Optimum TA 125

Optimum Vertical Dividing Head TA 125 Instruction Manual

1. Introduction

The Optimum Vertical Dividing Head TA 125 is a precision accessory designed for accurate indexing and dividing operations on milling machines and other machine tools. This device enables the precise division of a workpiece into a specific number of equal parts, which is essential for tasks such as gear cutting, fluting, and polygon machining. This manual provides essential information for the safe and effective use of your dividing head.

2. Safety Instructions

Adhering to safety guidelines is crucial for preventing injury and damage to equipment. Always follow these instructions:

- Always wear appropriate personal protective equipment (PPE), including safety glasses, when operating machinery.
- Ensure the dividing head is securely mounted to the machine table before any operation.
- Never attempt to adjust, clean, or perform maintenance on the dividing head while the machine is running or powered on.
- Keep hands, loose clothing, and long hair clear of all moving parts during operation.
- Read and thoroughly understand the machine tool's operating manual before using the dividing head in conjunction with it.
- Ensure the workpiece is securely clamped and balanced to prevent unexpected movement.

3. Product Overview

The Optimum Vertical Dividing Head TA 125 consists of several key components designed for precise angular division.

Figure 1: The main unit of the Optimum Vertical Dividing Head TA 125, showing the angular scale, indexing mechanism, and spindle.

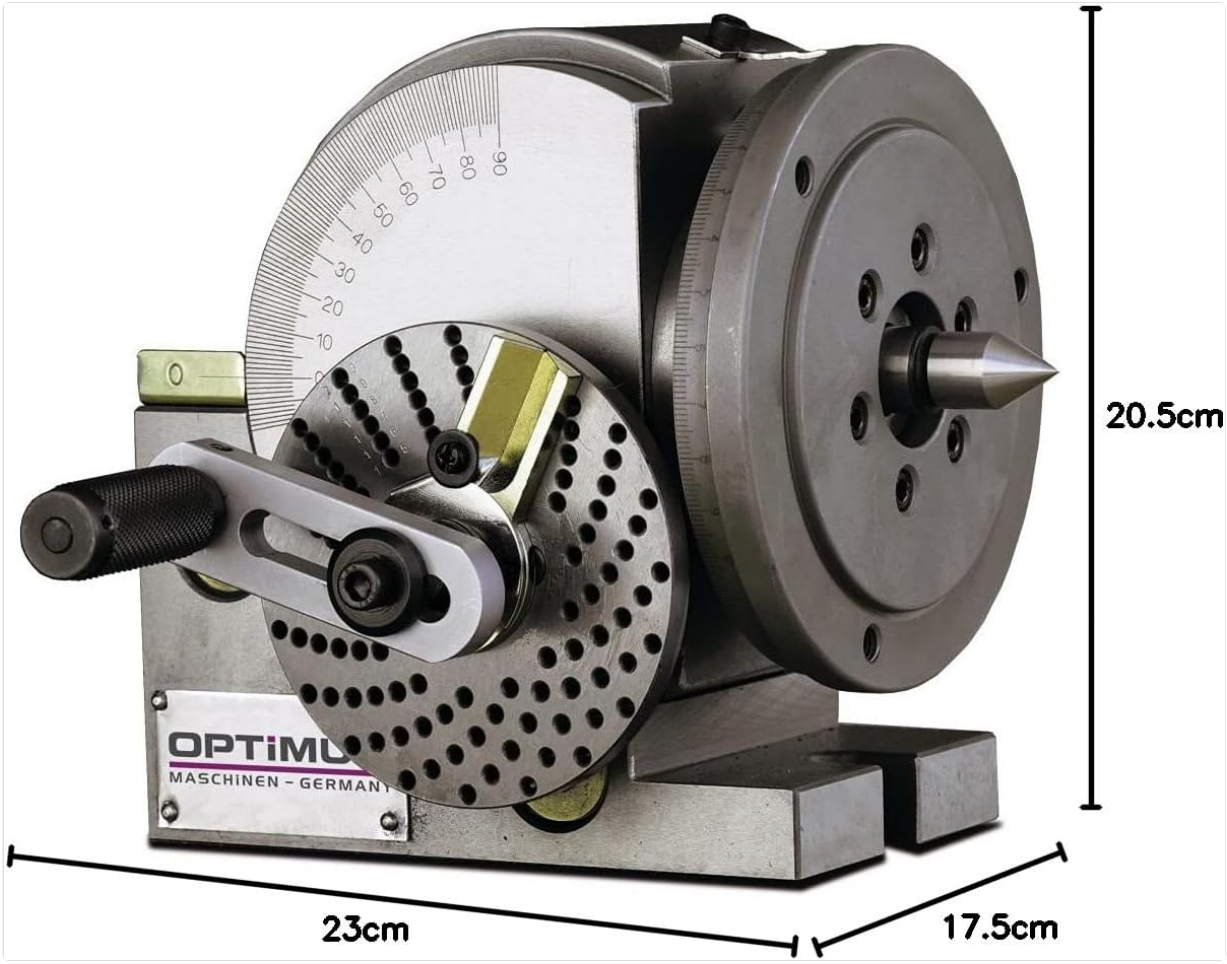

Figure 2: The Optimum Vertical Dividing Head TA 125 with indicated dimensions for length, width, and height.

Key Components:

- **Main Dividing Head Unit:** This is the core component, featuring a rotating spindle, an indexing mechanism with a crank handle, and an angular scale for precise positioning.
- **Dividing Plates:** Interchangeable plates with various hole patterns (circles) are used to achieve different division requirements.

Figure 3: Two dividing plates with multiple hole circles, used for precise indexing.

- **Tailstock:** (Optional, but often used with dividing heads) Provides additional support for longer workpieces, ensuring stability and accuracy during machining operations.

Figure 4: A tailstock unit, typically used to support the free end of a workpiece when mounted in the dividing head.

4. Setup

Proper setup is critical for accurate and safe operation.

1. **Mounting the Dividing Head:** Securely attach the dividing head to the machine table using appropriate T-nuts and bolts. Ensure it is aligned parallel to the machine's axis of travel. Verify that all mounting bolts are tightened to prevent movement during operation.
2. **Tailstock Installation (if required):** If using a tailstock for workpiece support, position it on the machine table. Align its center with the dividing head's spindle center. Adjust its height to match the dividing head's center height and secure it firmly.
3. **Workpiece Mounting:** Mount the workpiece securely in the chuck of the dividing head or between centers (if using a tailstock). Ensure the workpiece is concentric, firmly clamped, and properly supported to minimize vibration and deflection.
4. **Dividing Plate Selection:** Choose the appropriate dividing plate based on the desired number of divisions. The dividing plates have various hole circles to accommodate different indexing requirements.

5. Operating Instructions

Follow these steps for precise indexing operations:

1. **Determine Divisions:** Calculate the required number of turns of the crank handle and the specific hole circle on the dividing plate for the desired number of divisions. Consult a dividing head chart or

perform the necessary calculations (e.g., for simple indexing, turns = 40 / number of divisions).

2. **Set Indexing Pin:** Engage the indexing pin into the correct hole on the selected dividing plate. Ensure it is fully seated.
3. **Rotate Workpiece:** Turn the crank handle the calculated number of full turns and then move the indexing pin to the specified number of holes on the chosen hole circle.
4. **Lock Position:** Once the desired position is reached, lock the dividing head spindle to prevent any rotation during the machining process. This ensures stability and accuracy.
5. **Machining:** Perform the machining operation (e.g., milling a slot, cutting a gear tooth).
6. **Repeat:** Unlock the spindle, rotate the crank handle to the next division, lock the spindle, and repeat the machining operation until all divisions are complete.

6. Maintenance

Regular maintenance ensures the longevity and accuracy of your dividing head.

- **Cleaning:** After each use, thoroughly clean the dividing head to remove chips, dust, and coolant residue. Use a soft cloth and a suitable cleaning agent. Avoid harsh chemicals that may damage finishes or seals.
- **Lubrication:** Apply a thin film of high-quality machine oil to all moving parts, including the spindle, gears, and indexing mechanism. This ensures smooth operation, reduces wear, and prevents corrosion. Refer to the manufacturer's recommendations for specific lubricant types.
- **Inspection:** Periodically inspect the dividing head for any signs of wear, damage, or loose components. Pay close attention to the indexing pin, worm gear, and spindle bearings. Tighten any loose fasteners.
- **Storage:** When not in use, store the dividing head in a clean, dry environment to protect it from dust, moisture, and temperature fluctuations. Apply a protective coating of oil to exposed metal surfaces if storing for extended periods.

7. Troubleshooting

This section addresses common issues you might encounter:

Issue: Inaccurate Divisions

- **Possible Cause:** Incorrect calculations for crank turns or hole circles.
- **Solution:** Double-check your calculations against a reliable dividing head chart or formula.
- **Possible Cause:** Indexing pin not fully engaged.
- **Solution:** Ensure the indexing pin is firmly seated in the chosen hole before locking the spindle.
- **Possible Cause:** Dividing plate incorrectly installed or loose.
- **Solution:** Verify the dividing plate is correctly positioned and secured.
- **Possible Cause:** Excessive play in the worm gear mechanism.
- **Solution:** Consult a qualified technician for adjustment or repair.

Issue: Stiff Operation or Difficulty Turning Crank

- **Possible Cause:** Lack of lubrication or accumulation of debris.
- **Solution:** Clean and lubricate all moving parts as described in the Maintenance section.
- **Possible Cause:** Mounting bolts overtightened, causing binding.

- **Solution:** Loosen mounting bolts slightly and re-tighten to the recommended torque, ensuring smooth operation without excessive play.

8. Specifications

Attribute	Value
Model	TA 125
Brand	Optimum
Dimensions (L x W x H)	230 mm x 175 mm x 205 mm
Item Weight	12 Kilograms
Included Components	Dividing Head Unit, Dividing Plates
Efficiency	Highly efficient
Ease of Use	Easy to use

9. Warranty and Support

For specific warranty information, technical support, or service inquiries regarding your Optimum Vertical Dividing Head TA 125, please refer to the documentation provided at the time of purchase. Alternatively, contact your authorized Optimum dealer or the point of sale for assistance. Ensure you have your product model number (TA 125) and purchase details available when seeking support.