

LOGIC

LMF100

MULTI-FEEDER



USER MANUAL

WM2-LMF100

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Multi-Feeder Serial Number:

Date of Purchase:

With the purchase of your **LOGIC MULTI-FEEDER** you have made an excellent choice.

This machine should give first class service for a long time, if used correctly, and maintained as described in this manual.

The Multi-Feeder provides a first class method of feeding many classes of livestock using bulk feeds, minimal time with good accuracy.

No troughs are required, ground poaching is avoided and there is less stress on both the livestock and operator.

The **LOGIC MULTI-FEEDER** is of strong construction and the control equipment is high quality.

Options such as mudguards, animal fender, Tonneau cover, control counter, larger wheels and extension sides can be added to provide a comprehensive feeding unit.

If, after reading this manual there are any queries, please get in touch, we will be pleased to help.

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Please read this manual carefully, adhere to all instructions paying particular attention to the safety information. For further information or clarification of any of the points made, please contact Logic Manufacturing Ltd.

The Multi-Feeder can be towed by any suitable vehicle from UTVs to Landrovers to 4x4 pickups although it is ideally suited to ATVs

The Multi-Feeder is not suitable for use with ATVs with less than 300cc engine capacity or for use with leisure or sports models. 4 wheel drive vehicles are recommended for hilly ground. Using an ATV with an attached trailer introduces additional risks to operating an ATV alone, these should be thoroughly assessed and managed.

SAFE OPERATION

- Protective clothing must be worn, including a helmet with a visor or goggles, gloves, sturdy ankle covering footwear and strong clothing that covers your arms and legs. Carry a personal first aid kit including a large wound dressing.
- Never carry passengers in or on the feeder. Individuals under 16 years are forbidden to use this equipment. Ages 17+ must have been trained in towing equipment or trailers. We strongly recommend these operators have completed the 'car and trailer driving test — category B+E'. They must also receive additional training and supervision on the daily feeding route. Never carry additional weight which may affect stability, never exceed the gross weight of the Multi-Feeder.
- The towing vehicle (ATV) weight ratio must be within our guidelines.

(See guidelines/ diagram on page 12 and the feeder weight calculation table on page 13)

The unladen and gross weights of the Multi-Feeder are also found of the manufacturers plate which is riveted to the drawbar.

LOGIC		Manufacturing Ltd. Foundry Industrial Estate Bridge End, Hexham, Northumberland UK Tel: +44(0)1434 606661 Fax: +44(0)1434 608143 www.LogicToday.co.uk sales@LogicToday.co.uk		CE	
MODEL / TYPE		YEAR	201		
MAXIMUM GROSS MASS		UNLADEN MASS			
	KG		KG		
MAXIMUM DRAWBAR MASS					
	KG		KG		



If you are using the machine on uneven or hilly ground, we recommend reducing the amount of feed in the hopper by at least 25%. It is also recommended to reduce speed accordingly. Never cross a slope when towing a trailer.

The feeder should never be driven at speed. Off road models no more than 20mph and road models no more than 50mph. This should be reduced when off road to 20mph.

ROUTE PLANNING & ACCESS

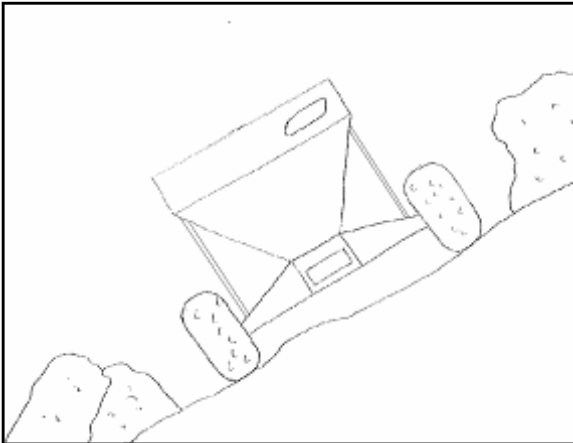
- Plan the daily feed route and access well in advance of the feeding season. We recommend you identify hazards and obstacles including: gates, tracks, public road crossings, field crossings, hill descents/ascents, sharp corners, unsuitable ground, wet boggy areas, hidden obstacles (tree stumps, rocks etc). (for more info see HSE Ag info sheet 33 and AFAG701 sheet 39).
- It is the duty of the operators employer, in conjunction with the operators, to identify and plan the route as part of the health and safety routine planning. A full risk assessment should be carried out. Logic Manufacturing Ltd accept no responsibility for poor route planning.



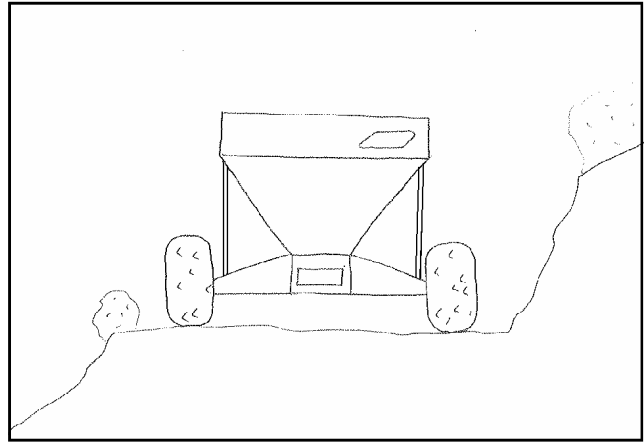
If the weather is or has been wet or poor the feed route should be reassessed before travelling. Poor weather can affect the terrain being travelled and the handling of the towing vehicle, especially ATVs

- Standard Multi-Feeders are designed for off road use only. Where the route involves the use of public roads the road legal (R) Multi-Feeder should be used.
- Using an ATV with a trailed attachment introduces additional risks to operating an ATV alone, these should be thoroughly assessed and managed.
- When navigating slopes, never cross a slope when towing the Multi-Feeder but ride up (ascend) and ride down (descend) vertically. A track may need to be cut into the bank or slope if it is not possible to navigate the slope safely. When riding down (descending) always use low gear and delicate use of controls. Consult your vehicle manufacturer's manual advice on towing loads up and down slopes forward speed of the vehicle **MUST** always be dictated by local ground conditions, which vary from season to season.

DO NOT

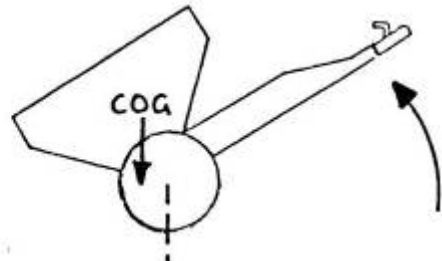
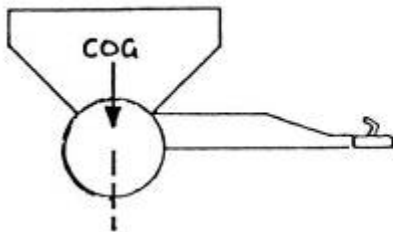


DO



As with all trailed equipment of this type take **EXTRA CARE** when unhitching a part or fully laden Multi-feeder from the towing vehicle.

NEVER lift the drawbar to a height which moves the centre of gravity behind its wheels,



MAINTENANCE — A WELL MAINTAINED MACHINE IS A SAFER MACHINE

- Maintenance of the towing vehicle and towed equipment should be part of the daily routine.
- The ATV should have its brakes, throttle and tyre pressures checked daily. Tyre pressures are low on an ATV so a 1psi difference can cause vehicle control problems.
- Check that the brakes give a safe straight stop and the throttle operates smoothly in all steering positions.
- Brakes can have a relatively short life in the environment the machine will be used, so frequent cleaning, regular adjustment and proper maintenance will be required. The Multi-Feeder is unbraked so the towing vehicle is relied upon to provide the control. Check the towing vehicles manufacturers manual for further guidance.
- Ensure that the wheel bearings are regularly lubricated with grease. Every 3 months re-pack with new grease and adjust to take up any wear.

TRAINING

- There is a legal requirement for employers to provide adequate training for all operators of ATV equipment and attachments. Contact your local HSE office for approved training courses such as LANTRA for ATVs. The same requirements apply to the self-employed.

Safe use of all-terrain vehicles (ATVs) in agriculture and forestry

HSE information sheet

Agriculture Information Sheet No 33 (Revision 1)

Introduction

This information sheet gives advice on the safe use of ATVs. It covers the two main types used in off-road working in agriculture, forestry and the land-based industries, namely:

- **Sit-astride ATVs:** Any motorised vehicle designed to travel on four low-pressure tyres on unpaved surfaces, with a seat designed to be straddled by the operator and with handlebars for steering control (see Figure 1). These vehicles are intended to be used by a single operator without a passenger. They may also be referred to as quad bikes.
- **Side-by-side ATVs:** Small utility vehicles in which the driver and passenger sit alongside each other in conventional (ie sit-in) seats (see Figure 2). Most side-by-side vehicles are capable of carrying two occupants in this way; however, some vehicles are equipped with a second row of seating (and can therefore carry four occupants), while others have bench-style seats allowing up to three people to be seated in a row. The majority of side-by-side vehicles have four wheels, although six-wheel and full and partially tracked versions are also available. There is usually a cargo bed behind the seating area. Side-by-side ATVs are sometimes referred to as utility vehicles (UTVs) or rough terrain utility vehicles (RTVs).

ATVs are usually fitted with a tow hitch and are capable of towing a load such as a trailer, a trailed appliance or other equipment.

Hazards

Both types of ATV are designed to cope with a wide variety of terrain types, including steep slopes, but if used outside their safe operating parameters they can very rapidly become unstable. The main causes of serious or fatal injury associated with ATVs are from:

- being thrown off during vehicle overturns or after loss of control;

- collisions with structures, trees, other vehicles etc;
- being trapped/asphyxiated under an overturned machine;
- pedestrians being struck or run over by ATVs.

Contributory factors/underlying causes of accidents and injury with ATVs can include:

- lack of formal operator training and/or experience;
- incorrect/lack of appropriate head protection;
- excessive speed;
- age of the operator;
- carrying a passenger on a sit-astride ATV;
- unbalanced loads or overloading;
- tipping on a bank, ditch, rut or bump;
- loss of control on a steep slope combined with other factors, eg ground or load conditions;
- towing excessive loads with unbraked equipment;
- poor maintenance, eg faulty brakes, incorrect tyre pressures etc.

Control measures for sit-astride ATVs

Training

It is a legal requirement for employers to provide adequate training for employees who use work equipment such as ATVs, and to make sure that only employees who have received appropriate training in their safe use, including the use of any towed equipment or attachments, are permitted to ride them. The same requirements apply to the self-employed.

You can get details of suitable training courses from franchised ATV dealers, manufacturers' websites, EASI (European ATV Safety Institute), the British Off Road Driving Association (BORDA) and through colleges and training providers.

When purchasing a new or used machine from a franchised dealer an industry-led scheme offers customers free training – see 'Useful contacts'.

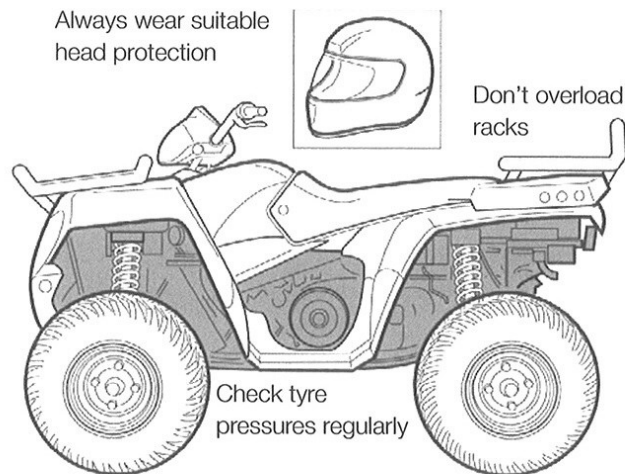


Figure 1 Example of a sit-astride ATV

Personal protective equipment – the importance of head protection

Sit-astride ATVs are not fitted with either a cab or roll bar, so your only protection is what you wear. Head protection is vital. Many ATV fatalities in the UK have been caused by head injuries. Helmets would certainly have prevented most of, if not all, these deaths. You should always wear a helmet when riding an ATV.

Helmet types suitable for ATV operations, depending on the circumstances, are motorcycle helmets, equestrian helmets, specialist ATV helmets, cycle helmets and mountaineering helmets. All helmets should be manufactured and tested in accordance with the current relevant EN/BS standard, have a chinstrap and be capable of being used with suitable eye protection. The type of helmet chosen should be based on an assessment of the circumstances in which the ATV will be used, eg the types of surface travelled over and anticipated speeds. The harder the surface and higher the speed the greater the degree of protection needed. NB: Forestry helmets and industrial hard hats are not acceptable for any ATV operations.

Wear clothing that is strong and covers your arms and legs. Gloves are useful for protection and handlebar muffs can help to keep hands warm in cold weather for good control of the ATV. Wear sturdy, ankle-covering footwear, eg boots or wellingtons that are strong, supportive and have good wet grip.

Protect your eyes from insects and branches with either a visor or goggles.

Passengers

The long seat on a conventional sit-astride ATV is to allow operators to shift their body weight backwards and forwards for different slope conditions,

a technique known as 'active' riding. It is **not** for carrying passengers. Manufacturers often display a sign on machines prohibiting passengers and this message is also repeated in operator manuals.

Do not carry a passenger in a trailer behind an ATV as any movement can make the machine unstable, particularly with independent rear suspension and trailers with axles wider than the ATV.

Some machines have received European Community Whole Vehicle Type Approval, allowing them to be ridden on the public highway. Some of these machines are designed to carry passengers. Such machines may not be suitable for carrying a passenger when used in off-road situations, eg on sloping ground, as the operator may not be able to use active riding techniques to maintain machine stability. Such machines may not have a locking differential and may not provide an acceptable level of traction to ensure safety in certain off-road conditions.

Before using an ATV you should assess the suitability of the machine for the intended tasks and working environment.

Route planning and stability

Accidents can occur where ATVs are driven on new routes over steep ground for the first time, or are carrying or dragging destabilising loads. When travelling over rough terrain, get to know your own ground and stick to planned routes where possible. Walk new routes if necessary to check for hidden obstructions, hollows or other hazards. Allow for changes in ground conditions and for the destabilising effect of loads or attachments.

Safety checks and maintenance

Off-road use is especially harsh on equipment so it is essential to carry out safety checks and maintenance in accordance with the manufacturer's recommendations. In particular, pre-ride safety checks should always include:

- tyre pressures. These are low, eg typically around 2–7 psi, so even a 1 psi (0.07 kg/cm²) difference in pressure can cause vehicle control problems. Use a gauge that is designed for measuring and displaying low pressures – usually supplied with the ATV;
- brakes and throttle. Check that the brakes give a safe straight stop and that the throttle operates smoothly in all steering positions. Brakes can have a relatively short life in farming or forestry environments and need frequent cleaning, regular adjustment and proper maintenance.

Safe riding methods

On sit-astride ATVs rider positioning is vital to operate them correctly. The position of the rider on the machine needs to be changed depending on the terrain and motion. Riders must have the ability to move and balance the momentum of the ATV with their own body weight. Plan routes (and review the plan if a route is used regularly) to assess risks.

The following advice is no substitute for formal training.

- Most ATVs have no differential and so do not handle in the same way as other machines. This means that when you turn, the ATV tries to keep going in a straight line.
- When cornering on an ATV with no differential, or with the differential lock engaged, where your body weight needs to be positioned depends on how sharp the corner is and on how fast you are going. Correct body position allows you to transfer weight to the outside of the turn through the footrests while maintaining balance with the torso. This lets the inside wheels skid slightly allowing the ATV to make the turn properly.
- You must understand how the transmission system of your machine will affect engine braking for both riding on slopes and recovery of stalled ATVs.
- When riding across a slope, keep your weight on the uphill side of the ATV.
- When going downhill, slide your weight backwards, select a low gear and use engine braking, reducing the need to use the brakes.
- When going uphill, it is important to review the route before starting the climb. Move your weight forwards and maintain a steady speed. It is important to shift your body weight forwards as much as possible. If necessary, stand up and lean forward, keeping both feet on the footrests at all times and always maintain momentum.
- Avoid sudden increases in speed. This is a common cause of rearward overturning accidents, even from a standing start on flat ground where there is good grip.
- Never put your foot onto the ground to stabilise an ATV when riding, but shift your weight across the ATV away from the imbalance.
- Always read the owner's manual.

Trailed equipment and loads

Ensure all riders know the manufacturer's recommended towing capacity and drawbar loading limit. Always operate within these requirements. Remember that your ability to control the ATV by your body movements will be considerably reduced when carrying a load or towing a trailer.

- When selecting trailed equipment look for:
 - over-run brakes;
 - a swivel hitch drawbar;
 - bead lock rims on wheels;
 - a low centre of gravity and a wide wheel track;
 - a long drawbar;
 - attachment points for securing a load.
- Check the weight ratio between your ATV and its trailed load. This needs to be assessed for each operation. As a general guide, on level ground braked trailed equipment can be a maximum of four times the unladen weight of the ATV. For unbraked trailed equipment the maximum should be twice the unladen weight. These loads should be reduced when working on slopes, uneven ground or poor surface conditions. Follow the manufacturer's advice for your particular machine.
- Weight transfer is also important. Stability and resistance to jackknifing is improved if some load is transferred onto the ATV's drawbar. Approximately 10% of the gross weight of the loaded trailer is recommended, but this should not exceed the manufacturer's drawbar loading limit. Remember that weight transfer can change dramatically when you start going up or down hill.
- When selecting mounted equipment, make sure it is within the manufacturer's approved weight limit, with a low centre of gravity and controls which are easy to operate but do not create a hazard. Where equipment is added to one end of the machine, add ballast at the other end to maintain stability.
- Loads carried on racks must be well secured, eg with ratchet straps, and be evenly balanced between the front and rear, except where they are deliberately altered to aid stability when going up or down a slope. Maximum weights that can be carried should be specified in the operator's manual and may be marked on the machine. These should not be exceeded.
- Only tow a load from the hitch point. Loads towed from other points, such as the rear rack, have caused sudden rear overturning even on slight slopes or with slight acceleration. Do not use ropes or chains to drag a load; they can become caught on a wheel. This may lead to entanglement with the brake cable, causing unexpected braking.

Using sprayers

- Sprayers should be fitted with an induction hopper unless the filling point is less than 1.5 m from the ground and within 0.3 m from the edge of the sprayer. A separate clean water tank for washing must be provided containing at least 15 litres of clean water and a tap that allows the water to run without being continuously pressed.
- When buying a sprayer look for a low centre of gravity and internal baffles to reduce liquid surge and improve stability when turning on slopes.

- ATVs should only be used with rear-mounted spray booms or other equipment that reduces the risk of pesticide exposure to the operator.
- Do not hold a spraying lance while riding your ATV as you need two hands for safe control.

Accessories

Beware of the potential dangers of accessories which are not approved by manufacturers, eg home-made gun racks and boxes. Either use accessories supplied/approved by manufacturers or seek their advice as to the suitability of those sourced elsewhere.

Any weight added above the centre of gravity will decrease the ATV's stability, eg feed hoppers/dispensers fixed above the rear rack.

Children

- Never carry a child as a passenger. It is illegal and will reduce your ability to control the ATV.
- Children under 13 years old are prohibited from using an ATV for work. Over-13s should only ride ATVs of an appropriate size and power after formal training on a low-power ATV.
- Children under 16 years old are prohibited from using most adult-sized machines. Check and adhere to the manufacturer's minimum age recommendations for your ATV; this information may be displayed on the machine and in operator manuals. Similar restrictions apply to side-by-side machines.
- The ratio of a child's weight to that of the ATV is significant, as weight transfer is the key to safe handling.
- In the event of an overturn, a child may be crushed by the weight of an adult-sized ATV. They may be unable to lift it off unaided.

Roll-over protective structures (ROPS)

- HSE's current advice is that roll-over protective structures (ROPS or crush protection devices) are not recommended for sit- astride ATVs. Research has shown that they may lead to an increased risk of injury in the event of an overturn by either preventing the operator from separating from the machine or striking the operator as the machine overturns.
- Lap straps/seat restraints should not be fitted. They prevent active riding and would be potentially lethal without a full cab or roll cage.
- Weather cabs on sit- astride ATVs restrict a rider's ability to jump clear in an overturn. The rider is likely to be crushed within the cab unless it is strong enough to withstand the forces involved. Carefully assess the risks for your particular

conditions of use before fitting any such structure and consult the manufacturer for information.

Side-by-side ATVs

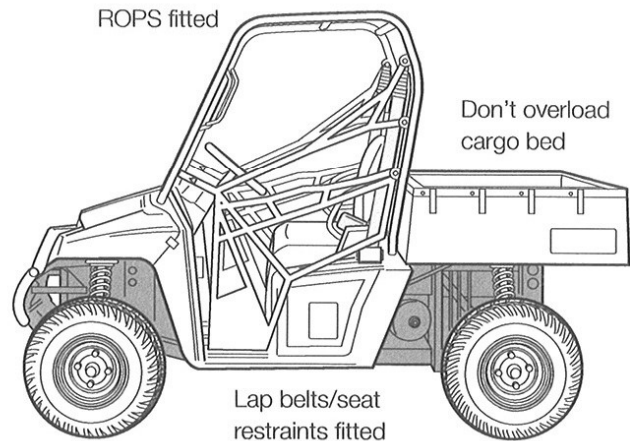


Figure 2 Example of a side-by-side ATV

Utility side-by-side ATVs are used for many of the same purposes as tractors and designed for similar work activities, ie off-road use on difficult terrain. They have conventional sit-in seats, and the main controls comprise a steering wheel and pedals. The driver does not need to use weight transfer to steer or to control stability. Nevertheless, the correct distribution of weight on-board the vehicle is important, particularly when carrying a load or on uneven surfaces. Loads carried on the cargo bed should not exceed the recommended weight and should be secured against movement.

Training

The legal requirements for training are the same as for the sit- astride ATVs.

ROPS and seat belts

The requirements for these machines are quite different to those of sit- astride ATVs:

- To reduce the risk of injury in the event of a roll-over or other incident, side-by-side vehicles require lap belts/seat restraints as well as ROPS that essentially form a protective structure around the seating area. The compartment is usually open, although some vehicles are fitted with a windscreen and/or side doors. The driver and all passengers should be protected by ROPS and wear lap belts.
- Where a machine is amphibious and used on deep water as opposed to marshland, then the seat restraints (and possibly ROPS) could increase the

overall risk rather than reduce it. In this case, do not use seat restraints while on the water. Assess the risk from the roll frame according to its design and the likelihood of trapping the occupants if the machine should sink.

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Parking

If you have to park on a slope, always park across it unless it is too steep. Accidents have occurred when machines have run down slopes because of poor brake maintenance or application, particularly while they are being loaded and movement or the increase in weight has set the machine in motion.

Useful contacts

EASI®, the European All-Terrain Vehicle Safety Institute, is a not-for-profit organisation which provides safety training courses for ATV riders.

EASI's UK operation is sponsored by a number of ATV manufacturers and delivers a programme of specialist ATV training courses which are designed to improve rider skills, safety levels and awareness of the capabilities of ATV machines.

Buyers who purchase a new or used ATV from one of these manufacturers via an authorised UK dealer are eligible for **free** or highly subsidised training, subject to qualifying terms, conditions and availability. See www.quadsafety.org/ for details.

Training is also available from other organisations, such as the British Off Road Driving Association (BORDA). See www.borda.org.uk for details.

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

This leaflet is available at:
www.hse.gov.uk/pubns/ais33.htm.

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CE

MODEL / TYPE _____ YEAR **201**

MAXIMUM GROSS MASS _____ KG UNLADEN MASS _____ KG

MAXIMUM DRAWBAR MASS _____ KG _____ KG

WP05



THIS PRODUCT IS PROTECTED BY **DESIGN RIGHT** WS36



TYRE PRESSURE GUIDE (lbs/sq.in.) OBSERVE TOWING VEHICLE MAX. TOWING LIMITS OR TRAILER MAX WEIGHTS

OFF ROAD TYRES (MAX SPEED 20 MPH)			ON ROAD TYRES		
TYRE SIZE	LIGHT LOAD	FULL LOAD	TYRE SIZE	LIGHT LOAD	FULL LOAD
22 x 11 x 8	3 - 5	6 - 10	16.5 x 6.5 x 8	40 - 44	45 - 47
25 x 12 x 9	4 - 6	5 - 8	185 x 850 x 8	40 - 44	45 - 50
13 x 5 x 6	17 - 20	17 - 20	195/60 R14	30	34 max
160/60 R8	36	36	165 R13	32	35 max
			205 x 60 x 13	28 - 32	40 max

KEEP WHEEL NUTS TIGHT WS38



The above decals should be located on your Multi-Feeder. If any of the above decals are not located on your Multi-feeder or are damaged in any way contact Logic for some replacement decals before use.

4 OPERATING INSTRUCTIONS AND ADJUSTMENTS

INITIAL CHECK

Make sure that all nuts, bolts and fittings are securely fixed, and that packaging materials e.g. wire bands, tape, etc., have been removed

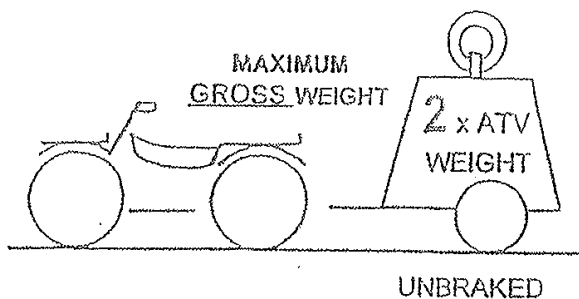
4.1 ATTACHING TO THE TOWING VEHICLE

The Multi-Feeder can be towed by any suitable vehicle from UTVs to Landrovers to 4x4 pickups although it is ideally suited to ATVs and is attached by a 50mm Swivel ball hitch.

WEIGHTS AND LOADING RECOMMENDATIONS

To comply with the weight restrictions detailed on the HSE information sheet 33. The following guidance must be fully understood and used.

An ATV can tow up to twice its own weight on an unbraked trailer on level ground.



Reduce the weight by 25% if working on uneven or hilly ground.

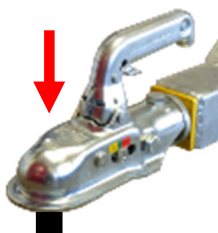
Refer to the following page (12) to calculate the maximum load allowed to be towed with your ATV.

When towed behind other suitable vehicles refer to the vehicle operator manual and appropriate regulations for guidelines.

	MAX GROSS WEIGHT
LMF450	650
LMF570	650
LMF870	650
LMF570TA	700
LMF610R/670R	750



The above table shows the maximum gross weight for all Multi-Feeder models with all options included. The maximum gross weight of the Multi-Feeder should never be exceeded.



TOW BALL WEIGHT	UNLADEN	STD 320kg LOAD	LMF108 EXT HOPPER 500kg LOAD
LMF450	16	21	21
LMF570	16	21	21
LMF870	16	21	21
LMF570TA	17	28	37
LMF610R/670R	18	31	46



Tow ball weights based on a hopper filled with 6mm sheep nuts. Ensure the weight does not exceed the towing vehicles recommendations. HSE recommend a tow ball weight around 10% of the gross weight of the trailed equipment. This should never be exceeded.

- Step 1 — Find out the kerb weight of your ATV and enter the weight in section 1 of the table. Multiply the ATV weight x2 as all Multi-Feeders are unbraked. This gives the allowable gross weight. Enter this in to the box.
- Step 2 — Using section 2 select which model of Multi-Feeder you have and enter the weight from column A to column B.
- Step 3 — Use section 3 to select which options are fitted to your Multi-Feeder, enter the weights in column B.
- Step 4 — Add together all the weights in column B to find the FEEDER UNLADEN WEIGHT.
- Step 5 — Using section 4 enter the ALLOWABLE GROSS WEIGHT from section 1 and FEEDER UNLADEN WEIGHT from section 2 and 3, subtract the FEEDER UNLADEN WEIGHT from the ALLOWABLE GROSS WEIGHT to find the MAXIMUM (FEED) LOAD ALLOWED WITH YOUR ATV. An example is highlighted in gray.

Section 1	YOUR ATV KERB WEIGHT = 325	kg	x 2 (UNBRAKED)	=	650	ALLOWABLE GROSS WEIGHT	kg
	MODEL	DESCRIPTION			A	B	FEEDER WEIGHT
	LMF450	M/Feeder, 320kg capacity 22 x 11 x 8 no counter			101		101
	LMF570	M/Feeder, 320kg capacity 22 x 11 x 8 re-settable counter			101		
Section 2	LMF870	M/Feeder, 320kg capacity 22 x 10 x 12 re-settable counter			117		
	LMF570TA	M/Feeder, 320kg capacity tandem axle re-settable counter			170		
	LMF610R/670R	R/Legal M/Feeder, 320kg capacity 20.5 x 8 x 10 re-settable counter			153		
	OPTIONS	DESCRIPTION					
	LMF101	Tonneau cover c/w support			2		2
	LMF112	Hard top bale rack – 320kg model only			16		
	LMF103	Mudguards, galvanised to suit 22 x 11 x 8			6		6
Section 3	LMF104	Mudguards, galvanised to suit 22 x 10 x 12			6		
	LMF102	Livestock fender to suit 22 x 11x 8 wheels			6		
	LMF113	Livestock fender to suit 22 x 10x 12 wheels			6		
	LMF108	Hopper extension to increase to 500kg capacity			20		
	LMF109	Tonneau cover c/w support – to suit above			3		
						FEEDER UNLADEN WEIGHT	109
							kg
Section 4	(NOT TO EXCEED MAX GROSS) (REDUCE WEIGHT BY 25% ON UNEVEN OR HILLY GROUND)			ALLOWABLE GROSS WEIGHT =	650	kg	
				TOTAL UNLADEN WEIGHT =	109	kg	
				MAXIMUM (FEED) LOAD ALLOWED WITH YOUR ATV =	541	kg	

POWER SUPPLY WIRING AND INSTALLATION

The following instructions are to connect the power supply and wiring for the control box to an ATV. If fitting to another vehicle such as UTV, Landrover or 4x4 pickup the same installation principals should be applied.

The standard cable lengths on the control box is to fit any ATV. Please contact your dealer if you require a control box with longer cable for use with other vehicles.

ATV POWER SUPPLY WIRING AND INSTALLATION INSTRUCTIONS



NOTE: Read all the instructions before starting.

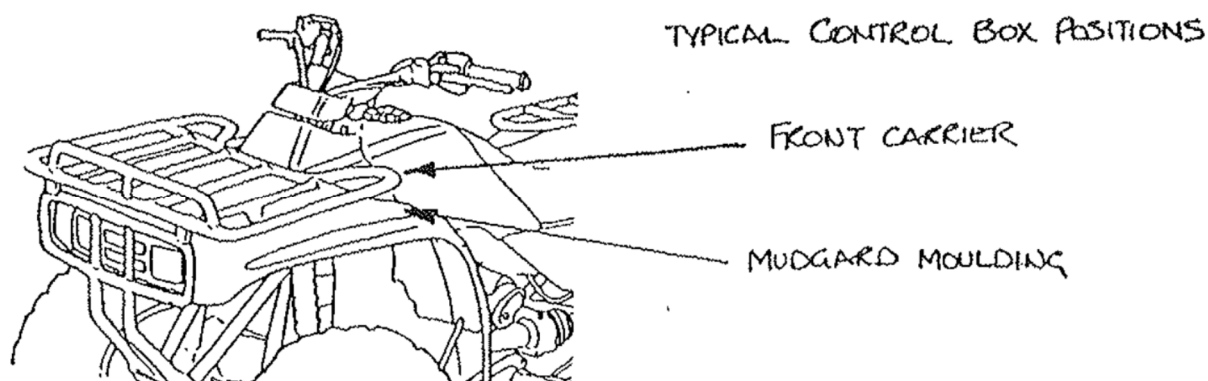
The Multi-Feeder power supply must be wired directly to the towing vehicle battery, not to the auxiliary plug or any other point.

1. Open up the installation kit and check the contents, which include:
 - A) A complete wiring loom with ON/Off control box, battery connection terminals (including fuse unit) and socket.
 - B) A selection of clips washers, nuts and bolts to attach the socket end of the loom to the ATV rear carrier or fender and the control box to the front end of the ATV.
 - C) Spare wiring connectors for use if the battery wiring loom is shortened to facilitate a neat fit on the ATV, without spare wire in the way.
2. First select the best position for the control box.

From the control box position ensure there is enough wire length to trace back to the battery and the socket at the rear of the ATV.

A suitable position would be either on the plastic moulded body, or on the back of the front carrier rack, so that the counter can be easily seen by the operator.

Use 2 x metal backed rubber clips if the box is secured to the carrier rack.

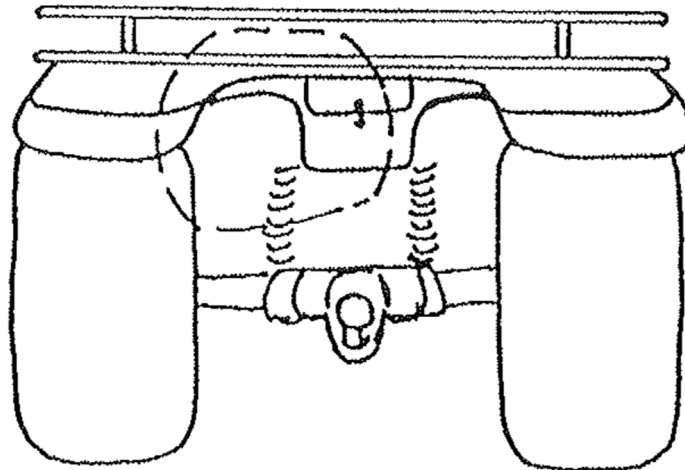


3. When fixing direct to the moulding use a 6.5mm (1/4") drill bit, drill through the plastic moulding at the marked positions 82mm apart, take care not to damage any other wiring or anything else in this location.

4. Locate the control box in the holes. Secure in position with the washers and nuts provided.
5. Route the socket wire to the rear end of the ATV. This task will be easier if the socket is removed from the wire.
Take care when routing the wire to avoid sharp edges that could wear into the wiring or hot areas that would melt the insulation.
6. Before cutting the wire to refit into the socket, site the socket on the rear carrier or other suitable position.
7. Mount the socket as central as possible immediately under the rear carrier, either by clipping it to the carrier or fixing to the plastic moulding e.g. the inner mudguard area or one of the surfaces of the ATV locker available on some models. This is shown below

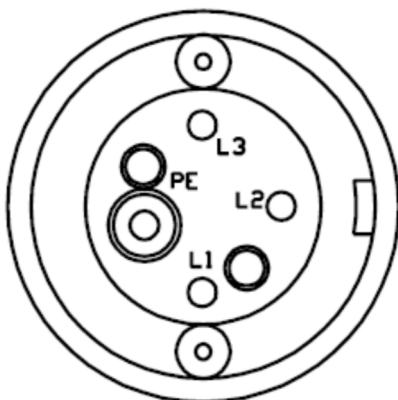


If the socket cannot be mounted central it should be mounted on the left side (near side) of the ATV, but no more than 200mm from the centre so that the plug wiring from the Multi feeder will not be over stretched when turning.



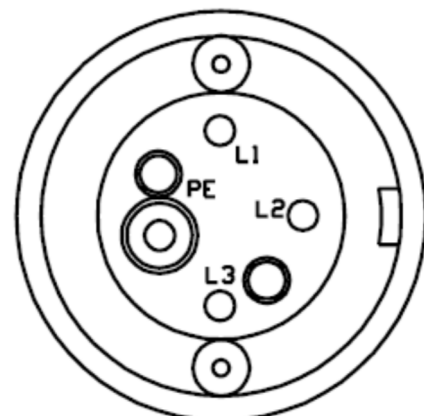
9. Once the socket is secured in position cut the power supply wire to the correct length, trim the 4 wires and connect to the socket terminal in the correct order as shown below.

Socket (ATV)



L1 - RED
L2 - BROWN
L3 - WHITE
PE - GREEN

Plug (Feeder)



L1 - GREY (BLUE on older models)
L2 - BROWN
L3 - BLACK
PE - GREEN/YELLOW

10. Re-assemble the socket taking care to ensure each wire is tight and the socket casing is seated properly.
11. Secure the power supply wire to the ATV frame with the cable ties supplied, to stop chaffing etc.
12. Now fit the battery wiring from the control box to the battery
Locate the battery and remove any covering from the battery terminals.
13. Route the wiring from the control box to the battery avoiding any sharp edges or hot areas that would damage the insulation.
14. There maybe excess wire to cut off, in which case an extra battery connector is supplied for the negative (blue) wire, and a straight connector to allow the fuse section of the positive (orange) wire to be shortened easily.
15. Secure the negative (blue) wire to the negative terminal and the positive (orange) wire to the positive terminal. Replace any terminal insulated covers.
Secure the battery wiring to the ATV frame using the small cable ties supplied. Replace the battery cover.
16. Check that all the fixing nuts are tight, and are kept tight thereafter.

4.2 CALIBRATION



NOTE: Before putting any feed in the hopper switch the Multi-Feeder **ON** and become familiar with the effect of altering the quantity setting to change the length of time of slide opening.
Once the operator is confident with the controls, switch **OFF**.

QUANTITY CALIBRATION

- a. Put a measured amount of feed in the hopper, for example 20kg.
- b. Place a container under the “drop” chute to collect the total amount of feed in the hopper.
- c. Decide how many “drops”, the amount should be divided into e.g. 20 x 1kg, 15 x 1.3kg or 10 x 2kg etc.
- d. Set the FEED QUANTITY slide at 4 or 5, switch **ON**.
- e. Record the number of “drops” displayed on the control box, or count, if not using the optional equipment, to empty the hopper.
- f. If the “drops” amount is incorrect, put the collected feed back into the hopper and try again, alter the setting so that the hopper contents are emptied in the required number of “drops”.
- g. Take note of the setting when correct, and record the information for that particular feed.
- h. Re-calibrate in the same way for any different feeds, or rate.

5.1 TONNEAU KIT (LMF101)

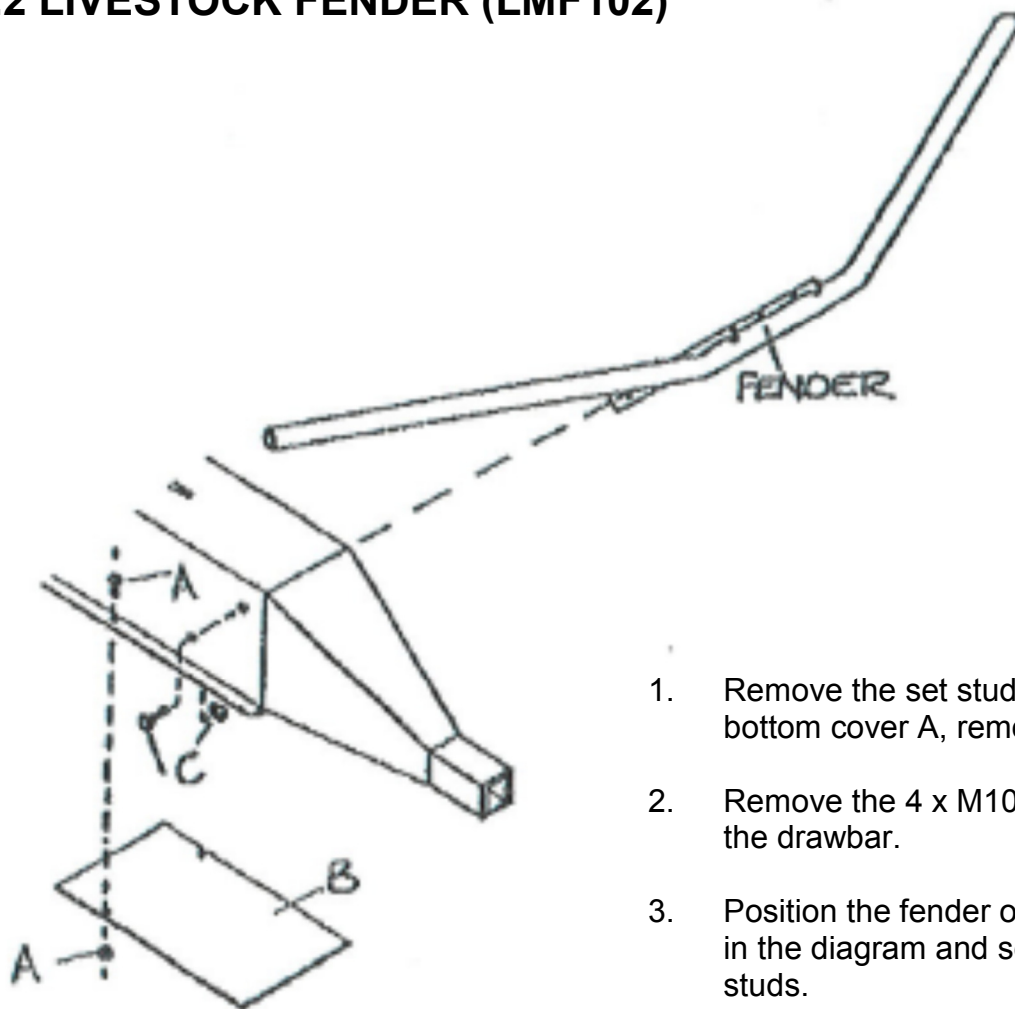
1. Take the tonneau cover support and position it on the Multi-Feeder body. This can be sited in many positions but normally from side to side mid way to allow access at the rear for filling without removal of the support.

Place the end of the support over the top lip of the hopper side, with the 'T' piece on the top of the hopper lip.

Slightly bend the support up over to allow similar entry on the opposite side of the hopper.

2. Position the Tonneau cover over the hopper and support.
3. Route the elastic rope through the eyelets of the cover. Ensure the rope is on the outside of the cover at each corner, to allow easy fitting of the cover. Tie the two ends of the rope securely with just enough tension not to allow the elastic rope to hang down below the cover.

5.2 LIVESTOCK FENDER (LMF102)



1. Remove the set studs holding the drawbar bottom cover A, remove the cover B
2. Remove the 4 x M10 x 25mm set studs C in the drawbar.
3. Position the fender over the drawbar as shown in the diagram and secure with the original set studs.
4. Re-position the drawbar bottom cover and secure with original set studs.
5. Ensure all set studs are tight and kept tight thereafter.

5.3 MUDGUARD KITS

LMF103 — (22X11-8)

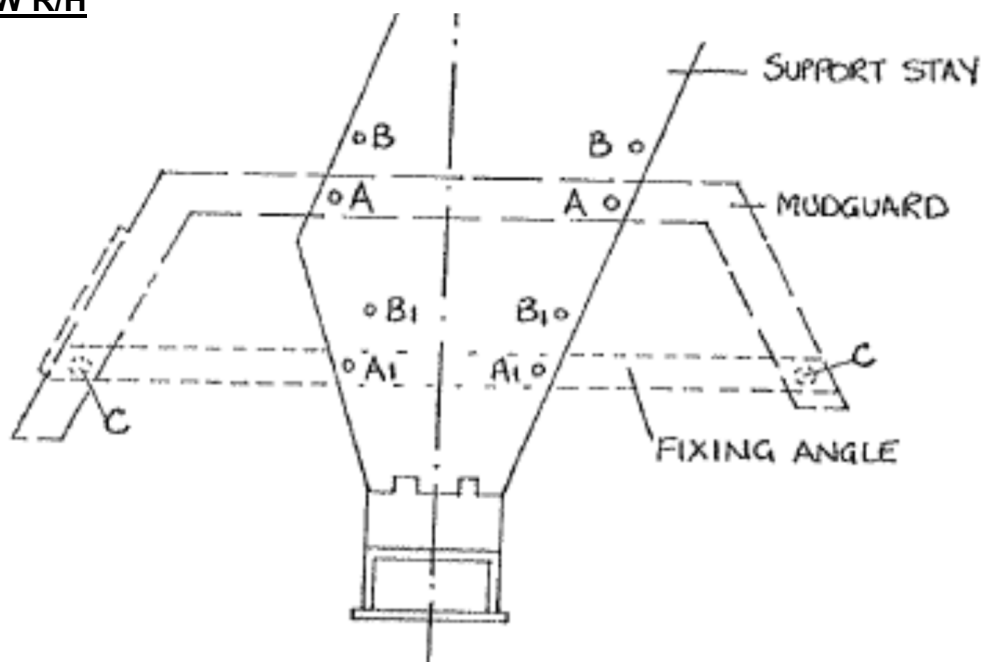
LMF104 — (25X10-12)

1. Select the correct mudguard for each side of the Multi-Feeder, with the reflective triangles to the rear.
2. Position the mudguard on the Multi-Feeder support stay at the correct series of holes, and locate with 2 x M8 x 20mm set studs finger tight (nuts on the inside). See diagram below for details.

For **LMF103** kits use the holes marked A for this first stage.

For **LMF104** kits use the holes marked B.

SIDE VIEW R/H



3. Position the mudguard fixing angle behind the support stay and line up the corresponding holes with the mudguard. Depending on which kit is being fitted.
LMF103 use holes marked A1.
LMF104 use holes marked B1.
Secure in position with 2 x M8 x 55mm bolts and nuts finger tight.
4. Use the 2 x mudguard spacer bushes at position C to locate each end of the mudguard onto the fixing angle. Secure with 2 x M8 x 55mm bolts.
5. Carry out the same procedure to fit the other mudguard on the opposite side of the Multi-Feeder.
6. Tighten all bolts and ensure they are kept tight thereafter.

5.4 1/2 TONNE EXTENSION SIDES KIT (LMF108)

READ ALL THE INSTRUCTIONS BEFORE STARTING



Ensure that the towing vehicle is capable of towing the feeder with an extension hopper fitted. Use the table on page 13 to see how fitting the extension will affect the towing weight.

If you are using the machine on uneven or hilly ground, we recommend reducing the amount of feed in the hopper by at least 25%. It is also recommended to reduce speed accordingly. Never cross a slope when towing a trailer.

1. Fit the reinforcement struts between the drawbar and the hopper of the Multi-Feeder as shown below.
2. The struts are secured with 2 x M10 x 30mm set studs on the drawbar through the same holes as the animal fender.
3. On the hopper drill 2 x 10.5mm holes as close to the corners as possible and secure the struts with the 2 x M10 x 25mm set studs provided.
4. Tighten all bolts and ensure they are kept tight thereafter.

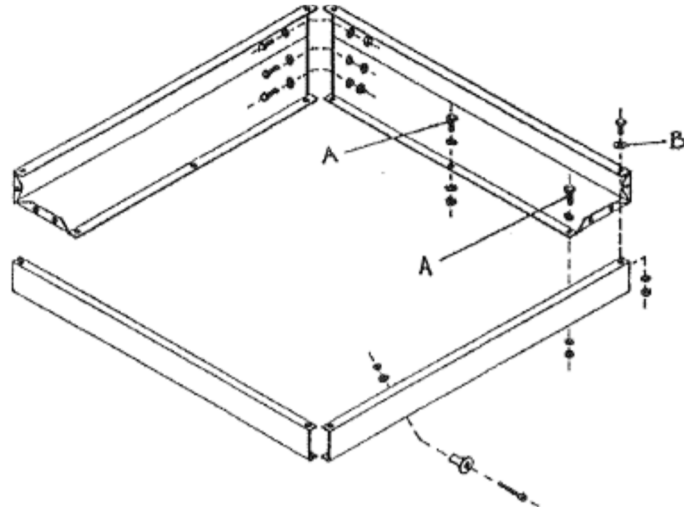


5. Lay out the extension side panels in a square shape.
6. Bolt the sides together using the 16 x M8 x 15mm set studs, lock nuts and washers provided. Fit the panels together so that the opposite panel is the same.

PLAN VIEW



7. Use the repair washer on the top of the sides at each corner (B)
Tighten the nuts only finger tight until all the set studs are fitted and assembly is complete.
Then tighten all nuts properly.



8. Lift the assembly onto the Multi-Feeder hopper and position as accurately as possible to allow all bolts the maximum purchase.
You may find that the sides of the Multi-Feeder hopper are slightly curved, this is not uncommon and is due to heat distortion during the galvanising process. At this stage, concentrate on getting the corners positioned correctly.
9. Use 'G' clamps to hold the extension sides down onto the hopper lip and drill through the holes on the extension sides down through the hopper lip using an 8.5mm drill bit.
Drill one corner at a time and insert an M8 x 20mm set stud with a repair washer on top, nut finger tight before proceeding to the next hole.
10. When all corners are secured, tighten up all the nuts using a spanner but not completely tight.
11. Before drilling through the middle holes in the extension sides, it may be necessary to apply pressure on the side to align it with the hopper side if distortion has occurred. Hold in position with 'G' clamps as before.
12. Drill each of the middle holes and secure with a set stud before proceeding to the next.
13. Tighten up all nuts on the extension side kit and ensure they are kept tight thereafter.

6**MAINTENANCE / SERVICE****SERVICE SCHEDULE**

	DAILY	WEEKLY	MONTHLY	SEASONALLY
Check tyre pressures	●	●	●	●
Check condition of tyres	●	●	●	●
Visual check to ensure nothing is loose	●	●	●	●
Check all nuts and bolts		●	●	●
Oil the coupling mechanism and check for wear			●	●
Clean out hopper and drop chute		●	●	●
Re-pack the stub axles with grease				●
Clean out the motor housing				●
Inspect all wiring for wear and chafing, replace if damaged				●
Inspect tonneau cover for wear, repair for next season				●

TYRE / PRESSURE

Tyre pressure for:	DURO 22 x 11 - 8 (Min 4 Psi Max 10 Psi)	OFF ROAD
	CARLISE 22 x 11 - 8 (Min 4 Psi Max 10 Psi)	OFF ROAD
	CARLISE 25 x 10 - 12 (Min 4 Psi Max 10 Psi)	OFF ROAD
	KINGS Tire 20.5 x 8.0 -10 (Max 35 Psi)	ROAD



DO NOT exceed recommended tyre pressures.

Remember that temperature affects pressures

Never adjust the pressure immediately after driving, because driving heats up the tyres. There are many individual causes of tyre troubles. However, the three abuses which will cause most problems, and the greatest costs, are under-inflation, overloading and speeding. When you check the tyre pressures also look for bumps, bulges in the side of the tyre or tread. Check the tyres for cuts, slits or cracks, nails or foreign objects embedded in the side of the tyre or tread. Check the tread for excess wear. Replace or repair any defect or fault with tyres before use.

SWIVEL HITCH HOUSING

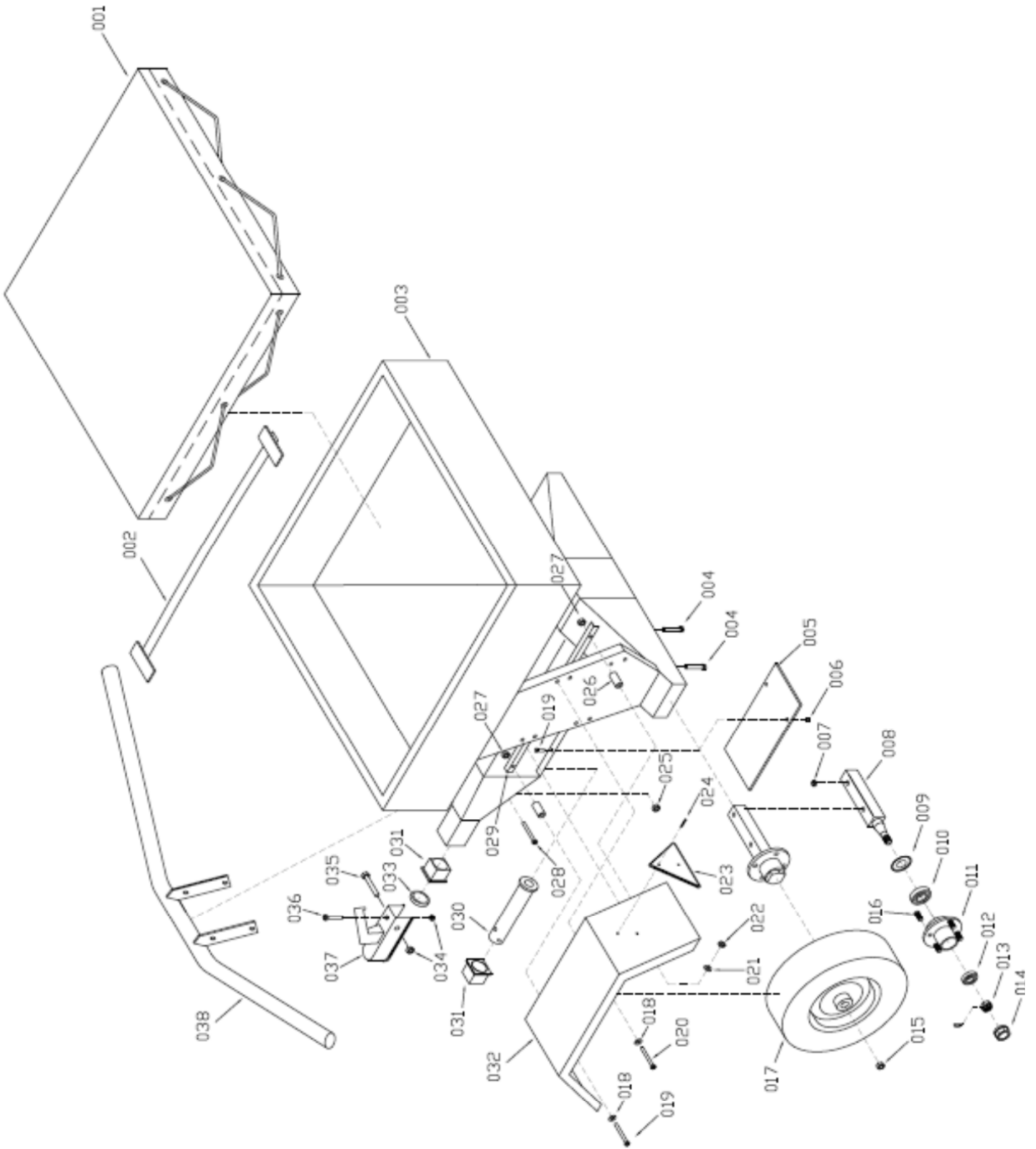
Check coupling for signs of damage or wear, swivel the coupling 360 degrees and check that the bushes are not too worn. Replace any worn or damaged parts.

Oil the 50mm coupling; follow the diagrams on the hitch to ensure oil is applied correctly. This is shown below.



7 PARTS DIAGRAMS AND LISTS

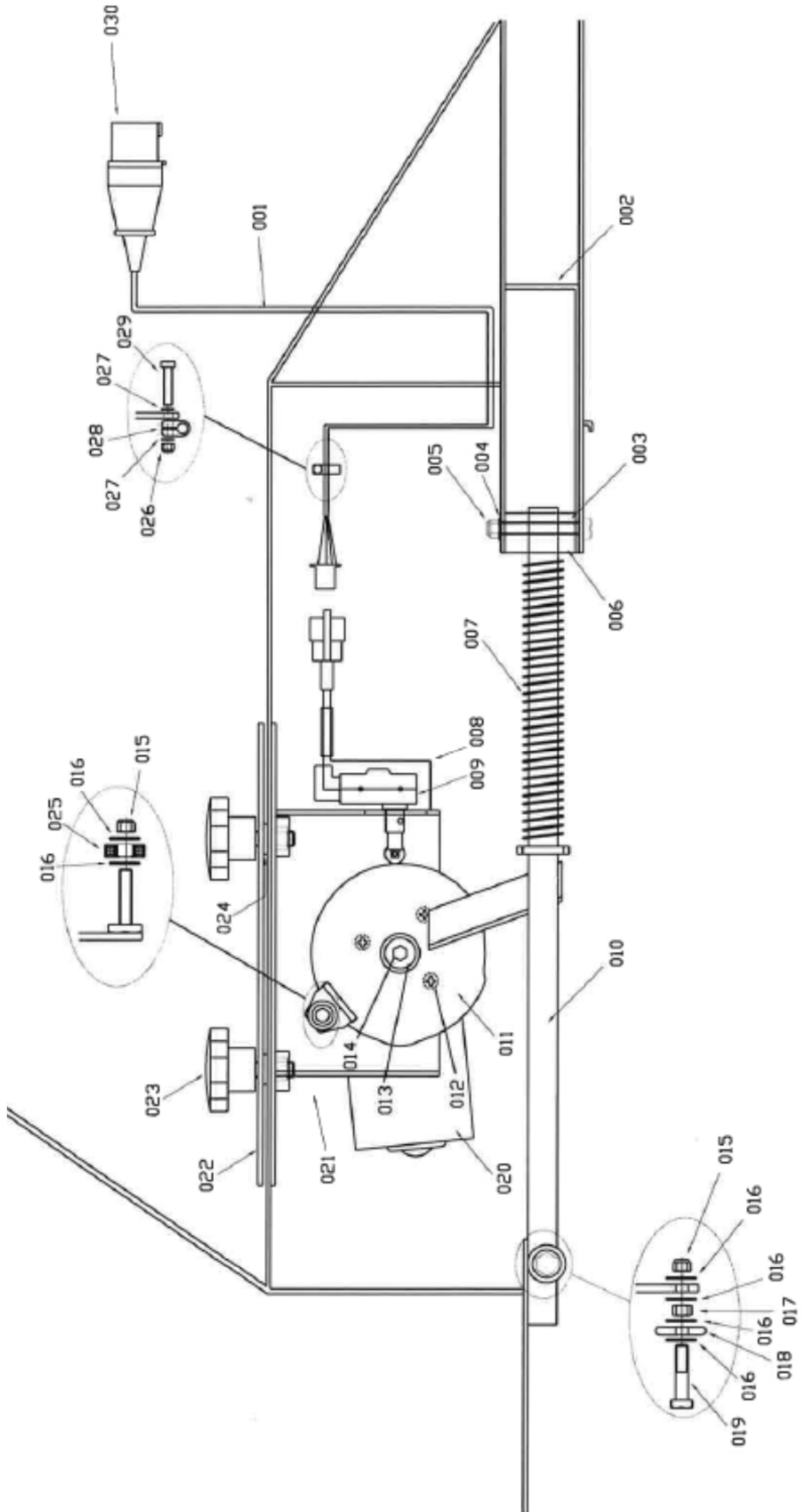
7.1 MAIN BODY



7.1 PARTS LIST MAIN BODY

Item	Part Number	Description
001	LMF101-01	Tonneau Cover
002	LMF101-02A	Tonneau Support
	LMF101	Tonneau Cover Complete
003	LMF100-01A	Hopper/Main Body
004	FBH12060	Bolt M12 X 60
005	LMF100-07	Drawbar Bottom Cover
006	FNN08	Nut Nyloc M8
007	FNN12	Nut Nyloc M12
008	SA140D	Stub Axle Complete
009	SA140-1006	Seal
010	BH1206	Bearing Inner
011	SA140D	Stub axle Complete
012	BH1204	Bearing Outer
013	SA135-1009	Nut Castle
014	SA135-1011	Dust Cap
015	SA135-1012	Wheel Nut Special
016	SA135-1013	Wheel Stud
017	WT400	Wheel/Tyre 22 X 11 X 8
	WT500	Wheel/Tyre 22 X 11 X 8 (Carlisle)
	WT801	Wheel/Tyre 25 X 10 X 12 (Carlisle)
018	FWR08	Washer Repair M8
019	FSH08020	Set Stud M8 X 20
020	FBH08055	Bolt M8 X 55
021	FWR06020	Washer Repair
022	FWR06020	Washer Repair
023	LB201	Triangle
024	FBR06020	Bolt Roofing M6 X 20
025	FNN10	Nut Nyloc M10
026	LMF103-03A	Mudguard Spacer Bush
027	FNN08	Nut Nyloc M8
028	FSH10025	Set Stud M10 X 25
029	LMF103-02A	Mudguard Fixing Angle
030	CM100-04	Swivel Hitch Draw Tube
031	CM100-03A	Swivel Hitch Nylon Bush
032	LMF103-01A	Mudguard Only (To Fit 2:11:8 and 25:10:12 Tyre)
	LMF103	Mudguard Kit Complete (To Fit 22:11:8 and 25:10:12 Tyre)
033	CM100-01A	Swivel Hitch Thrust Washer
034	FNN12	Nut Nyloc M12
035	FBH12070	Bolt M12 X 70
036	FBH12065	Bolt M12 X 65
037	C900	Coupling
038	LMF102	Animal Fender

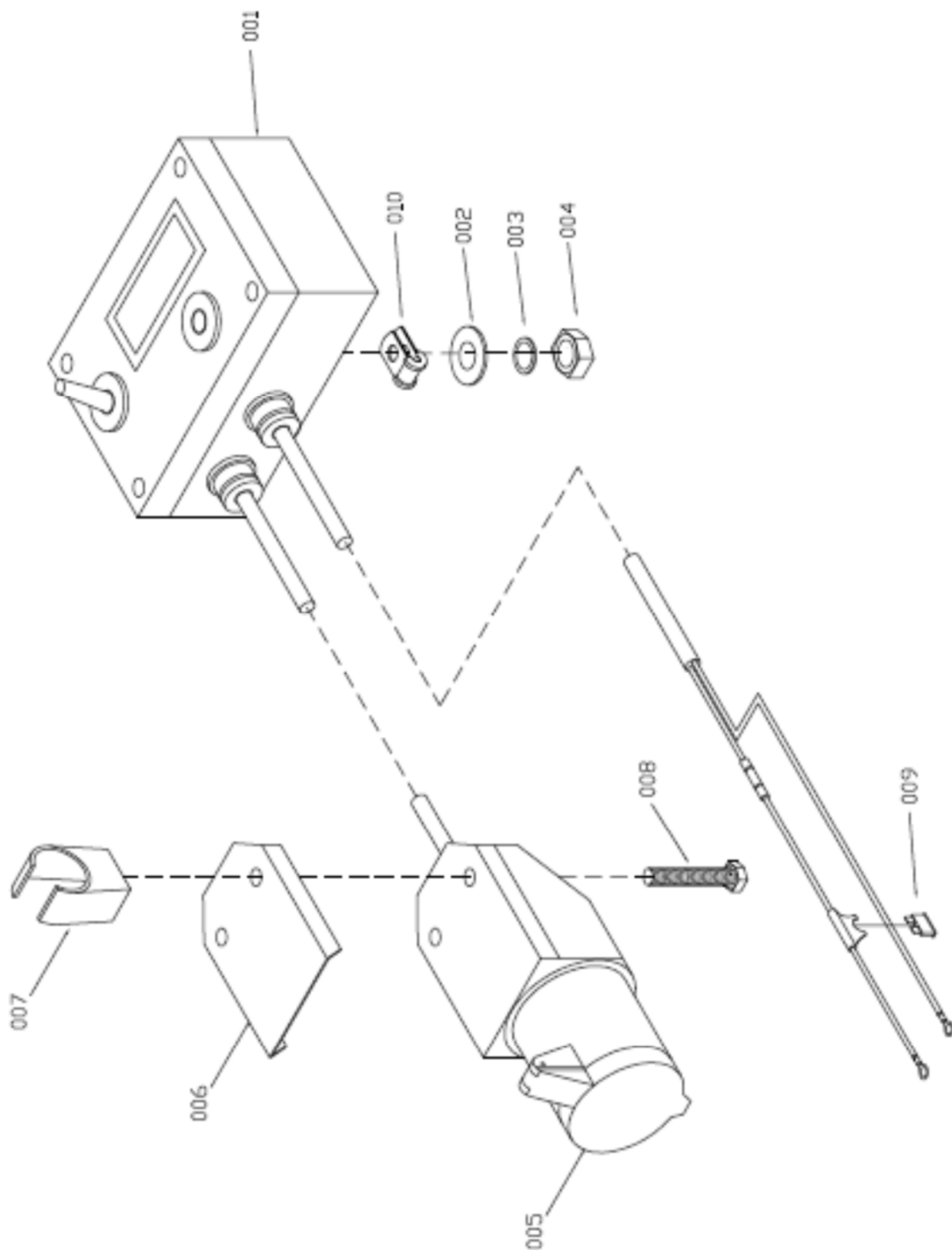
7.2 MOTOR AND SLIDE ASSEMBLY



7.2 PARTS LIST MOTOR AND SLIDE ASSEMBLY

Item	Part Number	Description
001	LMF116	Multi-Feeder Power Lead (complete with plug)
002	LMF100-08	Slide End Cover
003	FBH08070	Bolt Hex Head M8 X 70 mm
004	FWF08	Washer Flat M8
005	FNN08	Nut Nyloc M8
006	LMF100-25A	Slide Bearing
007	LMF100-19	M/Feeder Slide Spring
008	LMF315-10A	Park Switch And Motor Lead
009	ME-S043	Switch Micro Roller SDPT No/Nc
010	LMF115-03A	Slide Assembly
011	LMF315-01A	Lmf/Lgf/Lcf Cam Disc
012	FSP06012	S/Screw Tri-Lobe Pozi HD M6 X 12 mm
013	FWR05020	Washer Repair M5 X 20 mm OD
014	FSH04010	S/Screw Hex Head M4 X 10 MM
015	FNN10	Nut Nyloc M10
016	FWF10	Washer Flat M10
017	FNP10	Nut Plain M10
018	DSS100-21A	Snacker Slide Roller
019	FBH10040	Bolt Hex Head M10 X 40 mm
020	LMF215-31	Motor
021	LMF315-52A	Motor Mounting Leg
022	LMF100-27	Quantity Indicator Plate
023	OBS135-17	Hand Wheel
024	FWR10030	Washer Repair M10 X 30 mm OD
025	WAS100-410	Bearing
026	FNN06	Nut Nyloc M6
027	FWF06	Washer flat M6
028	MSU-CO13	Cleat poly 4-10 mm
029	FSH06030	S/Screw M6 X 30 mm
030	ME-P004	Plug 4 Pin 415V 16 Amp Red

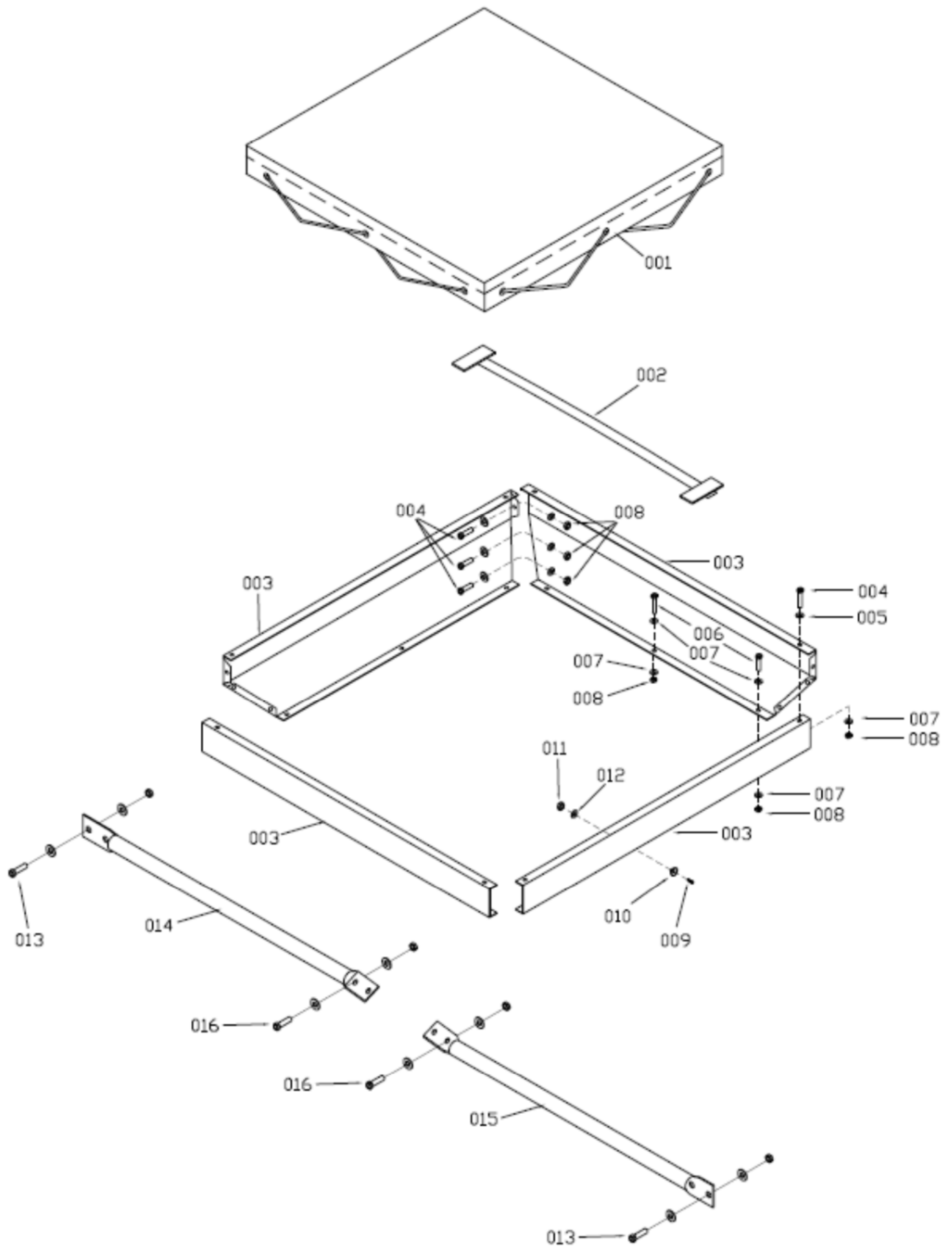
7.3 CONTROL BOX



7.3 PARTS LIST CONTROL BOX

Item	Part Number	Description
001	LMF207	Control Box With Counter c/w Wiring Harness
001a	LMF105	(Not Shown) Control Box Without Counter c/p With Wiring Harness
002	FWR06020	Washer Repair M6
003	FWS06	Washer Spring M6
004	FNP06	Nut Plain M6
005	ME-S019	Socket 4 Pin
006	LMF105-03	Socket Cover
007	S216-047	Stadium Clip
008	FSD06030	Cheese Head M6 X 30
009	ME-F013	Fuse 20 Amp
010	FCF19	Clip Fix Rubber Lined 19.0 MM

7.4 EXTENSION SIDES KIT



7.4 PARTS LIST EXTENSION SIDES KIT

Item	Part Number	Description
	LMF109	Extension Sides Tonneau Cover Kit Complete
001	LMF109-01	Tonneau Cover
002	LMF109-02A	Support Stay
	LMF108	½" Tonne Extension Sides Kit Complete
003	LMF108-01	Extension Side
004	FSH08015	S/Screw Hex Head M8 X 15 mm
005	FWR08025	Washer Repair M8 x 25 mm
006	FSH08020	S/Screw Hex Head M8 X 20 mm
007	FWF08	Washer Flat M8
008	FNN08	Nut Nyloc M8
009	FSD05016	S/Screw Cheese Head M5 X 16 mm
010	OCT107-06	Bobbin Rope Hook
011	FNN05	Nut Nyloc M5
012	FWF05	Washer Flat M5
013	FSH10030,FWF10,FNN10	S/Screw M10 X 30, Flat Washer, Nyloc Nut
014	LMF114-01L	Strut L/Hand
015	LMF114-01R	Strut R/Hand
016	FSH10025,FWF10,FNN10	S/Screw M10 X 25, Flat Washer, Nyloc Nut

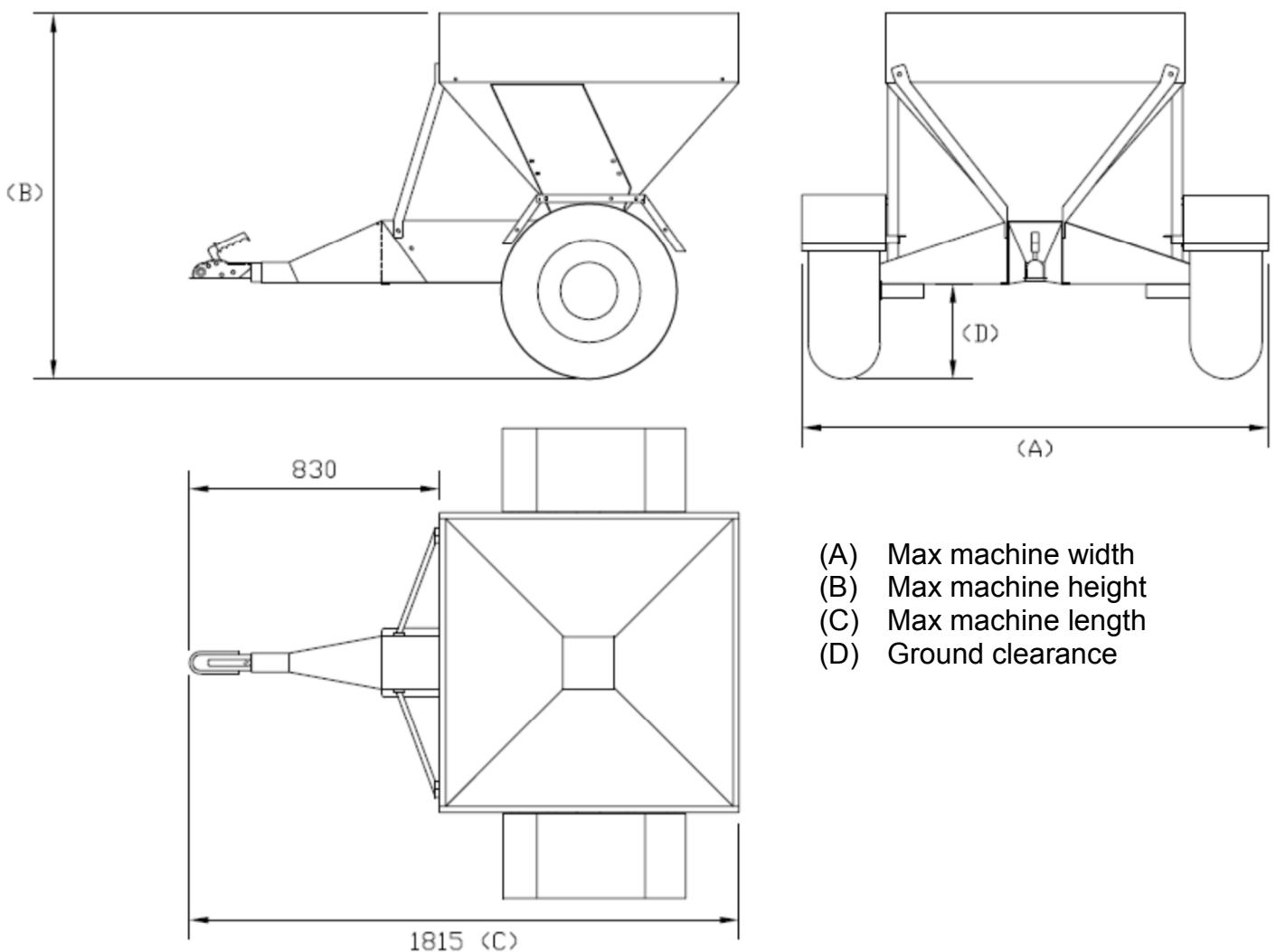
	LMF450/ 570/ 870	LMF570TA	LMF610R/670R	*LMF108
(A) Max machine width	1540mm/1540mm/1590mm	2090mm	1610mm	
(B) Max machine height	1110mm/1110mm/1145mm	1165mm	1195mm	+220mm
(C) Max machine length	1815mm	1940mm	1815mm	
(D) Ground clearance	315mm / 315mm / 350mm	360mm	400mm	
Hopper capacity	356 litres	Same	Same	+269 litres
Hitch	50mm ball swivel coupling	Same	Same	
Feed actuation	12V electric motor	Same	Same	
Wheel / Tyres	22x11-8/ 22x11-8/ 25x10-12	22x11-8	20.5x08-10	
Max speed	20mph	20mph	50mph	

- * LMF108 - Extension hopper Option to give approximately 500kg hopper capacity.



The information in the table above is based on the standard specification of each model and does not take into account any optional extras unless stated.

Basic representation of the Multi-Feeder



This Logic Manufacturing Ltd. product is guaranteed against faulty workmanship and materials for a period of 12 months from the date of purchase.

On Engine-Powered equipment, the engine manufactures guarantee will apply, any claims being subject to their terms and conditions.

All claims must be made in writing within 28 days of the alleged failure.

All claims must be made through the dealer who originally supplied the machine.

Any defective parts must be kept for inspection and if requested, sent to the factory or dealer.

The customer must bring equipment for repair to the dealer.

This guarantee becomes void if unauthorised modifications have been made, or if parts not manufactured, supplied or approved by Logic Manufacturing Ltd. have been fitted to the machine.

We accept no liability for normal wear and tear, misuse or abuse, or where recommended maintenance has not been carried out.

All guarantee work must be authorised by Logic Manufacturing Ltd. prior to any work being done. Work carried out without our consent may not be reimbursed.



DECLARATION OF CONFORMITY
2006/42EC



LOGIC MANUFACTURING LTD

Foundry Industrial Estate
Bridge End
HEXHAM
Northumberland

Product Type: **LMF450,570,870,570TA,610R,670R**

Covered By Technical File Number: **CE – LMF100**

Serial Number:

Standards and Regulations Used:

BS EN ISO 2454-1:2009 Agricultural Machinery. Safety — General requirements.

ISO 3600:1996 Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — operator manuals content and presentation.

BS5401:1990 Information, content and presentation of operator manuals provided for tractors and machinery for agriculture and horticulture.

**The Supply of Machinery (Safety) Regulations 2008
HSE Guidelines on ATV Equipment (Agric Sheet No. 33)**

Place of Issue: **United Kingdom**

Name of Authorised Representative: **S A WEIR**

Position of Authorised Representative: **PRODUCT DEVELOPMENT MANAGER**

Declaration,

I declare that as the authorised representative, the above information in relation to the supply / manufacture of this product, is in conformity with the stated standards and other related documents following the provisions of 2006/42EC directive

Signature of Authorised Representative

Date: **03/07/2012**