CONTENTS

TIMBERWOLF TW 18/100G

INTRODUCTION

Thank you for choosing this Timberwolf brushwood chipper. Timberwolf chippers are designed to give safe and dependable service if operated according to the instructions.

IMPORTANT HEALTH AND SAFETY INFORMATION

Before using your new chipper, please take time to read this manual which contains and explains the chipper controls. Failure to do so could result in:

- PERSONAL INJURY
- EQUIPMENT DAMAGE
- DAMAGE TO PROPERTY
- A MEMBER OF THE GENERAL PUBLIC BECOMING INJURED

This manual covers the operation and maintenance of the Timberwolf TW 18/100G. All information in this manual is based on the latest product information available at the time.

All the information you need to operate the machine safely and effectively is contained within pages 2 to 11. Ensure that all operators are **properly trained** for operating this machine, especially with regard to **safe working practices**.

Timberwolf's policy of constantly improving their products may involve major or minor changes to the chippers or their accessories. Timberwolf reserves the right to make changes at any time without notice and without incurring any obligation.

Due to improvements in design and performance during production there may be, in some cases, minor discrepancies between the actual chipper and the text in this manual.

The manual should be considered a permanent part of the machine and should remain with it if the machine is resold.

ALWAYS FOLLOW SAFE OPERATING AND MAINTENANCE PRACTICES

CAUTION or WARNING

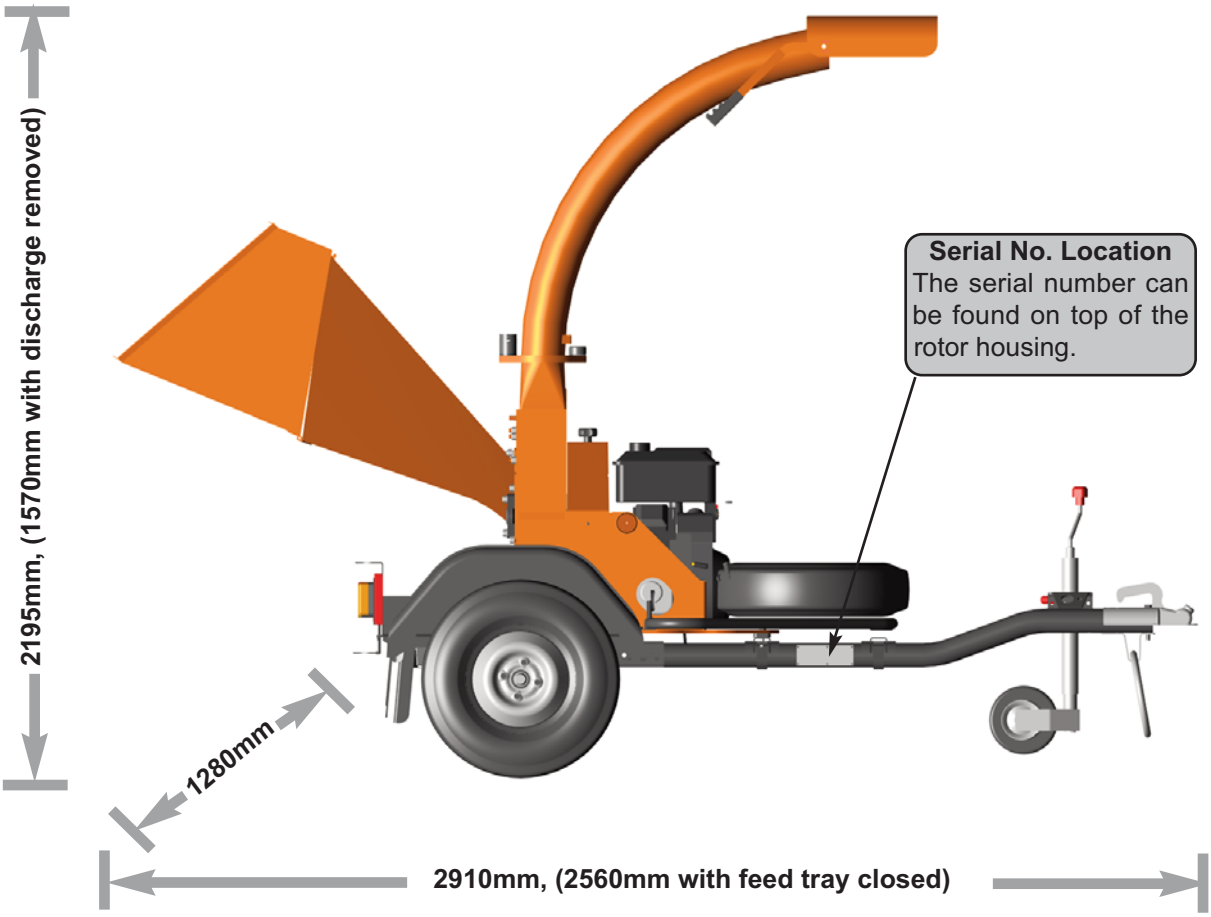
BE AWARE OF THIS SYMBOL AND WHERE SHOWN, CAREFULLY FOLLOW THE INSTRUCTIONS.

This caution symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury to yourself or others, and carefully read the message that follows.

The Timberwolf TW 18/100G

The Timberwolf 18/100G and 18/100G E/S brushwood chipper is designed to chip solid wood material up to 100 mm in diameter. It is capable of chipping over 1.5 tonne of brushwood per hour.

DIMENSIONS



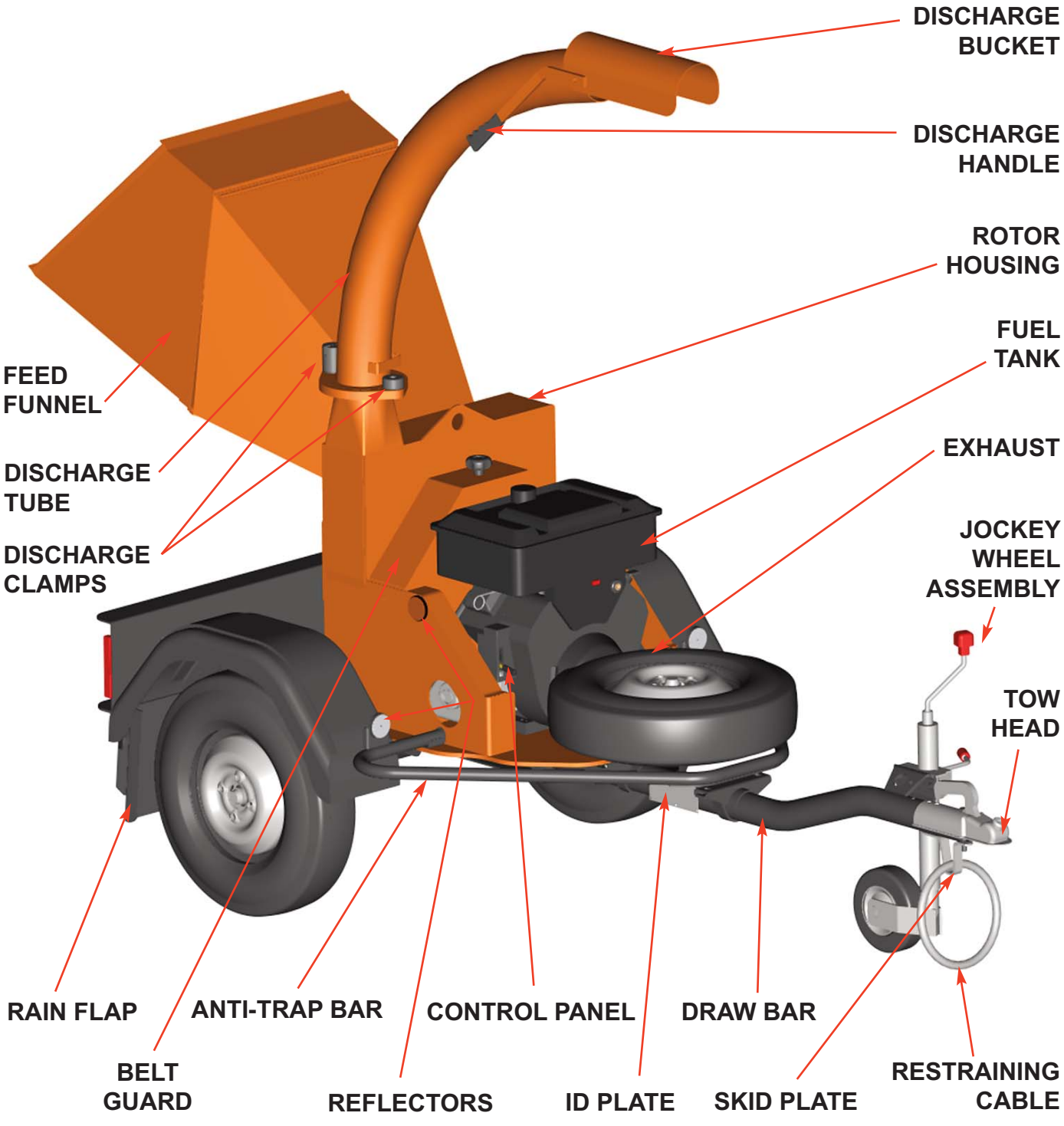
TIMBERWOLF TW 18/100G PULL START SPECIFICATION

Engine type	*Briggs & Stratton V-Twin (pull start)*	Type of feed	*Gravity*
Maximum power	*13.4kW (18hp)*	Maximum diameter material	*100 mm (4")*
Cooling method	*Air cooled*	Material processing capacity	*1.5 tonnes/hr*
Overall weight	*375kg*	Fuel capacity	*8.5 litres*
Starting method	*Recoil*	Fuel type	*Unleaded petrol*
Blade bolt torque	*22lbft - 30Nm*	Oil Capacity	*1.4 litres*
General M10 bolt torque	*34lbft - 46Nm*	Oil Type	*SAE10W-30*
General M12 bolt torque	*60lbft - 81Nm*		

TIMBERWOLF TW 18/100G ELECTRIC START SPECIFICATION

Engine type	*Briggs & Stratton V-Twin (electric start)*	Type of feed	*Gravity*
Maximum power	*13.4kW (18hp)*	Maximum diameter material	*100 mm (4")*
Cooling method	*Air cooled*	Material processing capacity	*1.5 tonnes/hr*
Overall weight	*385kg*	Fuel capacity	*8.5 litres*
Starting method	*Electric*	Fuel type	*Unleaded petrol*
Blade bolt torque	*22lbft - 30 Nm*	Oil Capacity	*1.4 litres*
General M10 bolt torque	*34lbft - 46Nm*	Oil Type	*SAE10W-30*
General M12 bolt torque	*60lbft - 81Nm*		

PARTS LOCATOR



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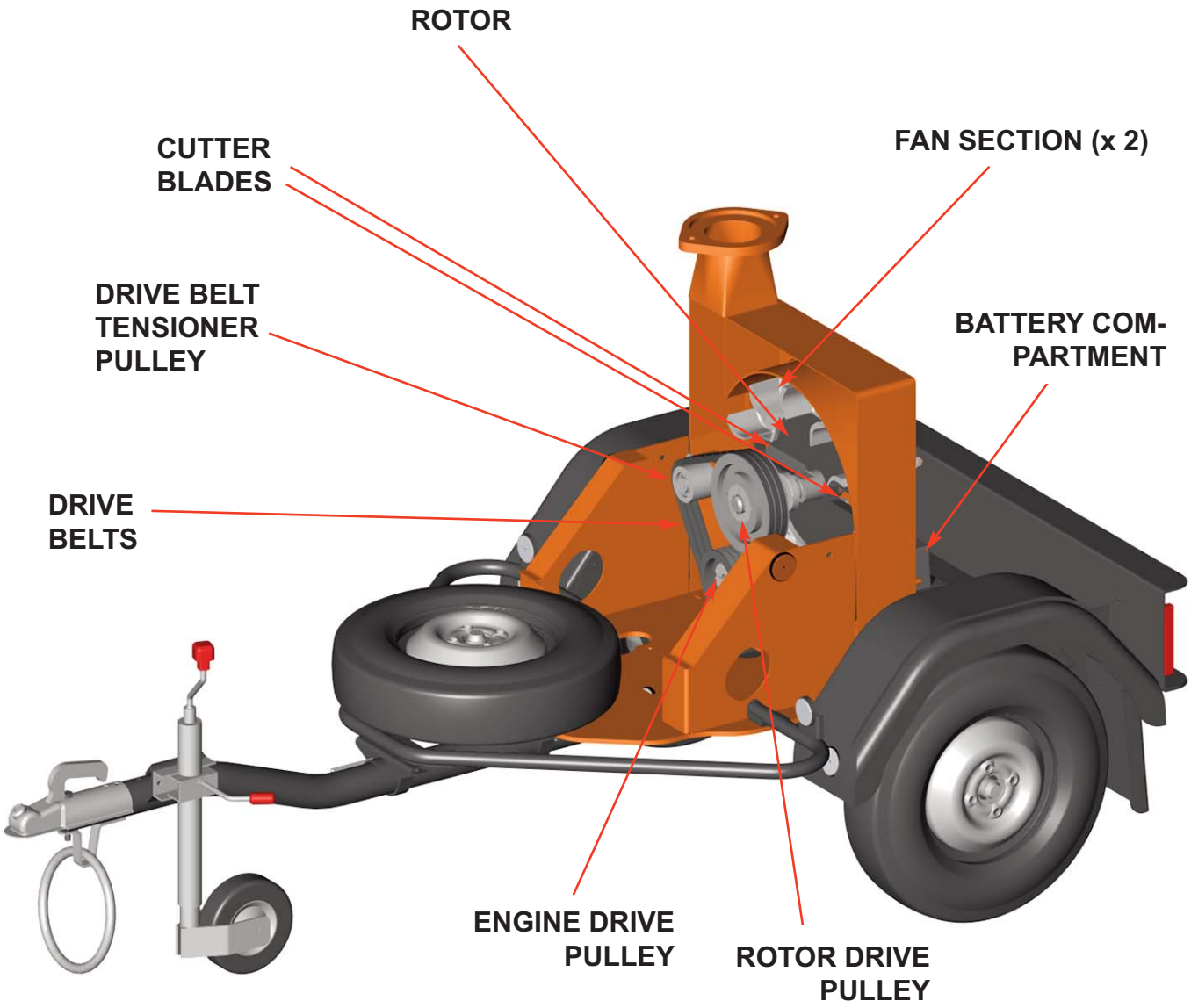


WARNING

The chipper will feed material through on its own. To do this, it relies on sharp blades both on the feed rollers and the chipper rotor. To keep the blades sharp, only feed the machine with clean brushwood. DO NOT put muddy/dirty wood, roots, potted plants, bricks, stones or metal into the chipper.

OPERATOR'S PERSONAL PROTECTIVE EQUIPMENT REQUIRED

Chainsaw safety helmet fitted with mesh visor and recommended ear defenders to the appropriate specifications.

Work gloves with elasticated wrist.

Steel toe cap safety boots.

Close fitting heavy-duty non-snag clothing.

Face mask if appropriate.

DO NOT
wear rings, bracelets, watches, jewellery or any other items that could be caught in the material and draw you into the chipper.

BASIC WOODCHIPPING SAFETY

The operator should be aware of the following points:

- MAINTAIN A SAFETY EXCLUSION ZONE around the chipper of at least 10 metres for the general public or employees without adequate protection. Use hazard tape to identify this working area and keep it clear from debris build up. Chips should be ejected away from any area the general public have access to.
- HAZARDOUS MATERIAL - Some species of trees and bushes are poisonous. The chipping action can produce vapour, spray and dust that can irritate the skin. This may lead to respiratory problems or even cause serious poisoning. Check the material to be chipped before you start. Avoid confined spaces and use a facemask if necessary.
- BE AWARE when the chipper is processing material that is an awkward shape. The material can move from side to side in the funnel with great force. If the material extends beyond the funnel, the brash may push you to one side causing danger. Badly twisted brash should be trimmed before being chipped to avoid thrashing in the feed funnel.
- BE AWARE that the chipper can eject chips out of the feed funnel with considerable force. Always wear full head and face protection.
- ALWAYS work on the side of the machine furthest from any local danger, e.g. not road side.

GENERAL SAFETY MATTERS

DO'S AND DON'TS

ALWAYS stop the chipper engine before making any adjustments, refuelling or cleaning.

ALWAYS check rotor has stopped rotating and remove spark plug lead before maintenance of any kind, or whenever the machine is to be left unattended.

ALWAYS check the machine is well supported and cannot move.

ALWAYS operate the chipper with the engine set to maximum speed when chipping.

ALWAYS check (visually) for fluid leaks.

ALWAYS take regular breaks. Wearing personal protective equipment for long periods can be tiring and hot.

ALWAYS keep hands, feet and clothing out of feed opening, discharge and moving parts.

ALWAYS use the next piece of material or a push stick to push in short pieces. Under no circumstances should you reach into the funnel.

ALWAYS keep the operating area clear of people, animals and children.

ALWAYS keep the operating area clear from debris build up.

ALWAYS keep clear of the chip discharge tube. Foreign objects may be ejected with great force.

ALWAYS ensure protective guarding is in place before commencing work. Failure to do so may result in personal injury or loss of life.

ALWAYS operate the chipper in a well ventilated area - exhaust fumes are dangerous.

DO NOT operate chipper unless available light is sufficient to see clearly.

DO NOT use or attempt to start the chipper without the feed funnel, guards and discharge unit securely in place.

DO NOT stand directly in front of the feed funnel when using the chipper. Stand to one side.

DO NOT allow -

BRICKS STRING CLOTH PLASTIC STONES

METAL GLASS RUBBER ROOTS BEDDING PLANTS

- to enter the machine, as damage is likely.

DO NOT smoke when refuelling.

DO NOT let anyone who has not received instruction operate the machine.

DO NOT climb on the machine at any time.

DO NOT handle material that is partially engaged in the machine.

DO NOT touch any exposed wiring while machine is running.

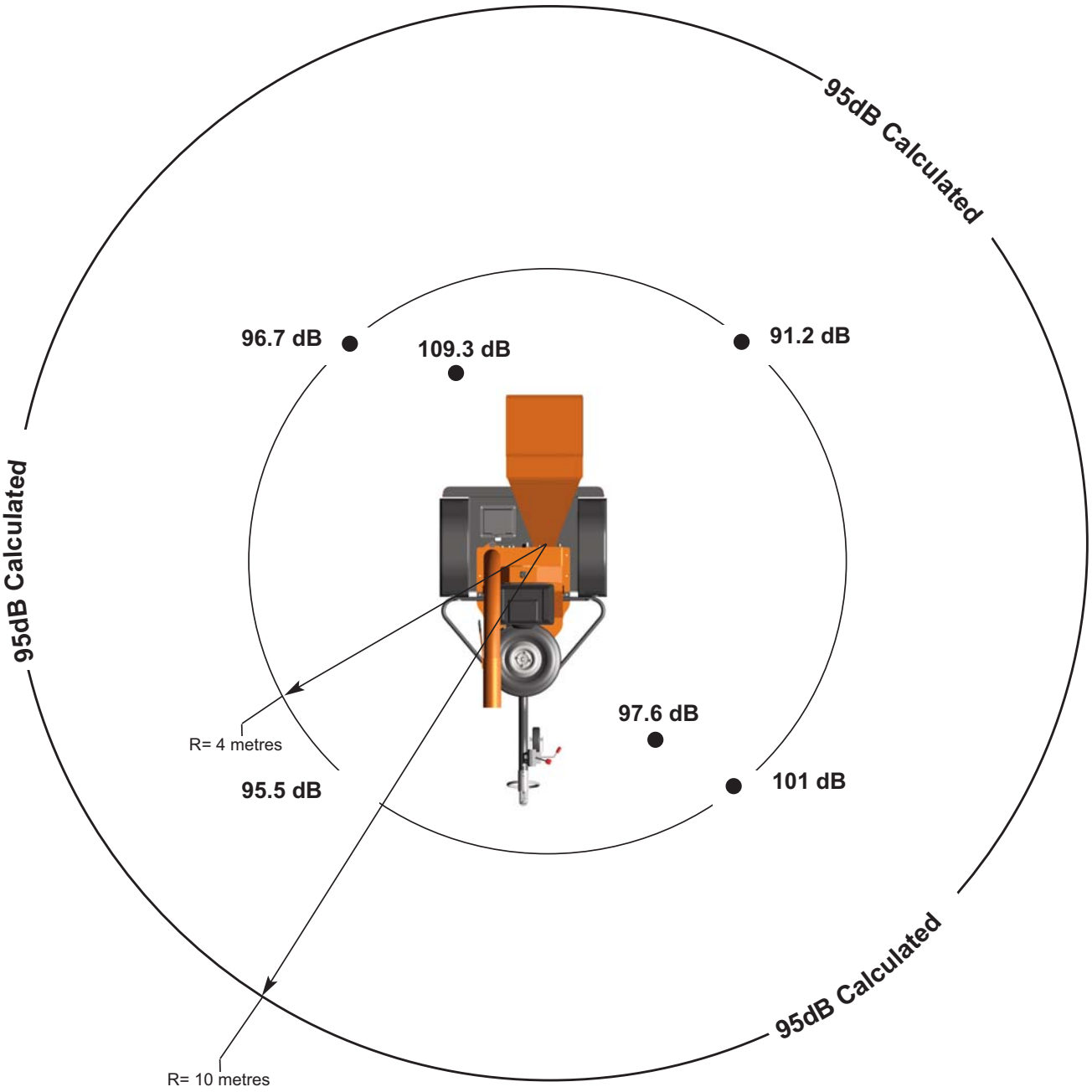
DO NOT use the chipper inside buildings.

NOISE TEST

MACHINE: TW 18/100G

NOTES: Tested chipping 50 mm x 50 mm corsican pine 1.5m in length

Noise levels above 80dB (A) will be experienced at the working position. Wear ear protection at all times to prevent possible damage to hearing. All persons within a 4 metre radius must also wear good quality ear protection.



Guaranteed Sound Power: 125dB (A)

As required by Supply of Machinery (safety) regulations of 2008.

SAFE TRANSPORTATION

WARNING **DO NOT RIDE ON THE CHIPPER WHEN IT IS BEING TOWED.**

- WHEN towing a chipper the maximum speed limit is 60 mph.
- ON rough or bumpy road surfaces reduce speed accordingly to protect your machine from unnecessary vibration.
- WHEN towing off road be aware of objects that may catch the chipper undergear.
- WHEN towing off road ensure inclination is not excessive.
- AVOID excessively pot holed ground.
- WHEN reversing the chipper the short wheel base will react quickly to steering.
- ALWAYS check the discharge is tight before moving.
- KEEP tyre pressures inflated to 1.8 bar or 26 psi.
- CHECK wheel nuts are tightened to 90Nm or 65 lbs ft.
- CLEAR loose chippings and debris from the machine before departing.
- ENSURE feed funnel is closed and the catch is properly engaged before departing.

HITCHING ONTO THE TOW BALL

- CHECK ball head is well greased.
- WIND jockey wheel assembly anticlockwise until the tow head is above the height of the ball hitch on the vehicle.
- REVERSE vehicle so the ball hitch is directly below the tow head.
- ATTACH breakaway cable to a strong point on the vehicle, not the ball hitch.
- GRASP handle on tow head and push back catch with thumb.
- WIND jockey wheel assembly clockwise, to lower the tow head onto the ball hitch.
- RELEASE handle and continue to wind jockey wheel clockwise. The tow head should snap into place on the ball hitch. If it doesn't, repeat previous 2 steps.
- WIND jockey wheel up until fully retracted and the jockey wheel frame is seated in its notch on the stem. The chipper weight should be fully on the vehicle.
- RELEASE jockey wheel clamp and slide the jockey wheel assembly fully up.
- TIGHTEN clamp on jockey wheel assembly.
- CONNECT electrical plug to socket on rear of towing vehicle and check operation of all the trailer and vehicle lights.
- THE chipper is now properly attached to the vehicle.

UNHITCHING THE CHIPPER

- ENSURE the chipper will not roll away after being disconnected from the vehicle.
- DISCONNECT the electrical cable from the vehicle socket.
- RELEASE breakaway cable.
- RELEASE the jockey wheel assembly clamp.
- LOWER the jockey wheel assembly fully.
- RETIGHTEN the jockey wheel assembly clamp.
- WIND the jockey wheel assembly anticlockwise until it starts to take the weight of the chipper.
- GRASP the handle and release the catch with your thumb.
- CONTINUE to wind the jockey wheel anticlockwise. This should lift the tow head clear of the ball hitch.
- DRIVE the vehicle clear of the chipper.
- WIND the jockey wheel assembly to a suitable point where the chipper is level.
- THE chipper is now fully detached from the vehicle.

DELIVERY

All Timberwolf TW 125 machines have a full pre - delivery inspection before leaving the factory and are ready to use. Read and understand this instruction manual before attempting to operate the chipper. In particular, read pages 5-7 which contain important health and safety information and advice.

OPERATOR'S PERSONAL PROTECTIVE EQUIPMENT REQUIRED

- CHAINSAW safety helmet fitted with visor and recommended ear defenders to an appropriate specification.
- HEAVY-DUTY gloves with elasticated wrist area.
- CLOSE - FITTING heavy-duty non-snag clothing.
- SAFETY footwear.
- FACE MASK (if appropriate).

See page 5 for more detailed information.

ENGINE CONTROLS

The engine speed is controlled by the vertically adjustable lever shown in diagram below. With the throttle lever in the *FAST* position the machine is ready to chip. It MUST be pushed up as far as possible to achieve a suitable working speed. If no wood is to be chipped for a few minutes the throttle should be returned to the idle position.

STARTING THE ENGINE

- Open fuel shutoff valve.
- Pull choke control to the full choke position.
- Move throttle lever to 'fast'. Always operate engine with throttle set to 'fast'.
- Push 'on/off' rocker switch to 'on' position.

PULL START START MODELS:

- Grasp recoil rope handle. Pull slowly until resistance is felt, then pull rapidly to start engine and avoid kickback.

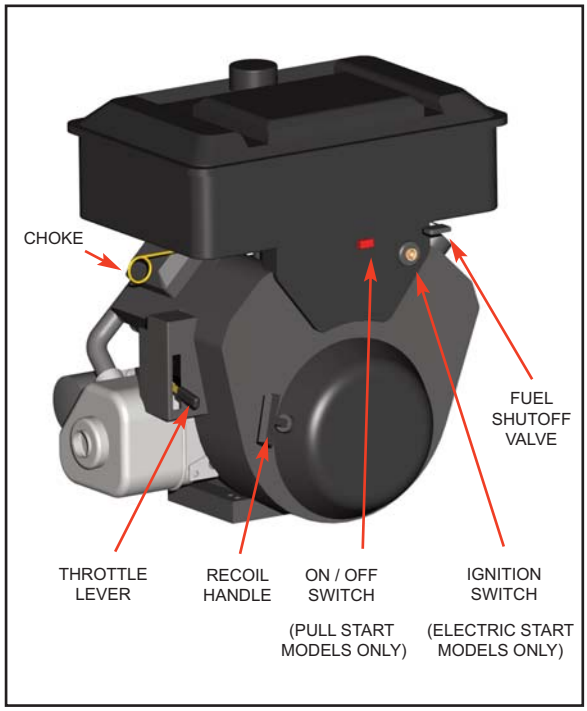
ELECTRIC START MODELS:

- Insert key in ignition and turn to start engine.
- Release key as soon as engine starts.

NOTE: To extend the life of the starter use only short starting cycles - 5 seconds max.

BOTH ENGINE MODELS:

- Allow engine to warm up.
  - In cold weather, allow engine to run smoothly before each change in the position of the choke handle. Operate with choke in 'run' position.
  - In warm weather temperatures or recently operated conditions, move choke handle slowly in towards the 'run' position.



STOPPING THE ENGINE

- Move throttle lever to 'slow'
- Push 'on/off' rocker switch position to 'off' position (pull start start only).
- Turn ignition key to 'off' position and remove (electric start engine only).
- Close fuel shutoff valve.

For more detailed information refer to the Engine Owner's Manual

DAILY CHECKS BEFORE STARTING

- LOCATE the machine on firm level ground.
- CHECK machine is well supported and cannot move.
- CHECK prop stand is lowered and secure.
- CHECK all guards are fitted and secure.
- CHECK the discharge unit is in place and fastened securely.
- CHECK discharge tube is pointing in a safe direction.
- CHECK the feed funnel to ensure no objects are inside.
- CHECK feed table is in up position - to prevent people reaching cutting blades.
- CHECK controls as described below.
- CHECK (visually) for fluid leaks.
- CHECK fuel and hydraulic oil levels.

For parts location see diagrams on pages 3 & 4.

STARTING TO CHIP

WARNING **Do not use or attempt to start the chipper without the protective guarding and discharge unit securely in place. Failure to do so may result in personal injury or loss of life**

- CHECK that the chipper is running smoothly.
- STAND to one side of the feed funnel.
- PROCEED to feed material into the feed funnel.

CHIPPING

Wood up to 100 mm in diameter can be fed into the feed funnel. Enter it into the funnel butt end first. Release the material before it engages the rotor. Some pieces of wood may move around significantly while being chipped.

The wood will be drawn into the cutting blade quite quickly, be ready for this to happen. Stand well clear.

A piece of wood which is too tough or too large for the chipper will slow the engine down. When this happens it is possible to hold back the branches that are being chipped and allow the engine to regain its speed again.

If a piece of wood gets stuck in the funnel and it cannot be chipped due to its size or shape, it will need to be removed. Trim the branch until it is a suitable shape for the chipper to accept.

BLADE WEAR

The most important part of using a wood chipper is keeping the cutter blades sharp. Timberwolf chipper blades are hollow ground to an angle of 40 degrees. When performing daily blade checks ensure blade edge is sharp and free from chips, if there is any evidence of damage, or the edge is “dull” change the blade(s). The TW 18/100G is fitted with 2 blades 177mm (7") long. They are 44 mm wide when new. A new blade should chip for up to 25 hours before it requires sharpening. This figure will be drastically reduced by feeding the machine with stony, sandy or muddy material.

As the blade becomes blunt, performance is reduced. With increased stress and load on the machine the chips will become more irregular and stringy. At this point the blade should be sent to a reputable blade sharpening company. The blade can be sharpened several times in its life. A wear mark on the reverse side indicates the safe limit of blade wear. Replace when this line is exceeded.

The machine is also fitted with a static blade (anvil). It is important that the anvil is in good condition to allow the cutting blades to function efficiently. Performance will be poor, even with sharp cutter blades, if the anvil is worn.

BLOCKAGES

Always be aware that what you are putting into the chipper must come out. If the chips stop coming out of the discharge tube but the chipper is taking material in - STOP IMMEDIATELY. Continuing to feed the chipper with brushwood once it has become blocked will cause the chipper to compact the chips in the rotor housing and it will be difficult and time consuming to clear.

AVOID THIS SITUATION - WATCH THE DISCHARGE TUBE AT ALL TIMES.

DO NOT AT ANY TIME CRANK STARTER MOTOR TO CLEAR BLOCKAGES AS THIS COULD RESULT IN STARTER MOTOR FAILURE THAT WILL NOT BE COVERED UNDER WARRANTY

If the chipper becomes blocked proceed as follows:

- STOP the engine and remove the spark plug lead.
- REMOVE the discharge tube. Check that it is clear.
- WEARING gloves, reach into the rotor housing and scoop out the majority of the debris causing the blockage.

WARNING **Do not reach into the rotor housing with unprotected hands. There are sharp blades and any small movement of the rotor may cause serious injury.**

- REPLACE the discharge tube.
- RESTART the engine and increase to full speed.
- ALLOW machine time to clear excess chips still remaining in rotor housing before you continue feeding brushwood. Feed in a small piece of wood while watching to make sure that it comes out of the discharge. If this does not clear it, repeat the process and carefully inspect the discharge tube to find any obstruction.

THE FOLLOWING PAGES DETAIL ONLY *BASIC* MAINTENANCE GUIDELINES SPECIFIC TO YOUR CHIPPER.

THIS IS NOT A WORKSHOP MANUAL.

THE FOLLOWING GUIDELINES ARE NOT EXHAUSTIVE AND DO NOT EXTEND TO GENERALLY ACCEPTED STANDARDS OF ENGINEERING/MECHANICAL MAINTENANCE THAT SHOULD BE APPLIED TO ANY PIECE OF MECHANICAL EQUIPMENT AND THE CHASSIS TO WHICH IT IS MOUNTED.

AUTHORISED TIMBERWOLF SERVICE AGENTS ARE FULLY TRAINED IN ALL ASPECTS OF TOTAL SERVICE AND MAINTENANCE OF TIMBERWOLF WOOD CHIPPERS. YOU ARE STRONGLY ADVISED TO TAKE YOUR CHIPPER TO AN AUTHORISED AGENT FOR ALL BUT THE MOST ROUTINE MAINTENANCE AND CHECKS.

TIMBERWOLF ACCEPTS NO RESPONSIBILITY FOR THE FAILURE OF THE OWNER/USER OF TIMBERWOLF CHIPPERS TO RECOGNISE GENERALLY ACCEPTED STANDARDS OF ENGINEERING/MECHANICAL MAINTENANCE AND APPLY THEM THROUGHOUT THE MACHINE.

THE FAILURE TO APPLY GENERALLY ACCEPTED STANDARDS OF MAINTENANCE, OR THE PERFORMANCE OF INAPPROPRIATE MAINTENANCE, MAY INVALIDATE WARRANTY IN WHOLE OR IN PART.

PLEASE REFER TO YOUR AUTHORISED TIMBERWOLF SERVICE AGENT FOR SERVICE AND MAINTENANCE.

SERVICE SCHEDULE

WARNING **Always immobilise the machine by stopping the engine, removing the ignition key and disconnecting the battery before undertaking any maintenance work.**

SERVICE SCHEDULE	Daily Check	25 Hours	50 Hours	100 Hours	250 Hours
Check engine oil - top up if necessary (10W-30).	✓				
Check fuel level.	✓				
Check feed funnel, access cover, belt guard and discharge unit are securely fitted.	✓				
Check tyre pressure is 1.8 Bar (26 psi).	✓				
Check funnel flange and front face.		✓			
Check for tightness front and rear bearing retaining nuts.		✓			
Check for tightness spindle screw in centre of front bearing.		✓			
Check for tightness engine mount bolts.		✓			
Check tension of main drive belts (and tension if necessary).		✓			
Clean air filter foam pre cleaner.		✓			
Check machine to ensure nothing has worked loose.		✓			
Change blades if necessary.		✓			
Check wheel nuts are tight.		✓			
Check all bolts retaining chipper to chassis.		✓			
Repeat 25 hour service.			✓		
Change oil.			✓		
Check anvil for wear.			✓		
Repeat 25 & 50 hour service.				✓	
Replace oil filter.				✓	
Inspect air filter - replace if necessary.				✓	
Check battery electrolyte level (elec start version).					✓
Repeat 25 & 50 hour service.					✓
Change spark plugs.					✓
Replace anvil when worn.			**RETURN TO DEALER**		

NOTE: Your Timberwolf woodchipper is covered by a full 12 months parts and labour warranty. Subject to correct maintenance and proper machine usage, the bearings are guaranteed for 12 months regardless of hours worked by the machine. In conditions of 'heavy usage' - i.e. in excess of 500 hours per year - it is recommended that the bearings are changed annually to ensure that the machine retains optimum working performance.

ENGINE SERVICING

All engine servicing must be performed in accordance with the Engine Manufacturer's Handbook provided with the machine. **FAILURE TO ADHERE TO THIS MAY INVALIDATE WARRANTY AND/OR SHORTEN ENGINE LIFE.**

SPARES

Only fit genuine Timberwolf replacement blades, screws and chipper spares. Failure to do so will result in the invalidation of the warranty and may result in damage to the chipper, personal injury or even loss of life.

SAFE MAINTENANCE

- HANDLE blades with extreme caution to avoid injury. Gloves should always be worn when handling the cutter blades.
- THE drive belts should be connected while changing blades, as this will restrict sudden movement of the rotor.
- THE major components of this machine are heavy. Lifting equipment must beused for disassembly.
- CLEAN machines are safer and easier to service.
- AVOID contact with fuel.

WARNING **ALWAYS IMMOBILISE THE ENGINE BEFORE UNDERTAKING ANY MAINTENANCE WORK ON THE CHIPPER BY REMOVING THE IGNITION KEY AND SPARK PLUG LEAD.**

SAFE LIFTING OF THE CHIPPER

The lifting eye is designed to lift the machine's weight only. Do not use hoist hook directly on the lifting eye, use a correctly rated safety shackle. Inspect the lifting eye prior to each use - DO NOT USE IF DAMAGED.

CHECK FITTINGS

The Timberwolf TW 18/100G and 18/100G E/S is subject to large vibrations during the normal course of operation. Consequently there is always a possibility that nuts and bolts will work themselves loose. It is important that periodic checks are made to ensure the security of all fasteners. Fasteners should be tightened using a torque wrench to the required torque (see below). ***Uncalibrated torque wrenches can be inaccurate by as much as 25%. It is therefore essential that a calibrated torque wrench is used to achieve the tightening torques listed below.***

	Size	Pitch	Head	Torque lb/ft	Torque Nm
Blade Bolts	M8	Standard	T40 Torq	22	29
Funnel Retaining Nuts	M12	Standard	19 mm Hex	60	80
General	M8	Standard	13 mm Hex	17	23
General	M10	Standard	17 mm Hex	34	46
General	M12	Standard	19 mm Hex	60	80

COPPER EASE SAFETY INFORMATION

Product name: Copper Ease.

Copper Ease contains no hazardous ingredients at or above regulatory disclosure limits, however, safety precautions should be taken when handling (use of oil-resistant gloves and saftey glasses are recommended - respiratory protection is not required). Avoid direct contact with the substance and store in a cool, well ventilated area avoiding sources of ignition, strong oxidising agents and strong acids. Dispose of as normal industial waste (be aware of the possible existance of regional or national regulations regarding disposal), do not discharge into drains or rivers.

In case of fire: in combustion the product emits toxic fumes, extinguish with alcohol or polymer foam, carbon dioxide or dry chemical powder. Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

FIRST AID

Skin contact: there may be mild irritation at the site of contact, wash immediately with plenty of soap and water.

Eye contact: there may be irritation and redness, bathe the eye with running water for 15 minutes.

Ingestion: there may be irritation of the throat, do not induce vomiting, wash out mouth with water.

A safety data sheet for this product can be obtained by writing to the manufacturer at the following address: Comma Oil and Chemicals Ltd., Deering Way, Gravesend, Kent DA12 2QX. Tel: 01474 564311, Fax: 01474 333000.

BATTERY SAFETY INFORMATION

WARNING NOTES AND SAFETY REGULATIONS FOR FILLED LEAD-ACID BATTERIES

For safety reasons, wear eye protection when handling a battery.

Keep children away from acid and batteries.

Fires, sparks, naked flames and smoking are prohibited.
-Avoid causing sparks when dealing with cables and electrical equipment, and beware of electrostatic discharges.
-Avoid short circuits, otherwise:

Explosion hazard:
-A highly explosive oxyhydrogen gas mixture is produced when batteries are charged.

Corrosive hazard:
-Battery acid is highly corrosive, therefore:
-Wear protective gloves and eye protection.
-Do not tilt the battery, acid may escapefrom the vent openings.

First aid:
-Rinse off acid splashed in the eyes immediately for several minutes with clear water! Then consult a doctor immediately.
-Neutralise acid splashes on the skin or clothes immediately with acid neutraliser (soda) or soap suds, and rinse with plenty of water.
-If acid is swallowed, consult a doctor immediately.

Warning notes: The battery case can become brittle, to avoid this:

-Do not store batteries in direct sunlight.
-Discharged batteries may freeze up, therefore store in an area free from frost.

Disposal:
-Dispose of old batteries at an authorised collection point.

-The notes listed under item 1 are to be followed for transport.
-Never dispose of old batteries in household waste.

BATTERY SAFETY INFORMATION...cont.

1. Storage and transport
- Batteries are filled with acid.
- Always store and transport batteries upright and prevent from tilting so that no acid can escape.
- Store in a cool and dry place.
- Do not remove the protective cap from the positive terminal.
- Run a FIFO (first in-first out)warehouse management system.

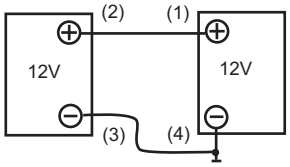
2. Initial operation
- The batteries are filled with acid at a density of 1.28g/ml during the manufacturing process and are ready for use.
- Recharge in case of insufficient starting power (cf. section 4).

3. Installation in the vehicle and removal from the vehicle
- Switch off the engine and all electrical equipment.
- When removing, disconnect the negative terminal first.
- Avoid short circuits caused by tools, for example.
- Remove any foreign body from the battery tray, and clamp battery tightly after installation.
- Clean the terminals and clamps, and lubricate slightly with battery grease.
- When installing, first connect the positive terminal, and check the terminal clamps for tight fit.
- After having fitted the battery in the vehicle, remove the protective cap from the positive terminal, and place it on the terminal of the replaced battery in order to prevent short circuits and possible sparks.
- Use parts from the replaced battery, such as the terminal covers, elbows, vent pipe connection and terminal holders (where applicable); use available or supplied filler caps.
- Leave at least one vent open, otherwise there is a danger of explosion. This also applies when old batteries are returned.

4. Charging
- Remove the battery from the vehicle; disconnect the lead of the negative terminal first.
- Ensure good ventilation.
- Use suitable direct current chargers only.
- Connect the positive terminal of the battery to the positive output of the charger. Connect the negative terminal accordingly.
- Switch on the charger only after the battery has been connected, and switch off the charger first after charging has been completed.
- Charging current-recommendation: 1/10 ampere of the battery capacity Ah.
- Use a charger with a constant charging voltage of 14.4V for re-charging.
- If the acid temperature rises above 55° Celsuis, stop charging.
- The battery is fully charged when the charging voltage has stopped rising for two hours.

5. Maintenance
- Keep the battery clean and dry.
- Use a moist anti-static cloth only to wipe the battery, otherwise there is a danger of explosion.
- Do not open the battery.
- Recharge in case of insufficient starting power (cf. section 4).

6. Jump Starting
- Use the standardised jumper cable in compliance with DIN 72553 only, and follow the operating instructions.
- Use batteries of the same nominal voltage only.
- Switch off the engines of both vehicles.
- First connect the two positive terminals (1) and (2), then connect the negative terminal of the charged battery (3) to a metal part (4) of the vehicle requiring assistance away from the battery.

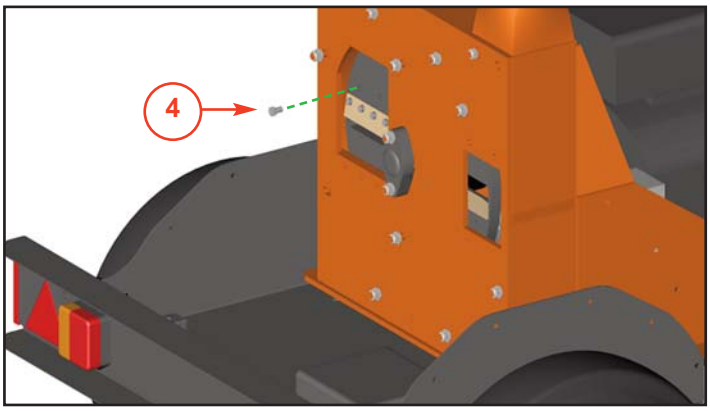


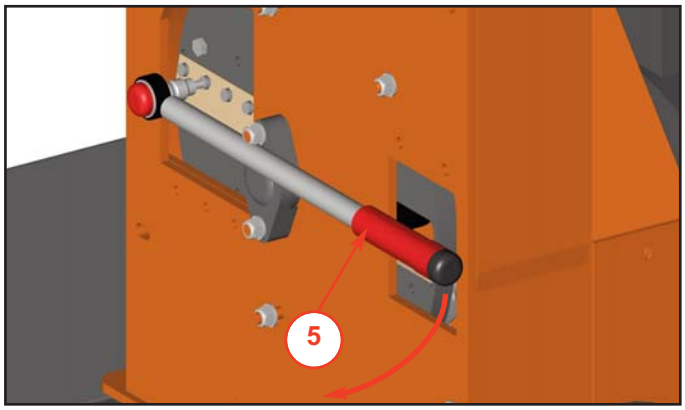
- Start the engine of the vehicle providing assistance, then start the engine of the vehicle requiring assistance for a maximum of 15 seconds.
- Disconnect the cables in reverse sequence (4-3-2-1).

7. Taking the battery out of service
- Charge the battery; store in a cool place or in the vehicle with the negative terminal disconnected.
- Check the battery state of charge at regular intervals, and correct by recharging when necessary (cf. section 4).

CHANGE BLADES

WARNING **Wear riggers gloves for the blade changing operation.**

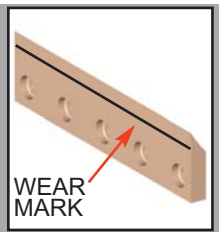




1. Turn the chipper off and remove the spark plug lead.
2. Remove the feed funnel.
3. Remove blade access cover.
4. Insert M10 screw into rotor to stop it turning.
5. Using the Torx fitting provided loosen the blade screws.
6. Remove the blade carefully.
7. **Before fitting a new blade ensure the seating surface on the rotor is spotlessly clean. This is necessary to ensure the blade is always held firm. Damage to the rotor may be caused if this is not checked.**
8. Apply a small amount of copper grease to the blade screws.
9. **Using a torque wrench tighten the blade screws to 29 Nm (22 lb/ft).**
10. Remove the M10 screw securing the rotor.
11. Re-install blade access cover.
12. Re-install the feed funnel.

WARNING

Always sharpen blades on a regular basis. Failure to do so will cause the machine to under perform and will overload engine and bearings causing machine breakdown. Blades must not be sharpened beyond the wear mark (see diagram). Failure to comply with this could result in machine damage, injury or loss of life.

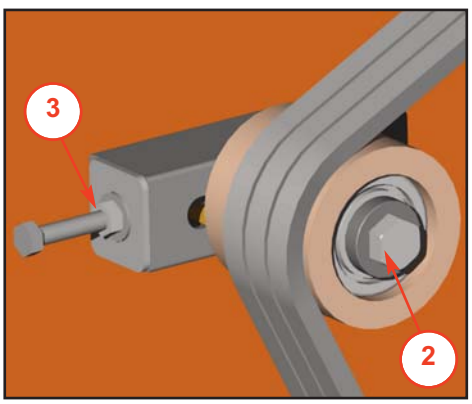


TENSION BELTS

NOTE: There will normally be a rapid drop in tension during run-in period for new belts. When new belts are fitted, check the tension every 2 - 3 hours and adjust until the tension remains constant.

Belt failures due to lack of correct tensioning will not be covered under your Timberwolf warranty.

1. Remove belt guard.
2. Loosen bolt in centre of tensioner pulley with a 19 mm spanner so that pulley is able to slide with minimal wobble.
3. Turn nut in end of tensioner pulley slider until correct belt tension is achieved. For instructions on checking belt tension & correct belt tension values, please refer to the Timberwolf V- Belt Tensioning Data Table (pg 30).
4. Re-tighten bolt in centre of tensioner pulley.
5. Re-install belt guard.
6. Run machine and test, recheck belt tension.
7. NOTE: Slack drive belts will cause poor performance and belt / pulley wear.



ENVIRONMENTAL MANUFACTURING LLP 12 MONTH CHIPPER WARRANTY

WARRANTY PERIOD

The warranty period for the woodchipper commences on the date of sale to the first end user and continues for a period of 12 months. This guarantee is to the first end user only and is not transferable except when an authorised Timberwolf Dealer has a woodchipper registered with Environmental Manufacturing LLP as a hire chipper or long term demonstrator – in these situations they are duly authorised to transfer any remaining warranty period to their first end user. Any warranty offered by the Timberwolf Dealer beyond the original 12 month period will be wholly covered by said Dealer.

LIABILITY

Our obligation under this warranty is limited to repair at Environmental Manufacturing LLP premises or at our option an Environmental Manufacturing LLP approved Timberwolf dealer. No liability will be accepted for special, indirect, incidental, or consequential loss or damages of any kind.

WARRANTY STATEMENT

Environmental Manufacturing LLP warrants to the first end user that;
-Your woodchipper shall be designed, built and equipped, at the point of sale, to meet all current applicable regulations.
-Your chipper shall be free from manufacturing defects both in materials and workmanship in normal service for the period mentioned above.

Warranty will not apply to a failure where normal use has exhausted the life of a component.

Engine units are covered independently by their respective manufacturer warranties.

OWNERS WARRANTY RESPONSIBILITIES

As the owner of an Environmental Manufacturing LLP woodchipper you are responsible for the following;
-Operation of the woodchipper in accordance with the Environmental Manufacturing LLP instruction manual.
-Performance of the required maintenance listed in your Environmental Manufacturing LLP instruction manual.
-In the event of a failure the Environmental Manufacturing LLP authorised Timberwolf dealer is to be notified within 10 days of failure and the equipment is to be made available for unmolested inspection by the dealer technician.

WARRANTY RESTRICTIONS

The Environmental Manufacturing LLP warranty is restricted to the first end user only and is not transferable except when an authorised Timberwolf Dealer has a woodchipper registered with Environmental Manufacturing LLP as a hire chipper or long term demonstrator – in these situations they are duly authorised to transfer any remaining warranty period to their first end user.

The Environmental Manufacturing LLP warranty may be invalidated if any of the following apply;
-The failed parts or assembly is interfered with in any way.
-Normal maintenance has not been performed.
-Incorrect reassembly of components.
-The machine has undergone modifications not approved in writing by Environmental Manufacturing LLP.
-In the case of tractor driven equipment, use has been on an unapproved tractor.
-Conditions of use can be deemed abnormal.
-The machine has been used to perform tasks contrary to those stated in the Environmental Manufacturing LLP instruction manual.

WARRANTY SERVICE

To obtain warranty service please contact your nearest Environmental Manufacturing LLP approved Timberwolf dealer. To obtain details of the nearest facility please contact Environmental Manufacturing LLP at the address on the front of this manual.
These warranty terms are in addition to and not in substitution for and do not affect any right and remedies which an owner might have under statute or at common law against the seller of the goods under the contract by which the owner acquired the goods.

CERTIFICATE OF CONFORMITY

Environmental Manufacturing LLP

Entec House,
Tomo Industrial Estate,
Stowmarket,
Suffolk IP14 5AY
Tel: 01449 765800 Fax: 01449 765801

E C Declaration of Conformity

CE

Environmental Manufacturing LLP as the designer and manufacturer, certifies that the machine stipulated below complies with all the relevant provisions of the:

Machinery Directive; 2006/42/EC
(& other relevant directives)

and the National Laws and Regulations adopting these directives.

Designer/Manufacturer	:	Environmental Manufacturing LLP
Description of Machinery	:	Self-powered portable machine intended to chip up tree waste prior to disposal.
Model	:	TW 18/100G
Serial No.		*Serial Manufacture*

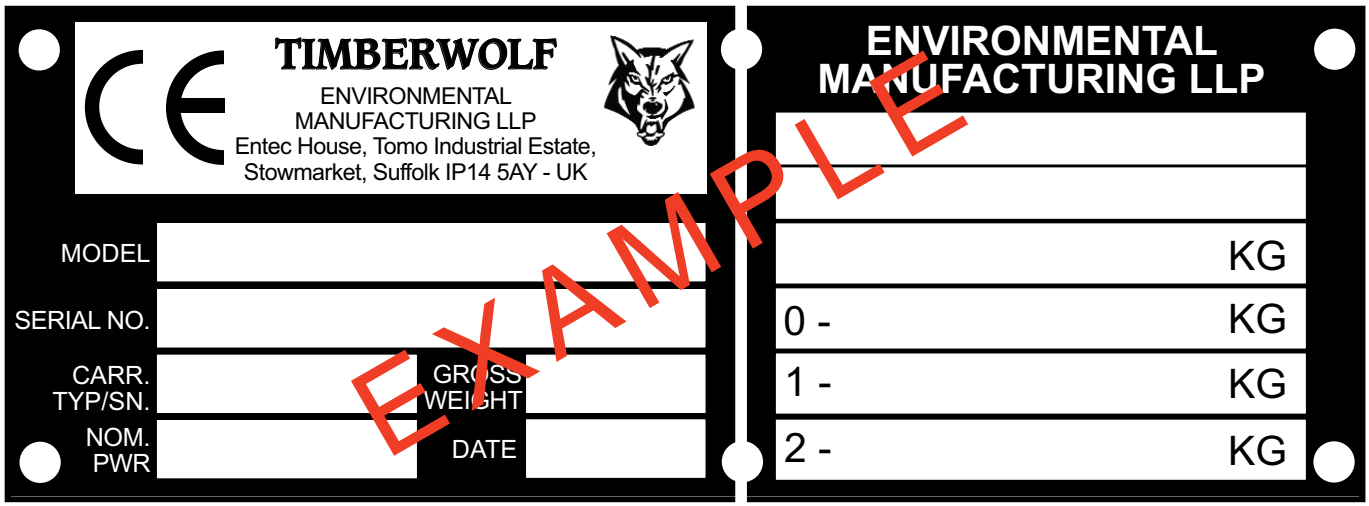
BSI Transposed Harmonised Standards applied: (including parts/clauses of):

BS EN 12100-1: 2003 Safety of Machinery- Basic concepts, BS EN 13857-1: 2008 Safety of Machinery-Safety distances to danger zones, BS EN 60204-1: 1998 Safe electrical practices, BS EN 13732-1:2006 Safety of Machinery – Temperatures of touchable surfaces, BS EN 13849-1: 2008 – Safety of Machinery – Safety related parts of control systems, BS EN 982: 1996 – Safety of Machinery – Hydraulics, BS EN 1088: 1995 – Safety of Machinery – Interlocking devices, BS EN 13525: 2005 – Forestry Machinery – Wood chippers – Safety.

"Responsible" Person empowered to sign: _____ **Mr. Jeff Haines**
Position in Company: Technical Director

Date: 1st December 2009

IDENTIFICATION PLATE



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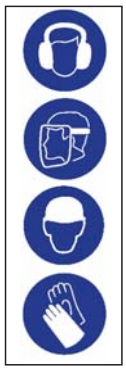

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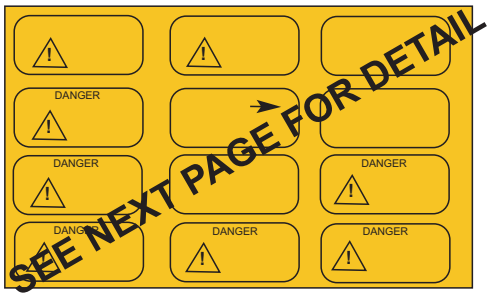

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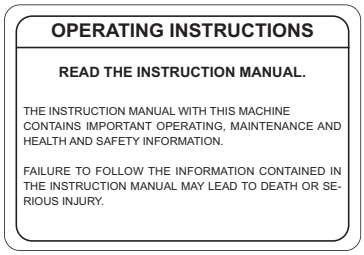

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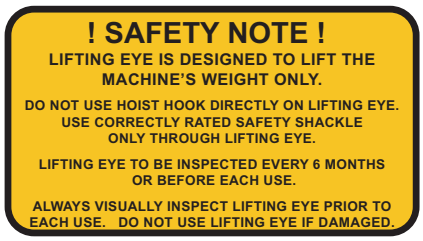

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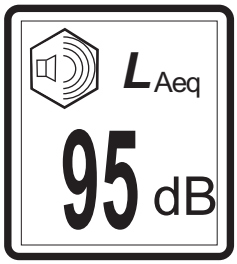

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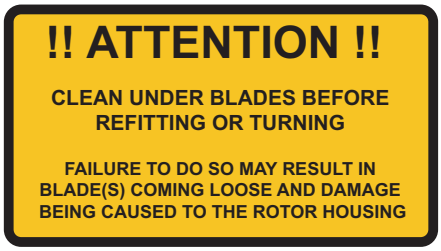


3022

4099 X 2

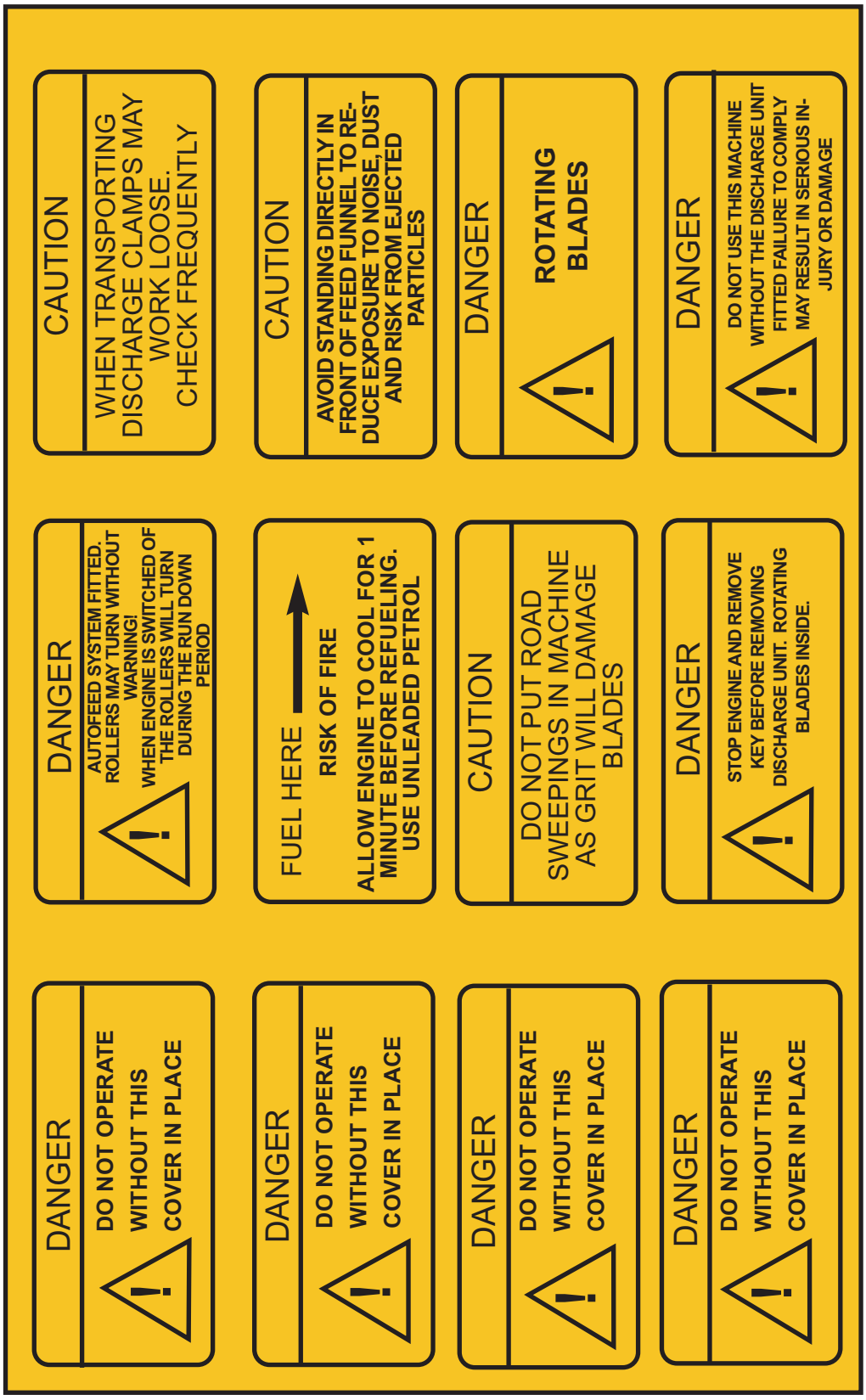
4328

18393

TIMBERWOLF
TW 18/100G

P0000154

671 - these individual decals are supplied as a set, they may not all apply to your machine.



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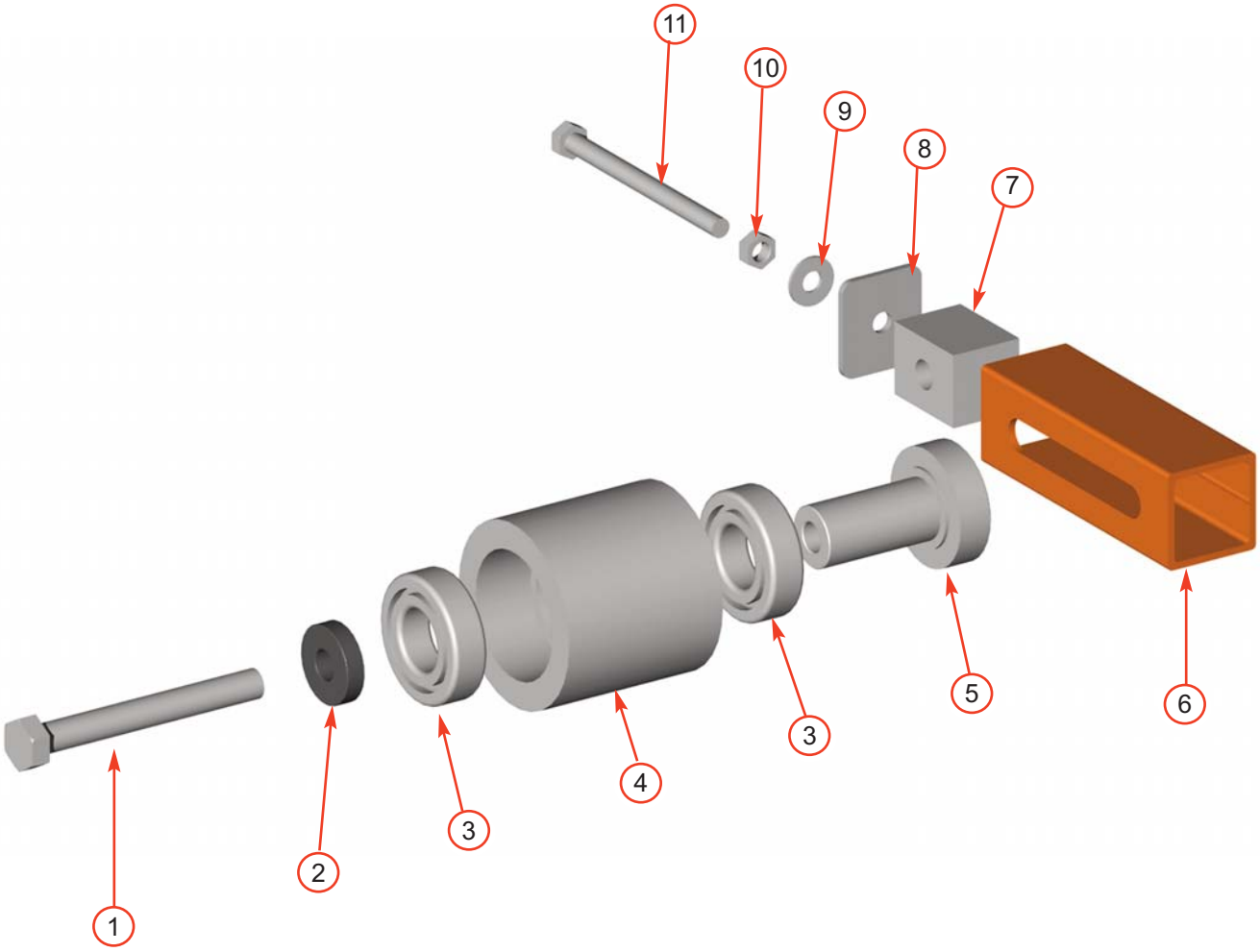
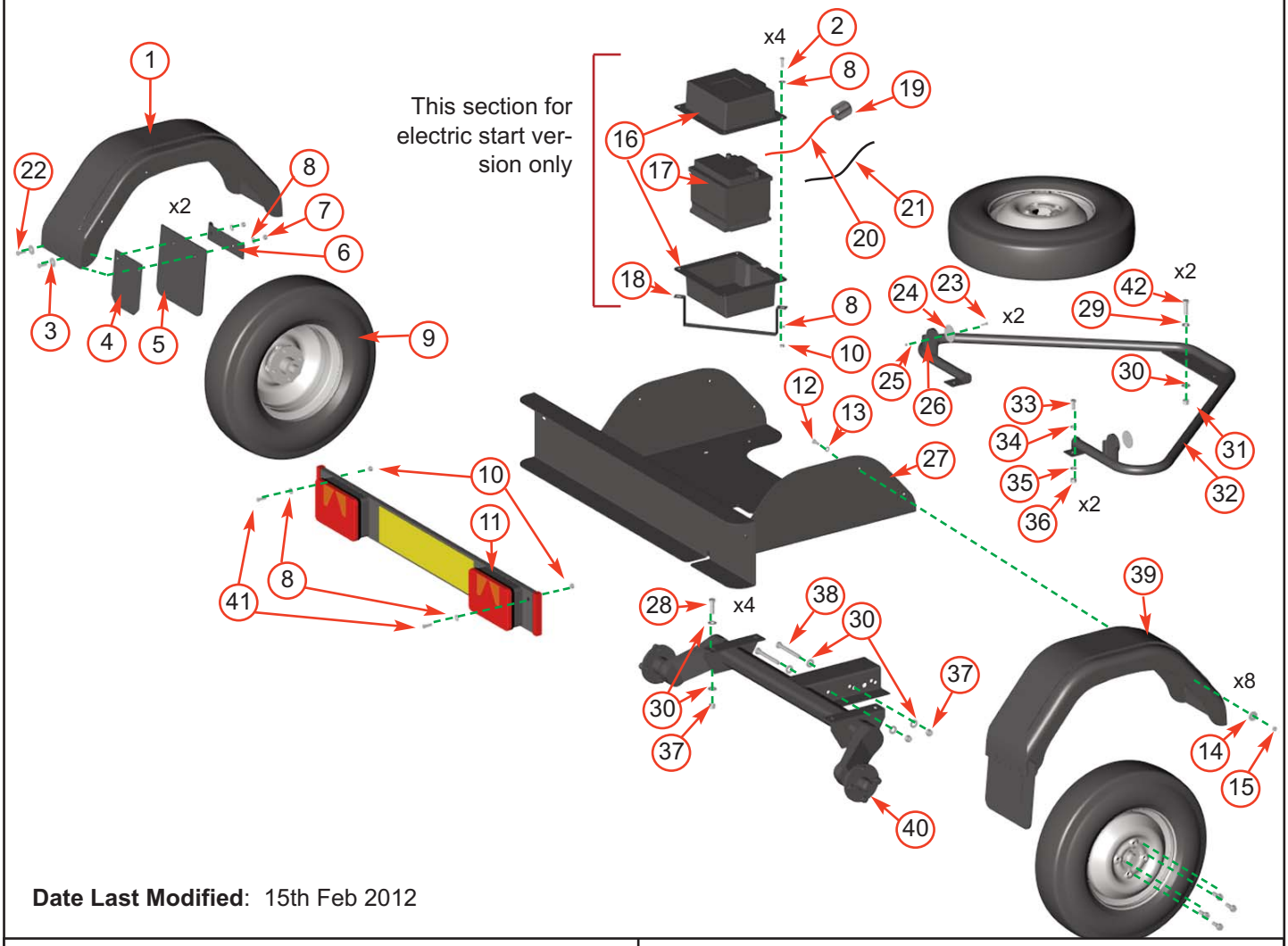
PARTS LISTS

The following illustrations are for parts identification only. The removal or fitting of these parts may cause a hazard and should only be carried out by trained personnel.



Item	Part No	Part Name	Q'ty
1	2988	M8/90 Bolt	1
2	0415	Heavy Washer	1
3	0491	Bearing 6205	2
4	0411M	Pulley	1
5	0472M	Pulley Boss	1
6	*N/A to purchase*	Slider	1
7	0469MS	Slider Block	1
8	1342PS	End Plate	1
9	*made in production*	Washer	1
10	0476	Plain M8 Nut	1
11	2988	M8/90 Bolt	1

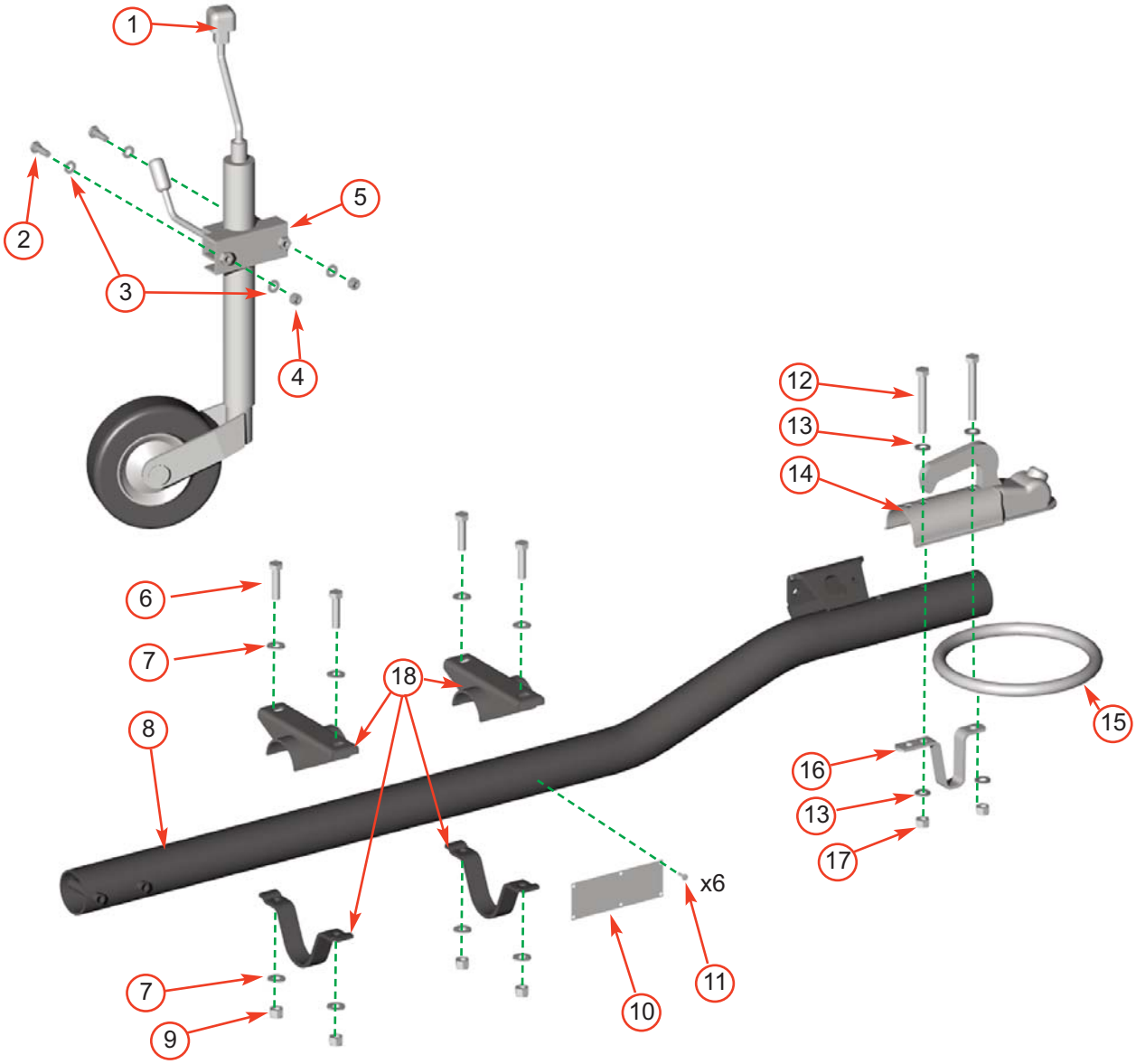
Date Last Modified: 30th Nov 06



Date Last Modified: 15th Feb 2012

Item	Part No	Part Name	Q'ty
1	19775	N/S Mudguard	1
2	0350	M8/25 Bolt	4
3	0714	M8 Mudguard Washer	4
4	19689	Rain Flap Support	2
5	19691	Rain Flap	2
6	19681	Rain Flap Clamp	2
7	0479	M8 P Nyloc Nut	4
8	0712	M8 C Washer	14
9	19663	Wheel	3
10	0481	M8 T Nyloc Nut	6
11	19792	Lightboard	1
12	0439	M6/20 Bolt	8
13	0709	M6 C Washer	8
14	4343	M6 Mudguard Washer	8
15	0142	M6 P Nyloc Nut	8
16	0764	Battery Box Half Section	2
17	4210	Battery	1
18	1808F	Battery Strap	1
19	19508	Terminal Boot	1
20	1375	Battery Cable (+)	1
21	1376	Battery Cable (-)	1

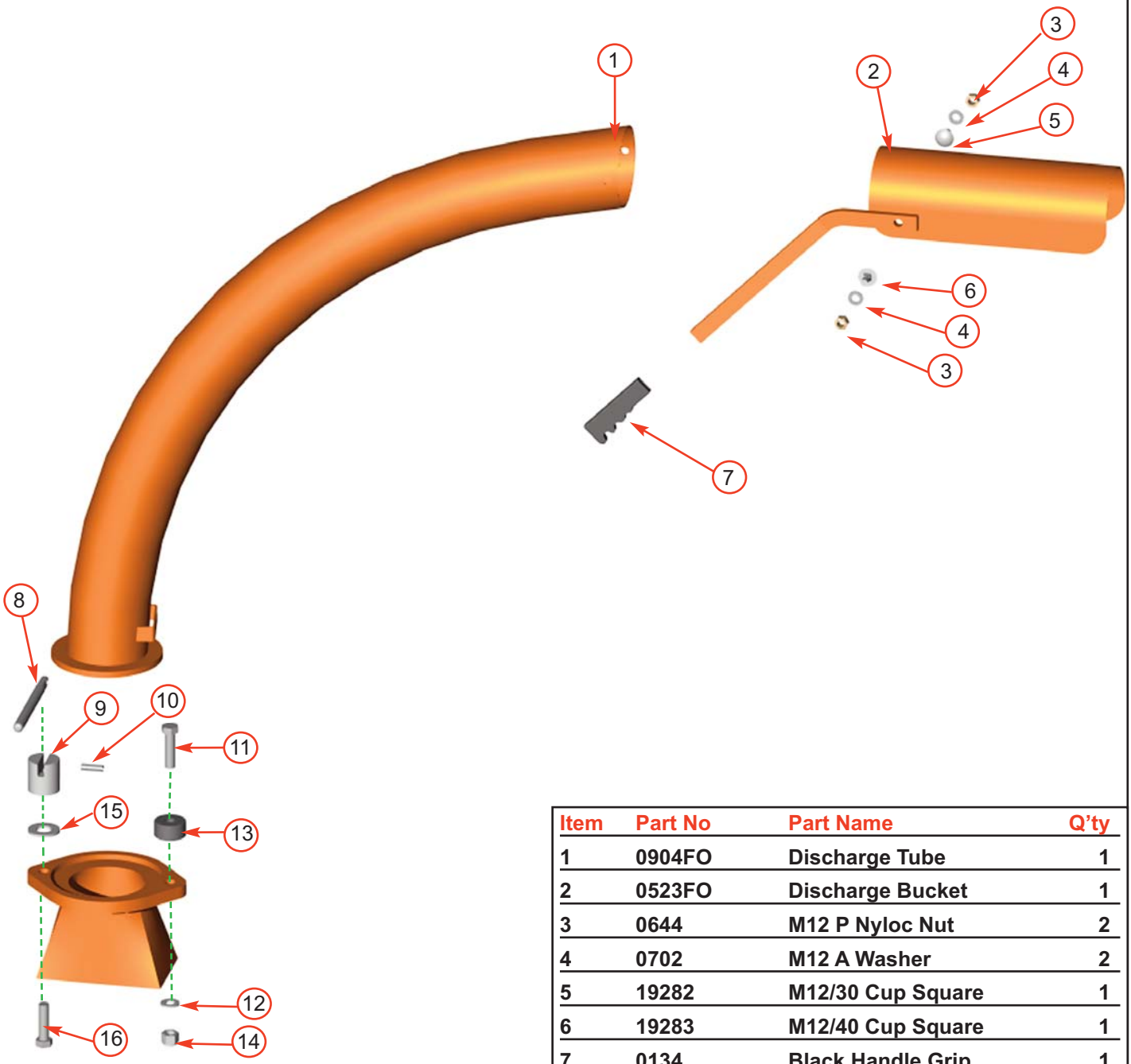
Item	Part No	Part Name	Q'ty
22	0351	M8/30 Bolt	4
23	0856	M5/20 Pan Pozi	2
24	18922	Reflector	2
25	0236	M5 P Nyloc Nut	2
26	0857	M5 A Washer	2
27	19764	Chassis	1
28	0431	M12/40 Bolt	4
29	0702	M12 A Washer	2
30	0704	M12 C Washer	10
31	0644	M12 P Nyloc Nut	2
32	19742	Anti Trap Bar	1
33	1812	M10/35 Bolt	2
34	0839	M10 C Washer	2
35	0701	M10 A Washer	2
36	4345	M10 P Nyloc Nut	2
37	0045	M12 T Nyloc Nut	4
38	0397	M12/120	2
39	19776	O/S Mudguard	1
40	17516	Axle	1
41	0352	M8/40 Bolt	4
42	18172	M12/45Bolt	2



Date Last Modified: 31st Oct 2012

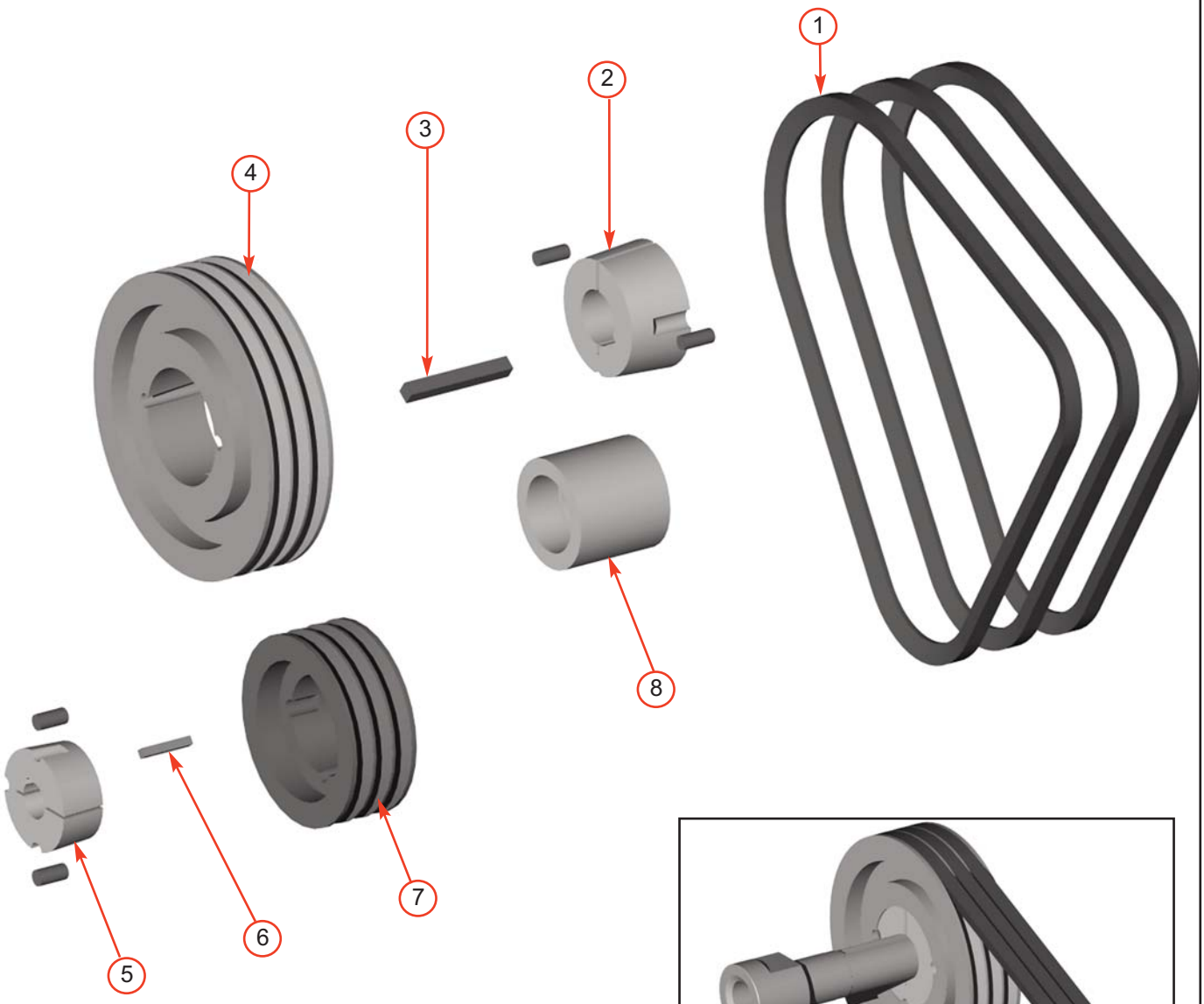
Item	Part No	Part Name	Q'ty
1	P*75	Jockey Wheel	1
2	0382	M10/30 Bolt	2
3	0701	M10 A Washer	4
4	4345	M10 P Nyloc Nut	2
5	17515	Jockey Wheel Clamp	1
6	0356	M12/50 Bolt	2
7	0704	M12 C Washer	8
8	17517	Swan Neck Drawbar	1
9	0644	M12 P Nyloc Nut	4

Item	Part No	Part Name	Q'ty
10	19600	ID Plate	1
11	0067	Pop Rivet	6
12	0313	M12/100 Bolt	2
13	0702	M12 A Washer	4
14	17518	Tow Head	1
15	0018	Tow Hitch Safety Cable	1
16	17611	Skid Plate	1
17	0644	M12 P Nyloc Nut	6
18	19797	Saddle Bracket	2



Item	Part No	Part Name	Q'ty
1	0904FO	Discharge Tube	1
2	0523FO	Discharge Bucket	1
3	0644	M12 P Nyloc Nut	2
4	0702	M12 A Washer	2
5	19282	M12/30 Cup Square	1
6	19283	M12/40 Cup Square	1
7	0134	Black Handle Grip	1
8	1649MS	Discharge Clamp Handle	1
9	4109M	M16 Clamp Nut	1
10	4131	Roll Pin	1
11	0434	M16/70 Hex Bolt	1
12	1354	M16 C Washer	1
13	2837M	Clamp Nut Small	1
14	1511	M16 P Nyloc Nut	1
15	0832	M24 Washer	1
16	0333	M16/60 Hex Bolt	1

Date Last Modified: 16th Dec 10

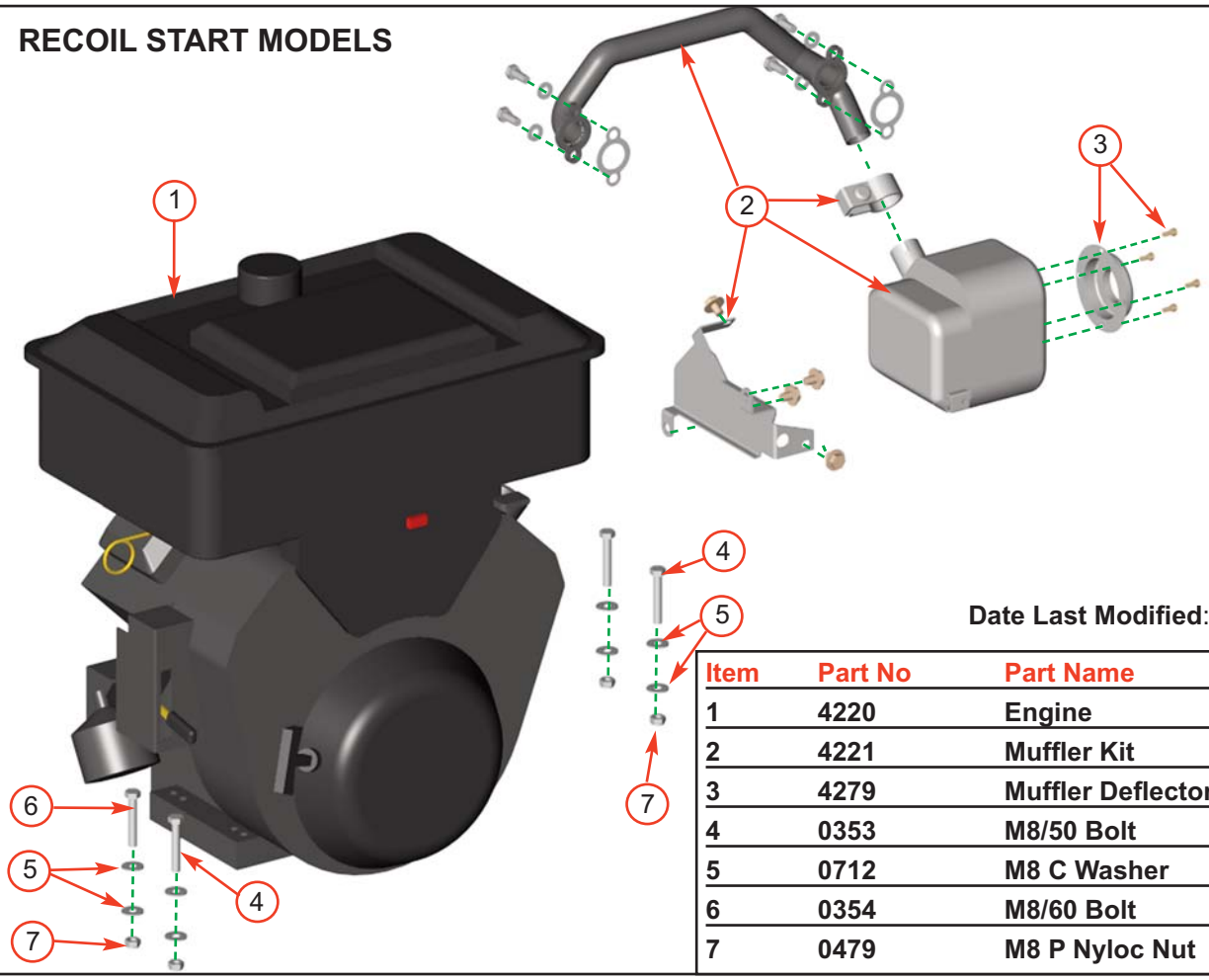


Date Last Modified: 10th Sept 09

Item	Part No	Part Name	Q'ty
1	17279	Belt Vee SPA 1060	3
2	0410	Taper Lock Bush 2517 38 mm	1
3	18961	Key 10 x 10 x 80	1
4	1351	Pulley 200 x 3 SPA	1

Item	Part No	Part Name	Q'ty
5	0408	Taper Lock Bush 2012 1"	1
6	0061	Key 1/4 x 1/4 x 1/2	1
7	1609	Pulley 125 x 3 SPA	1
8	0411M	Pulley Tension	1

RECOIL START MODELS

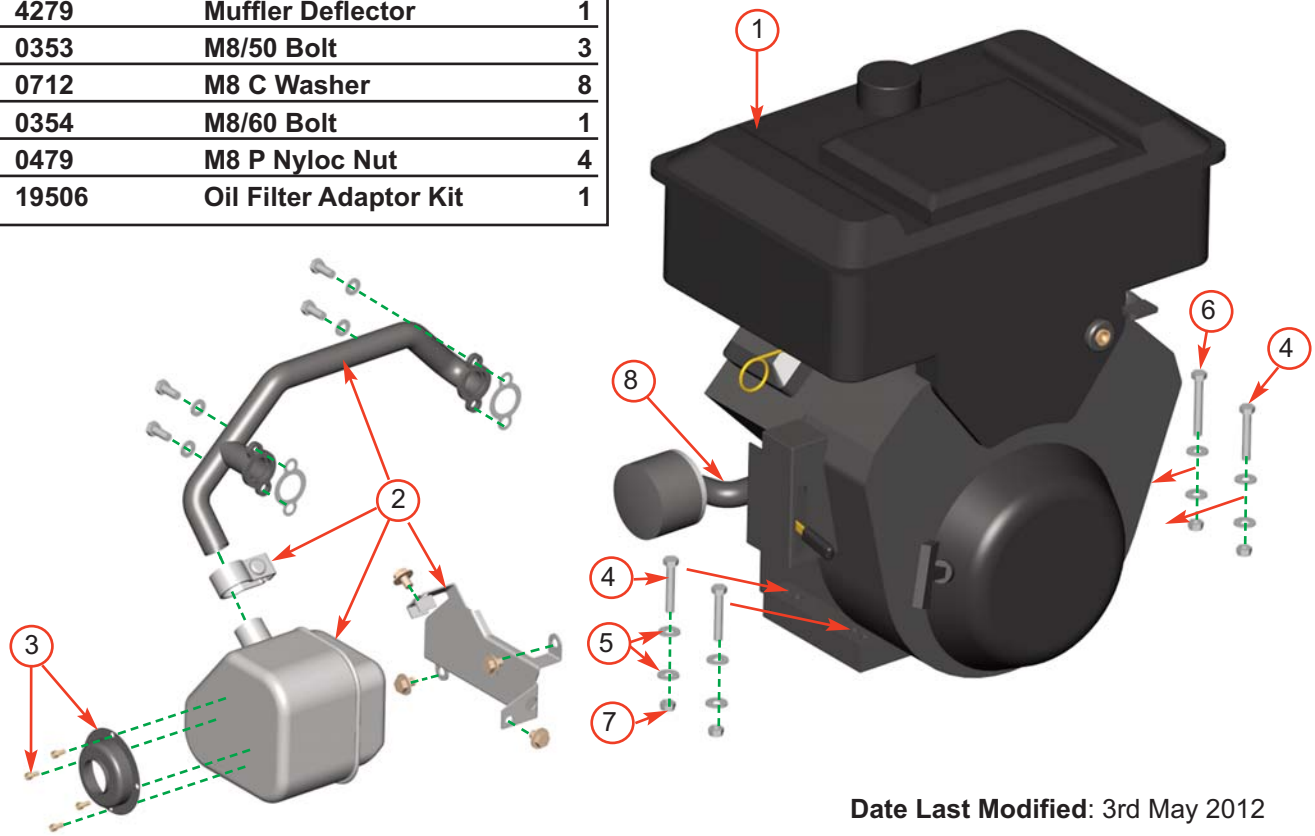


Date Last Modified: 3rd May 2012

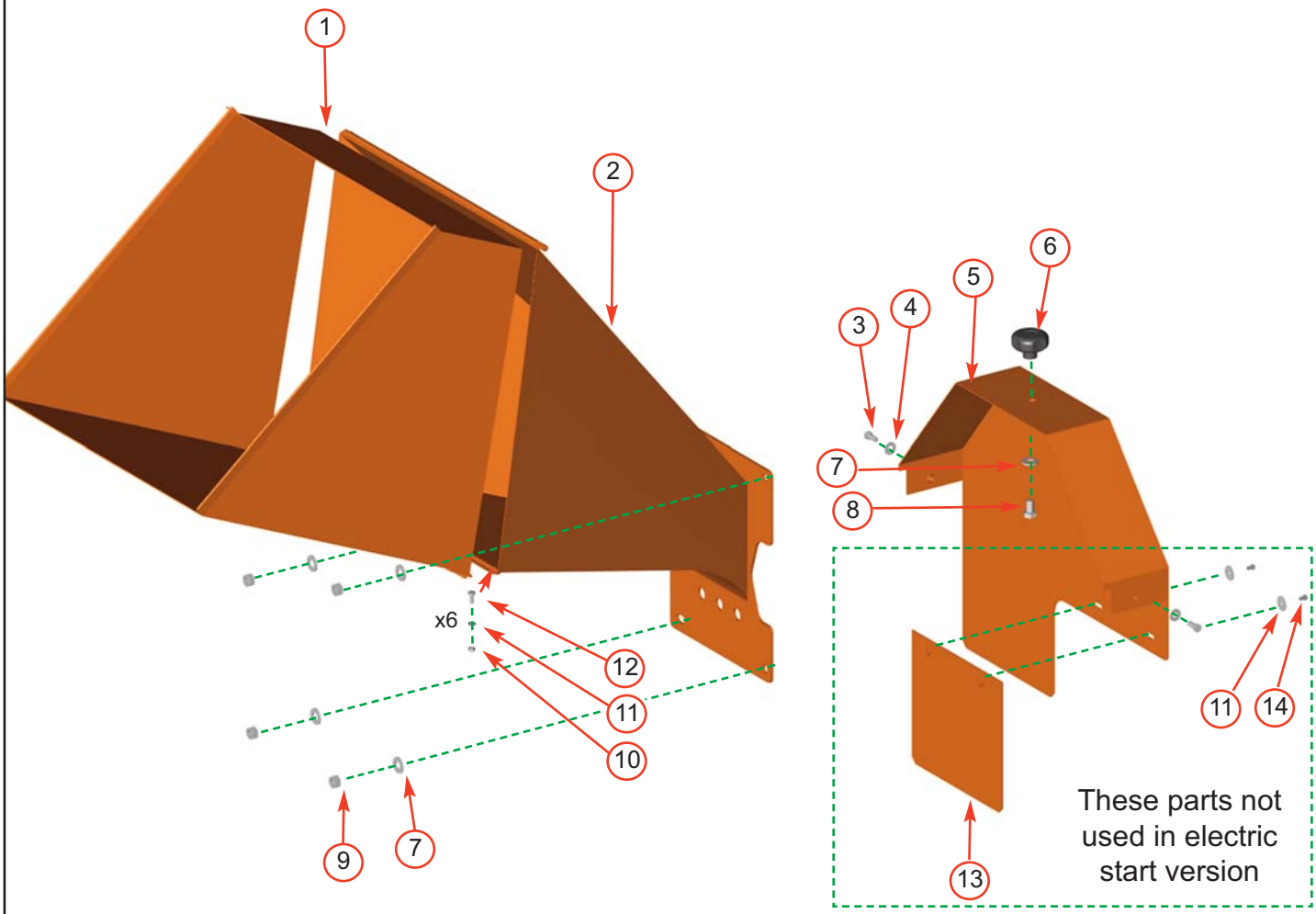
Item	Part No	Part Name	Q'ty
1	4220	Engine	1
2	4221	Muffler Kit	1
3	4279	Muffler Deflector	1
4	0353	M8/50 Bolt	3
5	0712	M8 C Washer	8
6	0354	M8/60 Bolt	1
7	0479	M8 P Nyloc Nut	4

ELECTRIC START MODELS

Item	Part No	Part Name	Q'ty
1	19504	Engine	1
2	19505	Muffler Kit	1
3	4279	Muffler Deflector	1
4	0353	M8/50 Bolt	3
5	0712	M8 C Washer	8
6	0354	M8/60 Bolt	1
7	0479	M8 P Nyloc Nut	4
8	19506	Oil Filter Adaptor Kit	1



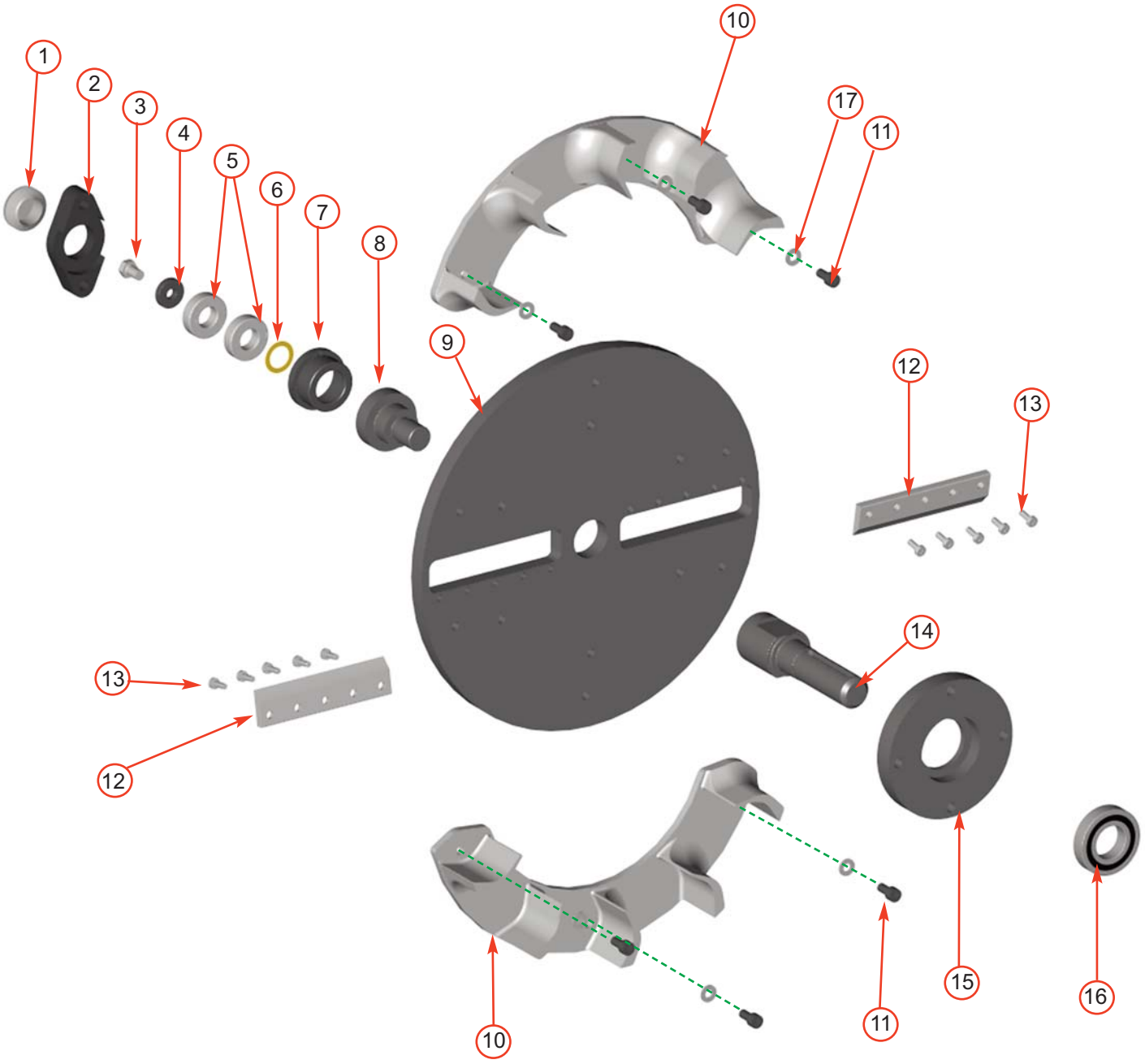
Date Last Modified: 3rd May 2012



Date Last Modified: 11th Oct 10

Item	Part No	Part Name	Q'ty
1	0693O	Feed Tray	1
2	0691O	Funnel	1
3	0346	M8/20 Bolt	4
4	0712	M8 C Washer	4
5	19486FO	Belt Guard	1
6	0361	Knob	1
7	0704	M12 C Washer	5

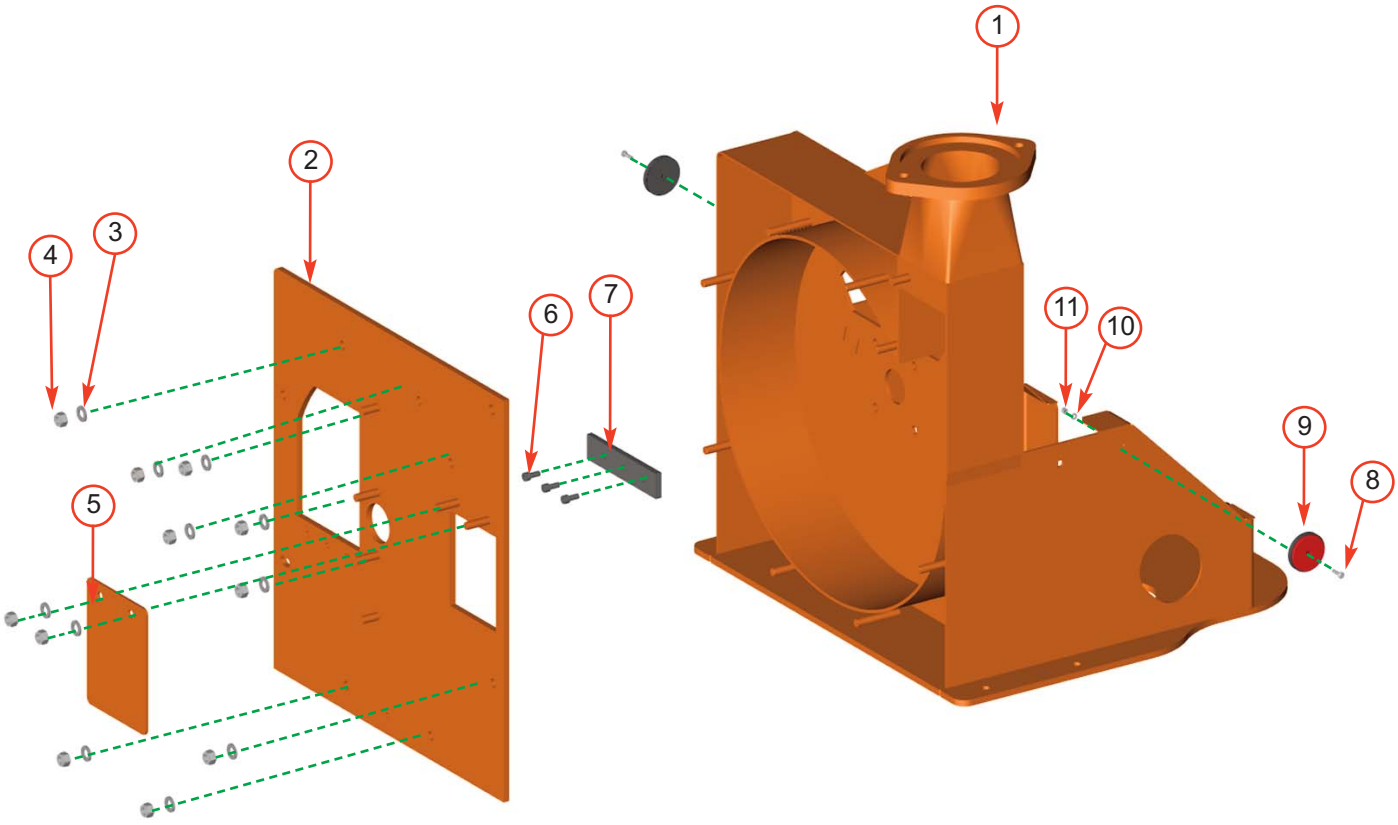
Item	Part No	Part Name	Q'ty
8	0318	M12/20 Bolt	1
9	0046	M12 Plain Nut	4
10	0391	M6 T Nyloc Nut	6
11	0709	M6 C Washer	8
12	1415	M6/16 Pan Pozi	6
13	1070FO	Belt Guard Fill In	1
14	0436	M6/12 Panhead Pozi	2



Date Last Modified: 20th Jan 2012

Item	Part No	Part Name	Q'ty
1	0959	Plastic Cap	1
2	0884MS	Front Bearing Housing	1
3	0318	M12/20 Hex Set	1
4	0415	Heavy Washer	1
5	0491	Bearing 6205	2
6	0796	20 Thou Shim	As Req'd
7	0883MCB	Bearing Cup	1
8	1611M	Nose Shaft	1
9	1083M	Rotor	1

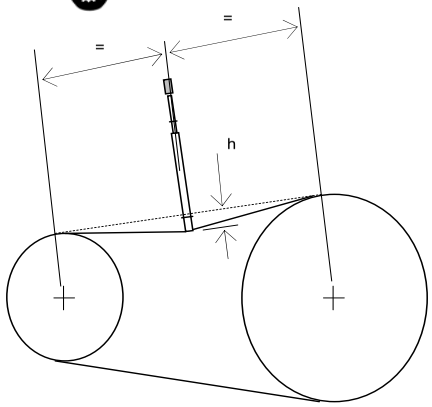
Item	Part No	Part Name	Q'ty
10	1571	Fan Section	2
11	0386	M10/30 Caphead	6
12	0071MH	Blade	2
13	0065	Blade Bolts	10
14	18947M	Rear Shaft	1
15	0676MCB	Rear Bearing Housing	1
16	0495	Bearing 6208	1
17	0781	M10 A Washer	6



Item	Part No	Part Name	Q'ty
1	19758FO	Rotor Housing	1
2	1096FO	Front Plate	1
3	0702	M12 A Washer	11
4	0045	M12 T Nyloc Nut	11
5	0524O	Access Cover	1
6	0345	M8/18 Socket Caps	3
7	0105MH	Anvil	1
8	0856	M5/20 Pan Pozi	2
9	18923	Reflector	2
10	0857	M5 A Washer	2
11	0236	M5 P Nyloc Nut	2

Date Last Modified: 23rd Jan 2012

TIMBERWOLF V-BELT TENSIONING DATA TABLE



METHOD:

1. SET THE DEFLECTION DISTANCE ON THE LOWER SCALE OF THE TENSION GAUGE SO THAT THE UNDERSIDE OF THE 'O'-RING EQUALS THE 'h' VALUE GIVEN IN THE TABLE BELOW

2. ENSURE THAT THE DEFLECTION FORCE SCALE IS ZERO'D BY PUSHING THE UPPER 'O'-RING ALL THE WAY DOWN

3. PLACE THE TENSION GAUGE IN THE CENTRE OF THE BELT SPAN AS SHOWN IN THE DIAGRAM LEFT

4. PRESS DOWNWARDS ON THE RUBBER BUFFER, DEFLECTING THE BELT UNTIL THE UNDERSIDE OF THE LOWER O'-RING IS LEVEL WITH THE BELT BEHIND (USE A STRAIGHT EDGE IF THERE IS ONLY 1 BELT)

5. TAKE THE READING FROM THE DEFLECTION SCALE OF THE TENSION METER (READ AT THE LOWER EDGE OF THE 'O'-RING) & COMPARE THIS VALUE WITH THAT GIVEN IN THE TABLE BELOW

6. TIGHTEN OR LOOSEN BELTS AS REQUIRED FOLLOWING PROCEDURE GIVEN IN THE OPERATOR'S MANUAL

TENSION GAUGES ARE AVAILABLE FROM TIMBERWOLF SPARES, QUOTING PART No. 18091

TIPS ON BELT TIGHTENING:

A) THERE WILL NORMALLY BE A RAPID DROP IN TENSION DURING THE RUN-IN PERIOD FOR NEW BELTS. WHEN NEW BELTS ARE FITTED, CHECK THE TENSION EVERY 2-3 HOURS & ADJUST UNTIL THE TENSION REMAINS CONSTANT

B) THE BEST TENSION FOR V-BELT DRIVES IS THE LOWEST TENSION AT WHICH THE BELTS DO NOT SLIP OR RATCHET UNDER THE HIGHEST LOAD CONDITION

C) TOO MUCH TENSION SHORTENS BELT & BEARING LIFE

D) TOO LITTLE TENSION WILL AFFECT THE PERFORMANCE OF YOUR MACHINE ESPECIALLY IN RESPECT OF NO-STRESS DEVICES

E) ENSURE THAT BELT DRIVES ARE KEPT FREE OF ANY FOREIGN MATERIALS

F) IF A BELT SLIPS - TIGHTEN IT!

	TW MODEL No.:			13/75G	18/100G	125PH	150DHB	150VTR	190TDHB	190TFTR 190TVGTR	350DHB(t)	PTO100	PTO150	S426 SHREDDER	S426TFTR SHREDDER	PTO S426 SHREDDER	SX200PHB(c)
ROTOR BELTS	Belt Mfr / Type			Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN
	Belt Pitch Designation			SPA	SPA	SPA	SPA	SPA	SPA	SPA	SPB	SPA	SPA	SPB	SPB	SPB	SPA
	Belt Length			900.0	1060.0	1060.0	1060.0	1060.0	1232.0	1232.0	2530.0	900.0	900.0	2120.0	2120.0	1700.0	1272.0
	Belt deflection	=	h	4.0	4.0	3.5	4.0	4.0	4.0	4.0	8.0	4.0	4.0	8.0	8.0	6.0	5.0
	Force reading (Kgf)	New belt		3.4 - 3.6	3.1 - 3.3	3.3 - 3.6	4.3 - 4.5	4.3 - 4.5	3.9 - 4.1	3.9 - 4.1	3.3 - 3.6	3.3 - 3.5	3.8 - 4.0	3.3 - 3.5*	3.3 - 3.5	6.5 - 6.9	1.9 - 2.1
		Used belt		3.0 - 3.2	2.8 - 3.0	2.8 - 3.1	3.7 - 4.0	3.7 - 4.0	3.4 - 3.6	3.4 - 3.6	2.9 - 3.1	2.9 - 3.0	3.3 - 3.5	2.9 - 3.1*	2.9 - 3.1	5.6 - 6.0	1.7 - 1.8
PUMP BELT	Belt Mfr / Type			N/A	N/A	Gates Super HC-MN	N/A	Gates Super HC-MN	N/A	Gates Super HC-MN	N/A	N/A	Gates Super HC-MN	N/A	Gates Super HC-MN	N/A	Gates Super HC-MN
	Belt Pitch Designation					SPA		SPA		SPA			SPA		SPA		SPA
	Belt Length					925.0		900.0		925.0			925.0		1060.0		950.0
	Belt deflection	=	h			4.0		4.0		4.0			4.0		4.0		4.0
	Force reading (Kgf)	New belt				1.9 - 2.0		2.3 - 2.4		2.3 - 2.4			2.0 - 2.2		2.7 - 2.9		3.1 - 3.3
		Used belt				1.7 - 1.8		2.0 - 2.1		2.0 - 2.2			1.8 - 2.0		2.3 - 2.5		2.7 - 2.9