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Harrison M500

Harrison M500 Metal Lathe Instruction Manual

Operation, Maintenance, Parts, and Wiring Guide for the Harrison M500 530mm (21") Metal Lathe

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1. INTRODUCTION

This manual provides comprehensive instructions for the safe and efficient operation, maintenance, and parts identification of the Harrison M500 Metal Lathe. It is intended for operators, maintenance personnel, and anyone involved with the setup and care of this machine. Adherence to the guidelines presented herein will ensure optimal performance and longevity of your lathe.

The Harrison M500 is a robust 530mm (21") swing center lathe designed for precision metalworking tasks. This reproduction manual, originally 90 pages, covers specifications, installation, lubrication, adjustments, operating procedures, electrical diagrams, and exploded view parts diagrams.



Harrison M500

530mm – 21in swing centre lathe

machine manual

1373

Figure 1.1: Cover of the Harrison M500 Metal Lathe Instruction Manual. This image displays the front cover of the manual, featuring the Harrison logo and the model designation "Harrison M500 530mm - 21in swing centre lathe machine manual".

2. SAFETY INFORMATION

Operating any machinery, especially a metal lathe, requires strict adherence to safety protocols to prevent injury and damage. Always read and understand all safety warnings and instructions before operating the Harrison M500 lathe.

- **Personal Protective Equipment (PPE):** Always wear safety glasses or a face shield. Avoid loose clothing, jewelry, and long hair that could get caught in moving parts.
- **Work Area:** Keep the work area clean, well-lit, and free from obstructions. Ensure adequate ventilation.
- **Machine Inspection:** Before each use, inspect the lathe for any damage, loose parts, or malfunctions. Do not operate a damaged machine.
- **Workpiece Securement:** Ensure the workpiece is securely clamped in the chuck or collet. Improperly secured workpieces can become dangerous projectiles.
- **Tooling:** Use sharp, correctly ground tools. Ensure tools are properly installed and tightened in the tool post.
- **Emergency Stop:** Familiarize yourself with the location and operation of the emergency stop button.
- **Electrical Safety:** Ensure the machine is properly grounded. Do not operate with wet hands or in damp conditions.
- **Never Leave Unattended:** Do not leave the lathe running unattended.

3. SPECIFICATIONS

The Harrison M500 is a precision metal lathe with the following general specifications:

| Feature | Detail |
|--------------------|----------------------------|
| Model | Harrison M500 |
| Swing Over Bed | 530mm (21 inches) |
| Manual Pages | 90 pages (original manual) |
| Language | English |
| Publisher (Manual) | Ozark Tool Manuals & Books |

For detailed mechanical and electrical specifications, refer to the relevant sections within this manual.

4. INSTALLATION AND SETUP

Proper installation is critical for the stability, accuracy, and safe operation of the Harrison M500 lathe. Follow these guidelines carefully.

4.1 Foundation and Placement

The lathe must be installed on a solid, level foundation capable of supporting its weight and absorbing vibrations. Ensure sufficient space around the machine for safe operation and maintenance access.

4.2 Unpacking and Assembly

Carefully unpack all components. Refer to the general arrangement diagrams for proper assembly sequence. Ensure all protective coatings are removed before operation.

4.3 Leveling

Use a precision level to ensure the lathe bed is perfectly level both longitudinally and transversely. Adjust the leveling feet

as necessary to achieve optimal accuracy.

4.4 Electrical Connection

Connect the lathe to a suitable power supply according to local electrical codes and the machine's specifications. Ensure proper grounding. Consult the electrical wiring diagrams in Section 8 for detailed connection information.

5. OPERATION

This section details the procedures for operating the Harrison M500 lathe, including basic controls, workpiece setup, and common machining operations.

5.1 Controls Overview

Familiarize yourself with the location and function of all controls, including the main power switch, spindle speed selector, feed engagement levers, and emergency stop button.

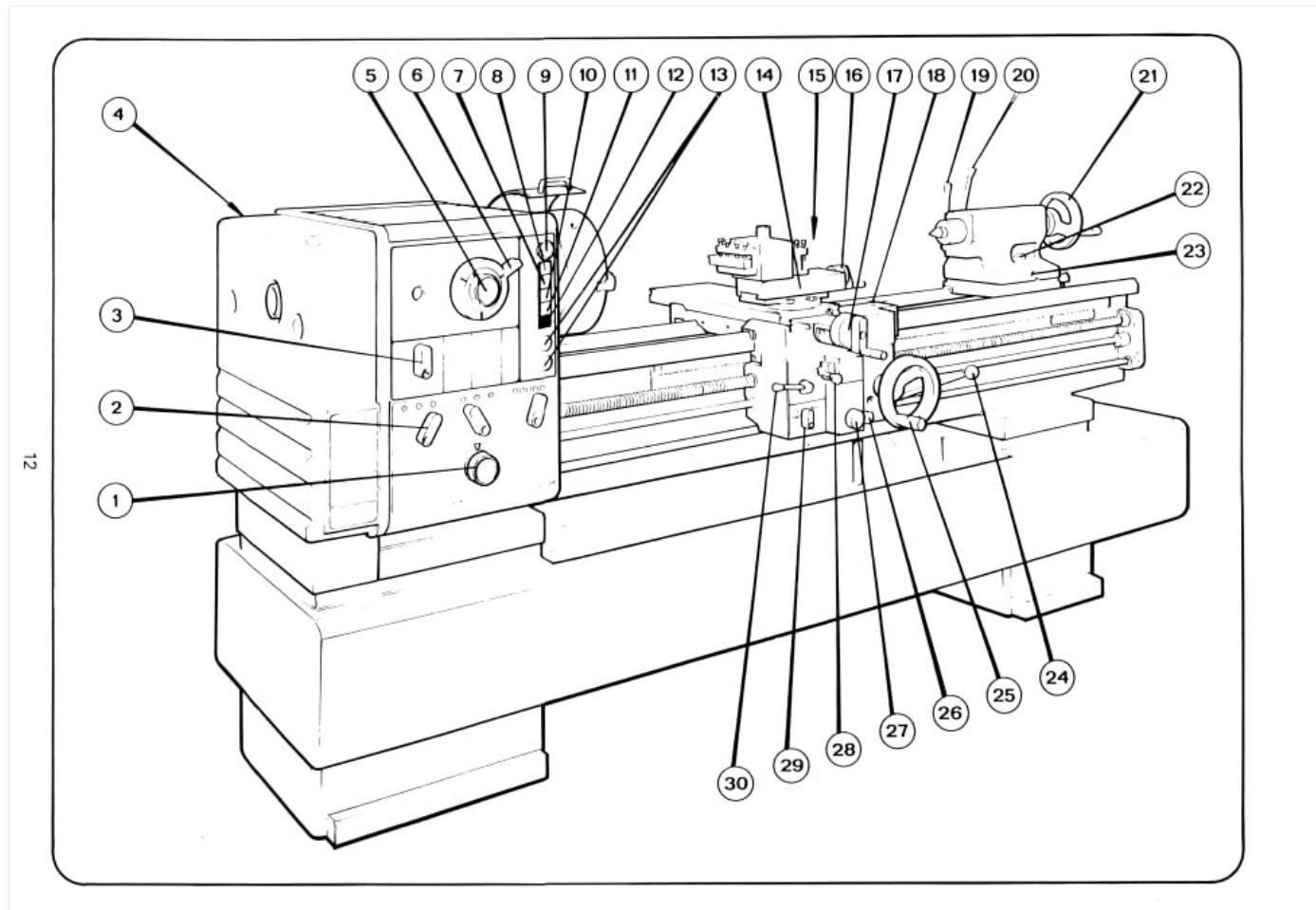


Figure 5.1: General arrangement diagram of the Harrison M500 Metal Lathe. This illustration provides an overview of the lathe's main components, with various parts numbered for identification, aiding in understanding control locations and machine structure.

5.2 Workpiece Setup

1. Select the appropriate chuck or collet for the workpiece.
2. Clean the chuck jaws and workpiece mounting surfaces.
3. Securely clamp the workpiece, ensuring it runs true. Use a dial indicator for precision alignment.
4. Ensure sufficient clearance for tooling and carriage movement.

5.3 Spindle Speed Selection

Choose the correct spindle speed based on the material, tool type, and desired cutting operation. Refer to the machine's

speed chart, typically located on the headstock.

5.4 Feed and Thread Cutting

Engage the appropriate feed levers for longitudinal or cross-feed operations. For thread cutting, consult the thread cutting chart and follow the specific procedures for gear selection and lead screw engagement.

6. MAINTENANCE

Regular maintenance is essential for the longevity, accuracy, and safe operation of your Harrison M500 lathe. Perform routine checks and lubrication as described below.

6.1 Lubrication

Proper lubrication prevents wear and ensures smooth operation. Refer to the lubrication diagram (if available in the original manual) for specific lubrication points and recommended lubricants. Generally, lubricate:

- Headstock gears and bearings
- Carriage and cross-slide ways
- Lead screw and feed rod
- Tailstock quill and screw
- Gearbox components

6.2 Cleaning

Keep the lathe clean from chips, swarf, and coolant residue. Clean the bedways, cross-slide, and other exposed surfaces regularly to prevent corrosion and maintain accuracy.

6.3 Adjustments

Periodically check and adjust components such as gibbs, belts, and clutches to maintain optimal performance and eliminate backlash. Refer to the original manual for detailed adjustment procedures.

7. PARTS SECTION

This section provides information for identifying and ordering replacement parts for your Harrison M500 lathe. It includes exploded view diagrams and parts lists.

7.1 Parts Identification

Refer to the exploded view diagrams to identify specific components. Each part is typically numbered or labeled for easy reference.

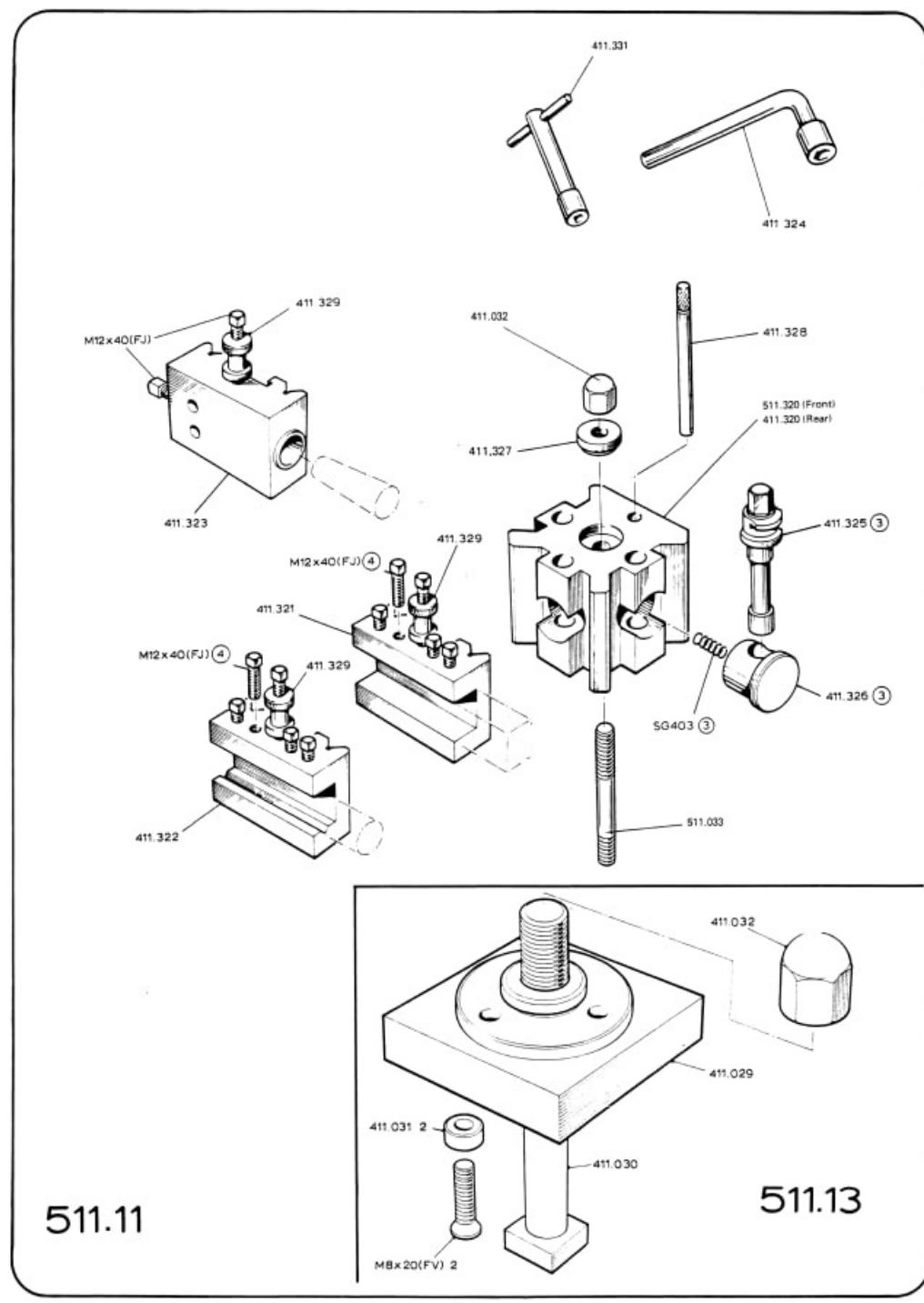


Figure 7.1: Exploded view diagram of Harrison M500 lathe tool post and accessories. This detailed illustration shows various components of the tool post assembly and related accessories, each with a corresponding part number for identification and ordering.

7.2 Parts Ordering Procedure

When ordering parts, always provide the machine model (Harrison M500), the part number, and a clear description of the part. Contact the original manufacturer or an authorized parts supplier for genuine replacement parts.

8. ELECTRICAL WIRING DIAGRAMS

This section contains electrical wiring diagrams for the Harrison M500 lathe. These diagrams are crucial for troubleshooting electrical issues, performing maintenance, and ensuring correct electrical connections. Only qualified electricians or technicians should perform electrical work on the machine.

(Specific wiring diagrams would be included here in the original manual. For safety and accuracy, always refer to the

(complete original documentation.)

9. TROUBLESHOOTING

This section provides guidance for identifying and resolving common issues that may arise during the operation of your Harrison M500 lathe. For complex problems, consult a qualified technician.

| Problem | Possible Cause | Solution |
|----------------------|--|---|
| Lathe does not start | No power supply, emergency stop engaged, faulty switch | Check power connection, disengage emergency stop, inspect switches |
| Excessive vibration | Unbalanced workpiece, loose mounting, worn bearings | Balance workpiece, tighten mounting bolts, inspect and replace bearings |
| Poor surface finish | Dull tool, incorrect speed/feed, machine chatter | Sharpen/replace tool, adjust speed/feed, check machine rigidity |

10. WARRANTY AND SUPPORT

This document is a reproduction of an original instruction manual for the Harrison M500 Metal Lathe. As such, it does not include specific warranty information for the machine itself, which would have been provided by the original manufacturer at the time of purchase.

For technical support, genuine parts, or warranty inquiries regarding an existing Harrison M500 lathe, it is recommended to contact the original manufacturer or an authorized Harrison service center directly. Please refer to any documentation that came with your specific machine for contact details.

For inquiries regarding this reproduction manual, please contact the publisher, Ozark Tool Manuals & Books.