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**S640 RM220**

**ROTARY MACHINE  
WITH 6 ROLLS**

**ASSEMBLY & OPERATING  
INSTRUCTIONS**

**JULY 2000**

5640

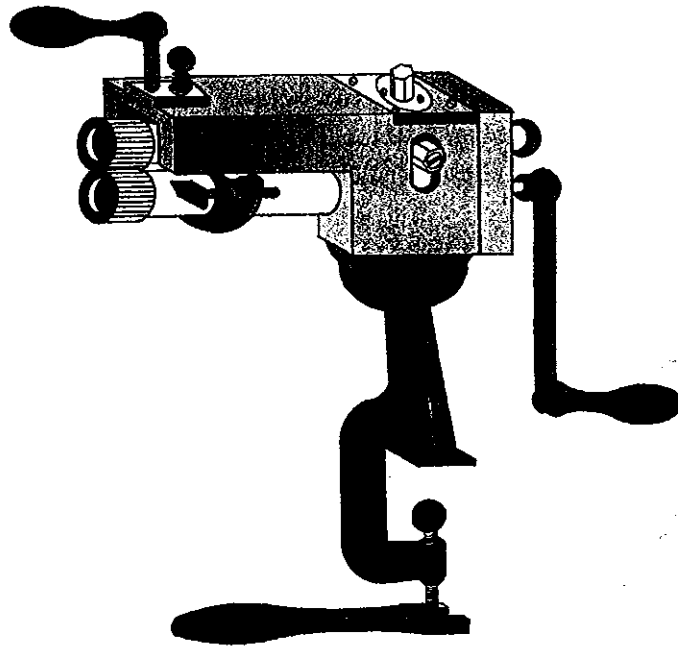
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# Rotary Machine with 6 Rolls

**Model RM220**

## Assembly & Operating Instructions



## **SPECIFICATIONS MODEL RM220 ROTARY MACHINE**

|                       |                                  |
|-----------------------|----------------------------------|
| Operation:            | Hand Powered                     |
| Sheet Metal Capacity: | 22 Gauge                         |
| Construction:         | Cast Iron and Machined Steel     |
| Throat Depth:         | 6-1/2"                           |
| Shaft Diameter:       | 0.784" OD                        |
| Overall Dimensions:   | 20-1/4" H x 19-3/4" L x 4-1/4" W |
| Net Weight:           | 47 Lbs.                          |

### **INCLUDED ACCESSORIES**

Turning Die Set A .118"  
Turning Die Set B .157"  
Burring Die Set .236"  
Wiring Die Set  
Crimping Die Set .236"  
Ogee Bead Die Set  
Spanner Wrench

### **FEATURES OF THIS TOOL**

1. Strong cast-iron and machined steel construction.
2. 6 die sets included to form the most-needed shapes.
3. Quick clamp mounting and swivel head for convenient use on any workbench.
4. Easy and reliable hand operation, does not require routing of power cords.
5. Multiple micro adjustments for accurate rolling precision.

### **SAVE THIS MANUAL**

You will need this manual for the safety warnings and cautions, assembly instructions, operating procedures, maintenance procedures, trouble shooting, parts list, and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep both this manual and your invoice in a safe, dry place for future reference.

### **NOTICE**

**The Warnings, Cautions, and Instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.**

## **SAFETY WARNING & CAUTIONS**

*WARNING: When using shop equipment, basic safety precautions should always be followed to reduce the risk of personal injury and hazards.*

### **READ ALL INSTRUCTIONS BEFORE USING THIS TOOL!**

1. **KEEP WORK AREA CLEAN.** Cluttered areas invite injuries.
2. **OBSERVE WORK AREA CONDITIONS.** Do not use tools in damp, wet, or poorly lit locations. Don't expose to rain. Keep work area well lit. Do not use electrically powered equipment in the presence of flammable gases or liquids.
3. **KEEP CHILDREN AWAY.** Children must never be allowed in the work area. Do not let them handle machines, tools, or equipment.
4. **STORE IDLE EQUIPMENT.** When not in use, tools must be locked up in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
5. **DO NOT FORCE THE TOOL.** It will do the job better and more safely at the rate for which it was intended. Do not use inappropriate attachments in an attempt to exceed the tool's capacities.
6. **USE THE RIGHT TOOL FOR THE JOB.** Do not use a tool for a purpose for which it was not intended.
7. **DRESS PROPERLY** Do not wear loose clothing or jewelry, as they can be caught in moving parts. Non-skid footwear is recommended. Wear restrictive hair covering to contain long hair. Always wear appropriate work clothing.
8. **USE EYE, EAR AND BREATHING PROTECTION.** Always wear ANSI approved impact safety goggles if you are producing metal filings or wood chips. Wear an ANSI approved dust mask or respirator when working around metal, wood, and chemical dusts and mists. Use ANSI approved ear protection when working in a loud or noisy environment.
9. **DO NOT OVERREACH.** Keep proper footing and balance at all times. Do not reach over or across running machines.
10. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect power cord periodically and, if damaged, have it repaired by an authorized technician. Control handle and power switch must be kept clean, dry, and free from oil and grease at all times.

11. **STAY ALERT.** Watch what you are doing. Do not operate any machinery when you are tired.
12. **DO NOT OPERATE MACHINERY WHILE UNDER THE INFLUENCE OF ALCOHOL, DRUGS, OR PRESCRIPTION MEDICINES.**
13. **CHECK FOR DAMAGED PARTS.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts, any broken parts or mounting fixtures, and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not turn on and off properly.
14. **REPLACEMENT PARTS AND ACCESSORIES.** When servicing, use only identical replacement parts, available from Harbor Freight Tools. Use of any other parts will void the warranty.

### **SPECIAL WARNINGS WHEN USING THIS ROTARY MACHINE**

*Using this Tool may create special hazards.  
Take particular care to safeguard yourself and those around you.*

**Do not exceed the material thickness limitation.** *You can form material up to 22 gauge with this machine.* Attempting to form thicker material may cause damage to the machine and potential personal injury.

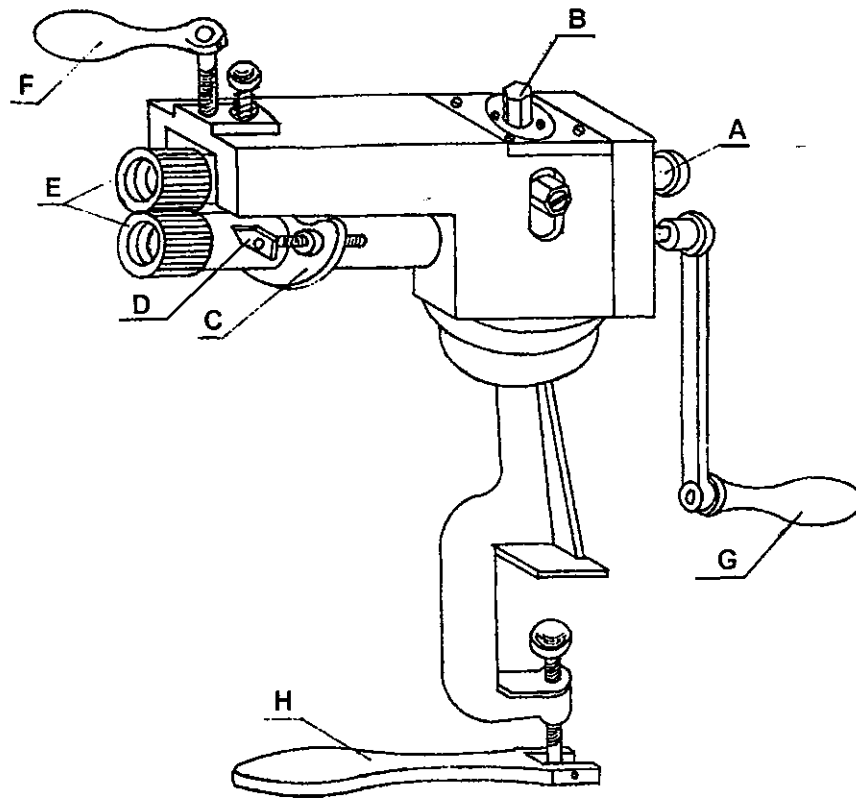
**Crushing and Marring.** *Overtightening or using mismatched or dirty roller dies can cause damage to your workpiece.* Before forming any material in this machine, assure that the roller dies are matched and in good condition. Take care when adjusting Die Control Handle (F) to assure that the pressure applied is appropriate to the thickness and hardness of the material being rolled.

**Guiding and Supporting Material.** *Materials must be supported while forming, and must be guided straight through the roller machine.* You may need an assistant to guide or support material while being processed. You may also wish to use support stands, which are available from Harbor Freight Tools.

**Long Hair, Clothing, Jewelry, or fingers can easily be caught in this roller.** Take caution not to allow any stray materials to be caught in this tool.

|                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b><i>NOTICE: No list of warnings can be all inclusive. The operator must supply common sense, and operate this tool in a safe manner.</i></b></p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|

## OPERATION



### ROTARY MACHINE CONTROLS

|    |                         |    |                    |
|----|-------------------------|----|--------------------|
| A. | Upper Die Alignment Nut | E. | Rollers            |
| B. | Adjusting Nut           | F. | Die Control Handle |
| C. | Width Stop Plate        | G. | Crank Handle       |
| D. | Stop Gauges             | H. | Tighten Handle     |

### FUNCTIONS OF EACH CONTROL

- A. Aligns upper and lower dies.
- B. Adjusts horizontal alignment of upper roller with the lower (main) roller.
- C. Limits insertion of work material into roller machine.
- D. Adjusts depth adjustment of roller dies to edge of material.
- E. Roller dies control the shape impressed on the material.
- F. Depresses upper rollers and adjusts depth of impression made by upper die.
- G. Handle activates the roller dies and feeds material through the machine.
- H. Clamp handle tightens the roller machine to the bench top.

## ASSEMBLY AND OPERATION

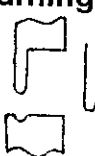
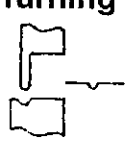
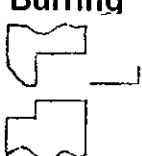
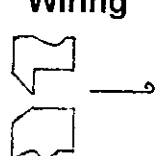
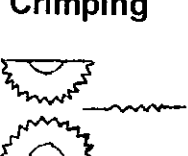
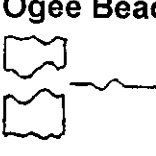
*Refer to Parts Diagram page 8 for Numbered parts, and General Diagram page 5 for lettered parts.*

### **Basic Assembly and Installation**

1. **Attach Roller Machine Base to Bench.** Attach the Base (#38) to your workbench, using the Tighten Handle (H) to tighten it to the workbench.
2. **Attach the Head Assembly to the Base.** Insert the round attachment portion of the Head Assembly into the socket at the top of the base. Tighten Lock Screw (#34) enough to hold the Head Assembly in place. If you want to prevent the Head Assembly from rotation, tighten this bolt securely.
3. **Install and Adjust Handle.** Place Crank (#33) onto end of Driving Shaft (#22) and tighten in place using Lock Screw (#34).

### **Select and Install Roller Dies**

1. **Select the dies required to produce the desired shape.** Dies are used in pairs to produce the desired shape. Select your dies, using the following chart.

| Turning A                                                                         | Turning B                                                                         | Burring                                                                           | Wiring                                                                            | Crimping                                                                           | Ogee Bead                                                                           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
| P/N: 11, 11a                                                                      | 11b, 11c                                                                          | 11d, 11e                                                                          | 11f, 11g                                                                          | 11h, 11i                                                                           | 11j, 11k                                                                            |

2. **Install the Dies.** Use the enclosed Spanner Wrench to remove the Retaining Nuts (#17 and 24) from the Driven Shaft (#2) and Driving Shaft (#22). Slide the desired Dies (#16) onto the shafts and secure in place with the Retaining Nuts.

### **Adjust for the Workpiece at Hand.**

1. **Adjust the Roller Dies.** Raise the Upper Shaft using the Die Control Handle (F). Insert a sample of the work material to set the correct thickness. Tighten the Upper Shaft using the Die Control Handle. Then turn the Upper Die Alignment Nut (A) to align the Upper and Lower Dies. Then adjust the Adjusting Nut (B) to make the Roller Dies parallel.
2. **Align work material edge guides.** Using the Adjusting Nuts (#20) adjust the Stop Gauges (D) to control the depth which the work material will pass under the Roller Dies.
3. **Adjust roller depth.** Using the Roller Die Control Handle (F) adjust the depth of the shape to be formed on the work material.
4. **Test roll.** Using a piece of scrap material, test the roller machine to assure that the final shape produced is within tolerance of the desired shape. Make final adjustments.
5. **Complete work.** Feed the work material into the Roller Machine from one side, and by turning the crank, roll the material through the machine. You may wish to have an assistant help guide the material through while it is being rolled.

*Note: You may wish to use roller supports to hold the workpiece as it is being fed through the roller machine. These are available from Harbor Freight Tools.*

## MAINTENANCE

1. Store in a dry place when not in use.
2. Keep Machined parts coated with a light grease to prevent rust.
3. Occasionally oil all moving parts, including the oil port(s) on sides of machine body.

## MODEL RM220 ROTARY MACHINE PARTS LIST

| P/N | Description                   | Quantity | P/N | Description      | Quantity |
|-----|-------------------------------|----------|-----|------------------|----------|
| 1   | Body                          | 1        | 21  | Round Cover      | 1        |
| 2   | Cover                         | 1        | 22  | Adjusting Screw  | 1        |
| 3   | Die Center Control            | 1        | 23  | Screw            | 4        |
| 4   | Gear                          | 2        | 24  | Spring           | 1        |
| 5   | Sleeve                        | 1        | 25  | Retaining Bolt   | 1        |
| 6   | Spring                        | 1        | 26  | Pin              | 1        |
| 7   | Collar                        | 1        | 27  | Adjusting Handle | 1        |
| 8   | Driven Shaft                  | 1        | 28  | Lock Bolt        | 1        |
| 9   | Adjusting Block               | 1        | 29  | Hex-head Nut     | 2        |
| 10  | Retaining Collar              | 4        | 30  | Shaft Sleeve     | 1        |
| 11  | Roll Die Turning A Upper .11" | 1        | 31  | Plate Width Stop | 1        |
| 11a | Roll Die Turning B Lower .11" | 1        | 32  | Stop Gauge       | 2        |
| 11b | Roll Die Turning B Upper .15" | 1        | 33  | Adjusting Nuts   | 4        |
| 11c | Roll Die Turning B Lower .15" | 1        | 34  | Driving Shaft    | 1        |
| 11d | Roll Die Burring Upper .236"  | 1        | 35  | Pin              | 1        |
| 11e | Roll Die Burring Lower .236"  | 1        | 36  | Screw            | 3        |
| 11f | Roll Die Wiring Upper         | 1        | 37  | Oil Cup          | 2        |
| 11g | Roll Die Wiring Lower         | 1        | 38  | Key              | 2        |
| 11h | Roll Die Crimping Upper .23"  | 1        | 39  | Base             | 1        |
| 11i | Roll Die Crimping Lower .23"  | 1        | 40  | Lock Bolt        | 1        |
| 11j | Roll Die Ogee Bead Upper      | 1        | 41  | Clip Bolt        | 1        |
| 11k | Roll Die Ogee Bead Lower      | 1        | 42  | Clip Handle      | 1        |
| 12  | Retaining Nut                 | 2        | 43  | Pin              | 1        |
| 13  | Key                           | 1        | 44  | Clip Head        | 1        |
| 14  | Pin                           | 1        | 45  | Split Pin        | 1        |
| 15  | Lock Nut                      | 2        | 46  | Crank            | 1        |
| 16  | Steel Ball                    | 2        | 47  | Lock Screw       | 1        |
| 17  | Set Screw                     | 2        | 48  | Lock Nut         | 1        |
| 18  | Lock Screw                    | 1        | 49  | Handle           | 1        |
| 19  | Supporting Block              | 1        | 50  | Screw            | 1        |
| 20  | Covering Plate                | 1        | 51  | Adjusting Handle | 1        |

**Body**

PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY: NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT: IN FACT THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.



# **MODEL RM220 ROTARY MACHINE**

