considered.

Coolant drain

A coolant drain is required, connected to the outlet labelled “drain” on the rear of the pneumatic compartment. The maximum coolant drain back pressure should not exceed 25 percent of the coolant supply pressure.

Gas supply

A gas supply (natural gas or propane) at 3.5 kPa (0.5 psig) and 0.3 m^3 (10 ft^3) per hour is required on systems using zinc alloy.

Lubricants

The pneumatic component lubricator requires a good quality spindle oil suitable for air line lubrication. The following oils are recommended:

British Petroleum HLP 32 (ISO Grade 32)

Esso NUTO H32 (ISO Grade 32)

Gulf Oil Company Harmony 43AW (ISO Grade 32)

Shell Oil Company Tellus 37 (ISO Grade 37)

The tool lubricator requires “Die Slick No. 175” supplied by:

U.S.A.	G.W. Smith & Sons Inc. Dayton, Ohio	tel: fax:	(937) 253-5114 (937) 253-9363
Europe	Alexander Cardew (Machines) Ltd. Kent, England	tel: fax:	+44 01843 861647 +44 01843 604003

The Die Slick should not be mixed with any solvents or water.

Alloy

The melt pot is shipped full of alloy. Subsequent requirements are dependent upon the volume of alloy injected in each cycle and the cycle rate of the system.

Contamination of zinc alloy supplies

ATTENTION!

Zinc alloy should be purchased from reputable suppliers who will provide a Certificate of Metal Analysis with each lot.

Zinc alloys containing aluminum are susceptible to intergranular corrosion when lead, tin or cadmium are present. Suppliers of certified zinc alloy ensure that the lead, tin and cadmium content of their alloys are within established standards.

The use of zinc alloys not certified within these standards can have serious impact on finished product quality:

- loss of dimensional stability
- reduced mechanical strength
- possible cracking of the zinc alloy termination, or hub.

These conditions may not appear immediately, but will be evidenced by a progressive deterioration of the alloy over time, particularly if the zinc alloy components are exposed to high humidity.

Preventing contamination of zinc alloy

Procedures must be established to maintain the quality of the zinc alloy following delivery:

- The production environment should be clean and free of potential contaminants such as solder or lead/tin alloys. Less than one gram of lead can contaminate the zinc alloy in the melt pot.
- Melt pot covers should be kept in place at all times.
- Scrap alloy or floor sweepings should never be returned to the melt pot.
- Alloy of unknown quality should never be introduced into the melt pot.

Preventing change in alloy composition

Overheating of zinc alloy causes the loss of aluminum and magnesium through oxidation (magnesium is used to protect zinc die cast components from intergranular corrosion), resulting in a change in physical and mechanical properties of the alloy.

Excess iron in the alloy will lead to the formation of iron-aluminum intermetallic particles which can cause the plunger to seize in the injection unit sleeve. The excess iron can be the result of steel being dropped in the melt pot, or a ladle being left in the melt pot.

Although zinc die casting alloys are sensitive to variations in composition and impurity level, the composition ranges are adequately wide. If certified zinc alloy is used, the specified composition can be easily maintained with good housekeeping and shop practices.

Recycling zinc alloys

Scrap zinc alloy is generally sold to the alloy supplier. If scrap zinc alloy is to be re-used, it should be melted in a separate melt pot and analysed for metallurgical content before use.

Installing the IMA system

Uncrating system components

The packing crate contains the:

1. IMA machine
2. Cable Processor Module
3. Tooling - if ordered
4. Tools and spare parts for service and maintenance.

Note: The Cable Processor Module is shipped mounted on the machine. The tooling (if supplied) is removed from the Cable Processor Module prior to shipment and is packaged separately in the crate. Discard all packing materials, remove tooling and spare parts boxes, as well as any protective coatings applied to the IMA machine.

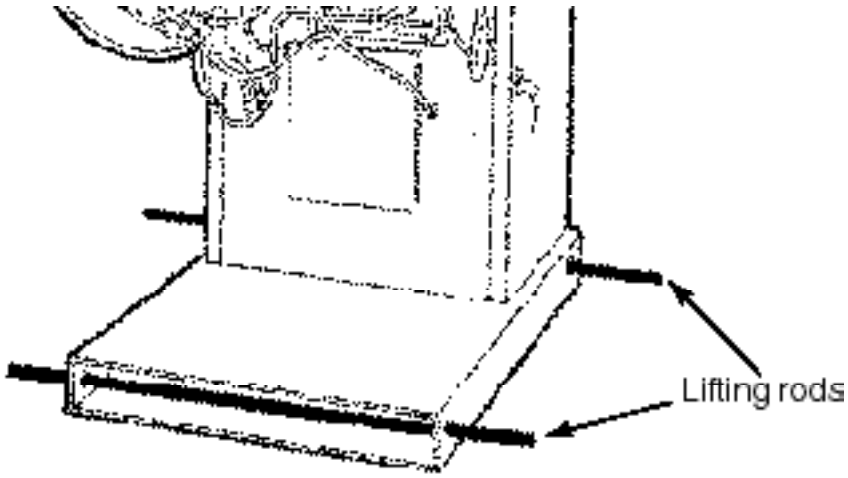
Lifting the machine

Note: Approximate weight of the machine and operating head is 450 kg (990 lbs.).

1. Remove four bolts which hold the machine frame to the wooden pallet.

2. Slide a steel bar through the front set of lifting holes, and a steel bar through the back set of lifting holes. The steel bars should be 25 mm (1 inch) in diameter and 860 mm (34 inches) long.

3. Connect four equal length independent lifting straps or chains of adequate rating to a crane hook to provide a single lift point.



Placement of lifting rods

4. Hook the opposite ends of the lifting straps or chains to the ends of the steel bars and use the crane to lift the machine from the pallet.

Positioning and levelling

When positioning the IMA machine:

1. Make allowances for door swing on both sides and the back of the machine.

2. Allow approximately 1.5 meters (5 feet) in front of the machine so the Cable Processor Module can be tilted back easily.

3. Level the machine to 1.5 mm (0.06 inches), measured across the top surface of the injection unit Y-bracket.

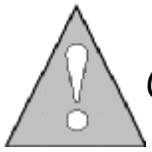
Connecting the services

Once the machine has been positioned correctly:

1. Connect the electrical supply through the access hole on top of the electrical control enclosure.

2. Turn off the air supply valve on the back of the machine. To do this, turn the handle so it is horizontal (pointing to the left when standing behind the machine looking at the valve).

3. Connect the air supply, coolant supply, coolant drain and gas supply to their respective connection points on the rear of the pneumatic compartment.



CAUTION!

Do not turn on the air, water and gas supplies to the machine before reading Section E: System Setup.

Installing the tooling

The tooling must be installed before the system can be made operational.

Refer to Section E: System Setup for information on installing the cavity tooling.

Note: The Cable Processor Module Closed proximity switch will be set to the tooling supplied with the system.

If tooling was not supplied with the system, the Cable Processor Module Closed proximity switch should be set to the tooling which is to be installed.

Refer to Cable Processor Module Closed proximity switch adjustment in Section G2: Cable Processor Module Maintenance for instructions on how to set the Cable Processor Module Closed proximity switch.