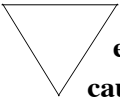


# Mag 20 Furnace Assembly, Operation and Parts

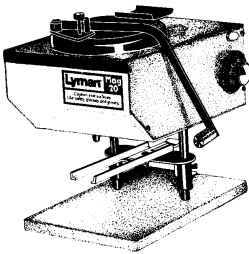


**WARNING:** Melting lead and casting lead objects will expose you and others in the area to lead, which is known to cause birth defects, other reproductive harm and cancer.

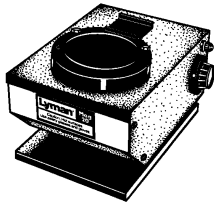
**REDUCING EXPOSURE:** Lead contamination in the air, in dust, and on your skin is invisible.

*Keep children and pregnant women away during use and until cleanup is complete.*

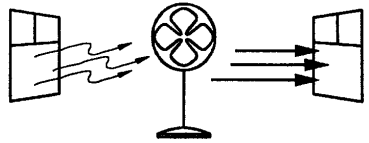
*Risk can be reduced — but not eliminated — with strong ventilation; washing hands immediately after use of these products before eating or smoking; and careful cleaning of surfaces and floors with disposable wipes, after lead dust has had a chance to settle. Use a lead specific cleaner with EDTA, or a high-phosphate detergent (like most detergents sold for electric dishwashers) and bag used wipes for disposal.*



Mag 20 Furnace



Mag Dipper Furnace



Use Strong Ventilation

## Assembly

The main body of your furnace is fully assembled and factory-tested. To facilitate packaging, the valve rod and operating lever have not been factory-installed and you must do so, prior to using the furnace as follows: Attach the operating lever spring to the operating lever. Slide the valve rod on the operating lever as shown in **Figure 19**. Next, place the valve rod and operating lever, into position as shown in **Figure 20**. Fasten the operating lever using the furnished 5/8" 6/32" screw. Insert the lever adjusting screw and hex locknut as shown. Your furnace is now ready for use.

## Handling Lead

Lead, a substance known to cause birth defects, reproductive harm and other severe physical injury, must be handled with extreme care. Handle lead bullets or lead shot only in a well ventilated area and ALWAYS wash hands after handling lead and before eating. Discharging firearms in poorly ventilated areas, cleaning firearms, or handling ammunition, also may result in exposure to lead. Have adequate ventilation at all times.

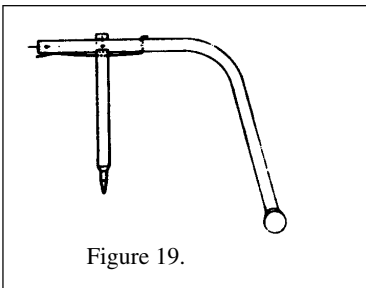


Figure 19.

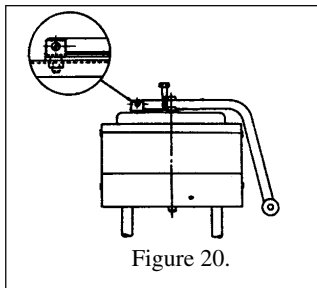


Figure 20.

## ***Mag 20 (continued)***

### **Safety Precautions:**

- 1) No casting should be done without basic safety garb. This would include long pants and long sleeves, sturdy gloves, eye protection and closed top shoes.*
- 2) Keep all flammable items away from casting area. Do not operate unit on flammable materials such as paper, wood or carpeting.*
- 3) Casting should be done in a well ventilated area. Avoid breathing fumes and dust from furnace.*
- 4) Never allow moisture near molten lead. When moisture is introduced to molten lead, a terrific steam explosion occurs and molten metal is sprayed not only over the immediate area but also over the bullet caster. This moisture could be introduced by a wet ladle or dipper.*
- 5) Keep children away from casting and reloading areas.*
- 6) Never pick up unit when heated.*
- 7. Do not continue to cast if distracted.*
- 8. Do not smoke or eat while handling lead.*
- 9. Do not run dry without lead. (Except initial warm-up period.)*
- 10) Keep plug dry.*
- 11) Wash hands after handling lead.*
- 12) Use caution when adding bullet metal to furnace or pot containing molten metal to avoid splashing.*

### **Operating your Furnace**

Be certain that the thermostat control knob is turned fully counterclockwise to the stop. This means your furnace is “off”. Next, plug in the electrical cord to an appropriate wall socket and, once your pot is loaded with up to 20 lbs. of cold bullet metal, you are ready to apply heat and begin casting.

Note: Before using your new furnace for the first time, we suggest you turn it on, empty, for 10 or 15 minutes in a well ventilated area (better yet, outdoors) to burn off preservatives. The unit usually smokes a bit at first which can be a problem inside your house.

The temperature of your furnace is controlled by a positive action thermostat that senses the lead alloy temperature of the furnace. The thermostat will cycle power to the furnace to maintain the desired casting temperature. This furnace is equipped with a pilot light located adjacent to the thermostat control knob. When this pilot light comes on, it means the furnace is heating the bullet metal. When the light goes off, the furnace is not heating the bullet metal as it has reached the set temperature.

When you have determined the casting temperature best for you, mark the control dial plate for future reference. The Lyman casting thermometer is particularly useful here.

### **Melting Cold Bullet Metal**

After loading the furnace pot with up to 20 pounds of bullet metal, turn the thermostat control knob to the desired temperature setting. The thermostat will deliver maximum power to the heating coil until the pot contents reach the designated temperature - usually about 15 minutes.

At that time, the heating system will begin cycling as the thermostat maintains a consistent temperature. The blinking pilot light tells you the furnace is cycling at the dialed temperature level.

The numbers on the thermostat control knob are for reference only and do not relate to the temperature of the bullet metal. You will need to experiment with different thermostat settings in order to find the temperature that works best with your bullet metal and mould combination. If you have a casting thermometer, 700 degrees F is a good starting point. Once you find your best temperature, mark the dial so you can return to it in subsequent casting sessions.

## ***Mag 20 (continued)***

When replenishing a near-empty pot, there is no need to adjust the control knob since the furnace automatically increases its heating efforts until the designated pot temperature is reached. The blinking pilot light indicates the furnace is at temperature.

The bottom pour spout valve system of the furnace has been designed to provide efficient trouble-free casting. Valve leakage is usually caused by dirt and grit, suspended in the molten metal, jamming the valve partially open.

Opening that valve to “full open” will usually clear such debris. When this does not work, drain the furnace and allow it to cool. Then dismount and clean the shutoff rod valve and internal bottom pour spout drain.

If the drain channel is seriously clogged, heat the furnace to the melting temperature. Hold an unbent paperclip with pliers and feed the wire up through the drain channel to dislodge any obstruction. Be careful to wear heat resistant leather gloves when performing the above procedure.

### **How to Use the Warming Shelf**

The warming shelf is located on the rear rim of the inner pot and allows you to pre-heat your mould blocks while the furnace is bringing your bullet metal up to casting temperature.

Single and double cavity moulds are best stood on end with the handles straight up. Four cavity blocks are best positioned horizontally on the warming shelf.

Use of the warming shelf and the foregoing placement techniques will greatly reduce the block warmup time to produce a good bullet - and keep the handles cool, too.

### **The Thermostat**

Your new Lyman electric furnace provides a full range of temperature adjustments. The thermostat employed is one of the finest available and allows you to control the melt temperature to within 20 degrees repeatability.

In time, your original thermostat and/or heating coil will age to the point where it needs replacement. In the interest of safety, replacement thermostats and heating coils must be installed in our factory. A minimum charge (plus shipping) is made for this service. Remove all bullet metal before shipping your furnace to the factory for service.

### **Preserving your Furnace's Heating System**

To realize the longest possible life from your furnace, follow these precautions:

1. Disconnect your furnace when it is not in use.
2. Do not operate your furnace above rated voltage (115 Volts, AC or 240 Volts, AC).
3. For maximum life, run the furnace at the lowest temperature that provides satisfactory casting. Establish appropriate temperatures by trial for each type of bullet metal. Normally a 650°-720° F temperature range proves adequate for most bullet casting.

### **Lyman Mould Guide - Alignment and Use**

The proven and popular Lyman Mould Guide is an assembled part of your new electric furnace. Please read the following for details on how to adjust the mould guide for optimum performance for your application.

Place your bullet mould in the track of the mould guide and raise the entire mould guide assembly until

## Mag 20 (continued)

there is about 1/4" between the pouring spout of the furnace and the top of the mould block. Tighten the elevation adjustment screws against the support posts so the mould guide will remain in this position.

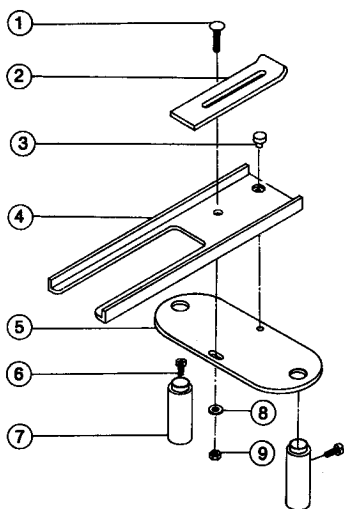
To align the sprue hole in the mould with the pouring spout on the furnace, you must loosen the carriage bolt in the adjustable mould guide slide. Loosening this bolt will allow the adjustable slide to be moved backward and forward. This also allows the horizontal alignment of the track. On multiple cavity moulds, align the sprue hole closest to the operator. When the sprue hole is aligned, slide the adjustable slide tight against the front of the mould block and tighten the carriage bolt.

When using the mould guide with a multiple cavity mould, the mould is set into the track and slid forward until it touches the adjustable slide.

Then, the cavity closest to the operator is filled with molten bullet metal first. Remaining cavities require visual alignment and are filled (each in order) as the mould is slowly drawn toward the operator. When all cavities are full, allow the mould to rest on the track for several seconds until the sprue solidifies.

If an ingot mould is to be used with the furnace while the mould guide is in place, set the ingot mould (length-wise) either on top of (it may be necessary to remove the mould stop), or beneath the track and fill the cavity closest to the operator first. Remaining cavities are filled by slowly drawing the ingot mould toward the operator. Pliers should be used to handle the ingot mould and care taken to avoid accidental spilling of hot bullet metal.

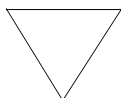
Note: Be a safe bullet caster. Wear protective glasses, gloves, long-sleeve shirt, long pants and closed top shoes when casting. Do not allow moisture, in any form whatever above or near your furnace filled with molten lead. When moisture is introduced to molten bullet metal, a terrific steam explosion occurs and molten metal is sprayed not only over the immediate area but also over the bullet caster.



### Mould Guide Parts List

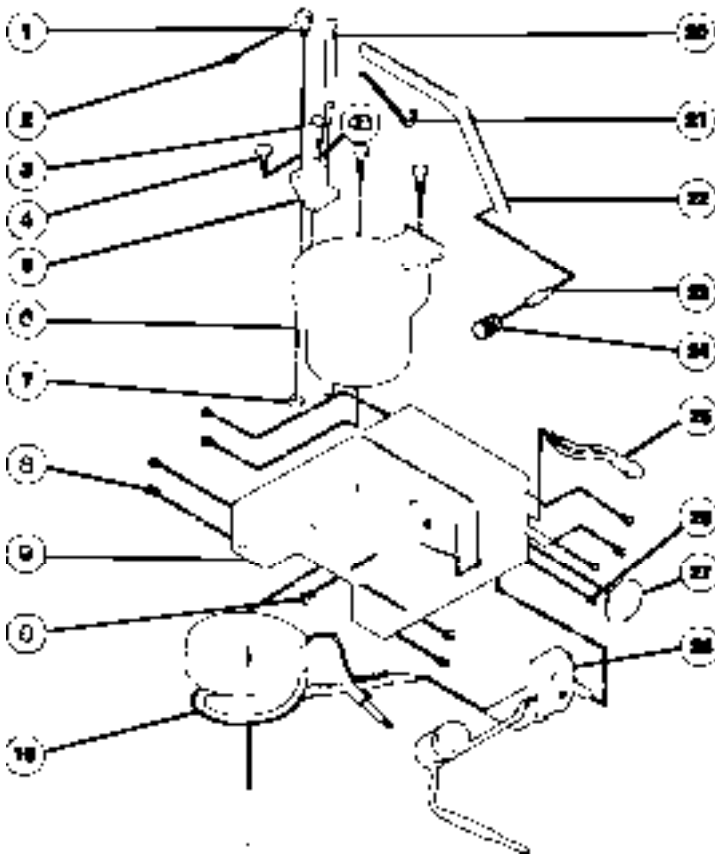
| Key | Part Description                  | Part #  |
|-----|-----------------------------------|---------|
| 1   | Carriage Bolt                     | 2990503 |
| 2   | Adjusting Slide                   | 2990502 |
| 3   | Rivet*                            | 2990724 |
| 4   | Channel*                          | 2800095 |
| 5   | Base Plate*                       | 2990515 |
| 6   | Elevation Adjustment<br>Screw (2) | 2999048 |
| 7   | Post Support* (2)                 | 2990696 |
| 8   | Washer                            | 03236R  |
| 9   | Plated Hex Nut                    | 2990075 |
| 10  | Complete Mould Guide<br>Assembly  | 2837515 |

\*Not Available Separately



**WARNING! See Safety  
Instructions Page 57**

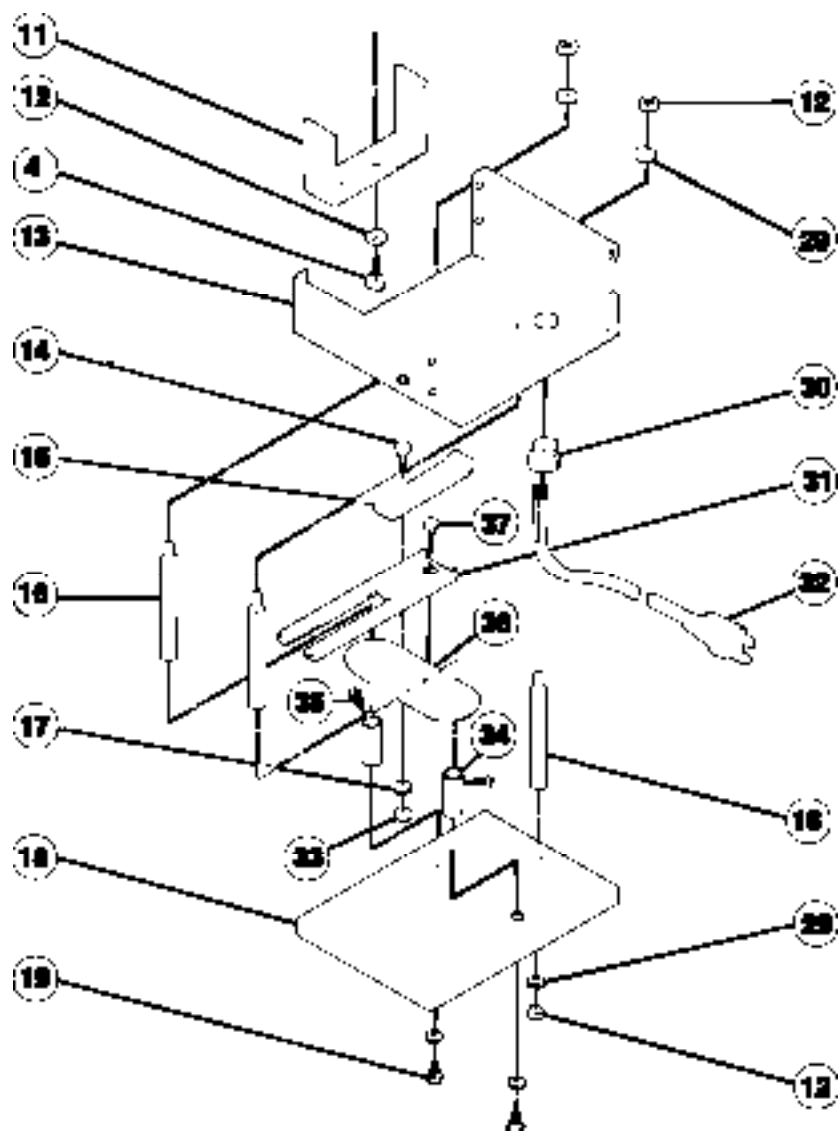
## MAG 20 (upper)



*See Page 63 for parts Description*

**Visit our complete Lyman website at  
[www.lymanproducts.com](http://www.lymanproducts.com)**

## MAG 20 (lower)



Visit our complete Lyman website at  
[www.lymanproducts.com](http://www.lymanproducts.com)

## MAG 20 PARTS LIST

|    |                               |         |
|----|-------------------------------|---------|
| 1  | Lever Stud*                   | 2999081 |
| 2  | Rd. Hd. Screw #6-32 x 5/8**   | 2800029 |
| 3  | Limit Screw**                 | 2999092 |
| 4  | Hex Bolt ¼-20 x 1" (4)*       | 2800079 |
| 5  | Valve Guide Plate*            | 2999080 |
| 6  | Inner Pot*                    | 2800074 |
| 7  | ¼-20 Hex Nut*                 | 8094080 |
| 8  | Self Tapping Screw (8)*       | 2800080 |
| 9  | Upper Body*                   | 2800081 |
| 10 | Heating Element 110V*         | 2800073 |
| 11 | Probe Retainer*               | 2800084 |
| 12 | Hex Nut 10-24 (6)*            | 03324R  |
| 13 | Lower Body*                   | 2800086 |
| 14 | Carriage Bolt**               | 2990503 |
| 15 | Adjusting Slide**             | 2990502 |
| 16 | Lower Post (3)*               | 2800004 |
| 17 | Washer**                      | 03236R  |
| 18 | Base*                         | 2800087 |
| 19 | Hex Bolt ¼-20 x ½" (3)*       | 2800088 |
| 20 | Shut Off Rod**                | 2999085 |
| 21 | Lever Spring****              | 2999087 |
| 22 | Lever****                     | 2999086 |
| 23 | Knob Stud****                 | 7994420 |
| 24 | Lever Knob****                | 7994419 |
| 25 | Indicator Light*              | 2800072 |
| 26 | Pan Head Screw #6-32 x ¼**    | 2800089 |
| 27 | Thermostat Knob**             | 2800077 |
| 28 | Thermostat 110V*              | 2800071 |
| 29 | Washer (5)*                   | 2800091 |
| 30 | Strain Relief Bushing*        | 2800094 |
| 31 | Channel***                    | 2800095 |
| 32 | Electric Cord 110V*           | 2800070 |
| 33 | Hex Nut #10-24                | 2990075 |
| 34 | Post Support (2)***           | 2990696 |
| 35 | Elevation Adjustment Screw*** | 2999048 |
| 36 | Base Plate***                 | 2990515 |
| 37 | Rivet***                      | 2990724 |
| 38 | Insulation*                   | 2800078 |
| 39 | Hex Nut                       | 2800043 |

\*Factory Serviced Part Only

\*\*Part Supplied for Customer Service

\*\*\*Available as an inseparable sub-assembly 2837515

\*\*\*\*Available as an inseparable sub-assembly 2999093