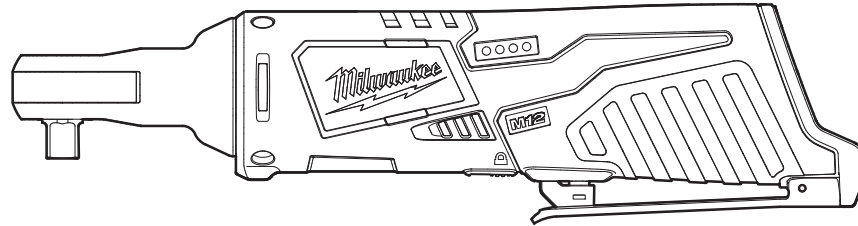




## OPERATOR'S MANUAL



**Cat. No.**

**2456-20**

**2457-20**

### **M12™ CORDLESS RATCHETS**

**TO REDUCE THE RISK OF INJURY, USER MUST READ AND UNDERSTAND OPERATOR'S MANUAL.**

## GENERAL POWER TOOL SAFETY WARNINGS

**WARNING** READ ALL SAFETY WARNINGS AND ALL INSTRUCTIONS. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury. **Save all warnings and instructions for future reference.** The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

### WORK AREA SAFETY

- Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.
- Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

### ELECTRICAL SAFETY

- Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools. Unmodified plugs and matching outlets will reduce risk of electric shock.
- Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.
- Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
- Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
- When operating a power tool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.
- If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply. Use of an RCD reduces the risk of electric shock.

### PERSONAL SAFETY

- Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool. Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.
- Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left

attached to a rotating part of the power tool may result in personal injury.

- Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewellery or long hair can be caught in moving parts.
- If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.

### POWER TOOL USE AND CARE

- Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
- Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- Use the power tool, accessories and tool bits etc., in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could

### BATTERY TOOL USE AND CARE

- result in a hazardous situation.
- Recharge only with the charger specified by the manufacturer. A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
- Use power tools only with specifically designated battery packs. Use of any other battery packs may create a risk of injury and fire.

- When battery pack is not in use, keep it away from other metal objects like paper clips, coins, keys, nails, screws, or other small metal objects that can make a connection from one terminal to another. Shorting the battery terminals together may cause burns or a fire.
- Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.





### SERVICE

- Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

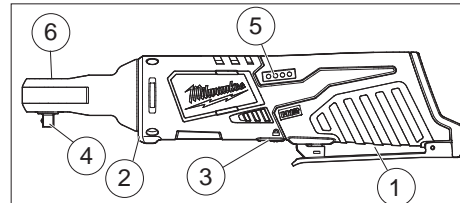
### SPECIFIC SAFETY RULES

- Hold power tool by insulated gripping surfaces, when performing an operation where the fastener may contact hidden wiring. Fasteners contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.
- Maintain labels and nameplates. These carry important information. If unreadable or missing, contact a MILWAUKEE service facility for a free replacement.
- WARNING: Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
  - lead from lead-based paint
  - crystalline silica from bricks and cement and other masonry products, and
  - arsenic and chromium from chemically-treated lumber.
 Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

### SYMBOLOLOGY

	Volts
	Direct Current
$n_0 \text{ xxx} \text{ min.}^{-1}$	No Load Revolutions per Minute (RPM)
	Lock Switch
	Underwriters Laboratories, Inc. United States and Canada

## FUNCTIONAL DESCRIPTION



1. Paddle switch
2. LED
3. Lock switch
4. Drive Anvil
5. Fuel Gauge
6. Forward/Reverse toggle

## SPECIFICATIONS

Cat. No.	Volts DC	RPM	Torque Range	Drive Anvil
2456-20	12	0-250	0-30 ft-lbs	1/4"
2457-20	12	0-250	0-35 ft-lbs	3/8"

## ASSEMBLY

**WARNING** Recharge only with the charger specified for the battery. For specific charging instructions, read the operator's manual supplied with your charger and battery.

### Inserting/Removing the Battery

To remove the battery, push in the release buttons and pull the battery pack away from the tool. To insert the battery, slide the pack into the body of the tool. Make sure it latches securely into place.

**WARNING** Always remove battery pack before changing or removing accessories. Only use accessories specifically recommended for this tool. Others may be hazardous.

**WARNING** Use only sockets and other accessories specifically designed for use on impact tools. Other sockets and accessories might shatter or break causing injury.

### Attaching and Removing Accessories

These tools are intended only for use with accessories designed for impact tools. Other sockets could shatter or break, causing injury.

1. Use only appropriate Square Drive Sockets.
2. To attach a socket or other accessory, align the accessory with the drive anvil and push it firmly onto the tool.
3. To remove the accessory, pull the accessory off the drive anvil.

## OPERATION

**⚠ WARNING** Always remove battery pack before changing or removing accessories. Only use accessories specifically recommended for this tool. Others may be hazardous.

**⚠ WARNING** To reduce the risk of injury, wear safety goggles or glasses with side shields.

### Fuel Gauge

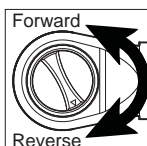
To determine the amount of charge left in the battery, pull the paddle switch. The Fuel Gauge will light up for 2-3 seconds.

To signal the end of charge, 1 light on the fuel gauge will flash for 2-3 seconds.


### Using the Forward/Reverse Toggle

For **forward** (clockwise) rotation, rotate the forward/reverse toggle **counterclockwise**. Check the direction of rotation before use.

For **reverse** (counterclockwise) rotation, rotate the forward/reverse toggle **clockwise**. Check the direction of rotation before use.



### Lock Switch

To **lock** the paddle switch, slide the lock switch to the locked  position. To **unlock** the paddle switch, slide the lock switch to the unlocked position. The paddle switch will not work when the lock switch is in the locked position.

Always lock the paddle switch or remove the battery pack before performing maintenance, changing accessories, storing the tool and any time the tool is not in use.

### Starting, Stopping and Controlling Speed

These tools may be operated at any speed from 0 to full speed.

1. To **start** the tool, pull the paddle switch. NOTE: An LED is turned on when the switch is pulled. The tool will shut off automatically when maximum torque is reached.
2. To vary the driving speed, increase or decrease pressure on the switch. The further the switch is pulled, the greater the speed.
3. To **stop** the tool, release the switch.

## MAINTENANCE

**⚠ WARNING** To reduce the risk of injury, always unplug the charger and remove the battery pack from the charger or tool before performing any maintenance. Never disassemble the tool, battery pack or charger. Contact a **MILWAUKEE** service facility for ALL repairs.

### Maintaining Tool

Keep your tool, battery pack and charger in good repair by adopting a regular maintenance program. After six months to one year, depending on use, return the tool, battery pack and charger to A **MILWAUKEE** service facility for:

- Lubrication
- Mechanical inspection and cleaning (gears, spindles, bearings, housing, etc.)
- Electrical inspection (battery pack, charger, motor)
- Testing to assure proper mechanical and electrical operation

If the tool does not start or operate at full power with a fully charged battery pack, clean the contacts on the battery pack. If the tool still does not work properly, return the tool, charger and battery pack, to a **MILWAUKEE** service facility for repairs.

**⚠ WARNING** To reduce the risk of personal injury and damage, never immerse your tool, battery pack or charger in liquid or allow a liquid to flow inside them.

### Cleaning

Clean dust and debris from charger and tool vents. Keep tool handles clean, dry and free of oil or grease. Use only mild soap and a damp cloth to clean the tool, battery pack and charger since certain cleaning agents and solvents are harmful to plastics and other insulated parts. Some of these include gasoline, turpentine, lacquer thinner, paint thinner, chlorinated cleaning solvents, ammonia and household detergents containing ammonia. Never use flammable or combustible solvents around tools.

### Repairs

For repairs, return the tool, battery pack and charger to the nearest service center.

## ACCESSORIES

**⚠ WARNING** Always remove battery pack before changing or removing accessories. Only use accessories specifically recommended for this tool. Others may be hazardous.