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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 350DHB(t). 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 3 to 12. 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.

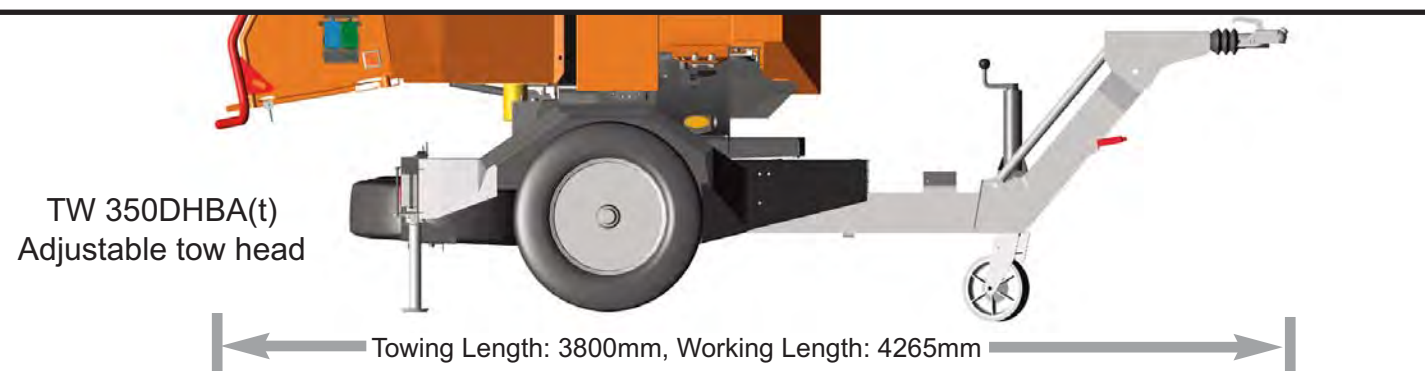
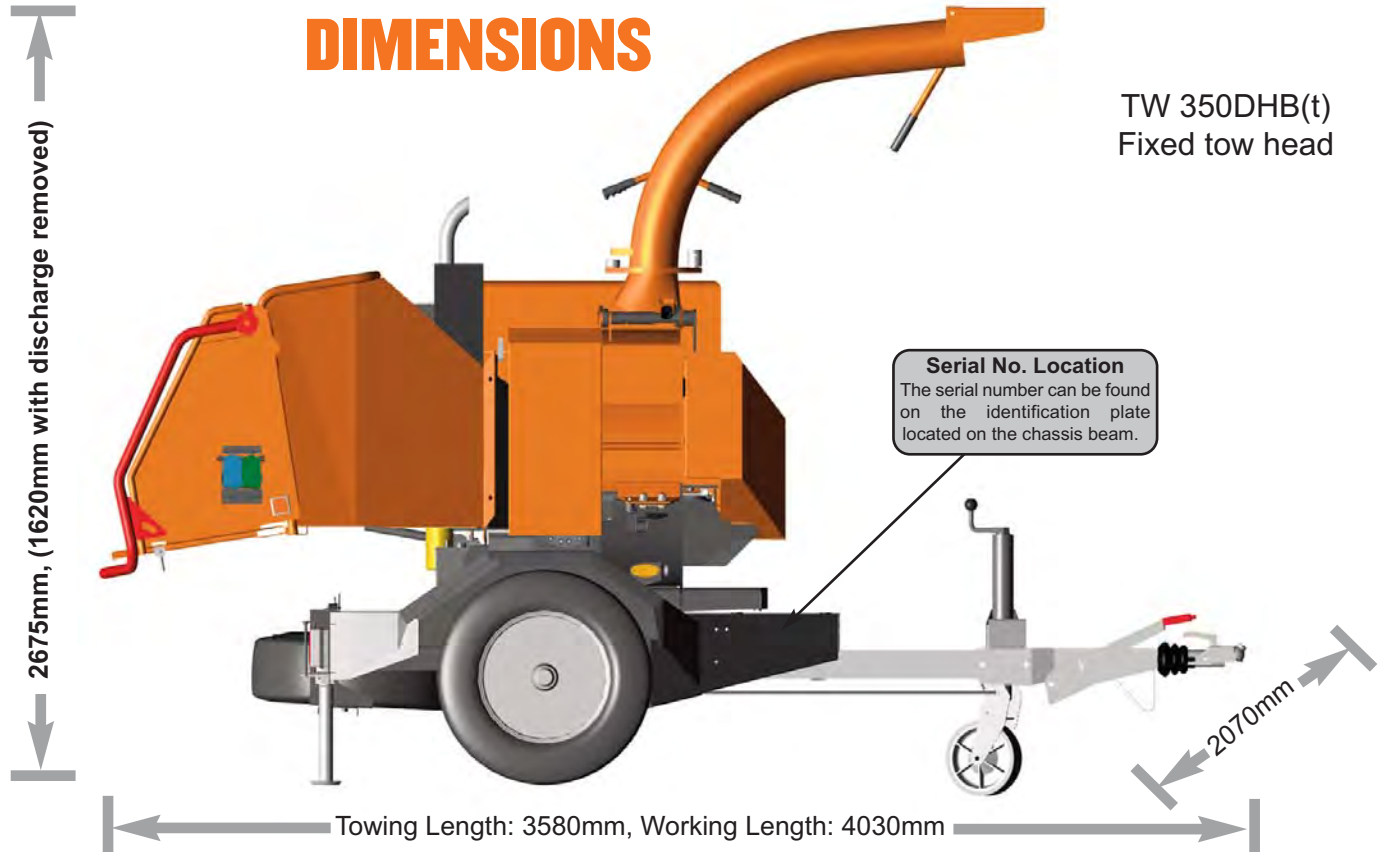


The Timberwolf TW 350DHB(t)

The Timberwolf TW 350DHB(t) / TW 350DHBA(t) brushwood chipper has a feed aperture 240mm high x 350mm wide and is designed to chip solid wood material up to 230mm (9") in diameter including timber branches, saplings and brushwood. It is capable of chipping up to 12 tonnes of brushwood per hour.

The TW 350DHB(t) /TW 350DHBA(t) is powered by an on-board air cooled diesel engine and feed to the chipping chamber is via twin hydraulically powered rollers. The chipping chamber is turntable mounted on a T-pole chassis with an integral braking system designed to allow the machine to be towed to the place of work on the public highway.

DIMENSIONS

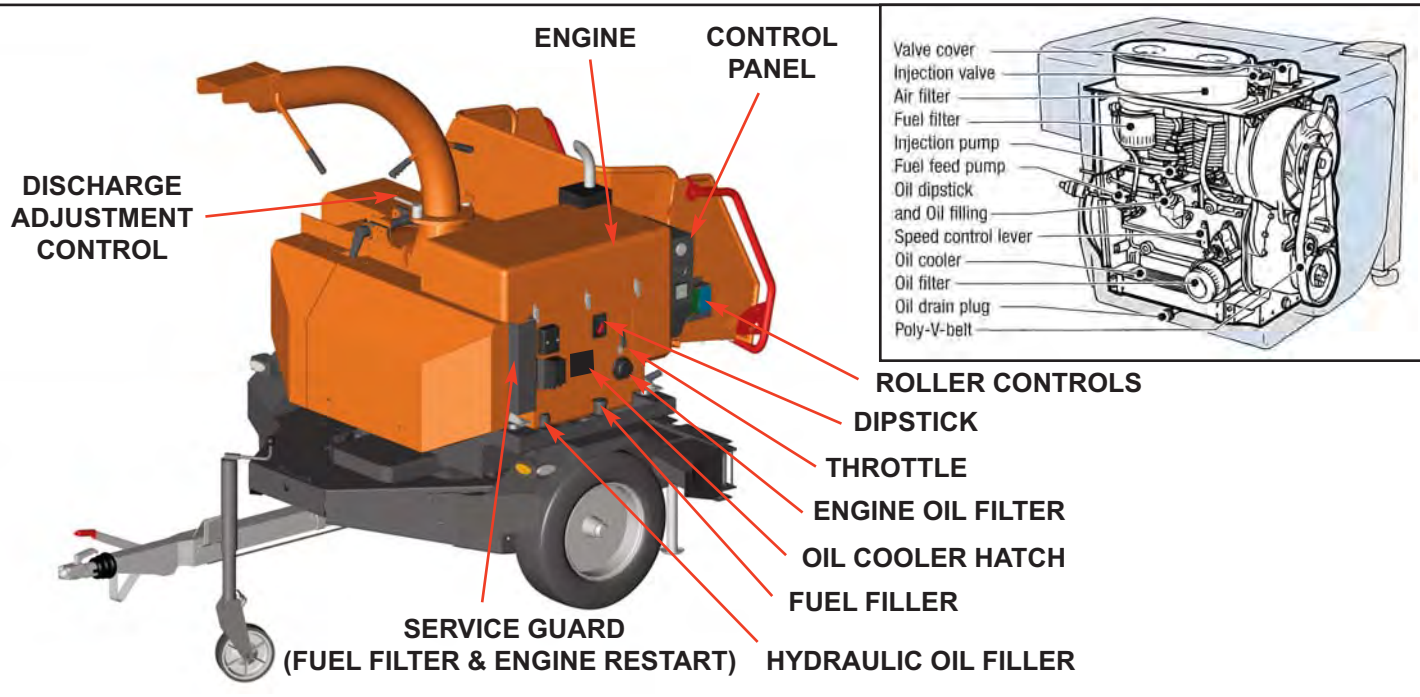
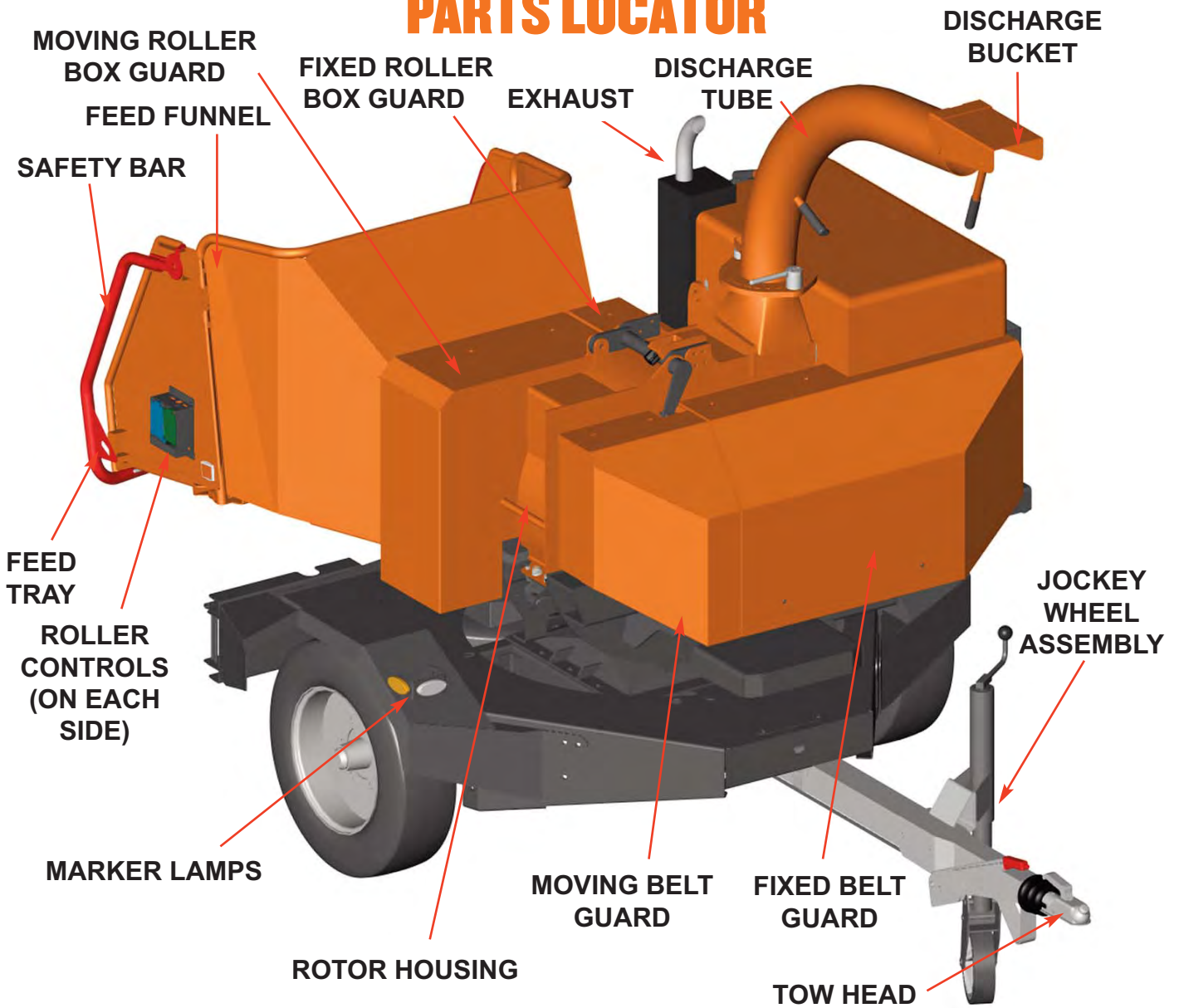


TIMBERWOLF TW 350DHB(t) & TW 350DHBA(t) SPECIFICATION

Engine type	<i>Hatz air cooled 4-cyl 4L41C silent pack diesel engine</i>	Roller feed	<i>Twin series hydraulic motors</i>
Maximum power	<i>47kW (64hp)</i>	Maximum diameter material	<i>230mm (9")</i>
Cooling method	<i>Air cooled</i>	Fuel capacity	<i>38 litres</i>
Overall weight	<i>with fixed head: 2,270kg with adjustable head: 2,320kg</i>	Hydraulic oil capacity	<i>20 litres</i>
Starting method	<i>Electric</i>	Material processing capacity	<i>up to 12 tonnes/hr</i>
		Fuel type	<i>Diesel</i>

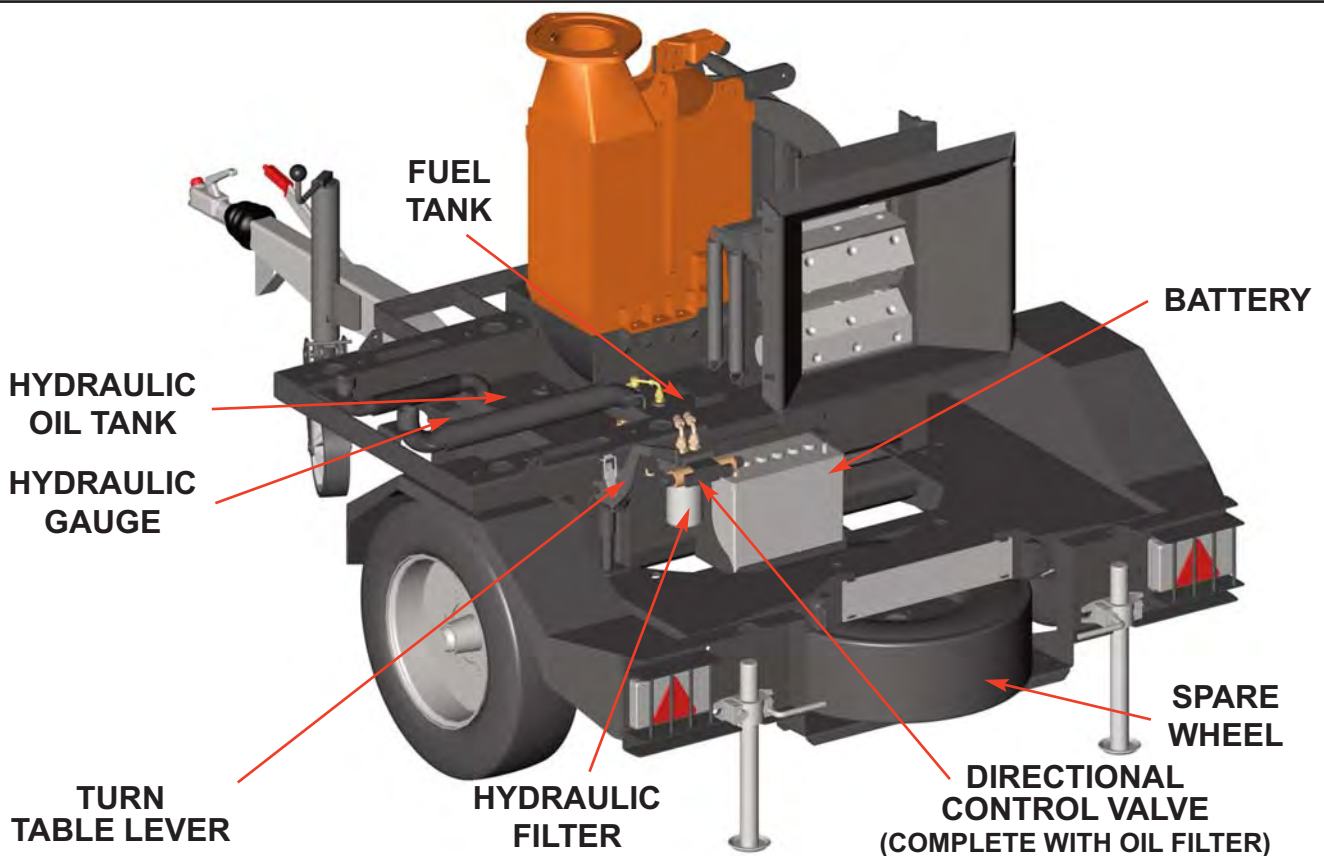
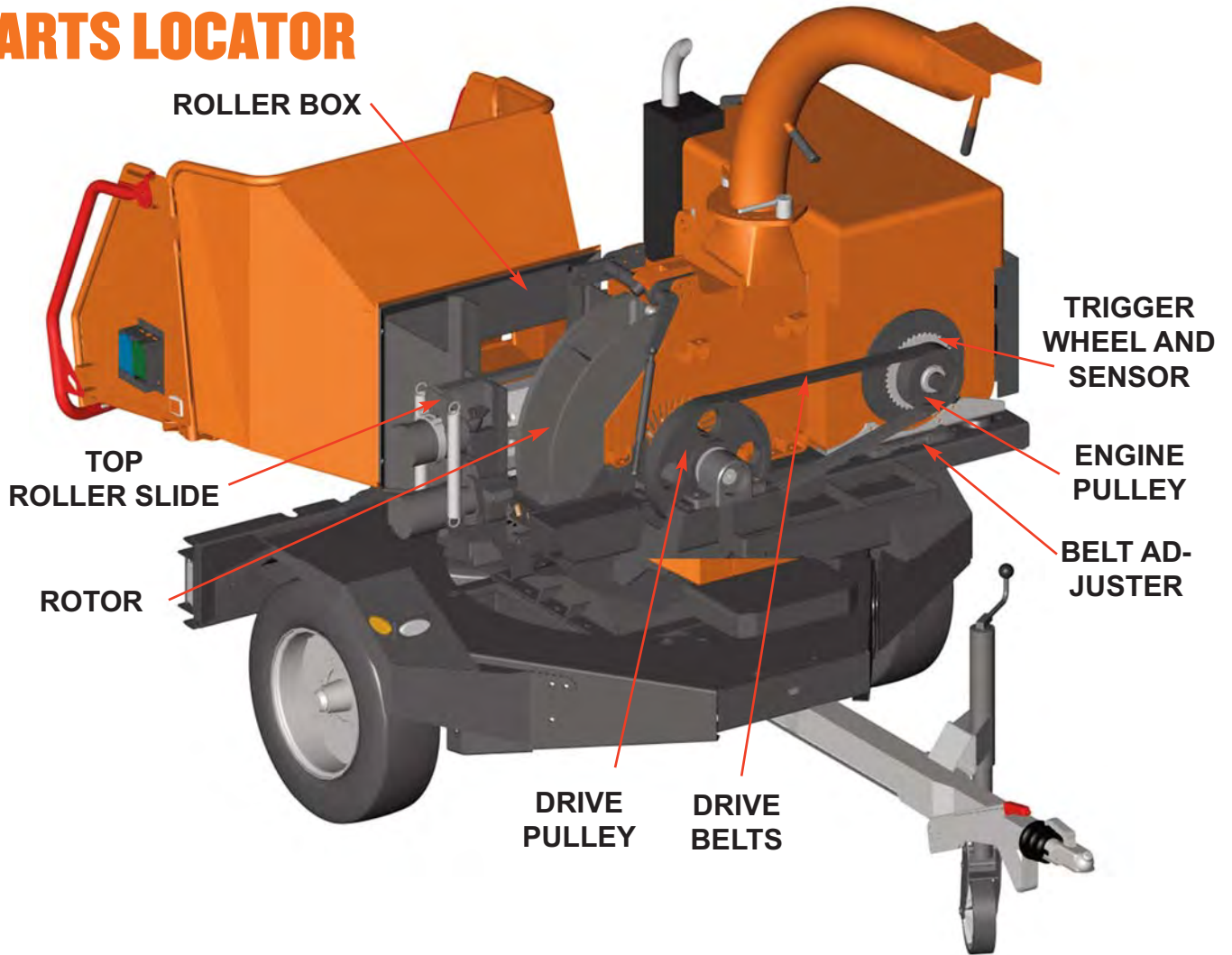


PARTS LOCATOR





PARTS LOCATOR



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.



Close fitting heavy-duty non-snag clothing.



Work gloves with elasticated wrist.



Face mask if appropriate.



Steel toe cap safety boots.



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 brush may push you to one side causing danger. Badly twisted brush 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 chipper ignition key 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.

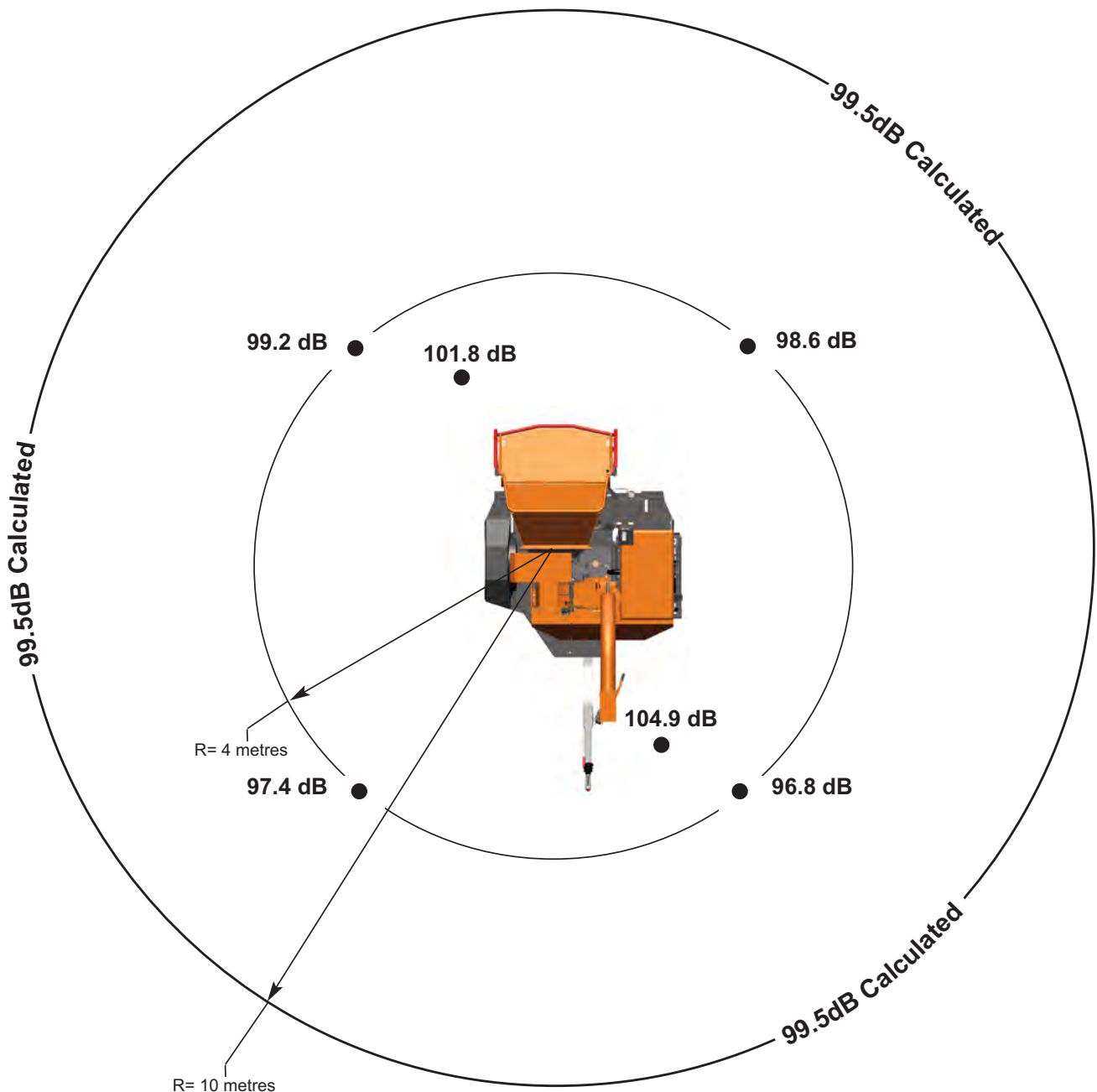
DO NOT use the chipper inside buildings.

NOISE TEST

MACHINE: TW 350DHB(t) & TW 350DHBA(t)

NOTES: Tested chipping 120mm x 120mm 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: 122dB (A)

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



SAFE TRANSPORTATION

WARNING

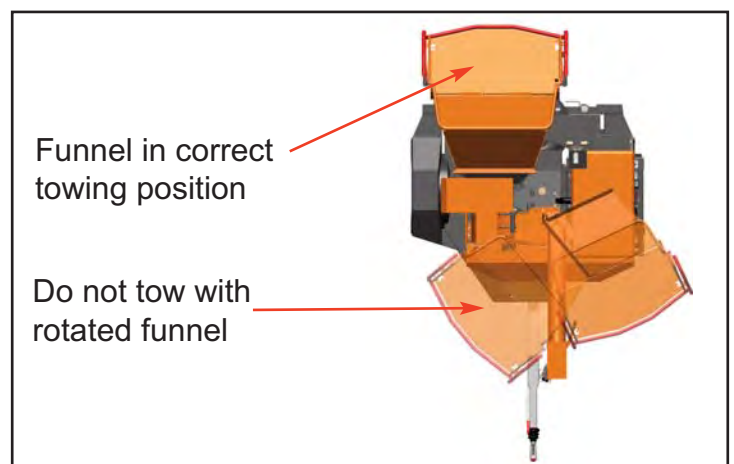
DO NOT RIDE ON THE CHIPPER WHEN IT IS BEING TOWED.



- 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 clamps are tight before travelling.
- KEEP tyre pressures inflated to 4.8 bar or 70 psi.
- CHECK wheel nuts are tightened to 240lbs ft (325Nm).
- CLEAR loose chippings and debris from the machine before travelling.
- ENSURE the feed funnel is closed and the catches are properly engaged before travelling.

HITCHING ONTO THE TOW BALL

- CHECK the 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 the vehicle so the ball hitch is directly below the tow head.
- ATTACH the breakaway cable to a strong point on the vehicle, not the ball hitch.
- GRASP handle on tow head and pull up handle until it catches and remains in the 'up' position.
- WIND the 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 folds into its tow position.
- 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.
- CHECK turntable is located in the 'tow' position and the safety catch is locked in position. **TOW POSITION IS ALWAYS WITH THE FUNNEL IN-LINE WITH TOWING VEHICLE.**
- CHECK prop stands are fully retracted.



UNHITCHING THE CHIPPER

- DISCONNECT the electrical cable from the vehicle socket.
- RELEASE breakaway cable.
- WIND the jockey wheel assembly anticlockwise until it just starts to take the weight of the chipper.
- GRASP the tow head handle and pull up until it catches and remains in the 'up' position.
- APPLY the handbrake.
- 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.
- LOWER the two prop stands to stabilise the chipper.

WARNING

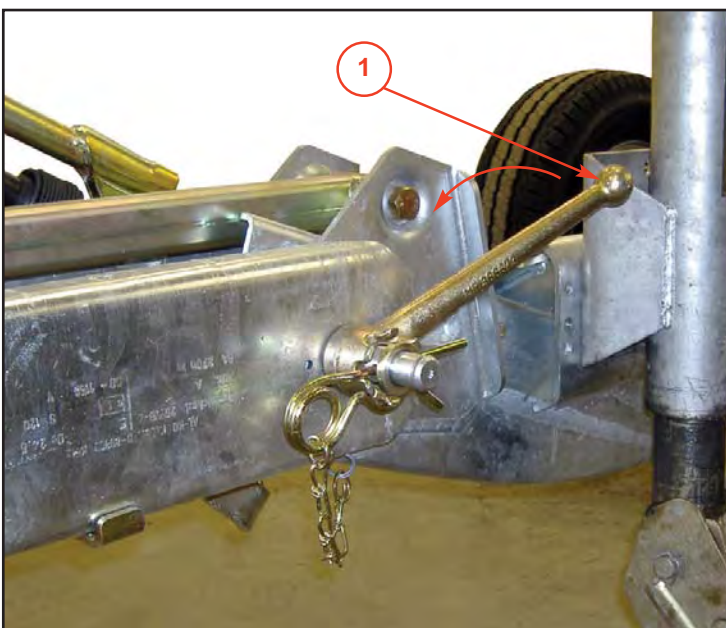
DO NOT UNHITCH ON AN INCLINE AS THE AUTO- REVERSE BRAKES MAY BE ACTIVATED AND THE CHIPPER WILL ROLL BACKWARDS.



ADJUSTING THE TOWHEAD HEIGHT

The TW350DHB (t) A chipper has the ability to adjust the towhead height to correspond with the vehicles towing point.

The preferred towing angle of any chipper is with the chassis level to the ground. The adjustable head has the ability to move between 300mm from the ground to 875mm giving an overall adjustment of 575mm.



The towhead latch and handbrake fundamentally work the same as a fixed standard towhead, however the front section of the head is retained in position via a locking ring and single clamp handle.

To adjust the height the locking handle located on the side of the head (1) is turned in an anticlockwise direction to allow for the locking ring to disengage from its apposing ring. An internal damper is fitter to support the heads weight allowing both hands free to adjust the height. Once the desired height has been achieved the locking handle is turned clockwise until tight. The latching of the hitch is as normal

as is the fitting of the light plug and breakaway cable as outlined in the 'Hitching onto the tow ball' section on page 8 .



DELIVERY

All Timberwolf TW 350DHB(t) & TW 350DHBA(t) 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.

MANUAL CONTROLS

Roller control boxes are located on the side of the feed tray and in the top of the guards (see Parts Locator on page 3). Their function is to control the feed rollers, which draw material into the machine. **They do not control the main rotor. The rotor turns all the time the engine is running.**

GREEN BUTTON = Forward feed - Push the button once - this activates the rollers and will allow you to start chipping (if the rotor speed is high enough).

RED SAFETY BAR = This is the large red bar that surrounds the feed tray and side of the feed funnel. The bar is spring loaded and connected to a switch that will interrupt the power to the rollers. The switch is designed so that it only activates if the bar is pushed to the limit of its travel. The rollers stop instantly, but can be made to turn again by pressing either the **GREEN FEED** or **BLUE REVERSE** control buttons.

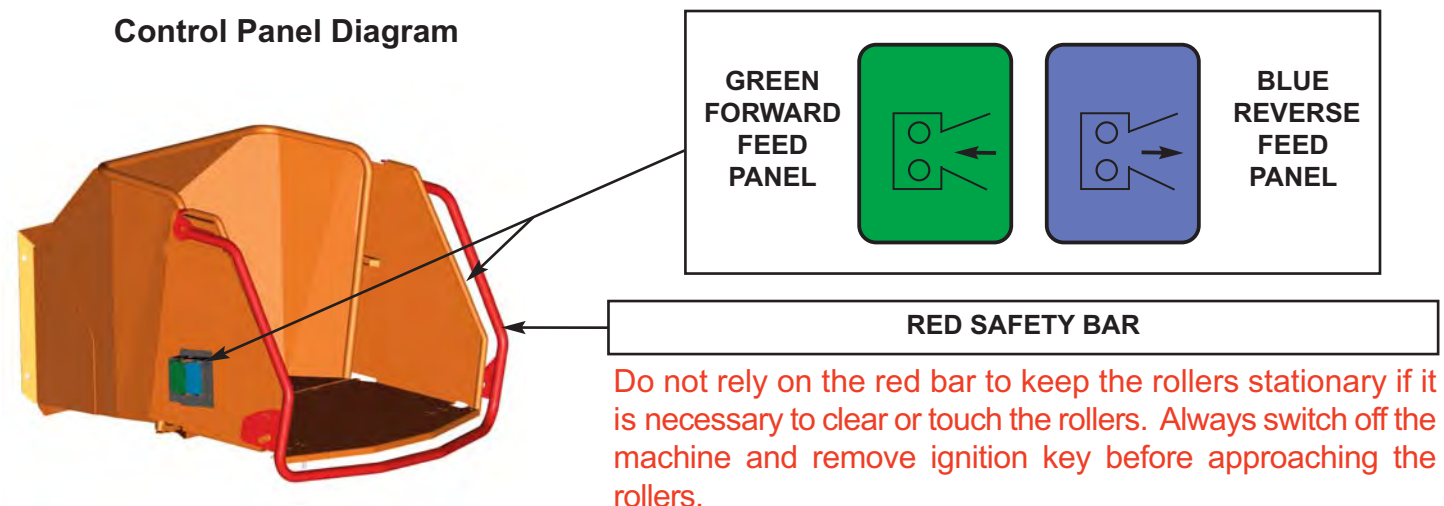
WARNING

DO NOT remove, jam, disable, bypass, override or otherwise impede the effectiveness of the red safety bar.



BLUE BUTTON = Reverse feed - allows you to back material out of the rollers. The rollers will only turn in reverse as long as you keep pressing the button.

Control Panel Diagram



Do not rely on the red bar to keep the rollers stationary if it is necessary to clear or touch the rollers. Always switch off the machine and remove ignition key before approaching the rollers.

AUTO CONTROLS

The engine management unit controls the feed rate of the material going into the chipping chamber. If the engine speed is below the predetermined level, the engine management unit will not allow the feed rollers to work in the forward “infeed” direction, or the reverse direction, until the rotor speed rises above the predetermined level. At this point, the feed rollers will start turning without warning. When applicable the roller whilst chipping will reverse a small distance to clear any blockages or attempt to break awkward joints. When this action is repeated because blockage or joint is not cleared, manually operate the reverse button on the control box to clear the blockage or remove joint to be cut with a saw.

EMERGENCY STOPPING

In the event of an emergency activating the red safety bar will stop the rollers immediately. To restart the rollers, just push the green forward button or blue reverse button.

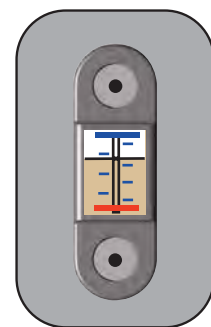
DAILY CHECKS BEFORE STARTING

- LOCATE the machine on firm level ground.
- CHECK machine is well supported and cannot move.
- CHECK turntable locked in position and handle secured.
- 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 tray is in up position - to prevent people reaching rollers.
- CHECK controls as described on page 13.
- CHECK (visually) for fluid leaks.
- CHECK fuel and hydraulic and engine oil levels.

For parts location see diagrams on pages 3 & 4.

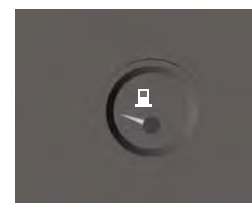
HYDRAULIC OIL LEVEL INDICATOR

This can be viewed via the level gauge on side of the hydraulic tank (see parts locator on page 4). Maximum and minimum marks are provided.



FUEL LEVEL INDICATOR

The fuel level can be seen via the level gauge on the side of the engine. To illuminate gauge turn key to position 1 (see engine controls). Fill with fuel to full position on gauge, do not overfill!

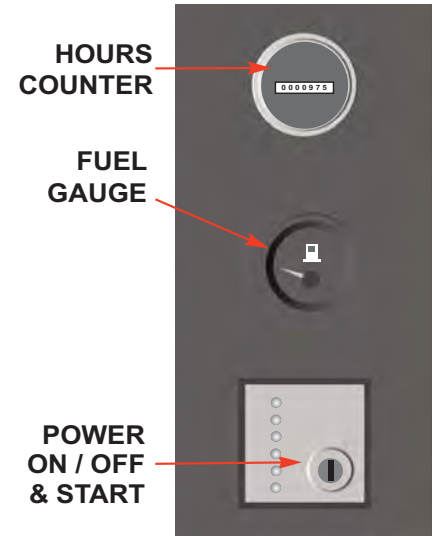
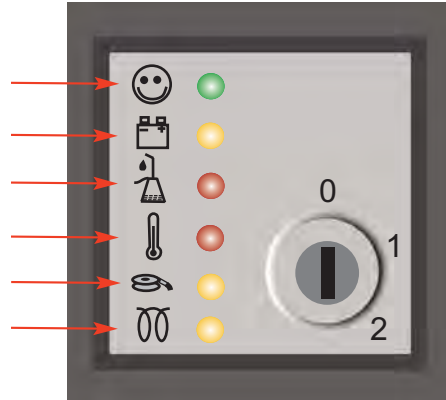




ENGINE CONTROLS

The engine controls are in two locations. The engine ignition is on the control panel at the engine end, and the throttle lever is on the side of the engine (see parts locator on page 3).

1. Engine operational indicator
2. Battery charge indicator
3. Oil pressure warning
4. Engine temperature warning
5. Air cleaner maintenance warning
6. Engine pre-heat lamp



STARTING THE ENGINE

- ENSURE throttle lever is set in the idle position (tortoise).
- INSERT key and turn to position 1.
- DIAGNOSTIC lamps flash 3 times, engine operation (1) and battery charge (2) lamps will continue to flash and red oil pressure lamp will stay illuminated.
- CHECK fuel level gauge.
- TURN key to position 2 to start engine, release immediately engine begins to run.
- GREEN engine operation lamp remains illuminated while engine is running, all other lamps must go out immediately.
- WARNING - diagnostic lamps will illuminate if a fault is detected while engine is running. Switch off engine immediately.

Note: Automatic shutdown may occur when fault is detected. Consult engine manufacturers handbook for fault analysis and correction procedure.

CONTROLLING ENGINE SPEED



The engine has two throttle settings, idle and fast. These are controlled by the throttle lever on the engine. Moving the lever towards the 'Hare' on the pictogram will increase engine speed while moving it towards the 'Tortoise' will decrease the engine speed. Always stop and start engine with throttle lever in the idle position.



STOPPING THE ENGINE

- ADJUST the throttle lever to idle position.
- ALLOW engine revs to drop and run at idle speed for 1 minute.
- TURN key to position 0. The engine will continue to run for a short time before stopping.

WARNING

Do not open or remove any guards, attempt any adjustments or maintenance until engine has come to a complete stop.



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 350DHB(t) is fitted with 4 blades 180 mm (7") long. They are 100 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.

BEFORE USING THE CHIPPER

IT IS ESSENTIAL TO CARRY OUT THE FOLLOWING TESTS to check safety equipment - this sequence of tests will only take a few seconds to carry out. We recommend that these tests are carried out daily. Observing the function as described will confirm that the safety circuits are working correctly. This is also a good opportunity to remind all operators of the control and emergency stop systems. Tests should be carried out on both control boxes (located on each side of the funnel).

WITH THE ENGINE RUNNING AT FULL SPEED



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.
- RELEASE the catches on the feed tray and lower.
- ENSURE throttle lever is moved to fast (hare) position.
- PRESS the green control button. The rollers will commence turning.
- STAND to one side of the feed funnel.
- PROCEED to feed material into the feed funnel.



JACKING POINT / WHEEL CHANGE

WARNING

NEVER RAISE THE CHIPPER OFF THE GROUND WITH A JACK POSITIONED UNDER THE AXLE, DROP ARM OR CHASSIS RAIL AS THE MACHINE WILL BECOME UNSTABLE AND TIP. WHILST SUPPORTED OFF THE GROUND NEVER POSITION ANY PART OF YOUR BODY UNDER THE CHIPPER. THIS WILL ENDANGER ANY PERSON IN CLOSE PROXIMITY AND MAY RESULT IN INJURY OR DEATH.



When the chipper needs any service work that requires you to position yourself under the chipper, appropriate supports **MUST** be used. To allow the supports to be installed use the rear prop stand pad as the jacking points. Never use the axle or drop arm to raise the chipper as it will become unstable and tip up. Position the support at the rear of the chassis rail (as shown in picture below).

When the chipper is required to be raised off the ground i.e. to change a wheel, the appropriate type and correct rating jack must be used. It must be positioned under the rear prop stand on the same side as the wheel to be changed.

- Place the chipper on firm level ground.
- Lower the jockey wheel to take the weight at the front of the chipper
- Remove the spare wheel clamp and slide the spare wheel from its dock.
- Chock opposite wheel to prevent chipper rolling whilst loosening and removing wheel.
- Crack the wheels nuts off the required wheel. **Do not remove them completely.**
- Place a jack under the pad of the prop stand on the same side as the wheel to be removed.
- Raise the chipper off the ground allowing enough clearance to fit a fully inflated tyre/wheel.
- Remove all wheel nuts and then remove the wheel from hub.
- Place new wheel on hub - ensure new wheel/tyre configuration is correct specification.
- Replace all the wheel nuts to hand tight but do not fully tighten them with the chipper off the ground as this may cause the chipper to become unstable.
- Lower the chipper down onto the ground and remove jack.
- Use an appropriate torque wrench and tighten the wheel nuts to 240lbs ft (325Nm) in a diagonal fashion until the entire set of wheel nuts are of the correct tension.
- Check wheel nut torque after the first 20 miles then every 1000-1500 miles thereafter.

IF IN DOUBT HAVE A QUALIFIED PERSON CHECK WHEEL INSTALLATION AND CORRECT NUT TENSION AS SOON AS POSSIBLE.



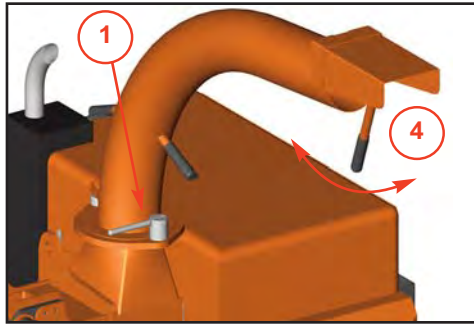


DISCHARGE CONTROLS

Controlling the discharge is an essential part of safe working.

ROTATION

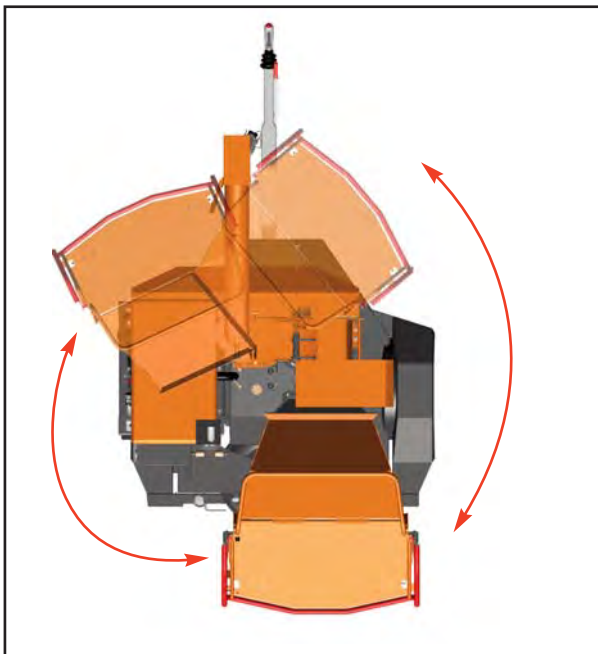
1. Slacken nut using integral handle.
2. Rotate tube.
3. Retighten nut.



BUCKET ANGLE

4. Adjust the bucket to the desired angle using the handle provided.

OPERATING THE TURNTABLE



For easier accessibility the chipper can be fed through 360° on the road chassis. Locate the turntable lever (see parts locator on page 4).

To position turntable release locking handle catch, push down on the handle and rotate the chipper to the position required. The handle is spring loaded and will drop in the next locking detent if not held down. Keep handle lowered until desired position is reached, then release and allow chipper to lock into the nearest locking detent. Reattach locking handle catch. Remember to adjust your discharge tube (as described above) accordingly.

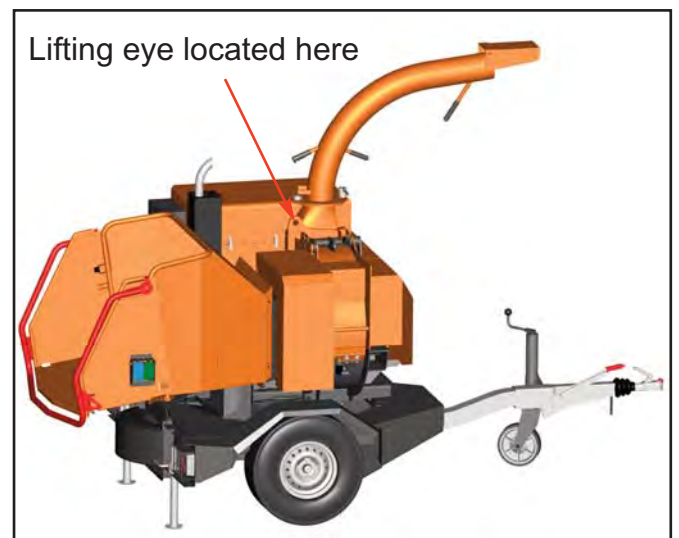
Always return the turntable to the tow position (funnel facing back) before hitching/towing.

Note: feed tray must be closed while rotating funnel/tray through towhead area (see diagram).

SAFE LIFTING OF THE CHIPPER

To safely lift chipper firstly securely attach large Dee shackle rated at 4 tonnes to BS 6994 1998 in top eye and lift vertically using 4000kg rated strop. When being raised/lowered the machine should remain level, to guide machine attach rope to tow head.

DO NOT ALLOW ANYONE TO STAND DIRECTLY UNDER THE CHIPPER.





CHIPPING

Wood up to 230 mm diameter can be fed into the feed funnel. Put the butt end in first and engage it with the feed roller. The hydraulic feed rollers will pull the branch into the machine quite quickly. Large diameter material will have its feed rate automatically controlled by the engine management unit.

Sometimes a piece of wood that is a particularly awkward shape is too strong for the feed rollers to break. This will cause the top roller to either bounce up and down on the wood or both rollers to stall. When installed, the 'Auto Reverse' will back out the material a short distance then switch forward. If the awkward piece is not broken by the rollers press the **BLUE REVERSE** button until the material has been released. Pull the material out of the feed funnel and trim it so the chipper can handle it.

Both feed rollers should always turn at the same speed. If one or both rollers stop or suddenly slow down it may be that a piece of wood has become stuck behind one of the rollers. If this occurs press the **BLUE REVERSE** button then remove wood. Reposition the wood to feed into the funnel or use a saw to cut into smaller sections. If the rollers continue to stall in the 'forward feed' or 'reverse feed' position push the **RED STOP BAR**, turn engine off, remove ignition key and investigate.

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 material into a blocked machine may cause damage and will make it difficult to clear.

If the chipper becomes blocked proceed as follows:

- STOP the chipper and remove key.
- REMOVE discharge tube.

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.



- CHECK that the discharge tube is clear.
- OPEN rotor housing by removing the 2 retaining nuts.
- REMOVE as many chips as possible (the rotor housing does not have to be completely clear to continue).
- SHUT the rotor housing and replace both bolts securely. Torque to 60lbs ft (80Nm).
- REPLACE the discharge tube.
- RESTART the engine.

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.

NOTE

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.



**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	50 Hours	100 Hours	500 Hours	1 Year
Check engine oil - top up if necessary (10W-30).	✓				
Check engine oil filter	✓				
Check for engine oil / hydraulic oil leaks.	✓				
Check feed funnel, feed roller cover, access covers, engine covers and discharge unit are securely fitted.	✓				
Check blades.	✓				
Check tyre pressure is 4.8 Bar (70 psi).	✓				
Check for tightness all nuts, bolts and fastenings making sure nothing has worked loose.		✓			
Check tension of main drive belts (and tension if necessary).		✓			
Grease the roller box slides.		✓ OR AS REQUIRED - SEE PAGE 24			
Grease the rotor bearings.		✓ OR AS REQUIRED - SEE PAGE 24			
Grease the roller spline and bearings.		✓ OR AS REQUIRED - SEE PAGE 24			
Grease the discharge flange.		✓			
Check anvils for wear.		✓			
Check air filter element.			✓		
Check safety bar mechanism.			✓		
Check fuel pipes and clamp bands.			✓		
Check battery electrolyte level.			✓		
Check for loose electrical wiring.			✓		
Replace hydraulic oil filter - every year or 100 hours after service or repair work to the hydraulic system.			✓	OR	✓
Replace hydraulic oil.			✓	OR	✓
Remove engine covers, blow out any dust/leaf debris on: Cylinder cooling fins, alternator & belt area, oil cooler					
Replace fuel pipes and clamp bands.					
Change engine oil.					
Replace engine oil filter cartridge.					
Check valve clearance.					
Replace anvil when worn.					
Road brake maintenance.					
Axle maintenance.					
Tow head maintenance.					

REFER TO YOUR ENGINE
SUPPLIERS MANUAL

RETURN TO DEALER FOR ANVIL CHANGE

RETURN TO DEALER

REFER TO SUPPLIERS
INSTRUCTION SHEET

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.

SAFE MAINTENANCE

ALWAYS IMMOBILISE THE ENGINE BEFORE UNDERTAKING ANY MAINTENANCE WORK ON THE CHIPPER BY REMOVING THE KEY AND DISCONNECTING THE BATTERY.

- 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 be used for disassembly.
- CLEAN machines are safer and easier to service.
- AVOID contact with hydraulic oil.

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.

BATTERY REMOVAL AND MAINTENANCE

WARNING

Refer to the battery safety section on pages 20-21.



1. Remove battery retainer.
2. Remove negative, then positive battery leads.
3. Remove battery.

When reinstalling the battery apply a small smear of Vaseline to the terminals.

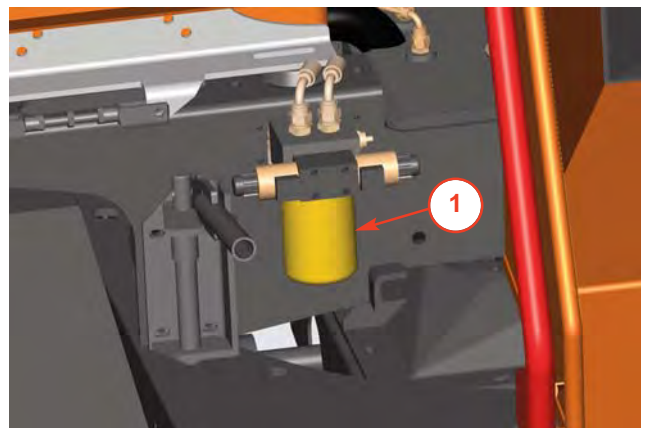
CHANGE HYDRAULIC OIL AND FILTER

WARNING

Use plastic gloves to keep oil off skin and dispose of the used oil and filter in an ecologically sound way. The oil and filter should be changed once a year or at any time it becomes contaminated. Before starting check that the chipper is standing level and brush away loose chips



1. Unscrew yellow filler (a filter strap may be required to loosen the filter).
2. Apply a smear of oil onto the seal of the new filter.
3. Screw new filter on.
4. Hand tighten only (do not use strap to tighten).





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 safety 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 industrial waste (be aware of the possible existence 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 escape from 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

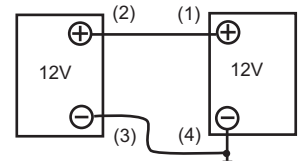
- the positive output of the charger. Connect the negative terminal accordingly.
- Switch on the charger only after the battery has been connected, and switch off the charger first after charging has been completed.
- Charging current-recommendation: 1/10 ampere of the battery capacity Ah.
- Use a charger with a constant charging voltage of 14.4V for re-charging.
- If the acid temperature rises above 55° Celsius, 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

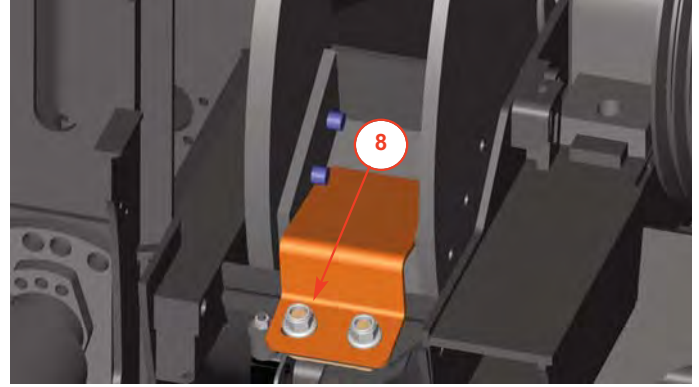
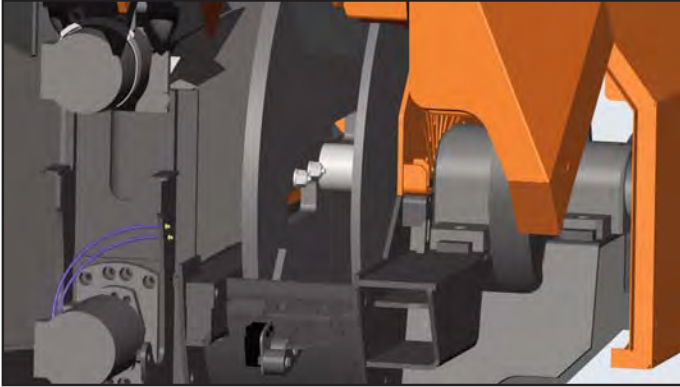
- Charge the battery; store in a cool place or in the vehicle with the negative terminal disconnected.
- Check the battery state of charge at regular intervals, and correct by recharging when necessary (cf. section 4).



CHANGE BLADES

WARNING

Wear riggers gloves for the blade changing operation.



1. Turn off the chipper and remove the key.
2. Turn the discharge tube to point towards the front of the machine.
3. Remove the negative battery lead.
4. Open the feed tray.
5. Using a 24mm spanner remove the 2 M16 nuts clamping the rotor housing shut.
6. Carefully lift the rotor housing until it rests on its stop.
7. Using the fan blades turn the rotor so the blades to be changed are in a convenient position.
8. Place rotor lock under the head of the cap screw then loosely fit the nylock nuts as shown
9. Brush away all dirt and debris from the rotor and blades.
10. With a 24mm spanner undo the two nyloc nuts that are holding each blade in place.
11. Grasp the blade by the flat edges while wearing heavy gloves.
12. Withdraw the blade from the rotor.
13. If the blades are being rotated and not replaced, do not remove the blade bolts.
14. If the blades are to be renewed, withdraw the bolts completely.
15. Clean the back surface of the blade, blade bolts and blade area of the rotor thoroughly before reseating blades. **The blades must not have any material underneath them when tightened. If they are not flat and tight they will become loose quickly.**
16. Reassemble the blades, bolts, washers and nuts in the order removed. Use only genuine Timberwolf nuts and washers, as they are of a higher grade than normally stocked at fastener factories. Failure to use the appropriate grade nuts or washers may result in damage, injury or death. The use of genuine Timberwolf blades and bolts is recommended.
17. Apply a smear of anti seize compound (copper grease) to the bolt threads and back face of the nuts.
18. **A calibrated torque wrench must be used to tighten the bolts to a torque setting of 125 lbs ft (170Nm).**
19. Repeat this procedure for the adjacent blade.
20. Remove rotor lock. Turn rotor ½ turn and replace the lock. Repeat steps 9 - 17.
21. Remove rotor lock
22. Slowly lower the rotor housing to its original position, refit the M16 nuts and tighten both to 60 lbs ft (80Nm).
23. Close the feed tray.

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.





CHECK FITTINGS

The TW 350DHB(t) / TW 350DHBA(t) 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 settings listed 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 lbft	Torque Nm
Blade Bolts	M16	Fine	24 mm Hex	125	170
Rotor Housing Clamp Bolts	M16	Standard	24 mm Hex	60	80
Hyd Motor Retaining Cap Screws	M12	Standard	10 mm Allen Key	60	81
Roller Box Retaining Bolts	M16	Standard	24 mm Hex	105	140
Rotor Shaft Retaining Screws	M16	Standard	14 mm Allen Key	105	140
Funnel Retaining Nuts/Bolts	M16	Standard	24 mm Hex	105	140
General	M8	Standard	13 mm Hex	17	23
General	M10	Standard	17 mm Hex	34	46
General	M12	Standard	19 mm Hex	60	80

CHECK HOSES

All the hydraulic hoses should be regularly inspected for chafing and leaks. The hydraulic system is pressurized to 150 Bar (2175 PSI) and thus the equipment containing it must be kept in good condition.

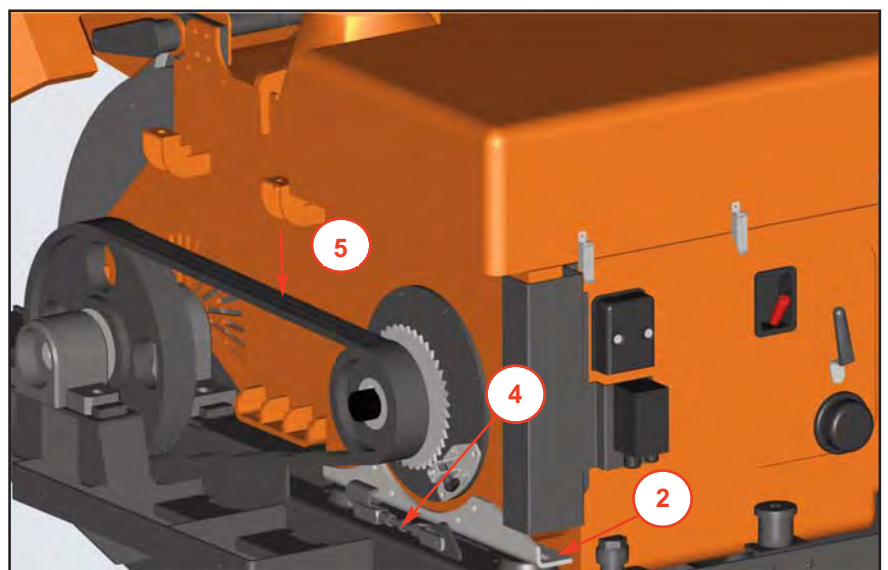
Identify the hoses that run to the top motor. These have the highest chance of damage as they are constantly moving. If any hydraulic components are changed new seals should be installed during re-assembly. Fittings should then be retightened.

TENSION DRIVE 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 fixed belt guard.
2. Slacken the 4 engine retaining flange nuts and 4 adjuster screw nuts.
4. Adjust coupling engine away from rotor to tension belts.
5. Check tension with tool. See back of manual for belt tensioning guide.
6. Tighten the 4 adjuster screw nuts and engine 4 retaining flange nuts - ensure engine has moved equal amounts each side of its base.
7. Refit fixed belt guard.





GENERAL GREASING

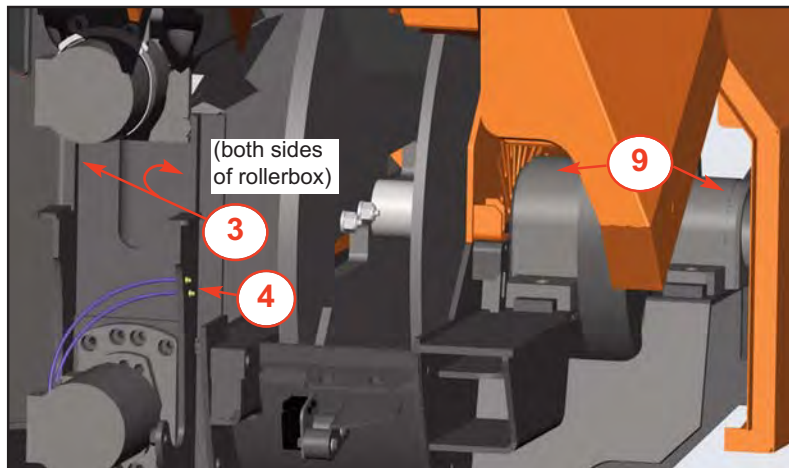
GREASING THE ROLLER BOX SLIDES

This should be done every 50 hours. In dirty or dusty conditions or during periods of hard work it should be done more frequently. If the slides become dry the top roller will tend to hang up and the pulling-in power of the rollers will be impaired. Excessive wear will ensue.

GREASING THE ROLLER SPLINE AND BEARINGS

This should be done regularly. In dirty and dusty conditions or during periods of hard work it should be weekly. If the bearings and splines are allowed to run dry premature wear will occur resulting in a breakdown and the need for replacement parts. This failure is not warranty. Early signs of insufficient grease includes squeaking or knocking rollers.

1. Open the feed tray.
2. Using a 24mm spanner undo the 2 M16 rotor housing clamp nuts and open housing.
3. Apply multipurpose grease directly to the slide surfaces indicated.
DO NOT USE GRAPHITE BASED GREASE.
4. Locate the two grease nipples indicated.
5. Use a pump action grease gun to apply a generous amount of grease to each roller drive. **DO NOT USE GRAPHITE BASED GREASE.**
6. Close the rotor housing and refit the 2 M16 flanged nuts to the rotor housing. Tighten to 80nm (60 ft lbs).
7. After applying grease, to penetrate all the bearing surfaces thoroughly start the machine and operate the rollers for 20 seconds. Switch off the machine. Repeat this greasing/running procedure a further 2 times.

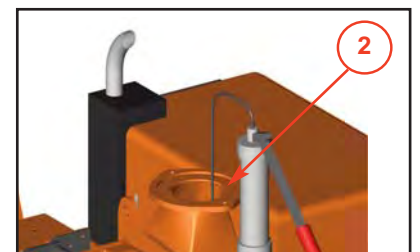


GREASING ROTOR BEARINGS

8. Repeat steps 1 -2 above if required.
9. Locate the 2 grease nipples on the bearing. Apply 2 pumps of grease every blade change.
10. Close the rotor housing and refit the 2 M16 flanged nuts to the rotor housing. Tighten to 80nm (60 ft lbs).
11. Close the feed tray.

GREASING THE DISCHARGE FLANGE

1. Remove the discharge tube.
2. Apply multipurpose grease to surface shown.
3. Refit discharge tube.



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.**



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



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 350 DHB(t) & TW 350 DHB(t)A
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 2010



IDENTIFICATION PLATE

		TIMBERWOLF ENVIRONMENTAL MANUFACTURING LLP Entec House, Tomo Industrial Estate, Stowmarket, Suffolk IP14 5AY - UK			
MODEL					
SERIAL NO.					
CARR. TYP/SN.			GROSS WEIGHT		
NOM. PWR			DATE		
			ENVIRONMENTAL MANUFACTURING LLP		
			KG		
			0 - KG		
			1 - KG		
			2 - KG		

EXAMPLE

DECALS



616

617



670



671

TIMBERWOLF

440mm

1136

WARNING
FAILURE TO MAINTAIN BRAKE ADJUSTMENT WILL RESULT IN DAMPER FAILURE. NO WARRANTY LIABILITY WILL BE ACCEPTED ON THIS ITEM.



PUSH TO STOP
DO NOT PULL HERE

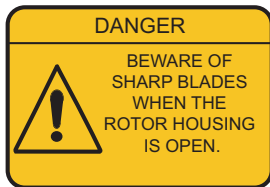
OPERATING INSTRUCTIONS
READ THE INSTRUCTION MANUAL.
THE INSTRUCTION MANUAL WITH THIS MACHINE CONTAINS IMPORTANT OPERATING, MAINTENANCE AND HEALTH AND SAFETY INFORMATION.
FAILURE TO FOLLOW THE INFORMATION CONTAINED IN THE INSTRUCTION MANUAL MAY LEAD TO DEATH OR SERIOUS INJURY.

1258

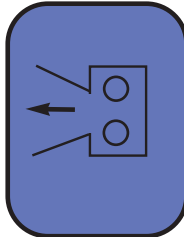
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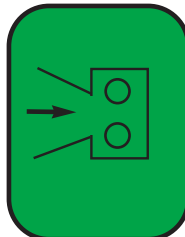
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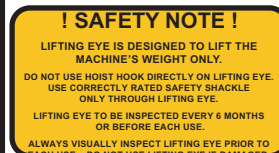
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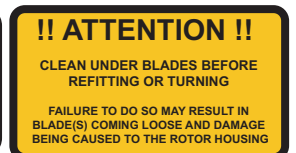
2801 X 2



2997



2949



3022



4099 x 2



Do not use when 12/24v option built



17861 (230mm) & 17862 (300mm)



18393



19434

19452



19453



19464 X 2



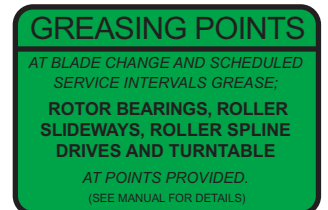
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P*149

TIMBERWOLF TW 350DHB(t)

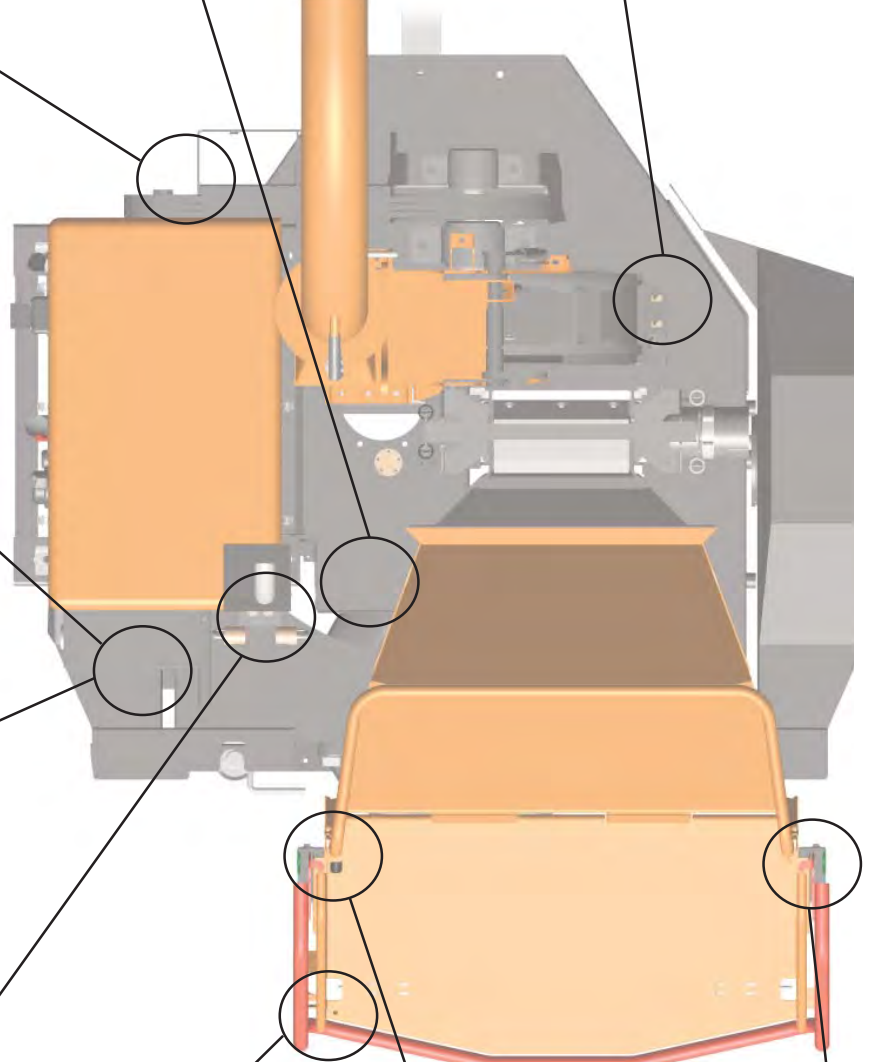
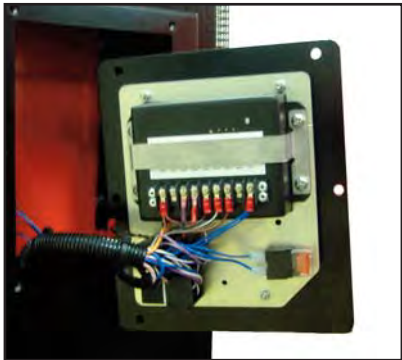
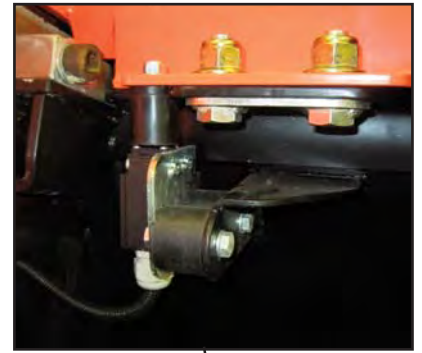
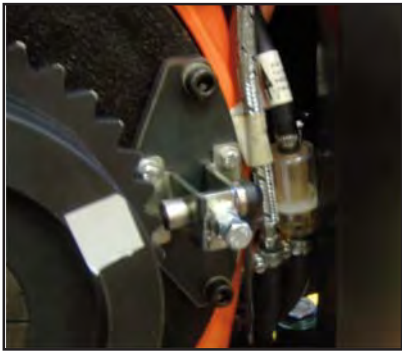
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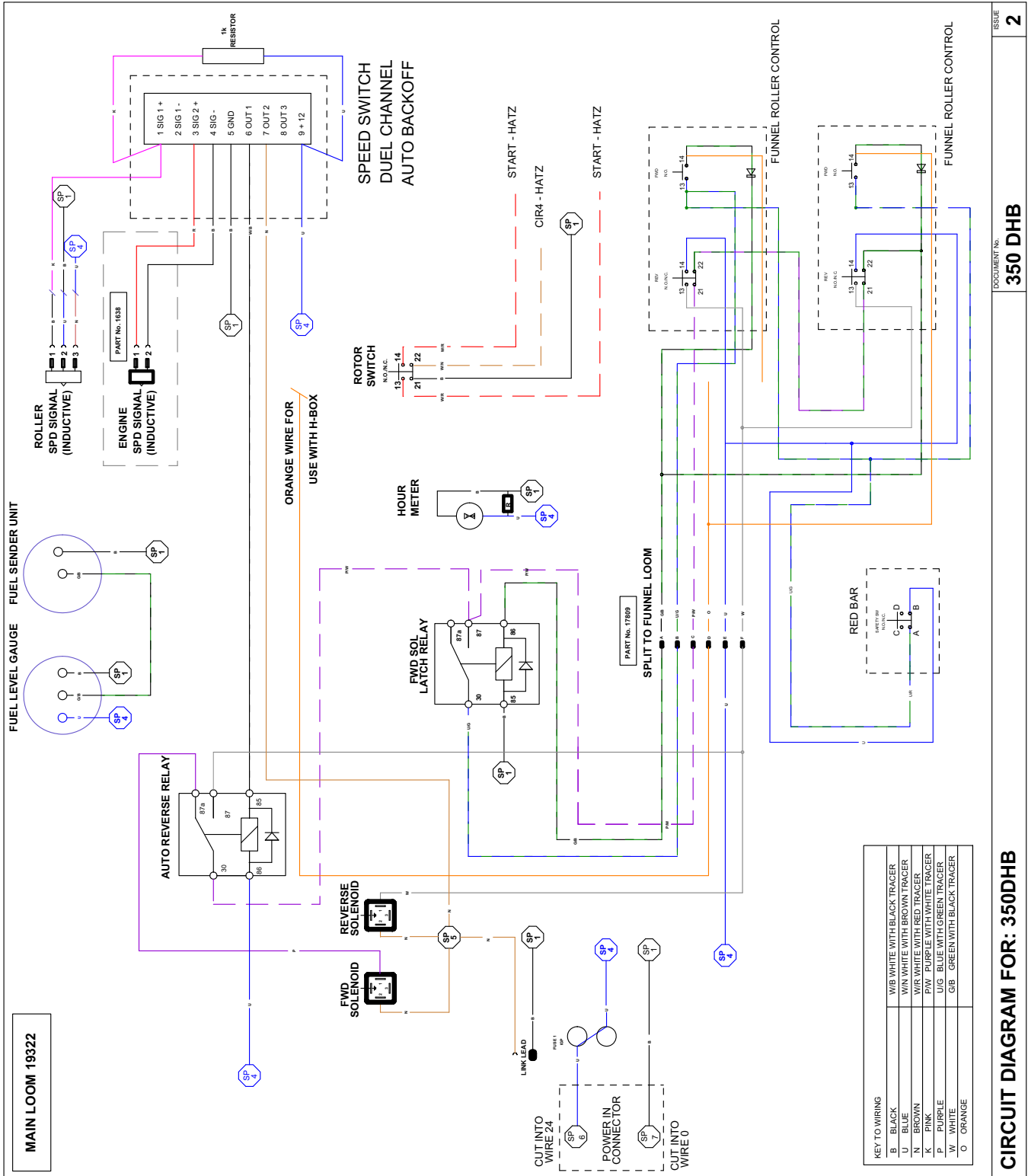


671 - these individual decals are supplied as a set, they may not all apply to your machine.

<p>DANGER</p> <p>DO NOT OPERATE WITHOUT THIS COVER IN PLACE</p> 	<p>DANGER</p> <p>AUTOFEED SYSTEM FITTED. ROLLERS MAY TURN WITHOUT WARNING! WHEN ENGINE IS SWITCHED OFF THE ROLLERS WILL TURN DURING THE RUN DOWN PERIOD</p> 	<p>CAUTION</p> <p>WHEN TRANSPORTING DISCHARGE CLAMPS MAY WORK LOOSE. CHECK FREQUENTLY</p>
<p>DANGER</p> <p>DO NOT OPERATE WITHOUT THIS COVER IN PLACE</p> 	<p>FUEL HERE </p> <p>RISK OF FIRE</p> <p>ALLOW ENGINE TO COOL FOR 1 MINUTE BEFORE REFUELING. USE UNLEADED PETROL</p>	<p>CAUTION</p> <p>AVOID STANDING DIRECTLY IN FRONT OF FEED FUNNEL TO REDUCE EXPOSURE TO NOISE, DUST AND RISK FROM EJECTED PARTICLES</p>
<p>DANGER</p> <p>DO NOT OPERATE WITHOUT THIS COVER IN PLACE</p> 	<p>CAUTION</p> <p>DO NOT PUT ROAD SWEEPINGS IN MACHINE AS GRIT WILL DAMAGE BLADES</p>	<p>DANGER</p> <p>ROTATING BLADES</p> 
<p>DANGER</p> <p>DO NOT OPERATE WITHOUT THIS COVER IN PLACE</p> 	<p>DANGER</p> <p>STOP ENGINE AND REMOVE KEY BEFORE REMOVING DISCHARGE UNIT. ROTATING BLADES INSIDE.</p> 	<p>DANGER</p> <p>DO NOT USE THIS MACHINE WITHOUT THE DISCHARGE UNIT FITTED FAILURE TO COMPLY MAY RESULT IN SERIOUS INJURY OR DAMAGE</p> 

ELECTRICAL PARTS LOCATOR





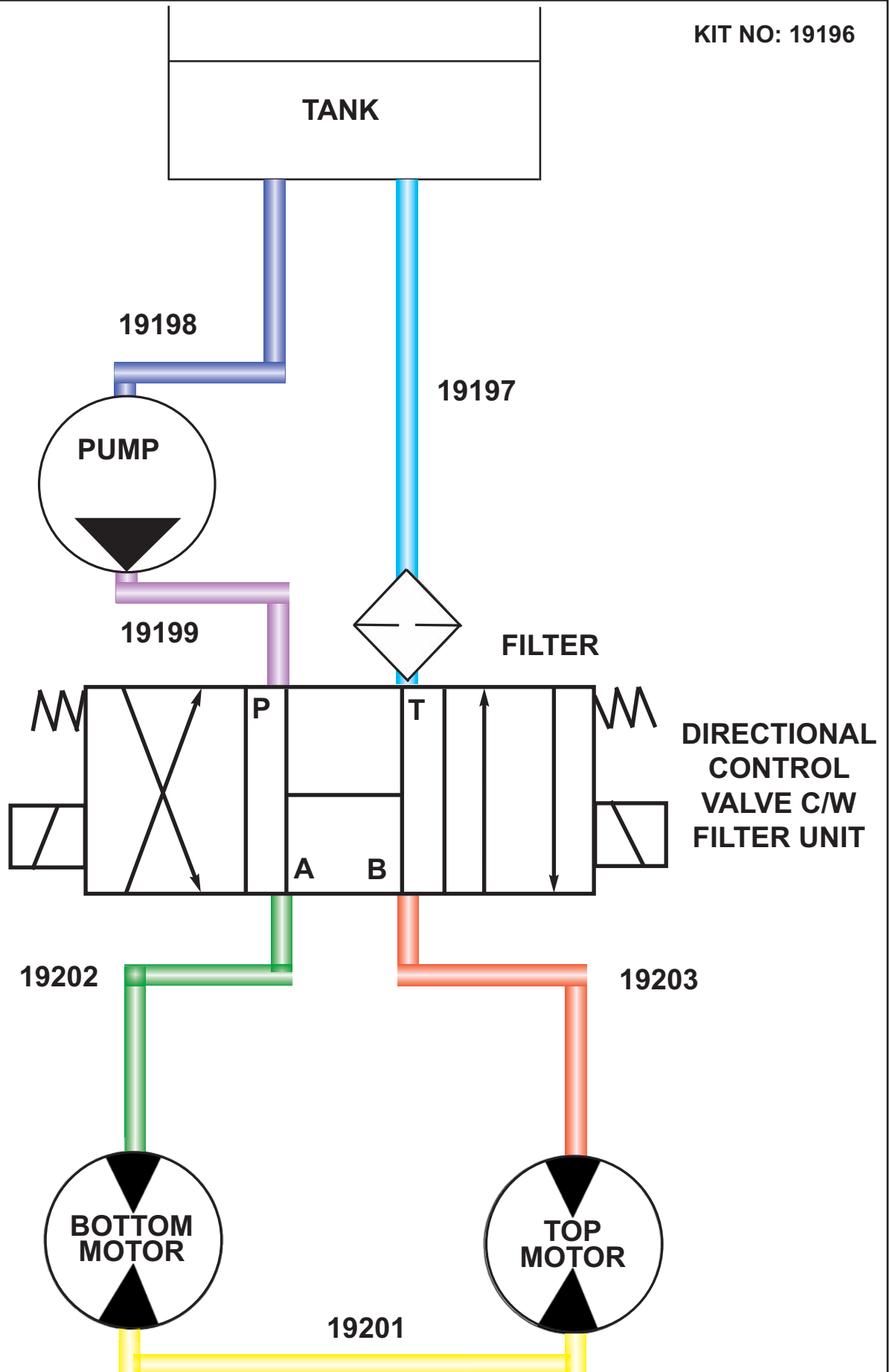
DOCUMENT NO. **350 DHB**

CIRCUIT DIAGRAM FOR: 350DHB

ISSUE **2**



KIT NO: 19196



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PARTS LISTS

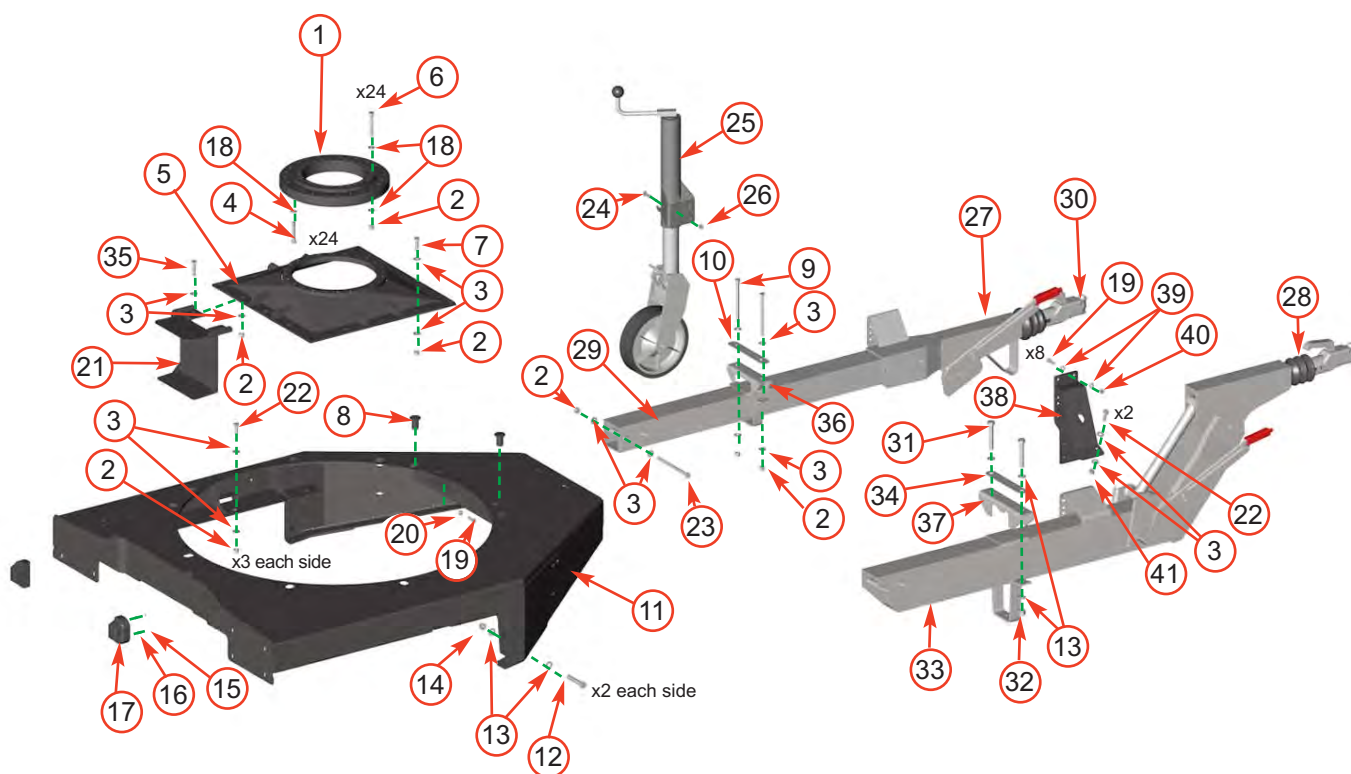
The following illustrations are for parts identification only. The removal or fitting of these parts may cause a hazard and should only be carried out by trained personnel.

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35 CHASSIS (1)



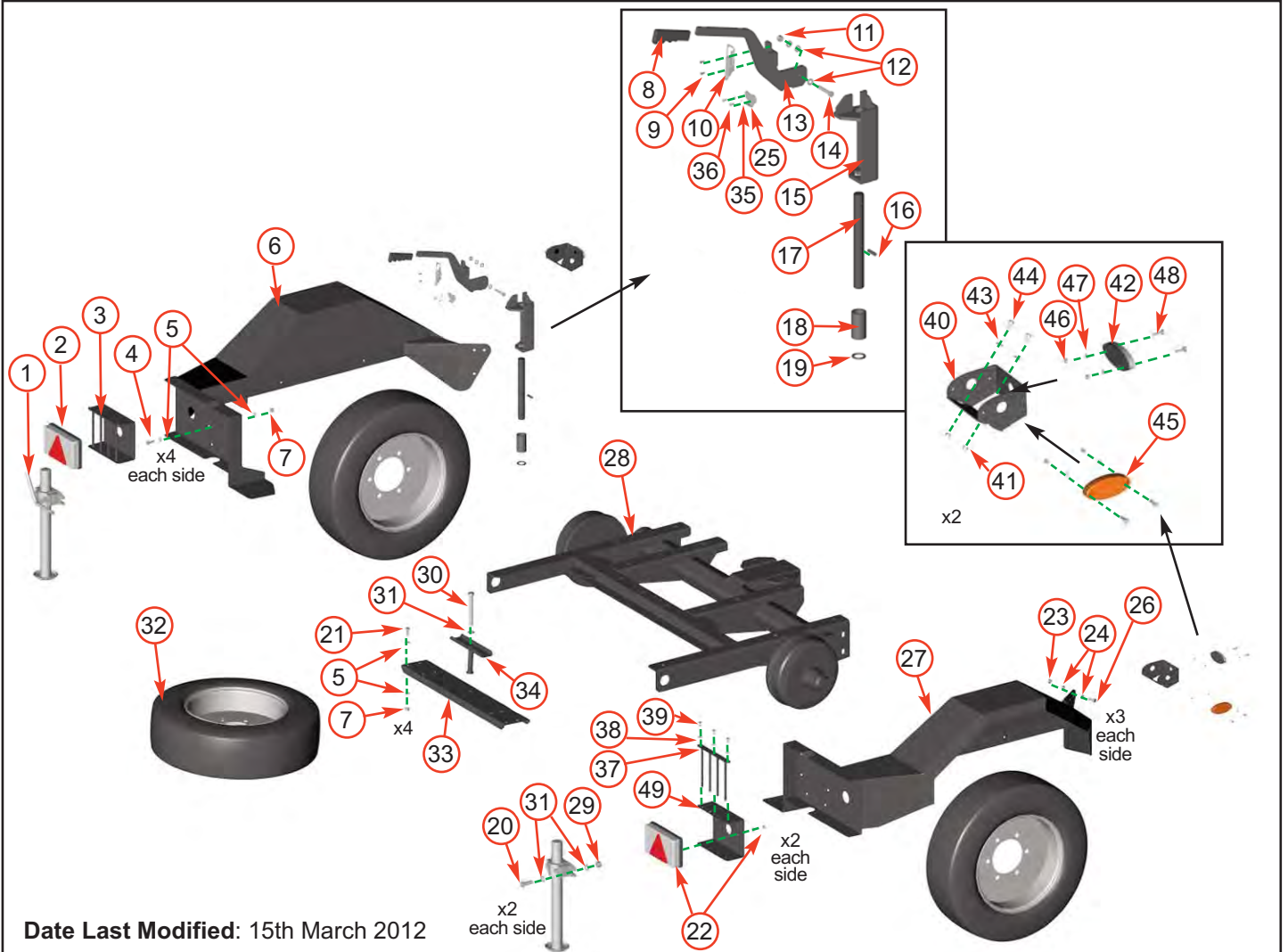
TIMBERWOLF
TW 350DHB (t)



Date Last Modified: 30th Aug 2012

Item	Part No	Part Name	Q'ty
1	19228	Slew Ring	1
2	0644	M12 P Nyloc Nut	42
3	0704	M12 C Washer	36
4	P00011	M12/75 Bolt	24
5	19294	350 Plinth	1
6	0332	M12/90 Bolt	24
7	0431	M12/40 Bolt	11
8	19435	Anti-lunge Support Pad	2
9	18175	M12/160 Bolt	2
10	19443	Washer Plate	1
11	19763	Chassis Assembly	1
12	19513	M16/90 Bolt	4
13	1354	M16 C Washer	12
14	18178	M16 T Nyloc Nut	4
15	18235	M4 Nyloc Nut	4
16	18256	M4 C Washer	4
17	19498	Number Plate Lamp	2
18	0702	M12 A Washer	79
19	1812	M10/35 Bolt	10
20	1036	M10 Plain Nut	2
21	19277	Spare Wheel Support Bracket	1

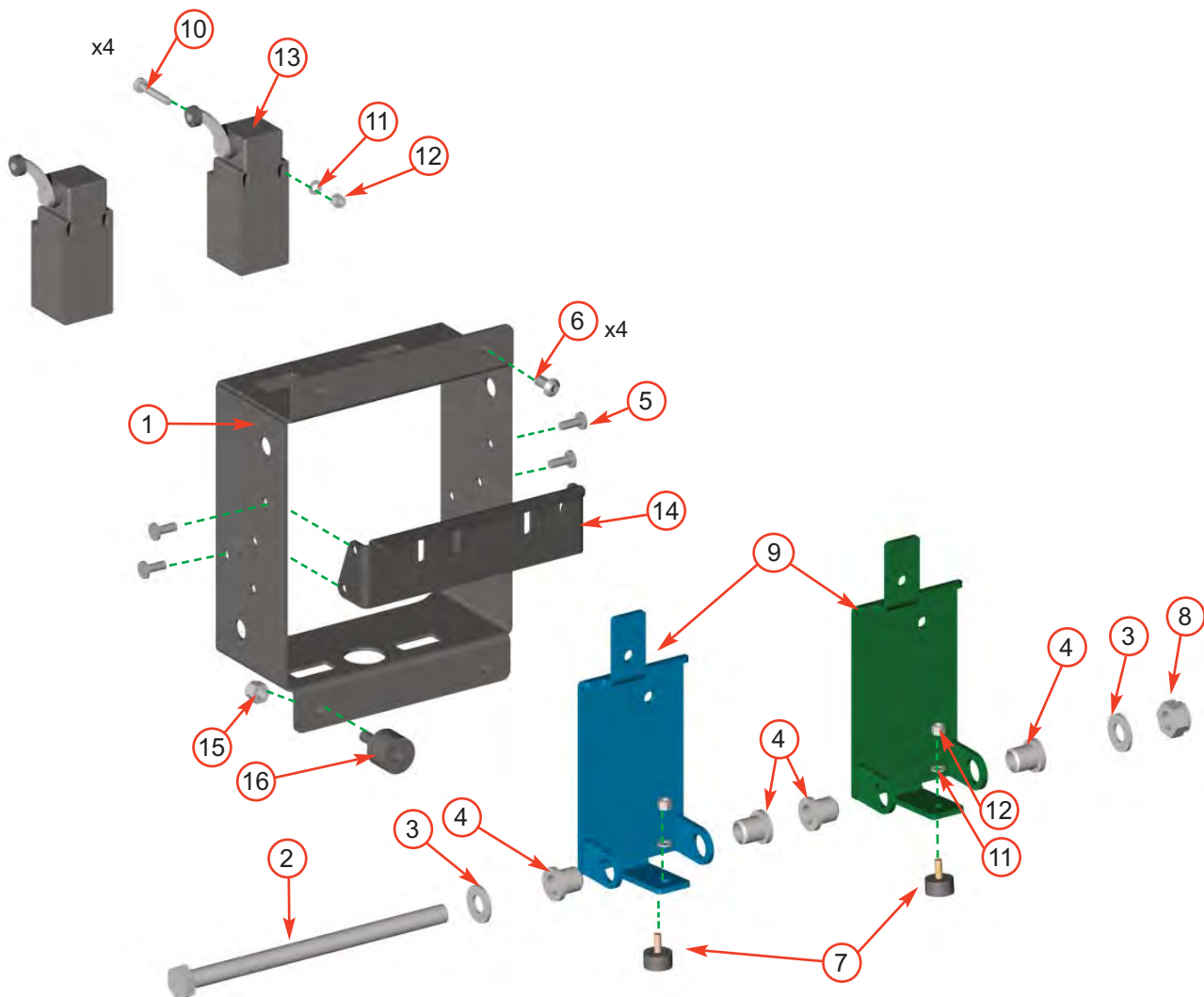
Item	Part No	Part Name	Q'ty
22	0429	M12/35 Bolt	8
23	17961	M12/180 Lg Studding	2
24	0382	M10/30 Bolt	4
25	18089	Jockey Wheel Assembly	1
26	0052	M10 T Nyloc Nut	4
27	19669	Tow Head	1
28	19675	Adjustable Tow Head	1
29	19668	Straight Draw Bar	1
30	19671	50mm Coupling	1
31	19765	M16/180 Bolt	2
32	1511	M16 P Nyloc Nut	2
33	19677	160 x 100 Straight Draw Bar	1
34	19554PB	Washer Plate	1
35	18172	M12/45 Bolt	2
36	19670	100 x 100 Clamp	1
37	19676	160 x 100 Clamp	1
38	19528FS	Jockey Wheel Bracket	1
39	0839	M10 C Washer	16
40	4345	M10 P Nyloc Nut	8
41	0045	M12 T Nyloc Nut	2



Date Last Modified: 15th March 2012

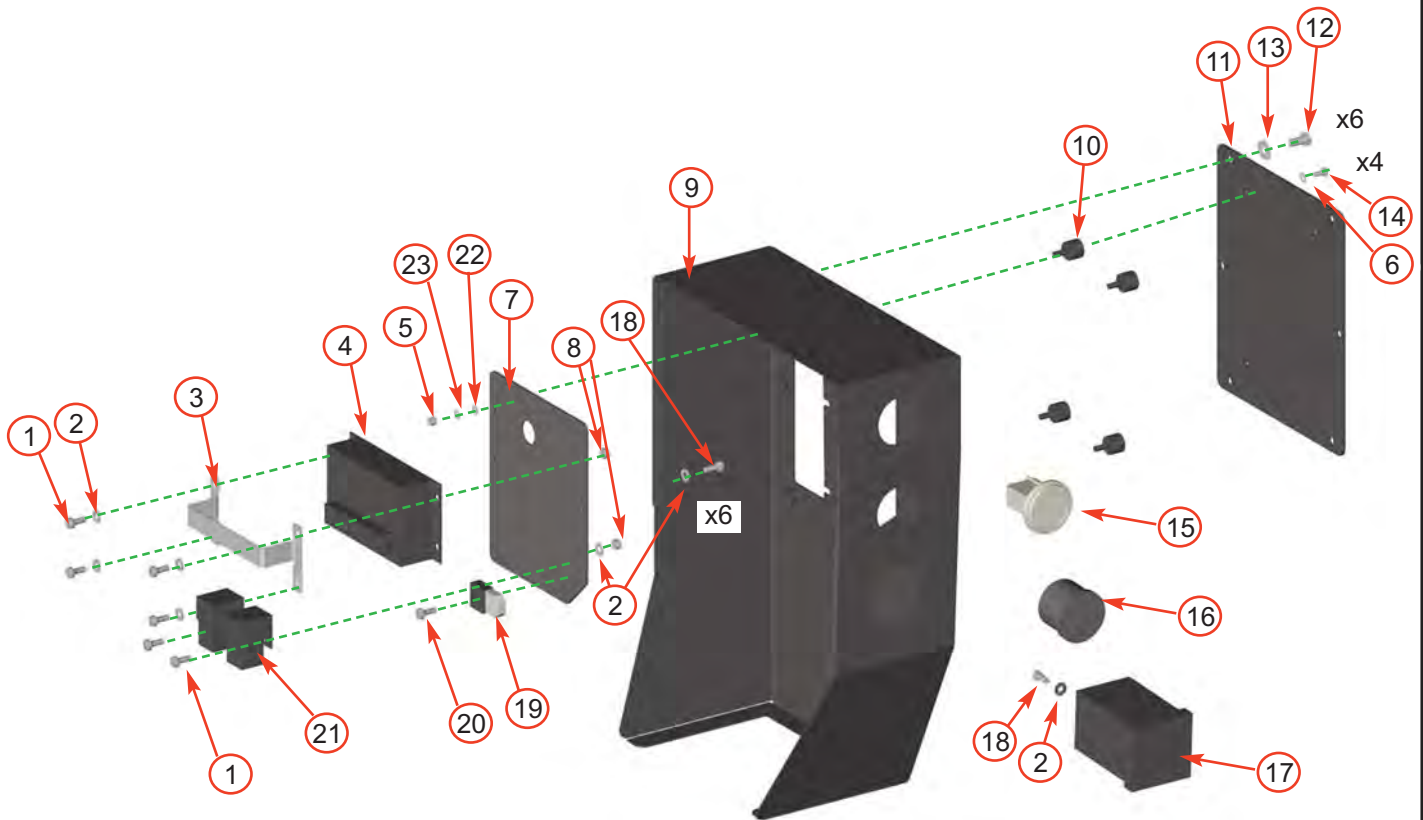
Item	Part No	Part Name	Q'ty	Item	Part No	Part Name	Q'ty
1	19308	Serrated Clamp Stand	2	26	0429	M12/35 Bolt	6
2	19500	12V Multi-LED L/H Rear Lamp	1	27	19740	Offside Mudguard	1
3	19605	4 Bar Light Cage	2	28	19763	Axle Assembly	1
4	0360	M10/25 Bolt	4	29	1511	M16 P Nyloc Nut	4
5	0839	M10 C Washer	12	30	19456	M16/150 Bolt	1
6	19739	Nearside Mudguard	1	31	1354	M16 C Washer	1
7	4345	M10 P Nyloc Nut	12	32	19511	Wheel	3
8	0134	Handle	1	33	19276FB	Spare Wheel Mount Bracket	1
9	0855	M5/10 Pan Pozi	2	34	19278FB	Spare Wheel Clamp	1
10	2963	Catch	1	35	0857	M5 A Washer	2
11	0052	M10 T Nyloc Nut	1	36	18104	M5/12 Pan Pozi	1
12	0701	M10 A Washer	3	37	19606F	Light Cage Grill	2
13	19300FB	Turntable Locking Handle	1	38	0711	M8 A Washer	3
14	1580	M10/60 Bolt	1	39	0344	M8/16 Bolt	3
15	19298FB	Turntable Locking Bracket	1	40	19646	Front Marker Bracket	2
16	4131	Roll Pin	1	41	0391	M6 T Nyloc Nut	4
17	19299	Turntable Locking Pin	1	42	19688	Front Marker Lamp	2
18	19446	Turntable Lock Spring	1	43	0709	M6 C Washer	8
19	19301	Spring Support Washer	1	44	1658	M6/12 Bolt	4
20	18381	M16/45 Bolt	4	45	19687	Side Marker Lamp	2
21	0382	M10/30 Bolt	4	46	18102	M5 T Nyloc Nut	8
22	19499	12V Multi-LED R/H Rear Lamp	1	47	0708	M5 C Washer	8
23	0644	M12 P Nyloc Nut	10	48	0435	M5/16 Bolt	8
24	0704	M12 C Washer	22	49	19605F	Light Cage	2
25	4088	Catch Plate	1				

37 CONTROL BOX



Date Last Modified: 31st March 11

Item	Part No	Part Name	Q'ty	Item	Part No	Part Name	Q'ty
1	17802FB	Control Box Cover	1	9	17803FS	Finger Plate	2
2	17963	M10/160 Bolt	1	10	18168	M4/35 Pan Pozi	4
3	0839	M10 C Washer	2	11	18100	M4 Washer	4
4	2804	Bush M10 Top Hat	4	12	18235	M4 P Nyloc Nut	4
5	0067	Pop Rivet M5/12	4	13	17927	Limit Switch	2
6	18108	M6/8 Pan Pozi	4	14	17805FS	Switch Mounting Plate	1
7	2834	AV Mount VE Type	2	15	0142	M6 P Nyloc Nut	4
8	4345	M10 P Nyloc Nut	1	16	18000	AV Mount	3

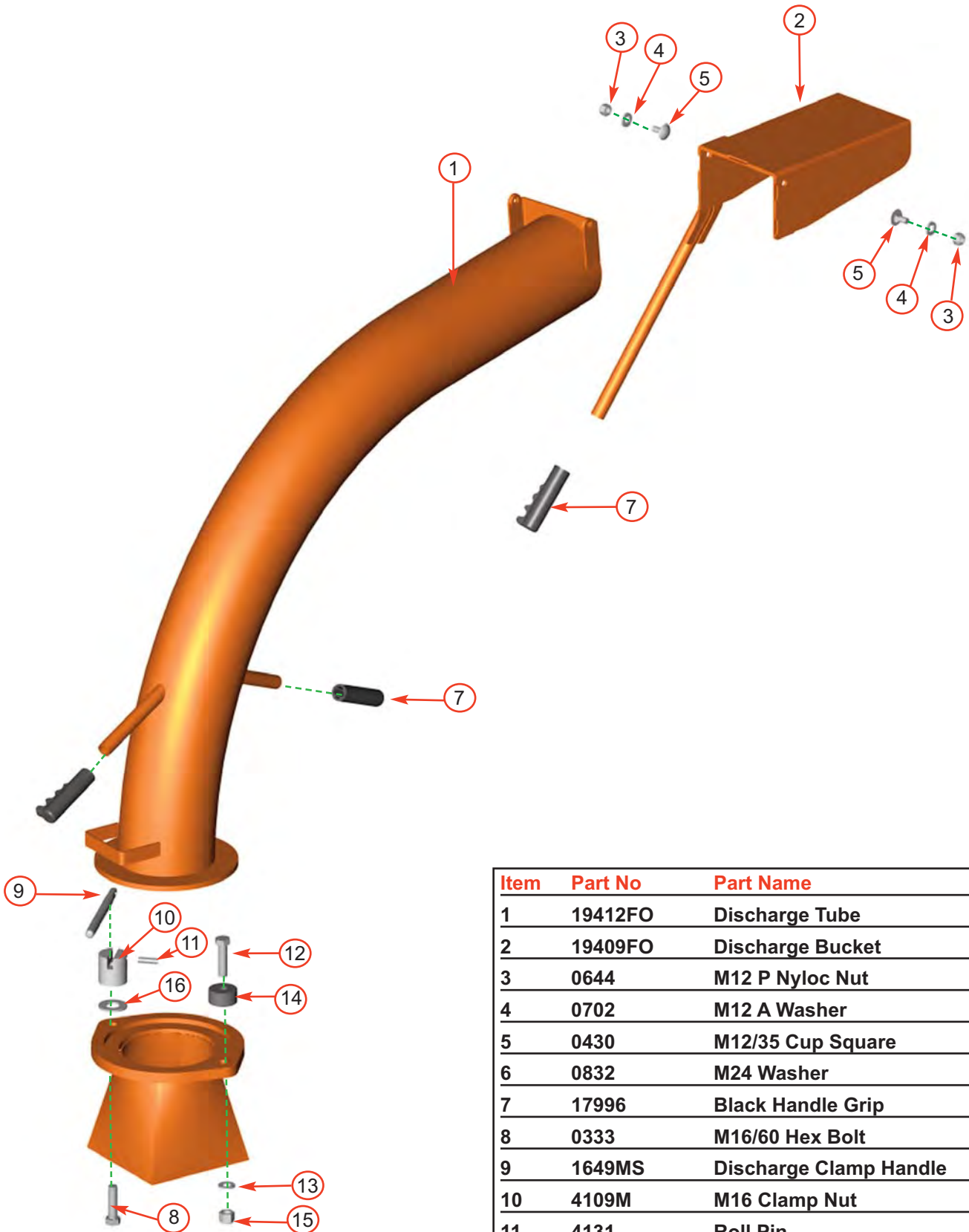


Date Last Modified: 9th June 11

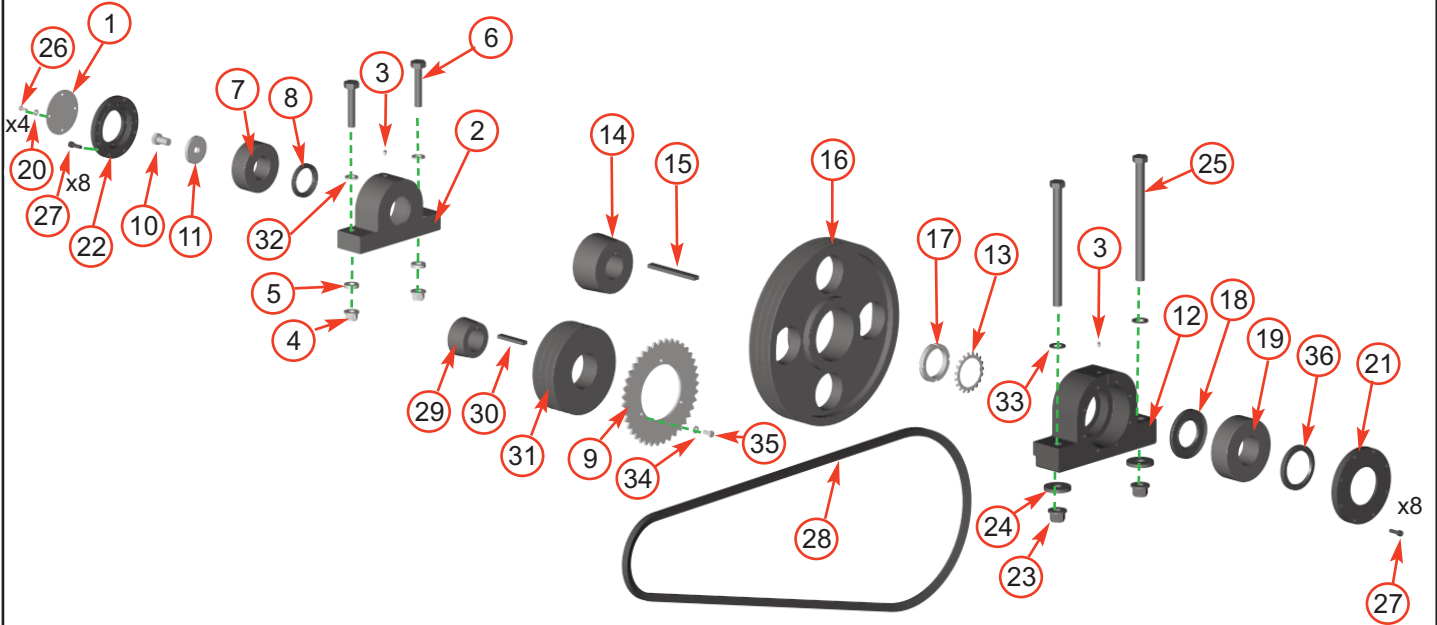
Item	Part No	Part Name	Q'ty
1	0438	M6/16 Pan Pozi	6
2	0709	M6 C Washer	13
3	18002F	Switch Box Clamp	1
4	17990	Dual Channel Speed Switch	1
5	18291	M5 Plain Nut	4
6	0708	M5 C Washer	10
7	19208F	Electrical Panel	1
8	0391	M6 T Nyloc Nut	6
9	19206FB	Electrical Panel Assembly	1
10	17999	AV Mount 164/18	4
11	19207FB	Electric Box Lid	1
12	0344	M8/16 Bolt	6

Item	Part No	Part Name	Q'ty
13	0711	M8 A Washer	6
14	18103	M5/8 Pan Pozi	4
15	0327	Hours Counter	1
16	19243	Fuel Tank Level Gauge	1
17	Supp'd with engine	Ignition Switch	1
18	0437	M6/16 Bolt	7
19	Supp'd with loom	Fuse	1
20	1151	Countersunk Pop Rivet	1
21	Supp'd with loom	Relay	2
22	0857	M5 A Washer	4
23	3024	M5 Spring Washer	4

39 DISCHARGE



Item	Part No	Part Name	Q'ty
1	19412FO	Discharge Tube	1
2	19409FO	Discharge Bucket	1
3	0644	M12 P Nyloc Nut	2
4	0702	M12 A Washer	2
5	0430	M12/35 Cup Square	1
6	0832	M24 Washer	1
7	17996	Black Handle Grip	2
8	0333	M16/60 Hex Bolt	1
9	1649MS	Discharge Clamp Handle	1
10	4109M	M16 Clamp Nut	1
11	4131	Roll Pin	1
12	0434	M16/70 Hex Bolt	1
13	1354	M16 C Washer	1
14	2837MS	Clamp Nut Small	1
15	1511	M16 P Nyloc Nut	1



Date Last Modified: 29th Jan 2013

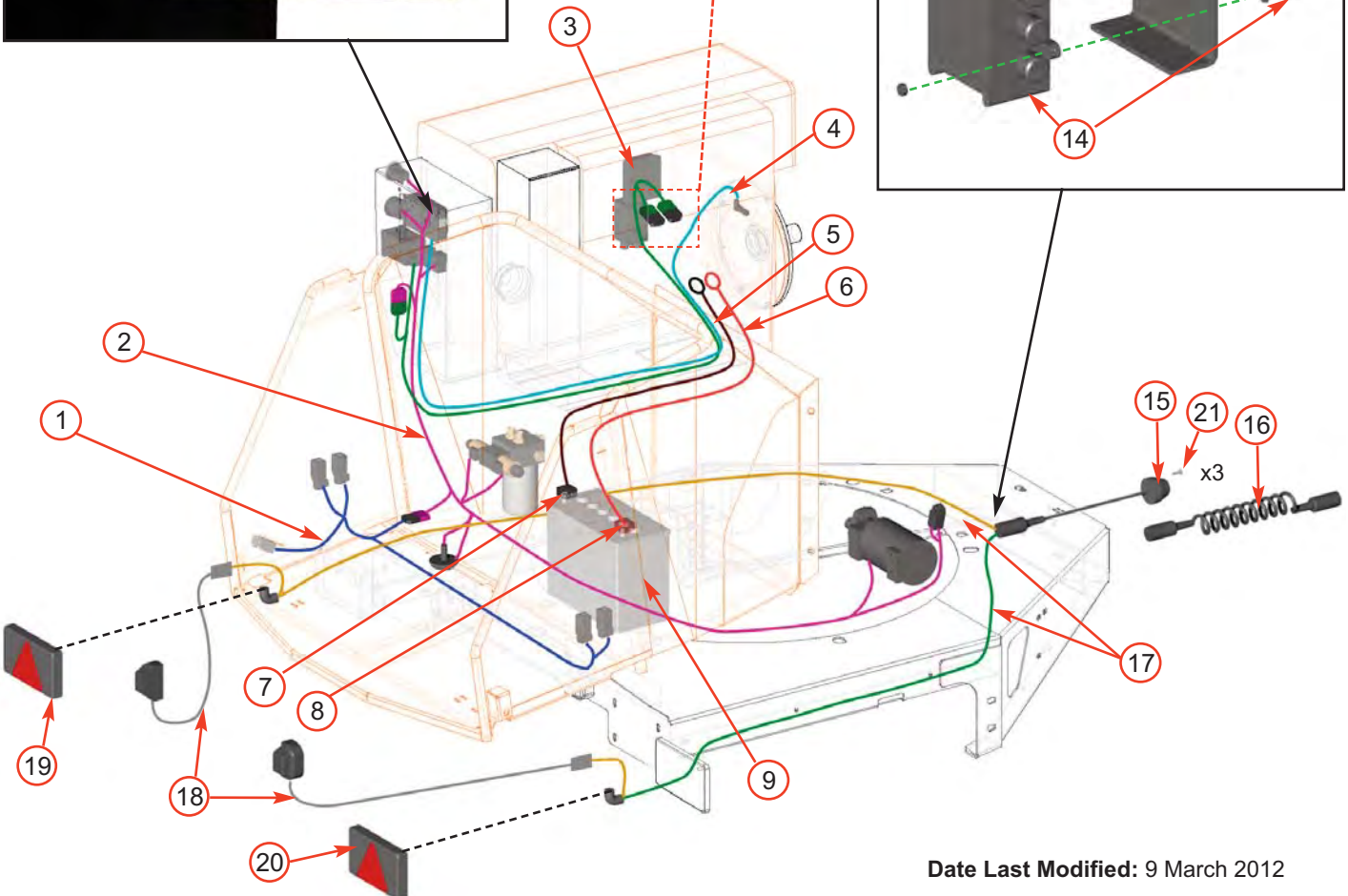
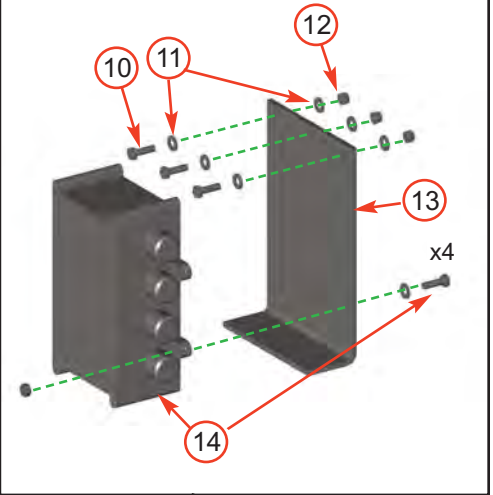
Item	Part No	Part Name	Q'ty	Item	Part No	Part Name	Q'ty
1	19678	Bearing Cap Plate	1	19	19218	Spherical Roller Bearing	1
2	19680	Main Rear Bearing Housing	1	20	0709	M6 C Washer	4
3	18627	Grease Nipple	2	21	19633M	Ø140 Bearing Cap	1
4	2978	M16 Flange Nut	2	22	19679M	Ø110 Bearing Cap	1
5	1412	M16 Heavy Washer	2	23	19307	M20 Flange Nut	2
6	19723	M16/90 Bolt	2	24	19724	Bearing Bolt Plate Washer	2
7	19224	Main Bearing Roller	1	25	P*182	M20/270 Bolt	2
8	19692	55 x 75 x 10mm Bearing Seal	1	26	0437	M6/16 Bolt	4
9	2010P	Trigger	1	27	1527	M8/25 Caphead	16
10	18532	M16/30 Bolt	1	28	19229	Belt SPB 2530	3
11	19469	Bearing Retaining Washer 62mm	1	29	19232	Taperlock Bush 2517	1
12	19632M	Main Bearing Housing Front	1	30	with engine	Key	1
13	19306	Retaining Tab Washer	1	31	19230	Pulley SPB 190 x 30	1
14	19233	Taperlock Bush 3525	1	32	1218	M16 Hardened Washer	2
15	19304	Key 16 x 10 x 55LG	1	33	P*183	M20 Hardened Washer	2
16	19231	Pulley SPB 400 x 3	1	34	0711	M8 A Washer	3
17	19221	Locknut	1	35	0346	M8/20 Bolt	3
18	19693	60 x 110 x 10 Seal	1	36	19696	75 x 100 x 10mm Bearing Seal	1

41 ELECTRICAL LAYOUT



Connected to
internal engine loom

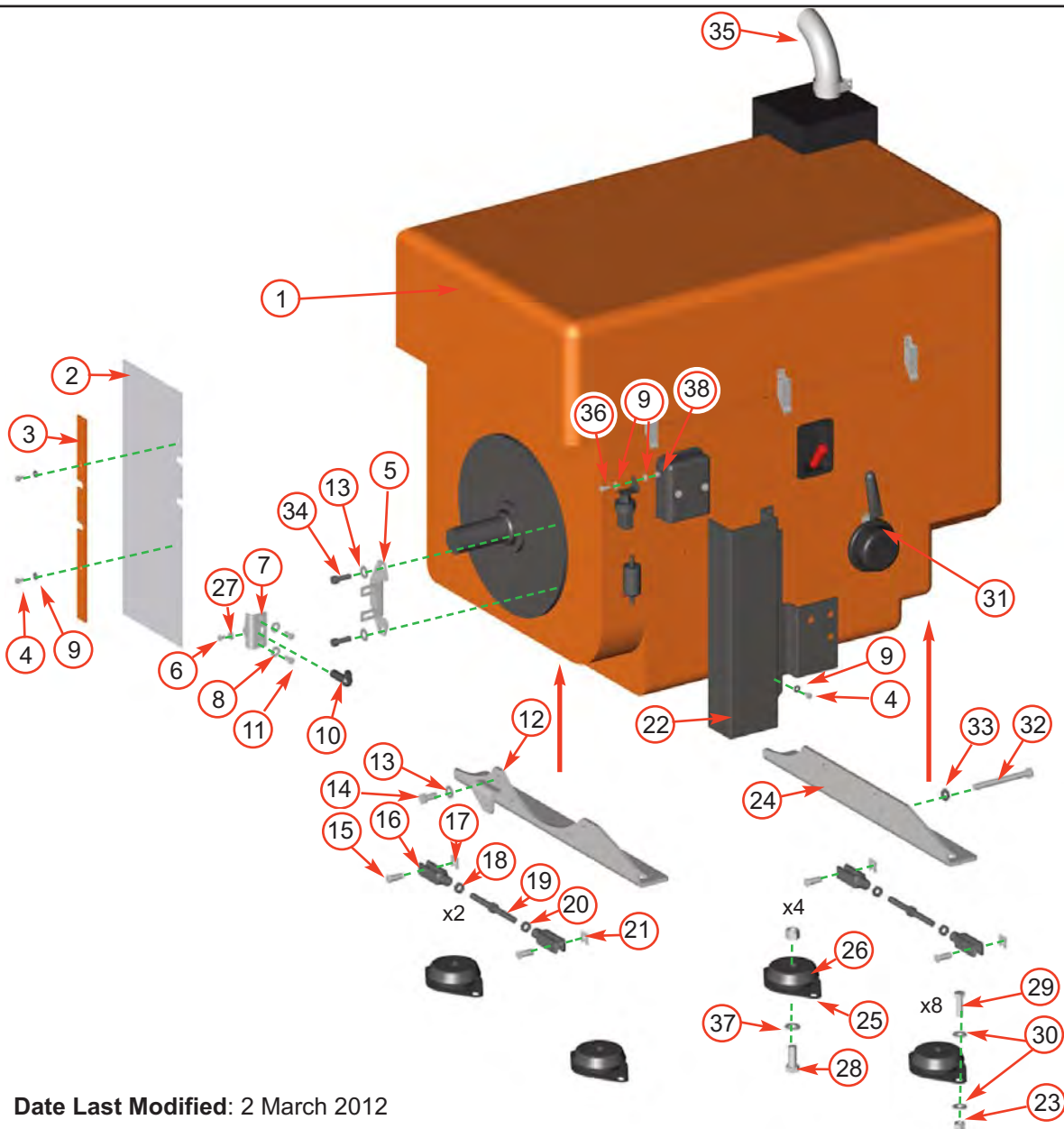
OPTIONAL
12/24V VOLTAGE
CONVERTER KIT



Date Last Modified: 9 March 2012

Item	Part No	Part Name	Q'ty
1	17809	Control Box & Safety Switch Loom	1
2	19322	Main Control Loom	1
3	19419	Engine Control Loom	1
4	19325	No Stress Loom (inc sensor)	1
5	19324	-VE Battery Cable	1
6	19232	+VE Battery Cable	1
7	19521	Battery Boot (black)	1
8	19520	Battery Boot (red)	1
9	2612	Battery	1
10	1253	M6/25 Bolt	3
11	0709	M6 C Washer	6

Item	Part No	Part Name	Q'ty
12	0142	M6 P Nyloc Nut	3
13	19502FB	12/24V Converter Bracket	1
14	19503	12/24V Voltage Converter	1
15	19685	13 Pin Socket and Cable	1
16	19573	Retractable Coiled Lead 20m	1
17	19868	Lighting Loom C/W Feed Cables	1
18	19498	Number Plate Lamp	2
19	19500	12V Multi-LED L/H Rear Lamp	1
20	19499	12V Multi-LED R/H Rear Lamp	1
21	1589	M5/35 Pan Pozi	3



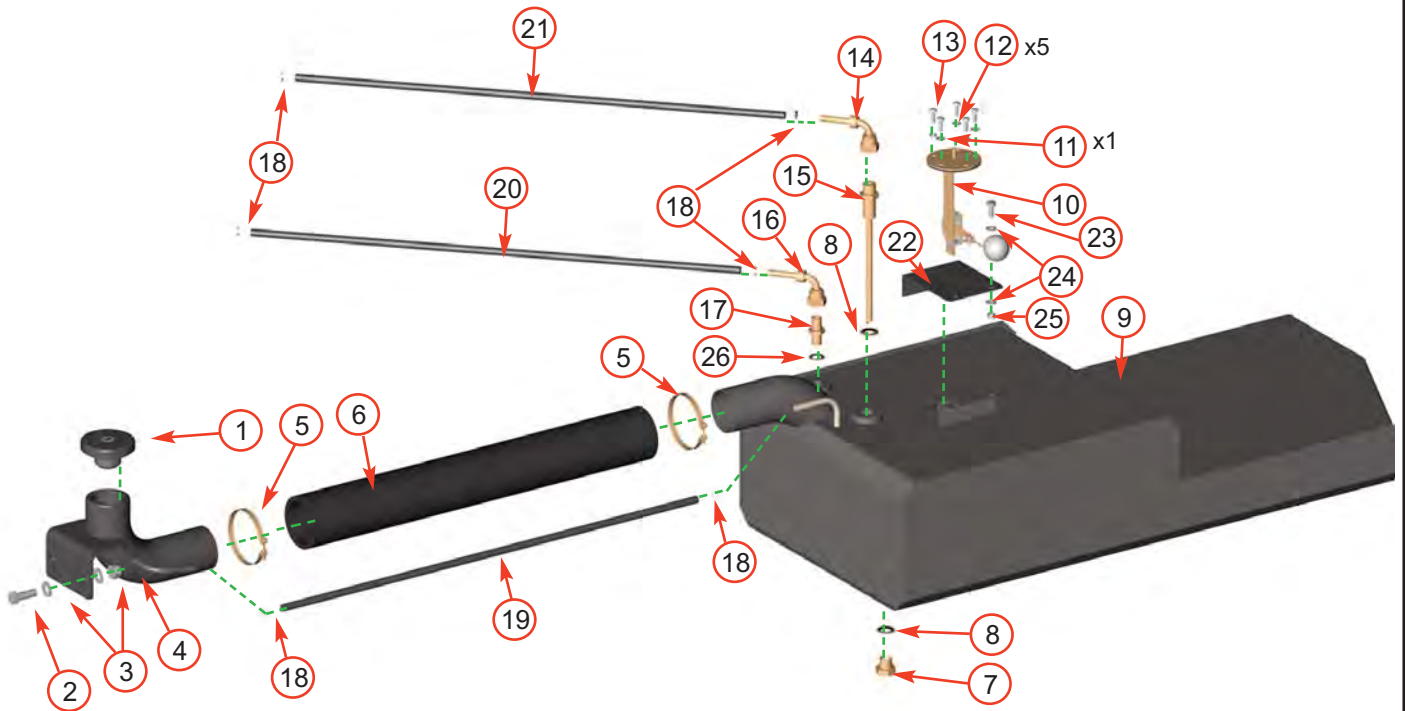
Date Last Modified: 2 March 2012

Item	Part No	Part Name	Q'ty	Item	Part No	Part Name	Q'ty
1	19250	Engine	1	20	19313	M10 Half Nut R/H Thread	2
2	19311	Engine Air Curtain	1	21	19239	R/H Clevis	2
3	19310	Engine Air Curtain Clamp	1	22	19209	Engine Side Guard	1
4	0438	M6/16 Panhead Pozi	6	23	0644	M12 P Nyloc Nut	8
5	19714F	Adaptor Plate	1	24	19315	Engine Bracket Rear	1
6	0351	M8/30 Bolt	1	25	1796	M16 AV Mount	4
7	19713F	Sensor Bracket	1	26	2978S	M16 Flange Nut	4
8	0712	M8 C Washer	2	27	0476	M8 Plain Nut	1
9	0709	M6 C Washer	14	28	0333	M16/60 Bolt	4
10	19325	Sensor - wire length 22160mm	1	29	0321	M12/30 Bolt	8
11	0344	M8/16 Bolt	2	30	0704	M12 C Washer	16
12	19316	Engine Bracket Front	1	31	2695	Plastic Handle Grip	1
13	<i>supp'd with engine</i>	M10 Spring Washer	4	32	<i>supp'd with engine</i>	M12/110 Bolt	4
14	0878	M10/20 Bolt	4	33	<i>supp'd with engine</i>	M12 Spring Washer	4
15	19242	Clevis Pin	4	34	0386	M10/30 Caphead	2
16	19240	L/H Clevis	2	35	19544	Exhaust Deflector	1
17	19241	Clevis Safety Fasteners	4	36	0437	M6/16 Bolt	1
18	19314	M10 Half Nut L/H Thread	2	37	1143	M16 A Washer	4
19	19312	M10 Adjuster Screw	2	38	0391	M6 T Nyloc Nut	1

43 FUEL TANK

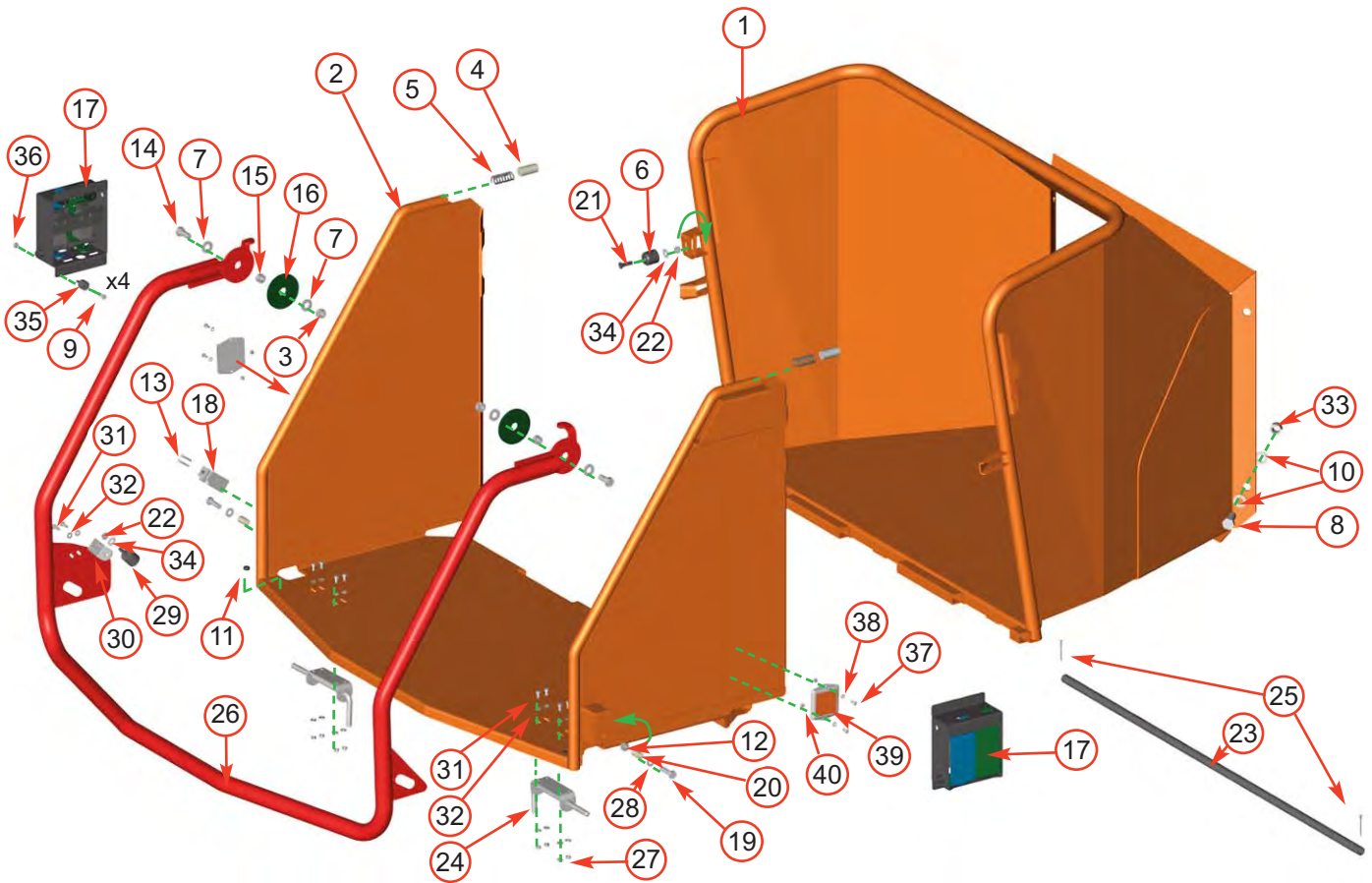


TIMBERWOLF
TW 350DHB (t)



Date Last Modified: 18th Aug 11

Item	Part No	Part Name	Q'ty	Item	Part No	Part Name	Q'ty
1	1374	Locking Cap	1	14	19429	3/8" BSP 90° Elbow	1
2	0382	M10/30 Bolt	2	15	19428F	3/8" BSP Fuel Delivery Tube	1
3	0701	M10 A Washer	4	16	19430	1/4" BSP 90° Elbow	1
4	0052	M10 T Nyloc Nut	2	17	18883	1/4" MM Adapter	1
5	19245	Hose Clip	2	18	0279	Jubilee Clip	6
6	19244	Fuel Tank Filler Pipe	1	19	19462	8mm Fuel Relief Hose - 620mm	1
7	0211	3/8" Blanking Plug	1	20	19460	6mm Fuel Return Hose - 1125mm	1
8	0396	3/8" Dowty Washer	4	21	19461	8mm Fuel Delivery Hose - 1225mm	1
9	19268FB	Fuel Tank	1	22	19266FB	Level Gauge Guard	1
10	19243	Fuel Tank Level Gauge	1	23	0438	M6/16 Pan Pozi	2
11	0857	M5 A Washer	1	24	0709	M6 C Washer	4
12	19468	M5 Fibre Washer	4	25	0391	M6 T Nyloc Nut	2
13	0435	M5/16 Pan Pozi	5	26	0395	1/4" Dowty Washer	1



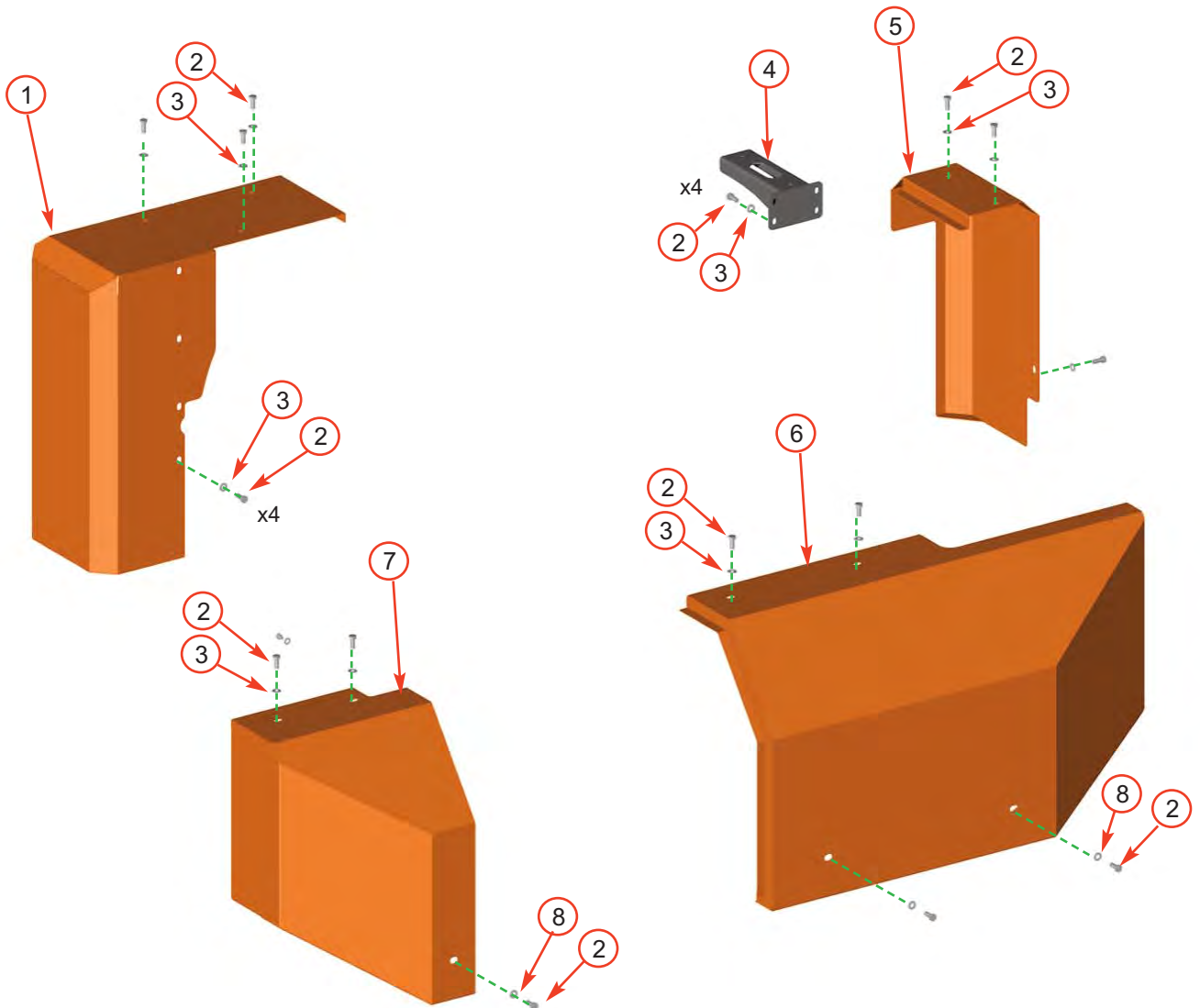
Date Last Modified:18 April12

Item	Part No	Part Name	Q'ty	Item	Part No	Part Name	Q'ty
1	19253FO	Funnel	1	21	18115	M8/50 Csk Soc.	1
2	2914FO	Feed Tray	1	22	0479	M8 P Nyloc Nut	2
3	0045	M12 T Nyloc Nut	2	23	2923FS	Hinge Pin	1
4	1601	Nylon Piston	2	24	2986	1/2" Spring Bolt	2
5	1603	Die Spring	2	25	1276	Split Pin	2
6	4206	Nylon Bush	1	26	1598FR	Safety Bar	1
7	0704	M12 C Washer	4	27	0391	M6 T Nyloc Nut	8
8	18381	M16/45 Bolt	4	28	4344	M10 C Repair Washer	2
9	18108	M6/8 Pan Pozi	8	29	0178	Rubber End Stop	1
10	1354	M16 C Washer	8	30	2727FS	Actuator Bracket	1
11	2493	Rubber Cap	2	31	0437	M6/16 Bolt	10
12	4345	M10 P Nyloc Nut	1	32	0709	M6 C Washer	10
13	1006	M4/30 Pan Pozi	2	33	1511	M16 P Nyloc Nut	4
14	0429	M12/35 Bolt	2	34	0712	M8 C Washer	2
15	1605M	Stainless Spacer	2	35	18000	AV Mount	8
16	1599	Bearing Washer	2	36	0142	M6 P Nyloc Nut	8
17	(see page 37)	Control Box	2	37	18104	M5/12 Pan Pozi	4
18	1348	Limit Switch	1	38	0857	M5 A Washer	4
19	1520	M10/45 Bolt	2	39	18924	Square Reflector	2
20	1591	Nylon Spacer	2	40	18102	M5 T Nyloc Nut	2

45 GUARDS

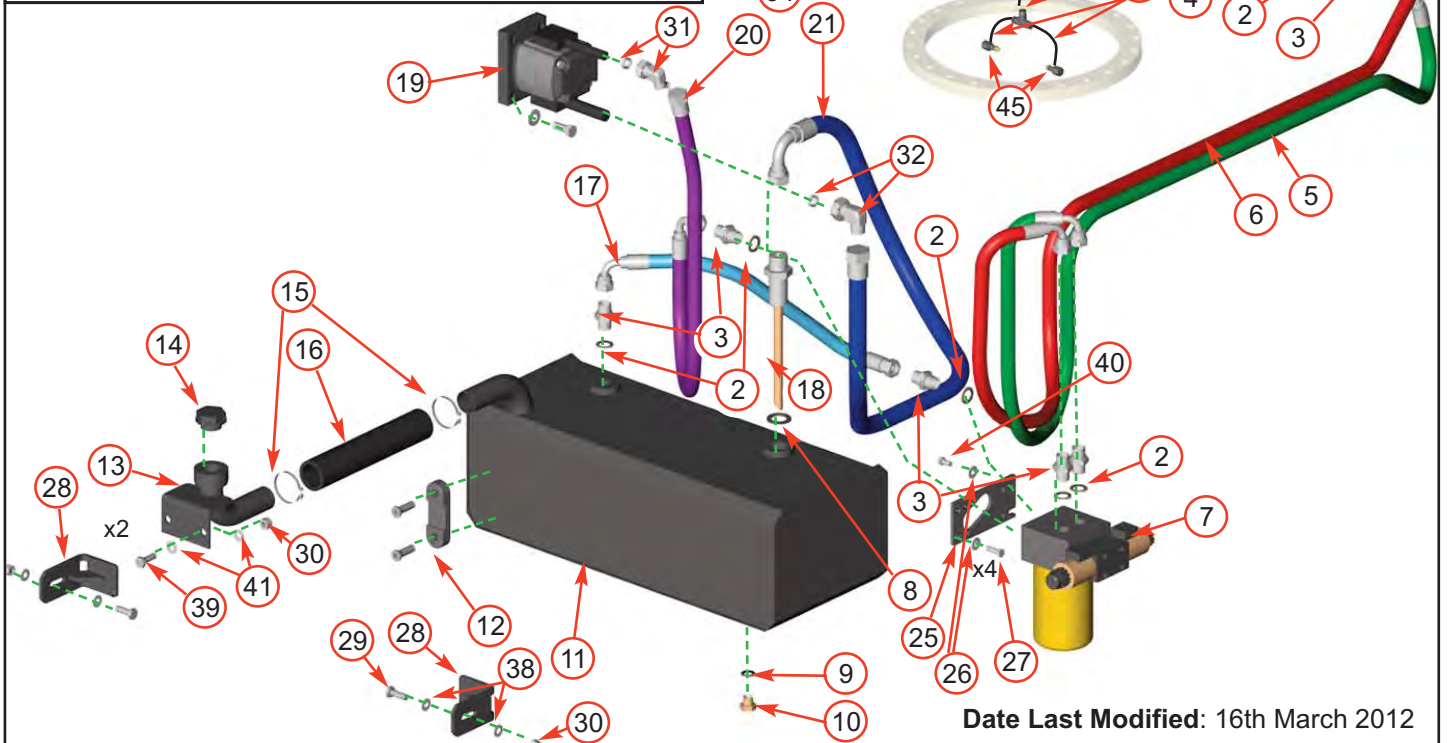
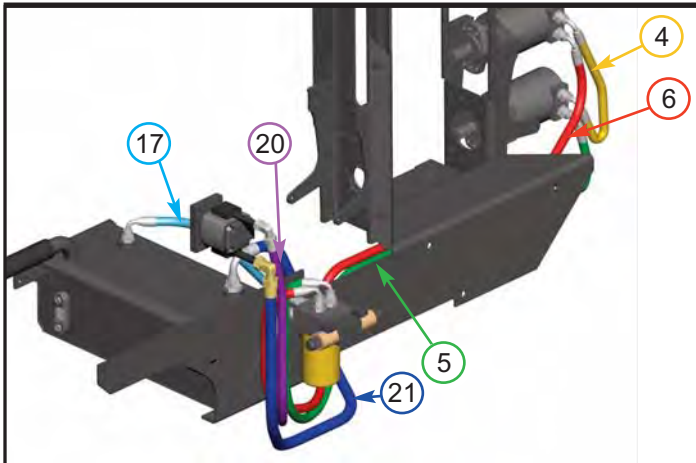


TIMBERWOLF
TW 350DHB(t)



Date Last Modified: 3rd May 2012

Item	Part No	Part Name	Q'ty	Item	Part No	Part Name	Q'ty
1	19565	Outer Roller Box Guard	1	5	19195	Centre Roller Box Guard	1
2	0360	M10/25 Bolt	21	6	19215	Fixed Front Guard	1
3	0839	M10 C Washer	18	7	19216	Moving Front Guard	1
4	19210FB	Top Support Bracket	1	8	4344	M10 Mudguard Washer	3



Date Last Modified: 16th March 2012

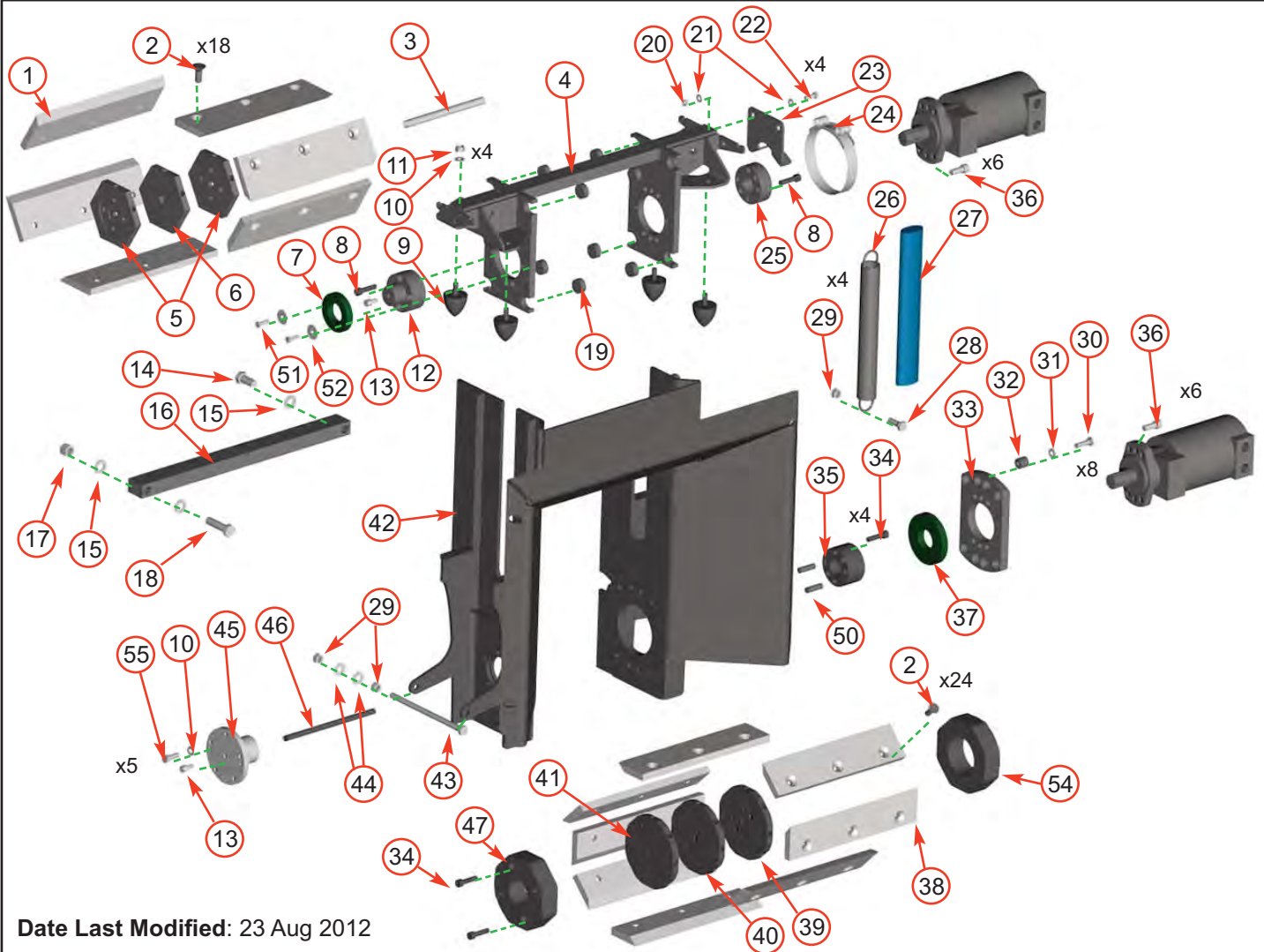
Item	Part No	Part Name	Q'ty
1	19329	Motor	2
2	0398	1/2" Dowty Washer	9
3	0027	1/2" - 1/2" BSP Adapter	9
4	19201	Hose	1
5	19202	Hose	1
6	19203	Hose	1
7	19271	Directional Control Valve (DCV)	1
8	2693	1" Dowty Seal	1
9	0396	3/8" Dowty Seal	1
10	0211	3/8" BSP Blanking Plug	1
11	19267FB	Hydraulic Tank	1
12	1163	Temperature Gauge	1
13	19281FB	Hydraulic Filler Neck	1
14	19272	Breather Cap	1
15	18315	Jubilee Clips (2A35-50mm)	2
16	19279	Hydraulic Filler Pipe	1
17	19470	Hose	1
18	19426	Hydraulic Delivery Tube	1
19	19270	Pump	1
20	19199	Hose	1
21	19198	Hose	1
22	19423FB	Greaser Plate	1
23	18192	Remote Grease Kit	3

Item	Part No	Part Name	Q'ty
24	19337	Motor with Sensor	1
25	19303FB	C-Top Mounting Plate	1
26	0711	M8 A Washer	4
27	0350	M8/25 Bolt	4
28	19457	Tank Clamp Bracket	2
29	1812	M10/35 Bolt	4
30	4345	M10 P Nyloc Nut	4
31	19205	Ø15 Compression Elbow	1
32	19204	Ø28 Compression Elbow	1
33	19459	Top Grease Tube 1530mm	1
34	19458	Lower Grease Tube 950mm	1
35	0142	M6 P Nyloc Nut	2
36	0709	M6 C Washer	2
37	1253	M6/25 Bolt	2
38	0839	M10 C Washer	4
39	0382	M10/30 Bolt	2
40	0344	M8/16 Bolt	4
41	0701	M10 A Washer	4
42	19738	1200mm Turntable Grease Tube	1
43	19734	T-Elbow Grease Fitting	1
44	19737	150mm Turntable Grease Tube	2
45	18474	Turntable Grease Point Fitting	2

47 ROLLER BOX

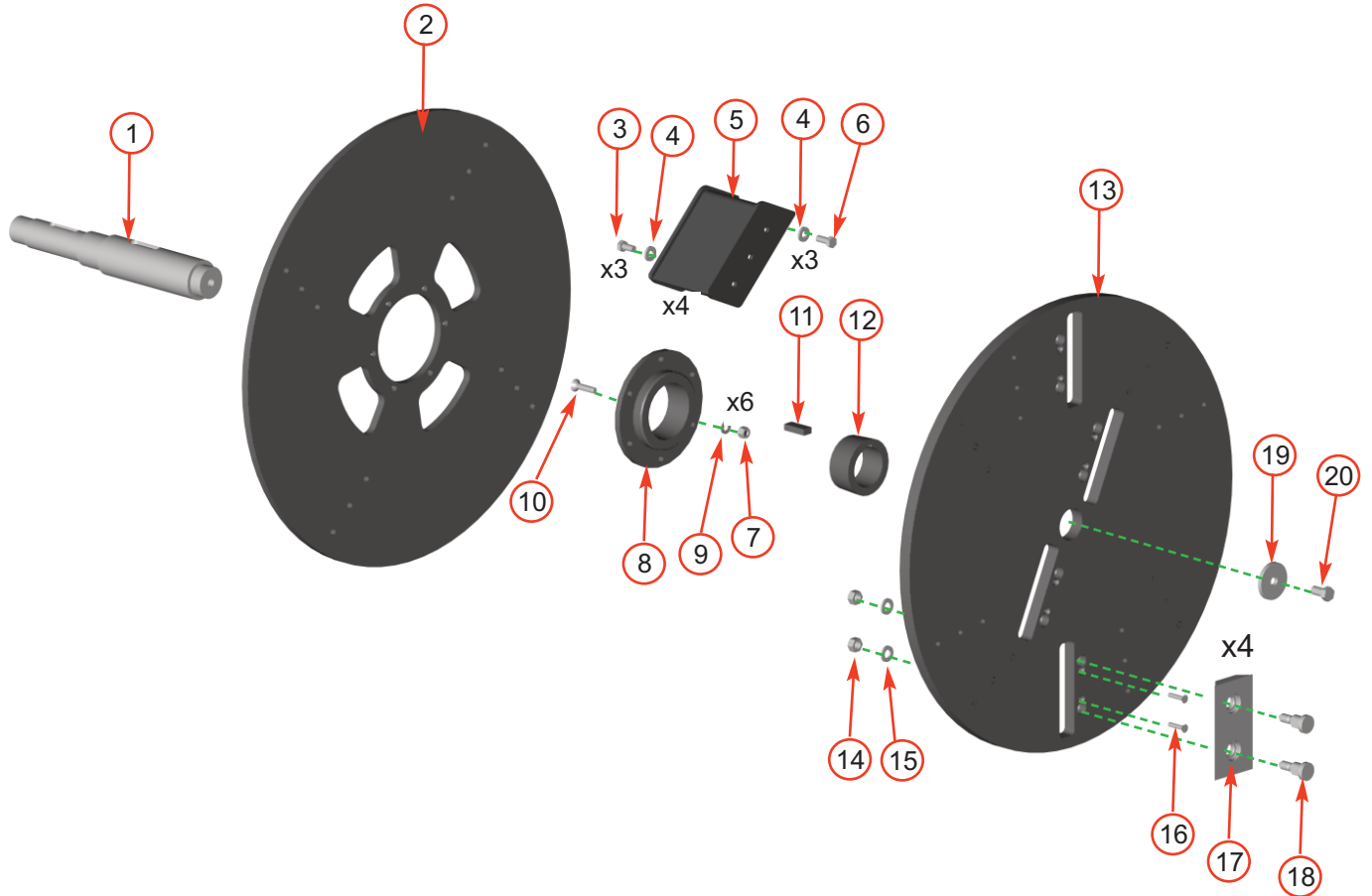


TIMBERWOLF
TW 350DHB(t)



Date Last Modified: 23 Aug 2012

Item	Part No	Part Name	Q'ty	Item	Part No	Part Name	Q'ty
1	19252M	Top Roller Blade	6	29	0046	M12 Plain Nut	4
2	0428	M12/30 Csk Bolt	42	30	1812	M10/40 Bolt	8
3	19422M	Grease Tube	1	31	0839	M10 C Washer	8
4	19247	Top Roller Slide	1	32	3026	AV Bush Concentric	8
5	17869	Outer Roller Spacer	2	33	19257M	AV Motor Mounting Plate	1
6	17868	Inner Roller Spacer	1	34	0299	M10/40 Caphead	6
7	17662	Oilon Bush for Top Roller	1	35	18015	Spline Drive 14T Long Version	1
8	0386	M10/30 Caphead	12	36	1985	M12/30 Caphead	6
9	19444	Buffer Cone	4	37	19255	Nylube Bottom Roller Bush	1
10	0701	M10 A Washer	9	38	19174	Blade Roller	8
11	4345	M10 P Nyloc Nut	4	39	19701M	Outer Roller Spacer	1
12	18628	Non-Motor Drive Boss	1	40	19700M	Inner Roller Spacer	1
13	18474	Grease Point Fitting	2	41	19699M	Outer L/H Roller Spacer	1
14	18181	M16/35 Caphead	1	42		Roller Box - Part of Rotor Housing	1
15	1143	M16 A Washer	3	43	19540	M12/180 Bolt	1
16	19251	Anvil	1	44	0704	M12 C Washer	2
17	1511	M16 P Nyloc Nut	1	45	19702M	Bottom Roller Stub Shaft	1
18	1515	M16/80 Caphead	1	46	19703M	Bottom Roller Grease Tube	1
19	3009	Slide Plug	8	47	19697M	Support Bearing	1
20	0481	M8 T Nyloc Nut	4	48	18037	M8/12 Bolt	2
21	0712	M8 C Washer	8	49	0714	Mudguard Washer	2
22	0350	M8/25 Bolt	4	50	18017	12 x 40 Dowel Pins	2
23	17767	Motor Support Bracket	1	51	18037	M8/12 Bolt	2
24	17893	Hose Clamp 131mm	1	52	0714	M8 Mudguard Washer	2
25	18016M	14T Spline Drive	1	53	19329	Motor	2
26	19052	Spring	4	54	19698M	Drive End Spacer	1
27	2888	2" Layflat 350mm	4	55	0382	M10/30 Bolt	5
28	0429	M12/35	2				



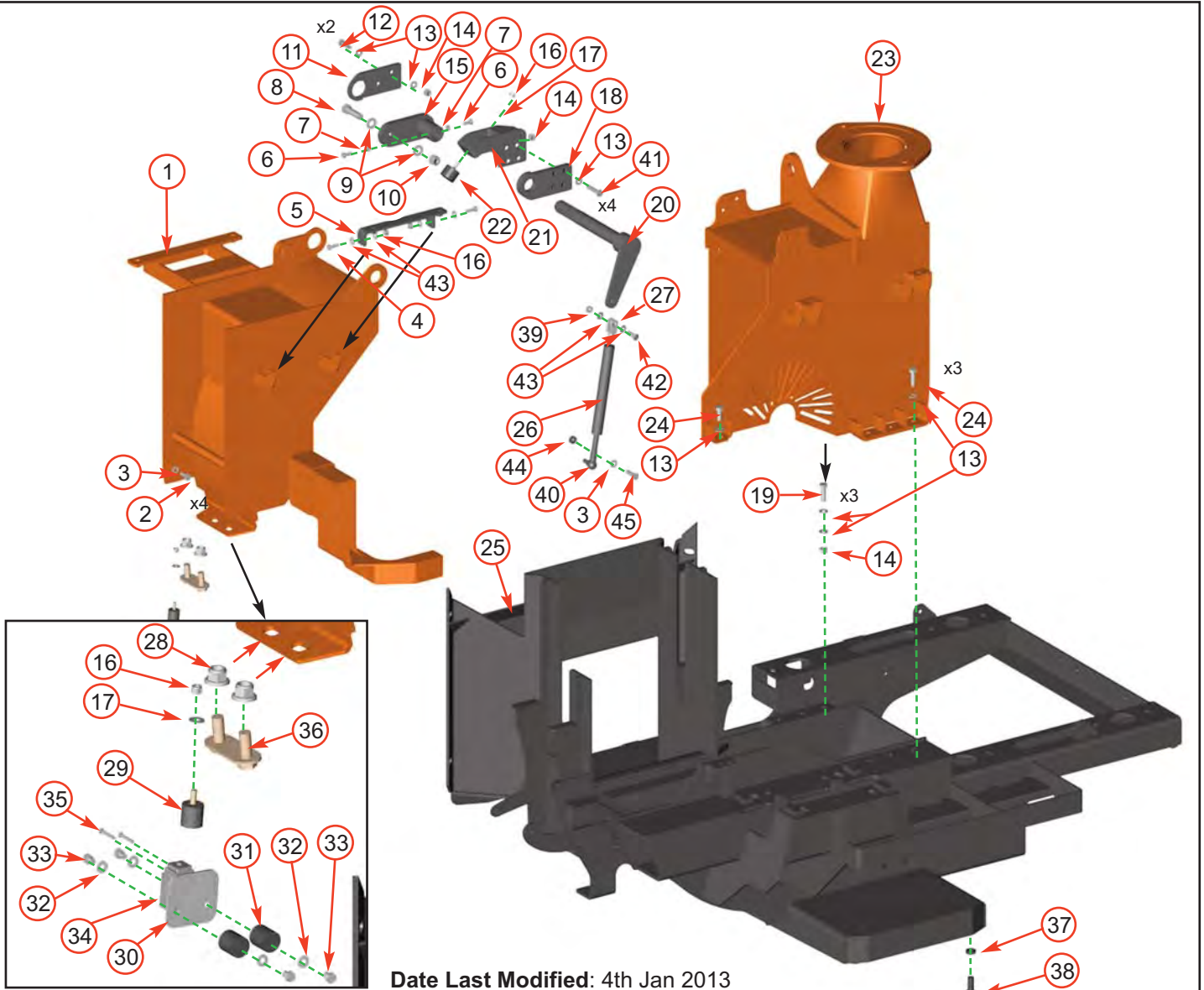
Date Last Modified: 29th Nov 12

Item	Part No	Part Name	Q'ty	Item	Part No	Part Name	Q'ty
1	19194M	Rotor Shaft	1	11	19305	Key 20 x 12 x 50LG	1
2	19288M	Rear Disc Drive	1	12	19235	Taper Lock Bush 3020	1
3	19728	M12/25 Set Screw s/c Grade 10.9	12	13	19287M	Main Front Disc	1
4	19259	M12 Nordlock Washer	24	14	1284	M16 T Nyloc Nut	8
5	19286	Rotor Fans	4	15	1218	M16 Hardened Washer	8
6	19729	M12/30 Set Screw s/c Grade 10.9	12	16	0355	M8/16 Csk Socket	8
7	0644	M12 P Nyloc Nut	6	17	19258	Cutting Blade	4
8	19234	Bolt on Flange	1	18	18712	Counter Bore Blade Bolt	8
9	0702	M12 A Washer	6	19	19295M	Rotor Nose Washer 70mm	1
10	18316	M12/50 Csk Socket	6	20	18532	M16/30 Bolt	1

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TIMBERWOLF
TW 350DHB(t)



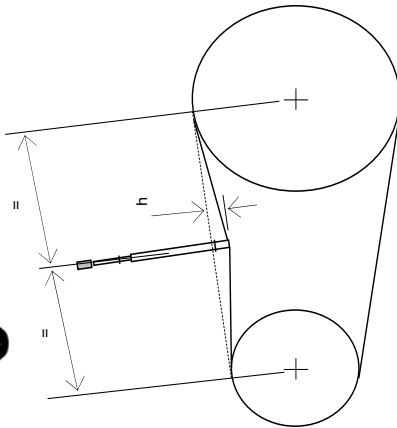
Date Last Modified: 4th Jan 2013

Item	Part No	Part Name	Q'ty
1	19292	Moving Top Rotor Housing	1
2	0360	M10/25 Bolt	4
3	0839	M10 C Washer	9
4	0382	M10/30 Bolt	2
5	19420FB	Front Guard Support Bracket	1
6	0878	M10/20 Bolt	2
7	1036	M10 Plain Nut	2
8	0434	M16/70 Bolt	1
9	1143	M16 A Washer	2
10	1511	M16 P Nyloc Nut	1
11	19408PS	L/H Hinge Plate	1
12	0431	M12/40 Bolt	2
13	0704	M12 C Washer	21
14	0466	M12 P Nyloc Nut	3
15	19320	Lever Arm & Bush Assy	1
16	0479	M8 P Nyloc Nut	2
17	0712	M8 C Washer	2
18	19407PS	R/H Hinge Plate	1
19	18172	M12/45 Bolt	3
20	19319FS	Gas Spring Lever Assy	1
21	19321FS	Rotor Housing Stop Bracket	1
22	17421	AV Mount	1
23	19291FO	Fixed Top Rotor Housing	1

Item	Part No	Part Name	Q'ty
24	0429	M12/35 Bolt	6
25	19290FB	Rotor Housing Base	1
26	14236	Gas Strut	1
27	19237	Clevis Fork	1
28	2978S	M16 Flange Nut	2
29	0178	Rubber End Stop	1
30	1691FS	Switch Back Plate	1
31	1868	M8 AV Mount	2
32	0711	M8 A Washer	4
33	1721	M8/10 Bolt	4
34	1348	Limit Switch	1
35	1006	M4/30 Pan Pozi	2
36	2819FS	Fitting Bracket	1
37	18179	M16 Plain Nut	2
38	1679	M16/40 Bolt	2
39	4345	M10 P Nyloc Nut	3
40	2341	Rose Joint	1
41	18173	M12/55 Bolt	1
42	4068	M10/40 Caphead	1
43	0701	M10 A Washer	6
44	19535M	Spacer	1
45	1812	M10/35 Bolt	1



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)
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
		SPA	SPA	SPA	SPA	SPA	SPA	SPA	SPB	SPA	SPA	SPB	SPB	SPB	SPA
		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 Length	= h	4.0	4.0	4.0	4.0	4.0	4.0	4.0	8.0	4.0	4.0	8.0	8.0	6.0	5.0
	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 - 3.1	3.3 - 3.5	2.9 - 3.1*	2.9 - 3.1	5.6 - 6.0	1.7 - 1.8
Force reading (Kgf)		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
		SPA	SPA	SPA	SPA	SPA	SPA	SPA	SPA	SPA	SPA	SPA	SPA	SPA	SPA
		925.0	925.0	925.0	900.0	900.0	925.0	925.0	925.0	925.0	925.0	1060.0	1060.0	950.0	
Belt Pitch Designation															
Belt deflection	= h	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
	New belt	1.9 - 2.0	1.9 - 2.0	1.9 - 2.0	2.3 - 2.4	2.3 - 2.4	2.3 - 2.4	2.3 - 2.4	2.3 - 2.4	2.0 - 2.2	2.0 - 2.2	2.7 - 2.9	2.7 - 2.9	3.1 - 3.3	
	Used belt	1.7 - 1.8	1.7 - 1.8	1.7 - 1.8	2.0 - 2.1	2.0 - 2.1	2.0 - 2.2	2.0 - 2.2	2.0 - 2.2	1.8 - 2.0	1.8 - 2.0	2.3 - 2.5	2.3 - 2.5	2.7 - 2.9	