

To order or for more information on
Brigade's vehicle safety solutions;

 **brigade-electronics.com**

 **+44 (0)1322 420300**

or visit your local stockist

Brigade's extensive portfolio of machine safety systems
includes:

- **CCTV systems**
- **'White sound' reversing alarms**
- **Pulsed radar detection systems**
- **Digital recorders**
- **Ultrasonic reversing sensors**



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BRIGADE[®]

Vehicle Safety Solutions



Backsense[™] Pulsed Radar Sensors

WASTE AGRICULTURE MINE & QUARRY MOBILE PLANT



Large vehicles, difficult conditions, greater danger!

Industries such as mining, quarrying, agriculture, construction and waste all use huge machines and plant equipment, which by their very nature pose a danger if they are not managed safely. Blind spots tend to be much larger on these applications and include not only the rear and nearside but also the front, especially with elevated driver positions. Terrains are harsher, vehicles are exposed to the elements more aggressively whilst thick dust and night time conditions all decrease visibility further.

The new ISO 5006 standard for earthmoving equipment addresses the problem of blind spots around a vehicle and states that the operator must be able to “see around the machine to enable proper, effective and safe operation.” Camera monitor systems provide this to some extent, but in difficult environmental conditions a range of complementary devices are vital to give visual and audible operator warnings. Brigade’s pulsed radar safety systems provide an answer.

The Health & Safety Executive (HSE) warned about the dangers of poorly managed transport in the workplace after a coal mining company was fined £400,000 following the death of two men crushed by a 100 tonne capacity dump truck. The dump truck driver could not see their vehicle because it was in a blind spot.

“Earth-moving vehicles have poor visual fields due to their large size. It is crucial that additional steps are taken to ensure that drivers of these machines are aware of other smaller vehicles around them.”

Norrie Buchanan HSE Inspector

Backsense™ - Pulsed radar detection systems

Brigade's Backsense pulsed radar sensor systems are designed to detect people and objects in blind spots, significantly reducing accidents. They detect both stationary and moving objects, providing the driver with an in-cab audible and visual warning - alerting the operator whose attention may be focused away from visual aids. Backsense works effectively in harsh environments and in poor visibility (darkness, smoke, fog). The comparison table sets Backsense apart from all other systems.

Characteristics	Backsense pulsed radar	Doppler radar	Ultrasonic	Laser
Sunlight glare	✓	✓	Poor	Poor
Dirt, mud	✓	✓	✗	✗
Rain, snow, sleet	✓	✓	✗	✓
Easy installation	✓	✓	✓	✗
Large coverage area	✓	✓	✗	✗
Audible alarm	✓	✓	✓	✓
In-cab display	✓	✓	✓	✓
Detects multiple objects	✓	✓	Poor	Poor
Detects stationary objects	✓	✗	✓	✗
Designed to SAE J1455 spec*	✓	✗	✗	✗

*The recommended environmental practice for electronic equipment in heavy duty vehicle applications.

Safety

- ✓ Helps prevent collisions
- ✓ Reduces accidents and fatalities, injury and sickness time
- ✓ Meets Health and Safety requirements

Efficiency

- ✓ Saves collision damage cost and downtime
- ✓ Saves on third party claims

Ruggedness

- ✓ Unaffected by; moisture, dust, vibration, heat, cold, UV, snow, ice, high wind, water and mud

Compatibility

- ✓ Can be triggered to activate reversing alarms, safety lights, camera systems and digital recorders



Complete coverage and integrated safety

Backsense Features:

- Programmable to ignore vehicle protrusions and overhangs
- Can trigger or be triggered by other vehicle safety devices such as CCTV or reversing alarms
- Eliminates possibility of driver interference. The audible warning buzzer cannot be switched off, providing fleet operators with peace of mind
- Suitable for both on and off road applications
- Extremely rugged design for severe weather conditions and all terrains
- Effective through non metallic objects - can fit behind plastic or glass fibre body work
- Visual and audible in-cab warnings
- Self diagnostics alert operator to system errors
- Choice of detection ranges

Studies in America have seen accidents on key waste fleets reduced by 70% with the use of Backsense technology



Backsense for Mining, Quarry and Construction

Backsense is the answer where machine size and difficult environmental conditions, such as dust clouds or darkness, make manoeuvring particularly dangerous. It reduces the risk of large machines reversing into smaller machines or overturning following collision with a stock pile. It is equally effective for forward movement, with machine design often creating large

blind spots - for instance many dumper trucks cannot see objects or people on the ground as far as 20 metres in front of them. It is possible to programme out large rear wheels and dump-bucket overhang. It is a vital back-up warning tool to prevent operator information overload. Backsense reduces risk to site workers wearing ear defenders who may be unable to hear tonal reversing alarms.

Backsense for the Refuse Industry

Bin lift mechanism detection can be programmed out. Especially useful when manoeuvring close to parked cars.

Can be networked with Brigade's bbs-tek® 'white sound' reversing alarms to eliminate noise nuisance for local residents - especially important during the early hours of the morning.



Backsense for lighter duty machines

Suitable for light machines with extensive or varying blind spots, such as telescopic handlers; and machines operating in confined spaces, such as small wheeled low-loading shovels.



Which Backsense™ is right for me?



BACKSENSE FEATURES

Feature	Xtreme	Standard
Multiple sensors supported	Yes	No
In-cab display/buzzer	Yes	Yes
Self Diagnostic	Yes	Yes
Maximum range	10m	6m
Triggers	2	1
Programmable feature	Yes	No
Power	12-24 Vdc	12-24 Vdc

Xtreme

Brigade offers two Backsense models – Standard and Xtreme. Whilst both are heavy duty systems, the Xtreme has a wider feature set, giving more functionality and flexibility.

Key benefits:

Programmable

- Programme with service tool (shown right) to:
 - Offers bespoke detection areas of six, eight or ten metres
 - Calibrate out fixed objects, bodywork and attachments
- Perfect for large fleets with differing vehicle types

Unparalleled accuracy and precision

- Visual display has 5 LEDs each representing one fifth of the detection range, whilst audible pulse rate increases as object becomes closer
- Improved precision down to only 80cm from the sensor allowing phenomenal flexibility of movement

All round coverage

- For maximum danger zone coverage, multiple units can be networked together around the vehicle and programmed to work in unison

Safety triggers

- Two output triggers to activate other devices such as alarms or cameras

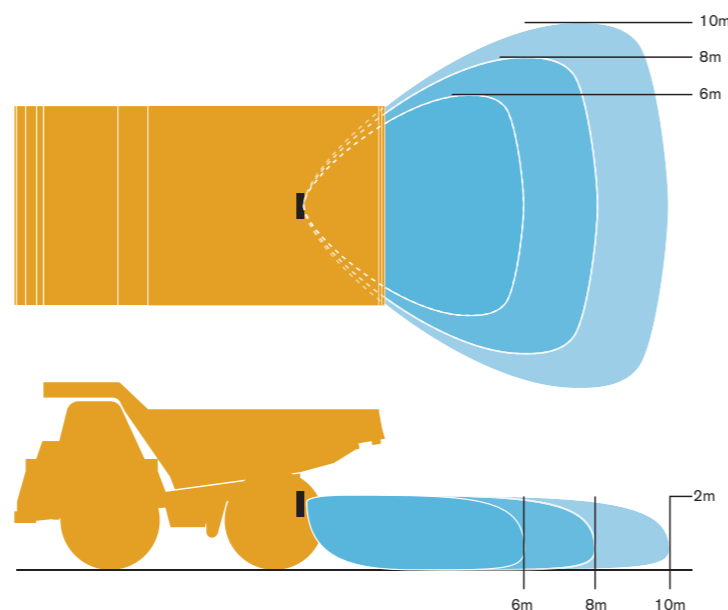
Xtreme Backsense is ideal for larger machines and mobile plant with extensive blind spots.



Xtreme



Service tool for Xtreme



Standard

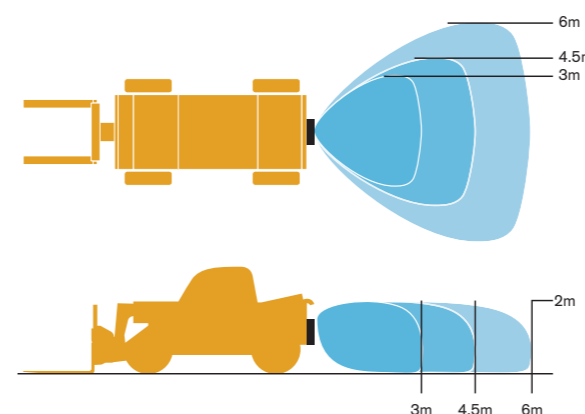
Standard Backsense is perfect for machines operating on or off road in confined spaces, such as small-wheeled low-loading shovels and telescopic handlers. With fewer features than the Xtreme and a pre-selectable detection range, it is a lower cost system.

Perfect when:

- Only one sensor required
- Smaller danger area up to 6 metres
- No protrusions in the detection area, such as the overhang on a dump truck
- Only one trigger required, such as for a reversing alarm



Standard



Backsense™ in action

Hydrex specialises in the short term rental and sale of mobile plant and equipment. It provides trained and licenced operators, maintains equipment and ensures compliance with all Health and Safety matters. Hydrex operates a fleet of over 1,300 machines available from 13 depots nationwide.

Hydrex fitted Backsense to its fleet of 30 loading shovels, articulated dump trucks, mobile fuel tankers and graders.



Every Backsense has an in-cab audio alert and LED display to alert the operator to hazards and their proximity.



example in-cab display

