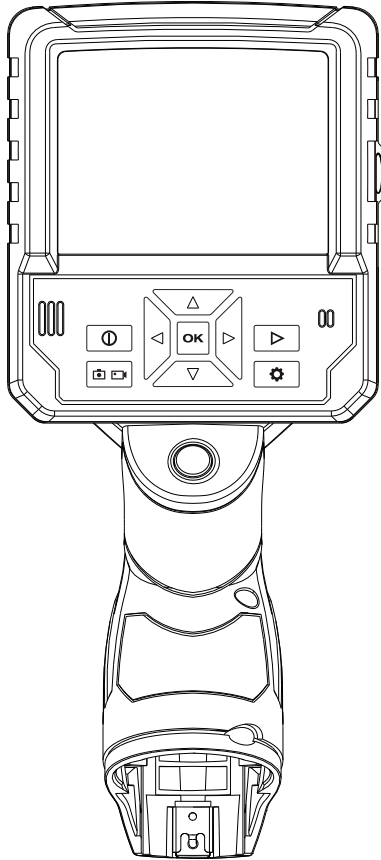




# OPERATOR'S MANUAL



Cat. No.  
A%&7 5 J' !- \$7

## M12™ M-SPECTOR FLEX™ INSPECTION CAMERA

 **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 ground fault circuit interrupter (GFCI) protected supply.** Use of an GFCI 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 energizing 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 jewelry. Keep your hair and clothing away from moving parts.** Loose clothes, jewelry 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 MULTIMEDIA CAMERA

•Maintain labels and nameplates. These carry important information. If unreadable or missing, contact a MILWAUKEE® service facility for a replacement.

**FCC** Federal Communications Commission **WARNING** This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Similarly in Australia and New Zealand this product complies to ACMA EMC requirements.

### SPECIFICATIONS

Cat. No. ....M12ICAV3-90C  
 Volts ..... 12 DC  
 Battery Type ..... M12™  
 Charger Type ..... M12™  
 Memory Card ..... SD  
 Interface Cable ..... Micro USB

### SYMBOLLOGY



Volts



Direct Current



User Must Read Operator's Manual



Wear Eye Protection



To Prevent Electric Shock, Do Not Allow Product to Contact Live Electrical Parts

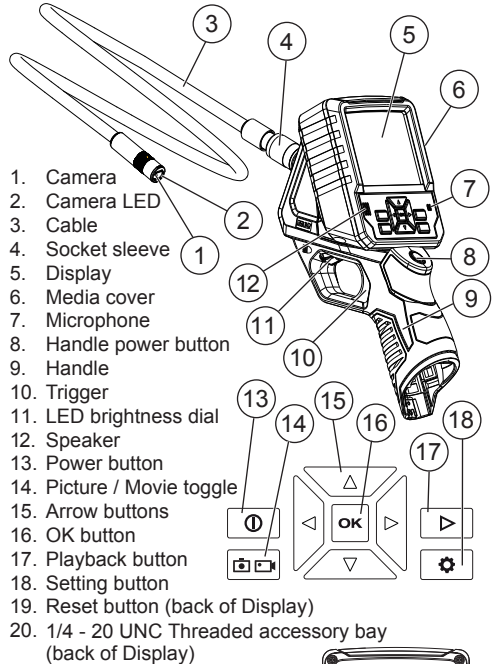


Federal Communications Commission

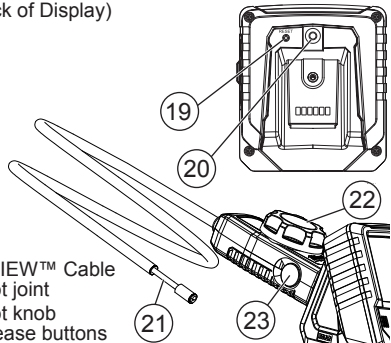


Regulatory Compliance Mark (RCM). Product meets applicable regulatory requirements.

### FUNCTIONAL DESCRIPTION



1. Camera
2. Camera LED
3. Cable
4. Socket sleeve
5. Display
6. Media cover
7. Microphone
8. Handle power button
9. Handle
10. Trigger
11. LED brightness dial
12. Speaker
13. Power button
14. Picture / Movie toggle
15. Arrow buttons
16. OK button
17. Playback button
18. Setting button
19. Reset button (back of Display)
20. 1/4 - 20 UNC Threaded accessory bay (back of Display)



21. Pivot joint
22. Pivot knob
23. Release buttons

## 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.

### Removing/Inserting the Battery

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

**⚠WARNING** Always remove battery pack before changing or removing accessories.

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

### Charging the Display

When the display and handle are connected, the battery pack will power both the handle and the display. When separated, the display runs off of an internal rechargeable battery. To recharge the display, connect it to the handle/battery pack, or to a power source via USB cable. Always store the display docked on the handle. If the display shuts down due to low power, recharge for at least 30 minutes before use.

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

### Connecting the Cable

1. Slide back the socket sleeve.
2. Insert the cable into the socket.
3. Rotate the cable until it is fully seated into the socket.
4. Slide the sleeve over the connection. Tighten the sleeve securely.

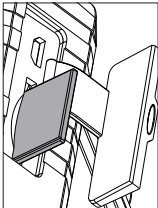
### Connecting the PIVOTVIEW™ Cable (Some Models or as an Accessory)

1. Rotate the pivot knob to determine the orientation needed for the movement. The pivot head rotates up to 270° on one plane.
2. Snap the PIVOTVIEW™ Cable over the socket. It must line up in one of four 90° positions.
3. To remove, press the release buttons and pull away from the tool.

### Inserting/Removing the Memory Card

The number of images/videos that can be saved is based on the size of the memory card.

1. Open the protective cover to access the memory card slot.
2. Slide the memory card into the slot, the top of the card should face away from the LCD screen. Press in the card securely. It should click in place.
3. Close the protective cover.
4. To remove the memory card, press it in and release. It will pop out.



**Note:** To save images/videos to the memory card, it must not be "locked" with the write-protection tab in the lower position.

### Downloading to a Computer

Power on the display. Insert the USB cable into the port on the side of the display. Connect the USB end into the USB port on your computer.

**NOTE:** If you are unable to view the videos on your computer it may be because your computer is missing the DIVX or XVID codec. The AVI file is recorded in MPEG4 format and your computer needs a DIVX or XVID codec to decode and play it. Download the appropriate codec to view the images/videos.

## Settings

To enter the settings menu, turn on the tool and press the Settings button. Use the ◀▶▲▼ buttons to move through the setting menu.

MENU	SELECTIONS
MICROPHONE	ON/OFF
LCD BRIGHTNESS	LOW/MEDIUM/HIGH
DATE	MM/DD/YY
TIME	HR/MIN AM/PM
LANGUAGE	MULTIPLE SELECTIONS
DELETE ALL	CANCEL/DELETE ALL
VERSION	Display the software version.

## OPERATION

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

Always remove battery pack before changing accessories or making adjustments.

### ⓪ Turning On/Off

When the display is docked on the handle, press either Power ⓪ button to turn the tool on. Press and hold either Power ⓪ button to turn the tool off.

When the display and handle are separated, use the individual power buttons to turn each piece on and off.

### ▣▣▣ Fuel Gauge

When the display is docked on the handle, the M12™ battery pack fuel gauge is displayed in the upper right corner.

When the display is undocked from the handle, two fuel gauges are displayed. The left gauge shows the remaining charge of the display's internal battery. The right gauge shows the remaining charge of the M12™ battery pack. Each block in the fuel gauges represents approximately 1/4 of the battery's life.

**⚠WARNING** To reduce the risk of explosion, electric shock and property damage, always check the work area before beginning a job. Do not allow cable to contact electrical, chemical, or moving hazards.

**Behind walls:** Shut off circuit breakers to the entire area.

**Inside Pipes:** Ensure there is no electrical charge to the pipes before beginning inspection. Do not allow liquid to flow down cable and into tool.

**Auto use:** Turn off the engine and allow to cool before beginning inspection. Do not allow the visual inspection camera or cable to contact oil, gas, or other corrosive materials.

**⚠CAUTION** To reduce the risk of damage to the tool, do not use excessive force or "kink" the cable. Do not use in areas where visual inspection camera and cable will contact corrosive or oily substances.

Do not use the cable to clear clogs or move obstructions. This is not a drain cleaner!

## Using the Handle and Display



To separate the display from the handle grasp each part firmly and slide the display away from the battery pack. To reconnect, slide handle and display together.

NOTE: The error message "NO IMAGE SIGNAL" is displayed if the handle is not powered on, the handle is out of range of the display (approximately 4.57M (15')) or the cable is not fully connected to the handle. Also, interference may occur when multiple tools are in use in close proximity.

## Using the PIVOTVIEW™ Cable (Some Models or as an Accessory)


1. Install in the desired orientation according to "Connecting the Cable".
2. Carefully feed cable into desired area.
3. Turn the pivot knob to rotate the head up to 270° on a single plane.
4. If the desired view is not achieved, press the release buttons and rotate the pivot cable 90°. Reattach to the socket. Bend or manipulate the cable as needed.

## Taking Images/Videos

Use the Image/Video   button to toggle between taking images or videos. The icon of the selected mode is displayed in the upper left corner of the display.

1. Adjust the cable to best fit the opening. After checking the workspace for hazards, insert the cable.
2. Use the ▲ ▼ buttons to zoom in or out on the image.
3. Use the ◀ ▶ buttons to rotate the image in 90° increments.
4. Use the LED brightness dial to increase/decrease the light.
5. To take an image or begin a video, press the OK button or pull the trigger.
6. To end the video, press OK or pull the trigger again.
7. To save the image/video, press OK or pull the trigger. The image/video is saved onto the memory card. Or, use the ◀ ▶ buttons to select Cancel.
8. **NOTE:** During a video recording, sound is also recorded at the display if the MICROPHONE is ON in Settings.

## Review

Press the Review  button to view the saved images/videos.

1. Use the ◀ ▶ buttons to move through the stored images/videos.
2. Press the OK button to select an image/video.
3. Use the ▲ ▼ buttons to select one of the following:
 

EDIT	Zoom or rotate an image. Use the ▲ ▼ buttons to zoom. Use the ◀ ▶ buttons to rotate in 90° increments.
PLAY	Play back a video. Use OK to Pause/Play. Use the ◀ ▶ buttons to Rewind/Fast Forward.
DELETE	Permanently delete an image/video.
FLAG	Flag an image/video for future use. An "F" is added to the front of the file name for ease of locating when connected to a computer.

## Reset Button

Use the reset button to restart the unit.

## 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. Inspect your 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. After six months to one year, depending on use, return the tool, battery pack and charger to a MILWAUKEE® service facility for inspection.

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 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 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 centre.

## ACCESSORIES

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

For a complete listing of accessories, go online to [www.milwaukeetools.com.au/](http://www.milwaukeetools.com.au/) [www.milwaukeetools.co.nz](http://www.milwaukeetools.co.nz) or contact a distributor.

### M-Spector FLEX™ 1M (3') Inspection Camera Cable

Cat. No. 48530150

### M-Spector FLEX™ 2.74M (9') Inspection Camera Cable

Cat. No. 48530151

### M-Spector FLEX™ 1M (3') Inspection Camera Cable with PIVOTVIEW™

Cat. No. 48530155





## **WARRANTY - AUSTRALIA and NEW ZEALAND**

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

## **SERVICE - AUSTRALIA and NEW ZEALAND**

*MILWAUKEE*<sup>®</sup> prides itself in producing a premium quality product that is Nothing But Heavy Duty<sup>®</sup>. 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*<sup>®</sup> dealer.

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

(Australia Toll Free Telephone Number 1300 361 505)

(New Zealand Toll Free Telephone Number 0800 279 624)

or visit [www.milwaukeetools.com.au](http://www.milwaukeetools.com.au) / [www.milwaukeetools.co.nz](http://www.milwaukeetools.co.nz).

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Rowville, Victoria, Australia, 3178

### **Milwaukee Electric Tool Corporation (New Zealand)**

Techtronic Industries (New Zealand) Pty. Ltd.

Mangere, Auckland, New Zealand, 2022

Professionally made in China for Milwaukee Electric Tool Corporation