

OPERATION MANUAL



***Mikasa* SERIES**
MODEL MTXi60
TAMPING RAMMER
(BOB10 RECHARGEABLE BATTERY)

Revision #0 (11/12/24)

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THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

PROPOSITION 65 WARNING



NOTES

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NOTICE

Specifications are subject to change without notice.

SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.









SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

SAFETY SYMBOLS

 DANGER
Indicates a hazardous situation which, if not avoided, WILL result in DEATH or SERIOUS INJURY .
 WARNING
Indicates a hazardous situation which, if not avoided, COULD result in DEATH or SERIOUS INJURY .
 CAUTION
Indicates a hazardous situation which, if not avoided, COULD result in MINOR or MODERATE INJURY .
NOTICE
Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Respiratory hazards
	Accidental starting hazards
	Eye and hearing hazards

SAFETY INFORMATION

GENERAL SAFETY

CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication.
- **NEVER** operate this equipment under the influence of drugs or alcohol.



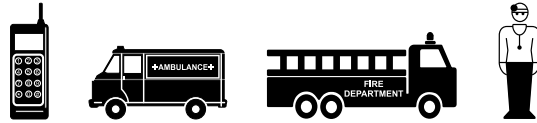
- **ALWAYS** check the equipment for loosened threads or bolts before starting.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor and fire department**. This information will be invaluable in the case of an emergency.



RAMMER SAFETY

DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



WARNING

- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.
- **DO NOT** use this machine on ground that is harder than the machine can handle, or for driving pilings or tamping rock beds. Furthermore, use of the machine on sloping ground, such as the side of an embankment, may make the machine unstable and can cause an accident. It can also result in premature machine wear due to uneven loads on the machine.

Use the machine for tamping earth and sand, soil, gravel, and asphalt. **DO NOT** use the machine for other types of jobs.

CAUTION

- **NEVER** lubricate components or attempt service on a running machine.

NOTICE

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

SAFETY INFORMATION

BATTERY SAFETY

DANGER

- When installing or removing the rechargeable battery, make sure that the battery switches are off
- Work in a clear and flat location when working with the battery.
- Make sure battery is securely installed before using machine.

CAUTION

- Before attaching rechargeable battery, make sure that the exterior covers are not damaged, switches are not damaged, start lever and safety lever are not damaged, battery lock is not damaged, battery connections are not damaged, and motor wire harness is not damaged.

TRANSPORTING SAFETY

CAUTION


- NEVER allow any person or animal to stand underneath the equipment while lifting.

NOTICE

- Before lifting, make sure that the equipment parts (hook and vibration insulator) are not damaged and screws are not loose or missing.
- Always make sure crane or lifting device has been properly secured to the lifting bail (hook) of the equipment.
- **ALWAYS** turn off motor before transporting.
- **NEVER** lift the equipment while the motor is running.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- Use one point suspension hook and lift straight upwards.
- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** tie down equipment during transport by securing the equipment with rope.
- Never allow any person or animal to stand underneath the equipment while lifting.

ENVIRONMENTAL SAFETY

NOTICE

- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters. 
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil directly onto the ground, down a drain or into any water source.

SPECIFICATIONS

Table 1. Rammer Specifications

Overall Height	40.9 in. (1040 mm)
Overall Width	13.9 in. (352 mm)
Over Length	29.4 in. (748 mm)
Plate Size (W x L)	10.4 x 13.4 in. (265 x 340 mm)
Lubrication Oil Capacity	0.69 qt. (0.65 liter)
No. of Impacts Per Minute	702 (11.7 Hz)
Impact Force	3,064 lbf (13.6 kN)
Impact Plate Stroke	1.57 - 2.76 in. (40 - 70 mm)
Travel Speed	40.7 ft/min (12.4m/min)*
Operating Weight	163 lbs. (74 kg)
Operating Time	30 min (battery: BOB10)
Charging Time	95 min (charger: BOC13)
Lubrication Oil	API Service Categories SE or higher SAE10W-30
Lubrication Oil Capacity	0.69 qt (0.65 liter)

* Speed may be affected by the inclination of machine and pushing (or pulling) power of operator.

Table 2. Motor Specifications

Type	Three-phase induction motor
Rated Output	3.1 PS (2.3 KW)
Rated Current	45 A
Rated Voltage	51 V
PTO Shaft Type	Taper
Rated Speed	4350 rpm

Table 3. Rechargeable Battery Specifications

Manufacturer	BATTERY ONE
Model	BOB10
Battery Type	Rechargeable Lithium Ion Battery
Type of Current (Output)	DC
Rated Voltage	51 V
Dimensions (L x W x H)	8.7 x 11.4 x 7.7 in. (220 x 290 x 196)
Weight	21.4 lb (9.7 kg)
Energy Content	1008 Wh
Operating Temperature Range	14°-122° F (-10°- 50° C)
Charging Temperature Range	32°-113° F (0°- 45° C)
Storage Temperature Range	-4°-122° C (-20°- 50° F)

Table 4. Battery Charger Specifications

Manufacturer	BATTERY ONE
Model	BOC13
Type of Current (Input)	AC
Rated Voltage	100 - 240 V
Rated Current	2.9 - 7.3 A
Rated Frequency	50 - 60 Hz
Rated Output	0.65 kW
Type of Current (Output)	DC
Output Current	13.5 A
Nominal Output Voltage	48 V
Output Voltage Range	2.7 - 60 V
Phases	1
Dimensions (L x W x H)	11.7 x 15.6 x 8.5 in. (296 x 396 x 217)
Weight	11.7 lb (5.3 kg)
Supply Cable	78.7 in (2000 mm)
Protection Class	I / Protective earthing
Protection Type	IP65
Operating Temperature Range	32°-113° F (0°- 45° C)
Storage Temperature Range	-4°- 140° F (-20°- 60° C)

Table 5. Noise and Vibration Emissions

Measured Sound Power Level in dB(A)	99
Guaranteed Sound Power Level in dB(A)	107
Guaranteed Sound Pressure Level at Operator Station in dB(A)	91
Hand-Arm Vibration in m/s ²	6.5

NOTES:

1. Products are tested for sound pressure level in accordance with European Directives 2000/14/EC and 2005/88/EC, relating to Noise Emission in the Environment by equipment for use outdoors.
2. Products are tested for hand/arm vibration (HAV) level in accordance with European Directives 2002/44/EC and EN500-4 and ISO 5349-1:2001, ISO 5349-2:2001.

DIMENSIONS

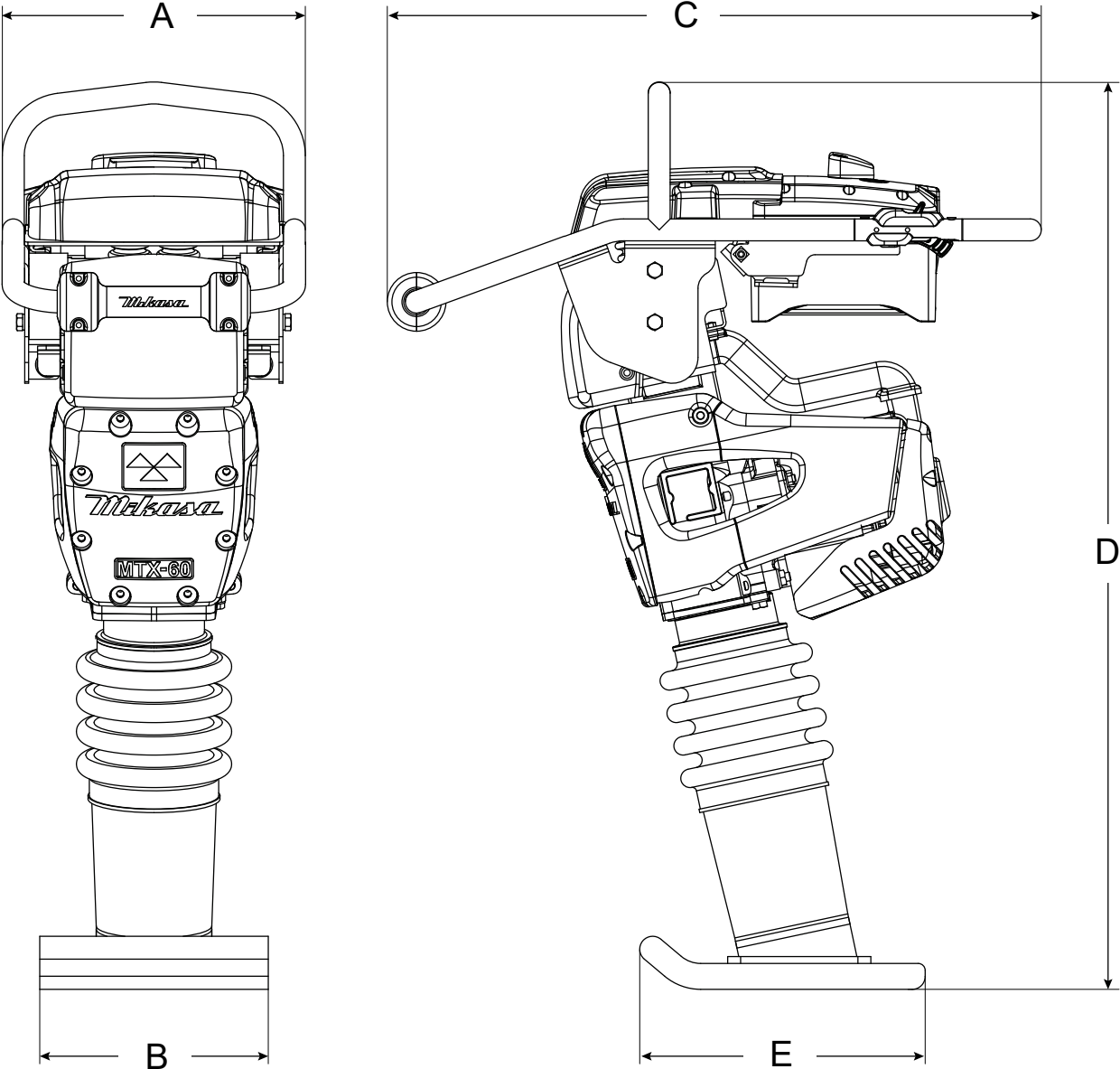


Table 6. Dimensions

A	13.9 in. (352 mm)
B	10.4 in. (265 mm)
C	29.4 in. (748 mm)
D	40.9 in. (1040 mm)
E	13.4 in. (340 mm)

GENERAL INFORMATION

The Multiquip MTXi60 tamping rammer is a walk-behind compactor designed for use in cohesive soils. Its applications include soil compacting for road, embankments and reservoirs as well as backfilling for gas pipelines, water pipelines and cable installation work.

The impact force of the MTXi60 levels and uniformly compacts voids between soil particles to increase dry density.

Circular motion is converted to create impact force. The upper section of the rammer functions as a weight and consists of the power unit section, gear reducer section, reciprocating section and handle section. The handle section is equipped with the battery and control unit section, and assembled to the upper section with shock absorbers.

The lower section of the rammer that compacts the ground, consists of the spring cylinder section to create sliding motion, the sloping section to tilt the machine forward, foot section to compact the ground, and bellows and protect sleeve to cover the sliding section.

The MTXi60 is equipped with a three-phase induction motor and a lithium ion battery as power unit. Transmission of the power takes place by increasing the motor speed to engage the centrifugal clutch.

The motor speed is reduced to the speed required for tamping by the reduction ratio of the pinion gear and crank gear. Circular motion is converted to create reciprocating motion through the crank gear and connecting rod. This reciprocating motion creates jumping motion of the foot up and down through the strong coil spring of spring cylinder. The rammer creates strong impact force to the ground by its own weight and the jumping motion of foot.

Do not use the rammer for pile driving work, and compacting work on rocks and hard ground that is over compacted.

Do not use the rammer on sloping ground like the side of embankments. It may cause an accident and machine trouble such as abnormal wear due to unstable operation.

COMPONENTS

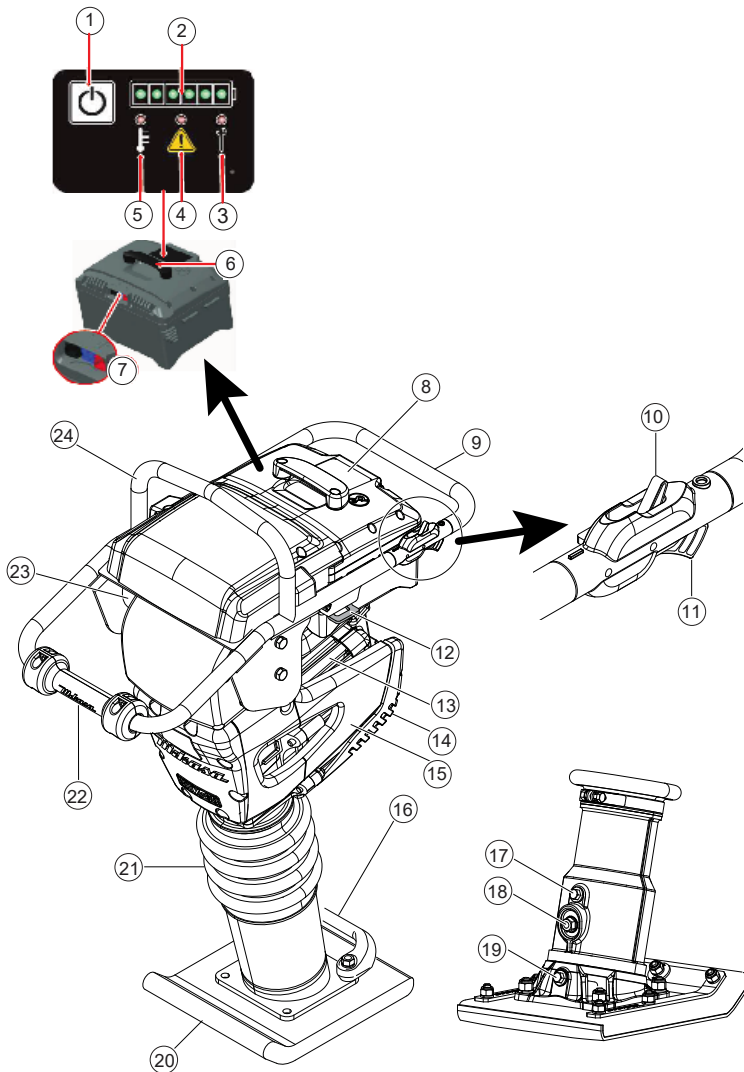


Figure 1. MTXi60 Rammer

Figure 1 shows the location of the controls and components for the MTXi60 Tamping Rammer. The functions of each control is described below:

1. **Battery Start Button** — Turns on the battery.
2. **Battery Control Light Charge** — Indicates the amount of charge left.
3. **Battery Control Light Diagnosis** — Indicates status of the battery
4. **Battery Light Rechargeable Battery Error** — Indicates battert error.
5. **Battery Control Light Over Temperature/Under Temperature** — Indicates the temperature status of battery
6. **Battery Handle** — Used to securely grasp battery when installing or removing.
7. **Battery Connections (Contact Strip)** — Provides connection to the main unit when battery is properly attached.
8. **Rechargeable Battery** — Provides power to the motor.
9. **Guide Handle** — Used by the operator **while standing behind the machine** to control direction and speed.
10. **Start Lever** — Used to start tamping action for the rammer.
11. **Safety Lever** — Keeps the rammer from accidentally starting.
12. **Battery Lock Lever** — Locks the battery in place.
13. **Motor** — starts the ramming action.
14. **Motor Guard** — Protects the motor.
15. **Motor Cover** — Covers the motor.
16. **Lower Lifting Handle** — Used with rollers (item 6) to facilitate the loading onto tailgate of a truck or transport vehicle.
17. **Oil Inlet Plug** — Used to add oil to the oil bath reservoir.
18. **Oil Gauge (Sight Glass)** — Indicates the level of oil in the oil bath reservoir.
19. **Drain Plug** — Open this valve to remove oil from the bellows.
20. **Plate (Foot)** — Laminated wood with tempered steel plate for superior shock absorption.
21. **Bellows** — Reservoir for oil bath.
22. **Roller** — Facilitates loading onto tailgate of a truck or transport vehicle.
23. **Shock Absorber** — Helps to control the impact and rebound movement of the rammer and smoothens out bumps and vibrations.
24. **One Point Lifting Hook** — Connection point for a lifting hook or strap when lifting with a forklift, crane or other machinery.

TRANSPORTING AND LIFTING

Inspect the **lower lifting handle** (Figure 2) for cracks or damage. If the lifting handle is damaged in any way, replace it immediately. Ensure hardware is properly tightened before use.

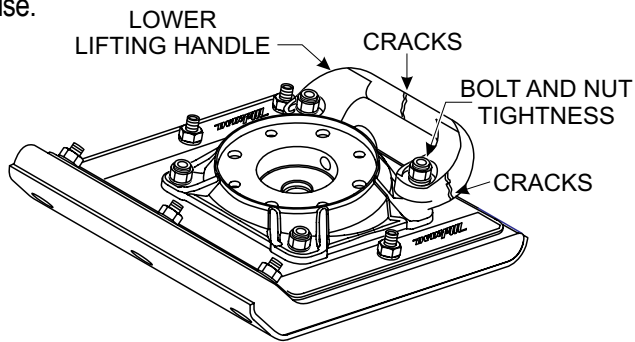


Figure 2. Lower Lifting Handle Inspection

TRANSPORTING

1. Stop the motor unit before transporting the machine.
2. Do not move the machine until the motor and main body have cooled down enough.
3. Remove the rechargeable battery.
4. Maintain upright position of the rammer on a level ground during transporting.

RAMMER LOADING (TRUCK TAILGATE)

NOTICE

DO NOT use the lower lifting handle as a connection point when transporting or lifting with forklifts, cranes or other machinery.

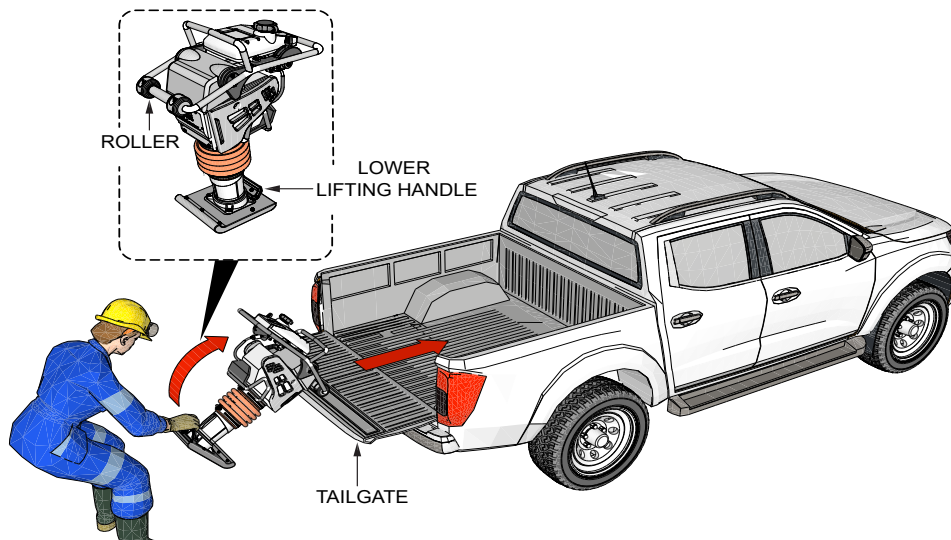


Figure 3. Loading Rammer Onto Truck Bed

1. Tilt rammer so that the roller makes contact with the edge of the truck tail gate as shown in Figure 3.
2. Next, grab lower lifting handle and **push** rammer forward until rammer is fully positioned onto truck bed.
3. Using straps, secure rammer to truck bed.

RAMMER LIFTING

4. When using a forklift or crane to lift the rammer, attach a suitable lifting strap to the **lifting handle** on the rammer as shown in Figure 4.

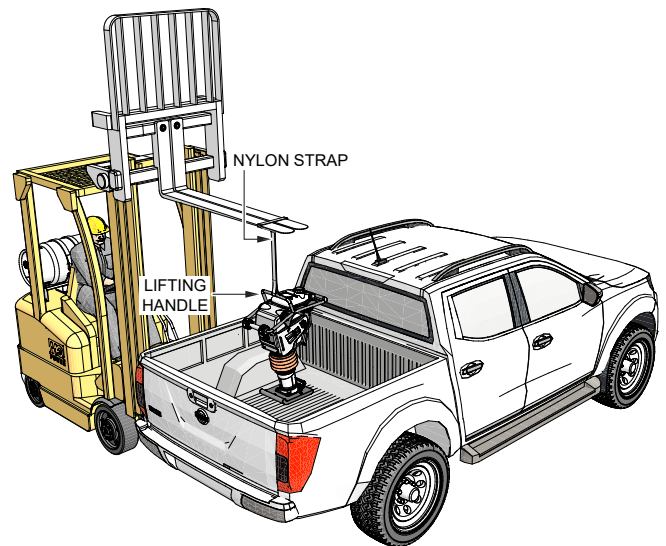


Figure 4. Rammer Lifting (Forklift/Crane)

It is extremely important that this section be read carefully before attempting to operate the rammer. **DO NOT** use your rammer until this section is thoroughly understood.

CRANKCASE AND SPRING CYLINDER OIL BATH

This unit uses an oil bath lubrication system. Perform the following:

1. Check the oil level through the oil level sight glass (Figure 5) at the rear of the tamper foot.

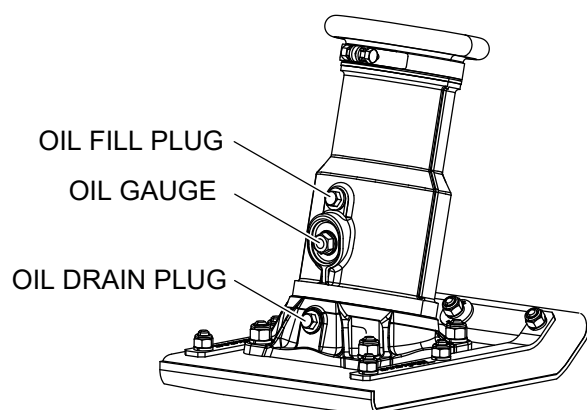


Figure 5. Foot Housing Sight Glass

NOTICE

The oil level should be kept at the half way point of the sight glass.

2. If oil is not visible, add 10W-30 SE, SF or higher grade motor oil into the oil fill plug opening (Figure 5). The bath contains approximately 0.69 qt. (0.65 liter).

TIGHTENING SCREWS

1. Retighten the nuts on the foot of the rammer (see Figure 6). Refer to Table 7 for proper tightening torque.

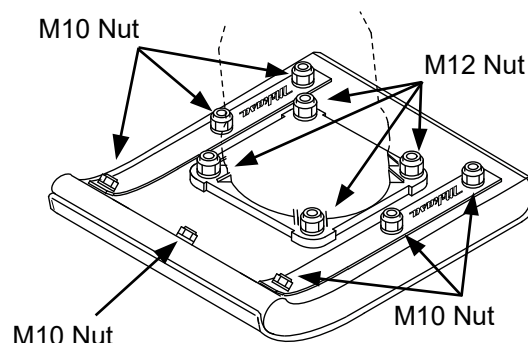


Figure 6. Location of Nuts to be Tightened

Table 7. Tightening Torque

Nut Size	Torque
M10	29.4 Nm (300 kgf cm)
M12	78.4 Nm (800 kgf cm)

GENERAL INSPECTION

1. Check all nuts, bolts fasteners for tightness. Retighten as necessary.
2. Clean any dirt from the recoil starter and foot pedestal. Wipe the entire unit clean before operating.
3. Replace any missing or damaged Safety Operation decals.

BATTERY AND BATTERY CHARGER

Refer to the battery and battery charger accompanying manuals for information on the following:

- Charging and Charge Level
- Cleaning
- Storage
- Disposal

BATTERY INSTALLATION

NOTICE

Make sure to use a genuine rechargeable battery. Connections and contact area of the rechargeable battery must be clean and dry. When installing the rechargeable battery, make sure the connections point in the direction of the protective cover.

Refer to Figure 7 for location of parts.

Battery Installation

1. Set the Start Lever to the OFF position.
2. Hold the machine handle with one hand.
3. Using the other hand, lift the battery by its handle.
4. Carefully insert the battery into the guard rail on the handle.
5. Slide in the battery to the front of the machine until a click is heard to indicate that the battery is locked in place.

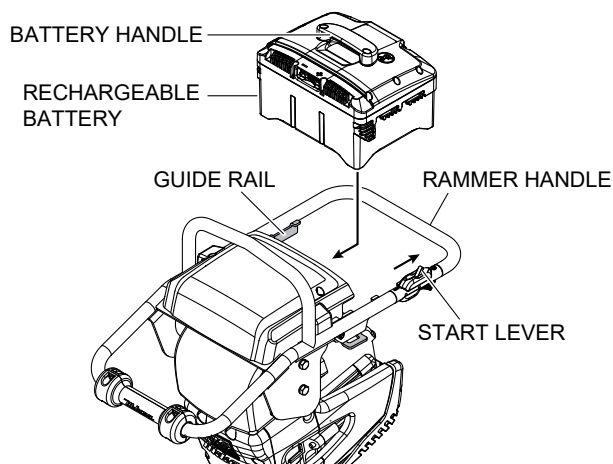


Figure 7. Battery Installation

BATTERY REMOVAL

NOTICE

Make sure the machine is at a complete stop

Refer to Figure 8 for location of parts.

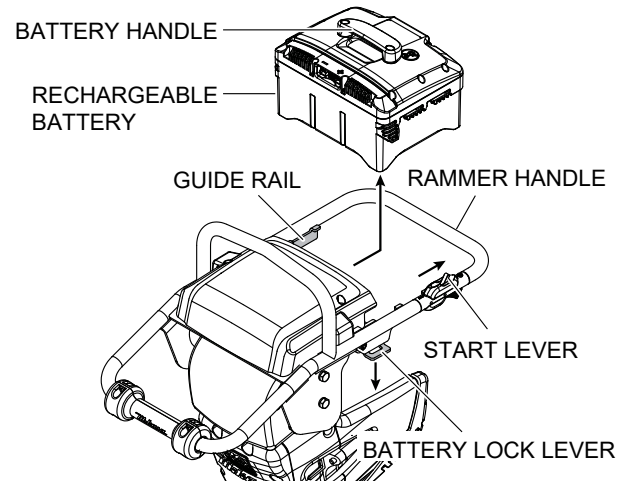


Figure 8. Battery Removal

1. Set the Start Lever to the OFF position.
2. Hold the machine handle with one hand on the handle.
3. Push the battery lock lever down.
4. Using the other hand, carefully pull the battery handle to the rear until it stops.
5. Pull out the battery by its handle and put it down safely.

CAUTION

Failure to understand the operation of the Tamping Rammer could result in severe damage to the unit or personal injury.

INITIAL STARTUP

When starting the MTXi60 Tamping Rammer perform the following:

1. Set the Start Lever to the OFF position (Figure 9).

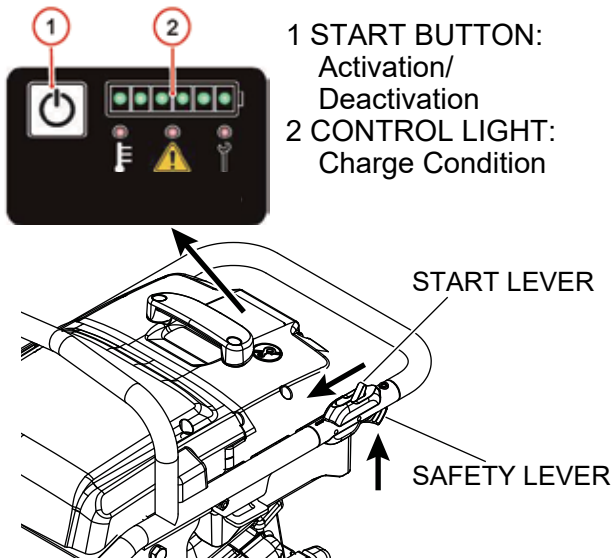


Figure 9. Start Lever

2. Hold the machine by the handle.
3. Press the START button (Activation/Deactivation).
4. Check the current state of charge on the CONTROL LIGHT (Charge Condition).

OPERATION

1. Pull the safety lever with one hand.
2. Slowly push the start lever forward and rammer starts with a jolt.

NOTICE

Use rammer only for tamping earth and sand, soil, gravel, and asphalt.

Do not use rammer for other types of jobs such as driving pilings or tamping rock beds.

CAUTION

Do not use rammer on sloping ground, such as the side of an embankment as this may make the machine unstable and cause an accident. It can also result in premature machine wear from the uneven load on the machine.

CAUTION

Rammer should only be operated while **standing behind the machine, and holding Guide Handle firmly with both hands** (Figure 10A). **NEVER** operate rammer while holding handle/roller at the front of the machine (Figure 10B), damage to the unit could result and personal injury.

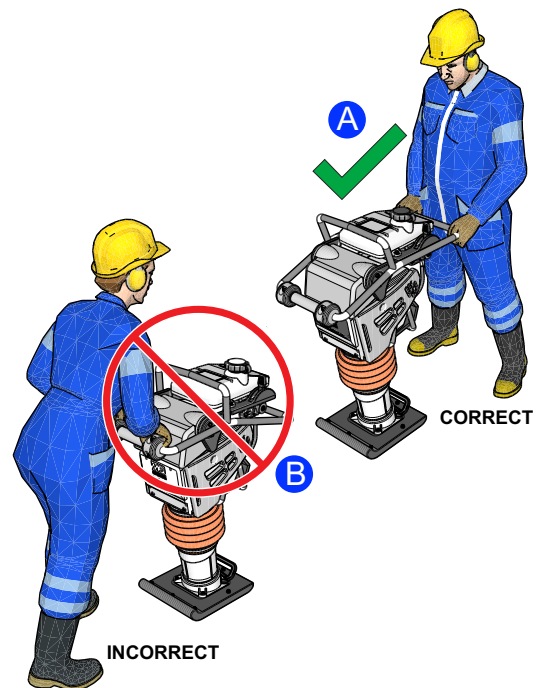


Figure 10. Rammer Operating Position

STOPPING THE RAMMER



WARNING

DO NOT touch hot parts until they have cooled down enough, to prevent burns.

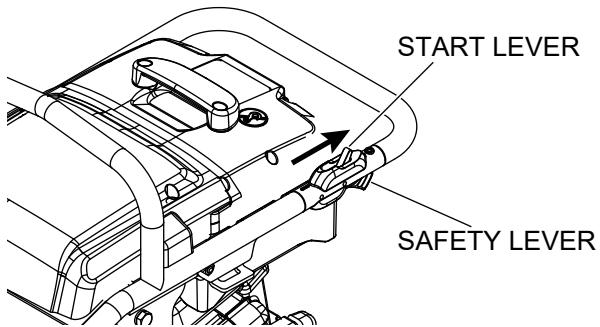


Figure 11. Stopping the Rammer

1. Slowly pull the Start Lever back until it stops, and then the safety lever clicks into place with the start lever and holds it in the OFF position.
2. Allow the machine to come to a complete stop.

DAILY

- Visually inspect rammer parts such as the plate, handle, shock absorber, and for deformation, breakage, crack, and dirt.
- Check that the battery lock lever is operating properly.
- Check the rammer for oil leaks. Repair or replace parts as needed.
- Check for loose or missing bolts and nuts.

EVERY 200 HOURS

- Remove the oil drain plug on foot housing (Figure 12) and drain the oil. Refill with approximately 0.69 qt. (0.65 liter) of 10W-30 SE, SF or higher grade motor oil. Break in oil should be changed after first 50 hours.

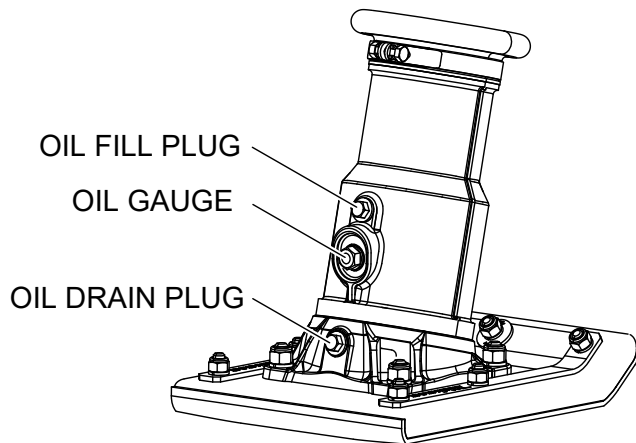


Figure 12. Oil Drain Plug

LONG TERM STORAGE

- **STOP** the machine motor.
- **DO NOT** move the machine until the motor and main body have cooled down enough.
- Remove the rechargeable battery.
- Maintain upright position of the rammer on a level ground when storing.
- Store unit indoors covered with plastic sheet in moisture-free and dust-free location out of direct sunlight.

TROUBLESHOOTING

Troubleshooting (Rammer)		
Symptom	Possible Problem	Solution
Motor does not start.	Battery is not installed correctly?	Reinstall battery.
	Battery charge is low?	Fully charge battery.
	Battery malfunction?	Replace battery.
	Wire broken or short circuit?	Repair wiring.
Motor starts normally but rammer tamping stroke is not stable or rammer does not tamp.	Oil in excess?	Drain excess oil. Bring to correct level.
	Clutch slips?	Replace or adjust clutch.
	Spring Failure?	Replace spring.
	Bearing Failure?	Replace bearing

NOTICE

For Troubleshooting information of the Rechargeable Battery and Battery Charger, please refer to corresponding operation manual accompanying the product.

OPERATION MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

Multiquip Inc.

(310) 537- 3700
6141 Katella Avenue Suite 200
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Multiquip

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This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

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