

Flux Master Chuck Controllers

The Flux Master controls were developed by Magna-Lock USA to provide rectified DC power and control for all makes of electromagnetic chucks. All control and power modules are housed in rugged, splash-proof enclosures. Standard models range from 150 through 10,000 watts capacity and 0-100% variable holding is standard on all models. Models rated at 500 watts or larger have a separate wall-mounted power enclosure which is normally located at the rear of the machine.



A COMPREHENSIVE GUIDE TO FLUX MASTER CHUCK CONTROLS

A rectifier is a general term used to describe any device that converts alternating current (AC) into direct current (DC). All electromagnetic chucks are for operation from a direct current source. Most factories have alternating current (AC) readily available, so a rectifier system is used to convert the alternating current electricity to direct current. Many times, a rectifier used to control the electricity running to an electromagnetic chuck is referred to as a chuck controller or chuck control. Chuck controls can be manually operated or automated regarding their ability to release the magnetized part or material from the chuck when the machining process is complete. A switch of ample capacity is also required to permit turning the chuck on and off. To minimize residual magnetism, the chuck control switch must also be capable of reversing the DC input to the chuck. Many people confuse the releasing of the part or material as a function of the magnet not the controller when it is actually the rectifier that controls that function.

From simple rectifier and manual switch combinations to completely automatic demagnetizing systems with remote controls, chuck controls are accessories that should be designed for continuous duty, long life expectancy, and be conservatively rated. On request, special systems incorporating such features as built-in sensing devices, automated cycling, etc. can be provided.

THE BASICS OF ALL CHUCK CONTROLS

Before going into detail about these special systems, let us discuss more about the most valued standard features of chuck controllers.

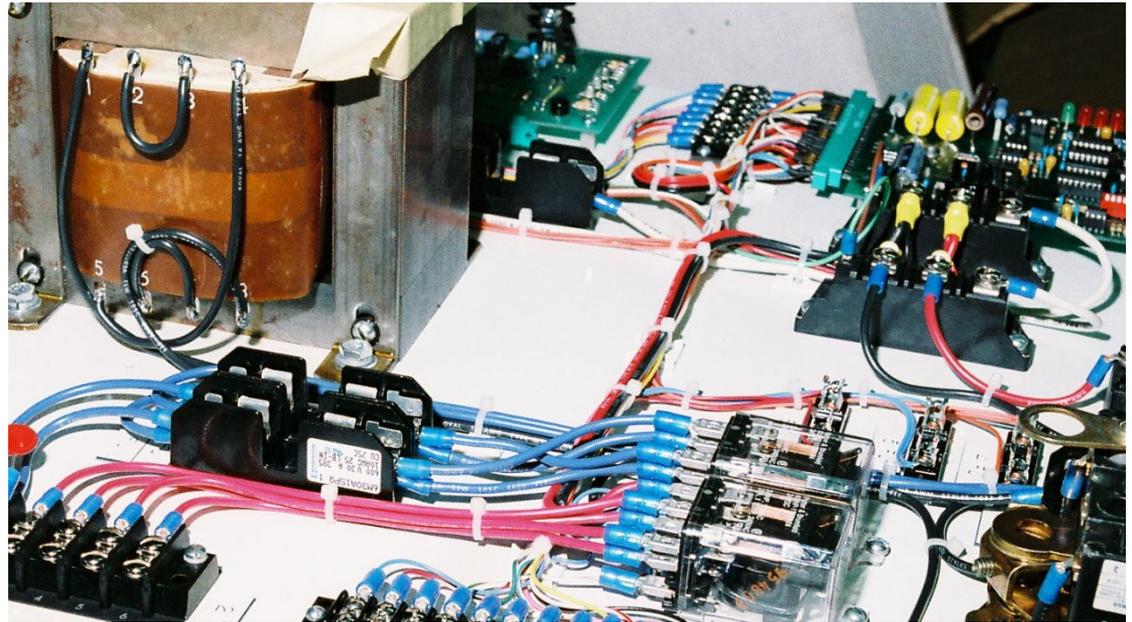


Variable Control

The setting of the variable control knob will determine whether the chuck will be energized at 100% rated current or at some conveniently selected lower value.

Isolation Transformer

For safety reasons, an isolation transformer is highly recommended on any rectifier used with an electromagnetic chuck. An isolation type transformer will provide galvanic isolation resulting in no conductive path present between the source and the load. This type of isolation is essential to protect against electrical shocks and to transfer power between the two circuits (rectifier and chuck) that should not be directly connected.



Fused Disconnect Switch

As a safety feature, a switch should be present on chuck controls with higher voltage and wattage to disconnect power from the unit when the door is opened for maintenance or troubleshooting.

Terminals for Simplified Wiring Connections

For smooth installation and stress-free maintenance, easy access terminals should be used making wiring connections simplified.

Machine Interlock

Higher voltage chuck controllers on larger machines may require a machine interlock present in the chuck control to ensure operator safety with the electromagnetic chuck. By installing the machine interlock switch, it will prevent the spindle from turning if the electromagnetic chuck is not energized.



Replaceable spare parts

While the latest technology and state-of-the-art electronic components are essential in chuck controls, parts need to be available for replacement when unfortunate circumstances occur. Chuck controllers need to be serviceable and repairs made timely to keep production going and downtime to a minimal. It is essential that chuck control manufacturer's keep spare parts available and ready to ship. Chuck control units should be made to last many years. High quality chuck controls and rectifiers should not be considered disposable technology.

Rugged, moisture proof enclosure

To safeguard the operators from any electrical shock, chuck controllers should be inside cabinets that are properly rated for machining area applications where moisture is present.

Rapid Cycling for Part Removal

During the demagnetization cycle of standard models, there are four steps including slow, medium, medium fast, and fast. Note the fast cycle is not recommended for chucks with larger wattage due to the higher current causing the relay to possibly stay closed and cause internal damage to the controller.

Available in standard AC and DC voltages

Typical standard AC input voltages for the United States and Canada are 115, 230, 460, or 575 VAC, single phase, 60Hz.

Typical standard DC output voltages are 115 or 230 VDC.

Wattage Availability

Typical standard Wattage Ratings from 115 to 10,000 Watts



SPECIAL MODEL CHUCK CONTROLS

Most standard chuck controllers are well suited for general electromagnetic chucks and machines but the characteristics of both should always be evaluated and considered prior to purchasing the chuck control. When replacing an existing chuck controller, it may be wise to think about upgrades or additional features at that time. Also, availability of the specifications of the existing chuck control and electromagnetic chuck is necessary to make an informed decision for your purchase. Keep in mind, not all chuck controls will work well with any electromagnetic chuck in your shop. It is essential to match the two to get optimal performance from both.

Now, let us get back to discussing the special systems that are often requested as modifications from the standard for chuck controllers. Some of the requested features of these special systems include the following:



Remote Control

Remote controls are for easy reach of the operator especially when the main unit is mounted away from operator area.

Foot Controls

Special applications may require foot controls for operator ease and safety.

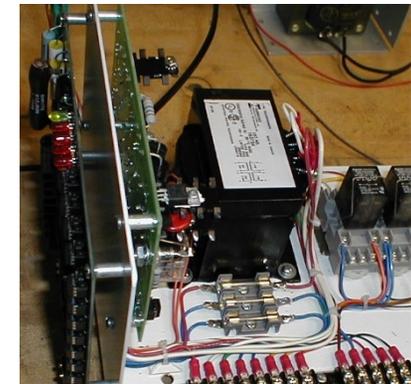


Floor Stand Legs

Controllers do not need to be mounted on the machine and are available with floor stand legs if desired.

Panel Only Units Mounting Directly inside Machine Cabinet

For certain applications, it is safer and more efficient to mount the chuck controller on a panel that is installed into the machine cabinet instead of having its own independent cabinet.





Special Enclosure to Accommodate Several Controls

For machining center applications, it may be necessary to mount 2 or 4 controllers together in the same cabinet.

Special machining applications with electromagnetic chucks may require timers for automatic loading and unloading of parts for continuous production.

A timer used to control the electrical current flowing to the chuck is needed when machining parts that are automatically loaded and unloaded during the machining process. The timer would energize the sectional chuck when loading parts and then demagnetize the chuck to release the parts during the unloading process.

WHAT SETS A FLUX MASTER CHUCK CONTROL APART FROM THE REST

We have established that the main goals of a chuck controller are the electrical current conversion and releasing the part or material. Furthermore, we have listed several optional functions that can be built into a chuck controller to provide a better machining experience for the operator and, many times, improve production rates. Lastly, let's discuss how to value the quality of the product, longevity of its life in your shop and a few intangible factors that add value to a chuck controller. All these things should be considered when planning a rectifier purchase.

Quality The Flux Master controls were developed by Magna-Lock USA to provide rectified DC power and control for all makes of electromagnetic chucks. Flux Master controls reverse polarity and reduce voltage through a series of steps. Work can be easily removed when voltage is reduced to zero. All control and power modules are housed in rugged, splash-proof enclosures. Standard models range from 150 through 10,000 watts capacity and 0-100% variable holding is standard on all models. Models rated at 500 watts or larger have a separate wall-mounted power enclosure which is normally located at the rear of the machine.

Longevity Magna-Lock USA workholding products are built to last generations. Many of our products can be retrofitted with current technology and up-to-date safety and industry standards for a fraction of the cost of new models. Flux Master chuck controllers are not disposable technology. We stock spare parts and offer technical support to keep your machines running and production going.





Origin and Assembly of Unit As with most machinery and machine tools, careful consideration should be given to the country of origin and assembly when making a purchase of a chuck control. This is important because of availability of spare parts and servicing the unit to not lose valuable production time waiting for parts to arrive from long distances away.

Brand Experience It is important that all industrial controls include state-of-the-art features and advanced technology that is proven from an experienced brand. With over 70 years of experience in manufacturing and repairing workholding equipment, our vast engineering department encompasses years' worth of documentation of research, innovative developments, and product design. Furthermore, our serial number database makes it almost effortless to repair almost every item from our Magna-Lock USA product lines since 1948.



Plug and Play Factor Magna-Lock USA controllers are shipped complete, no extra parts or components to purchase. Careful consideration is taken to ensure a secure shipment and your new control arrives ready to use.

Service Beyond Installation Troubleshooting is a phone call away with all Magna-Lock USA workholding including our Flux Master chuck controls. Our experienced service technicians will work with your operators and electrical service people to find the problem and offer the best solutions.

Warranty Magna-Lock USA Flux Master products and repair services stand out above the rest with our industry leading two-year warranty. We challenge you to find a USA made chuck controller that provides the same warranty as the one provided with Magna-Lock USA industrial controllers. A copy of our warranty is available on our corporate website for viewing prior to any purchase.



HOW TO ORDER A MAGNA-LOCK USA FLUX MASTER CHUCK CONTROL

When finalizing your order for a new chuck control, it will be necessary to specify incoming AC voltage, outgoing DC voltage and wattage of chuck. Providing this information is the only way to ensure that the chuck control will effectively work with your electromagnetic chuck. It is also suggested that incoming voltage from the building be verified to ensure no problems with the chuck controller installation.

STANDARD AVAILABLE MODELS



F15MY1 Manually operated Flux Master chuck control. A three-position toggle switch is used in controlling the chuck, ON, OFF, and release. 115 VAC / VDC and 150 Watts capacity. Unit is contained in a NEMA XII enclosure with 6' of 3 wire AC cord and plug and 6' DC power cord. Weighs approximately 9 lbs.





SCC-115-300S-115VAC A remote operated automatic chuck control unit with 115 VAC, 115 VDC, 300 total watt capacity. Variable hold 0 to 100%, auto demag cycle, fast or slow. Operation modes: full ON, variable hold, residual, release (demag) with indicator lights. NEMA enclosure with 8-foot AC input cord, 8-foot DC output cord. Weighs approximately 30 lbs.



SCC-115-300S-230VAC A remote operated automatic chuck control unit with 230 VAC, 115 VDC, 300 total watt capacity. Variable hold 0 to 100%, auto demag cycle, fast or slow. Operation modes: full ON, variable hold, residual, release (demag) with indicator lights. NEMA enclosure with 8-foot AC input cord, 8-foot DC output cord. Weighs approximately 30 lbs.

SCC-230-300S-115VAC A remote operated automatic chuck control unit with 115 VAC, 230 VDC, 300 total watt capacity. Variable hold 0 to 100%, auto demag cycle, fast or slow. Operation modes: full ON, variable hold, residual, release (demag) with indicator lights. NEMA enclosure with 8-foot AC input cord, 8-foot DC output cord. Weighs approximately 30 lbs.

SCC-230-300S-230VAC A remote operated automatic chuck control unit with 230 VAC, 230 VDC, 300 total watt capacity. Variable hold 0 to 100%, auto demag cycle, fast or slow. Operation modes: full ON, variable hold, residual, release (demag) with indicator lights. NEMA enclosure with 8-foot AC input cord, 8-foot DC output cord. Weighs approximately 30 lbs.



CC Models (spec below) Automatic, remote controlled, chuck control. Includes remote control NEMA enclosure (9" x 8" x 7") with operation switches and indicator lights and NEMA main enclosure (sizes below) with fused disconnect switch. 0 to 100% variable hold control and automatic de-mag cycles (fast/slow). Specs below for VAC input, VDC output and watts maximum load. Approx. weights below.

	Enclosure B1		Enclosure B2		Enclosure B3	
	in	mm	in	mm	in	mm
Width	20	508	24	610	24	610
Height	20	508	24	610	30	762
depth	7	178	11	279	13	330

 Model No.	Watts	Max. Output Volts DC at 100% setting	Weight		Enclosure Size
			lbs	kg	
CC-115-500S-230VAC OR CC-115-500S-460VAC	500	115	115	52	B1
CC-230-500S-230VAC OR CC-230-500S-460VAC	500	230	115	52	B1
CC-115-750S-230VAC OR CC-115-750S-460VAC	750	115	115	52	B2
CC-230-750S-230VAC OR CC-230-750S-460VAC	750	230	115	52	B2
CC-115-1000S-230VAC OR CC-115-1000S-460VAC	1000	115	130	59	B2
CC-230-1000S-230VAC OR CC-230-1000S-460VAC	1000	230	130	59	B2
CC-115-1500S-230VAC OR CC-115-1500S-460VAC	1500	115	190	86	B2
CC-230-1500S-230VAC OR CC-230-1500S-460VAC	1500	230	190	86	B2
CC-230-2000S-230VAC OR CC-230-2000S-460VAC	2000	230	220	100	B2
CC-230-3000S-230VAC OR CC-230-3000S-460VAC	3000	230	290	132	B2
CC-230-5000S-230VAC OR CC-230-5000S-460VAC	5000	230	350	159	B3
CC-230-7500S-230VAC OR CC-230-7500S-460VAC	7500	230	420	191	B3
CC-230-10000S-230VAC OR CC-230-10000S-460VAC	10000	230	420	191	B3

*As always, you must be particularly careful when dealing with electricity. Stay aware of potential hazards and understand the importance of electrical safety. Always respect the power of electricity. Certain areas require securing a permit for any electrical work. Consult your local authorities regarding the laws in your area before beginning any electrical service. **ALWAYS READ AND FOLLOW INSTRUCTION MANUALS AND SAFETY WARNINGS.** Any advice, guidance or other information provided by Obsidian Manufacturing Industries, Inc. or within any of our publications, including websites, cannot completely anticipate your situation. If you are at all unsure about completing any aspect of this or any other electrical troubleshooting, consult a qualified electrical contractor to perform the service(s) for you. Testing and analysis of electromagnetism and electricity should only be done by trained electricians that are qualified and trained to do so.*

SPARE PARTS FOR CHUCK CONTROLS FOR ELECTROMAGNETIC CHUCKS



Chuck Controller Spare Parts		Chuck Controller Model Number																
Part Number	Description	F15MY1	SCC-115-300S	SCC-230-300S	CC-115-500S	CC-230-500S	CC-115-750S	CC-230-750S	CC-115-1000S	CC-230-1000S	CC-115-1500S	CC-230-1500S	CC-230-2000S	CC-230-3000S	CC-230-5000S	CC-230-7500S	CC-230-10000S	204725 Remote
368540	Varistor					✓		✓		✓		✓	✓					
368535	Knob	✓	✓	✓														✓
368536	Knob		✓	✓														✓
368513	Toggle Seal Boot	✓																
368541	Cord w/plug	✓	✓	✓														
232070803	Relay				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
235408021	Switch		✓	✓														
368507	Potentiometer	✓																
368523	Lamp Holder		✓	✓														
369248	Green Light																	✓
369249	Red Light																	✓
369250	White Light																	✓
369251	Amber Light																	✓
368506	Toggle Switch	✓																
368529	Switch		✓	✓														✓
368505	Proportional Controller	✓																
2049457	Power Board		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2049458A	Control Board		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Service	Control Board Set Up & Testing, this is a required item on certain chuck controls for replacement of Control Board, part #2049458A																	1 hr. charge

Obsidian Manufacturing Industries, Inc. reserves the right to limit quantities. Prices are subject to change without notice. No prior discounts apply to these prices. All returned items are subject to a 25% restocking fee. Electrical parts not installed at our facilities by our technicians are not covered under our warranty. A copy of our warranty is available upon request. All products and prices are subject to Obsidian Manufacturing Industries, Inc. current terms and conditions available upon request.



In addition to carrying in stock spare parts, we offer repair services for current generation Flux Master chuck controls. Contact our sales department for instructions on how to send your chuck controller in for evaluation, quotation, and repair services which include our industry leading 2-year warranty.

TROUBLESHOOTING YOUR FLUX MASTER CHUCK CONTROLLER

FAULT / FAILURE	CHECK THIS IN ORDER	TEST AND REMEDY
No light on Control	<ul style="list-style-type: none"> Fuse Power Supply Cord and Plug Power Supply Board (SCR) Control Circuit Board (Logic) Transformer Selector Switch 	Replace the bad component and re-test
No DC power to Chuck	<ul style="list-style-type: none"> DC power cord and plug Relay (Reversing) may be out of socket or not connected Rectifiers Control Circuit Board (Logic) Power Supply Board (SCR) Transformer Mag-AMP Selector / Toggle Switch SCR 	Replace the bad component and re-test
No Demagnetization	<ul style="list-style-type: none"> Control Circuit Board (Logic) Relay Power Supply Board (SCR) Selector Switch / Toggle Switch 	Replace the bad component and re-test
Blowing Fuses	<ul style="list-style-type: none"> Check resistance readings on C1-C2 connections to chuck AC Supply Connections DC Chuck Connections Rectifiers Control Circuit Board (Logic) Transformer SCR 	Replace the bad component and re-test
Full OK-variable does not work or variable OK on full zero volts	<ul style="list-style-type: none"> Control Circuit Board (Logic) Power Supply Board (SCR) Selector Switch 	Replace the bad component and re-test, including adjusting settings on Potentiometer resistors
Stickiness on Steel Parts on Release	<ul style="list-style-type: none"> R35 Release Pot Setting on Control Circuit Board (Logic) Adjustment of Variable Resistor Settings 	<ol style="list-style-type: none"> 1. Decrease the setting by clockwise turning 2. Slow down cycle by adjusting dip switches on Control Circuit Board.