Accusize Industrial Tools 2508-0016

Accusize Industrial Tools 2-1/2 inch Indexable Face Milling Cutter 90 Degree, Model 2508-0016 User Manual

Comprehensive instructions for the setup, operation, and maintenance of your Accusize Industrial Tools Indexable Face Milling Cutter.

1. Introduction

The Accusize Industrial Tools 2-1/2 inch Indexable Face Milling Cutter is a precision-engineered tool designed for demanding metalworking applications. This cutter features a 90-degree positive rake and a right-hand cutting direction, optimized for efficient and precise face milling operations. It is compatible with standard TPG322 carbide inserts, including TiN-coated variants (SKU 2127-1026, 2127-1028, 2127-1029), ensuring extended performance and wear resistance across various machining environments.

With a 2-1/2 inch cutting diameter and a 3/4 inch bore diameter, this milling cutter offers versatility for a wide range of milling machines and applications. Its design incorporates four inserts, which distribute cutting forces evenly, contributing to a superior surface finish, enhanced efficiency, and prolonged tool lifespan. The cutter's body is treated with a black oxide finish for superior corrosion resistance, extending its usable life. An SM6 x 12 locking screw secures the inserts, enhancing operational safety and reliability.

2. Key Features

- **90° Positive Rake & Right-Hand Cut:** Engineered for high efficiency in face milling, providing precise and clean material removal.
- **Standard TPG322 Inserts Compatibility:** Designed to work with TPG322 carbide inserts, including TiN-coated options (SKU 2127-1026, 2127-1028, 2127-1029), for enhanced tool life and performance.
- **2-1/2" Cutting & 3/4" Bore Diameter:** Provides versatile application capabilities for various milling operations and ensures compatibility with standard machine setups.
- **4 Insert Configuration:** Optimizes cutting force distribution, leading to improved surface finish quality and increased cutter durability.
- **Robust Black Oxide Finish:** Offers superior corrosion resistance, extending the tool's lifespan. Includes an SM6 x 12 locking screw (0045-6012) for secure insert attachment.

3. Setup Instructions

Proper setup is crucial for safe and effective operation. Always wear appropriate personal protective equipment (PPE) including safety glasses and gloves during setup and operation.

1. **Inspect Components:** Before assembly, inspect the milling cutter body, inserts, and locking screws for any damage or wear. Ensure all components are clean and free of debris.
2. **Insert Installation:**
    - Carefully place each TPG322 carbide insert into its designated pocket on the cutter body.
    - Secure each insert using the provided SM6 x 12 locking screw. Tighten the screws evenly and firmly using the appropriate hex key. Do not overtighten, as this can damage the insert or screw.
    - Verify that all inserts are seated correctly and securely.
3. **Mounting the Cutter:**
    - Ensure the milling machine spindle is clean and free of burrs.
    - Mount the face milling cutter onto the machine spindle, ensuring the 3/4 inch bore diameter aligns correctly.
    - Secure the cutter firmly to the spindle using the machine's clamping mechanism. Check for any runout after mounting to ensure proper alignment.
4. **Workpiece Securement:** Secure the workpiece firmly in a vise or clamping fixture on the machine table. Ensure there is no movement during machining.
5. **Initial Adjustments:** Set the initial depth of cut and feed rate according to the material and desired finish. Refer to machining handbooks or experience for appropriate starting parameters.



Figure 1: The Accusize 2-1/2 inch Indexable Face Milling Cutter shown with its accompanying hex key for insert installation.



Figure 2: A close-up view illustrating a TPG322 carbide insert securely fastened within the cutter body.

4. Operating Instructions

Operating the face milling cutter requires adherence to safety protocols and proper machining techniques.

1. **Safety First:** Always wear safety glasses, hearing protection, and appropriate clothing. Ensure all machine guards are in place before starting.
2. **Spindle Speed and Feed Rate:**
    - Calculate or select appropriate spindle speeds (RPM) and feed rates (IPM) based on the workpiece material, insert grade, and desired surface finish.
    - The 90-degree positive rake design is optimized for efficient chip evacuation and reduced cutting forces.
3. **Depth of Cut:** Begin with a shallow depth of cut and gradually increase it as needed, monitoring machine load and chip formation.
4. **Coolant Application:** Apply cutting fluid or coolant as appropriate for the material being machined to improve tool

life and surface finish, and to aid in chip removal.

5. **Monitoring Operation:** Continuously monitor the machining process for unusual noises, vibrations, or excessive heat, which may indicate issues with parameters or tool wear.
6. **Finishing Pass:** For optimal surface finish, consider a separate finishing pass with a lighter depth of cut and higher spindle speed.
7. **Emergency Stop:** Familiarize yourself with the machine's emergency stop button and its location.



Figure 3: An illustration of a face milling operation, demonstrating the cutter engaging with a workpiece.

5. Maintenance

Regular maintenance ensures the longevity and performance of your Accusize Face Milling Cutter.

- **Cleaning:** After each use, clean the cutter body and insert pockets to remove chips, coolant residue, and debris. Use a brush and appropriate cleaning agents.
- **Insert Replacement:**
  - Monitor inserts for wear, chipping, or dullness. Worn inserts can lead to poor surface finish, increased cutting forces, and potential tool damage.
  - To replace an insert, loosen the SM6 x 12 locking screw with the hex key, remove the old insert, and install a new one. Ensure the new insert is correctly oriented and securely tightened.
  - Rotate or replace all inserts simultaneously for balanced cutting and optimal performance.
- **Storage:** Store the milling cutter in a clean, dry environment to prevent corrosion. The black oxide finish provides good protection, but proper storage is still recommended.
- **Screw Inspection:** Periodically inspect the locking screws for signs of wear or damage. Replace any compromised screws to maintain secure insert retention.

6. Troubleshooting Common Issues

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
Poor Surface Finish	Worn or chipped inserts, incorrect feed/speed, excessive vibration, insufficient coolant.	Replace inserts, adjust cutting parameters, check machine rigidity, ensure adequate coolant flow.
Excessive Tool Wear	High cutting speed, insufficient feed, hard material, lack of coolant, incorrect insert grade.	Reduce cutting speed, increase feed, use appropriate insert grade for material, apply coolant.
Vibration/Chatter	Unstable setup, long tool overhang, incorrect cutting parameters, worn spindle bearings.	Ensure rigid setup, minimize tool overhang, adjust speed/feed, inspect machine components.
Insert Breakage	Excessive depth of cut, sudden impact, incorrect clamping, material hardness variations.	Reduce depth of cut, ensure smooth engagement, verify insert clamping, check material consistency.

7. Product Specifications

Feature	Detail
Brand	Accusize Industrial Tools
Model Number	2508-0016
Cutting Diameter	2-1/2 inches
Bore Diameter	3/4 inches
Rake Angle	90 Degree Positive Rake
Cutting Direction	Right-Hand
Number of Inserts	4
Compatible Inserts	TPG322 Carbide Inserts (e.g., SKUs 2127-1026, 2127-1028, 2127-1029)
Finish	Black Oxide
Locking Screw	SM6 x 12 (0045-6012)
Product Dimensions	3.94 x 3.94 x 3.94 inches
Item Weight	1.65 Kilograms (3.64 Pounds)
UPC	663566006741

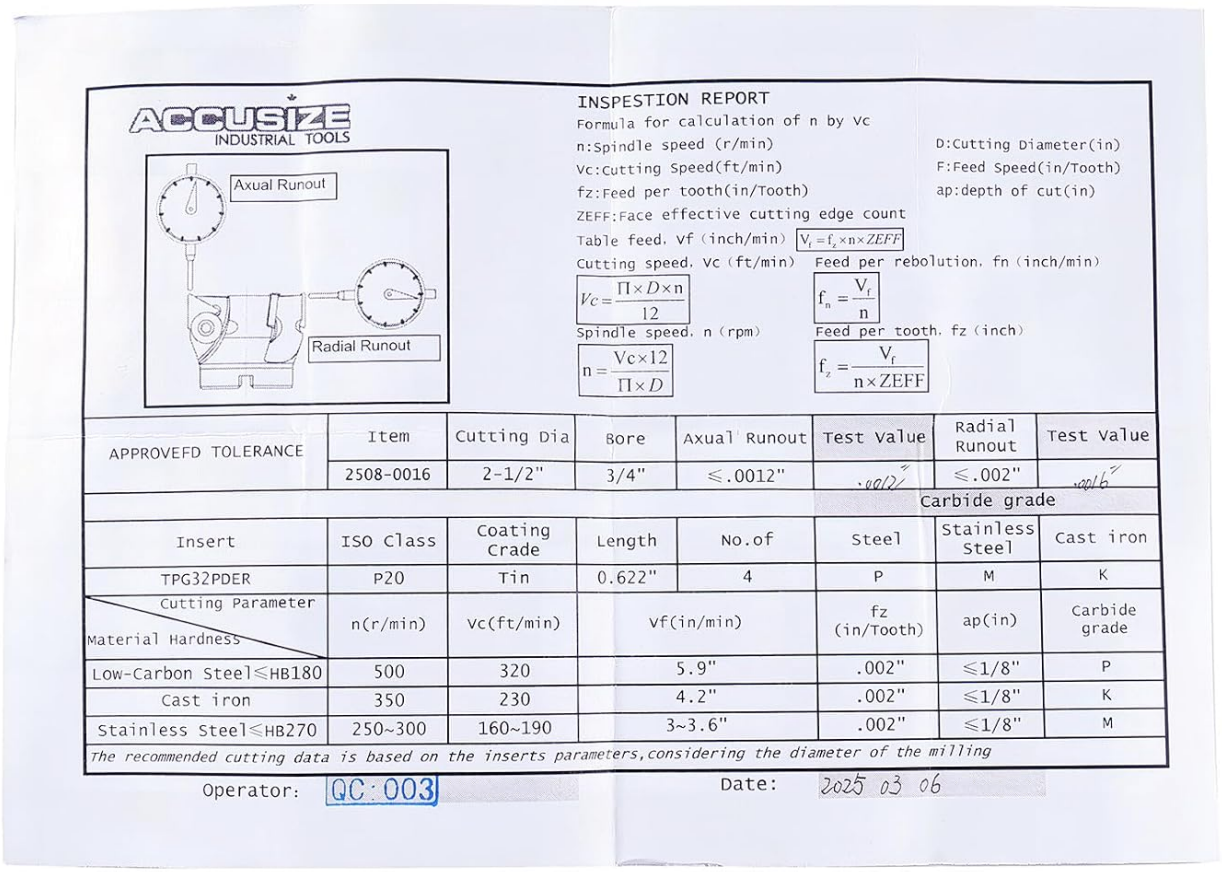


Figure 4: An example of an inspection report detailing specifications and cutting parameters for Accusize Industrial Tools products, including runout tolerances and recommended cutting data for various materials.

8. Warranty and Support

For warranty information, technical support, or inquiries regarding your Accusize Industrial Tools 2-1/2 inch Indexable Face Milling Cutter, please contact Accusize Industrial Tools directly through their official website or the retailer from whom the product was purchased. Please have your model number (2508-0016) and purchase details available when contacting support.

You can visit the Accusize Industrial Tools Store on Amazon for more information and contact options.

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