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› Williams TM-290 Torque Multiplier with Planetary-Gear Mechanism User Manual

Williams TM-290

Williams TM-290 Torque Multiplier User Manual

Model: TM-290 | Brand: Williams

1. INTRODUCTION

The Williams TM-290 Torque Multiplier with Planetary-Gear Mechanism is engineered for applications requiring high torque for fastening or loosening stubborn fasteners. This tool provides a safe and efficient method for achieving necessary torque requirements. Its precision planetary gear system amplifies the input from standard torque wrenches or air-driven (non-impact) wrenches, ensuring accurate and controlled torque application.

Proper torque application is crucial to prevent damage and equipment failures across various industries, from manufacturing mechanical assemblies to bolting flanges in oil and gas production. The TM-290 is designed to meet the precision and accuracy demands of these critical applications.



Figure 1: Williams TM-290 Torque Multiplier and Carrying Case.

2. SETUP AND PREPARATION

Before using the Williams TM-290 Torque Multiplier, ensure the work area is clear and safe. Verify that the tool is clean and free from any debris or damage. Always wear appropriate personal protective equipment (PPE), including safety glasses and gloves.

1. **Inspection:** Visually inspect the torque multiplier for any signs of wear, cracks, or damage. Ensure all components

are securely attached.

2. **Compatibility:** Confirm that the input and output drives of the torque multiplier are compatible with your existing torque wrench or air-driven wrench and the fastener size.
3. **Lubrication:** Check the manufacturer's recommendations for any required lubrication before initial use or after extended storage.
4. **Secure Fastener:** Ensure the fastener to be torqued is properly seated and accessible.



Figure 2: The Williams TM-290 Torque Multiplier is supplied in a durable carrying case for protection and transport.

3. OPERATING INSTRUCTIONS

The Williams TM-290 Torque Multiplier is designed to increase the torque applied by a standard wrench, allowing for higher torque values with less effort. It is essential to understand the multiplication ratio of the TM-290 to calculate the required input torque accurately.

3.1. Torque Application Principle

Applying torque to threaded fasteners creates a clamp load, which is critical for joining two pieces of material securely. As additional torque is applied, the fastener stretches, creating and maintaining the desired clamping force. Incorrect torque application can lead to stripped threads, premature loosening, broken fasteners, or leaking joints, potentially causing engine or equipment failures.

3.2. Using the Torque Multiplier

1. **Determine Target Torque:** Identify the precise torque specification for the fastener from the equipment manufacturer's guidelines.
2. **Calculate Input Torque:** Divide the target torque by the multiplication ratio of the TM-290 (refer to the tool's label or specifications for the exact ratio). This result is the torque you will set on your input wrench.
3. **Attach Input Wrench:** Connect your standard torque wrench or air-driven wrench to the input drive of the TM-290.

4. **Position Tool:** Place the output drive of the TM-290 onto the fastener. Ensure the reaction arm is securely braced against a solid, immovable object to prevent rotation of the multiplier body.
5. **Apply Torque:** Slowly and steadily apply torque with your input wrench until the calculated input torque is reached. The TM-290 will multiply this force to the fastener.
6. **Verify:** For critical applications, it is recommended to verify the final torque with a calibrated torque wrench directly on the fastener if possible, or by using a torque analyzer.

Always ensure that the reaction arm is properly positioned and secured to prevent injury or damage to the tool or workpiece.

4. MAINTENANCE AND CALIBRATION

Proper care and maintenance are essential to ensure the accurate performance and longevity of your Williams TM-290 Torque Multiplier. Regular calibration is also critical for maintaining precision.

4.1. Cleaning and Storage

- After each use, wipe down the tool with a clean, dry cloth to remove dirt, grease, and debris.
- Do not use harsh chemicals or solvents that could damage the finish or internal components.
- Store the torque multiplier in its original carrying case in a clean, dry environment, away from extreme temperatures and humidity.

4.2. Calibration

Torque multipliers, like all precision torque instruments, should be calibrated periodically to ensure their accuracy. The frequency of calibration depends on usage, environmental conditions, and specific industry standards. It is generally recommended to have the TM-290 calibrated at least once a year or after any significant impact or overload.

- Calibration should be performed by a qualified calibration laboratory or service center that adheres to recognized standards (e.g., ISO 17025).
- Keep records of all calibration dates and results.

5. TROUBLESHOOTING

This section addresses common issues that may arise during the use of the Williams TM-290 Torque Multiplier.

Problem	Possible Cause	Solution
Inaccurate Torque Output	Incorrect input torque calculation; Worn internal gears; Tool needs calibration; Improper reaction arm bracing.	Re-calculate input torque; Inspect for wear and replace if necessary; Send for professional calibration; Ensure reaction arm is securely braced.
Excessive Play/Looseness	Loose fasteners on the tool; Worn bearings or gears.	Check and tighten all external fasteners; Contact service for internal inspection and repair.
Difficulty Engaging Fastener	Damaged output square drive; Fastener head is stripped or damaged.	Inspect output drive for damage; Replace or repair damaged fastener.

If you encounter issues not listed here or if solutions do not resolve the problem, contact Williams customer support or a certified service center.

6. SPECIFICATIONS

The following are key specifications for the Williams TM-290 Torque Multiplier:

- **Model:** TM-290
- **Manufacturer:** Snap-on Industrial Brand JH Williams
- **Maximum Torque Output:** 750 Foot Pounds
- **Item Weight:** 4.7 pounds
- **Product Dimensions:** 8.5 x 2.82 x 3.25 inches
- **Material:** Metal
- **Finish:** Powder Coated
- **Mechanism:** Planetary Gear

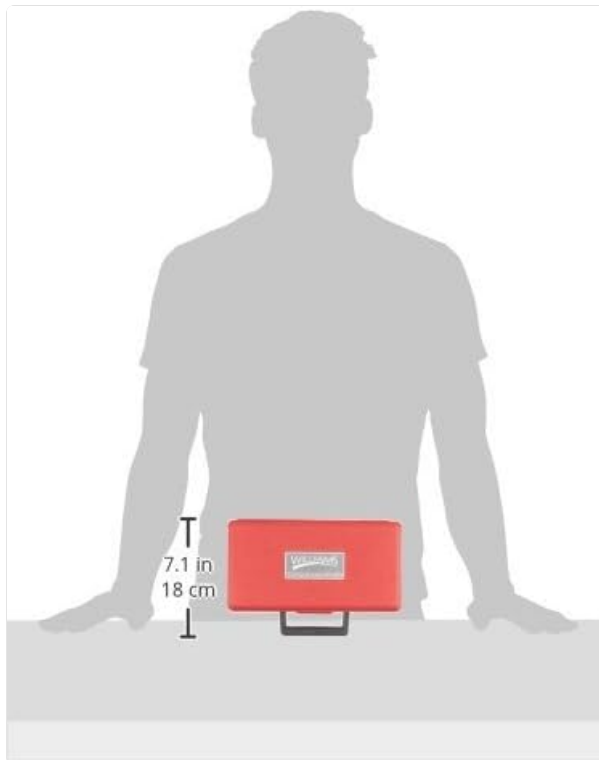


Figure 3: Size comparison of the Williams TM-290 Torque Multiplier's carrying case.

7. WARRANTY INFORMATION

Williams products are manufactured to high standards and are backed by a limited warranty against defects in material and workmanship. For specific warranty terms and conditions, please refer to the warranty card included with your product or visit the official Williams website. Keep your proof of purchase for warranty claims.

8. CUSTOMER SUPPORT

For technical assistance, service, or parts, please contact Williams customer support. You can find contact information on the Williams official website or through your authorized dealer. When contacting support, please have your product model number (TM-290) and serial number (if applicable) ready.

Visit the [Williams Store](#) for more information on Williams products.



