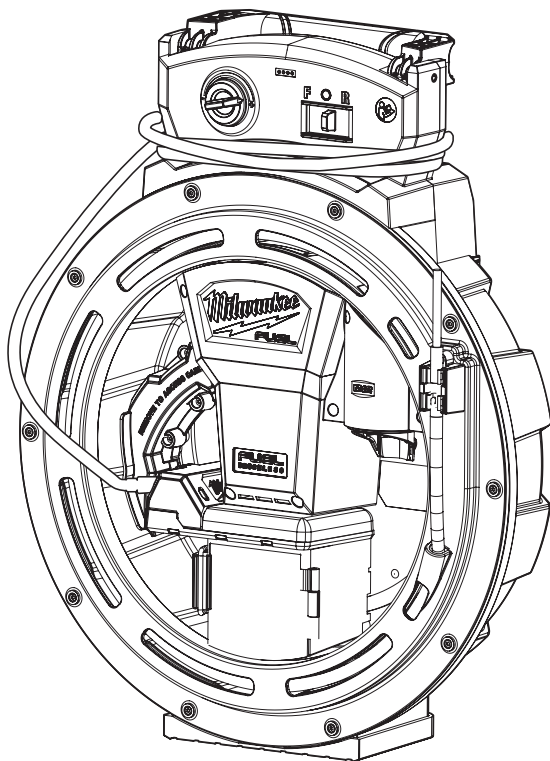





OPERATOR'S MANUAL



Cat. No.
M12 FFSM

M12 FUEL™ HIGH SPEED CHAIN SNAKE FOR 1-1/4" - 2" PIPES

 **WARNING**

 To reduce the risk of injury, user must read and understand operator's manual.

GENERAL POWER TOOL SAFETY WARNINGS

WARNING Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below 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 a 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 a 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 and clothing 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.
- **Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles.** A careless action can cause severe injury within a fraction of a second.

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 remove the battery pack, if detachable, 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 and accessories. 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 result in a hazardous situation.
- **Keep handles and grasping surfaces dry, clean and free from oil and grease.** Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.

BATTERY TOOL USE AND CARE

- **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.
- Do not use a battery pack or tool that is damaged or modified. Damaged or modified batteries may exhibit unpredictable behaviour resulting in fire, explosion or risk of injury.
- Do not expose a battery pack or tool to fire or excessive temperature. Exposure to fire or temperature above 130°C (265°F) may cause explosion.
- Follow all charging instructions and do not charge the battery pack or tool outside the temperature range specified in the instructions. Charging improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.
- Only use the drain cleaner for the recommended drain sizes. Using the wrong size drain cleaner can lead to twisting, kinking or breaking of the cable and may result in personal injury.
- Inspect cable for wear and damage before use. Replace a worn or damaged cable before using the drain cleaner.
- Do not twist, kink or over bend cables. Breaking of the cable may result in serious personal injury.
- Inspect the drain to be cleaned before use. If possible, determine the access point(s) to the drain, the size(s) and length(s) of the drain, distance to mainlines, the nature of the blockage, presence of drain cleaning chemicals or other chemicals, etc. If chemicals are present in the drain, it is important to understand the specific safety measures required to work around those chemicals. Contact the chemical manufacturer for required information.
- If needed, place protective covers in the work area. The drain cleaning process can be messy.
- Place the drain cleaner at a distance no greater than 60 cm from drain opening. If the drain cleaner cannot be placed within 60 cm from the drain opening, the drain opening will need to be extended using a similar size pipe and fittings. Greater distances can cause control problems leading to twisting, kinking, breaking or whipping of the cable.

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.
- Never service damaged battery packs. Service of battery packs should only be performed by the manufacturer or authorised service providers.

SPECIFIC SAFETY RULES FOR DRAIN CLEANERS

- Only grasp the rotating cable with gloves recommended by the manufacturer. Latex or loose fitting gloves or rags can become wrapped around the cable and may result in serious personal injury.
- Do not allow the cutter to stop turning while the cable is turning. This can overstress the cable and may cause twisting, kinking or breaking of the cable and may result in serious personal injury.
- One person must control both the cable and the switch. If the cutter stops rotating, the operator must be able to turn the tool off to prevent the cable from twisting, kinking and breaking.
- Use latex or rubber gloves inside the gloves recommended by the manufacturer, goggles, face shields, protective clothing, and respirator when chemicals, bacteria or other toxic or infectious substances are suspected to be in a drain line. Drains may contain chemicals, bacteria and other substances that may cause burns, be toxic or infectious or may result in other serious personal injury.
- Practice good hygiene. Do not eat or smoke while handling or operating the tool. After handling or operating drain cleaning equipment, use hot, soapy water to wash hands and other body parts exposed to drain contents. This will help reduce the risk of health hazards due to exposure to toxic or infectious material.
- Always wear leather gloves over latex/rubber gloves to avoid entanglement.
- Move the Forward/OFF/Reverse switch to O (locked) and remove battery from tool before transporting.
- Ensure foot pedal cord is properly wrapped and the pedal is stored before transporting.
- Always clear the area of obstructions before transporting.
- Always secure the tool and any accessories when operating on uneven or raised surfaces.
- Always operate the rotating cable in the F (forward) direction to clear the blockage. When freeing the cable from a blockage, do not run in reverse for more than a few seconds to prevent cable damage.
- Always use common sense and be cautious when using tools. It is not possible to anticipate every situation that could result in a dangerous outcome. Do not use this tool if you do not understand these operating instructions or you feel the work is beyond your capability; contact MILWAUKEE® Tool or a trained professional for additional information or training.
- Maintain labels and nameplates. These carry important information. If unreadable or missing, contact a MILWAUKEE® service facility for a 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.

READ AND SAVE ALL INSTRUCTIONS FOR FUTURE USE

ADDITIONAL BATTERY SAFETY RULES

WARNING To reduce the risk of fire, personal injury, and product damage due to a short circuit, never immerse your tool, battery pack or charger in fluid or allow a fluid to flow inside them. Corrosive or conductive fluids, such as seawater, certain industrial chemicals, and bleach or bleach-containing products, etc., can cause a short circuit.

WARNING Do not charge non-rechargeable batteries.

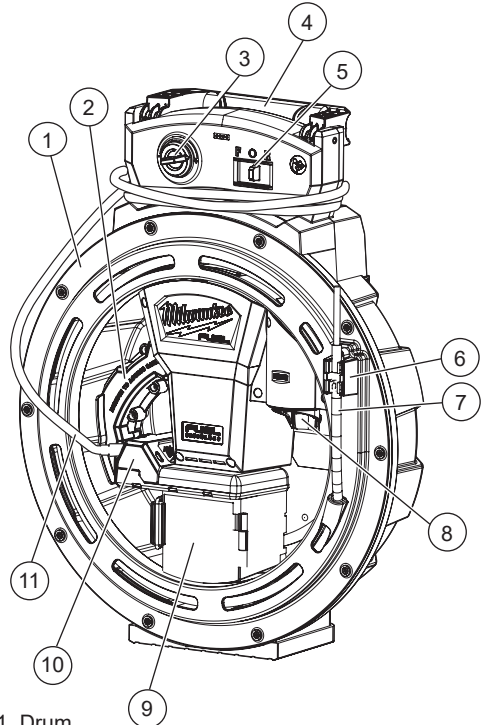
SYMBOLGY

- V** Volts
- |—|** Direct Current
- n₀ XXXX min⁻¹** No Load Revolutions per Minute (RPM)
-  Read operator's manual.
-  Always wear leather gloves over latex/rubber gloves.
-  Always wear eye protection. Use appropriate hearing and respiratory protection.
-  Start/Stop
- F O R** Forward/OFF/Reverse
-  Do not allow battery to contact corrosive or conductive fluid.
-  Do not step on tool. Frame may collapse or break. Tool may tip, causing injury.
-  Regulatory Compliance Mark (RCM). This product meets applicable regulatory requirements.
-  Do not dispose of electric tools together with household waste material. Electric tools and electronic equipment that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

SPECIFICATIONS

Cat. No.....	M12 FFSM
Volts.....	12 V DC
Battery Type.....	M12™
Charger Type.....	M12™
No Load RPM.....	450-1,850
Drain Capacity.....	32 mm - 50 mm (1-1/4" - 2")
Cable Length.....	10.5 m (35')
Cable Diameter (without sheath).....	6.35 mm (1/4")
Cable Diameter (with sheath).....	9.5 mm (3/8")
Cable Lubricant.....	5W40
Weight.....	9.2 kg
Recommended Ambient Operating Temperature.....	-17°C to 51°C

FUNCTIONAL DESCRIPTION



1. Drum
2. Cable access cover
3. Speed control dial
4. Handle
5. Cable rotation control switch
6. Cable clip
7. Cable
8. Battery bay
9. Storage for the accessories
10. Foot pedal
11. Foot pedal cord

ASSEMBLY

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

Inserting/Removing the Battery

To insert the battery, slide the pack into the body of the tool. Make sure it latches securely into place.

⚠WARNING Only use accessories specifically recommended for this tool. Others may be hazardous.

To remove the battery, push in the release buttons and pull the battery pack away from the tool.

⚠WARNING Always lock the trigger or remove the battery pack any time the tool is not in use.

NOTICE To prevent damage to the cable and attachments, only use in recommended pipe size.

Installing Chain Knocker

Selecting a chain knocker:

Only use chain knockers designed for 6.35 mm (1/4") cable. Select the proper chain knocker size by the drain capacity and application.

Chain knockers without carbide cutting tips can be used in common pipe types. These chain knockers work well in grease and similar blockages.

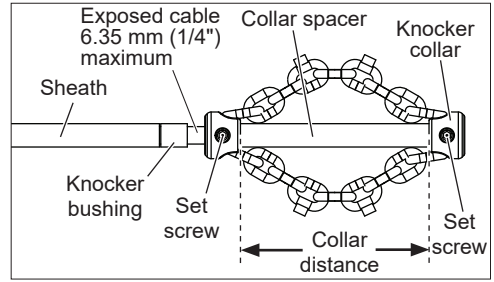
Chain knockers with carbide cutting tips can be used for breaking up more challenging blockages and debris. Carbide cutting tips are used for aggressive cleaning and could damage pipe, especially softer materials (such as plastics and Orangeburg), thin walled pipe, or if the chain knocker is kept in one position for an extended time. Do not use chain knockers for cleaning in glass, ceramic, porcelain or similar material fixtures or pipes. Damage could occur.

Collar distance:

A proper collar distance will allow the chains to spread an appropriate amount when rotated to clean the pipe walls. Use the supplied collar spacer sized for the chain knocker. If additional flexibility is required to navigate a bend, the collar spacer can be removed and the collar distance can be set with a tape measure. Operating without a collar spacer makes it more likely for the cable to flip over in use and be damaged. Do not operate carbide cutters without a collar spacer to reduce risk of cable damage.

Exposed cable:

The amount of exposed cable (cable not covered by sheath) should not exceed 6.35 mm (1/4"). The more exposed cable there is, the more likely the cable will flip and be damaged. Exposed cable is set with a bushing ("Knocker bushing") made from the extra sheath provided. Only use sheath of the correct size for the cable. Any time sheath is cut, it should be cut cleanly and squarely. Do not damage the cable when cutting the sheath.



Attaching the chain knocker

- ⚠WARNING** Remove battery to avoid starting the tool.
- Test fit the chain knocker and collar spacer on the cable as shown. Chains should be straight; do not assemble with chains twisted. Cable end should be flush with the end of the collar. Check length of exposed cable.
- Tighten the set screws with the supplied hex wrench to secure the chain knocker to the cable. Failure to secure properly can result in damage or the knocker being lost down the drain.

Drain Cleaning Setup

- Place the chain snake no further than 60 cm (2') from the drain.
- ⚠WARNING** Greater distance can cause twisting, kinking, breaking or whipping of the cable.
- Remove the foot pedal from storage and unwrap the cord and place to the side, ensuring the cord will not tangle with the cable.

Moving the product

Move the Forward/Neutral/Reverse switch to O (OFF) and remove battery from the tool before moving.

Ensure the foot pedal cord is properly wrapped and the pedal is stored before moving. Always clear the area of obstructions before moving.

OPERATION

⚠WARNING To reduce the risk of short circuit, when setting tool or battery down, do not allow battery to contact corrosive or conductive fluid.

To reduce the risk of injury, always wear proper eye protection marked to comply with AS/NZS 1337.1.

Always wear leather gloves over latex/rubber gloves to avoid entanglement.

Fuel Gauge

To determine the amount of charge left in the battery, turn the tool on. The fuel gauge will light up for 2-3 seconds. When less than 10% of charge is left, 1 light on the fuel gauge will flash 4 times.

To signal the end of charge, 1 light on the fuel gauge will flash 8 times and the tool will not run. Charge the battery pack.

If the battery becomes too hot, the fuel gauge lights will flash and the tool will not run. Allow the battery to cool down.

Reverse Protection

The chain snake is equipped with a reverse protection feature. If the chain snake runs in reverse for three seconds, the tool will turn off and the fuel gauge lights will flash.

Selecting Speed

Rotate the speed control dial to the desired speed. The farther the dial is rotated the higher the speed.

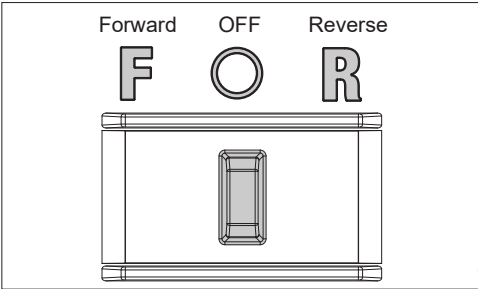
Forward/OFF/Reverse Switch

The rotational direction of the cable is set with the Forward/OFF/Reverse switch.

1. For forward (clockwise) rotation, move the switch to the F position. Check the direction of rotation before use.
2. For reverse (anticlockwise) rotation, move the switch to the R position. Check the direction of rotation before use.

NOTE: The chain snake should not be run in reverse for longer than two seconds. For more information, see "Reverse Protection".

3. To lock the switch, move the switch to the center position O. The motor will not run while the switch is in the center locked position. Always lock the switch and remove the battery pack before performing maintenance, changing accessories, storing the tool and any time the tool is not in use.



Starting and Stopping

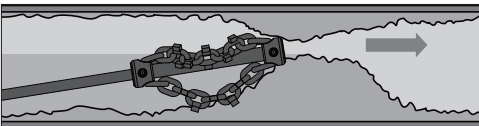
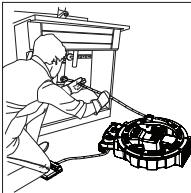
1. To **start** the tool, move the Forward/OFF/Reverse switch to either direction and step or kneel on the foot pedal.
2. To **stop** the tool, release pressure on the pedal or move the Forward/OFF/Reverse switch to the O (OFF) position.

Inserting Cable into Drain

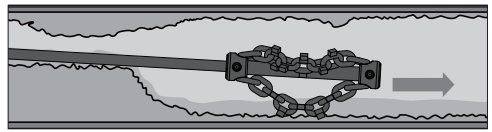
1. Transport and set the tool up according to the instructions under "Drain Cleaning Setup".
2. Pull the cable from the tool and feed at least 60 cm (2') into the drain.

WARNING Always wear leather gloves over latex/rubber gloves to avoid entanglement.

3. Feed the cable into the drain until the obstruction is reached.

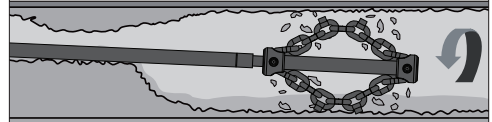


4. Pass the chain knocker through the blockage.

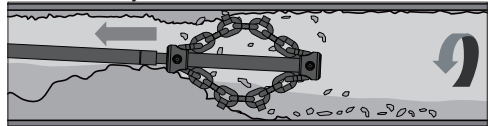


5. Set the Forward/OFF/Reverse switch to the forward F position and step or kneel on the foot pedal to begin rotating the cable.

WARNING One person must control both the cable and the foot pedal. If the cable stops rotating, the operator must be able to turn the tool OFF to prevent damage and reduce the risk of injury.



6. Gradually withdraw the cable, so the chain knocker can break up the blockage. If the tool binds, release pressure from the pedal immediately.



7. Repeat steps 4-6 until drain is clear.

Removing Cable from Drain

1. Release pressure on the foot pedal. Allow the cable to come to a complete stop before removing from drain.
2. Move the Forward/OFF/Reverse switch to the O (OFF) position.
3. Pull the cable away from the drain.
4. Wipe the exposed cable with a rag and feed it back into the drum.
5. Before storing the tool, wash the cable and drum (see "Cleaning" and "Cleaning the Cable" in Maintenance).

MAINTENANCE

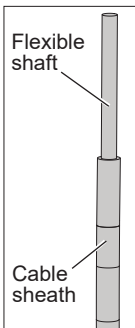
⚠WARNING To reduce the risk of injury, always unplug the charger and remove the battery pack from the charger or tool before performing any maintenance. Never disassemble the battery pack, charger, or tool, except as provided in these instructions. Contact a MILWAUKEE® service facility for all other repairs.

Oiling the Cable

Regular oiling will prolong the cable and decrease friction.

To oil the cable:

1. **⚠WARNING** Remove battery to avoid starting the tool.
2. Remove the "Remove to Access Cable" cover.
3. Remove cable from the tool.
4. Pull the flexible shaft cable out of the sheath.
5. Pour 1 oz. of 5W40 oil into the sheath at the gearbox end.
6. Insert the chain knocker end of the flexible shaft cable back into the oiled-end of the sheath.
NOTE: It may be easier to feed the flexible shaft back into the cable sheath when the sheath is uncoiled.
7. Install the cable back into the tool (see "Replacing the Cable" section).
8. Reinstall the "Remove to Access Cable" cover.
9. Install the battery pack. Run the tool in forward **F** position for two minutes at high speed to allow the oil to travel the cable length.



Repairing a Damaged Cable End

⚠WARNING A freshly cut cable end is sharp; always wear protective gloves when handling the cable.

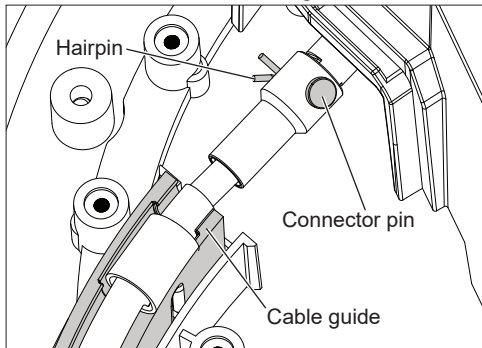
Do not use a damaged cable. The cable can be repaired by cutting off a section to produce a clean and square end.

1. **⚠WARNING** Remove battery to avoid starting the tool.
2. Use clamps or another practical way to secure and support the cable to a stable platform. Holding the work by hand or against your body leaves it unstable and may lead to loss of control.
3. Cut off damaged cable end cleanly and squarely.
4. Measure the remaining exposed cable.
5. Using a tubing cutter, cut the sheath back to expose the sheath.
6. Remove any sharp edges from the cable end.

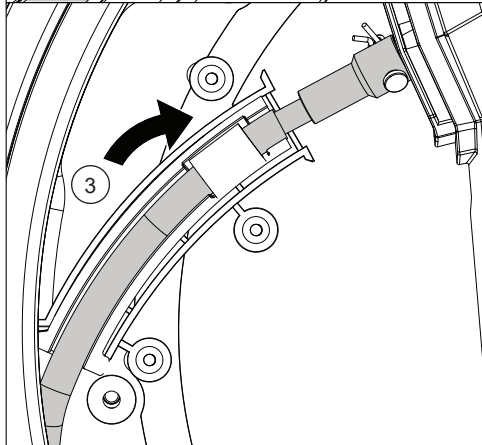
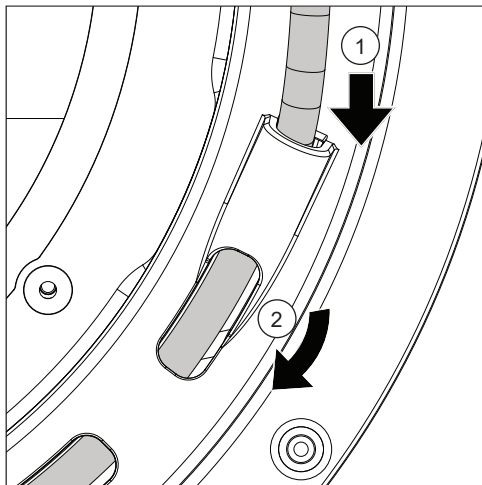
Replacing the Cable

1. **⚠WARNING** Remove battery to avoid starting the tool.
2. Remove the "Remove to Access Cable" cover.
3. Remove the hairpin and connector pin to separate the cable from the cable drive.

4. Pull the cable out of the recessed rubber guides to free the cable from the housing.



5. While noting how the cable is routed through the housing, pull the cable out of the tool.
6. Route the new cable through the housing as shown until the cable appears inside the drum.



7. Align cable and cable drive holes using the supplied hex wrench.
8. Install the connector pin and hairpin.
9. Push the cable into the recessed rubber guides.
10. Push the remaining length of cable into the tool.
11. Reinstall the "Remove to Access Cable" cover.

Maintaining Tool

Keep this tool, battery pack and charger in good repair by adopting a regular maintenance program. Inspect the tool for issues such as undue noise, misalignment or binding of moving parts, breakage of parts, or any other condition that may affect the tool operation. Return the tool, battery pack, and charger to a **MILWAUKEE**® service facility for repair. Depending on use, periodically have an authorized service facility inspect and maintain the tool, battery, and charger to ensure proper performance.

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 a tool, battery pack or charger in liquid or allow a liquid to flow inside them.

Cleaning

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

Cleaning the Cable

⚠WARNING Remove battery to avoid starting the tool. Cleaning fluids or contaminated water entering the battery can result in battery damage and possible fire.

The cable should be thoroughly flushed with water after every use to prevent damaging effects of sediment and drain cleaning compounds. Do not expose battery bay or electrical connections to water. Ensure electrical connections are dry before inserting battery pack.

⚠WARNING Always wear leather gloves over latex/rubber gloves to avoid entanglement. After washing, dry cable completely.

Repairs

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

ACCESSORIES

⚠WARNING Use only recommended accessories. Others may be hazardous.

For a complete listing of accessories, go online to milwaukeeetool.com.au / milwaukeeetool.co.nz or contact a distributor.

WARRANTY - AUSTRALIA and NEW ZEALAND

Please refer to Australian and New Zealand warranty supplied with tool. This warranty applies only to product sold by authorised dealers in Australia and New Zealand.

SERVICE - AUSTRALIA and NEW ZEALAND

MILWAUKEE® prides itself in producing a premium quality product that is Nothing But Heavy Duty™. Your satisfaction with our products is very important to us! If you encounter any problems with the operation of this tool, please contact your authorised **MILWAUKEE®** dealer.

For a list of **MILWAUKEE®** dealers, guarantee or service agents please contact **MILWAUKEE®** Customer Service or visit our website.

(Australia Toll Free Telephone Number 1300 645 928)

(New Zealand Toll Free Telephone Number 0800 645 928)

or visit milwaukeetool.com.au/milwaukeetool.co.nz.

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