



# Auto Solar Powered Welding Helmet



## User Manual

[Revision 1.0 February 2020]

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READ THIS MANUAL CAREFULLY BEFORE USE – FAILURE TO DO SO MAY RESULT IN INJURY, PROPERTY DAMAGE AND MAY VOID WARRANTY. • KEEP THIS MANUAL FOR FUTURE REFERENCE. • Products covered by this manual may vary in appearance, assembly, inclusions, specifications, description and packaging.

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# Safety

Safety messages are designed to alert you to possible dangers or hazards that could cause death, injury or equipment or property damage if not understood or followed. Safety messages have the following symbols:



You **WILL** be KILLED or SERIOUSLY INJURED if you do not follow instructions.



You **CAN** be KILLED or SERIOUSLY INJURED if you do not follow instructions.



You **CAN** be INJURED if you do not follow instructions or equipment damage may occur.

It is vital that you read and understand this user manual before using the product, including safety warnings, and any assembly and operating instructions. Keep the manual for future reference.

Safety precautions and recommendations detailed here must be fully understood and followed to reduce the risk of injury, fire, explosion, electrical hazard, and/or property damage.

Safety information presented here is generic in nature – some advice may not be applicable to every product. The term "equipment" refers to the product, be it electrical mains powered, battery powered or combustion engine powered.

- Before Use** - If you are not familiar with the safe operation/handling of the equipment or are in any way unsure of any aspect of suitability or correct use for your application, you should complete training conducted by a person or organization qualified in safe use and operation of this equipment, including fuel/electrical handling and safety.

- Do NOT operate the equipment in flammable or explosive environments, such as in the presence of flammable liquids, gases or dust. The equipment may create sparks or heat that may ignite flammable substances.
- Keep clear of moving parts.
- Equipment may be a potential source of electric shock or injury if misused.
- Do NOT operate the equipment if it is damaged, malfunctioning or is in an excessively worn state.
- Do NOT allow others to use the equipment unless they have read this manual and are adequately trained.
- Keep packaging away from children - risk of suffocation! Operators must use the equipment correctly. When using the equipment, consider conditions and pay due care to persons and property.

## General Work Area Safety

- Work areas should be clean and well lit.
- Do not operate the equipment if bystanders, animals etc are within operating range of the equipment or the general work area.
- If devices are provided for connecting dust extraction / collection facilities, ensure these are connected and used properly. Dust collection can reduce dust-related hazards.

## General Personal Safety

- Wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect from eye and ear injury, poisoning, burns, cutting and crush injuries. Protective equipment such as safety goggles, respirators, non-slip safety footwear, hard hat, hearing protection etc should be used for appropriate equipment / conditions. Other people nearby should also wear appropriate personal protective equipment. Do not wear loose clothing or jewellery, which can be caught in moving parts. Keep hair and clothing away from the equipment.
- Stay alert and use common sense when operating the equipment. Do not over-reach. Always maintain secure footing and balance.
- Do not use the equipment if tired or under the influence of drugs, alcohol or medication.
- This equipment is not intended for use by persons with reduced physical, sensory or mental capabilities.

## General Fuel Safety

- Petrol/fuel/gasoline is extremely flammable – keep clear of naked flames or other ignition sources.
- Do not spill fuel. If you spill fuel, wipe it off the equipment immediately – if fuel gets on your clothing, change clothing.
- Do NOT smoke near fuel or when refuelling.
- Always shut off the engine before refuelling.
- Do NOT refuel a hot engine.
- Open the fuel cap carefully to allow any pressure build-up in the tank to release slowly.
- Always refuel in well ventilated areas.
- Always check for fuel leakage. If fuel leakage is found, do not start or run the engine until all leaks are fixed.

## General Carbon-Monoxide Safety

- Using a combustion engine indoors **CAN KILL IN MINUTES**. Engine exhaust contains carbon-monoxide – a poison you cannot smell or see.
- Use combustion engines **OUTSIDE** only, and far away from windows, doors and vents.

## General Equipment Use and Care

- The equipment is designed for domestic use only.
- Handle the equipment safely and carefully.
- Before use, inspect the equipment for misalignment or binding of moving parts, loose components, damage or any other condition that may affect its operation. If damaged, have the equipment repaired by an authorised service centre or technician before use.
- Prevent unintentional starting of the equipment - ensure equipment and power switches are in the OFF position before connecting or moving equipment. Do not carry equipment with hands or fingers touching any controls. Remove any tools or other items that are not a part of the equipment from it before starting or switching on.
- Do not force the equipment. Use the correct equipment for your application. Equipment will perform better and be safer when used within its design and usage parameters.
- Use the equipment and accessories etc. in accordance with these instructions, considering working conditions and the work to be performed. Using the equipment for operations different from those intended could result in hazardous situations.
- Always keep equipment components (engines, hoses, handles, controls, frames, housings, guards etc) and accessories (cutting tools, nozzles, bits etc) properly maintained. Keep the equipment clean and, where applicable, properly lubricated.
- Store the equipment out of reach of children or untrained persons. To avoid burns or fire hazards, let the equipment cool completely before transporting or storing. Never place or store the equipment near flammable materials, combustible gases or liquids etc.
- The equipment is not weather-proof, and should not be stored in direct sunlight, at high ambient temperatures or locations that are damp or humid.
- Do not clean equipment with solvents, flammable liquids or harsh abrasives.
- For specific equipment safety use and care, see Equipment Safety.

General Electrical Safety	General Electrical Safety	General Service Information
<ul style="list-style-type: none"> <li>Inspect electrical equipment, extension cords, power bars, and electrical fittings for damage or wear before each use. Repair or replace damaged equipment immediately.</li> <li>Ensure all power sources conform to equipment voltage requirements and are disconnected before connecting or disconnecting equipment.</li> <li>When wiring electrically powered equipment, follow all electrical and safety codes.</li> <li>Wherever possible, use a residual current device (RCD).</li> <li>High voltage / high current power lines may be present. Use extreme caution to avoid contact or interference with power lines. Electrical shock can be fatal.</li> </ul>	<ul style="list-style-type: none"> <li>Electrically grounded equipment must have an approved cord and plug and be connected to a grounded electrical outlet.</li> <li>Do NOT bypass the ON/OFF switch and operate equipment by connecting and disconnecting the electrical cord.</li> <li>Do NOT use equipment that has exposed wiring, damaged switches, covers or guards.</li> <li>Do NOT use electrical equipment in wet conditions or in damp locations.</li> <li>Do NOT use electrical cords to lift, move or carry equipment.</li> <li>Do NOT coil or knot electrical cords, and ensure electrical cords are not trip hazards.</li> </ul>	<ul style="list-style-type: none"> <li>The equipment must be serviced or repaired at authorised service centres by qualified personnel only.</li> <li>Replacement parts must be original equipment manufacturer (OEM) to ensure equipment safety is maintained.</li> <li>Do NOT attempt any maintenance or repair work not described in this manual.</li> <li>After use, the equipment and components may still be hot – allow the equipment to cool and disconnect spark plugs and/or electrical power sources and/or batteries from it before adjusting, changing accessories or performing repair or maintenance.</li> <li>Do NOT adjust while the equipment is running.</li> <li>Perform service related activities in suitable conditions, such as a workshop.</li> <li>Replace worn, damaged or missing warning/safety labels immediately.</li> </ul>
<ul style="list-style-type: none"> <li>The welding helmet is unsuitable for laser and oxygen acetylene welding projects.</li> <li>Do not put the welding helmet and filter near strong heat sources or damp places.</li> <li>Do not remove the filter from the welding helmet or open the filter box without proper knowledge or training.</li> <li>Before beginning any operation, confirm first if the welding or grinding function selection is correct.</li> <li>The protective plate must be installed to protect the filter from sustaining any damage.</li> <li>Do not make any amendments or replacements of the welding helmet or the ADF part without proper knowledge or training.</li> <li>Stop using the welding helmet immediately if the filter can't change to a dark state; contact an authorised technician to have it repaired.</li> <li>Do not use alcohol, petrol or paint thinner to clean the filter. Do not immerse it in water.</li> <li>Operational temperature range: -5 to 55°C. The reaction time of the ADF part will slow down if the ambient temperature is too low. But it does not affect any protective functions.</li> <li>Replace protective films immediately if they're broken or scratched. It could affect your vision and seriously reduce protective functions.</li> <li>Replace the protector immediately if it's broken or scratched. Do not use hard objects to clean the filter lens's surface</li> <li>Clean the filter surface, sensors and solar cells regularly.</li> <li>The welding helmet cannot protect you from any serious impacts, explosives or injuries from corrosive liquids.</li> <li><b>SERIOUS PERSONAL INJURIES WILL BE INCURRED IF USERS DO NOT FOLLOW THE ABOVE-MENTIONED WARNINGS.</b></li> </ul>		

# Safety Symbols

The product may have safety warning labels attached to it, explained below. Understand the symbols on your product and their meanings. If any stickers become unreadable, unattached etc., replace them.

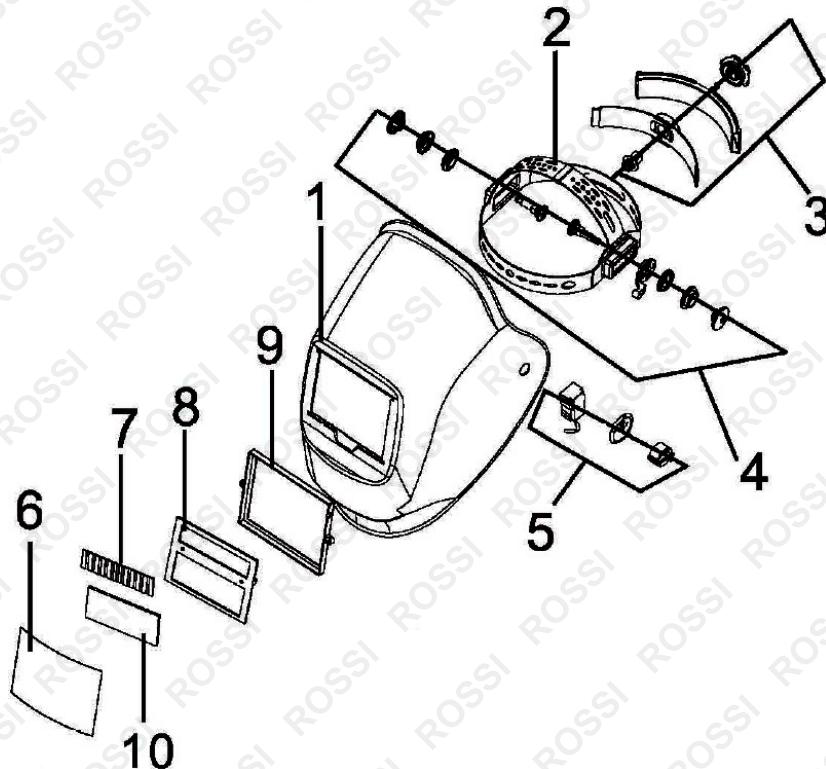
 <p><b>Flammable Material Hazard</b> Flammable liquids, gases or substances etc may present. Avoid ignition sources and open flames. Danger of fire.</p>	 <p><b>Read User Manual</b> Read and fully understand product safety warnings, operation, procedures etc before using the product.</p>	 <p><b>Use Hand Protection</b> Wear appropriate hand protection and take due care as the product or use of the product may present hand hazards.</p>	 <p><b>Carbon-Monoxide Hazard</b> Do not use the product in confined areas or without adequate ventilation. Carbon-monoxide poisoning can be fatal.</p>
 <p><b>Electrocution / Electrical Shock Hazard</b> High voltage or high current electricity may be present or required by the product. Take due care when handling electrical products, cables, plugs and leads. Electrical shock can be fatal.</p>	 <p><b>Toxic Fumes / Dust Hazard</b> Using the product or by-products from use may produce fumes, smoke or particles that could be harmful if inhaled. Wear appropriate breathing protection and have adequate ventilation.</p>	 <p><b>Explosive Material Hazard</b> Combustible liquids, gases or substances etc may be present. Avoid ignition sources and open flames. Danger of explosion.</p>	 <p><b>Cutting / Amputation Hazard</b> The product may have blades, edges or mechanical devices that can cause severe cut injury to fingers, limbs etc. Take due care when handling and using the product.</p>
 <p><b>Crush Hazard</b> The product may have blades, edges or mechanical devices that can cause severe crush injury to fingers, limbs etc. Take due care when handling and using the product.</p>	 <p><b>Single Operator Only</b> The product must be operated by a single person only. More than one person operating the product may introduce additional hazards.</p>	 <p><b>Use Face Protection</b> Wear appropriate full-face protection and take due care as the product or use of the product may present face and eye hazards.</p>	 <p><b>Use Foot Protection</b> Wear appropriate foot protection and take due care as the product or use of the product may present foot hazards.</p>
 <p><b>Use Eye / Ear / Head Protection</b> Wear appropriate eye and / or ear and / or head protection and take due care as the product or use of the product may present eye, hearing and head hazards.</p>	 <p><b>Running Hazard</b> Do not run on or near the product as doing so may present a fall hazard.</p>	 <p><b>Diving Hazard</b> Do not dive into the product as doing so may present a neck / head injury hazard.</p>	 <p><b>Adult Supervision Required</b> Always supervise children and other users of a product to prevent drowning or injury.</p>
 <p><b>Skin Penetration / Puncture Hazard</b> The product may produce pressure, emit liquids or objects that can cause severe injury to fingers, limbs, blood etc. Take due care when handling and using the product.</p>	 <p><b>Hot Surface Hazard</b> Be aware that the product may produce high temperatures and hot surfaces that can cause burn injuries.</p>	 <p><b>Flying Debris Hazard</b> Be aware that the product or use of the product may present hazards produced by flying debris. Wear appropriate clothing and protective devices.</p>	 <p><b>Moving Parts Hazard</b> Be aware that the product contains or uses mechanical devices that move or rotate. Always wait for moving parts to stop fully before handling the product, adjusting, maintenance etc.</p>

 <p><b>Carbon-Monoxide Hazard</b> Do not use the product in confined areas or without adequate ventilation. Carbon-monoxide poisoning can be fatal.</p>	 <p><b>Pull Hazard</b> Be aware that the product contains or uses mechanical devices that can pull in objects and can cause severe injury to fingers, limbs etc. Take due care when handling and using the product.</p>	 <p><b>Slope / Fall Injury Hazard</b> Be aware that using the product on sloping surfaces or in slippery conditions may present additional dangers from falls and contact with blades, moving parts, hot surfaces etc.</p>	 <p><b>"Slam Dunk" Warning</b> Do NOT attempt "slam dunk" manoeuvres as this may result in severe injury due to falling, product breakage or collapse etc.</p>
 <p><b>Electrocution / Electrical Shock Hazard - Outdoor</b> High voltage or high current electricity may be present or required by the product. Do NOT use in rain, damp or wet conditions. Electrical shock can be fatal.</p>	 <p><b>Electrocution / Electrical Shock Hazard - Disconnect</b> High voltage or high current electricity may be present or required by the product. Always disconnect the product from the electrical supply before handling the product, adjusting, maintenance etc.</p>	 <p><b>Power Line Electrocution Hazard</b> High voltage / high current power lines may be present. Use extreme caution to avoid contact or interference with power lines. Electrical shock can be fatal.</p>	 <p><b>"Kick-Back" Hazard</b> High level of "kick-back" hazard that can cause the machine to suddenly rotate towards operator. Kick-back injury can be fatal.</p>
 <p><b>Winch Operator Position Hazard</b> Do NOT stand between winch and load. Do NOT use winch to move people.</p>	 <p><b>Winch Lift Hazard</b> Do NOT LIFT load vertically. Use machine to PULL only.</p>	 <p><b>Cable Hazard</b> Ensure that load bearing cable is not kinked or knotted.</p>	 <p><b>Winch Cable Hazard</b> Ensure that there is a minimum number of cable coils on winching mechanism.</p>
 <p><b>Winch Hook Hazard</b> Carry hook to load – do NOT throw or run.</p>	 <p><b>Flash / Blinding Hazard</b> Wear appropriate eye protection for welding. Direct exposure to weld arcs may cause permanent eye injury.</p>	 <p><b>Laser Hazard</b> Laser may be in use – do NOT look directly at laser or allow others to.</p>	

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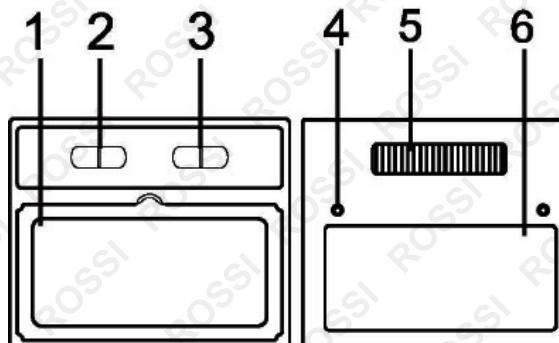
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# Parts Identification



No.	Name
1	Helmet body
2	Headgear
3	Headgear adjusting knob
4	Headgear angle adjusting knobs
5	Shade number adjuster

No.	Name
6	Protective plate
7	Solar panel
8	Fixed plate
9	Press card
10	UV/IR filter



No.	Name
1	LCD
2	Sensitivity control knob
3	Delay time control knob

No.	Name
4	Sensor
5	Solar cell
6	UV/IR filter

# Operation

## Before Welding

1. Remove the protective film from the internal and external screens.
2. Ensure that you have enough power supply before using the welder.
3. Check for any abnormalities in the filter display.
4. Please check for the following and clean, if necessary:
  - Protective films are complete
  - Solar cell and arc sensor are NOT damaged or dirty/dusty
5. Check for any worn-off or damaged operating parts. If any operating parts are damaged, replace immediately to avoid accidents and injuries from occurring.
6. Check for any loose parts and re-tighten them, if necessary.
7. Choose the right shade number with the corresponding machine type and welding current.

## Shade Number Selection

1. You can manually set the shade number from 9 – 13. The adjusting knob is located outside and inside the mask. Rotate the adjusting knob to set your desired shading number.
2. Adjust the helmet to the correct shade tint for a welding process. Please refer to the table below:

Welding Process	Arc Current(Ampères)																			
	1.5	6	10	15	30	40	60	70	100	125	150	175	200	225	250	300	350	400	450	500
SMAW		8		9		10		11		12		13		14						
MAG			8		9		10		11		12		13		14					
TIG		8		9		10		11		12		13								
MIG(heavy)				9		10		11		12		13		14						
MIG(light)					10			11		12		13		14						
PAC					9	10	11		12		13									
PAW	4		5		6		7		8		9	10		11	12					
Note	★ SMAW-Covered electrodes ★ MAG-Metal arc Welding ★ TIG-Gas Tungsten Arc Welding ★ MIG(Heavy)-MIG with heavy metals										★ MIG(light)-MIG with light alloys ★ PAC-Plasma jet cutting ★ PAW-Microplasma arc welding									

## Delay Time

This is for the helmet to switch back from full darkness to full brightness depending on the welding current and the duration of power by dialing the "DELAY" knob faster or slower.

- Choose the minimum delay time. You can set it from 0.1 to 0.25 second. This is suitable for spot welding, short welding or seam welding projects
- Choose the maximum delay time. You can set it from 0.85 to 1.0 second. This is suitable for high-current welding to prevent eye fatigue from the arc weld.

- You can also choose a medium delay time, which is suitable for the majority of indoor and outdoor welding projects.

## Sensitivity

The default sensitivity is its lowest state. You can adjust the sensitivity setting by rotating the SENSITIVITY knob. Sensitivity will depend on the welding process and the amount of ambient light present.

- Minimum Sensitivity: Suitable for high-current welding or in environments with bright lighting.
- Maximum Sensitivity: Suitable for low-current welding such as argon arc welding or in environments with dim lighting.
- Mid-range sensitivity: Suitable for most indoor and outdoor welding projects.

## Welding/Grinding Set

While cutting or grinding, dial the control knob to the GRIND position.

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**NOTE:** Not all models come with this feature.

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## Test Welding

- Set the shading number from 9 - 13, then press the TEST button. Check if the LCD changes from light to dark, and automatically returns to its bright state.
- If the filter doesn't have a self-test function, you can set the shading from anywhere between 9 – 13 before using the helmet. Set an ordinary incandescent light source of more than 40W near the arc sensor filter. Check if the LCD darkens, then automatically returns to its bright state after removing the light source.

## Adjusting the Headband

- The tightness of the headband can be manually adjusted. First, moderately press the rotary gear and adjust the tightness accordingly. The rotating gear has a self-locking function; excessive force may damage the gear.
- There are positioning holes on the side of the helmet. By adjusting the fixed plate on a lateral hole location, you can change the sight and view angles.
- You can change the angle of the face mask by adjusting the screws' tightness. You can also turn it upward or downward. The ideal welding angle is when the eyes and joints are connected by a straight line, perpendicular to the filter.

## Battery Replacement

- Part ADF uses 2 pieces of 3V Lithium battery, or 2 pieces of AAA alkaline batteries as a backup power supply. It only uses non-changeable battery types.

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**NOTE:** Batteries should be disposed in accordance to your local laws and regulations. Filters should be disposed in accordance with your local electronic waste material processing laws.

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- The battery can be used continuously for 5,000 hours in normal conditions. The low voltage lamp will not work when power is insufficient. Replace the battery once the low-voltage light turns on.

**NOTE:** Not all models come with this feature.

## Maintenance

- Use tissues, lens paper or a clean soft cotton material when cleaning the filter.
- Use a neutral detergent to clean the welding helmet exteriors and the sweat bands.
- Replace the external and internal protection plates and sweat bands regularly.
- Do not use any corrosive solvents or gasoline as a detergent-diluter.

## Troubleshooting

Problems	Reasons	Solutions
<b>Filters do not darken or flickers</b>	Protector is dirty or damaged	Clean or replace it
	Arc sensor is dirty	Clean the surface of the arc sensor
	Welding current is too low	Increase sensitivity setting as needed
	Low battery power	Replace battery
<b>Slow reaction</b>	Ambient temperature is too low	Do not use below -5°C
	Sensitivity setting is too low	Increase sensitivity setting as needed
<b>Filter isn't clear</b>	Protector is dirty	Clean or replace the protector
	Protective film has not been removed	Remove the protective film
	Dirty filter lenses	Clean both sides of the filter lenses
	Insufficient ambient light	Adjust ambient light of workplace
<b>Welding helmet feels loose</b>	Incorrect shade number selected	Choose an appropriate shade number
	Headband is not adjusted properly	Adjust the fixed nuts of the headgear

# Specifications

<b>Model</b>	ADF DX-400N
<b>Response Time</b>	<0.0002ms
<b>Viewing Area</b>	92 x 42mm
<b>Size of Cartridge</b>	110 x 10 x 9mm
<b>Arc Sensor</b>	2
<b>Light State</b>	DIN4
<b>Dark State</b>	Variable shade 9-13
<b>Shade Control</b>	Internal, variable
<b>Power ON/OFF</b>	Fully automatic
<b>UV/IR Protection</b>	DIN16
<b>Power Supply</b>	Solar cells, re-chargeable battery, no battery change required
<b>Switching Time</b>	1/15,000s from light to dark
<b>Dark to Light</b>	0.25-0.45s at fast position, 0.65 - 0.85s at slow position
<b>Operating Temperature</b>	-5°C ~ +55°C
<b>Helmet Material</b>	PP (fireproof)



**Some experts believe that the incorrect or prolonged use of almost any product may cause serious injury or death. To help reduce your risk of serious injury or death, refer to the information below. For more information, see [www.datastreamserver.com/safety](http://www.datastreamserver.com/safety)**

- Consult all documentation, packaging and product labelling before use. Note that some products feature documentation available online. It is recommended to print and retain the documentation.
- Before each use, check the product for loose/broken/damaged/missing parts, wear or leaks (if applicable). Never use a product with loose/broken/damaged/missing parts, wear or leaks.
- Products must be inspected and serviced (if applicable) by a qualified technician every 6 months. This is based on average residential use by persons of average size and strength, and on a property of average metropolitan size. Use beyond these recommendations may require more frequent inspections/servicing.
- Ensure that all users of the product have completed a suitable industry recognised training course before being allowed access to the product.
- The product has been supplied by a general merchandise retailer that may not be familiar with your specific application or description of application. Be sure to attain third-party approval from a qualified specialist for your application before use, regardless of any assurances from the retailer or its representatives.
- This product is not intended for use where fail-safe operation is required. As with any product (for example, automobile, computer, toaster), there is the possibility of technical issues that may require the repair or replacement of parts, or the product itself. If the possibility of such failure and the associated time it may take to rectify could in any way inconvenience the user, business or employee, or financially affect the user, business or employee, then the product is not suitable for your requirements. This product is not intended for use where incorrect operation or a failure of any kind, including but not limited to, a condition requiring product return, replacement, parts replacement or service by a technician may cause financial loss, loss of employee time or an inconvenience requiring compensation.
- If this product has been purchased in error when considering the information presented here, contact the retailer directly for details of their returns policy, if required.

