



MEGA MILLING & MINING TECHNOLOGY

TURBULENT IMPACT MILL (T.I.M.)

OWNERS MANUAL

This manual contains important safety instructions for the Turbulent Impact Mill
(T.I.M.)

READ SAFETY WARNINGS AND OPERATING INSTRUCTIONS CAREFULLY.
SAVE THESE INSTRUCTIONS!

TABLE OF CONTENTS

- Safety Warnings
- Operating Procedures/ Instructions
- Preventive Maintenance
- Troubleshooting

Record the information below:

Date of Purchase: _____

Delivery/Pick Up Date: _____

Serial #: _____

Model #: _____

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OPERATING INSTRUCTIONS

FEEDING THE MILL

Mega Milling's custom designed precision feeding system is a weigh feed belt that with electronic controls, will feed within 1% of the desired rate per second. Each part is specifically designed and assembled into the unit to achieve a role and purpose.

Because of the Turbulent Impact Mills unique process and design with the exception of hammer sets pre milling effect, the milling is primarily air on material (materials colliding with materials in a designed chaotic air flow chamber). The particle size reduction is achieved in seconds rather than minutes or hours. This instant process method requires a steady and precise input feed that does not exceed the Turbulent Impact Mills controlled process rate output per second. The technology of the T.I.M. process is unique in particle separation. Particle separation by the T.I.M. is drastically different from other type impact and grinding mills.

EXAMPLE: A T.I.M. that processes at a rate of 2000 lbs. per hour actually **will not process more than .55 lbs. per second.** If the T.I.M. is fed at a rate that exceeds its ability to instantly process the solid load, the following things begin to happen. (1) The excess material will be thrown outward from the unit's pulverizing chamber with no possible way of re-entering. When this condition occurs, immediate wear on the rotor blades and internal heat rises. Detection of this condition is observed by the decrease in T.I.M. speed of the rotor and excessive HP load on the motor. Even

though the unit will accept overloading, the result will be excessive wear on moving parts and minimal production.

NOTE: Do not feed a Turbulent Impact Mill one pound (16 oz.) per second when the mill can only process half a pound (8 oz.) per second.

TURBULENT IMPACT MILL

Mega Milling's Advanced Turbulent Impact Mill pulverizing technology is designed to instantly powder dry ores and other fractural materials in varying ton per hour, depending on the T.I.M. model. Our milling technology is a **DRY PROCESS**, classified feed material should have no more than 6% humidity. Damp materials fed into the T.I.M. will cause severe damage to the internal housing parts and will dramatically affect the efficiency of product output.

The T.I.M. also requires the addition of a collection system for the powdered product exhausting from the T.I.M. Without a proper collection system, the T.I.M. process is inefficient. In addition to inefficient production, damage results to the internal parts of the T.I.M. by causing excessive metal wear and heat BUILD UP due to inadequate air flow discharge. Downstream air flow restriction MUST BE AVOIDED.

GOLD MAXX COLLECTION SYSTEM

The collection system involves the process of stripping the solids (powder and fine particles) from the air stream flow discharge exhaust from the T.I.M. Each T.I.M. model is designed to generate and process a continual predetermined volume of air. This flow rate is critical to the volume amount of solid material

introduced into the T.I.M. milling chamber. All T.I.M. models generate a calculated air discharge in direct proportion to air intake measured in CFM (Cubic feet/minute). The discharged air from the T.I.M. MUST ALWAYS equal or exceed intake air for efficient, worry free operation.

The flow design for efficient operation of the T.I.M. will be a properly sized cyclone for bulk material collection and a bag house properly sized for fine dust collection from bag house filters. The system must be vacuumed sealed causing air generated throughout the system to come through the T.I.M. intakes. About 98%(+/-) of the material product will be collected in the cyclone or primary collection unit and the remaining 2%(+/-) will be collected in the bag house. If air permits are required, all the intake air must be exhausted beyond the bag house as acceptable clean air as defined by regulation standards.

The physical and mechanical T.I.M. process of particle size reduction involves four primary functions. These T.I.M. functions (1) air speed (velocity), (2) air intake, (3) pressure drop and (4) air exhaust. The even balance between air intake and air output of the T.I.M. process is essential in order for the Turbulent Impact Mill to function efficiently.

Each T.I.M. unit model is constructed for specific production capacities of **DRY** crushed classified feed size ore (1/4" or 6.5mm). Solids introduced into the mill intake become instant airborne particles inside the mill chamber. Particles that collide with other particles create friction (heat) and are quickly amplified into the mill chamber due to the chaotic air speed movement. The

powdered material is exhausted from the T.I.M. through designed exhaust port(s) at rates ranging from 400 to 2400 cfm (cubic feet minute) with a velocity speed of 55-75 mph (80+ feet per second) depending on the T.I.M. model. If immediate discharge of air is decreased and airborne particles are restricted downstream, backpressure builds up in the mill chamber causing immediate heat build-up, a decrease in air speed (T.I.M.) and excessive solids accumulation in the mill chamber. This situation in turn causes excessive wear on the rotating blades.

The Turbulent Impact Mill will quickly and efficiently powder dry materials that are fractural. Collecting the powdered material discharge and stripping the solids out of the air stream is just as important as making the powder. This is not a simple task. The solids have to be collected from the moving air flow.

OPERATING PROCEDURES/ INSTRUCTIONS

TURBULENT IMPACT MILL (T.I.M.)



WARNING

AVOID INJURY!

Read and understand the entire Safety Warning section before proceeding.



WARNING

Always stand clear of T.I.M. discharge port area.

SAFETY WARNINGS

TURBULENT IMPACT MILL (T.I.M.)

This Owner's Manual is considered a permanent part of the T.I.M. and should remain with the equipment if resold. The T.I.M. is designed to give safe and dependable service if operated according to instructions. Read and understand this Owner's Manual before operating your T.I.M.

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**THIS MACHINE IS CAPABLE OF INFLICTING
SERIOUS INJURY IF OPERATED IMPROPERLY!
READ WARNINGS & SAFETY PRECAUTIONS**

**NEVER USE YOUR T.I.M. FOR ANY OTHER PURPOSE THAN WHAT IT
WAS DESIGNED FOR. ANY OTHER USE MAY CAUSE SERIOUS INJURY**



WARNING

Internal pulverizing mechanism! Keep hands and feet out of feed and discharge ports while machine is running.



WARNING

This machine can CRUSH, GRIND, CUT and SEVER parts of your body if they enter the feed or discharge ports.



WARNING

Do not peer into feed or discharge openings when the machine is running.

IMPORTANT SAFETY PRECAUTIONS! READ CAREFULLY!

ALWAYS WEAR EARPLUGS AND PROTECTIVE EYEWEAR WHILE OPERATING THE T.I.M.

1. Never feed any metal objects into the T.I.M. Personal injury or damage to the machine may occur.
2. Do NOT feed any potentially explosive material, including coal, into the T.I.M.
3. If there is abnormal noise or shaking in the T.I.M., SHUT DOWN the machine immediately and solve the problem. (see Troubleshooting section) Please inspect for damage and check for and tighten any loose parts. (Replacement of damaged parts must be obtained from the manufacture.)
4. Never allow children under the age of 16 to operate the T.I.M.
5. Never operate your T.I.M. under the influence of alcohol, drugs, or medication.
6. Never assemble or disassemble any parts of the T.I.M. when in operation.
7. Never wear loose clothing or long jewelry while operating the T.I.M. Keep your long hair under headgear when operating the machine.
8. Never attempt to unclog either the feed or discharge ports, or inspect and repair the T.I.M. while the machine is running. Shut down the motor and wait until all moving parts have come to a complete stop.

INSTALLATION

1. Do a visual check of all connecting piping and general appearance of installed equipment.
2. For Electric Motor equipped machine: Enlist a qualified/ certified electrician to install code appropriate outlet for electric motor requirements. Start motor and follow proper electric procedure protocols for operating the electric motor.

OPERATING THE MACHINE

1. Place the properly sized feed material onto the weigh feed belt for discharge into the feed chute for pulverizing. For all models, the material should have a diameter of no greater than approx. ¼ " (6.5mm)

**NOTE: Feed material must be dry! (Moisture level less than 6%)
Do not feed wet or damp sand, minerals or clays into system.**

2. Best performance and results are obtained by feeding classified materials at a steady fed rate.
3. At the conclusion of any work session, finish by letting the T.I.M. run for a short period (1-2 minutes) to purge out any remaining material in chamber and discharge port.

SHUT DOWN PROCEDURE

1. Do not turn off the motor until the T.I.M. is completely empty.
2. Switch the electric motor off.
3. Allow all moving parts to come to a complete stop before any transporting, storing or inspecting of the mill.

PREVENTATIVE MAINTENANCE

TURBULENT IMPACT MILL (T.I.M.)



WARNING

Make sure the motor is OFF before you begin any maintenance. Accidental starts of rotating parts can cause severe injury.

If supplied with an electric motor – follow proper motor maintenance as suggested in manufacturer's manual.

Check for proper tightness of exposed bolt & nuts

1. End plate bolts
2. Motor mount support attached to end plates (all bolts)
3. Floor mounting bolts
4. Check adjusting bearing block bolts and shaft set screws for tightness.

Also check:

5. Check motor sheave and T.I.M. sheave
6. Belt safety cover
7. Grease bearings via grease fittings
8. Visual inspection of exhaust pipe and feed snout for sign of any material build-up or blockage
9. Tension of drive belts
10. Visual inspection of all connecting pipe and feed snout for sign of any material build-up or blockage

TROUBLESHOOTING TURBULENT IMPACT MILL (T.I.M.)

PROBLEM	CAUSE	REMEDY
Engine or motor fails to start		Refer to Manufacturer's Manual
Too much vibration	Loose parts, bolts or damaged rotor/impellers, blades/hammers	Perform Maintenance Checks May require replacement of rotor assembly parts (Blades or Hammers)
Unit not feeding material at correct rate	Feed chute clogged or objects not sized appropriately Check weigh feed belt controls	Follow T.I.M. Shut Down procedures and then check systems
Unit not discharging material sufficiently	Baghouse filters need replacement or cleaning Collection system motor blower not running full RPM	Follow T.I.M. Shut Down procedures and then check baghouse filters
Rate of discharge slows down	Motor not at full RPM Damp material	Check motor RPM rate Make sure motor is appropriately connected to electrical source