



# TW 150DHB INSTRUCTION MANUAL



**timberwolf-uk.com**

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# INTRODUCTION

Thank you for choosing Timberwolf. 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. Failure to do so could result in:

- PERSONAL INJURY
- EQUIPMENT DAMAGE
- DAMAGE TO PROPERTY
- 3RD PARTY INJURIES

This manual covers the operation and maintenance of the Timberwolf TW 150DHB. All information in this manual is based on the latest product information available at the time of purchase. .

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 **safe working practices**.

Timberwolf's policy of regularly reviewing and 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 an important 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.**

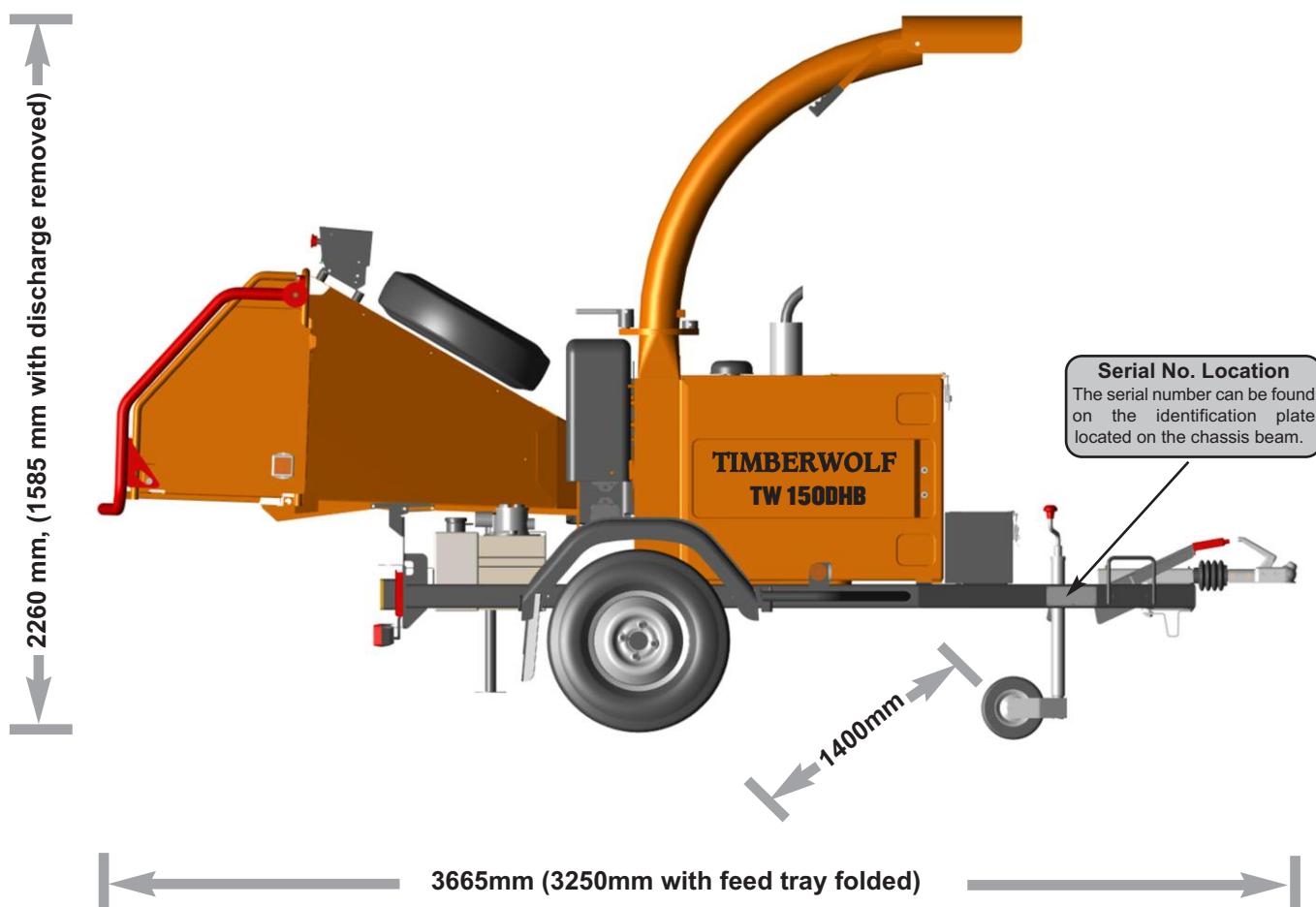
This caution symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury to yourself or others and carefully read the message that follows.



# The Timberwolf TW 150DHB

*Designed to chip solid wood material up to 150mm in diameter and capable of chipping up to 4 tonnes of brushwood per hour.*

## DIMENSIONS

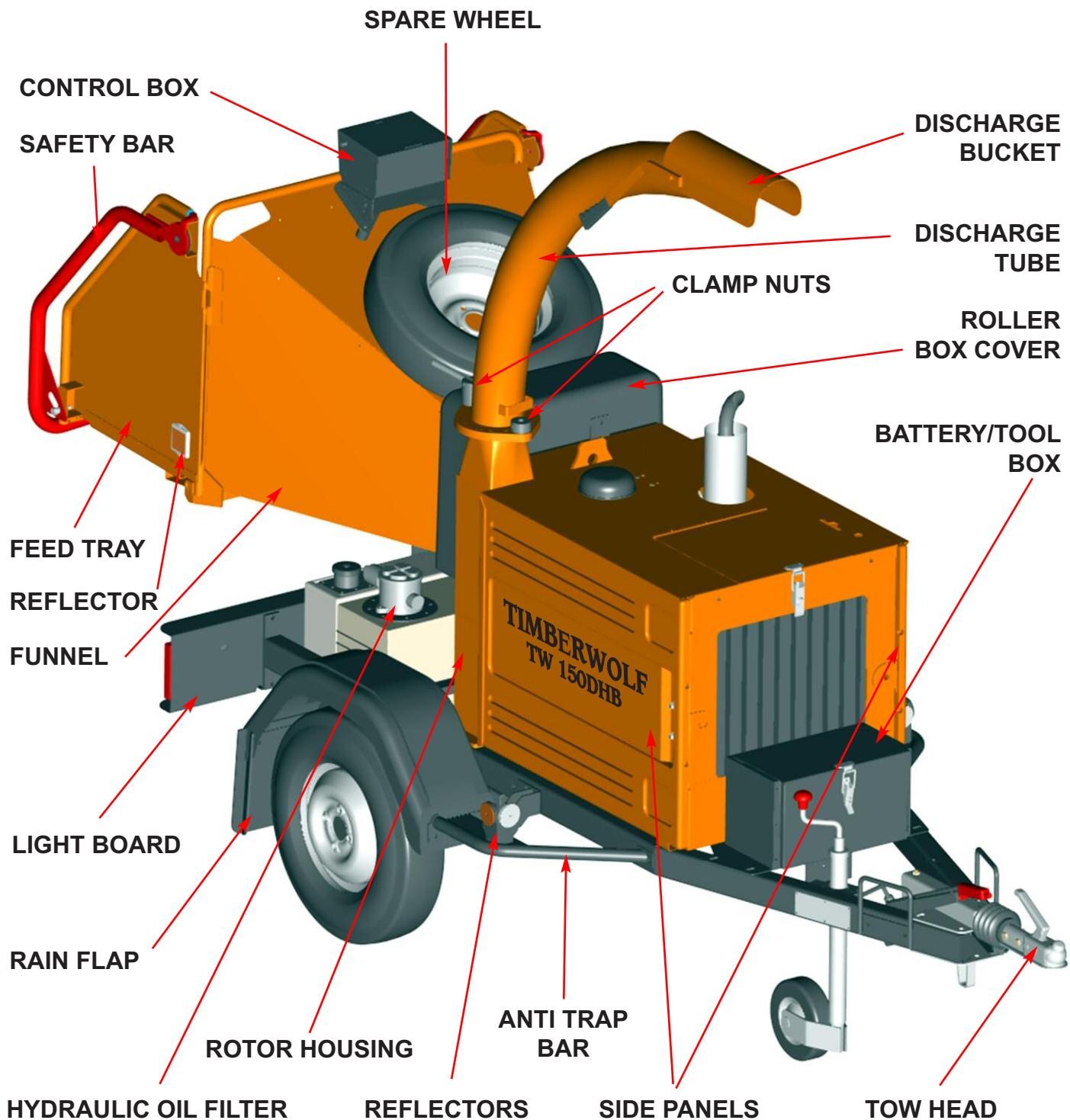


### TIMBERWOLF TW 150DHB SPECIFICATION

|                  |                          |                               |                   |
|------------------|--------------------------|-------------------------------|-------------------|
| Engine type:     | Kubota 4-cylinder diesel | Maximum diameter material:    | 150mm (6")        |
| Maximum power:   | 26kW (35hp)              | Fuel capacity:                | 18 litres         |
| Cooling method:  | Water cooled             | Hydraulic oil capacity:       | 15 litres         |
| Overall weight:  | 737kg                    | Material processing capacity: | up to 4 tonnes/hr |
| Starting method: | Electric                 | Fuel type:                    | Diesel            |
| Roller feed:     | Twin hydraulic motors    |                               |                   |

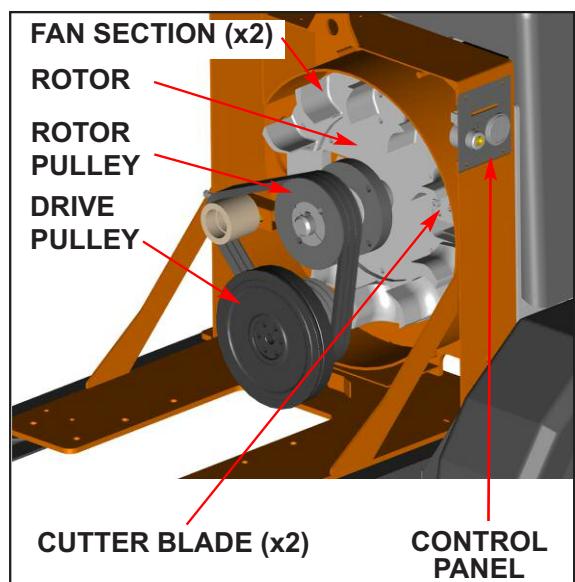
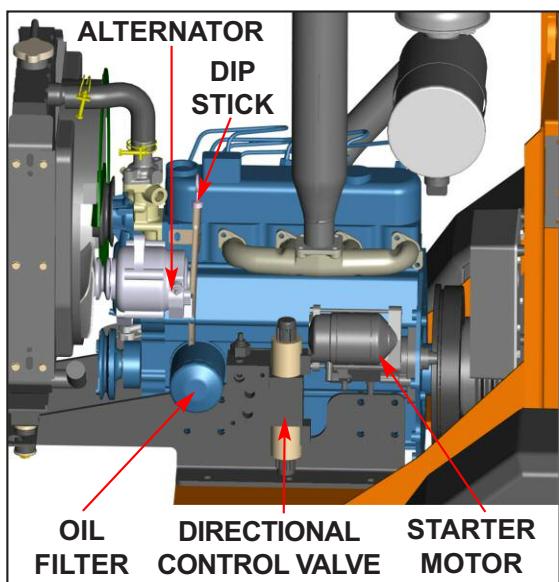
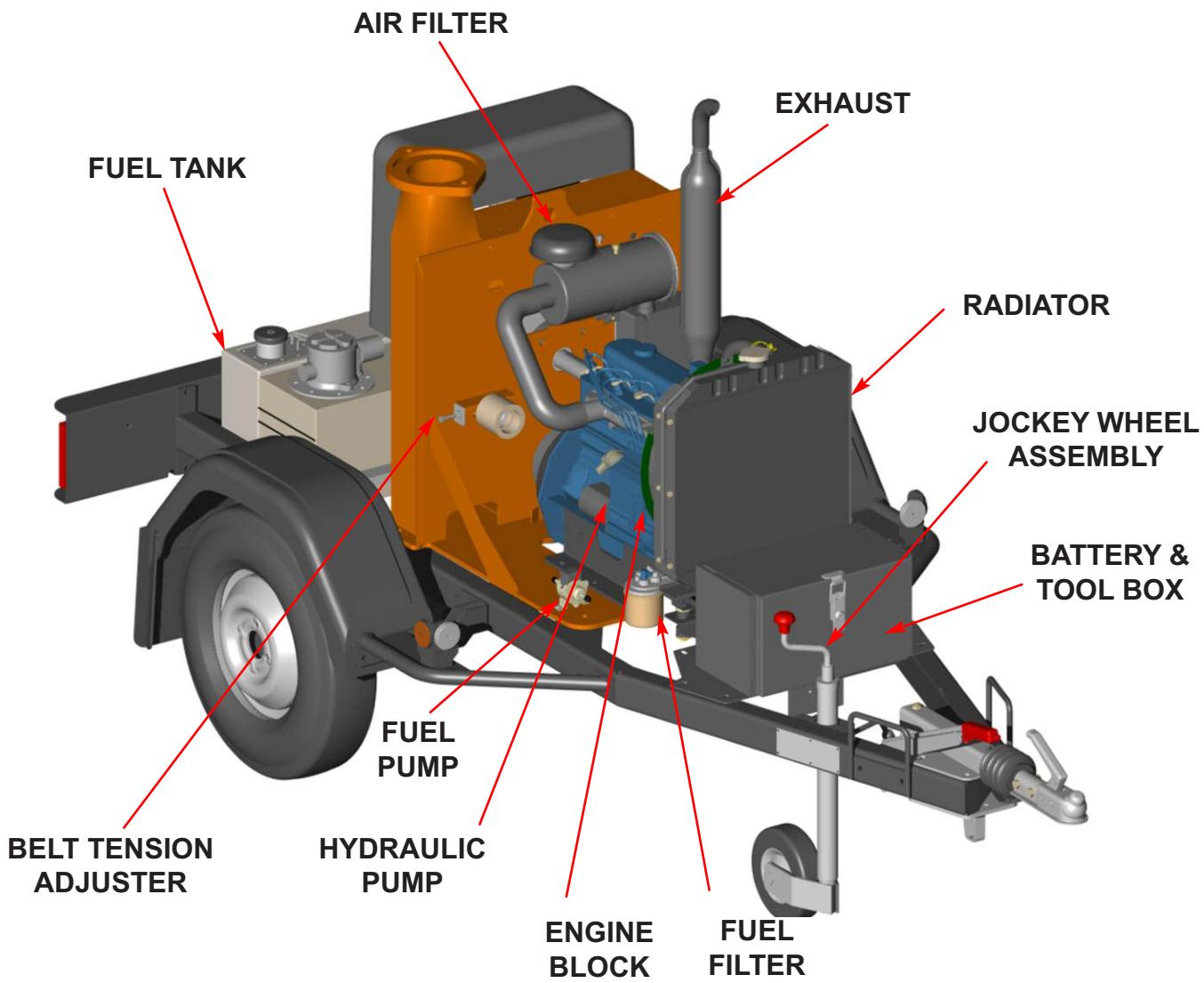


## PARTS LOCATOR





## 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 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 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 -



- 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.

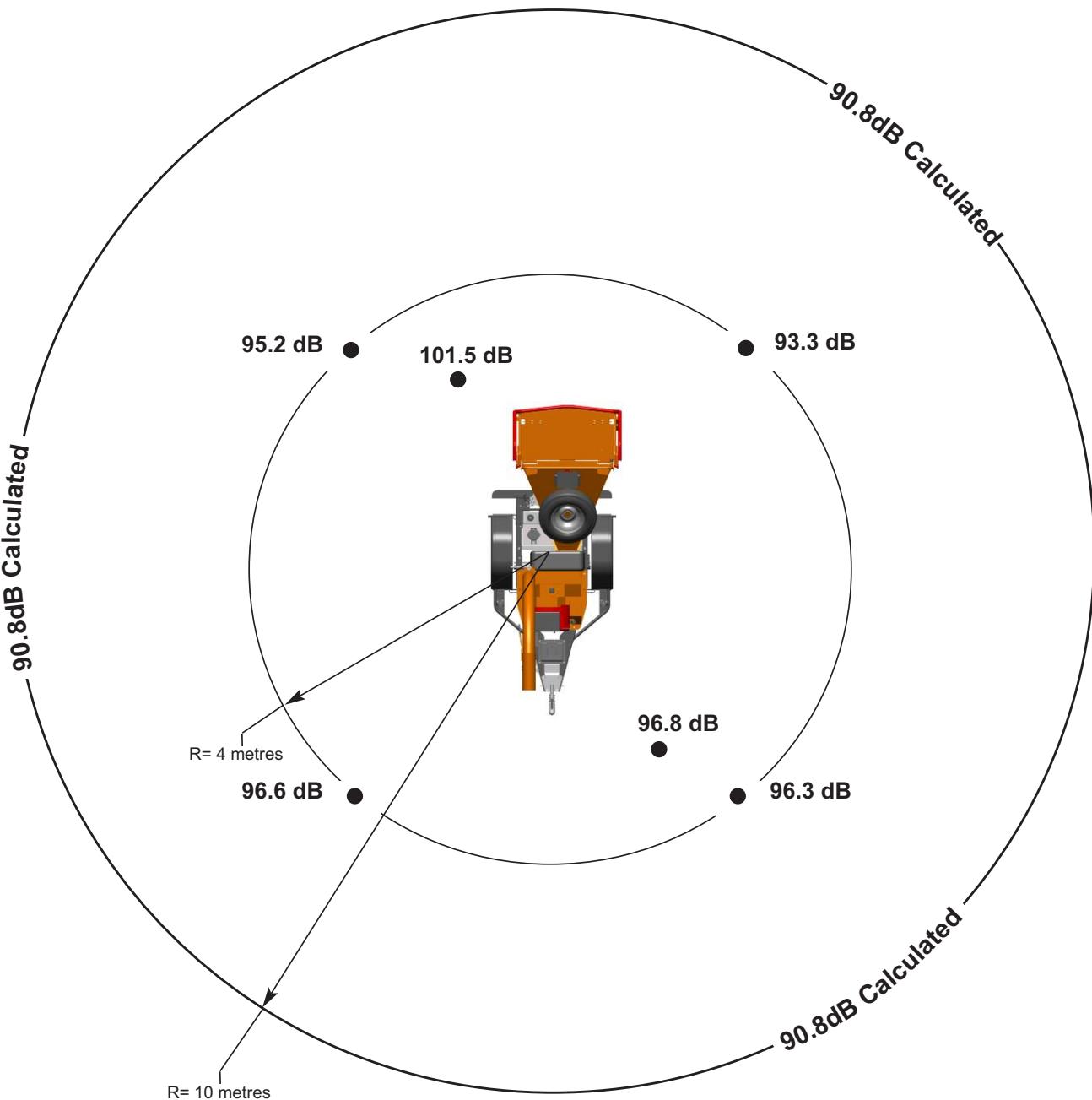


## NOISE TEST

**MACHINE: TW 150DHB**

**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: 120dB (A)**

As required by Annex III of Directive 2000/14/EC "Noise Emission in the environment by equipment for use outdoors".

# OPERATING INSTRUCTIONS



TIMBERWOLF  
TW 150DHB 8

## SAFE TRANSPORTATION

- 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.

### WARNING

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



- 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 2.2 bar or 32 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.

## STABILISING THE CHIPPER

When hitched to a vehicle the chipper handbrake should be released and the prop stand and jockey wheel stored in the towing position (a).



When the chipper is unhitched it should be made secure before starting work by applying the handbrake and lowering the prop stand and jockey wheel (b).



# 9 OPERATING INSTRUCTIONS



TIMBERWOLF  
TW 150DHB

## DELIVERY

All Timberwolf TW 150DHB 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 box - is the control box above the feed opening of the chipper funnel. Its function is to control the feed rollers. The feed rollers draw material into the machine. **It does not control the main rotor.**

**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.

### RED SAFETY BAR TEST

To ensure the safety bar is always operational it must be activated once before each work session. The rollers will not function until the bar is activated. This procedure must be repeated each time the ignition is switched off.

### WARNING

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

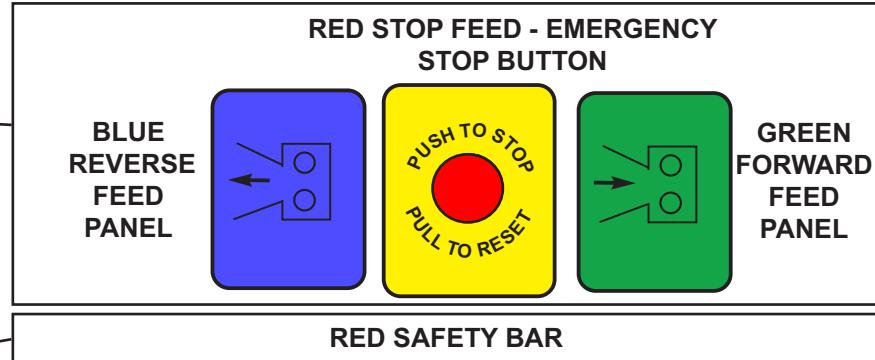
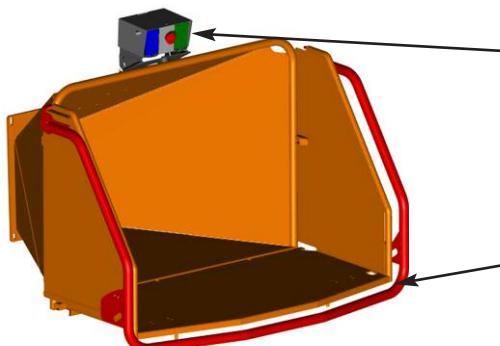


**GREEN BUTTON** = Forward feed - Push the button once - this activates the rollers and will allow you to start chipping (if the rotor speed is high enough).

**RED BUTTON** = Emergency stop - This button stops the rollers from feeding. It overrides all other buttons or bars and will not allow the other buttons to function until it has been reset. To reset, pull out until it returns to its original position. The forward and reverse buttons will now function.

**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. You do not have to press the STOP button before pressing the GREEN FEED button to recommence feeding.

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 no stress unit controls the feed rate of the material going into the chipping chamber. If the rotor speed is below the predetermined level, the no stress unit will not allow the feed rollers to work in either forward or reverse, until the rotor speed rises above the predetermined level. At this point, the feed rollers will start turning without warning.

## EMERGENCY STOPPING

Push the **RED STOP** button (see diagram on page 9) or push the **RED SAFETY BAR**, whichever is the quickest for you to reach. Turn off the engine ignition key. The emergency stop will prevent any more material being fed into the chipper. The rotor will still be turning. The engine must be powered down to stop the rotor.

## ENGINE CONTROLS

The engine speed is controlled by the horizontally adjustable lever shown in the drawing. With the throttle lever in the FAST position the machine is ready to chip. It MUST be fully pushed to the left 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.



## BLADE WEAR

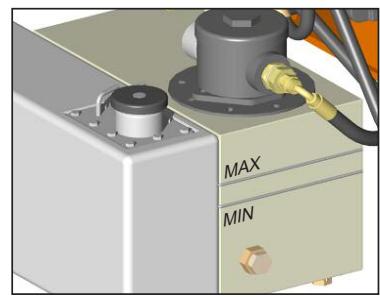
The most important part of using a wood chipper is keeping the cutter blades sharp. Timberwolf chipper blades are hollow ground to an angle of 40 degrees. When performing daily blade checks ensure blade edge is sharp and free from chips, if there is any evidence of damage, or the edge is "dull" change the blade(s). The TW 150DHB is fitted with 2 blades 101mm (4") 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.

## HYDRAULIC OIL LEVEL INDICATOR

The oil level will be visible through the tank wall. It should be within the upper and lower level marks.



## FUEL LEVEL INDICATOR

The fuel level can be seen through the wall of the plastic tank.

## DAILY CHECKS BEFORE STARTING

- LOCATE the machine on firm level ground.
- CHECK machine is well supported and cannot move.
- CHECK jack 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 tray is in up position - to prevent people reaching rollers.
- CHECK controls as described on page 11.
- CHECK (visually) for fluid leaks.
- CHECK fuel and hydraulic oil levels.

*For parts location see diagrams on pages 3 & 4.*

# 11 OPERATING INSTRUCTIONS



TIMBERWOLF  
TW 150DHB

## BEFORE USING THE CHIPPER

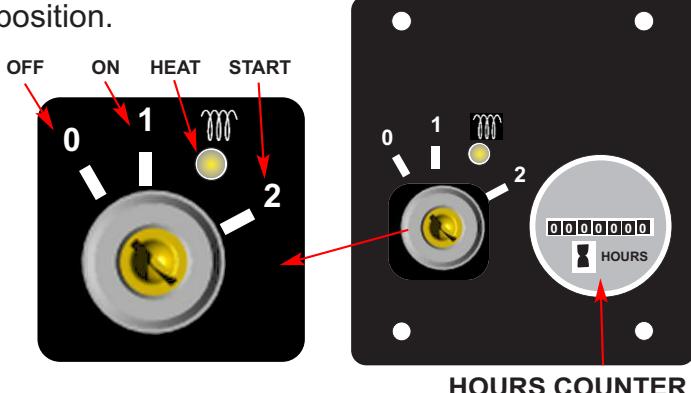
WITH THE ENGINE RUNNING AT FULL SPEED

- 1 PRESS THE GREEN BUTTON  
THE ROLLERS SHOULD TURN FORWARDS
- 2 PRESS THE RED SAFETY BAR  
THE ROLLERS SHOULD STOP
- 3 PRESS THE BLUE BUTTON  
THE ROLLERS SHOULD TURN BACKWARDS ONLY WHILE THE BUTTON IS PRESSED
- 4 PRESS THE GREEN BUTTON AGAIN  
THE ROLLERS SHOULD TURN FORWARDS
- 5 PRESS THE EMERGENCY RED BUTTON  
THE ROLLERS SHOULD STOP
- 6 PRESS THE BLUE BUT-TON  
THE ROLLERS SHOULD NOT TURN
- 7 PULL TO RESET THE RED BUTTON  
THE MACHINE IS READY TO USE

## STARTING THE ENGINE

- ENSURE throttle lever is in the slow (tortoise) position.
- INSERT key. Turn to heat.
- HEATER LED comes on.
- WAIT FOR HEATER LED TO GO OUT.
- TURN key to engage starter motor.
- RELEASE key once engine starts.

*Do not engage starter motor for more than 20 seconds - allow one minute before attempting to start. Investigate reasons for failure to start.*



## STOPPING THE ENGINE

- MOVE the throttle lever to the 'Tortoise' to reduce the engine speed to idle.
- LEAVE the engine running for 1 minute.
- TURN the power switch to position 0. The engine should stop after a few seconds.
- REMOVE the ignition key.

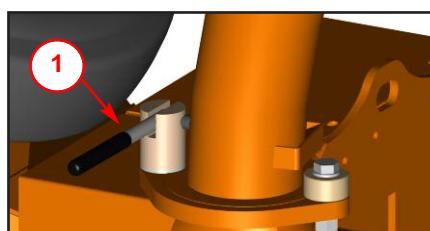
*For more detailed information refer to the Engine Owner's Manual*

## DISCHARGE CONTROLS

Controlling the discharge is an essential part of safe working.

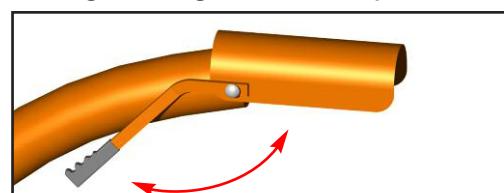
### ROTATION

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.





## 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. Pull to release the red stop button.
- PERFORM the "before using the chipper" tests (see page 11).
- 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.

## CHIPPING

Wood up to the recommended diameter can be fed into the feed funnel. Put the butt end in first and engage it with the feed rollers. 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 no stress 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. If this occurs, 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 and hold for 2 seconds - then repress **GREEN FEED** button. This should enable the rollers to free the offending piece of material and continue rotating at the correct speed. If the rollers continue to stall in the 'forward feed' or 'reverse feed' position push the **RED STOP BUTTON**, turn the engine off, remove the 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 engine and remove the ignition keys.
- 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.

### 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.**







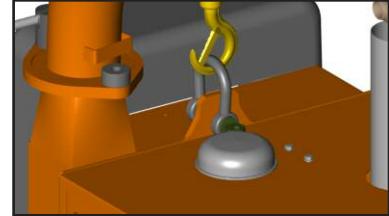
## SAFE MAINTENANCE

**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.

## 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 LIFTING EYE IF DAMAGED.



## 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 16-17.



1. Open the battery / tool box lid.
2. Remove the negative lead first and then the positive lead.
3. Clean, charge and/or top up the battery as required.
4. Refitting is the reverse of removal. Apply a smear of vaseline to the terminals to prevent corrosion.

## CHECK FITTINGS

The Timberwolf TW 150DHB 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 lbft | Torque Nm |
|--------------------------|----------|----------|-----------|-------------|-----------|
| Blade Bolts              | M10      | Standard | T50 Torx  | 45          | 61        |
| Hyd Motor Retaining Nuts | M10      | Standard | 17mm Hex  | 34          | 46        |
| Funnel Retaining Nuts    | M12      | Standard | 17mm Hex  | 38          | 51        |
| General                  | M8       | Standard | 13 mm Hex | 17          | 23        |
| General                  | M10      | Standard | 17 mm Hex | 34          | 46        |
| General                  | M12      | Standard | 19 mm Hex | 60          | 80        |
| Drain Bung in Fuel Tank  | 3/8" BSP | -        | 22 mm Hex | 25          | 33.8      |



## 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.



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.



Pb



## 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.

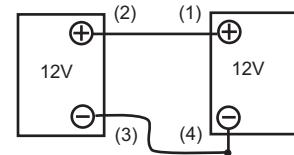
- Switch on the charger only after the battery has been connected, and switch off the charger first after charging has been completed.
- Charging current-recommendation: 1/10 ampere of the battery capacity Ah.
- Use a charger with a constant charging voltage of 14.4V for re-charging.
- If the acid temperature 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

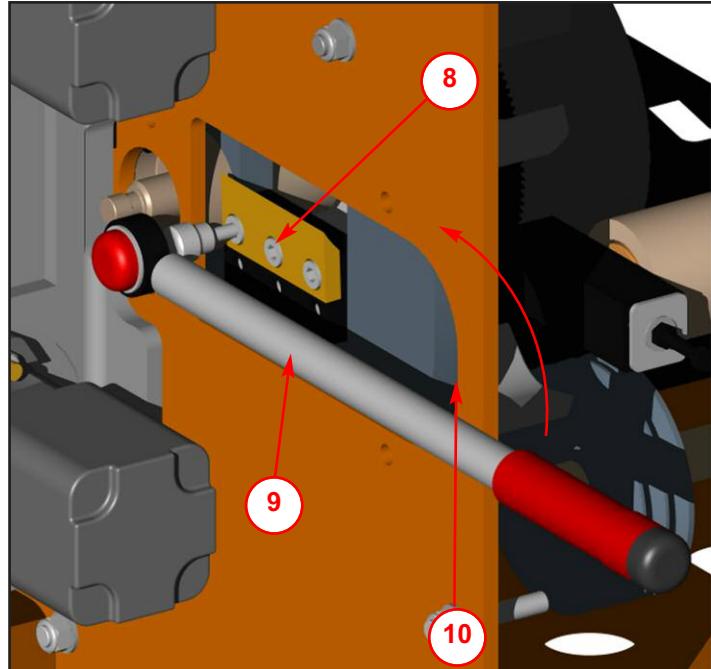
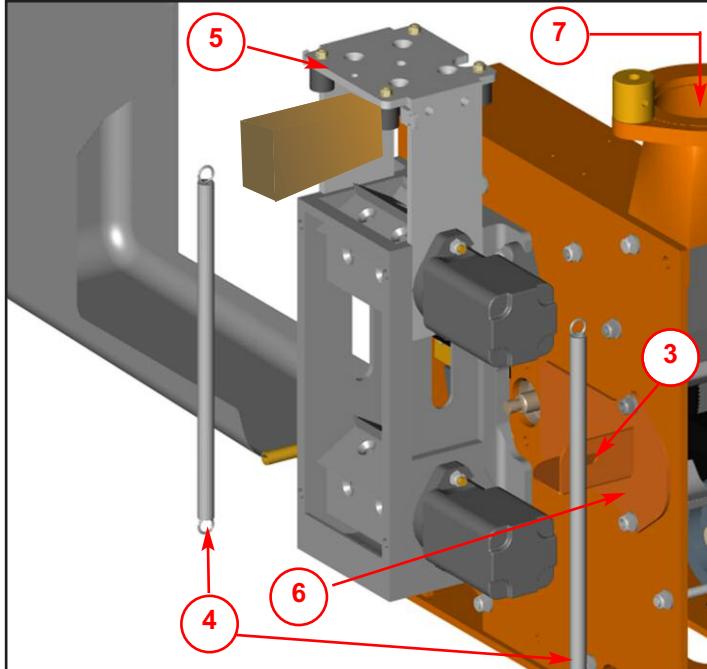
- Charge the battery; store in a cool place or in the vehicle with the negative terminal disconnected.
- Check the battery state of charge at regular intervals, and correct by recharging when necessary (cf. section 4).



## CHANGE BLADES

### WARNING

Wear riggers gloves for the blade changing operation.



1. Turn the chipper off and remove the ignition keys.
2. Remove battery leads.
3. Remove bolt and washer retaining roller box guard and lift guard.
4. Remove the two springs on the roller box slide.
5. **NOTE: Rollerbox slide weighs in excess of 20kg.**  
Lift the roller box slide and wedge a suitably sized piece of wood to hold in place.
6. Remove blade access cover.
7. Remove discharge tube. Turn the rotor by hand by grasping fan section on rear of rotor disc until blade is visible through aperture.
8. Use a small screwdriver to remove sap and debris from Torx socket in screw - be particularly careful to ensure every last piece has been removed.
9. Undo blade screws using Torx socket drive provided. Rotor will turn until Torx socket has located on machine.
10. **Before fitting replacement blades carefully clean blade recess in rotor so that no debris is trapped between blade and rotor.**
11. When fitting blades replace any damaged screws with new and coat each screw with copperslip over the whole of the thread.
12. **Retighten each screw to 60Nm (45lbs ft).**  
*NOTE: This torque setting is vitally important to ensure your bolts come out at a later date and Timberwolf recommend you purchase a torque wrench for this and other jobs on the chipper.*
13. Grease all surfaces of the roller box sliding mechanism (see diagram on page 20).
14. Replace blade access cover.
15. **NOTE: Rollerbox slide weighs in excess of 20kg.**  
Remove wedge, lower roller box slide and replace springs.
16. Close roller box guard making sure that it is located over the retaining bracket, and ensure bolt and washer (as note 3) are tightened.
17. Refit battery leads.

### 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.



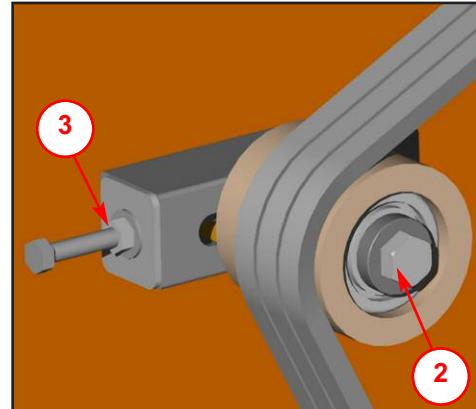


## TENSION DRIVE BELTS

**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.*

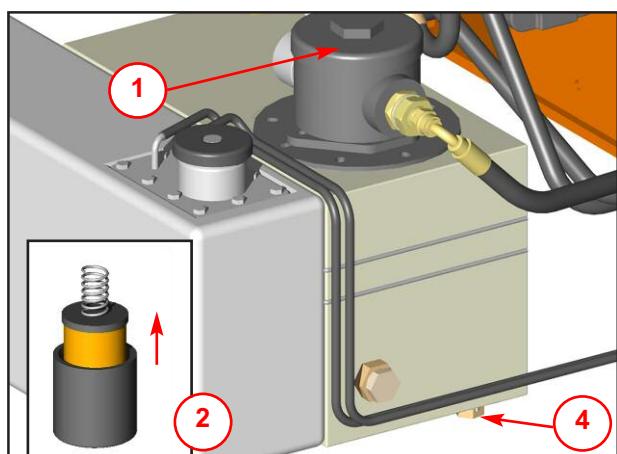
1. Remove side panel.
2. Loosen bolt in centre of tensioner pulley with a 19 mm spanner so that pulley is able to slide with minimal wobble.
3. Turn nut in end of tensioner pulley slider until correct belt tension is achieved. For instructions on checking belt tension & correct belt tension values, please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



## CHANGE HYDRAULIC OIL AND FILTER

### WARNING

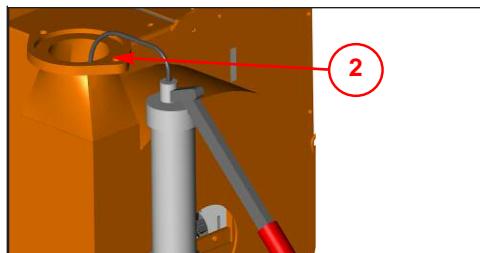
Use plastic gloves to keep oil off skin and dispose of the used oil and filter in an ecologically sound way. The oil and filter should be changed once a year or at any time it becomes contaminated. Before starting check that the chipper is standing level and brush away loose chips.



*NOTE: This is a non-adjustable air breather filter.*

1. Remove the black screw cap from the top of the filter housing.
2. Partially remove filter element from inner cup. Leave filter to drain for 15 minutes.
3. Remove filter element from cup when clear of hydraulic oil.
4. Remove drain plug and drain oil into a suitable container.
5. Replace drain plug.
6. Refill with VG 32 hydraulic oil until the level is between the min and max lines on the tank (about 15 litres).
7. Refit the filter cup, install a new filter element and refit the black screw cap, to the filter housing, ensuring o-ring remains in place.

## GREASE THE DISCHARGE FLANGE

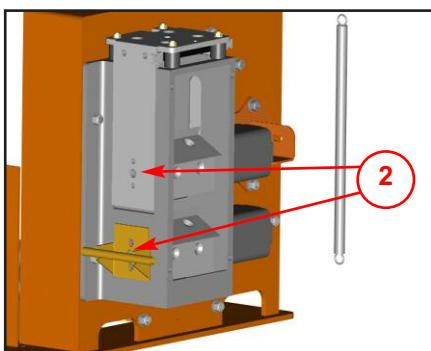


1. Remove the discharge tube.
2. Apply multipurpose grease to surface shown.
3. Refit discharge tube.



## GREASE THE ROLLER SPLINE AND BEARING

**NOTE:** 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.

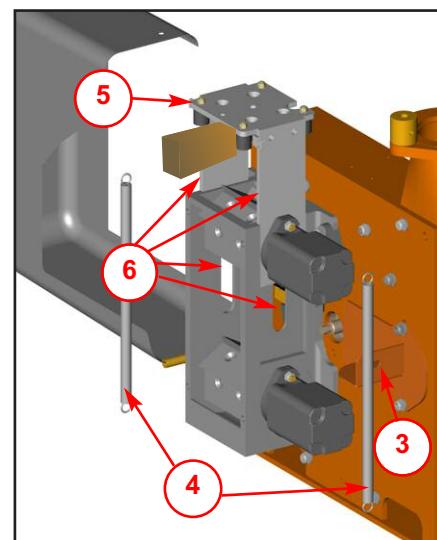


1. Remove bolt and washer retaining roller box guard and lift guard (see diagram on page 18).
2. Locate two grease nipples; one in the centre of each roller shaft.
3. Use a pump action grease gun to apply a generous amount of grease to each roller drive. **DO NOT USE GRAPHITE BASED GREASE.** After applying 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 3 times.
4. Close roller box guard making sure that it is located over the retaining bracket, and ensure bolt and washer are tightened.

## GREASE THE ROLLER BOX SLIDES

**NOTE:** This should be done regularly. In dirty or dusty conditions or during periods of hard work it should be done weekly. If the slides become dry the top roller will tend to hang up and the pulling-in power of the rollers will be much reduced. Excessive wear will ensue.

1. Turn the chipper off and remove the ignition keys.
2. Ensure machine has come to a complete stop - remove battery leads.
3. Remove the bolt and washer retaining roller box guard and lift guard.
4. Remove the two springs on the roller box slide.
5. **NOTE: Rollerbox slide weighs in excess of 20kg.** Lift the top roller and wedge a suitably sized piece of wood to hold in place.
6. Apply thin grease with a brush to each slide on roller box and on inner cheeks of slider. **DO NOT USE GRAPHITE BASED GREASE.**
7. **NOTE: Rollerbox slide weighs in excess of 20kg.** Remove wedge, lower roller box slide and replace springs.
8. Close roller box guard making sure that it is located over the retaining bracket, and ensure bolt and washer (as note 3) are tightened.
9. Refit battery leads.



## GREASING ROTOR BEARINGS

Both front and rear bearings are sealed and do not need greasing.

## 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.**

## CHECK HOSES

All the hydraulic hoses should be regularly inspected for chafing and leaks. The hydraulic system is pressurized to 130 Bar 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 reassembly. Fittings should then be retightened.

**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

### EC 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 150DH & DHB

**Serial No.** : Serial Manufacture

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

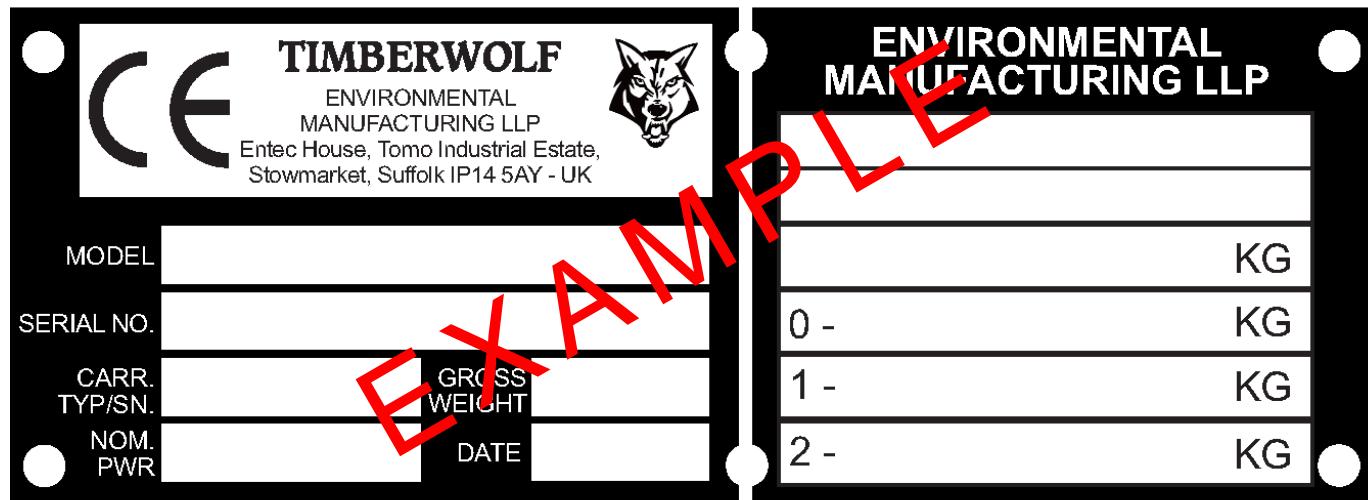
BS EN 12100-1: 2010 Safety of Machinery- Basic concepts, BS EN 13857-1: 2008 Safety of Machinery-Safety distances to danger zones, BS EN 60204-1: 2006 +A1 2009 Safe electrical practices, BS EN 13732-1:2008 Safety of Machinery – Temperatures of touchable surfaces, BS EN 13849-1: 2008 – Safety of Machinery – Safety related parts of control systems, BS13850:2008 safety of Machinery Emergency stop BS EN 982: 1996 + A1 2005 – Safety of Machinery – Hydraulics, BS EN 1088: 1995 + A2 2008 – Safety of Machinery – Interlocking devices, BS EN 13525: 2005 + A2 2009 – Forestry Machinery – Wood chippers – Safety. BS EN 953:1997+A1:2009

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

Date: 31 July 2014



# IDENTIFICATION PLATE



# DECALS



**TIMBERWOLF 24  
TW 150DHB**

| Decal | Description   | Decal                | Description  |
|-------|---|----------------------|--|
|       | 616<br>Hot exhaust  |                      | 4099<br>Danger.<br>Rotating blades.<br>Keep hands and feet out.  |
|       | 617<br>High velocity discharge -<br>keep clear  | 2800<br><br>2801<br> | Reverse feed<br>Forward feed   |
|       | 670<br>Personal Protective<br>Equipment required  |                      | 2802<br>Push to stop,<br>Pull to reset.  |
|       | 1661<br>Read the instruction<br>manual for greasing and<br>maintenance information  |                      | 19517<br>Warning<br>Do not engage starter motor for<br>more than 20 seconds. Allow one<br>minute before attempting to start.<br>Investigate reasons for failure to start.<br>Excessive cranking will result in<br>starter motor failure. This will not be<br>covered under warranty.   |
|       | 1662<br>The instruction manual with<br>this machine<br>contains important<br>operating, maintenance and<br>health and safety<br>information. Failure to<br>follow the information<br>contained in the<br>instruction manual may lead<br>to death or serious injury. |                      | 2949<br>Lifting eye is designed to lift<br>the machine's weight only.<br>Do not use hoist hook directly on<br>lifting eye. Use correctly rated<br>safety shackle only through lifting<br>eye. Lifting eye to be inspected<br>every 6 months or before each<br>use. Always visually inspect lifting<br>eye prior to each use. Do not<br>use lifting eye if damaged. |
|       | 1399<br>Push to stop.   |                      | 3022<br>Clean under blades before<br>refitting or turning.<br><br>Failure to do so may result in<br>blade(s) coming loose and<br>damage being caused to the<br>rotor housing.  |
|       | P691<br>Do not pull here.   |                      | 18438<br>When re-fitting this guard<br>ensure that steel retaining<br>bracket is on the inside.<br>Damaged guards due to incorrect<br>assembly will not be covered by<br>your Timberwolf warranty.   |

# 25 DECALS

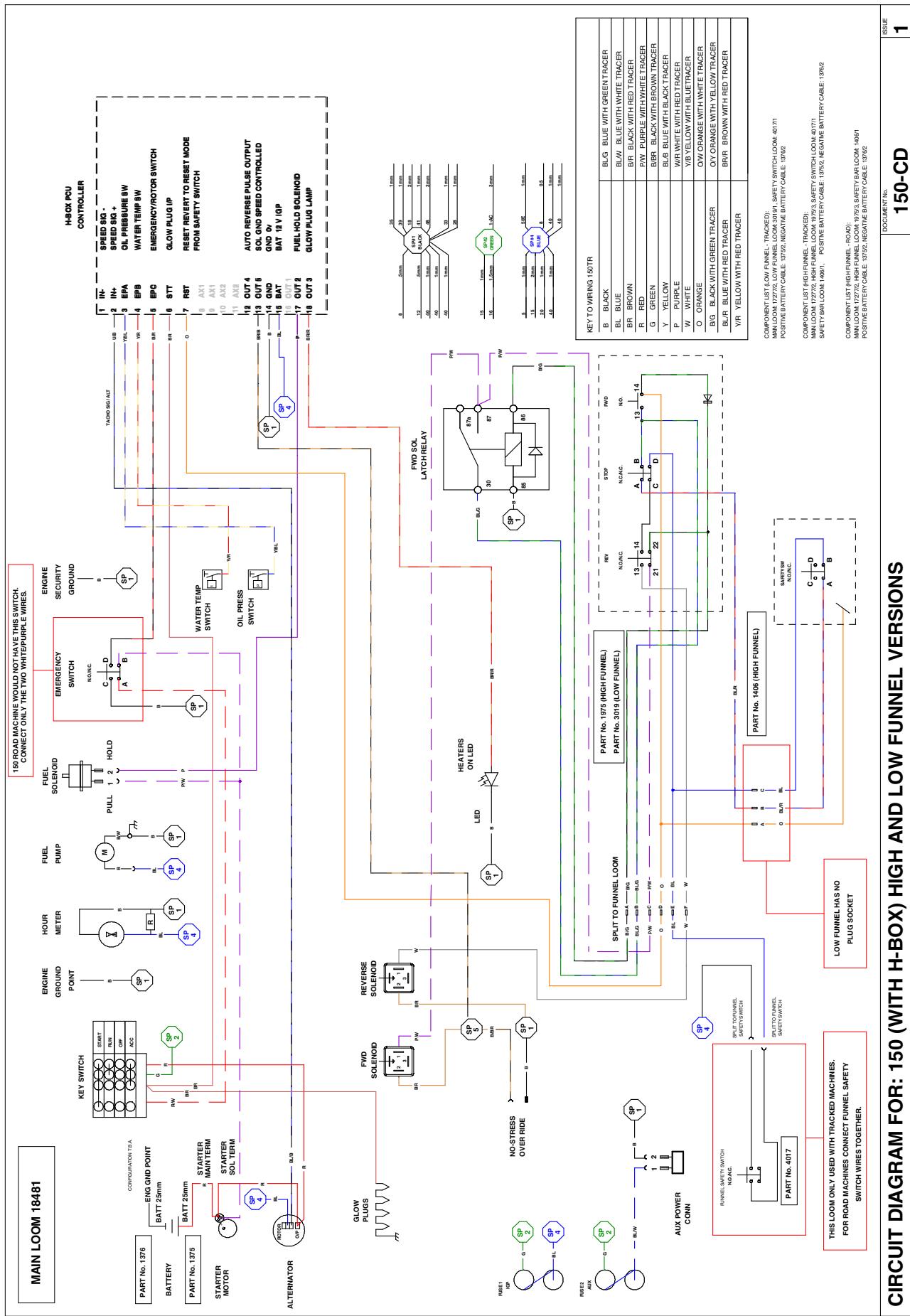


**TIMBERWOLF**  
**TW 150DHB**

| Decal | Description  | Decal | Description  |  |       |  |  |                                       |
|-------|--|-------|--|--|-------|--|--|---------------------------------------|
|       | P637<br>Danger.<br>Do not operate without this cover in place.   |       | P653<br>Danger.<br>Rotating blades inside.<br>Stop engine and remove key before removing discharge unit.   |  |       |  |  |                                       |
|       | P652<br>Caution. Do not put road sweepings in machine as grit will damage blades.  |       | P654<br>Caution. When transporting, discharge clamps may work loose. Check frequently.   |  |       |  |  |                                       |
|       | P655<br>Caution.<br>Avoid standing directly in front of feed funnel to reduce exposure to noise, dust and risk from ejected particles.           |       | P656<br>Danger.<br>Do not use this machine without the discharge unit fitted. Failure to comply may result in serious injury or damage.                        |  |       |  |  |                                       |
|       | 1258<br>Warning<br>Failure to maintain brake adjustment will result in damper failure. No warranty liability will be accepted on this item.      |       | P650<br>Danger. Autofeed system fitted. Rollers may turn without warning!<br>When the engine is switched off the rollers will turn during the run down period. |  |       |  |  |                                       |
|       | 18393<br>New drive belts need re-tensioning.<br>When new belts are fitted check tension every 2-3 hours & adjust until tension remains constant. |       |  |  |       |  |  |                                       |
|       | 3004   |       | 2998   |  | 1756  |  |  | <b>TIMBERWOLF</b><br><b>TW 150DHB</b> |
|       | 1363   |       | 4138   |  | P*150 |  |  |                                       |



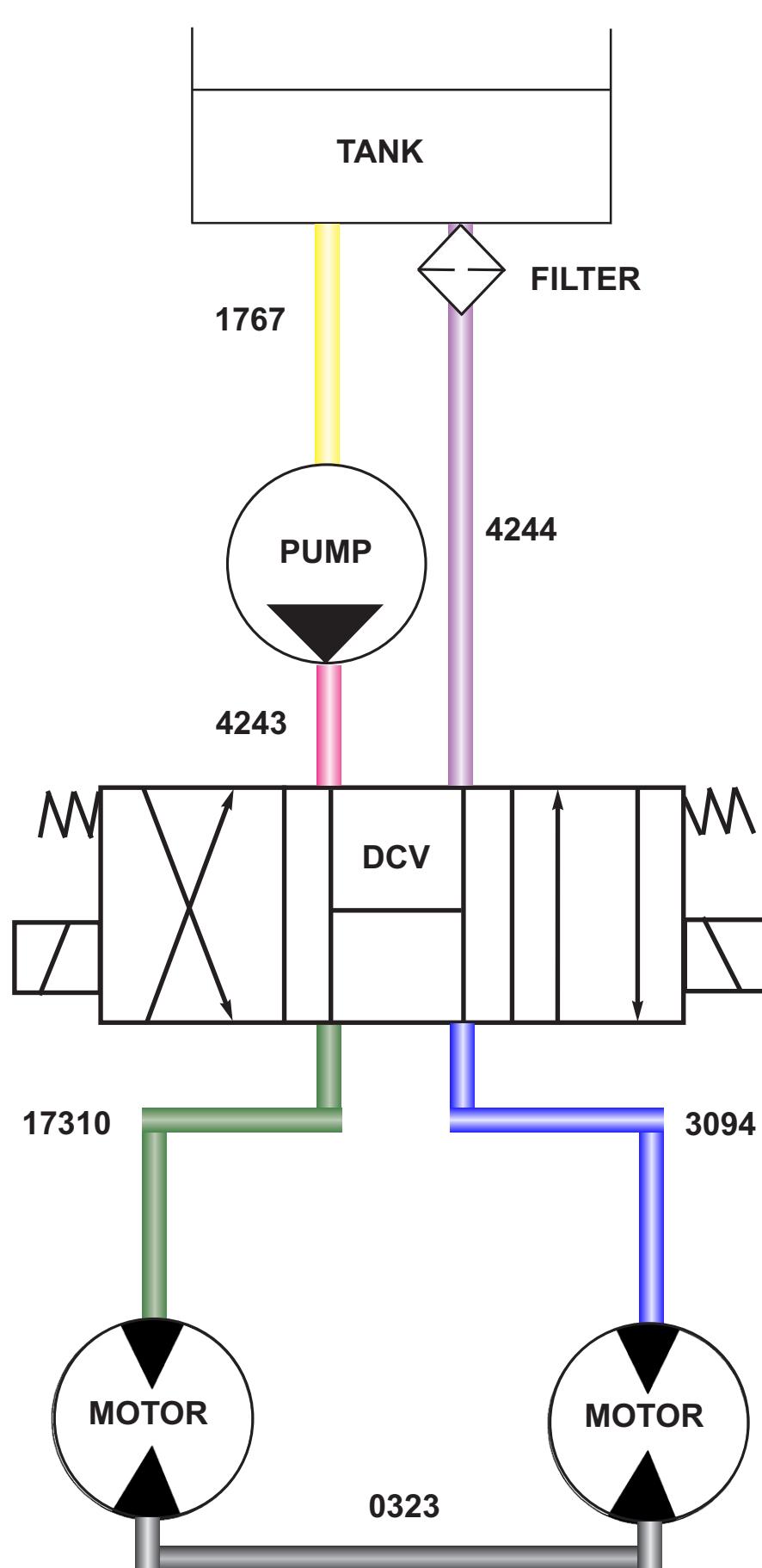
Date Last Modified: 16th May 06



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Hose Kit 4330



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# PARTS LISTS

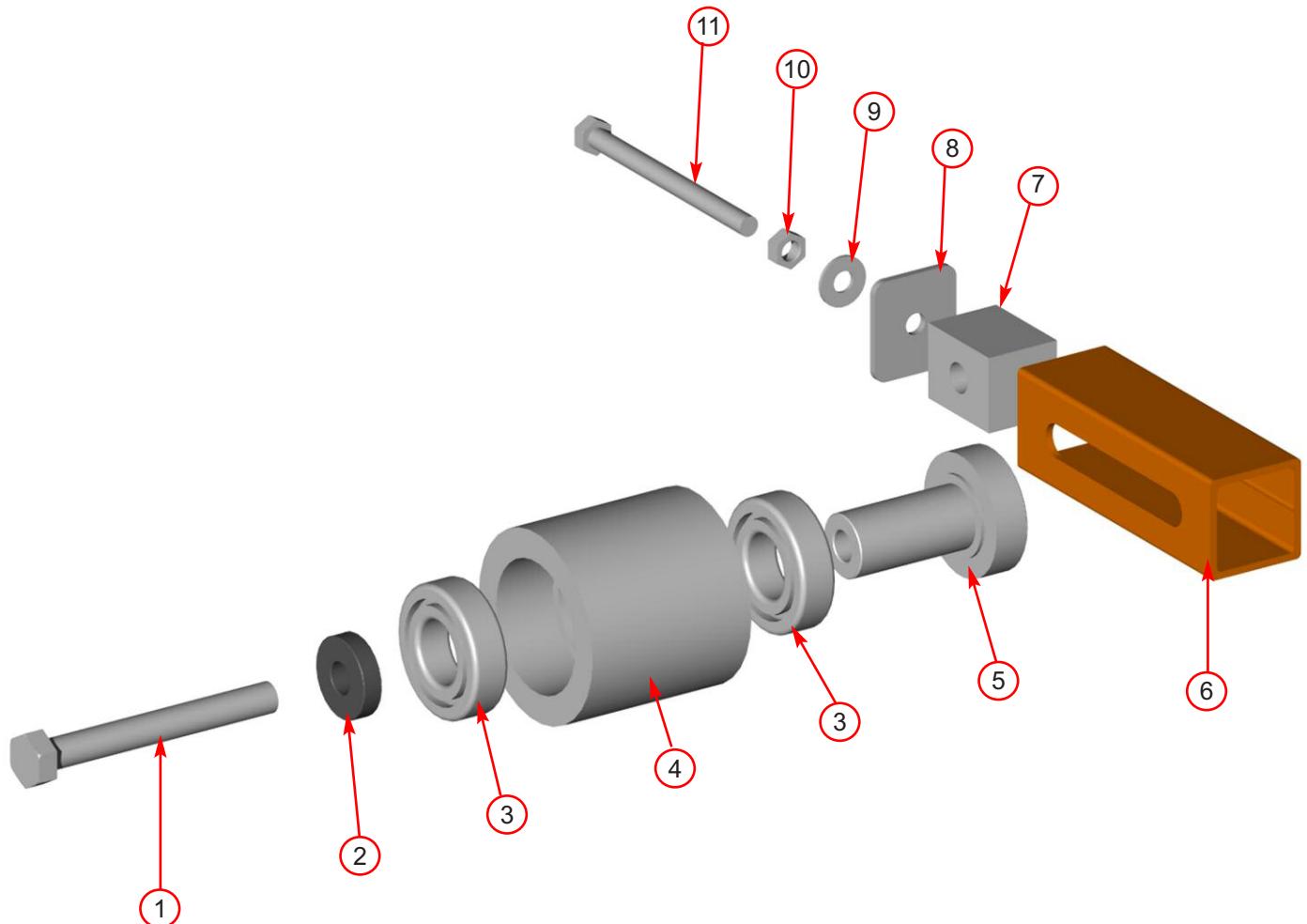
*The following illustrations are for parts identification only. The removal or fitting of these parts may cause a hazard and should only be carried out by trained personnel.*

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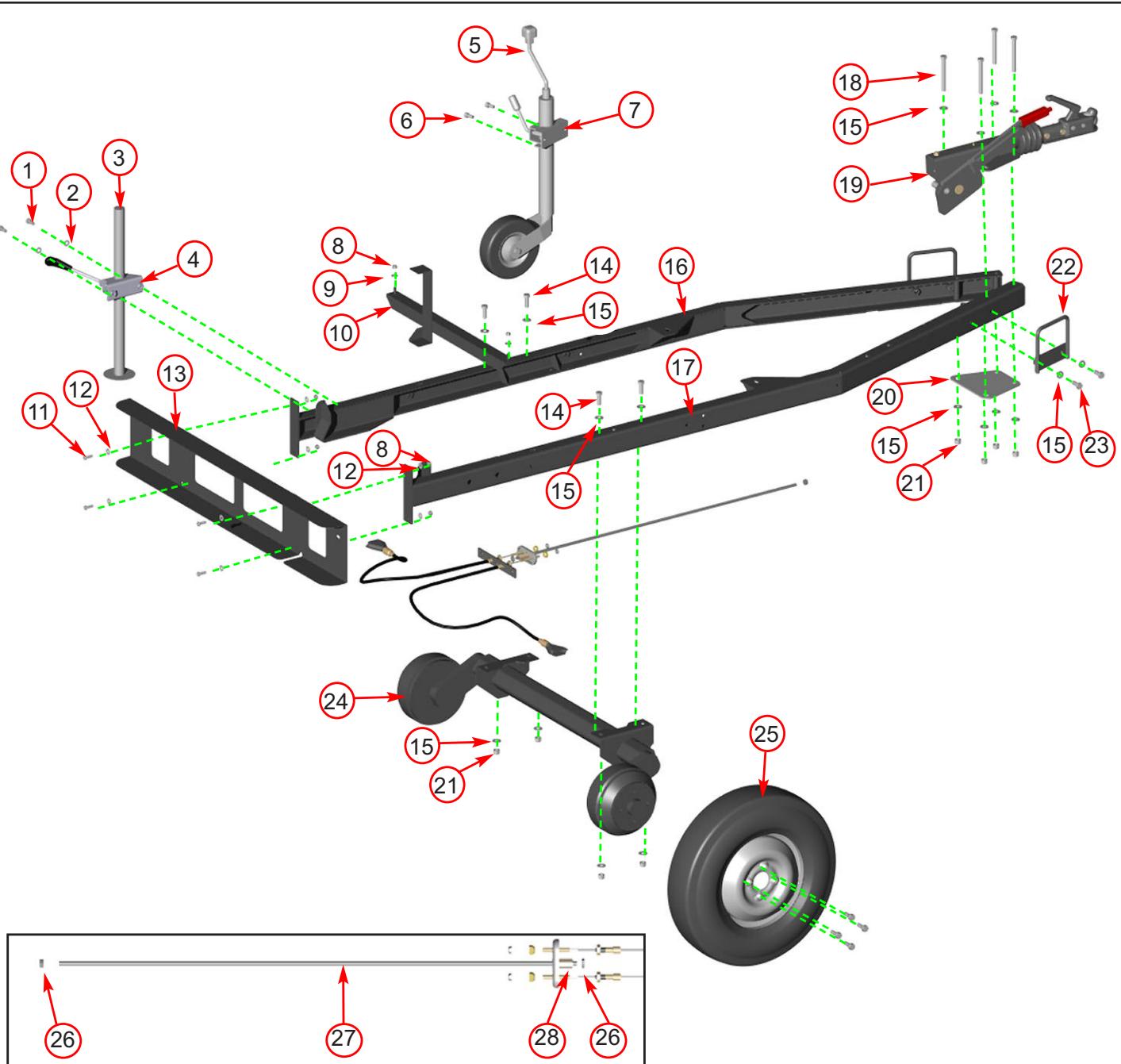
# 31 BELT TENSIONER



TIMBERWOLF  
TW 150DHB



| Item | Part No            | Part Name    | Q'ty |
|------|--------------------|--------------|------|
| 1    | 0313               | M12/100 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    |



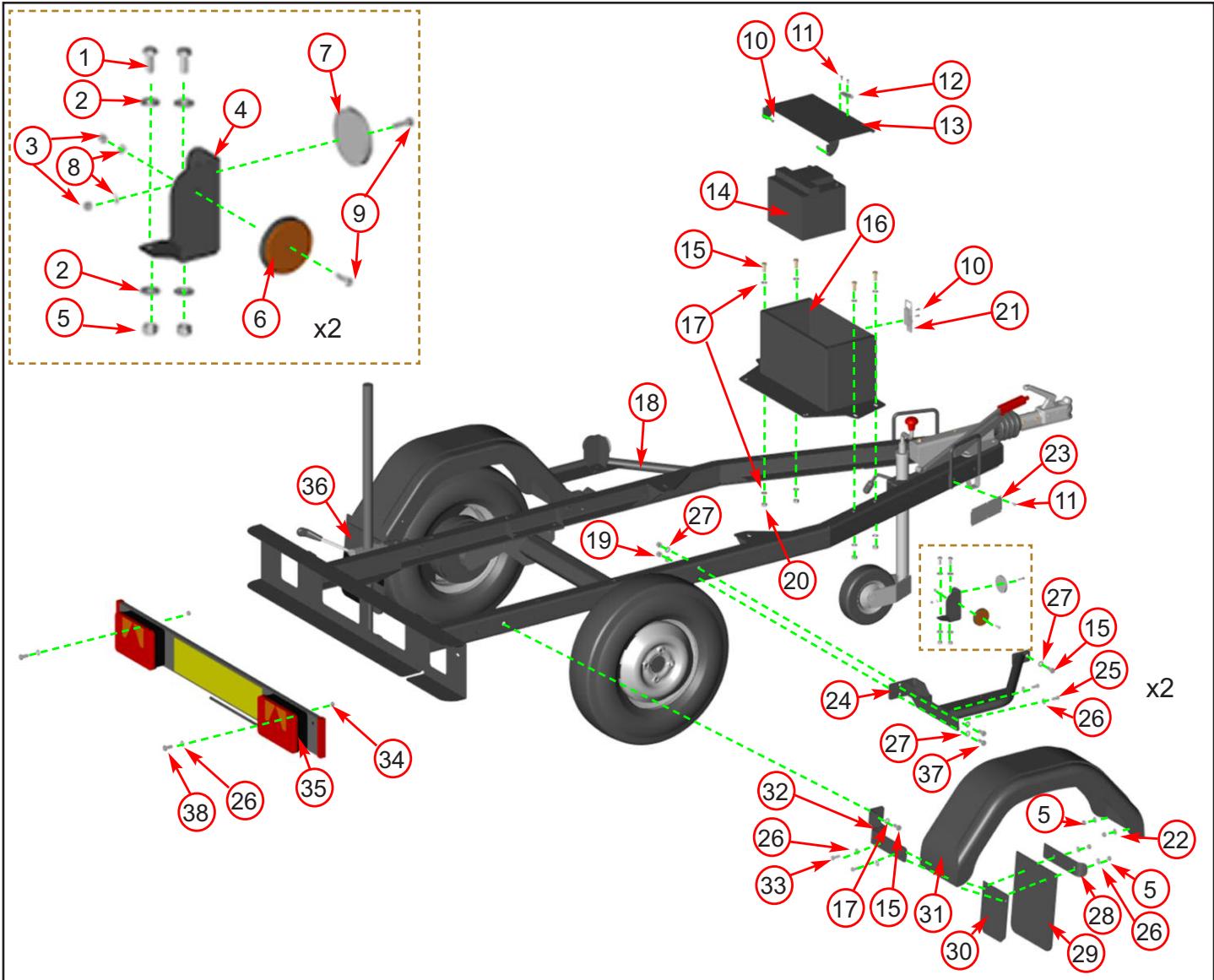
| Item | Part No | Part Name          | Q'ty |
|------|---------|--------------------|------|
| 1    | 0309    | M10/40 Bolt        | 2    |
| 2    | 0701    | M10 A Washer       | 2    |
| 3    | 0012    | Prop Stand         | 1    |
| 4    | 0017    | 34 mm Prop Clamp   | 1    |
| 5    | P*75    | Jockey Wheel Assy  | 1    |
| 6    | 0305    | M10/25 Caphead     | 2    |
| 7    | 18083   | Jockey Wheel Clamp | 1    |
| 8    | 0479    | M8 P Nyloc Nut     | 6    |
| 9    | 0712    | M8 C Washer        | 3    |
| 10   | 1701FB  | Tank Support       | 1    |
| 11   | 0350    | M8/25 Bolt         | 4    |
| 12   | 0711    | M8 A Washer        | 4    |
| 13   | 19804FB | Lightboard Bracket | 1    |
| 14   | 0430    | M12/35 Bolt        | 4    |

| Item | Part No | Part Name         | Q'ty |
|------|---------|-------------------|------|
| 15   | 0704    | M12 C Washer      | 24   |
| 16   | 19802FB | Beam N/S          | 1    |
| 17   | 19803FB | Beam O/S          | 1    |
| 18   | 0314    | M12/110 Bolt      | 4    |
| 19   | 17479   | Tow Head          | 1    |
| 20   | 17509   | Brace Plate       | 1    |
| 21   | 0644    | M12 P Nyloc Nut   | 8    |
| 22   | 3043FS  | Chassis Handle    | 2    |
| 23   | 1581    | M12/35 Caphead    | 4    |
| 24   | 17476   | Axle              | 1    |
| 25   | 19663   | Wheel (inc spare) | 3    |
| 26   | 1036    | M10 Plain Nut     | 2    |
| 27   | 4010    | Brake Rod         | 1    |
| 28   | 0079F   | Nut Ball          | 1    |

# 33 CHASSIS (2)

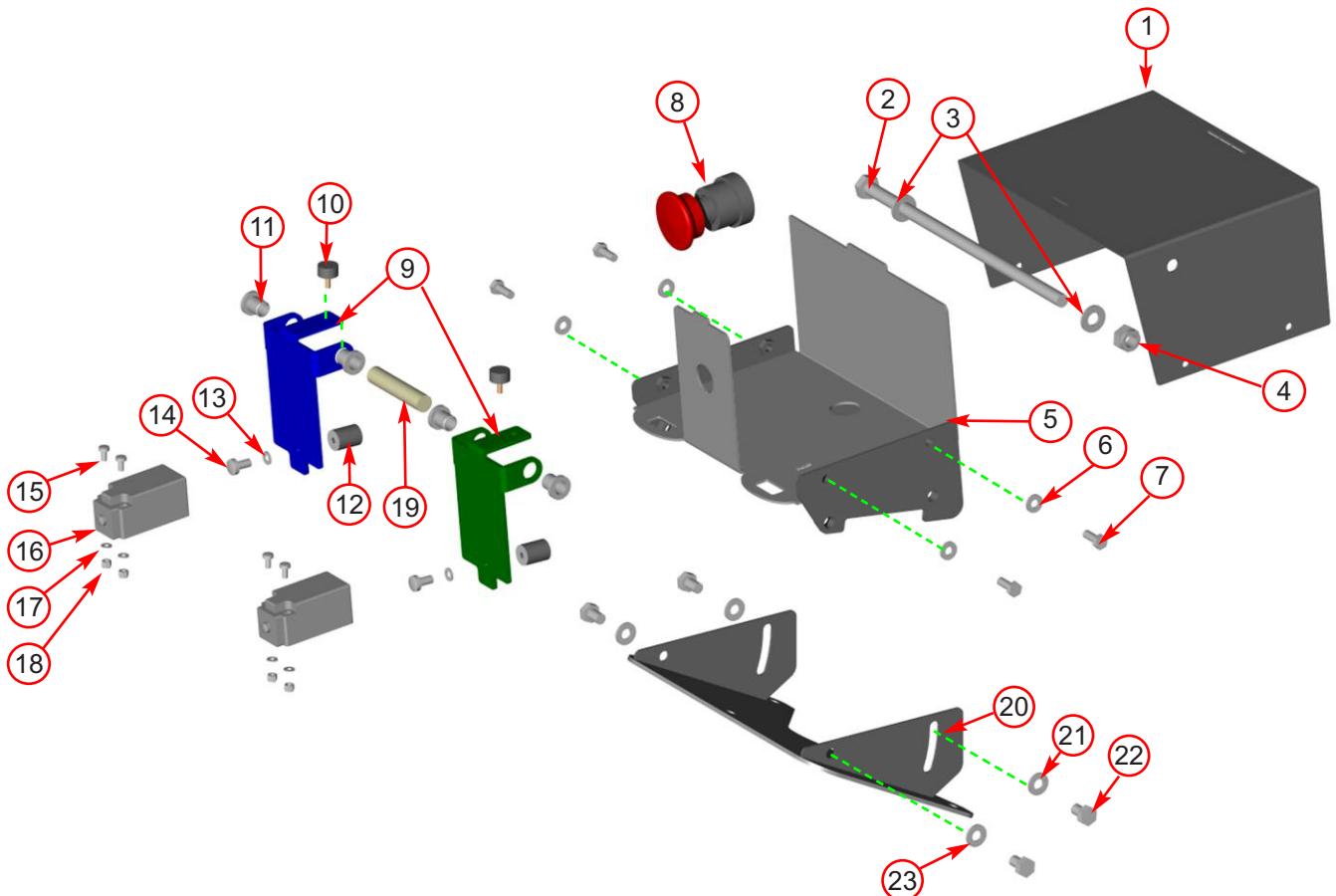


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TW 150DHB



| Item | Part No | Part Name                 | Q'ty |
|------|---------|---------------------------|------|
| 1    | 0346    | M8/20 Bolt                | 4    |
| 2    | 0711    | M8 A Washer               | 8    |
| 3    | 0236    | M5 P Nyloc Nut            | 4    |
| 4    | 18919   | Reflector Support Bracket | 2    |
| 5    | 0481    | M8 P Nyloc Nut            | 12   |
| 6    | 18923   | Reflector Amber           | 2    |
| 7    | 18922   | Reflector Clear           | 2    |
| 8    | 0857    | M5 A Washer               | 4    |
| 9    | 0435    | M5/16 Pan Pozi            | 4    |
| 10   | 0066    | Pop Rivet 4.8 x 6         | 4    |
| 11   | 0067    | Pop Rivet 4.8 x 12        | 6    |
| 12   | 4088    | Catch Plate               | 1    |
| 13   | 19645FB | Battery/Tool Box Lid      | 1    |
| 14   | 4210    | Battery                   | 1    |
| 15   | 0360    | M10/25 Bolt               | 6    |
| 16   | 19640FB | Battery/Tool Box          | 1    |
| 17   | 0839    | M10 C Washer              | 10   |
| 18   | 19682   | Anti Trap Bar N/S         | 1    |
| 19   | 4345    | M10 P Nyloc Nut           | 4    |

| Item | Part No | Part Name                 | Q'ty |
|------|---------|---------------------------|------|
| 20   | 0052    | M10 T Nyloc Nut           | 4    |
| 21   | 2963    | Catch                     | 1    |
| 22   | 0714    | M8 Mudguard Washer        | 4    |
| 23   | 19600   | ID Plate                  | 1    |
| 24   | 19683   | Anti Trap Bar O/S         | 1    |
| 25   | 0350    | M8/25 Bolt                | 4    |
| 26   | 0712    | M8 C Washer               | 14   |
| 27   | 0701    | M10 A Washer              | 6    |
| 28   | 19681   | Rain Flap Clamp           | 2    |
| 29   | 19691   | Rain Flap                 | 2    |
| 30   | 19689   | Rain Flap Support         | 2    |
| 31   | 19664   | Mudguard                  | 2    |
| 32   | 19655   | Rear Mudguard Bracket O/S | 1    |
| 33   | 18113   | M8/35 Bolt                | 4    |
| 34   | 0479    | M8 P Nyloc Nut            | 2    |
| 35   | 19795   | Lightboard                | 1    |
| 36   | 19654   | Rear Mudguard Bracket N/S | 1    |
| 37   | 0382    | M10/30 Bolt               | 4    |
| 38   | 0352    | M8/40 Bolt                | 2    |



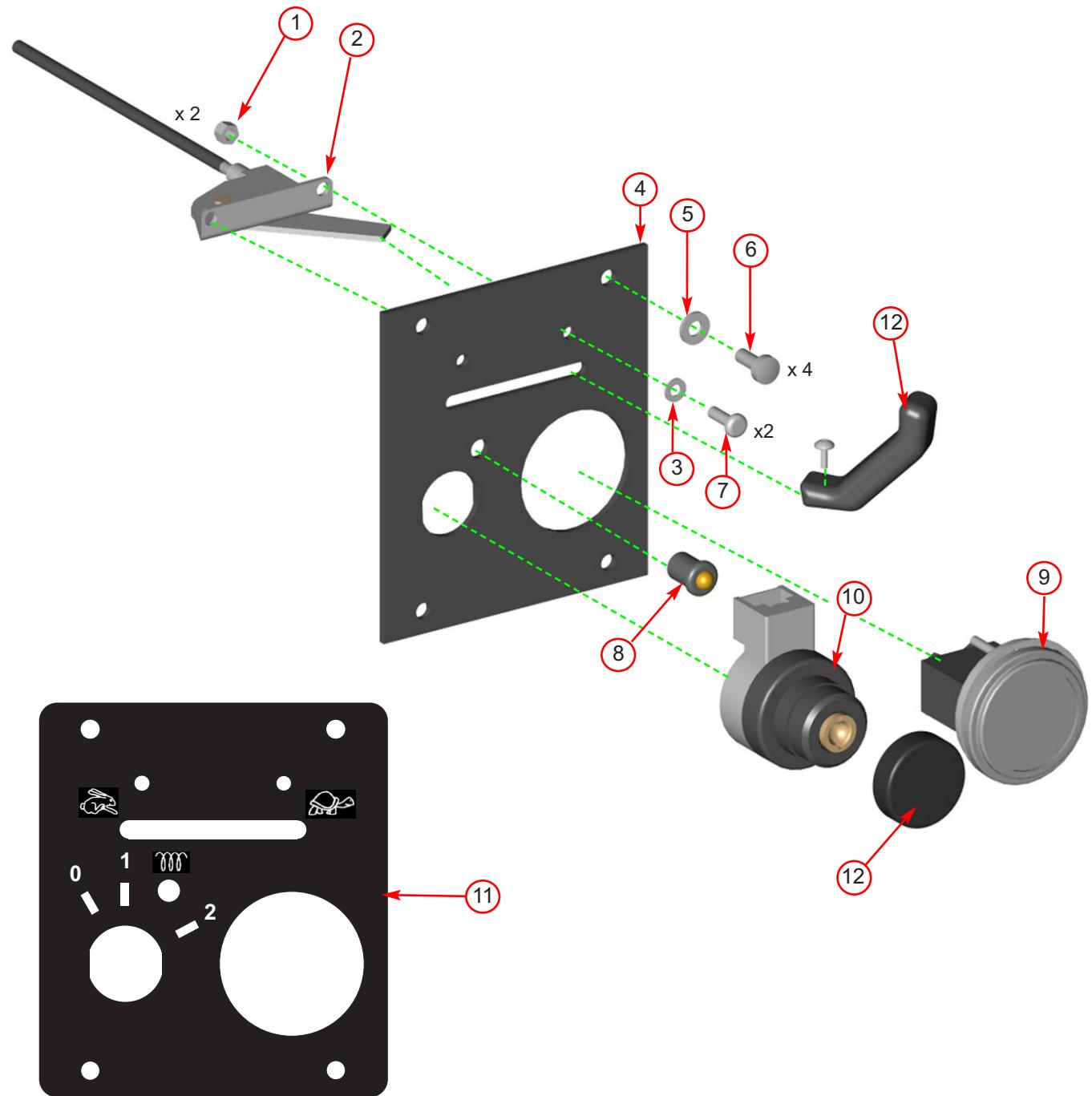
| Item | Part No | Part Name         | Q'ty |
|------|---------|-------------------|------|
| 1    | 2794FB  | Control Box Cover | 1    |
| 2    | 2803    | M10/240 Bolt      | 1    |
| 3    | 0839    | M10 C Washer      | 2    |
| 4    | 4345    | M10 P Nyloc Nut   | 1    |
| 5    | 2795FB  | Control Box Base  | 1    |
| 6    | 0709    | M6 C Washer       | 4    |
| 7    | 1658    | M6/12 Bolt        | 4    |
| 8    | 2853    | Stop Switch       | 1    |
| 9    | 2796FS  | Finger Plate      | 2    |
| 10   | 2834    | AV Mount          | 2    |
| 11   | 2804    | Bush M10 Top Hat  | 4    |
| 12   | 2807    | AV Mount 20 x 16  | 2    |

| Item | Part No            | Part Name                    | Q'ty |
|------|--------------------|------------------------------|------|
| 13   | 0857               | M5 A Washer                  | 2    |
| 14   | 18103              | M5/8 Pan Pozi                | 2    |
| 15   | 18168              | M4/35 Pan Pozi               | 4    |
| 16   | 1348               | Limit Switch                 | 2    |
| 17   | 18100              | M4 Washer                    | 6    |
| 18   | 18235              | M4 P Nyloc Nut               | 6    |
| 19   | made in production | 65mm Spacer                  | 1    |
| 20   | 2793FB             | Bracket Mounting Control Box | 1    |
| 21   | 0712               | M8 C Washer                  | 2    |
| 22   | 0344               | M8/16 Bolt                   | 4    |
| 23   | 0711               | M8 A Washer                  | 2    |

# 35 CONTROL PANEL

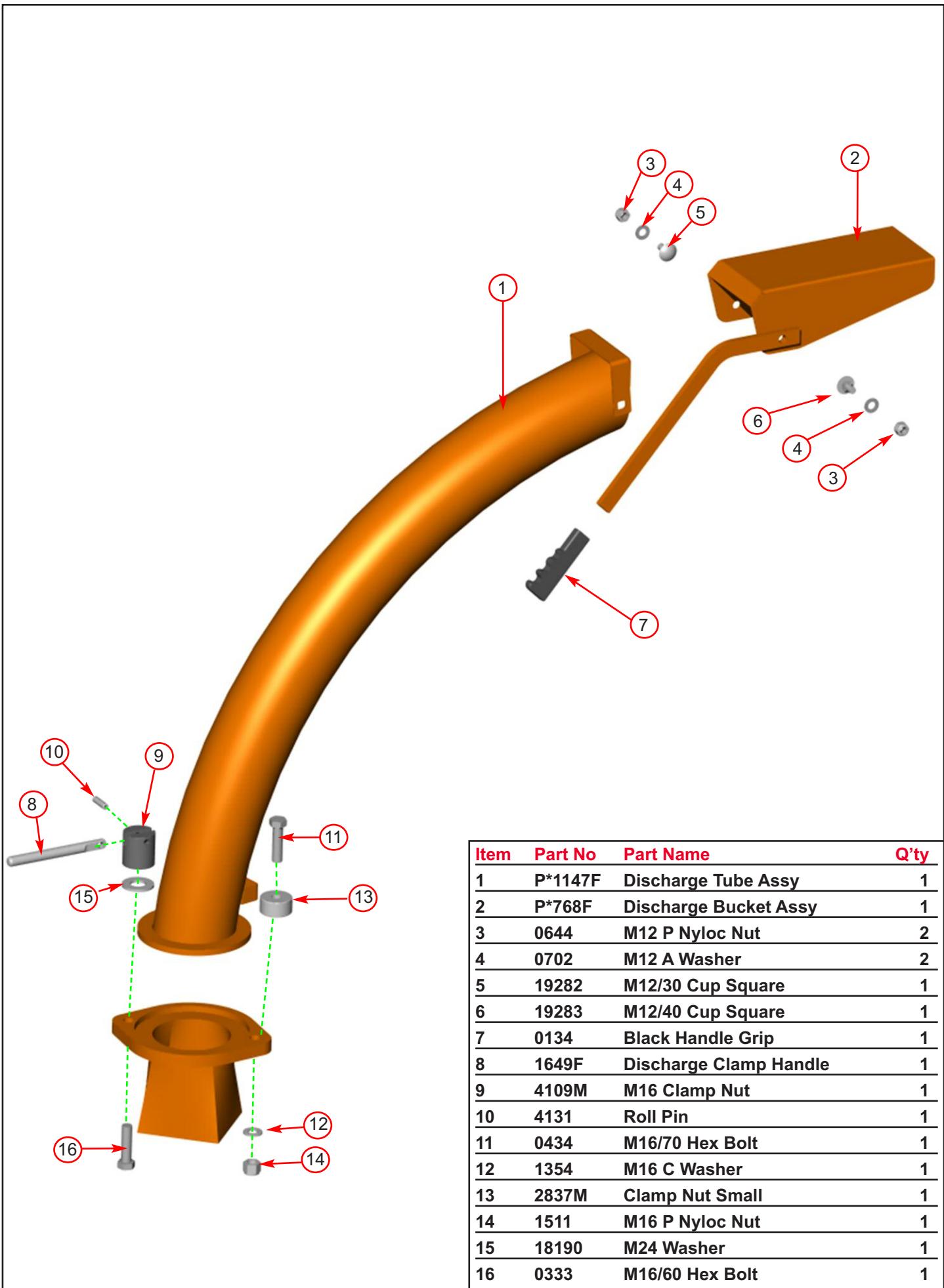


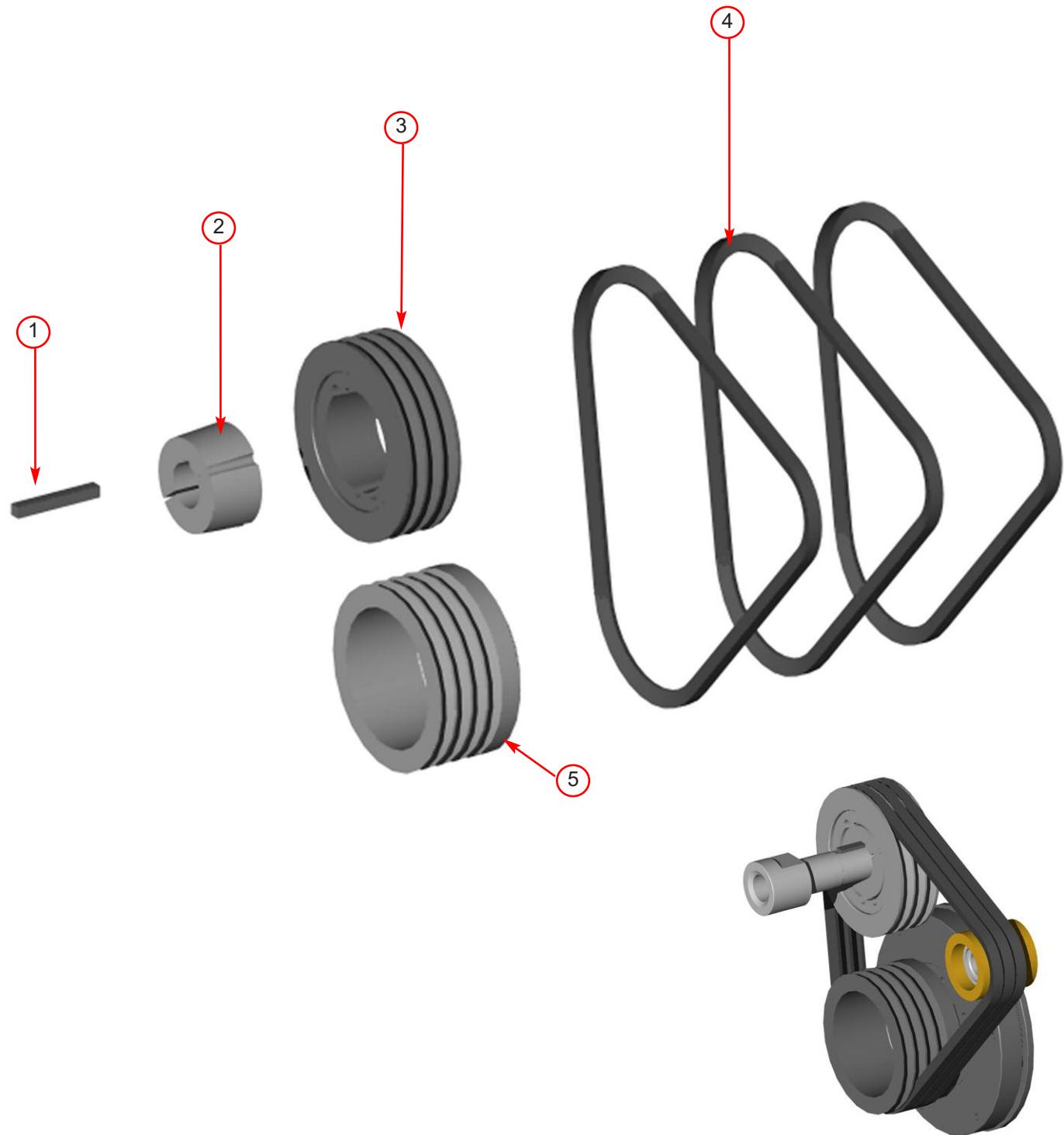
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| Item | Part No | Part Name      | Q'ty |
|------|---------|----------------|------|
| 1    | 0236    | M5 P Nyloc Nut | 2    |
| 2    | 0911    | Throttle Cable | 1    |
| 3    | 0708    | M5 C Washer    | 2    |
| 4    | 1758S   | Control Panel  | 1    |
| 5    | 0709    | M6 C Washer    | 4    |
| 6    | 0438    | M6/16 Pan Pozi | 4    |
| 7    | 0435    | M5/16 Pan Pozi | 4    |

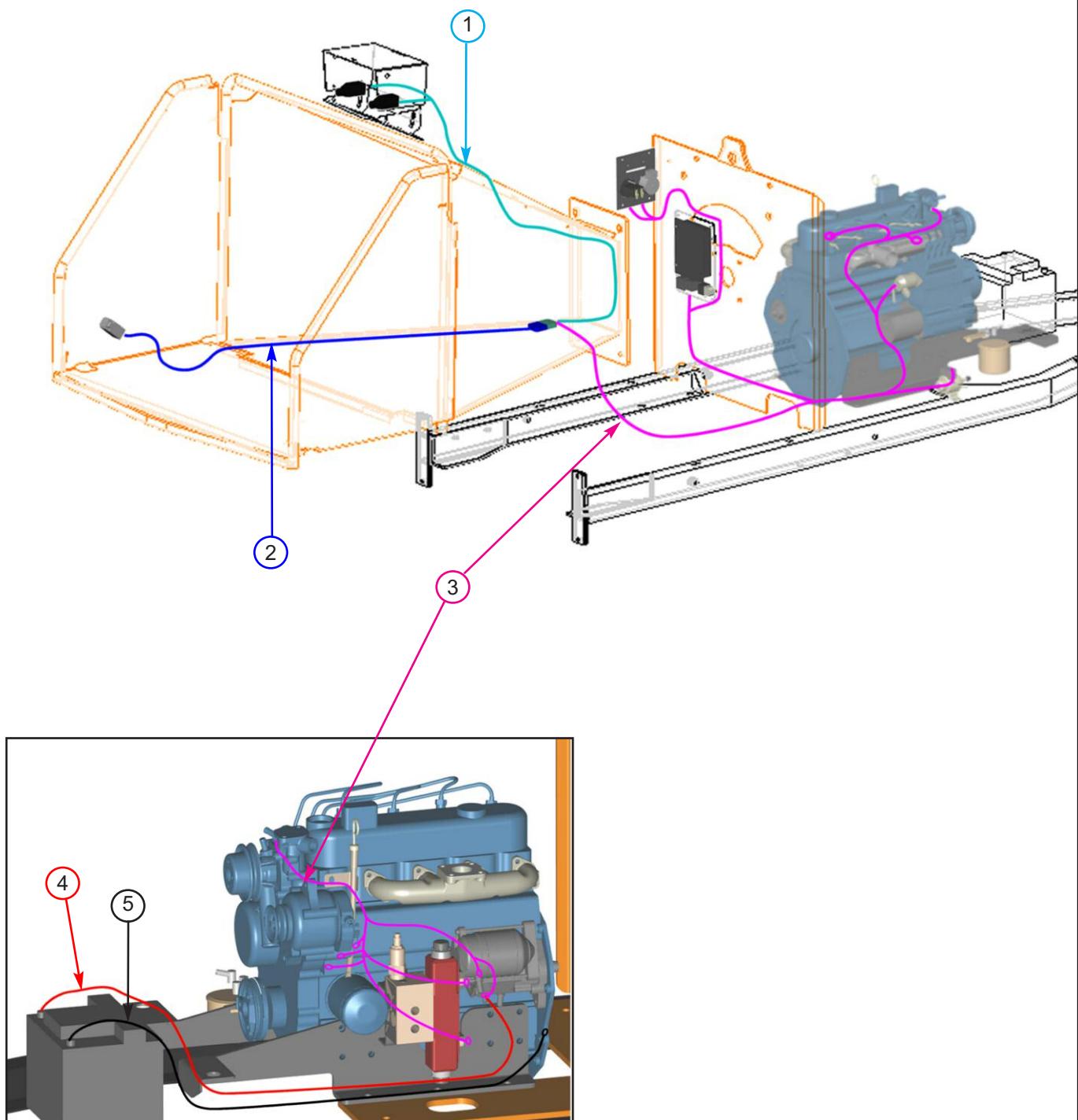
| Item | Part No            | Part Name           | Q'ty |
|------|--------------------|---------------------|------|
| 8    | 1757               | Amber LED           | 1    |
| 9    | 0327               | Hours Counter       | 1    |
| 10   | Supp'd with engine | Ignition Switch     | 1    |
| 11   | 1756               | Control Panel Decal | 1    |
| 12   | 1397               | Throttle Lever      | 1    |
| 13   | 1470               | Rubber Protector    | 1    |





| Item | Part No | Part Name            | Q'ty |
|------|---------|----------------------|------|
| 1    | 18961M  | Key                  | 1    |
| 2    | 0410    | Taper Lock Bush 2517 | 1    |
| 3    | 1175    | Rotor Pulley         | 1    |

| Item | Part No | Part Name     | Q'ty |
|------|---------|---------------|------|
| 4    | 0310    | Belt SPA 1060 | 3    |
| 5    | 1170M   | Engine Pulley | 1    |

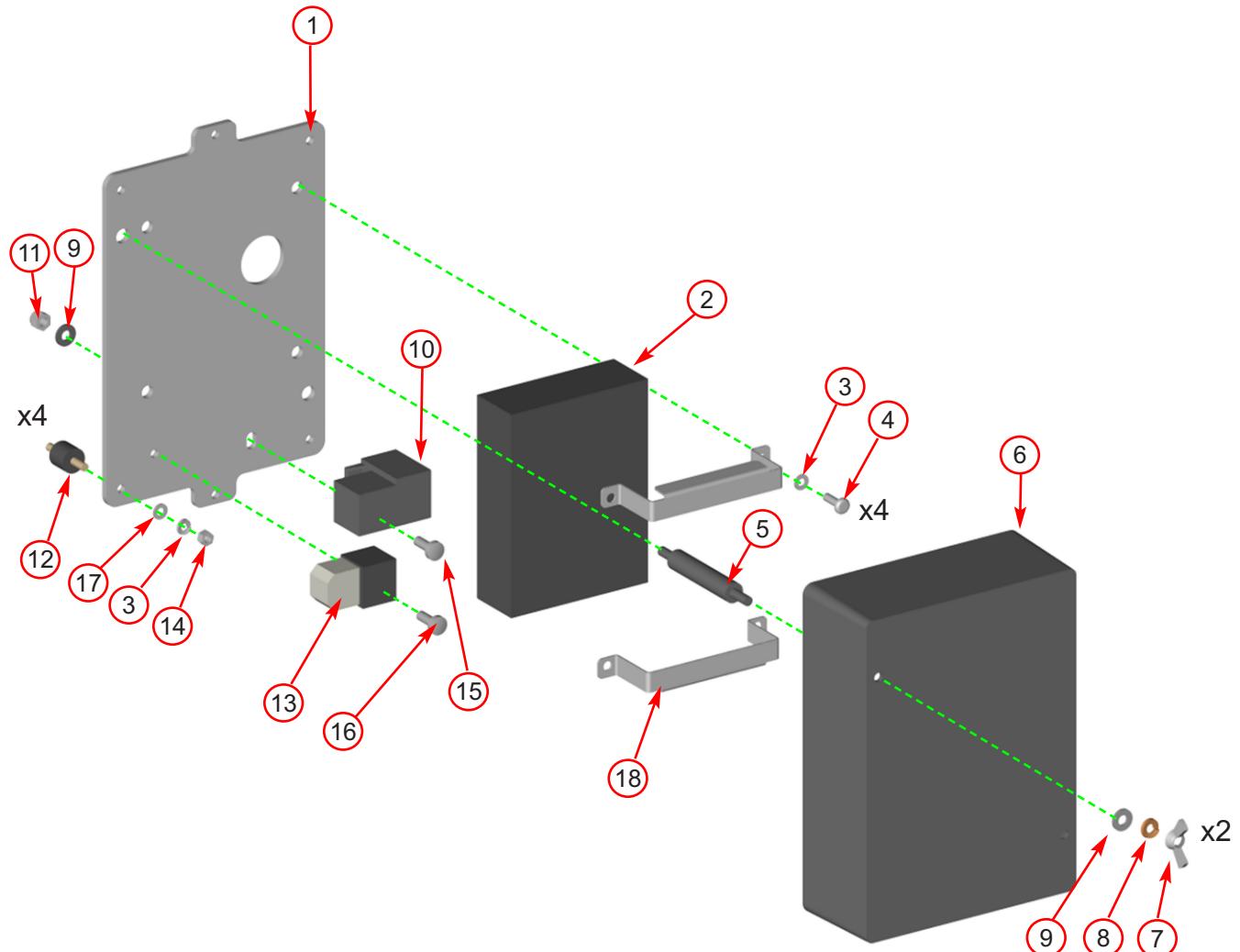


| Item | Part No | Part Name        | Q'ty | Item | Part No | Part Name        | Q'ty |
|------|---------|------------------|------|------|---------|------------------|------|
| 1    | 1975    | Funnel Loom      | 1    | 4    | 1375    | +VEBattery Cable | 1    |
| 2    | 1406    | Safety Bar Loom  | 1    | 5    | 1376    | -VEBattery Cable | 1    |
| 3    | 18481   | Main Engine Loom | 1    |      |         |                  |      |

# 39 ELECTRICAL PANEL



TIMBERWOLF  
TW 150DHB



| Item | Part No | Part Name                  | Q'ty |
|------|---------|----------------------------|------|
| 1    | 3038FS  | Electrical Panel           | 1    |
| 2    | 18405   | H-Box                      | 1    |
| 3    | 0857    | M5 A Washer                | 8    |
| 4    | 0435    | M5/16 Pan Pozi             | 4    |
| 5    | 2725    | Electrical Cover Stand Off | 3    |
| 6    | 1930    | Electrical Cover           | 1    |
| 7    | 18107   | M6 Wing Nut                | 2    |
| 8    | 18106   | M6 Spring Washer           | 2    |
| 9    | 0709    | M6 C Washer                | 4    |

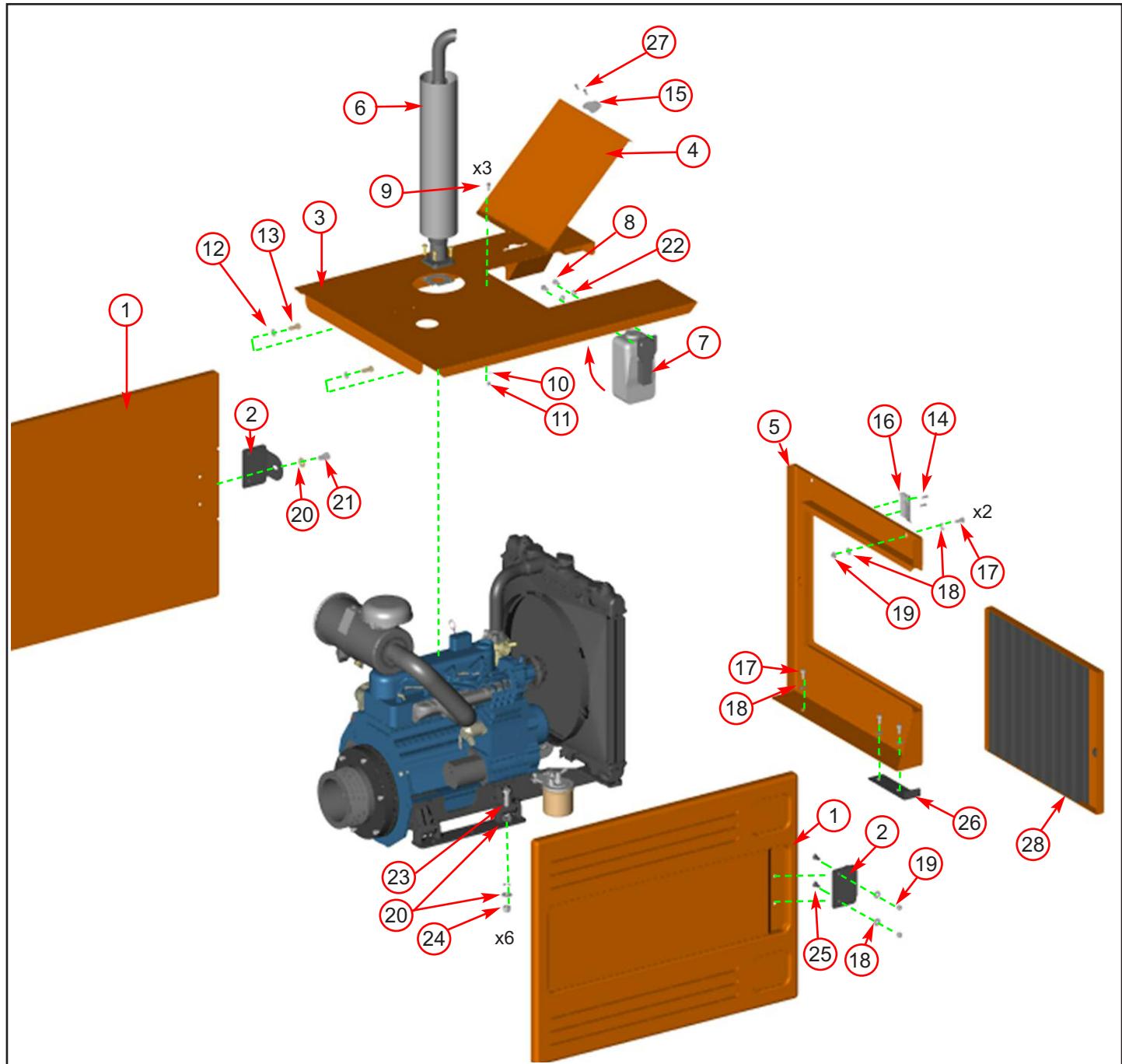
| Item | Part No          | Part Name             | Q'ty |
|------|------------------|-----------------------|------|
| 10   | Supp'd with loom | Relay                 | 1    |
| 11   | 0391             | M6 T Nyloc Nut        | 2    |
| 12   | 4033             | M5 AV Mount           | 4    |
| 13   | Supp'd with loom | Fuse                  | 2    |
| 14   | 18291            | M5 Plain Nut          | 4    |
| 15   | 0438             | M6/16 Pan Pozi        | 1    |
| 16   | 1151             | Countersunk Pop Rivet | 1    |
| 17   | 3024             | M5 Spring Washer      | 4    |
| 18   | 18398            | Mounting Bracket      | 4    |



# 41 ENGINE BAY

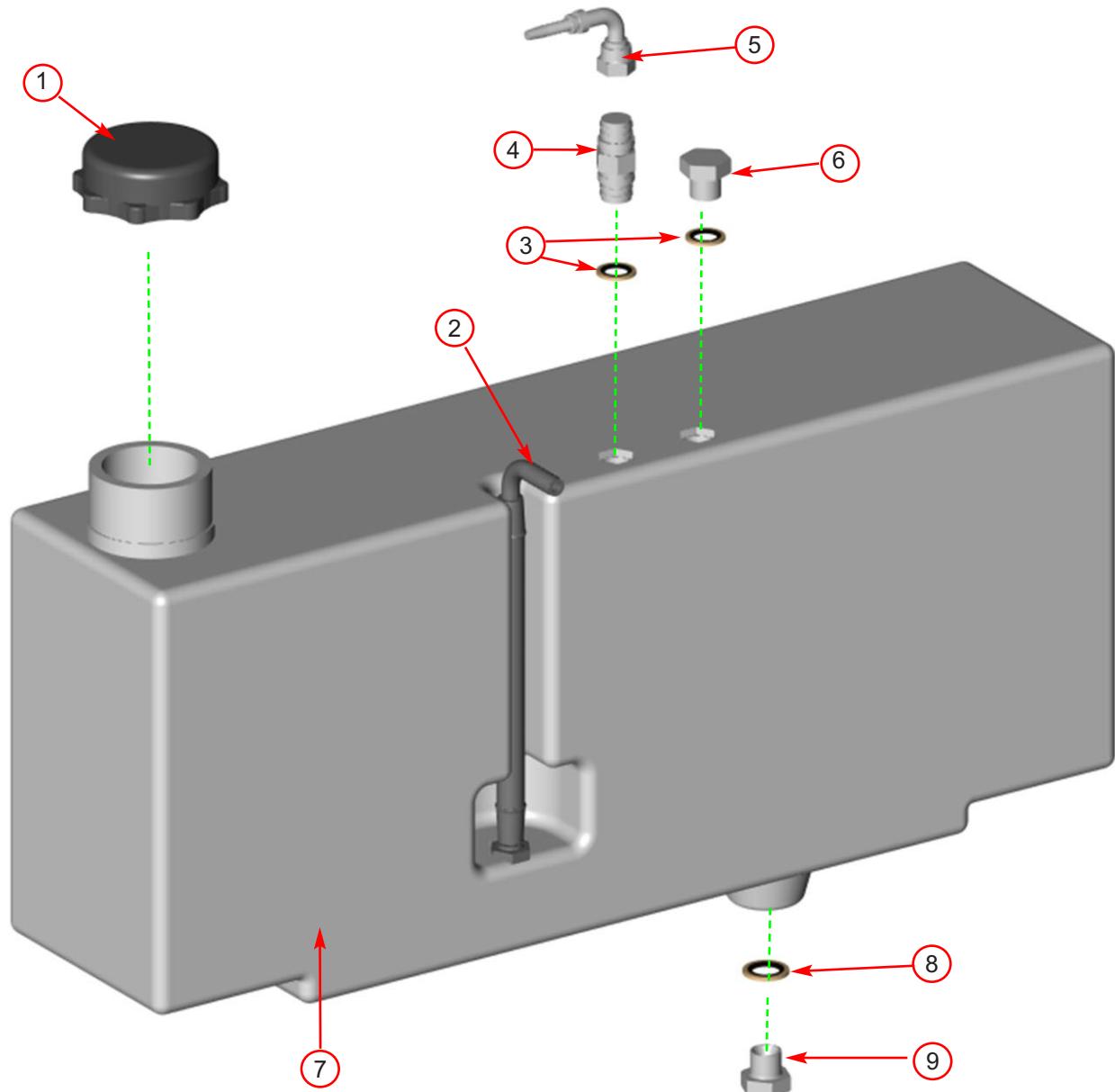


TIMBERWOLF  
TW 150DHB



| Item | Part No            | Part Name                | Q'ty |
|------|--------------------|--------------------------|------|
| 1    | 0765O              | Side Panel               | 2    |
| 2    | 0825FS             | Handle Side Plastic      | 2    |
| 3    | 17292FO            | Top Bonnet               | 1    |
| 4    | 0607FO             | Access Cover             | 1    |
| 5    | 18580FO            | Guard Front Engine Bay   | 1    |
| 6    | 18327FB            | Exhaust Muffler Complete | 1    |
| 7    | Supp'd with engine | Reserve Tank             | 1    |
| 8    | 0344               | M8/16 Bolt               | 2    |
| 9    | 0438               | M6/16 Pozi               | 3    |
| 10   | 0709               | M6 C Washer              | 3    |
| 11   | 0391               | M6 T Nyloc Nut           | 3    |
| 12   | 0701               | M10 A Washer             | 2    |
| 13   | 0360               | M10/25 Bolt              | 2    |
| 14   | 0067               | Pop Rivet 4.8 x 12       | 2    |

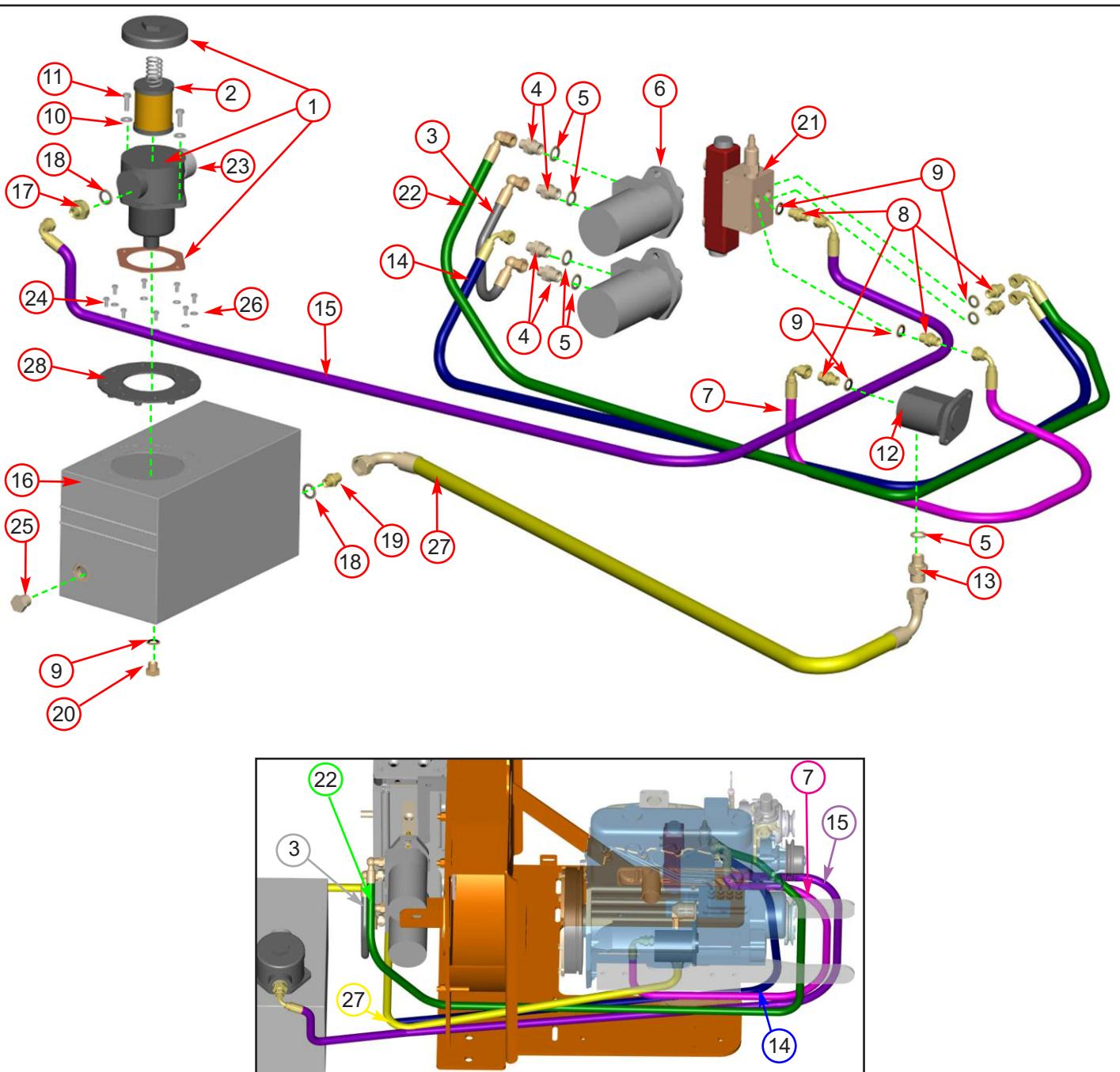
| Item | Part No | Part Name           | Q'ty |
|------|---------|---------------------|------|
| 15   | 4088    | Catch Plate         | 1    |
| 16   | 0235    | Catch               | 1    |
| 17   | 0346    | M8/20 Bolt          | 5    |
| 18   | 0712    | M8 C Washer         | 14   |
| 19   | 0479    | M8 P Nyloc Nut      | 8    |
| 20   | 0704    | M12 C Washer        | 14   |
| 21   | 0318    | M12/20 Bolt         | 2    |
| 22   | 0711    | M8 A Washer         | 2    |
| 23   | 0431    | M12/40 Bolt         | 6    |
| 24   | 0644    | M12 P Nyloc Nut     | 6    |
| 25   | 0348    | M8/20 Skt Csk Bolt  | 4    |
| 26   | 17312FB | Side Panel Retainer | 1    |
| 27   | 0066    | Pop Rivet 5 x 6     | 2    |
| 28   | 18581FO | Front Filter Grill  | 1    |



| Item | Part No | Part Name           | Q'ty |
|------|---------|---------------------|------|
| 1    |         | Breathable Tank Cap | 1    |
| 2    | P*815   | Hose Fuel Pick Up   | 1    |
| 3    | 0795    | 1/4" Dowty Washer   | 2    |
| 4    | 18883   | 1/4" MM Adapter     | 1    |
| 5    | 19430   | 1/4" BSP tail       | 1    |

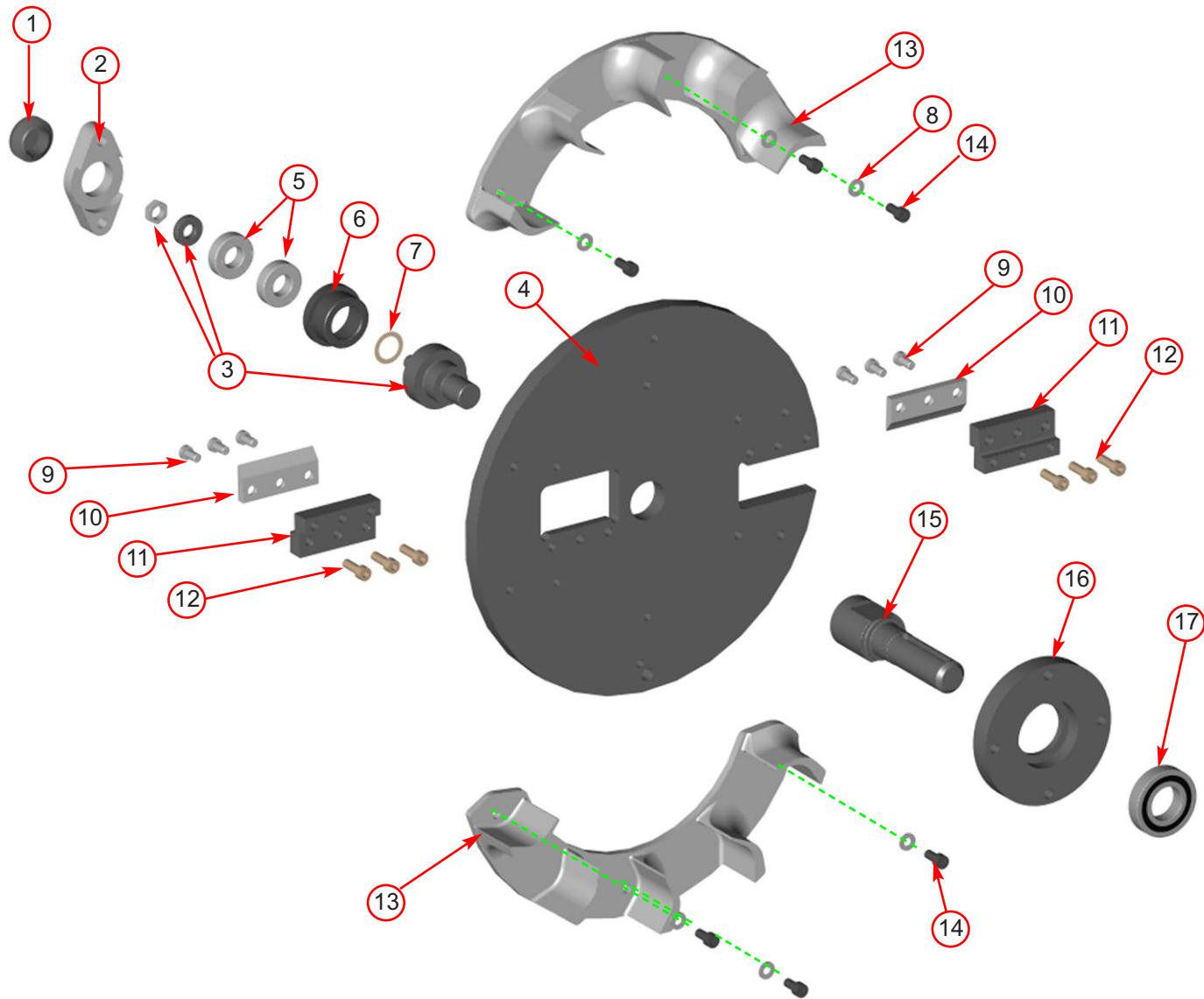
| Item | Part No | Part Name          | Q'ty |
|------|---------|--------------------|------|
| 6    | 0296    | 1/4" Blanking Plug | 1    |
| 7    | P*814   | Fuel Tank          | 1    |
| 8    | 0396    | 3/8" Dowty Washer  | 1    |
| 9    | 0211    | 3/8" Drain Plug    | 1    |





| Item | Part No | Part Name                         | Q'ty | Item | Part No | Part Name                       | Q'ty |
|------|---------|-----------------------------------|------|------|---------|---------------------------------|------|
| 1    | 1434    | Tank Top Filter Housing           | 1    | 15   | 4244    | 3/8" Hose, Hyd Filter to DCV    | 1    |
| 2    | 0100    | Filter                            | 1    | 16   | 1703    | Hydraulic Oil Tank              | 1    |
| 3    | 0323    | 3/8" Hose, Top Motor to Btm Motor | 1    | 17   | 0225    | Adaptor 3/4" - 3/8"             | 1    |
| 4    | 0026    | Adaptor mm 1/2"- 3/8" BSP         | 4    | 18   | 0152    | Washer Dowty 3/4"               | 2    |
| 5    | 0398    | Washer Dowty 1/2"                 | 5    | 19   | 1766    | Adapter 3/4" - 3/4" BSP         | 2    |
| 6    | 2982B   | Hydraulic Motor                   | 2    | 20   | 0211    | 3/8" BSP Plug                   | 1    |
| 7    | 4243    | 3/8" Hose, Pump to DCV            | 1    | 21   | 1613    | Directional Control Valve (DCV) | 1    |
| 8    | 0161    | Adaptor mm 3/8"- 3/8" BSP         | 5    | 22   | 17310   | 3/8" Hose, DCV to Top Motor     | 1    |
| 9    | 0396    | Washer Dowty 3/8"                 | 6    | 23   | 1067    | Breather Filter                 | 1    |
| 10   | 0711    | M8 A Washer                       | 2    | 24   | 1658    | M6/12 Bolt                      | 8    |
| 11   | 0350    | M8/25 Bolt                        | 2    | 25   | 4219    | 3/4" Tapered Blanking Plug      | 1    |
| 12   | 1660    | Hydraulic Pump                    | 1    | 26   | 0709    | M6 C Washer                     | 8    |
| 13   | 1583    | Adaptor 1/2"- 3/4" BSP            | 1    | 27   | 1767    | 3/4" Hose, Hyd Tank to Pump     | 1    |
| 14   | 3094    | 3/8" Hose, Bottom Motor to DCV    | 1    | 28   | 1702FS  | Tank Top Plate                  | 1    |





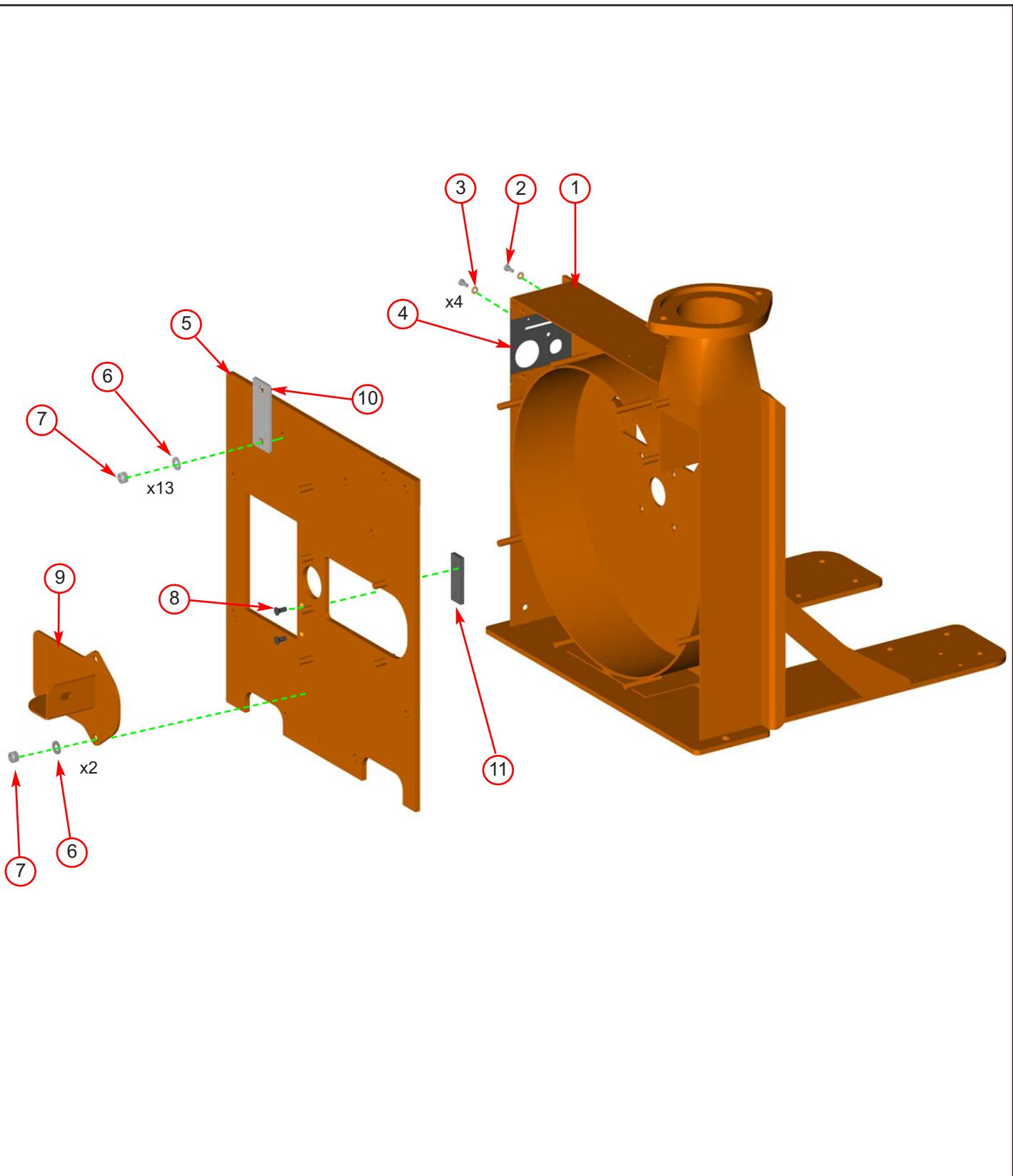
| Item | Part No | Part Name             | Q'ty     |
|------|---------|-----------------------|----------|
| 1    | 0959    | Plastic Cap           | 1        |
| 2    | 0884MS  | Bearing Housing Front | 1        |
| 3    | 18479K  | Rotor Nose Shaft Kit  | 1        |
| 4    | 0880M   | Rotor                 | 1        |
| 5    | 0491    | Bearing 6205          | 2        |
| 6    | 0883MCB | Bearing Cup           | 1        |
| 7    | 0796    | 20 Thou Shim          | As Req'd |
| 8    | 0701    | M10 A Washer          | 6        |
| 9    | 0900    | M10/20 Star Cap Screw | 6        |

| Item | Part No | Part Name            | Q'ty |
|------|---------|----------------------|------|
| 10   | 083MH   | Cutter Blade 4"      | 2    |
| 11   | 18275M  | Blade Pocket         | 2    |
| 12   | 0386    | M10/30 Cap Screw     | 6    |
| 13   | 1571    | Fan Section          | 2    |
| 14   | 0386    | M10/30 Caphead       | 6    |
| 15   | 18912M  | Rear Shaft           | 1    |
| 16   | 4063MCB | Bearing Housing Rear | 1    |
| 17   | 0495    | Bearing 6208         | 1    |

# 47 ROTOR HOUSING



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TW 150DHB



| Item | Part No | Part Name      | Q'ty |
|------|---------|----------------|------|
| 1    | 18436FO | Rotor Housing  | 1    |
| 2    | 0438    | M6/16 Pozi Pan | 4    |
| 3    | 0709    | M6 C Washer    | 4    |
| 4    | 1758S   | Control Panel  | 1    |
| 5    | 1267FO  | Front Plate    | 1    |
| 6    | 0702    | M12 A Washer   | 15   |

| Item | Part No | Part Name             | Q'ty |
|------|---------|-----------------------|------|
| 7    | 0045    | M12 T Nyloc Nut       | 15   |
| 8    | 0355    | M8/16 C/Sunk Bolt     | 2    |
| 9    | 1268FO  | Access Cover          | 1    |
| 10   | 18023PS | Guard Stand-Off Plate | 1    |
| 11   | 0101MH  | Anvil Vertical        | 1    |





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