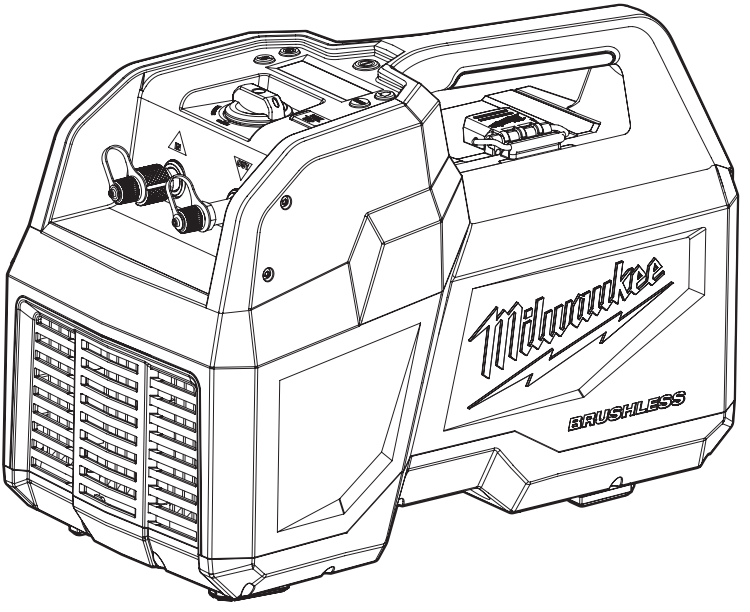
OPERATOR'S MANUAL



Cat. No.
M18 BLRP

M18™ HVAC RECOVERY PUMP

⚠ 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 pump. 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 behavior 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.

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 RECOVERY PUMP

⚠WARNING **To reduce the risk of injury when working in dusty situations, use a suitable dust extraction solution in accordance with its operating instructions or wear appropriate respiratory protection.**

- **For use by qualified personnel only.**
- **Do not leave the pump running unattended.**
- **To avoid cross contamination of refrigerant and potential leakage to the atmosphere, the proper hoses and fittings should be used and checked for damage.** Use caution when handling hoses and valves. Check for leaks often.
- **Always treat hoses and valves as if they are under high pressure.** Open valves slowly to avoid accidental release of refrigerant.
- **Do not mix refrigerants.**
- **To prevent debris from entering or obstructing the pump, ensure area around the pump is clear of debris.**
- **Purge the recovery pump after every use. Do not allow refrigerant to remain in the machine.**
- **Always use common sense and be cautious when using pump.** 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.

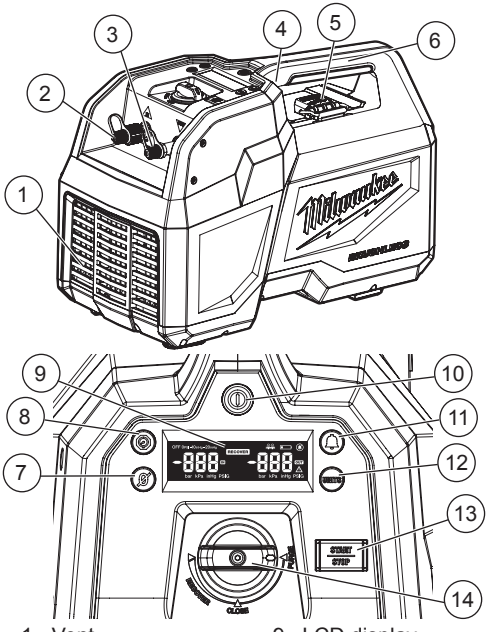
Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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.

FUNCTIONAL DESCRIPTION



1. Vent
2. In port
3. Out port
4. Rope notch
5. Battery door latch
6. Handle
7. Zero button
8. Shut off selection button
9. LCD display
10. Power button
11. Alarm button
12. Units button
13. Start/Stop button
14. Mode selection knob

SPECIFICATIONS

Cat. No. ..... M18 BLRP
Volts..... 18 V DC
Battery Type ..... M18™
Charger Type..... M18™
Max Recovery Rates (per minute)
Direct Vapor (R410a)..... 0.3 kg/min
Direct Liquid..... 3.3 kg/min
Max Pressure Safety Cut-off..... 550 PSIG
Recommended Ambient
Operating Temperature..... -17°C to 51°C

Approved Refrigerants

Intended for use with Category III, IV, and V Refrigerants in Accordance with AHRI-740-2016.

Class	Refrigerant
III	R12, R134A, R401C, R500, R1234YF
IV	R22, R401A, R401B, R402B, R407C, R407D, R408A, R409A, R411A, R411B, R412A, R502, R509
V	R32, R402A, R404A, R407A, R407B, R410A, R507

Maximum Recovery Rates

Recovery rates measured with a pro-set molecular transformator sub cooler. In order to maximize recovery rates, use 1/4" I.D Hose for recovery of liquid R410A and 3/8" I.D Hoses for all other types of refrigerant recovery.

Refrigerant	Push/ Pull lbs/min (kg/min)	Direct Liquid lbs/min (kg/min)	Direct Vapour lbs/min (kg/min)
R-22	11.4 (5.17)	8.5 (3.79)	0.9 (0.41)
R-134A	10.4 (4.58)	7.4 (3.79)	0.66 (0.30)
R-410A	12.6 (4.63)	7.4 (3.35)	0.7 (0.33)
R-1234YF	8.0 (3.62)	6.0 (2.69)	0.7 (0.30)
R-32	12.0 (3.93)	4.8 (2.20)	0.51 (0.23)
R407C	10.9 (3.83)	6.3 (2.89)	0.6 (0.26)

SYMBOLOGY

V — Volts

⎓ — Direct Current


Safety Alert Symbol


⚠WARNING Risk of Electric Shock


Wear protective gloves.


Read Operator's Manual


Always wear proper eye protection marked to comply with AS/NZS 1337.1


⚠DANGER EXPLOSION HAZARD - BATTERIES MUST ONLY BE CHANGED IN AN AREA FREE OF IGNITABLE CONCENTRATIONS.


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.

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 **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.

LED Screen Icon Symbology

This tool has an LED screen that displays the icons below. The icons change based on current settings. If a setting is changed, the icon on the screen will be updated.

Symbol	Function
OFF	Power On/Off
0PSIG -10inHg -20inHg	Shut Off Pressure Setting
RECOVER	Recovering
THROTTLE	Throttling
	Depleted Battery
	Alarm On/Off
	Overload Warning
IN	IN Pressure
OUT	OUT Pressure
bar kPa inHg PSIG	Pressure Units

Setting the Units

To select the desired pressure units, press the Units button. The Units on the LCD display will cycle between bar, kPa, inHg, and PSIG.

Low Battery Indication

When the pump's battery is fully drained, an alarm will sound and the pump will turn off.

Zeroing Out Pressure Sensors

Press the Zero button on the tool's control panel to zero out the tool's pressure measurements.

Turning Alarm On/Off

To silence/unsilence the alarm, press the Alarm button. The Alarm icon on the LCD screen will change to reflect the current setting.

Shut Off Selection

Press the Shut off button to select the pressure measurement at which the pump will stop the recovery process. If Shut off is set to OFF, the pump will continue recovery until the battery runs out.

OPERATION

⚠WARNING To reduce the risk of injury, always wear proper eye protection marked to comply with AS/NZS 1337.1.
To reduce the risk of injury when working in dusty situations, use a suitable dust extraction solution in accordance with its operating instructions or wear appropriate respiratory protection.

General Operation

1. To turn the tool **on**, press the Power button. The LCD display will light up.
   NOTE: the battery door must be closed for the tool to turn on.
2. To turn the tool **off**, press the Power button. The LCD display will turn off.

Test Procedure

The **test** procedure verifies the recovery pump is operating correctly.
NOTE: This test requires the use of a ball valve.
To test the recovery pump:
1. Insert battery and close battery door.
2. Turn mode selection knob to Recover.
3. Remove caps from IN and OUT hose ports.
4. Connect a ball valve to OUT hose port.
5. Close the ball valve.
6. Press the Power button to turn the tool on.
7. Hold down the Start/Stop button for three seconds to start the device. Pressure will be created at the OUT hose port.
8. Wait for max pressure safety cutoff. If cutoff occurs at or below 60 seconds, then the pump is working correctly.
9. Open ball valve to release pressure.
10. If pump is not working correctly, consult troubleshooting section or return the tool, battery pack, and charger to a *MILWAUKEE*® service facility for repair.

Purging the Pump

The pump should be purged after each recovery before disconnecting the pump.
To **purge** the pump:
1. Set mode selection knob to Purge.
2. Set Shut Off setting to 0 PSI.
3. Hold down the Start/Stop button for three seconds to start the pump.
4. Wait for the purge to complete. The recover process will automatically end and the motor will stop running when finished.

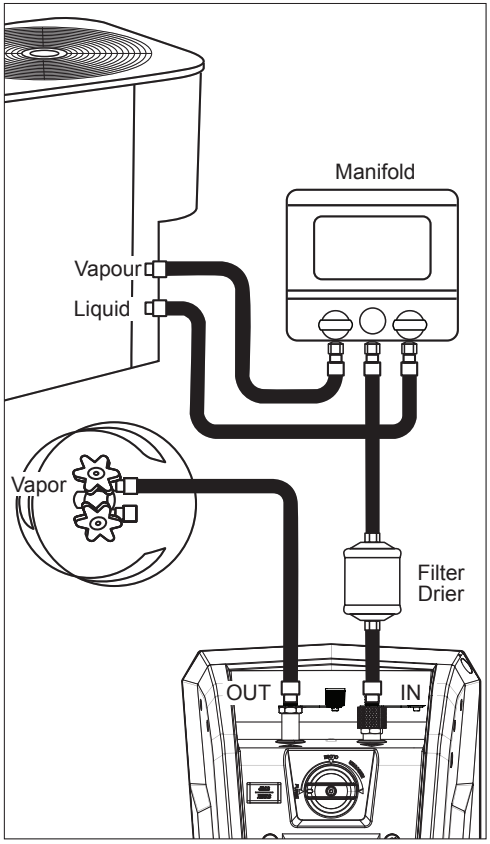
Direct Liquid/Vapour Recovery

This is the most common recovery method, which routes vapor and liquid through a manifold that regulates the flow of refrigerant.

⚠WARNING Before beginning recovery, ensure you have the tank capacity to recover all of a system's refrigerant. Do not overfill recovery tanks past 80% capacity.

1. Insert battery and close battery door.
2. Close the valves of the recovery cylinder, manifold, and recovery pump.
3. Connect recovery pump to the unit as shown in the diagram.
4. Press the Power button to turn the tool on.
5. Press and hold the Zero button to zero out the pressure sensors.
6. Press the Shut off button to select the pressure measurement (0PSI, -10inHG, -20inHg) at which the pump will stop the recovery process.
7. Set the mode selection knob to Recover.
8. Open the high side of the manifold to begin liquid recovery.
9. Hold the Start/Stop button for three seconds to start the pump.

10. Purge air from the hose by briefly unseating the hose fitting at the cylinder until vapor is seen from the hose. Reseat the hose fitting.
11. Purge air from the low side hose by briefly unseating it from the low side of the manifold until vapor is seen from the hose. Reseat the hose fitting.
12. Open the vapour valve of the recovery cylinder.
13. Press Start/Stop button to start recovery.
14. When liquid recovery is complete, open the low side of the manifold to begin vapour recovery.
15. The pump will stop automatically when the shut off setting (0 PSI, -10 inHG, -20 inHg) is reached.
16. Set knob to Purge and press the Start/Stop button to purge the pump.
17. When purge is finished, close the manifold and cylinder hose valves.
18. Disconnect the pump and cover its ports with caps.

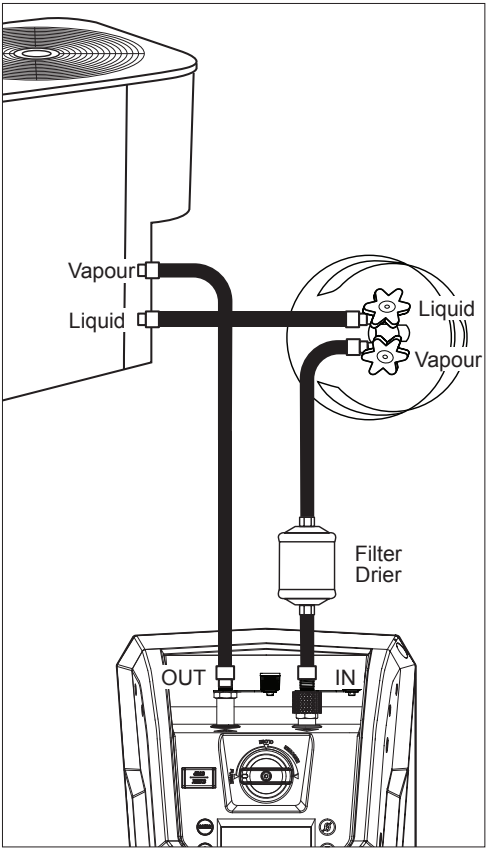


Push/Pull Recovery

This recovery method is used for large systems with at least 4.54 kg (10 lbs) of refrigerant.

⚠WARNING Before beginning recovery, ensure you have the tank capacity to recover all of a system's refrigerant. Do not overfill recovery tanks past 80% capacity.

1. Insert battery and close battery door.
2. Close recovery cylinder valves.
3. Connect recovery pump to the unit as shown in the diagram.
4. Press the Power button to turn the tool on.
5. Press and hold the Zero button to zero out the pressure sensors.
6. Purge air from the liquid hose by briefly unseating the hose fitting at the cylinder's port until vapour is seen. Reseat the hose.
7. Open the liquid valve on the recovery cylinder.
8. Set knob to Recover.
9. Press the Start/Stop button to begin recovery.
10. Open the vapour valve of the recovery cylinder.
11. Purge air from the vapor hose by briefly unseating the hose fitting at the cylinder's port until vapor is seen. Reseat the hose.
12. Press Start/Stop button when liquid recovery is complete.
13. Close all valves. Proceed to Direct vapour Recovery procedure.



Troubleshooting

Problem	Cause	Correction
Pump will not turn on.	Battery door is open.	Close battery door.
Pump will not run.	Hose valves are not open.	Open the hose valves
Device is making a knocking noise.	Pump is not throttled to compensate for a larger system.	Throttle the pump by moving the knob closer to Close until the knocking stops.
	System is too large.	Do not use this device for large systems.
Pump is too slow.	Mesh screen is dirty or clogged.	Clean mesh screen.
	HVAC system is contaminated or damaged.	Clean mesh screen Check for damaged or contaminated HVAC components and complete necessary repairs.

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 repairs.

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.

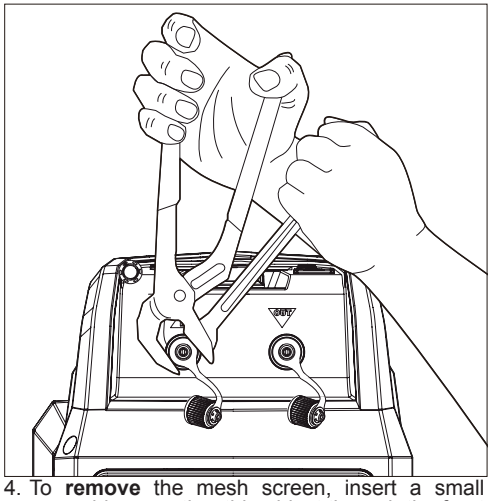
⚠WARNING To reduce the risk of personal injury and damage, never immerse a tool, battery pack or charger in liquid or allow a liquid to flow inside them.

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/Replacing the Mesh Screen

1. Purge the pump and disconnect from any system before cleaning/replacing the mesh screen.
2. **WARNING!** Remove battery to avoid starting the tool.
3. To **remove** the IN port, use one wrench to hold the port steady and another wrench to loosen the filter nut of the IN port. Remove the IN port.



4. To **remove** the mesh screen, insert a small screwdriver or other thin object through the front of the IN port to poke the screen out.
5. Clean debris from the screen.
6. To **replace** the screen, use a small screwdriver to poke the screen into place within the IN port.
7. To **install** the IN port, use one wrench to hold the port steady and another wrench to tighten the filter nut. Do not overtighten.

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 milwaukeetool.com.au / milwaukeetool.co.nz or contact an authorised 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)
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or visit milwaukeetool.com.au/milwaukeetool.co.nz.

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