

BULLET MASTER MK 8 INSTRUCTIONS

When you unpack the machine check for the following items:

- ☐ Four legs placed along the side of the machine.
- ☐ "H" frame, See line 4 below.
- ☐ Extra sets of molds when applicable.
- ☐ **Accessory box containing:**
- ☐ Two catch trays
- ☐ Assembly screws
- ☐ Leveling bolts for the legs
- ☐ Allen wrenches
- ☐ Extra roll pins and drivers
- ☐ Extra sheer bolts
- ☐ Silicone lube stick
- ☐ Sample Master Lubricant
- ☐ Sample alloy flux
- ☐ Two blowers and 1 guard
- ☐ Carrier pliers
- ☐ Instruction book

ASSEMBLY

1. Unwrap the four machine legs and attach the leveling bolts.
2. Set the machine on a workbench with one end overhanging just enough to attach two of the legs. Bolt on two of the legs leaving the nuts loose.
3. Remove the machine from the bench and support or hold the machine to bolt on the second two legs. Again leave the nuts loose.
4. Bolt the "H" frame to the corresponding holes in the legs. This forms a guide for the bullet catching tray under the machine.
5. Tighten the leg bolts starting with the bolts nearest the corners of the machine. This allows the legs to pull into the corners properly. Next tighten the "H" frame bolts.
6. The other catching tray hangs on the left end of the machine to catch the sprues.
7. Re-attach air blowers and sprue knocker assembly.

ELECTRICAL AND AIR SUPPLY

Wiring: Your machine has a four-wire cord for 240V single-phase service. It will be necessary for you to furnish the plug for whatever type of receptacle you have. For state side the wiring should be black (L1), red (L2), white is neutral and green is ground. For overseas the black (L1) wire is 220V hot and the red (L2) wire is your common wire. White and green wires to earth ground. The wire size used on the power legs should be at least 12ga. Circuit breaker or fuse size is 15 amp per machine, do not double machines on a larger breaker. Building codes in most areas require a separate disconnect box per machine.

The Bullet Master requires about 1/3 horsepower of air per machine. The machine requires a minimum of 110 psi; therefore most small compressors do not supply adequate pressure. You must use a compressor rated at low -100, high -125 psi (usually 2hp and larger). Maximum pressure 160 psi.

The pressure gauge on the machine is for the valve and sprue hammer only. It should be set at 40 psi with the regulator next to it.

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Your compressor supplies the pressure to the bullet ejectors. High pressure is needed for reliable bullet ejection (160psi maximum).

OPERATION

The Bullet Master will have only a trace of metal alloy in the melting pot. Before turning the machine on, partly fill both sides of the melting pot with small pieces of metal alloy (bullets and sprues). This will help speed up the initial melting process. Once the initial charge melts, add slowly to the front (pre-melt) pot only.

The Bullet Master has two digital read out temperature controllers made by TOHO. The temperature of each controller is present in our plant at 700° to test the machine. During production the temperature setting is generally lower.

The Bullet Master should be ready to run without any further adjustments. All machines are extensively tested at the factory before they are shipped. Follow these steps to begin casting:

- (A) Turn on the MELTING POT switch; wait for the preset temperature to appear on the LED read out (load lights up). Wait for the pot to come up to temp.
- (B) Turn on the MOTOR switch.
- (C) Turn on the remote switch (located on the back left side of the machine). Check variable speed control (next to motor switch) that it is turned on and adjusted for the speed desired.
- (D) Now the wheel should be indexing. Turn the AIR and VALVE switches on. You should now be casting.
- (E) When the molds are warm and casting good bullets. You may need one or both of the blowers depending on the weight of the castings.
- (F) To shut down, turn the VALVE switch off first.
- (G) Once all the molds have cleared, turn the REMOTE and DRIVE switches off.

Once the machine has run for about twenty minutes you should be getting good bullets. If you are not getting good bullets check the following hints:

Are the sprue cutters resetting directly over the mold cavities?

Check this by standing at the right end of the machine. Watch the sprue cutters as they reset. If they are not resetting properly, with a small hammer, tap the resetting arm to the right or left to adjust it.

Are the metal streams falling directly through the holes in the sprue cutters without glancing off the edges?

Lateral adjustment is accomplished by loosening the pot and sliding it side to side. Longitudinal adjustment is accomplished by adjusting the clevis on the drive shaft (BM045). Looking in the left end of the machine you will notice the clevis engagement with the notched wheel. Remove the hairpin cotter (BM480) and the clevis pin (BM473). Rotate the clevis clockwise to increase the distance the wheel travels, rotate counterclockwise to decrease the distance the wheel travels.

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CASTING POUR - ADJUSTMENT

The adjusting screw (BM520) mounted on the valve bracket (BM490) over the valve (BM500) arm is for adjusting the RATE of alloy flow through the valve mechanism. Turning the screw will either increase or decrease the pouring rate through the valve. Normally a slow rate with good-looking streams is best. This pouring rate is very important for casting quality. The rate needs to be periodically checked as the valve mechanisms wear. Set at $\frac{3}{4}$ " to 1" turn from dead stop.

The DURATION of pour is adjusted with the timer mounted in the control box. Be sure the timer is set to 9.99s and One Shot. The duration is set when the two sprues join and fall off in one piece. This gives only one sprue to handle and is easier to dislodge from the sprue cutter.

FLOAT VALVE

Alloy should be added to the pre-melt section of the pot, nearest the front of the machine, to maintain even pouring pressure on the valve side. Keep the alloy level in the pre-melt side of the pot above the float valve orifice to keep from skimming surface impurities into the valve area. If the float valve should become plugged and continuously transfers alloy into the valve side of the pot, tap the float valve arm to clear it. When skimming the pot scrape around the valve to prevent buildup.

The float level in the valve side of the pot is important. If the head pressure on the valve is too great, the alloy will pour so rapidly that it will have a tendency to splash and cause bullets to have hollow bases. Careful adjustment of the float level is required.

Over filling the pre-melt side of the pot will cause the float arm swivel to jam. Lubricant may free it but disassembly and thorough cleaning is best. Set at 1" from bottom of pot.

BLOWERS

The blowers on the machine are not to be used until the molds are warm. Once the molds have warmed up turn on the blower switch on the control box. With smaller bullet sizes, this usage is not always necessary.

As the mold temperature continues to climb and the bullets begin to frost, plug in the auxiliary blower. This blower is only necessary for use when casting larger bullets.

CASTING TEMPERATURE

A good starting point for casting is 700 degrees. A difference in alloy, ambient temperature, airflow, your altitude, etc. may require a different temperature setting.

When it is necessary to adjust the temperature, press the up and down arrow keys on the TOHO controller.

Avoid drafts, even with the molds up to temperature, moving air has an adverse effect on bullet quality, particularly in winter.

VALVE AND ORIFICES

If scum and/or dirt plugs the orifices in the valve assembly, the orifice plate can be cleaned with a #44 drill bit without removing it. With a pair of needle pliers carefully ream out the orifice plate on the machine with the pot hot.

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If the problem persists, remove the orifice plate. With a 5/32" Allen wrench loosen and remove the two Allen head screws. Then remove the orifice plate from the bottom of the pot. The orifice plate is grooved to aid in its removal should it stick (CAUTION: This operation may be performed while the metal in the pot is molten, but we recommend that the pot should be turned off and allowed to cool until solidified before the removal of the orifice plate. Residual alloy trapped between the orifice plate and the valve seat may run out when the machine is hot). Flush the valve with the orifice plate out of the pot by working the valve arm by hand to move alloy through the valve. Catch the alloy pouring from the open bottom of the pot in a flat tray inserted between the valve and the molds. Clean the valve base and the small channel while the pot is still warm.

Clean the orifice plate with a #44 drill bit. Sand it on a flat surface with 400-grit sandpaper.

REMOVING THE POT

To remove the pot turn off the electrical power to the machine at the source, do not rely on the switch on the control box. Standing at the rear of the control box, open the cover and disconnect the thermocouple leads and pot wiring from the temperature controllers exposed under the cover. Be sure to mark where the wires go for re-assembly.

Notice that the thermocouples are connected white (14), red (13). Remove the two nuts and washers from the base of the pot. Remove the cotter key and clevis pin from the valve arm. Lift the pot straight up until the mounting bolts clear the pot stand. Pour the remaining alloy from the pot into ingot molds. Next while the pot is still hot gently bounce it up side down on a clean floor where the mess can easily be cleaned up.

FLUXING

Fluxing your melting pot at frequent enough intervals is very important. Lead alloys contain various suspended foreign materials (dirt, etc.) that will not float to the surface without fluxing and stirring the mixture. These suspended particles will tend to flow toward the exit of the pot, then the pouring orifices and will plug causing erratic pouring. Magma's Flux formulated for cleaning lead and blending alloys works well in the pot.

VENTILATION

Smoke is hazardous to your health. A vent hood with an exhaust fan over the melting pot is mandatory. Be careful not to raise the lead temperature over 850 degrees, overheated lead will generate poisonous gases. Use of a vent hood is advised regardless of operating temperatures.

Lack of personnel hygiene is the problem people have with lead poisoning not the fumes from the pot. You should not smoke or eat after handling lead, simply wash your hands first.

SHEAR PIN

If for any reason the wheel movement is arrested during its cycle, a shear pin will break. The shear pin is located beneath the cover plate below the pot. Note the clevis hookup with the pivot arm. The shear pin is on the top end of the drive shaft linkage. We use a 1/4 - 20 X 1" pan head machine screw (stove bolt) for this pin. Remove the broken pieces and replace with the SAME TYPE ONLY. If a harder type is used severe damage to the machine could result. Install screw and nut leaving the nut loose. Put tension on the shear pin by engaging the motor and stopping before end of wheel travel then tighten nut. Check to make sure the indexing of the machine is proper, if not adjust accordingly. Replace the cover plate.

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MOLD REMOVAL AND REPLACEMENT

To remove a mold, use the pin punch provided in the accessory box to drive out the 3/16" stainless steel roll pin on the top of the carrier arm next to the mold. The pin will fall out and may be caught in your hand. After driving out the two pins, with one hand pull the mold from the carriers, with the other hand prevent the carriers from snapping together, this prevents damage to the wheel protective band. To replace the mold open the carriers with your thumb and index finger, cant the mold slightly to start in one of the mounting keys then push until the other key starts in, at this time when the holes are lined up drive the roll pins with tool provided.

MOLD CARE

The main cause of bullets sticking in molds is burrs, dirty molds or rust. A good solvent and scrubbing with a toothbrush will usually do a satisfactory job in removing oxide and dirt from molds. The vent lines should be cleaned in the same manner. Anything resembling a screwdriver or sharp metal object should not be used in removing sticking bullets. A metal object striking the cavity may cause burrs and seriously mark the surface of the cavity. Before we ship molds, they are all clean and test run on our shop machine.

Lead removal can be done with an industrial razor blade by shaving the alloy from the mold faces. **STAY AWAY FROM THE MOLD CAVITIES.**

The sprue cutters should be cleaned and heavily coated on both sides with a good dry lubricant. Moly disulfide or graphite are an excellent lubricants for sprue cutters and mold tops.

LUBRICATION

The motor and all bearings are self-lubricating, therefore require no additional lubrication.

The cams and carriers are hardened, but to decrease wear, lubricate twice daily. A sample of the lubricant is enclosed with each machine. Apply after the machine is warmed up to the carrier section that contacts the cam and brake shoes.

COUNTER

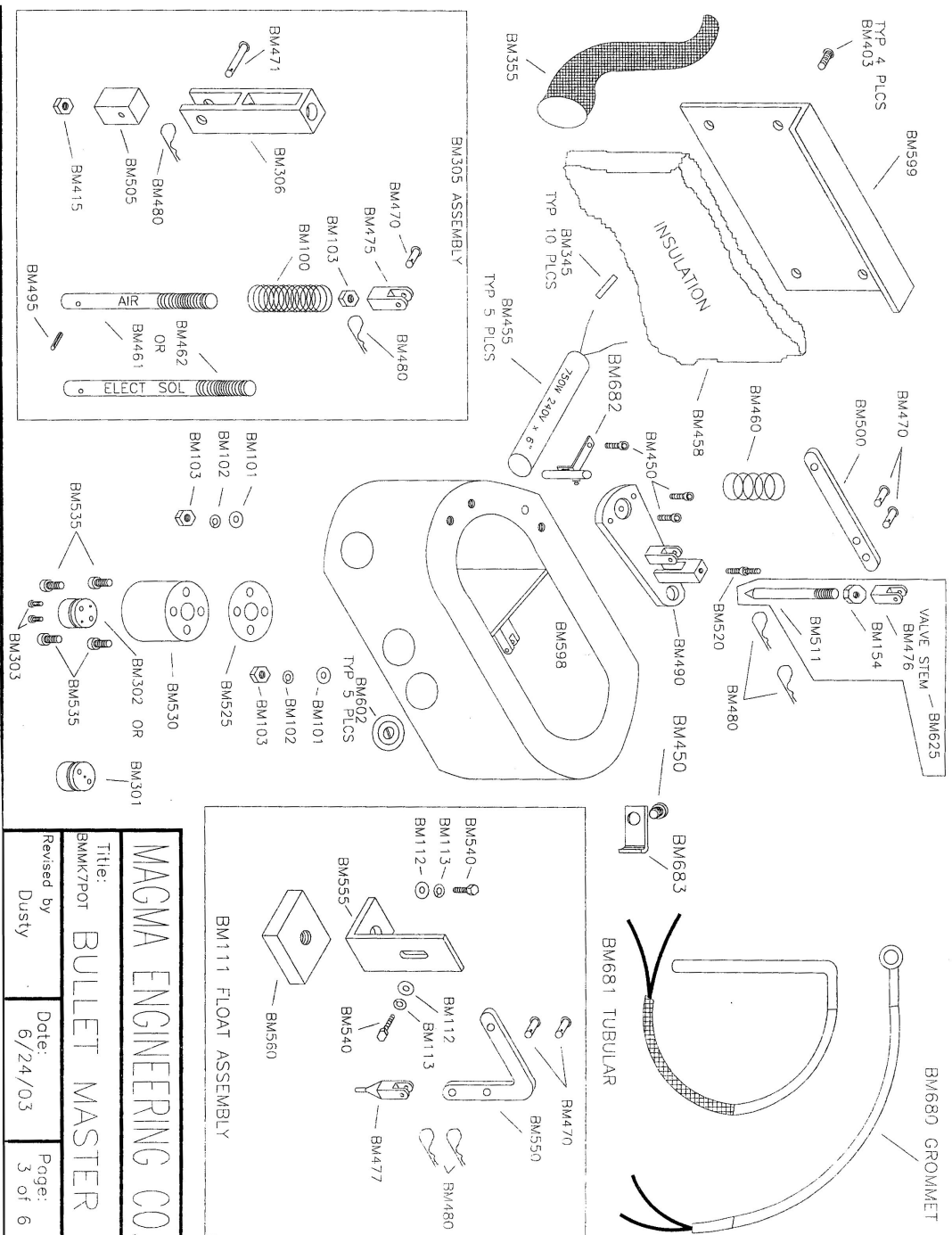
The counter is battery operated. Counter batteries may need to be replaced every 5-10 years. Simply open the back of the counter with a screwdriver, remove the batteries and replace them. The counter counts the cycles of the machine. With two cavity molds double the count for the actual number of slugs.

If you have trouble, our shop number is : (480) 987-9008

FAX (480) 987-0148

*UPS shipping address : Magma Engineering Co.
20955 E Ocotillo Rd
Queen Creek, AZ 85242*

*Mailing address : Magma Engineering Co.
PO Box 161
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MAGMA ENGINEERING CO.			
Title: BMK7POT BULLET MASTER			
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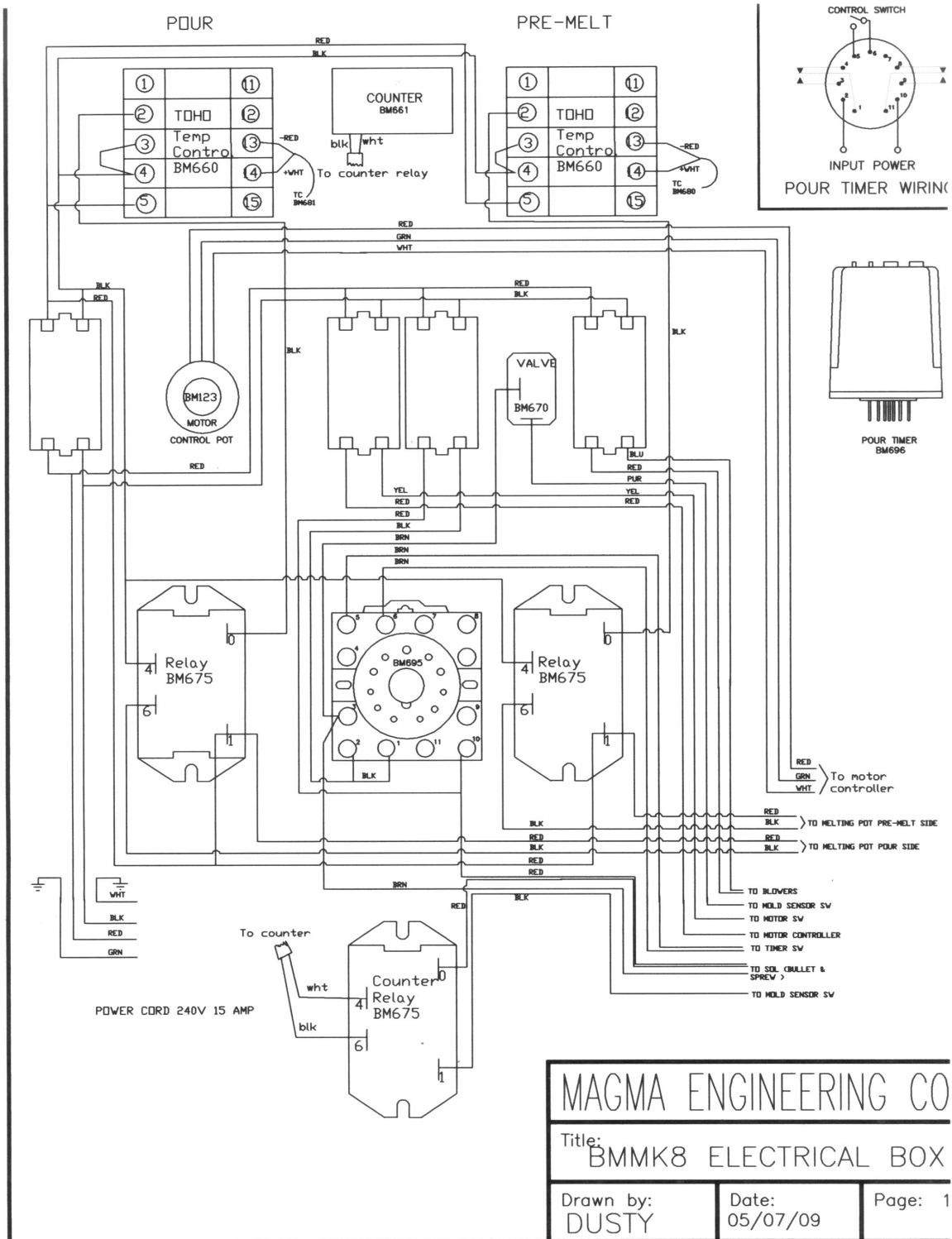
Use the long wrench to loosen and tighten the two screws. Use caution when tightening the screws with the long wrench. The screws can be easily over tightened.

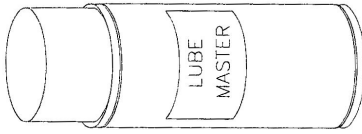
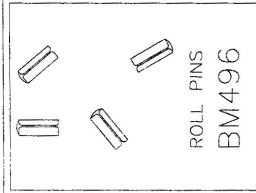
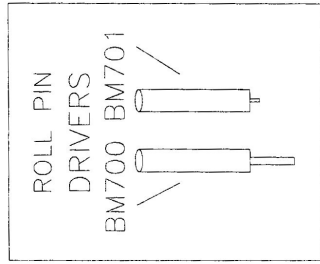
With the melting pot hot use the swivel tool to back out one screw and set it aside. The orifice plate will rest on the second screw and will come out with it. Upon replacement set the orifice plate on the swivel tool with one screw. Remount the orifice plate with $\frac{1}{2}$ to 1 turn. Proceed with the second screw and snug. Now snug the first screw.

Carefully tighten both screws with the long wrench.

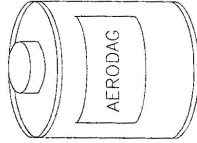




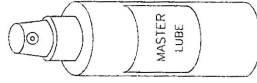




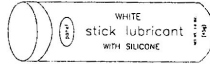
BM736



BM735



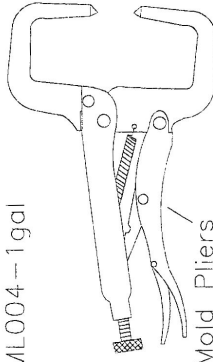
- ML001--4oz
- ML002--8oz
- ML003--16oz
- ML004--1gal



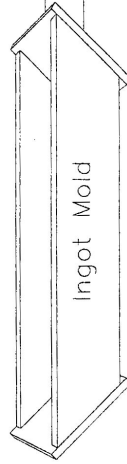
BM710



BM715

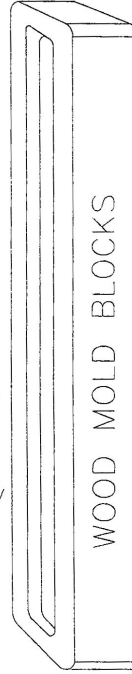


BM705



- BM720 (10LB.)
- BM721 (14LB.)

MM170 (8 mold) MM171 (4 mold)

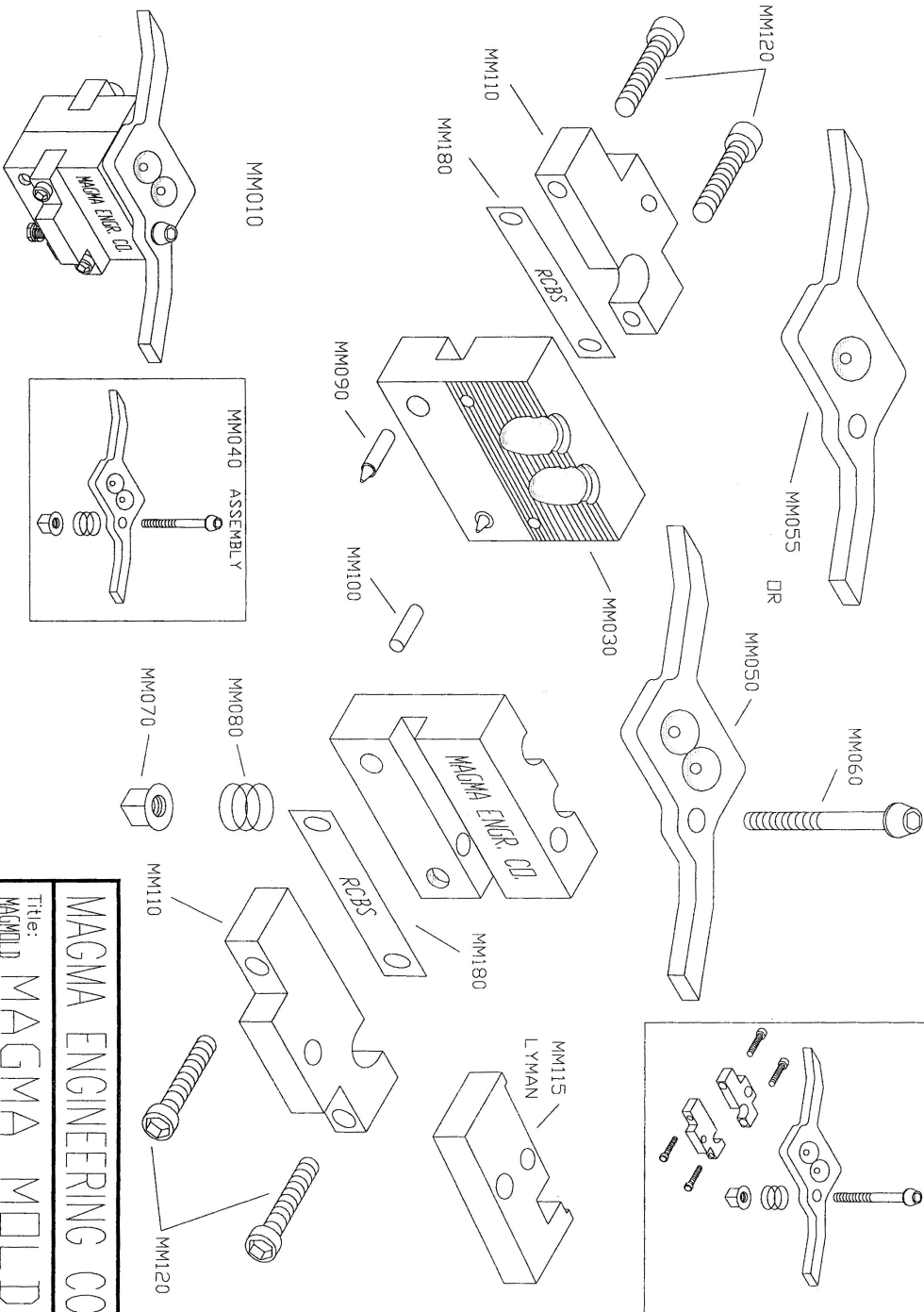


BM737

MAGMA ENGINEERING CO.

Title: BMACCESS BM Parts Accessories

Revised by: Dusty Date: 8/3/03 Page: 1 of 1



MAGMA ENGINEERING CO.		
Title:	MAGMA MOLD	
Drawn by:	Brenda Novak	
Date:	1/15/97	
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MAGMA ENGINEERING CO.

Item	Description
MM	CASTING MOLDS
MM010	MAGMA MOLD COMPLETE
MM020	MAGMA BLANK BLOCK W/O HARDWARE
MM022	BLANK BLOCK/HANDLES W/O HARDWARE
MM025	MAGMA BLANK BLOCK W/HARDWARE
MM030	MAGMA MOLD W/O HARDWARE
MM031	MOLD HARDWARE
MM032	MOLD W/O SPRUE CUTTER ASSY
MM033	LYMAN MOLD HARDWARE
MM034	RCBS MOLD HARDWARE
MM040	SPRUE CUTTER ASSEMBLY
MM050	DOUBLE HOLE SPRUE CUTTERS
MM051	COATED SPRUE CUTTER ELECTROLYSES NI
MM055	SINGLE HOLE SPRUE CUTTER
MM060	SPRUE BOLT
MM070	SPRUE LOCK NUT
MM080	SPRUE TENSION SPRINGS
MM090	ALIGNMENT PIN (2 REQUIRED)
MM100	ALIGNMENT BUSHING (2 REQUIRED)
MM110	MOLD KEY
MM115	LYMAN MOLD KEY (2 REQUIRED)
MM120	KEY MOUNTING SCREWS
MM130	SAECO MOLDS
MM140	LYMAN MOLDS
MM150	RCBS MOLDS
MM170	WOOD MOLD STORAGE BLOCKS-LONG
MM171	WOOD MOLD STORAGE BLOCK-SHORT
MM172	STYROFOAM MOLD STORAGE TRAY SHORT
MM173	STYROFOAM MOLD STORAGE TRAY LONG
MM180	MOLD SHIMS (RCBS ONLY)
MM190	CONVERT SAECO MOLDS
MM196	CONVERT BALLISTICAST MOLD FOR MAGMA M...
MM200	CONVERT LYMAN MOLDS
MM210	CONVERT RCBS MOLD
MM800	CONVERT MAGMA MOLDS FOR HANDLES
MM810	MAGMA MOLD FOR HANDLES
MM815	MAGMA MOLD WITH RCBS HANDLES
MM835	MODIFIED RCBS HANDLES
MMRB	ROUND BALL MAGMA MOLD