WARNING! Failure to install this product according to the manufacturer's recommendations may result in property damage, serious injury or death to those you are seeking to protect!

The use of this, or any warning device, does not ensure that all drivers can or will observe or react to an emergency warning signal. Never take the right-of-way for granted. It is your responsibility to be sure you can proceed safely before entering an intersection, driving against traffic, responding at a high rate of speed, or walking on or around traffic lanes.

The effectiveness of this warning device is dependant on correct mounting and wiring. Read and follow the manufacturer's instructions before installing or using the device. The vehicle operator should ensure daily that all features of the device are operating correctly. In use, the vehicle operator should ensure the projection of the warning signal is not blocked by vehicle components (i.e open doors, lids, etc..), people, vehicles, or any other obstructions.

This equipment is intended for use by authorised personnel only. It is the operator's responsibility to understand and obey all laws regarding emergency warning devices. The operator should check all applicable city, state and federal laws and regulations.

Australian Warning Systems Pty Ltd assumes no liability for any loss resulting from the use of this warning device.

Proper installation is vital to the performance of this warning device and the safe operation of the emergency vehicle. It is important to recognise that the operator of the emergency vehicle is under psychological and physiological stress caused by the emergency situation.

The warning device should be installed in such a manner as to:

a) Not reduce the output performance of the system.

b) Place controls within convenient reach of the operator so that he can operate the system without losing eye contact with the roadway.

Emergency warning devices often require high electrical voltages and/or currents. Properly protect and use caution around live electrical connections. The unit must be properly grounded. Improper grounding or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.

PROPER INSTALLATION COMBINED WITH OPERATOR TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO ENSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.

Introduction:

The AS Series Directional Arrows are a range of traffic advisory signals, designed to comply with the current Australian Standard. Designed and manufactured in Australia, the AS Series offer many features not found in other makes of directional arrows. The solid-state design and absence of moving parts make the AS series virtually repair free.

The AS Series Directional Arrows are available in the sizes specified by the revised AS/NZS 4192:2006. In addition, the AS Series directional arrows are available in double-sided models, and with a comprehensive range of mounting options, and accessories.

Australian Standard Versions:

Model ASAP-121	"A Type" - 1260mm x 650mm single sided arrow with incandescent lamps
Model ASAP-122	"A Type" - 1260mm x 650mm double sided arrow with incandescent lamps
Model ASAP-131	"A Type" - 1260mm x 650mm single sided arrow with LED lamps
Model ASAP-132	"A Type" - 1260mm x 650mm double sided arrow with LED lamps
Model ASAP-151	"B Type" - 1500mm x 770mm single sided arrow with incandescent lamps
Model ASAP-152	"B Type" - 1500mm x 770mm double sided arrow with incandescent lamps
Model ASAP-161	"B Type" - 1500mm x 770mm single sided arrow with LED lamps
Model ASAP-162	"B Type" - 1500mm x 770mm double sided arrow with LED lamps
Model ASAP-241	"C Type" - 2400mm x 1200mm single sided arrow with incandescent lamps
Model ASAP-251	"B Type" - 2400mm x 1200mm single sided arrow with LED lamps

The AS series directional arrows are available with traditional incandescent sealed beam bulbs, or the latest sealed LED lamps, all of which are compliant to AS 4192-2006. The control module is dual voltage, with automatic adjustment between 12 and 24 volt DC.

Unpacking:

Carefully remove all of the components from the packing, and place on a flat surface. Examine all pieces for transit damage, broken lamps, etc. Check to ensure that the vehicle electrical system matches with the voltage requirements of the supplied products. If in doubt, contact your local supplier, or the manufacturer for advice.

Installation & Mounting:

The AS series directional arrows have been designed with a flexible mounting system which allows it to be mounted almost anywhere. For questions concerning a specific application, call your local supplier, or Australian Warning Systems Pty. Ltd.
Prior to mounting, consideration should be given to cable location. The cable should exit the passenger side of the arrow board, on the left side of the panel as you face the lamps. Reversed mounting will result in all of the flash patterns being reversed.

The mounting location should be chosen such that there is maximum visibility to the oncoming traffic.

Located on each side of the frame is a 10mm threaded hole, which will allow low-level pivot mounts for collapsible mounting options. Ensure that all mounting brackets, etc. are secure enough to allow for the weight of the panel, as well as vibration, particularly during travel on bumpy roads, or at high speeds. If the arrow panel is collapsible, make sure that it is secured in both the 'up' and 'down' positions, and will not 'bounce' during travel. Constant vibration will reduce the life of the lamps, as well as increase the risk of damage to the panel and it's mounting points. The AC5 control module is mounted inside the arrow board. Access is via a removable cover located in the top of the frame. During installation care must be taken not to drill through the access plate.

Wiring Instructions:

Larger wires and tight connections will provide a longer service life for components. For high current wires it is recommended that terminal blocks or soldered connections be used, with heatshrink tubing to protect the connections. Do not use insulation displacement connectors (eg. 3M Scotchlock type connectors). Route wiring using grommets and sealant when passing through compartment walls. Minimize the number of splices to reduce voltage drop. High ambient temperatures (e.g engine bays) will significantly reduce the current carrying capacity of the wires, fuses and circuit breakers. All wiring should conform to the minimum wire size and other recommendations of the manufacturer, and be protected from moving parts and hot surfaces. Looms, grommets, cable ties, and similar installation hardware should be used to anchor and protect all wiring.

Fuses or circuit breakers should be located as close to the power takeoff points as possible and properly sized to protect the wiring and devices. Particular attention should be paid to the location and method of making electrical connections and splices to protect these points from corrosion and loss of conductivity. Ground termination should only be made to substantial chassis components, preferably directly to the vehicle battery. Circuit breakers are very sensitive to high temperatures and will 'false trip' when mounted in hot environments or operated closely to their capacity.

IMPORTANT!: Do not connect power wire to battery until all other connections are completed.

The AS Series directional arrows are available with either 12 or 24 volt lamps, and all harnesses are supplied with the correct fuse that is suitable for the supplied voltage. This fuse should never be replaced with one of a higher or lower rating.

Route the supplied wiring harness that connects the control switch to arrow panel. A standard eight meter wiring harness is supplied, and should be suitable for most installations. Optional extra length wiring harnesses are also available, ir required.

Remember when routing the main wiring harness that the end with round black multi-pin connector connects to the arrow panel. The small 6 pole white connector will connect to the control switch, and the 6mm twin sheathed cable will connect direct to the battery.

When routing the wiring harness ensure that it is protected from any moving parts of the vehicle, such as tail shaft, suspension components, or any moving parts of the vehicle body such as tippers, conveyors or hydraulic lifts. Secure the harness with cable ties, and use grommets when passing through metal panels.

Route the thin grey harness to the control switch location. Any excess length can be gathered and cable tied in a safe location (i.e under the dash).

Rout the 6mm twin sheathed (black) cable to the vehicle's battery. Cut excess length from the cable and crimp the supplied fuse holder to the red wire in the twin sheath. Crimp the appropriate size eye terminal to the black wire in the twin sheath. Removing the fuse first, connect the eye terminal on the red wire to the positive post of the vehicle battery. Then connect the eye terminal on the black wire to the negative post of the vehicle battery. **Caution:** Be careful to select the correct battery post when connecting to 24 volt dual battery systems.

Before connecting the 6 pole white connector into the control switch, make sure the rotary switch is in the "OFF" position (all the way left). Plug the 6 pole white connector to the matching connector at the control switch, observing that correct orientation of the connector is required to allow the connection to be made. The connectors must interconnect entirely, until the locking mechanism is engaged. Check all connections for loose or frayed wires, making sure that all crimp connections, and all battery cable connections, are firm.

After making all connections, insert the supplied fuse into the fuse holder at the battery. Turn the rotary switch one click clockwise. The arrow panel will commence to flash in "right arrow" mode. Select the other modes one at a time, ensuring that the correct flash mode is being displayed, particularly the left and right directional arrow modes.

The wiring instructions refer to an arrow panel mounted in the rear facing position, with the control switch being mounted inside the vehicle facing the driver in his normal seated position i.e a right arrow (arrow pointing to the right of the control panel) will produce a flashing arrow signal pointing towards the driver's side of the vehicle (away from the kerb). If the arrow panel is mounted front facing, or flipped over on its centre pivot to face oncoming traffic, the arrow modes will remain the same, in relation to the driver i.e right arrow mode on the controller will produce a flashing arrow, pointing to the right of the driver (left for the oncoming traffic).

Check that all bolts and nuts are taut, and that all electrical cables have been secured with cable ties or similar. Ensure all lamps on the arrow panel are working, and replace any faulty units.

Operation:

1) Selection of Flash Mode

Select the desire flashing arrow or caution mode, from the rotary control switch.

The controller has four flashing modes to choose from:

- Right flashing arrow
- Left flashing arrow
- Double flashing arrow
- Alternating corners
- Flashing caution, centre bar

CAUTION:

ALWAYS visually check the arrow panel to make sure that the correct arrow mode has been selected, and that all lamps are working. Replace any faulty lamps immediately.

2) Selection of Lamp Brightness

Dimming the AS Series arrows is controlled automatically by a light sensor on the top of the arrow panel. Automatic dimming requires no manual switching, and will reduce the intensity of the lamps to approximately 10% of full brightness, when the ambient light level falls to a determined level. Once the ambient light level is restored i.e sunrise, the arrows will revert to full brightness.

Power Requirements:

AS Series directional arrows are available with a choice of 12 or 24 volt sealed beam lamps, to suit the voltages of each particular vehicle. This eliminates the need for high capacity voltage reducers or special wiring, to facilitate powering 12 volt lamps with 24 volt electrical systems.

The power consumption (amperage) will vary with the size of the arrow panel, the voltage of the electrical system, and also the flash mode being used. The following chart will provide an indication of the **peak** and average power consumption during double flashing arrow mode (highest) on both **12 and 24 volt** electrical systems. Note: This is for a single sided arrow panel only. Calculations should be doubled for double-sided arrow panels.

Type	Size	Lamp Type	Lamp Model	Voltage	Watts
A	1260 x 650mm	Incandescent	900-4414A	12	18
A	1260 x 650mm	Incandescent	900-4593A	24	50
A	1260 x 650mm	LED	900-36450	12	
B	1500 x 770mm	Incandescent	900-4415A	12	35
B	1500 x 770mm	Incandescent	900-4502A	24	50
B	1500 x 770mm	LED	900-36625	12	
C	2400 x 1200mm	Incandescent	900-4412A	12	35
C	2400 x 1200mm	LED	900-4614	12	

Vehicles left stationary while powering flashing arrows will suffer a considerable drain on their battery. It is normally recommended that the vehicle engine be allowed to run at an idle while the arrow panel is in operation. This is particularly important when other hazard lighting is being utilized at the same time, such as rotating beacons, work lights or electric motors or fans, as used in some equipment. In these instances, even an idling engine will not provide enough to the vehicle recharging system. The engine revs may need to be increased via a hand throttle to help keep the battery charged.

Maintenance:

AS Series directional arrows require very little routine maintenance. Occasional cleaning of the lamps and hoods is all that may be required to maintain maximum light output. Use plain water and a soft cloth or facial tissue. Do not use solvents as they may damage the lamp faces or the ABS hoods.

Do not wash the control switch with a wet cloth. Wipe only with a soft dry cloth when necessary.

Lamp Replacement:

Important: Before replacing any lamps, remove the fuse at the battery. This will eliminate the risk of damage to the control module, which may be caused through a short circuit while changing lamps.

Locate the faulty lamp and then loosen the four screws around the lamp hood. Turn the hood anti-clockwise and remove the hood, taking care to support the lamp. Loosen the two screws on the rear of the lamp and remove the harness. Replace the lamp by attaching the harness to the rear of the lamp. Align the lamp with the notch in the panel, and position the hood over the screws. Twist the hood clockwise, and tighten the screws. Test all flash modes for correct operation.

Manufacture's Warranty

The manufacturer warrants that on the date of purchase this product will conform to the manufacturer's specifications for this product, and the manufacturer further warrants that this product is free from defects in materials and workmanship. This limited warranty extends for twelve months from date of purchase.

Manufacturer will, at its discretion, repair or replace any product found by the manufacturer to be defective and subject to this limited warranty.

Damage to parts or products resulting from tampering, accident, abuse, misuse, negligence, unapproved modifications, fire or other hazard; improper installation or operation; or not being maintained in accordance with the maintenance procedures set forth in manufacturer's installation and operating instructions voids this limited warranty.

Oral statements or representations about the product which may have been made by salespeople, dealers, agents or other manufacturers representatives do not constitute warranties. This limited warranty may not be amended, modified, or enlarged except by a written agreement, signed by an authorized official of manufacturer which expressly refers to those limited warranty.

In the event of liability for damages arising out of this limited warranty or any other claim related to the manufacturer's products, manufacturer's liability for damages shall be limited to the amount paid for the product at the time of original purchase.

In no event shall manufacturer be liable for lost profits, the cost of substitute equipment or labour, property damage, or other special, consequential, or incidental damages based upon any claim for breach of contract, improper installation, negligence, or other such damages.

Manufacturer shall have no further obligation or liability with respect to the product or its sale, operation and use, and manufacturer neither assumes nor authorizes the assumption of any other obligation or liability in connection with such product.

Arrow Board Model:…….. Arrow Board Serial Number:……..…….

Controller Model Number:……. Controller Serial Number:……....

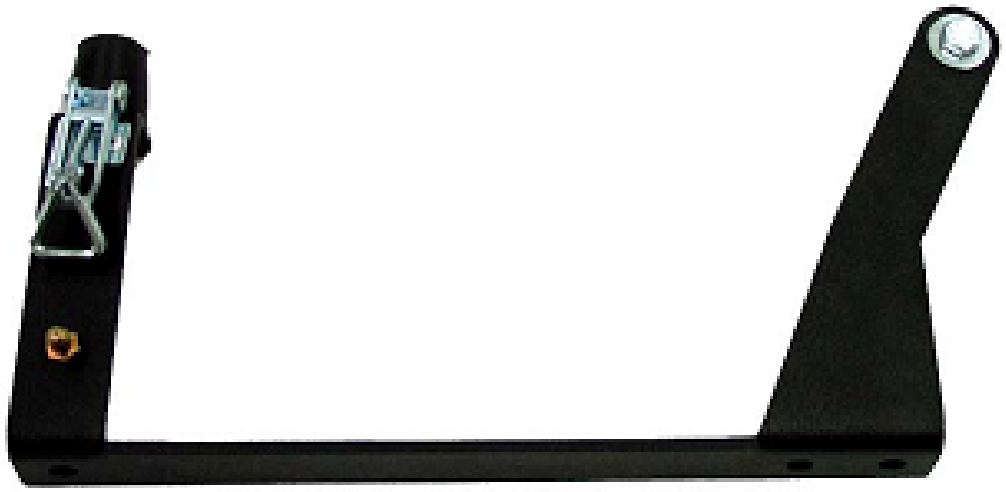
Name of Purchaser:……... Date of Purchase:…….

Side Mounting Brackets Instructions (Optional)

WARNING! Failure to install this product according to the manufacturer's recommendations may result in property damage, serious injury or death to those you are seeking to protect!

An option to the AS Series Directional Arrows are the side mounting brackets. These brackets have been designed to offer secure mounting of the arrow board, in both a raised and lowered position.

The side mounting brackets incorporate the pivot and the rest points in one bracket. Provision is made for a choice of gas struts for manual raising and lowering of the arrow board, or an electric actuator for raising and lowering via a switch in the vehicle. The brackets themselves can be fixed to any secure surface, such as roof racks, locker bodies, etc.



The side mounting brackets are suitable for both the A & B type arrow boards. The arrow board mounts on the inside of the bracket as pictured. A 10mm locking bolt is inserted through the bracket, into the pivot point, 150mm up from the bottom corner of the arrow board.

Important: The hardware should be fitted in the following order:-

Starting from outside:
- 10mm x 40mm hex head bolt
- M10 x 25mm flat washer
- Pivot bracket
- M10 nut
- M10 spring washer
- M10 x 25mm flat washer

Note:
The locking nut, spring washer & flat washer must be locked against the arrow board frame. Failure to correctly position the locking nut will eventually result in damage to the frame and mounting system.

Note: The gap between the locking nut and the inside of the pivot bracket should be no more than 3mm.

Pivoting on the 10mm bolts, the arrow board can be raised to the vertical position by either gas struts, or an electric actuator.

1. Gas Struts

Two gas struts are located, one at each end of the arrow board. The following indicates the correct force for the gas struts used with each model arrow board.

Type	Size	Version	Gas Strut Force
A	1260 x 650mm	Single Sided	150N
A	1260 x 650mm	Double Sided	200N
B	1500 x 770mm	Single Sided	200N
B	1500 x 770mm	Double Sided	250N

The gas struts have sufficient force to raise the arrow board to the vertical or display position. Lowering is manual, either via a handle or rope pull. Handles are supplied on arrow boards being fitted to lower level vehicles, such as cars, utes, etc. Rope pulls are supplied for higher-level vehicles such as trucks.

Systems with the Handle: Release the adjustable catch to allow the arrow board to rise to the vertical position. The gas struts will hold the arrow board vertical while stationary or at low travel speeds. To lower the arrow board, grab hold of the handle and pull down until the board is resting on the rubber rests. Reposition the catch to hold the board in the lowered position.

Systems with the Rope Pull: Release the rope from the hook at the back of the cabin, allowing the arrow board to rise to vertical position. The gas struts will hold the arrow board vertical while stationary or at low travel speeds. To lower the arrow board, grab hold of the rope and pull down until the board is resting on the rubber rests. Reposition the looped end of the rope to hold the board in the lowered position.

2. Electric Actuator

A single heavy duty electric actuator can drive the arrow board up and down, via three way switch located inside the vehicle. Apart from voltage, the same actuator is used for all versions of the directional arrow boards.

The actuator mounts on the inside of the bracket as pictured. An 8mm locking bolt is inserted through the actuator, into the arrow board, 300mm up front from the driver's side corner.

Important: The hardware should be fitted in the following order:-

Starting from outside:

- 8mm x 50mm hex head bolt
- M8 x 20mm flat washer
- Actuator Spindle
- M8 x 20mm flat washer
- M8 nut
- M8 spring washer
- M8 x 20mm flat washer

Note:
The locking nut, spring washer & flat washer must be locked against the arrow board frame. Failure to correctly position the locking nut will eventually result in damage to the frame and mounting system.