

Step 1: Determine Basic Information


To understand the potential problems encountered with the *BackMinder* reversing aid it is useful to gather basic product information that can help in determining the failure mode.

What is the vehicle registration or build/chassis number?

Registration:

Build/chassis number:

What is the vehicle?

Make:

Model:

Step 2: Ensure customer / dealer is aware of correct operation of BackMinder


Audio – Visual Indication	Distance range	Comments
Slow pulse – Green LED	3.0m to 1.8m (10ft to 6ft)	Not every object behind the vehicle will be detected at 3.0m to 1.8m (10ft to 6ft) and is dependent on the reflective / absorbent properties of the object.
Faster pulse – Amber LED	1.8m to 0.9m (6ft to 3ft) (Generally 24V vehicles) OR 1.8m to 0.6m (6ft to 2ft) (Generally 12V vehicles)	The pulse increases with intensity as an object behind the vehicle nears in this zone.
Constant tone – Red LED	0.9m (3 ft) (Generally 24V vehicles) OR 0.6m (2 ft) (Generally 12V vehicles)	A constant tone is indicated when an object is behind the vehicle in this zone. The brakes should be applied as soon as the constant tone is indicated.

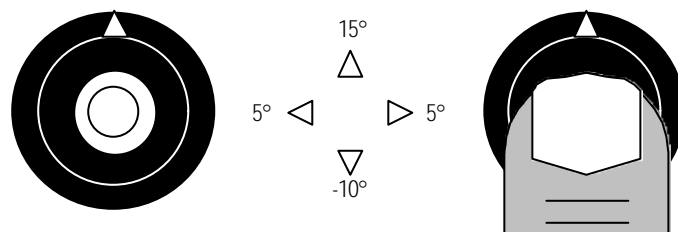
Step 3: Basic Checking / Testing of System

Thumb Test

1. Ignition ON
2. As reverse gear is engaged, check for start up tone and rapid LED sequence to indicate BackMinder is powered up.
3. Leaving the vehicle in reverse, walk round the back of the vehicle.
4. Place thumb or finger lightly pressed on sensor eyeball and check for faint vibration. Repeat for second sensor.
5. Without unplugging either sensor you can 'cut out' any sensor by placing your thumb over the sensor as shown for the duration you wish to check the operation of the other sensor. It takes approximately two seconds after placing thumb over the sensor for it to set up the 'return signal' to the control unit to cut it out.

Adjust Sensors

Autosonics LTD hold a patent on the sensor housing design. It enables the angle to be adjusted so that the system can be set up to your needs. The sensors can be adjusted 15° in elevation, 10° in depression and 5° left and right. When installed the fitter will have already set the angle, therefore, please do not adjust the sensor angle unnecessarily. There may be a number of reasons why the sensors need adjusting. Eradicating unwanted ground reflection, avoiding the sensors reflecting off steps and tow bars or maybe to prevent BackMinder® detecting objects wider than the width of the vehicle.



Firstly, ensure that the triangular arrow is located at the 12 o'clock position. A spring washer holds the sensor eyeball to the determined angle. Press the sensor eyeball with the thumb, taking care not to scratch the surface of the sensor. This pushes it back a little clear of the front of the housing enabling the sensor to pivot.

N.B. For standardised fleet fits the sensors can be supplied fixed.

1. Ensure the arrow on the sensor housing face is at 12 O'clock.

- Adjust the sensor up towards the arrow in most instances as ground reflection is the most likely instance of a continuous buzzer tone, red LED indication.

Step 4: Determine Indication From Unit

Audio -Visual Indication	Failure Mode	Check for	Action to take	Step Ref.
Start up tone then CONSTANT TONE & RED LED INDICATION when reverse engaged nothing is within 3 metres (10 feet) of vehicle.	Fittings in view of sensors such as tow bars, tail lifts, steps, storage containers etc.	Check for fittings mounted on the rear of the vehicle such as tow bars, tail lifts, steps, storage containers etc.	Ascertain the closest distance from the sensor in x, y, z axis. Try sensor angle adjustment. Will not resolve the problem in extreme cases. Would require moving the obstruction or the sensor(s)	1A
	Ground Reflection	Check arrow on sensor face is at 12 O'clock.	If not, rotate the sensor in the hole.	1B
		Check angle of eyeball.	Adjust sensor eyeball up towards arrow with thumb.	1C
		Remove sensors and point to sky.	If the buzzer and red LED clears then fit wedges to angle sensors further away from the ground.	1D
Start up tone then Intermittent CONSTANT TONE & RED LED INDICATION when reverse engaged and reversing when nothing is within 3 metres (10 feet) of vehicle.	Intermittent Ground Reflection	Check arrow on sensor face is at 12 O'clock.	If not, rotate the sensor in the hole.	2A
		Check angle of eyeball.	Adjust sensor eyeball up towards arrow with thumb. <i>N.B. On rough ground spurious reflections are inevitable.</i>	2B
		Remove sensors and point to sky.	If the buzzer and red LED clears then fit wedges to angle sensors further away from the ground.	2C

Audio -Visual Indication	Failure Mode	Check for	Action to take	Step Ref.
Start up tone then CONSTANT TONE & RED LED INDICATION when reverse engaged and nothing is within 3 metres (10 feet) of vehicle. It has never worked.	Misaligned pin in sensor connector	With ignition on, engine off and reverse engaged, check for the faint vibration on the sensor eyeballs.	If either or both are not vibrating, check for misaligned pins in the sensor rubber connectors.	3A

Audio -Visual Indication	Failure Mode	Check for	Action to take	Step Ref.
No start up tone, but LED indication operating OK.	Buzzer broken	With ignition on, engine off and reverse engaged, check the BackMinder is detecting at correct distances.	If the LED indication is OK, but no tone then replace the Control Unit.	4A
No LED indication, but Start up tone OK.	LED Fly lead broken	With ignition on, engine off and reverse engaged, compare buzzer fly	If the tone is OK, but no LED indication then replace the LED fly lead.	4B
No start up tone. NO LED start up indication.	No power	With ignition on, engine off and reverse engaged, check for the faint vibration on the sensor eyeball.	If neither is vibrating, first check the reverse lights are working and / or the vehicle fuse is OK.	4C
			If above ok, check there is power using a multi meter at the power plug connected into the control unit.	4D
			If ok, check the pins are sitting up in the plug housing when viewing end on. If not, then push the pins up using a fine blade screwdriver through the slots on underside of plug housing).	4E

Audio -Visual Indication	Failure Mode	Check for	Action to take	Step Ref.
Start up tone then no objects being detected at all or on one of the sensors.	Discontinuity on sensor line(s)	With ignition on, engine off and reverse engaged, check for the faint vibration on the sensor eyeball.	If either is not vibrating, check the rubber sensor connector for misaligned pins.	5A
			If above ok, unplug the main harness sensor connection to the control unit. Check that all four pins are sitting up in the plug housing when viewing end on. If not, then push pins up through slots on underside of plug housing using a fine blade screwdriver.	5B
	One Faulty sensor	With ignition on, engine off and reverse engaged, check for the faint vibration on the sensor eyeball.	If not any of above and one sensor is vibrating but not the other then verify it is a faulty sensor by unplugging both sensor rubber connectors and connecting the sensor that does vibrate into the other line. If it vibrates on the other line then replace sensor that does not vibrate. If fault still not identified repeat steps 5A to 5C.	5C
	Burnt out coil on Control Unit. Power lead at Control Unit has been forced into sensor line	Remove Control Unit	Replace Control Unit.	5D

Audio -Visual Indication	Failure Mode	Check for	Action to take	Step Ref.
Start up tone then intermittent regular beeping and intermittent flashing in green, amber or red.	Operating Voltage too low	With ignition on, engine off and reverse engaged, check voltage on BackMinder power line.	For 12 Volt Vehicle operating range 8 to 15 Volts. For 24 Volt Vehicle operating range 20 to 28 Volts.	6A
Start up tone then intermittent random beeping and intermittent random or continuous green, amber or red LED not corresponding to correct distance.	Moisture ingress on Control Unit PCB	With ignition on, engine off and reverse engaged check for symptoms.	Change Control Unit.	6B

Audio -Visual Indication	Failure Mode	Check for	Action to take	Step Ref.
Start up tone then periodically repeats start up tone whilst reverse remains engaged.	Intermittent power connection to BackMinder	Unplug the power connection to the control unit. Check the pins are sitting up in the plug housing when viewing end on.	If not, then push pins up through slots on underside of plug housing using a fine blade screwdriver.	7A
		Trace the power lead from the control unit to the connection into the reverse light circuit	Check for a good connection into reverse light circuit and a good earth.	7B