



# LENCO BEARCAT OPERATORS MANUAL

**LENCO**  
**ARMORED ★ VEHICLES**  
*Protecting Our Nation's Defenders™*

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# **BearCat Operation**

## **I Vehicle Basics**

### **Engine Starting (Diesel)**

Vehicle should be in Park with the Parking Brake set. Rotate the key forward one position. The warning systems will momentarily illuminate. Wait for the glow-plug pre-heat indicator light to go out, vehicle is ready to start. Turn the key to the start position and release as soon as the engine starts. More information can be found in the Ford Power Stroke Owners Guide Supplement.

### **Four Wheel Drive System**

Using **Manual Shift on Stop (MSOS)**

The 4WD system is engaged or disengaged by rotating the control for both front wheel hub locks from the FREE or LOCK position, then manually engaging or disengaging the transfer case with the floor-mounted shifter. For increased fuel economy in 2WD, rotate both hub locks to the FREE position. A “4x4” indicator light will illuminate when the floor mounted shifter is engaged with an additional indicator light illuminated in “LOW RANGE”.

Note: Some noise may be heard as the 4WD system shifts or engages. This is normal.

**2H (2WD High)** For general on-road driving. Sends power to rear wheels only.

**4H (4WD High)** For winter and off-road conditions. Sends power to front and rear wheels.

**N (Neutral)** Only used when towing the vehicle.

**4L (4WD Low)** For low speed off-road applications that require extra power.

#### **Shifting from 2H (2WD High) to 4H (4WD High)**

Engage the locking hubs by rotating the hub lock control from FREE to LOCK, then move the transfer case lever from 2H (2WD High) to 4H (4WD High) at a vehicle speed below 3 mph. DO NOT shift into 4H with the rear wheels slipping.

#### **Shifting from 4H (4WD High) to 4L (4WD Low)**

1. Bring the vehicle to a complete stop.
2. Place the gearshift lever in N (Neutral)
3. Move the transfer case shift lever through N directly to 4L. If the shift lever does not or only partially moves to the 4L position, perform a shift with the transmission in N and the vehicle rolling at a speed below 3 mph. This will ensure the transfer case is fully engaged into 4L.

### **Shifting from 4L (4WD Low) to 4H (4WD High) or 2H (2WD High)**

1. Bring the vehicle to a speed below 3 mph
2. Place the gearshift lever to N (Neutral)
3. Move the transfer case shift lever through N (Neutral) directly to 4H or 2H
4. If the transfer case **will not** engage into 4H or 2H, let the vehicle creep at a speed above 1 mph then repeat steps 2 and 3.
5. If shifting to 2H with the vehicle at a complete stop, disengage the locking hubs (optional) by rotating the hub lock control from LOCK to FREE.

### **Using the N (Neutral) position**

The transfer case neutral position overrides the transmission and puts the vehicle in neutral regardless of transmission gearshift lever position. The vehicle can now move forward or backwards.

This position should only be used when towing the vehicle.

**Note:** For more information consult the Ford Owners Manual supplied with your vehicle.

## **Four Wheel Drive System**

### **Using Electronic Shift on the Fly (ESOF)**

The system is equipped with Auto-Manual hub locks. Automatic operation of the hub locks is recommended, and will increase fuel economy. Turning the hubs to “Lock” will manually override the Auto-Manual System.

**Note:** Some noise may be heard as the 4WD system shifts or engages. This is normal.

The Four Wheel Drive engagement control is located to the right of the steering wheel on the dash board.

**2WD** – For general on-road driving. Sends power to the rear wheels only.

**4x4 HIGH** – For winter and off-road conditions. Sends power to front and rear wheels.

**This mode is not intended for use on dry pavement.**

**4x4 LOW** – For low-speed off-road applications that require extra power such as steep grades, deep sand or pulling a boat out of the water. Sends power to front and rear wheels. **This mode is not intended for use on dry pavement.**

### **Shifting from 2WD to 4X4 HIGH**

Rotate the 4x4 control to the 4x4 HIGH position at speeds up to 55 mph (88 km/h).

### **Shifting from 4x4 HIGH to 4x4 LOW**

1. Bring the vehicle to a complete stop.
2. Depress the brake.
3. Place the gearshift in N (Neutral). If the vehicle is equipped with a manual transmission, also depress the clutch pedal.
4. Move the 4x4 control to the 4x4 LOW position.
5. Hold the shift conditions until the 4x4 LOW indicator light illuminates.
6. If the 4x4 LOW indicator light **does not** illuminate within 15 seconds, allow the vehicle to move at a speed below 5 mph (8 km/h), then repeat steps 2 through 5 while the vehicle is rolling before reporting any shift concerns to your authorized dealer.

### **Shifting from 4x4 LOW to 4x4 HIGH or 2WD**

1. Bring the vehicle to a complete stop.
2. Depress the brake.
3. Place the gearshift in N (Neutral).
4. Move the 4x4 control to the 4x4 HIGH or 2WD position.
5. Hold the shift conditions until the 4x4 LOW indicator light shuts off.
6. If the 4x4 LOW indicator light **does not** shut off within 15 seconds, allow the vehicle to move at a speed below 5 mph (8 km/h), then repeat steps 2 through 5 while the vehicle is rolling. If the indicator light still does not shut-off, contact your authorized Ford dealer.

**Note:** For more information consult the Ford Owners Manual supplied with your vehicle.

### **Fuel Pump Shut-Off Switch/Reset**

The Fuel Pump Reset is located on the passenger side of the dash board. This switch shuts off fuel flow to the engine in the event of a substantial jolt. To reset follow the instructions outlined in the Ford Owners Guide.



**Fuel Pump Reset**

## **II Electrical Options**

### **Auxiliary Ford Switches**

The Auxiliary Ford Switches are dash mounted and are located to the right of the steering wheel. All switches are tagged for easy identification. The four switches only have power when the ignition key is in the on position. The switches control the following options.

**Elevated Idle Control** allows the vehicle to “idle up” while it is in a stationary position.

The vehicle gear shift selector must be in Park with the Parking Brake set. Flip the Idle Control Switch up. A light will come on to indicate that the switch is activated. The engine idle will increase in RPM. The Elevated Idle Control can be deactivated by releasing the Parking Brake, stepping on the brake pedal or flipping the auxiliary switch down into the off position.



**Driving Lights** are controlled by the second switch from the left. Flip the switch up to activate. A light will come on to indicate that the switch is activated. The lights are integrated into the front bumper.

**Wig-Wag Lighting** is controlled by the switch labeled “Wig-Wag”. A light will come on to indicate that the switch is activated. Once activated the front headlights and rear tail lights including the reverse lights will flash alternating from side to side.

Vehicle main power must be “on” for these features to function.

**Note:** The additional switch location is not in use but are available for future accessory installation.

### **Combustible Gas Monitoring System**

The Combustible Gas Detection System is made up of a Polytron IR Gas Transmitter located under the vehicle, a Trip Amplifier mounted inside the center console and an LED Light Display with Audible Alarm mounted on the console. Although the unit is capable of detecting several gases it is calibrated for **Methane Gas**. Whenever the main vehicle power is on the unit is activated. The display is set up using two LED lights and an audible alarm.



**Combustible Gas LED Display**



The alarms are preset to function by measuring the LEL (Lower Explosive Limit) as a percentage of the gas being detected. Using 100% as fully combustible the display operates in the following manner: At 20% of LEL (Lower Explosive Limit) the High LED light is triggered. At 40% of LEL (Lower Explosive Limit) the High/High LED light and Audible Alarm is triggered. This gives the vehicle occupants advance warning before explosive concentrations are reached. The trigger points are preset and tested at the factory before delivery.

(**Note:** The Polytron IR Gas Transmitter mounted on a **BearCat** is located under the vehicle on the driver side ahead of the rear wheels. The Gas Transmitter on a **Bear** is mounted behind the front bumper on the passenger side.)

For more information refer to the Drager Operation Manual # SC044453.

### **D/C to A/C Power Inverter**



**D/C to A/C Power Inverter**

The D/C to A/C Power Inverter is mounted inside the vehicle under the rear bench and provides a 120 VAC receptacle with GFCI (Ground Fault Circuit Interrupt) protection. The unit is operated using an On/Off rocker switch mounted on the front panel. The Power Inverter is equipped with a Battery Charge Feature that allows the vehicle batteries to be charged via an external 30 amp shore plug. The inverter does not need to be turned on for this feature to function. A 30 amp to 15 amp adapter is provided to allow the use of standard 120 VAC wall outlets for charging.

Plug the adapter into the receptacle marked "Shore Line 30 Amp Max" located on the exterior of the vehicle on the driver side. Using a heavy duty extension cord, plug into the adapter and into the 120 VAC power supply, charging starts automatically. There is a Remote Temperature Sensor attached to the batteries which allows the unit to monitor the battery temperature to assure correct operation of the charge circuit. Battery state is indicated by lights on the front of the Power Inverter. When shore power is plugged in, an internal transfer switch is activated which allows 120 VAC power to be supplied direct from the wall outlet to the 120 VAC receptacle located on the Power Inverter.

**Caution:** When shore power is disconnected and the vehicle is not in use the Power Inverter rocker switch must be in the "off" position to avoid a power drain at the vehicle batteries.

For more information refer to the D/C to A/C Power Inverter Manual supplied with your vehicle.



**Shore Line**

## **Electric Power Winch**

The Electric Power Winch is mounted in the front bumper. The top of the bumper is open to allow easy access to the control plug. Remove the weather cover on the control plug and mount the Winch Remote Control onto the plug. The Remote Control is indexed to fit only one way. The Control has a 12 ft. long cord with a handheld remote which uses a rocker switch to control the spool. Pictures indicate spool direction. A Red LED light is located above the rocker switch and will flash if the winch reaches a temperature that could result in damage to the motor. Current models are equipped with an LED Flashlight integrated into the Remote Control handle. When not in use the Remote Control should not be left plugged in. The spool drum clutch handle is located on the winch body opposite the control access plug. Engagement is indicated by decals and arrows. “Free Spool” releases the drum allowing the winch cable to be pulled out without the winch motor running. Always use the supplied Hook Strap to pull the cable by hand. The use of heavy leather gloves is recommended whenever the winch cable is handled. “Engaged” couples the gear train allowing the winch cable to be controlled by the hand held Remote Control. For **Safety** it is important to read and understand all **Warnings Cautions and Notices** referenced in the Winch Operators Guide included with your vehicle.



**Electric Winch**

**Caution:** Do not attach the winch cable to an object and pull with the vehicle. The winch should only be operated by utilizing the winch controller.

## **Exterior Red/Blue Lighting**

There are four LED lights mounted on the exterior of the BearCat. Two are mounted in the front grille guard and two are positioned above the rear doors. The control switches are located in the center console. They are labeled “Front LEDs” and “Rear LEDs”. Vehicle main power must be “On” for the lights to function.

## **Heated Windshields**

The Heated Windshield Option is designed to reduce the amount of time necessary to De-Ice the exterior of the windshield. The vehicle main power must be “on” for the system to function. To operate the Heated Windshields, depress the switch on the center console marked “Front Defrost”, a Red LED light will illuminate to indicate that the feature is activated. The windshields will heat for 8 minutes and automatically shut off. The switch can be reactivated for another 8 minutes by depressing the “Front Defrost” switch a second time. At any time throughout the process the Windshields can be turned off using the same switch.



## **Intercom System: Inside to Outside**

The two-way intercom system includes an interior master station with volume and Push-to-Talk (PTT) controls and an exterior remote station that is operated hands free. When the system is activated the remote station is always transmitting unless interrupted by a transmission from the master station.

Vehicle main power and the console mounted intercom switch must be “on” for the system to operate. The interior master station is located in the rear of the center console and the exterior remote station is mounted outside the vehicle on the driver side.



**Master Station**



**Remote Station**

With the intercom switch activated outside noise can be heard through the interior speaker without opening the door. Adjust the volume using the knob located on the interior master station. Depress the Push-to-Talk (PTT) button, also located on the interior master station, to speak to the outside.

## **Interior Lighting**

The Interior Lighting is mounted along the upper edges of the interior walls. The lights are half Red and half White and are activated by pushing on the desired lens color. The vehicle Main Power must be “on” for the Interior Lighting to function.



**Interior light**

## **Light Bar Prep**

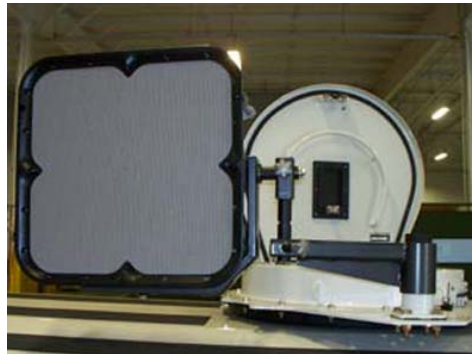
The Light Bar Prep includes a mount area that is located forward on the roof of the vehicle. Removable exterior panels and internal access holes through the roof armor help facilitate wiring installation. An ATC style fuse protected power circuit is located in the center console and is marked “Lightbar”. One of the locations in the center console is left blank for installation of your light bar controls. The maximum width for a **BearCat** light bar is **45** inches.

## **Long Range Acoustical Device**

The Long Range Acoustical Device (**LRAD**) consists of an acoustic transducer module and a separate control module. Audio signals from this unit are amplified and projected to distances of up to 500 meters or more. Pre-recorded tones can be played at extreme volume levels. The speaker system is yoke mounted to the Rescue Hatch base plate with the control panel mounted inside the vehicle. Refer to the LRAD Operations Manual that is included with your vehicle for specific operating instructions.



**LRAD Control Unit**



**Roof Mounted LRAD**

## **Radiation Detection with External Detector**

The Digital Radiation Detector consists of two parts, a Model 375 Digital Wall-Mount Monitor located behind and above the front passenger seat with an attached 44-2 Gamma Scintillator mounted inside the vehicle at the top edge of the passenger side windshield. A Pocket Survey Meter for hand held detection is also included.

Vehicle main power must be “on” for Model 375 Digital Wall-Mount Area Monitor to function. A Green Status Light will be displayed when the monitor is on. If the Green Status Light is not on, there is an additional power switch located on the left side of the wall unit.



**Digital Wall Monitor**

The Model 375 Wall Mount Detector measures the level of Gamma radiation and is calibrated in kcpm (thousand counts per minute). When the unit is activated an audible alarm will sound and a number will be displayed indicating the back round radiation for your area. The Low Alarm is preset at 20 kcpm and is indicated by a Yellow light and a slow beep (1 per second). The High Alarm is preset at 50 kcpm and is indicated by a Red light and a fast beep (4 per second). If the Detector experiences an overload or instrument failure the Det Fail will be activated and is indicated by a Red light and an audible tone greater than 68 dB.

A “Radiation Area” is equal to 2 mR/hr.

A “High Radiation Area” is equal to 100 mR/hr.

Rem = (Roentgen Equivalent Man) relates the dose of radiation to the biological effect of that dose on human tissue.

R/hr = rem per hour.

mR/hr = millirem per hour or 1000 rem per hour.

cpm = (counts per minute) the signal that indicates a radiation event has been detected.

kcpm = (thousand counts per minute) Model 375 Digital Wall-Mount Monitor calibration.

175 kcpm = 1mR/hr

350 kcpm = 2 mR/hr “Radiation Area”

The Pocket Survey Meter 2401-P is a hand held device that measures alpha, beta and gamma radiation in cpm and mR/hr.

Due to the complicated nature of Radiation Detection it is recommended that you read the instruction manuals provided with the Model 375 Digital Radiation Detector and Model 2401-P Pocket Survey Meter. The manuals outline the specific functions of each of the components. Section Six of the 2401 Pocket Survey Meter Manual gives an overview of radiation basics.

For more information contact Atlantic Nuclear at 800 878-9118 or Ludlum Measurements, Inc. [www.ludlums.com](http://www.ludlums.com)

Additional information and links can be found at the Center for Disease Control web site [www.bt.cdc.gov/radiation](http://www.bt.cdc.gov/radiation)

## **Radio Prep Option**

The following components are part of the Radio Prep Option.

- Max Rad 118-940 MHz ¼ wave Antenna mounted on the rear light box at roof level. The RG 58 antenna wire is run to the front of the vehicle via wire ways located along the upper interior walls. The antenna wire terminates inside the center console located between the front seats.
- Keyed radio power is located inside the console on the power module. Attach your power wire to any of the spade connectors marked “Radio” and install an ATC style blade fuse for circuit protection.

## **Rear Auxiliary Heat/Air Conditioning**



**Dash Mounted Controls**

- The interior rear compartment under bench mounted unit with controls located to the right of the steering wheel on the dash board.



**Interior Rear Wall Heat/AC**

- The interior compartment front wall mounted unit with controls located on the Auxiliary Heater/Air Conditioner.



**Interior Rear Heat/AC-under bench**

- The interior compartment rear wall mounted unit with controls located on the Auxiliary Heater/Air Conditioner.



**Interior Front Wall Heat/AC**

The Rear Heat/Air Conditioning Unit runs tandem with the existing vehicle Climate Control System. All Auxiliary Heater/Air Conditioners require that, with the vehicle running, the existing vehicle Climate Control System be set to the desired temperature before adjusting the controls for the tandem unit. For optimum operation set the vehicle climate controls and the rear controls to maximum. There are three types of optional Auxiliary Heat/Air Conditioners.



## **Rear Blackout**

Controlled by a switch located on the center console. Activation of the Rear Blackout switch will shut off the rear brake lights, and reverse lights including the optional backup alarm. A console mounted LED with an audible beeper reminds the operator that the system is activated. For full Blackout all other lighting will need to be shut off using their individual function switches, including Headlights, Taillights, Running lights and Wig-Wags. Vehicle main power must be “on” for the Blackout System to function.

**Caution: This system is for Tactical Operations Only. Operating the vehicle in Rear Blackout mode may be hazardous to other drivers who are behind you.**

## **Rear View Backup Camera**

The optional Rear View Backup Camera has a display that is integrated onto the existing rear view mirror. Half of the unit is a video display and the other half is a rear view mirror. The display is activated when the vehicle main power is on and the gear shift selector is in reverse.



**Rear View Camera**



**Rear View Mirror/Screen**

The camera can be put into a constant “on” mode by pushing the power button located under the mirror on the right side. The camera will remain on until the ignition key is switched to the off position.

For more information refer to the Rear View Backup Camera owner manual that was supplied with your vehicle.

## **Roof Mounted Spot Lights**

The Roof Mounted Spot light is a permanently affixed searchlight. Common locations are at the corners of the vehicle roof. The light is controlled by a 4-way joystick/power switch located on the header between the sun visors. Vehicle main power must be “on” for searchlight to function. Activate the toggle switch on the light controller, a Red LED indicates the light is on. Rotate the light up to 370 degrees horizontal and 135 degrees vertical using the 4-way joystick.



**Roof Mounted Spot Light**



**Spot Light Control**

If you have multiple lights, each roof location is indicated on the individual controller. The Spot light can be positioned by hand without the power being activated. It is recommended that the Spot lights face rearward during over the road travel.

## **Siren / Public Address**

The Siren P/A consists of an Amplifier mounted under the driver seat, a Control Head mounted in the center console and two 100 amp. Speakers mounted behind the front bumper. Main vehicle power must be on for the system to function. Unit power is controlled by a rocker switch on the control head. The various modes are well marked and have back lighting for easy readability. The primary operating modes are Rad, PA, Man, HF, Wail, Yelp, and Pier. The operating modes can be selected by using the rotary selector switch. Turning the switch to Wail, Yelp, or Pier will result in distinct tones being emitted from the speakers.

Manual is a silent mode that allows manual operation of the siren. HF will result in the siren being activated after the Manual switch is pushed.

For more information including Microphone volume adjustment refer to the Siren Installation Guide supplied with your vehicle.



**Siren P/A**



## **Thermal Camera**



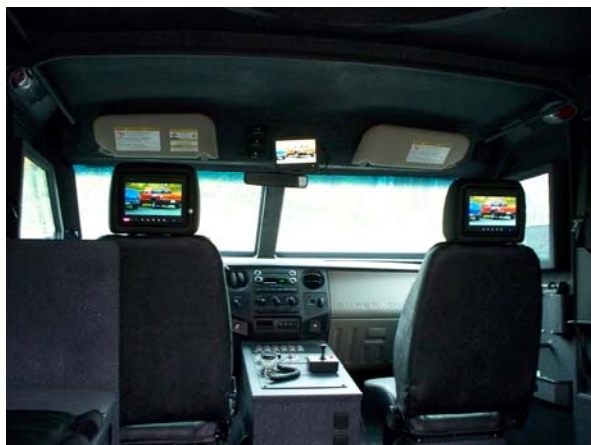
**Thermal Camera**

The Thermal Camera is mounted on the right hand side of the vehicle. The camera control joy stick is attached to the center console inside the vehicle and is removable. There is approximately 5 feet of control wire to allow ease of movement throughout the front of the cab. The power switch is located on the same control. (Note: Vehicle main power must be “on” to operate camera system.)

The monitors are located above the windshield centered between the sun visors and in each of the front seat headrests. Activation is controlled by the right hand power button at each monitor location. Toggling between AV1 and AV2 allows each monitor to show color or thermal at the operators’ discretion. Picture adjustment can be accomplished using the additional monitor control buttons. Access the adjustment options and use the left and right arrows to change color and orientation. A remote control is also provided with each monitor and controls the monitor functions only.



**Camera Control**



**Monitor Locations**

Once the system is powered up, control left/right and up/down movement using the joystick control. When the camera is not in use it is recommended that it be stowed facing rearward to protect the camera lens. The monitor is located above the windshields centered between the sun visors. Activation is controlled by the right hand button.

For more information refer to the Camera System manuals that were supplied with your vehicle.

Toggling between AV1 and AV2 is also controlled by the right hand button. AV1 is Infrared and AV2 is color picture. Picture adjustment is accomplished using the second button from the right to access adjustment options and using the left and right arrows to change color and orientation. A remote control is also provided and controls the monitor functions only.

Once the system is powered up, push the camera control joystick forward until the camera rolls fully forward. Left, right, up and down are controlled by the joystick. To stow the camera, pull the joystick fully back until the lens travels vertical and stows within the unit. (Note: Two blurred white lines will show across the monitor helping to indicate the lens location.) When the lens has stowed turn off the power to the monitor and the joystick. The camera body will automatically turn toward the rear.

For more information consult the EMX5000 Operations Manual # DCR04015.

### **III Mechanical Options**

#### **Ballistic Skip Round Shields**

The Ballistic Skip Round Shield is made of a Kevlar material and provides protection to NIJ Level 3A. The Shield is designed to be hung from the running boards of the vehicle to prevent stray rounds from “skipping” under the truck during an operation. The Shields are stowed in the vehicle and can be utilized as stretchers if needed.

#### **Door Hold Opens**

The Rear Door Hold Open allows the rear doors to be latched in the fully open position. Open the door until the door stop is engaged and rotate the latch located above the door to the locked position.



**Rear Door Hold Open**



**Rear Door Hold Open Locked**

The Front Door Hold Open allows the forward hinged front doors to be locked in an open position. Open the door until it hits the door stop and rotate the Door Hold Open latch located on the interior side of the door into the latch holder located on the vehicle floor.



**Front Door Hold Open**



**Front Door Hold Open Locked**

## **Door Locks**

The Doors can be locked from the outside using the door key. The operator should unlock all doors before proceeding to an operation. The inside latch handle will override the exterior lock but it will not unlock it.

The interior door locks (Battle Bolts) are located at each door and have Red handles. Turn the handle 90 degrees and the lock will slide into place. The doors cannot be opened from the outside with the Battle Bolts engaged.



**Interior Latch w/ Battle Bolt**

## **Gunner Stand (Military)**

The Gunner Stand is bolted to the center of the vehicle floor below the hatch. The Gunner stand height can be adjusted to two predetermined locations by lifting up on the two hand holds in the platform. The platform will lock with an audible click at the first location. Continue to lift and the platform will lock with an audible click in the top position which is approximately fourteen inches above the vehicle floor. The Gunner Stand can be returned to the lower location or to the fully closed position by grasping the release pins located on the sides of platform and pulling out as the stand is guided to the lower positions. When the Gunner Stand is up always ensure that the locks are engaged before weight is put on the platform

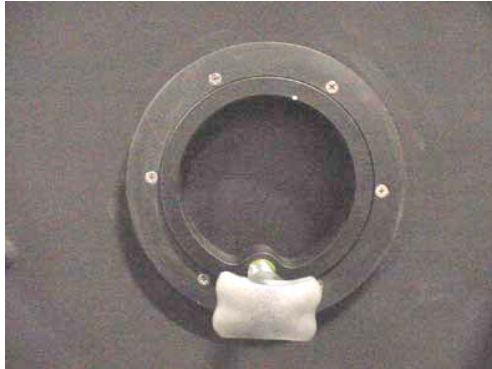


**Military Gunner Stand**



## **Gunports**

The Gunports are firing positions located throughout the vehicle. Common locations include; one each in the front and rear doors, three per side wall, and one in the hatch lid. The Gunports are opened by pushing out on the spring loaded actuating handle and turning clockwise. To close, rotate the actuating handle counter clockwise 180 degrees. As the handle is rotated the spring will pull the Gunport closed. Rectangular Gunports are located at key positions including the hatch lid. The larger opening is meant to accommodate weapons with various sights and other attachments.



**Round Gunport**



**Rectangular Gunport**

## **Hood Release/ Hood Prop Rod**

The Hood Prop Rod is a safety device designed to assist in holding the ballistic hood open. Open the hood by pulling the Hood Release located inside the vehicle at the driver side kick panel. Go to the front of the vehicle and release the yellow handled secondary latch located on the passenger side just below the top of the front bumper.



**Yellow Handled Secondary Latch**



**Hood Prop Rod**

Apply slight down pressure to the hood as the secondary latch is released. Stay at the passenger front location and lift the hood. The hood pistons will assist in lifting the ballistic hood. Once the hood is fully open swing the Prop Rod into place. When closing, return the Prop Rod to its original stowed position in the retaining clip, pull the hood closed until it is in the full latched position.

## **Pull Points**

There are Pull Points at various locations on the vehicle. Forward locations include four on the front bumper and two on the forward corners of the roof. Rear locations are at the left and right of the rear wall above the running board and two on the rear corners of the roof. The roof mounted points can be utilized when an object needs to be pulled from over a fence or other high obstruction. The lower points can be used for pulling when height is not a factor.

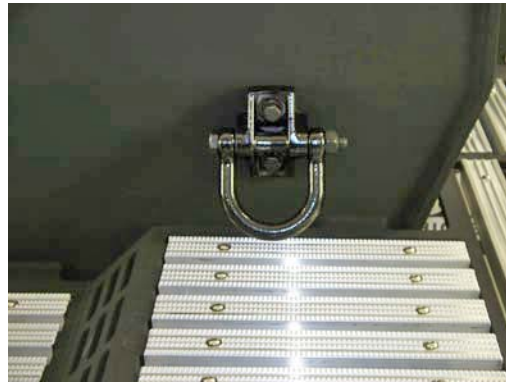


**Roof Mounted Pull Point**

**Caution:** When using the roof mounted Pull Points use extreme caution to avoid damage to the Ballistic Glass. Be aware of the path that debris will follow once it has dislodged. Always attach from a single anchor point on the vehicle to the object to be pulled.



**Front Bumper Mounted Pull Points**



**Rear Pull Points**

## **Ram Bar System**

The Ram Bar System is a breaching tool that is deployed by inserting the Ram Bar into a two inch receiver located at the front of the vehicle just below the front bumper. A slide pin on a safety lanyard secures the bar in place. A push plate is mounted to the forward end of the bar using the same type of slide pin and safety lanyard. When not in use the bar and push plate assembly stow along the roof rail on the driver side.



**Ram Bar System Stowed**





**Front Receiver**

The roof rail mounted carry brackets have slide pins with hitch pins and safety lanyards to secure the assembly during transport.

The following procedure should be used as the basis for any breaching operation that utilizes the Ram Bar System. Once the Ram Bar is in place at the front receiver with the safety pin engaged, proceed to the object to be breached, ease up to the object and put pressure against the front Push Plate.

With pressure against the plate drive forward with the vehicle keeping constant pressure until the breach is complete. When backing out always keep the vehicle as straight as possible to avoid “hooking” the front push plate.

**Caution:** Failure to follow the basic breaching procedure can result in Ram Bar damage.



**Ram Bar System Deployed**

### **Rescue Hatch Stand (Police)**



**Rescue Stand Stowed**

The Rescue Hatch Stand is located behind the front Passenger seat. In the stowed position it serves as an additional seating location. The Hatch Stand is hinged and can be deployed by releasing the Red handled lock located on the left side.



**Rescue Stand Deployed**

Lift the Stand up and pivot toward the center of the vehicle. Reverse the procedure to stow the stand in its original position. Assure that the lock is engaged.

## **Rotating Roof Hatch (Police)**

The roof mounted Rotating Hatch can be opened by releasing the rotary latch and pushing up on the hatch lid. The Counter Balance hinge system allows the ballistic lid to be lifted with one hand. In the fully open position the hatch lid will “Lock Open”. The Roof Hatch can be rotated by depressing the secondary Red handle on the rotation gear lock and pulling the handle toward you.



**Hatch Rotary Latch**



**Rotation Lock**

Manually rotate the hatch to the desired location and engage the gear lock. A Gunport is located in the hatch lid. Push the Gunport handle and turn to open the port. There is an aluminum rain cover attached to the outside of the Gunport which can be removed by simply pulling on the edge. The cover should be removed and stowed in the vehicle during an operation.

The hatch lid can be closed by pulling the “Hatch Release” located on the right side of the lid as indicated by the label. Before driving it is recommended that the rain cover is reinstalled on the outside of the Gunport. The rain cover can only be secured from outside the vehicle with the Gunport in the closed position. During over the road travel the lid should be in the down and locked position with the rotation gear lock engaged.



**Hatch Lock**

## **Rotating Roof Turret (Military)**

The Rotating Roof Turret provides a protected gunner position out the top of the vehicle. The hatch is opened from inside the vehicle by releasing the rotary latch. The Counter Balance hinge system allows the ballistic hatch lid to be lifted with one hand. In the fully open position the hatch will “Lock Open”. A crew served weapons mount is located on the front of the Rotating Roof Turret.



**Military Turret**



**G-4 Rotating Roof Turret**

The Turret position can be changed by depressing the secondary Red handle on the rotation gear lock and pulling the handle toward you to unlock the gear. Use the Turret Gear Rotation handle located to your left outside the hatch to change the orientation of the Turret. The Roof Turret will spin 360 degrees and lock in any position. It is recommended that the Turret Gear Rotation Lock be engaged when firing a weapon from the platform.

## **Run Flat Tire Inserts**

The **CRF** Run Flat Tire Insert is a polymer device designed to provide flat tire mobility in the event of tire air loss. The insert is secured around the drop center of the stock rim. The Run Flat is made of a composite material that reduces friction and heat build up. The interior of the tire crown is coated with a lubricant to further dissipate heat when the Run Flat is in use. Although the rims are marked with a sticker indicating that a run flat insert has been installed, it is important to alert your servicing technicians about the Run Flat Insert to avoid damage during tire changes. Insert installation tools can be obtained by contacting the Lenco Industries Parts Department.

The **VFI** Run Flat Insert is used in our off road style tires. The insert consists of one piece reinforced molded rubber that is hydraulically inserted into the tire and is designed for use with two piece rims. The insert also serves as a bead lock device. This style insert cannot be changed on site without the use of a special hydraulic machine. Replacement tires can be supplied with the **VFI** insert already installed.



## **Self Contained Breathing Apparatus (SCBA)**



**SCBA Connectors**

The SCBA System consists of two 6000 psi holding tanks mounted below floor level with separate left side and right side pressure adjustable regulators and twelve quick connect fittings. The holding tanks have easy access exterior fill valves with lockable ballistic doors. Based on a ten man team with under stress air usage at 45 cu ft / ½ hr. onboard air supply would last approximately .75- 1.0 hrs



**SCBA Regulator**



**Exterior Remote Fill Valve**

## **Scheduled Maintenance**

The scheduled maintenance is outlined in the Ford Scheduled Maintenance Guide included with your vehicle. The Special Operating Conditions section of the guide should be used. Due to the tendency for extensive engine idling; it is recommended that the total hours be used as the guide for vehicle maintenance and service intervals.

The Engine Hour Meter is accessed by pushing the Select / Reset button located on the gauge face to the right of the steering wheel. Repeatedly push the button until you get to “System Check”, then push and hold until the system check begins. The check will include “Engine Hours”. Two Hundred hour increments is the Ford recommended service interval.

## **Ballistic Glass Care and Maintenance**

All windows in the Lenco BearCat are Glass-clad Polycarbonate; a laminate of multi-layered glass and a polycarbonate core layer with glass on both the inboard and outboards sides to prevent scratching. This product requires special attention and a higher degree of care than conventional automotive glazing.

The interior and exterior surfaces of the Ballistic Glass should be cleaned using mild soap and water or a non-solvent based commercial glass cleaner. Lenco uses “CRL Glass Cleaner No. 1973”. You may use glass cleaners that contain Vinegar or other environmentally-friendly / ‘green’ solutions.

Do not use products that contain Ammonia, Acetone, Lacquer Thinner, Turpentine or other petroleum distillates. These solvents may attack or cause degradation of the polyurethane inner layers, which will manifest itself in Delamination (inner layer ply separation) or Crazing (small hairline cracks) of the inner layers. Use all cleaning products sparingly. Any excess cleaning product that runs down the glass interior should be wiped away from the bottom framework to prevent it from seeping into the frame.

**Store out of the sun.** When not in use, it is important to park your BearCat armored vehicle out of the direct harmful rays of the sun and its ultraviolet light. Over time, direct sunlight will have an adverse affect on the ballistic glass and will cause Delamination; separation of the inner layers. Direct summer sun may also cause the vehicle’s interior temperature to rise to excessive levels, which may also have an adverse affect on the ballistic glass. Always park your BearCat in the shade or under a covered structure out of direct sunlight. It will prolong the life of your glass.

## **Paint Care**

### **Military Chemical Agent Resistant Coating (CARC)**

Wash the vehicle using mild soap and water and a soft brush. Rinse with water using a standard hose. A lint free rag may be used for spot cleaning as needed.

**Caution:** This type of paint cannot be waxed.

### **Lusterless Polyurethane Topcoat**

Wash the vehicle using mild soap and water and a soft brush. Rinse with water using a standard hose. A lint free rag may be used for spot cleaning as needed.

**Caution:** This type of paint cannot be waxed.

### **High Gloss Polyurethane Topcoat**

Wash the vehicle using mild soap and water and a soft brush. Rinse with water using a standard hose. A lint free rag may be used for spot cleaning as needed.

This type of paint can be polished using automotive car wax.

Touchup Kits are available through the Parts Department by using the contact information located at the back of the Operators Manual.

## Specifications

### **Tire Pressures/ Wheel Torque**

BearCat Model	Rim Size	Air Pressure	Wheel Torque
<b>G-2</b>	19.5	110 psi max cold.	160 ft lbs.
<b>G-2</b>	22.5	120 psi max cold.	160 ft lbs.
<b>G-3</b>	20	90 psi max cold	160 ft lbs.
<b>G-4</b>	20	90 psi max cold	160 ft lbs.
<b>G-3 / G-4</b>	20		165 ft lbs. Rim Halves.

### **Torque Specifications (Additional information)**

Rear Driveshaft/Rear Yoke- 46 ft lbs.

Rear Driveshaft to circular transmission flange-74 ft lbs.

Rear Axle U-Bolts -295 ft lbs.

Body mounts (solid) - 110 ft lbs.

Body mounts (non-solid) - 50 ft lbs.

### **Tire and Wheels**

Rim sizes for the **G-2** are 19.5 inch standard with an optional 22.5 inch available. Both options come fitted with aggressive profile heavy duty tires.

Rim size for the **G-3** and **G-4** is 20 inch fitted with military style rough terrain tires.

All vehicles can be ordered with optional Run Flat Inserts.



**G-3/G-4 12.5 R 20 Military Style Rough Terrain Tires are directional.**

**Arrow indicates the direction of rotation**



**Air Conditioning R134A Refrigerant amount:**

2.7 lbs. (with optional rear Auxiliary Heater/Air Conditioner)

**Glass**

Install Materials:

Dinitrol D-538 one step primer

Dinitrol D-500 urethane (low viscosity)

CRL Glass Cleaner -1973

CRL General Purpose Solvent-2032

CRL Glazing Tape 74418X14BL

Rubber setting Blocks

**Lubrication**

Ring Gear- Multipurpose High Temp Grease NLG1 2 ISO VG460 or equivalent.

Door Hinge (machined one piece)- Multipurpose High Temp Grease NLG1 2 ISO VG460 or equivalent.

Door Hinge (continuous 3/8 pin)- Non-petroleum based lubricant to avoid dust/dirt buildup.

Gun Ports equipped with metal oil lite bushing- No lubrication needed.

Gunner Stands with bronze slide ways-No lubrication needed to avoid dust/dirt buildup.

**Welding Precautions**

It is recommended that Technical Services be contacted at 800-444-5362 before any welding or cutting operation is undertaken. Electronic equipment damage can occur.

## **IV Lenco Armored Vehicles Contact Information**

### **Company Headquarters**

Lenco Industries, Inc.  
10 BETNR Industrial Drive  
Pittsfield, MA 01201 USA  
Telephone: (413) 443-7359  
Toll Free Phone: 1-800-444-5362  
Fax: (413) 445-7865  
Website: [www.armoredtrucks.com](http://www.armoredtrucks.com)  
[www.swattrucks.com](http://www.swattrucks.com)

### **Customer Service**

Steve Mix  
Toll Free Phone: 1-800-444-5362  
Telephone: (413) 443-7359 Ext. 128  
Fax: (413) 442-7914  
Email: [stevem@lencoarmor.com](mailto:stevem@lencoarmor.com)

### **Parts Department**

Dave Pfeiffer  
Toll Free Phone: 1-800-444-5362  
Telephone: (413) 443-7359 Ext. 125  
Fax: (413) 442-9612  
Email: [parts@lencoarmor.com](mailto:parts@lencoarmor.com)