

D-2100 Series with MOD 4.0 AC

Congratulations on the purchase of your new Magnaflux D-2100 Magnetic Particle Inspection Machine! This guide will help you install and set-up your new Magnaflux machine.

If you have any questions, please contact your local Magnaflux Authorized Service Center or call Magnaflux Customer Service at 847-657-5300.



Getting Started

The manual is shipped with the unit in electronic format wrapped in a green bubble wrap mailer within the Accessories Box. In the manual is an extensive step by step process of how to assemble the enclosure and attach it to the unit.



Operating Manual and Drawings

Set-Up

Front of Unit:



Air Pressure Regulator

Back of Unit:



Incoming Power Connection Chassis Ground Connection



Incoming Air Connection 1/8" NPT Thread



120VAC receptacle for pump

1. A minimum of two feet is required at both ends and the rear of the inspection unit to ensure adequate space for servicing (removing machine panels and accessing the circulating pump) and ventilation.
2. A firm, reasonably level floor capable of supporting the inspection unit and the materials awaiting inspection.
3. Adequate space to accommodate a black light inspection canopy (Optional), material storage, material movement and access to the materials.
4. A power source of the proper voltage, frequency and phase (as designated on the **Magnaflux Data Plate** located on headstock end of inspection unit) capable of providing current per the nameplate. Connect the incoming power to the Incoming Power Connection located inside the unit on the back side. Attach the Chassis Ground wire to the inside of the unit to the Chassis Ground Connection Screw. Follow all local electrical codes for wiring. It is highly recommended that an electrical fused disconnect be installed on the headstock side of the unit—Either on the wall behind the unit or on a pedestal near the unit. See page 3 for correct fuse sizes.

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5. A compressed air supply capable of providing a minimum 90-120 psig at 5 cubic feet per minute. Connect the incoming air supply to the Incoming Air Connection on the air filter externally on the unit. Adjust the Air Pressure Regulator to 40 psig to supply air to the headstock extension cylinder. Follow all local codes for plumbing pneumatics.
6. Fill the tank to the appropriate level as per the Recommended Bath Level.
7. Connect the pump plug to the 120VAC receptacle that is located above the black box on the headstock side of the unit. Never run the pump dry. The pump On/Off switch is located on the Operator Control Panel.

Electrical Input:

Input Volts AC	Phase	Full Load (Amps)	Recommended Line Fuse (Amps)	Recommended Wire Size (AWG)
208	3	425	300	#0
230	3	400	300	#0
380	3	245	200	#2
415	3	225	175	#2
460	3	200	150	#4
575	3	160	125	#4

Duty Cycle:

At full output: 0.5 seconds “ON” – 20 seconds “OFF”

At 1000 amps: 0.5 seconds “ON” – 5 seconds “OFF”

The equipment can be fused based on less than the maximum amperage draw due to the duty cycle. Refer to NEC Code Section 630.31 Ampacity of Supply Conductors and Table 630.31 (A) (2) Duty Cycle Multiplication Factors for Resistance Welders (NPFPA National Electric Code 2011). Some areas refer to 2 phase instead of 1 phase. The incoming power goes directly to an isolation transformer so the unit will operate identically on 1 or 2 phase power.

Recommended Bath Level:

When adding 14A particles to a new bath you can use the following guide to achieve a 0.2 concentration. 1 level scoop of 14A particles per 1 gallon of Carrier II. NOTE: DO NOT ADD ALL THE PARTICLES ALL AT ONCE. This will cause particles to accumulate in the bottom of the tank. Allow particles to mix for 20–30 minutes, then test concentration per instructions.

Model No.	Gallons	Liters
D-2100 (2 door)	20	76
D-2100L (3 door)	34	129
D-2100XL (4 door)	46	174
D-2100XL2 (5 door)	58	220

Pump Care and Maintenance

NOTE: Due to the nature of the material used in Magnetic Particle Inspection, periodic maintenance is required on the pump seal. Replacement is recommended every 3 months, based on using Magnaflux materials for an 8 hour day, 5 days a week work schedule. It is recommended to maintain a back-up pump that can be switched out when the seal needs to be changed in order to decrease the amount of downtime on the machine.

The life of the pump and pump seal can be maximized if contamination is not introduced into the machine's inspection bath. Contamination may include but not limited to grinding dust, tooling oil or coolant, metal shavings, wheelabrator/sandblasting residue and paint chips.

Ways to prevent contamination include locating the machine in a dedicated room, providing positive air pressure inside the Equipment Enclosure (Hood Assembly) , keeping the front curtain of the Equipment Enclosure closed, and thoroughly cleaning parts before they are subjected to testing.

Signs of contamination:

1. Settling time exceeds either 30 minutes (water) or 60 minutes for Carrier II (Oil)
2. 2nd layer (lighter in color) appears in centrifuge tube (Spec. is less than 30%)
3. Oil bath turning a "milky white" color (water/coolant contamination)

Examples of contaminated pumps:



Optional Hood Enclosure

with UV Light and Fan Assembly and White Light

Note: Both the UV light and Fan Assembly plug into receptacles located on the unit. The Fan Assembly plugs into a 4 prong receptacle on the Headstock end of the unit and the ON/OFF switches for both the fan and white light are located on the Operator Control Panel. The UV light (supplied associated mounting bracket and transformer) will mount on the tailstock end of the unit and plug into the 115 outlet located there.



Enclosure Foot Print:

Model	Open Dimensions			Closed Dimensions		
	Length	Depth	Height	Length	Depth	Height
Standard unit	86" (218 cm)	50" (127 cm)	120" (305 cm)	86" (218 cm)	73" (185 cm)	89.5" (227 cm)
Long unit (D-2100L)	135" (336 cm)	50" (127 cm)	120" (305 cm)	135" (336 cm)	73" (185 cm)	89.5" (227 cm)
Extra long unit (D-2100XL)	178" (452 cm)	50" (127 cm)	120" (305 cm)	178" (452 cm)	73" (185 cm)	89.5" (227 cm)

Machine Only Footprint:

Model	Length	Depth	Height
Standard unit	84.5" (215 cm)	41" (104 cm)	60.25" (153 cm)
Long unit (D-2100L)	132.5" (336 cm)	41" (104 cm)	60.25" (153 cm)
Extra long unit (D-2100XL)	176.5" (448 cm)	41" (104 cm)	60.25" (153 cm)