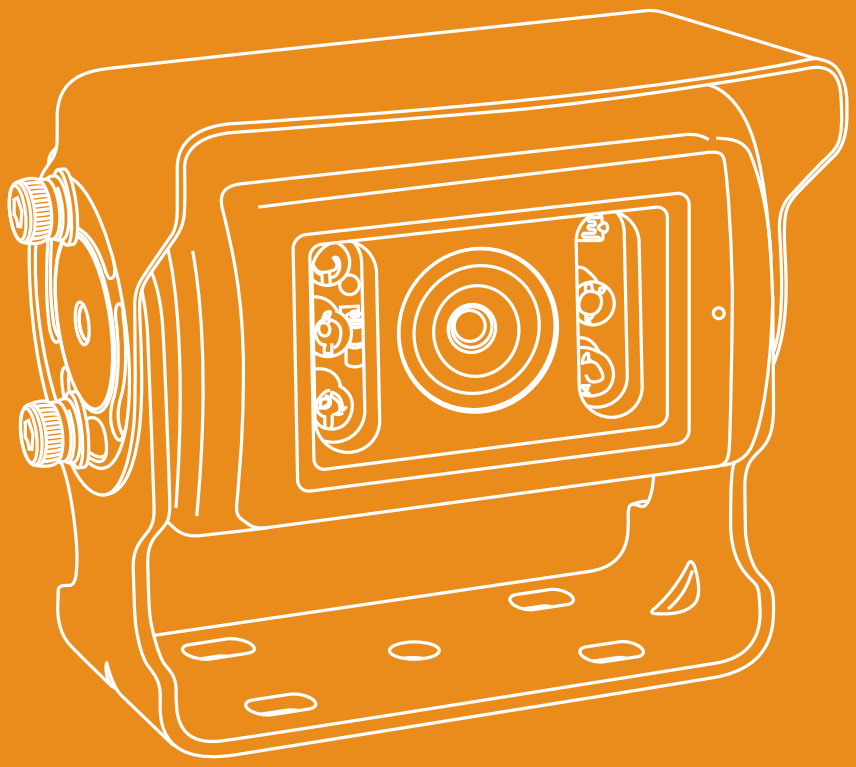
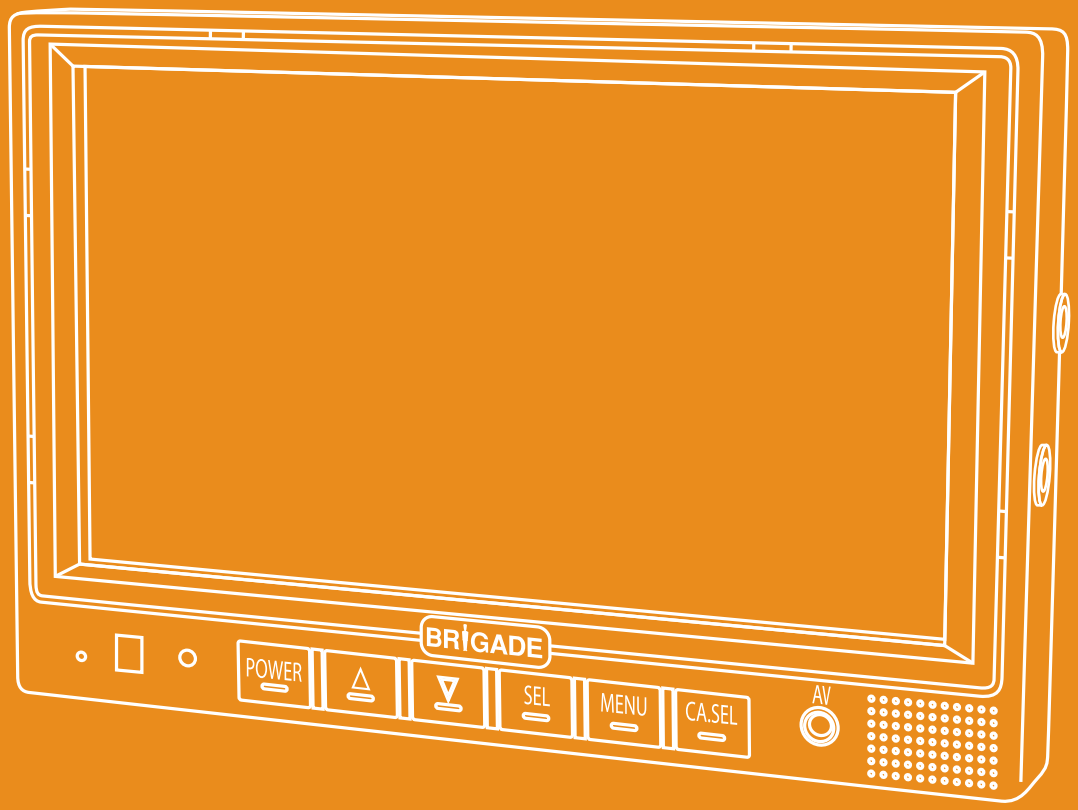
BRIGADE®

Vehicle Safety Solutions





Backeye™

Camera Monitor Systems

Camera Monitor Systems

Eliminating costly blind spots

Vehicle blind spots are a huge contributory factor to collisions in all industries. The complex shape and sheer size of many commercial vehicles and machines greatly limit driver visibility, making collisions more likely. The cost to industry of property or vehicle damage is significant and is magnified by associated costs such as downtime. Even greater are the corporate and emotional costs when there is personal injury.

There has been much debate about mirrors creating further blind spots and an ‘information overload’ for drivers who don’t know where to look first. Knocked and broken mirrors add to the question of suitability.

Camera monitor systems have brought driver vision into the twenty-first century offering wider angles of view, clearer pictures, the ability to view multiple images on a single monitor, and most recently, a virtual ‘bird’s-eye’ view in a single image.

The cost of limited visibility

The UK Health & Safety Executive (HSE) warned about the dangers associated with deliveries and reversing vehicles after a banksman was killed when a delivery lorry reversed into him, trapping him between the vehicle and a brick wall. The company was fined £30,000 plus costs.

HSE inspector Karl Howes said “Banksmen should only be used when there are no safer available methods to control reversing and then only when people have been fully trained to undertake that role.”

Every year 400 people are killed in EU countries when drivers fail to detect pedestrians, cyclists and other vehicles in their blind spots when manoeuvring.

Saving money and lives

Camera monitor systems are used in a wide range of on- and off-road applications to meet a host of health and safety and legislative requirements. They can eliminate blind spots to prevent costly vehicle damage and, more importantly, to save lives.

Operational and cost benefits

- ✔ Can cover multiple blind spots on a single monitor.
- ✔ Can reduce vehicle damage and downtime.
- ✔ Can help reduce insurance premiums.
- ✔ Improvement on mirrors:
  Wider angle of view.
  Clearer visibility in low light conditions.
  Less likely to be damaged or broken.

Meet health and safety requirements

- ✔ Management of Health and Safety at Work Regulations (MHSWR) - requires all employees to identify risk and eliminate where possible.
- ✔ Provision & Use of Work Equipment Regulations (PUWER) - no person should be exposed to risk to his health and safety as a result of operational control (e.g. due to blind spots).

On-Road Applications

- ✔ EU directive 2007/38/EC - compulsory vision in class IV & V blind spots.
- ✔ EU directive 2003/97/EC - compulsory vision in class VI blind spot.

Off-Road Applications

- ✔ ISO 5006 – standard for earth-moving equipment which addresses the problem of blind spots around a vehicle.
- ✔ The Supply of Machinery (Safety) Regulations 1992 - appropriate devices must be provided to remedy hazards due to inadequate direct vision.

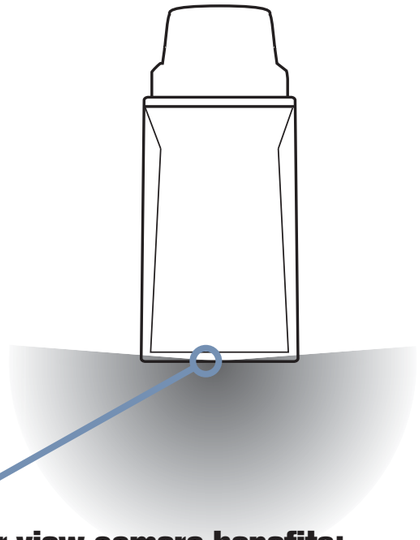
Rear View

"Reversing of commercial vehicles is a major problem accounting for one claim in every six."

Association of British Insurers

Reverse in Safety

The rear blind spot is a huge problem regardless of vehicle/machine, and according to the UK Health and Safety Executive a quarter of all workplace accidents are caused by reversing.. The University of Huddersfield highlighted in its report 'Reversing Accidents in UK Transport Fleets' that a massive 90% of reversing accidents occur OFF the road (loading bays, lorry parks, private roads, quarry sites, warehouses etc).



Rear view camera benefits:

- ✔ Prevents costly reversing collisions with people, property or vehicles
- ✔ Reduces vehicle damage to the rear
- ✔ Reduced insurance premiums
- ✔ Assists safe and easier manoeuvring

Rear view cameras are available in the following ranges:

Elite, Select and Essential

Features include:
- IP69K
- Heated
- Shutter
- Compact and flush mount
- LEDs for ultra-low light performance
- Up to 15m illumination distance

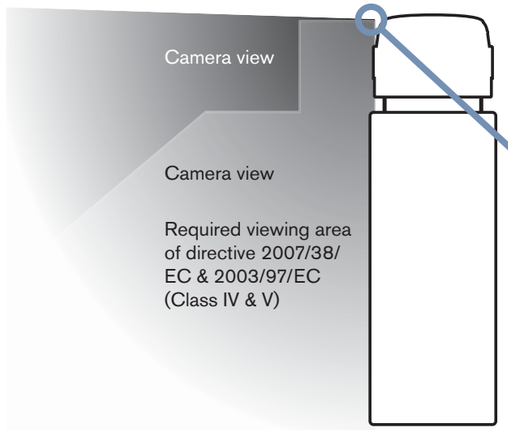
Please see the Brigade product catalogue for individual model specifications.

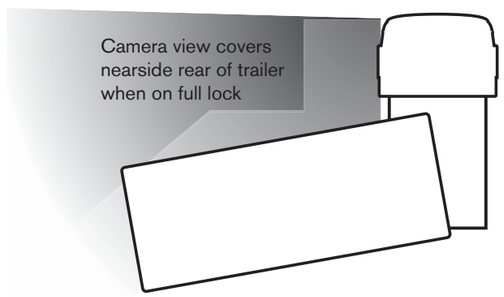
Side View

According to the Department for Transport, more than half of all cyclist deaths in London are caused by collisions with goods' vehicles due to the nearside blind spot.

Benefits:

- ✔ Meets side view requirements of EU blind spot directive 2007/38/EC & 2003/97/EC (Class IV & V)
- ✔ Removes the nearside blind spot
- ✔ Reduces risk of collisions with cyclists and pedestrians
- ✔ Reduces risk of sideswipe collisions with other vehicles
- ✔ Provides full side view of trailer when reversing on full lock, including nearside rear corner
- ✔ Reduced nearside vehicle damage





Eliminating the Nearside Blind Spot

Most cyclist fatalities happen at low speeds, typically at road junctions and when moving off from a stationary position. A flush mount side view camera, triggered by the indicator solves this problem by giving a clear view of the nearside blind spot, where vulnerable cyclists and pedestrians are often hidden from the driver's view.

Sideswipe collisions on motorways are another common result of poor visibility. This problem is especially acute for continental drivers in the UK, where the driver position is on the left hand side, and vice versa, when UK drivers are abroad.

Side view cameras are available in the following ranges:

Elite, Select

Features include:
- Flush mount
- Eyeball with adjustable lens position

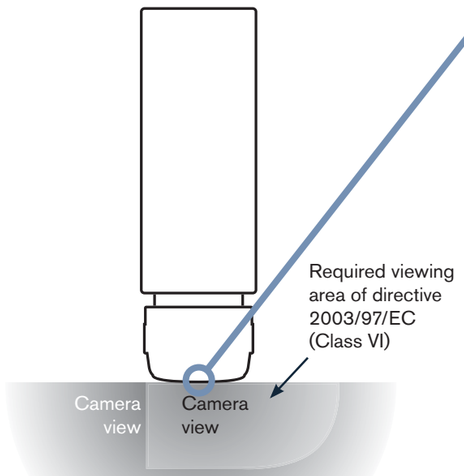
Please see the Brigade product catalogue for individual model specifications.

Front View

Forward Vision

Due to size of machinery and elevated operator positions, a blind spot often exists to the front. ISO 5006 states that ‘a driver must be able to detect the presence of a standing person, of short stature [approx. 1.5m], 1m out from the perimeter of the machine.’ A camera monitor system is the best solution for all-round visibility.

Additionally, trucks with tall cabs and/or high windscreens can lose sight of pedestrians in their front blind spot. Brigade’s front view cameras meet the requirements of blind spot directive 2003/97/EC (Class VI), where front view is mandatory at forward speeds below 30kph.



Benefits:

- ✔ Meets front view requirements of EU blind spot directive 2003/97/EC (Class VI)
- ✔ Reduced front vehicle damage
- ✔ Prevents collisions with workers or pedestrians

Front view cameras are available in the following ranges.

Elite, Select

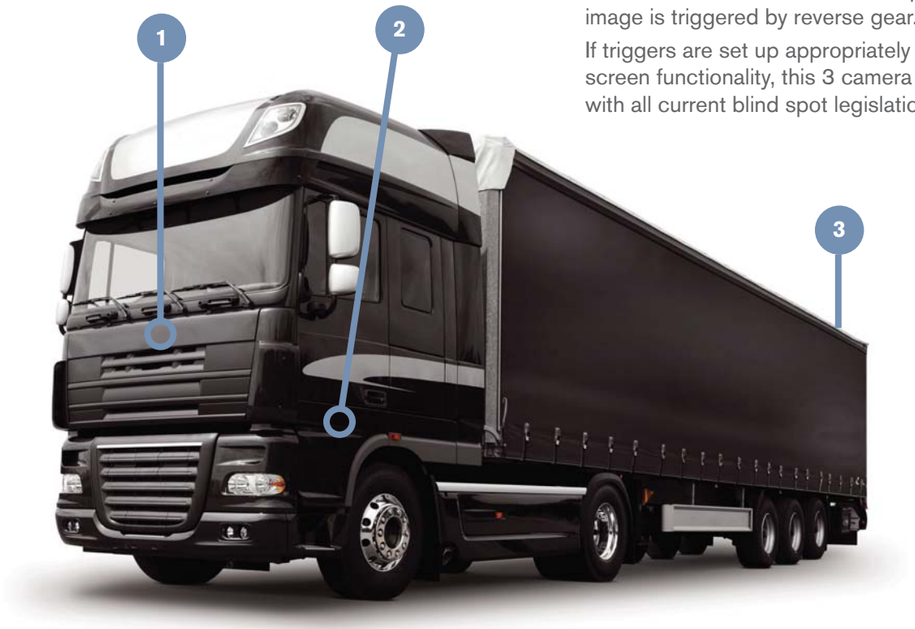
Features include:
- IP69K
- Mini
- Flush mount
- Eyeball with adjustable lens position
- Infrared LED's for ultra-low light performance
- R46 approved for indirect vision

Please see the Brigade product catalogue for individual model specifications.

Multiple View

All-round Visibility

Brigade’s Select, Elite and Extreme camera monitor ranges are all suitable for multiple view applications. Up to four camera images can be displayed on a single monitor with inbuilt single, split, triple and quad screen function or in conjunction with Brigade’s screen splitter.



On-road applications

All-round visibility is vital but mirrors can create further blind spots and drivers can only look in one direction at a time. By combining multiple cameras to view all blind spots on a single monitor, this problem is eradicated.

Camera 1: Front view

Camera 2: Side view

Camera 3: Rear view

The side view image can be shown permanently or triggered by the indicator circuit. At speeds of up to 30kph, the front view image can be simultaneously displayed using a multi-view monitor or a screen splitter. The rear view image is triggered by reverse gear.

If triggers are set up appropriately and the monitor has split screen functionality, this 3 camera configuration complies with all current blind spot legislation.

Off-road applications

It is essential for operators of agricultural machines to check produce is picked efficiently, whilst also ensuring safety. From the cab, visibility is limited, especially when the land is dry and dusty.

A bespoke, three-camera solution eliminates the problem.

Camera 1: Installed at the bottom of the pick-up element, viewing the level of the machine.

Camera 2: Positioned to look into the trailer of the adjacent collection vehicle.

Camera 3: Provides a panoramic rear view.

Images of the collection and transfer processes are shown on the monitor by default. The rear view is triggered by reverse gear.

360° View

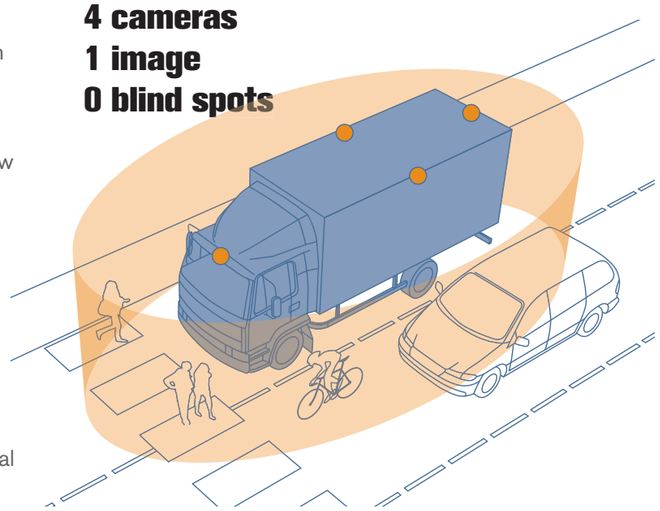
All Hazards in a Single Image

When manoeuvring a commercial vehicle, a driver can have up to 10 places to look (six mirrors, a monitor, and direct view to the front, left and right of the cab). With pedestrians and other vehicles possibly moving in the vicinity, conventional safety systems do not allow him to view all possible hazard areas at once.

Backeye® 360 Systems give the driver a 'bird's-eye' view of the vehicle, so all blind spots are eliminated. Presenting all-round visibility in a single image saves the driver having to process information from several mirrors or monitors in quick succession, making it easier to assess and react to possible hazards.

The system works by taking the images from four cameras installed around the vehicle and 'stitching' them together in real time to give the driver all potential hazard areas in one view.

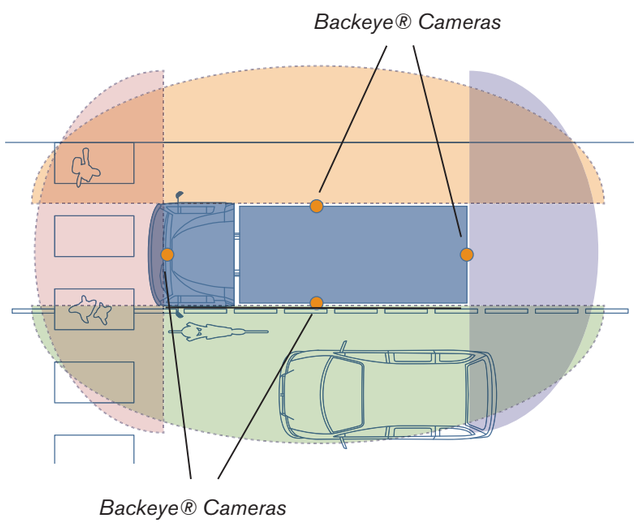
4 cameras
1 image
0 blind spots



Actual Backeye® 360 image

Benefits:

- ✔ Comprehensive surround view in a single image for safer manoeuvring
- ✔ Eliminates blind spots
- ✔ Reduces danger for vulnerable road users
- ✔ Reduces risk of costly vehicle or property damage
- ✔ Multiple image display options



360° systems are available in the following ranges:
Elite, Select

Features include:
- 4 ultra wide-angle cameras
- Customisable views
- Inbuilt safety system to prevent frozen frames

Please see the Brigade product catalogue for individual model specifications.

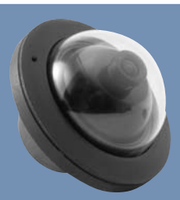
Internal View

Ensuring passenger safety

Internal cameras are increasingly used as a deterrent against vandalism and violence. Attacks on passengers account for a quarter of all crime on London's buses. By using an in-cab monitor, drivers can observe activities in the vehicle and raise the alarm if necessary.

If a mobile digital recorder is installed, camera monitor systems can help reduce personal injury claims by deterring fraud. Evidence makes it easier for operators to refute any dubious claims that arise and prove whether a claimant was or was not on the bus concerned.

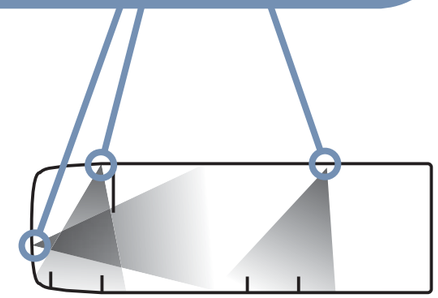
Internal cameras can be used to monitor driver behaviour by capturing footage of those who flout company regulations or are suspected of theft.



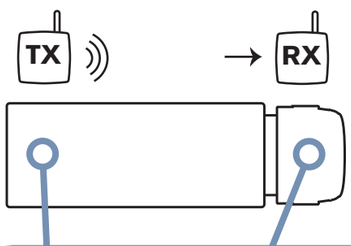
Internal cameras are available in the following range.
Elite

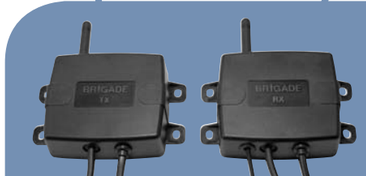
Features include:
- Mini
- Dome
- Flush

Please see the Brigade product catalogue for individual model specifications.



Wireless system





Compatible with the following camera monitor ranges
Elite, Select

Features include:
- Digital technology
- Eliminates the need for additional suzie cables
- Vastly reduces installation time
- Allows for interchangeable trailers

Please see the Brigade product catalogue for specification.

Cable free connection

Connecting a rear view camera system to a large vehicle or machine can be time-consuming and awkward due to the amount of cable to install. Brigade's new wireless system eliminates excess cabling, saving up to two hours' fitment time, and removes the need for an additional suzie cable.

The camera image is sent to the monitor via a transmitter, installed on the trailer, and a receiver installed in the cab.

New digital wireless technology gives almost instantaneous pictures and is not affected by electrical interference from other vehicle equipment. Once paired, the transmitter and receiver link is secure, whilst a button on the receiver allows for re-pairing to a different transmitter making interchanging trailers easy on articulated vehicles.

System Ranges

Brigade's camera monitor systems can help eliminate driver blind spots to prevent costly damage and ultimately save lives.

The Select and Elite ranges meet a host of on and off road health and safety and legislative requirements and are suitable for a wide range of applications and vehicles.

Compatible with Brigade's Mobile Digital Recorder to provide irrefutable evidence in the case of incidents and legal proceedings.

Use this guide to help you select the most suitable camera monitor range for your vehicle type.

Essential

A low cost, entry level reversing camera monitor kit. Ideally suited to light commercial vehicles and vans where only one camera is required.

1 YEAR WARRANTY

Elite

A superior, high quality CMS range for comprehensive blind spot coverage. Suitable for heavy duty applications, large road going vehicles and specialist applications.

Features include:

- Single/split/triple/quad/picture in picture screen function
- Certified to ISO 13766:2006 standard for earth moving equipment

3 YEAR WARRANTY

Select

Our mid range CMS offer added choice, camera inputs and features at a cost effective price. Suitable for medium to large road going vehicles.

2 YEAR WARRANTY

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

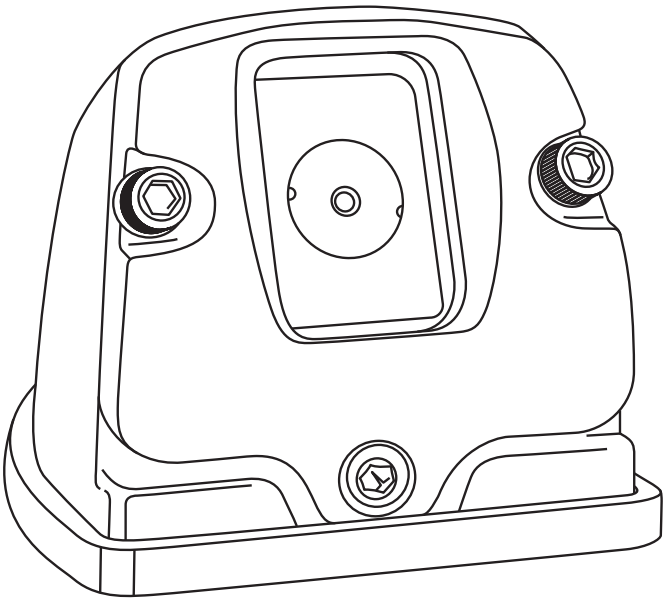
brigade-electronics.com

+44 (0)1322 420300

or visit your local stockist

Brigade's extensive portfolio of safety systems includes:

- **360˚ Camera monitor systems**
- **Camera monitor systems**
- **'White sound' reversing and warning alarms**
- **Pulsed radar obstacle detection systems**
- **Mobile digital recording**
- **Ultrasonic obstacle detection systems**



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