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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.

Before using your new chipper, please take time to read this manual which contains
IMPORTANT HEALTH AND SAFETY INFORMATION
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 150FTR/VTR. 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 **adequately 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.

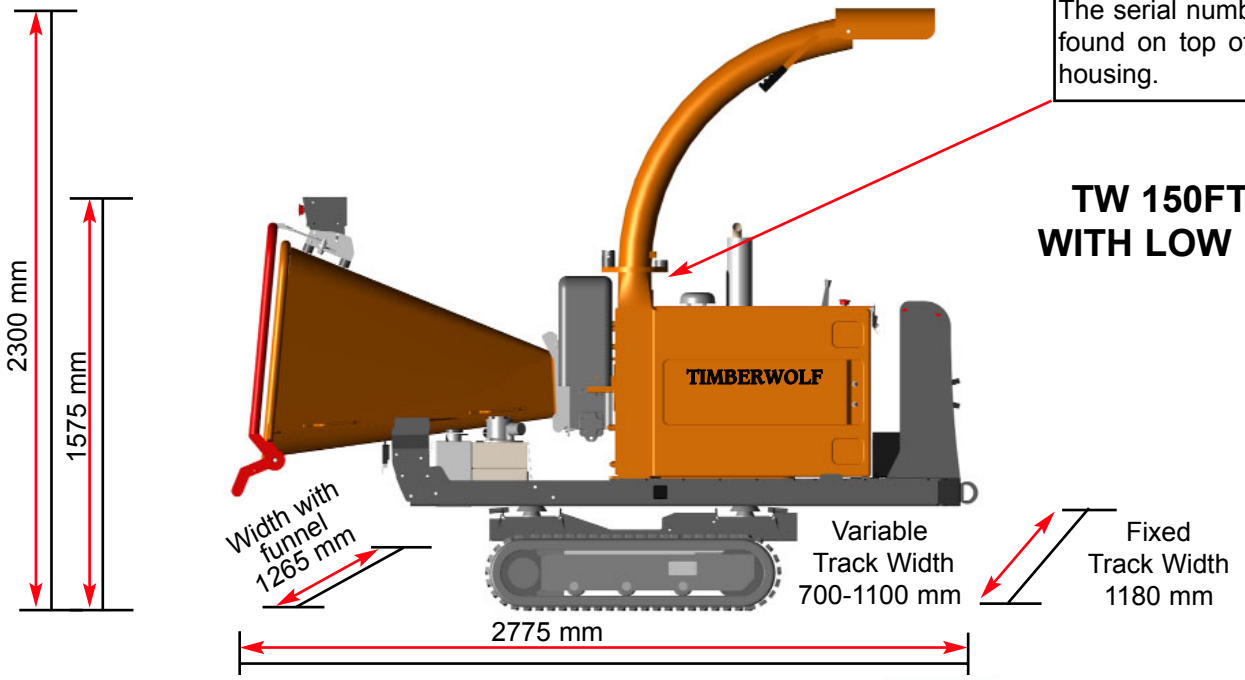
PURPOSE OF MACHINE

The Timberwolf TW 150FTR/VTR brushwood chipper is designed to chip solid wood material up to 150 mm in diameter. The maximum cross-section hardwood for continuous feed is 8500 mm^2. It is capable of chipping up tp 4 tonnes of brushwood per hour.

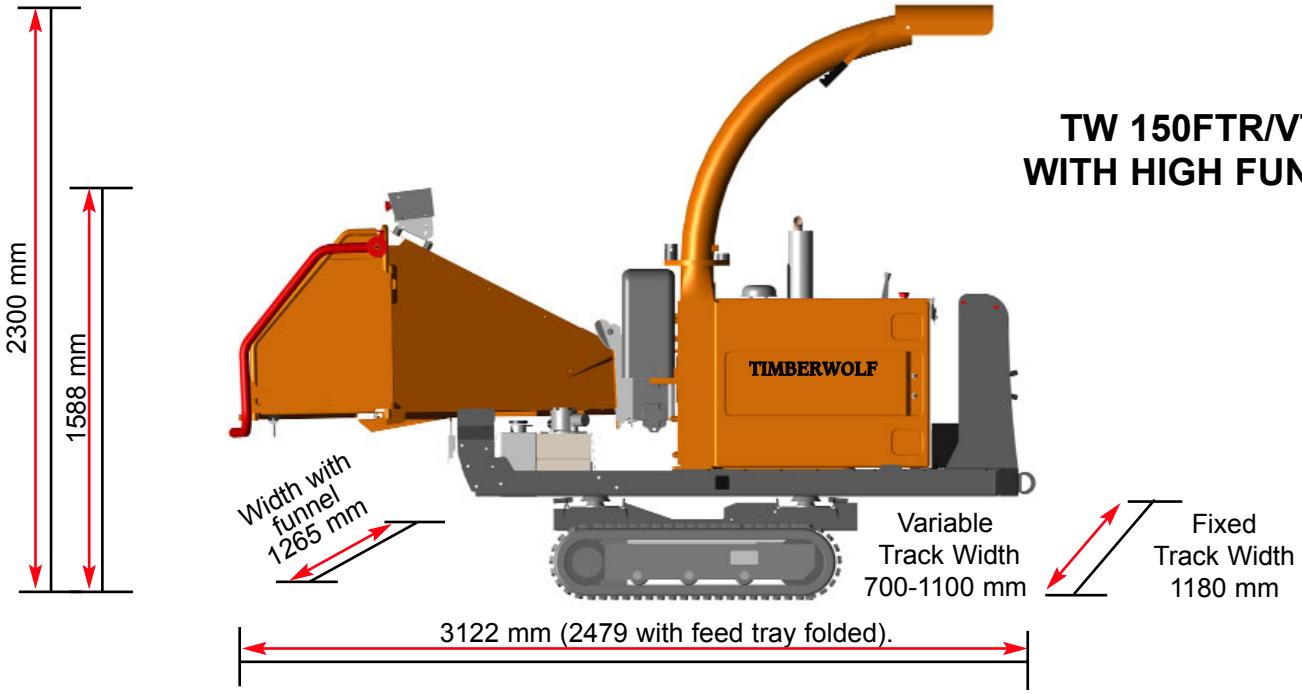
DIMENSIONS

Serial No. Location
The serial number can be found on top of the rotor housing.

TW 150FTR/VTR WITH LOW FUNNEL

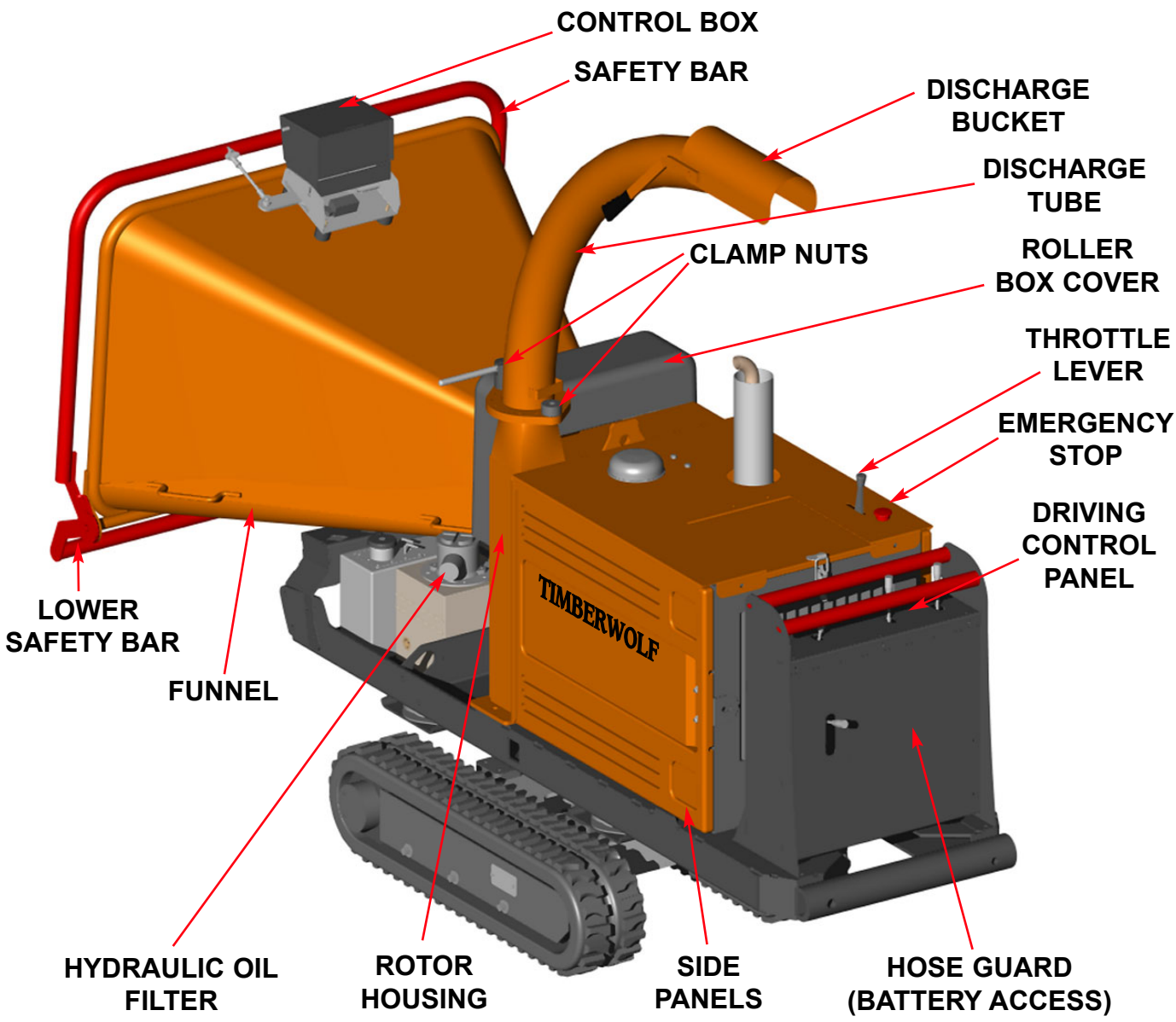


TW 150FTR/VTR WITH HIGH FUNNEL

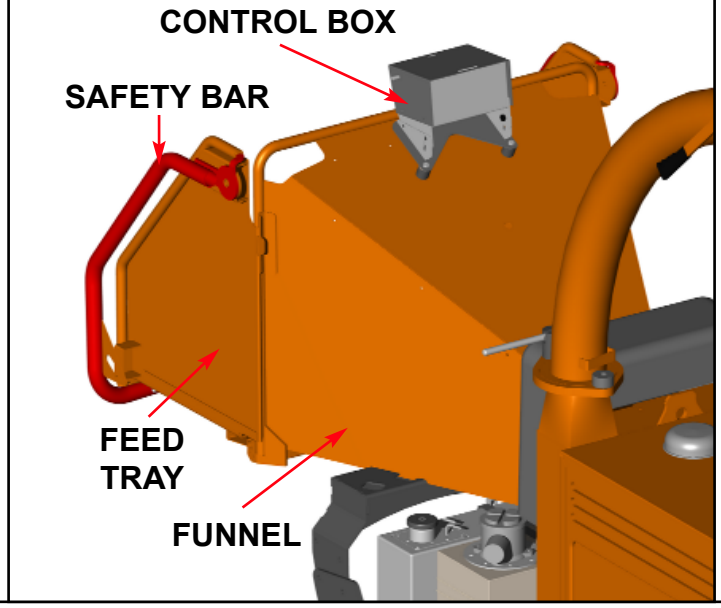


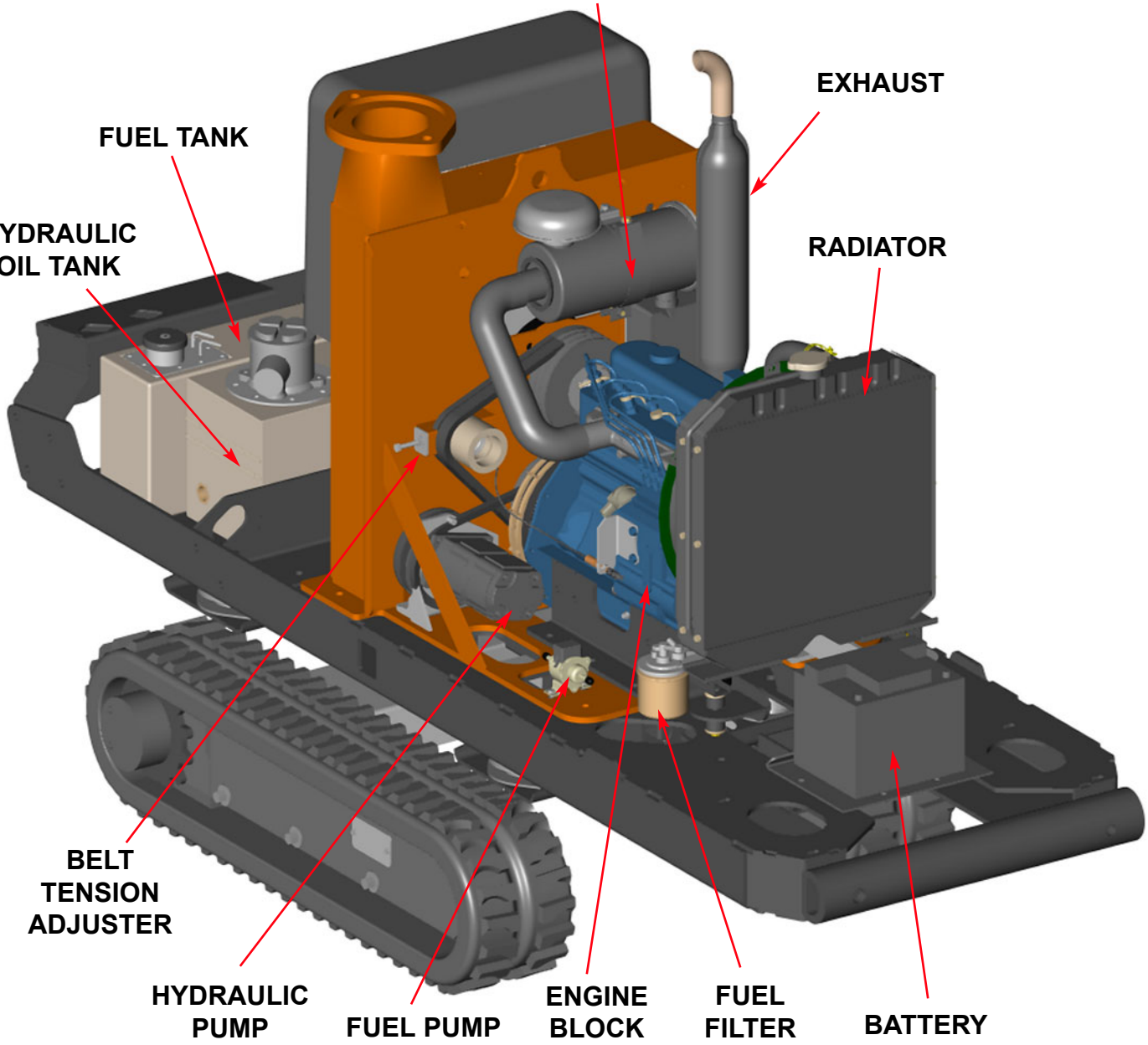
TIMBERWOLF TW 150FTR/VTR SPECIFICATION

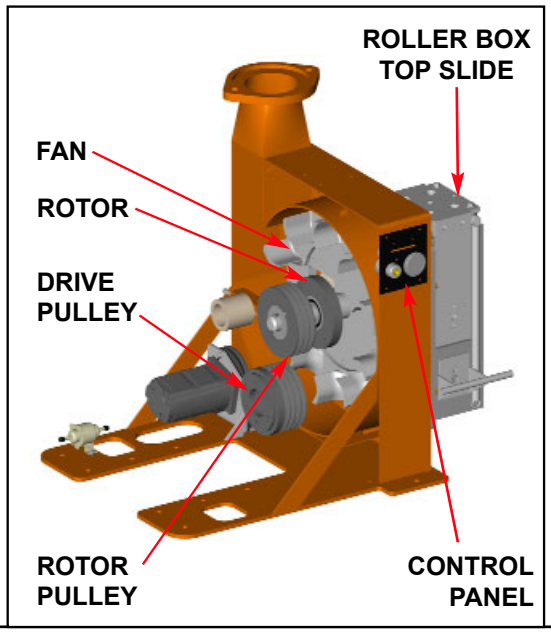
Engine type	*Kubota 4 cyl. diesel*	Maximum diameter material	*150 mm (6")*
Maximum power	*25.7 kW (35 HP)*	Fuel capacity	*16 litres*
Cooling method	*Water cooled*	Hydraulic oil capacity	*15.5 litres*
Overall weight	*1080 kg (VTR) 1155 (FTR)*	Material processing capacity	*4 tonnes/hr*
Starting method	*Electric*	Fuel type	*Diesel*
Roller feed	*Twin series hydraulic motors*		

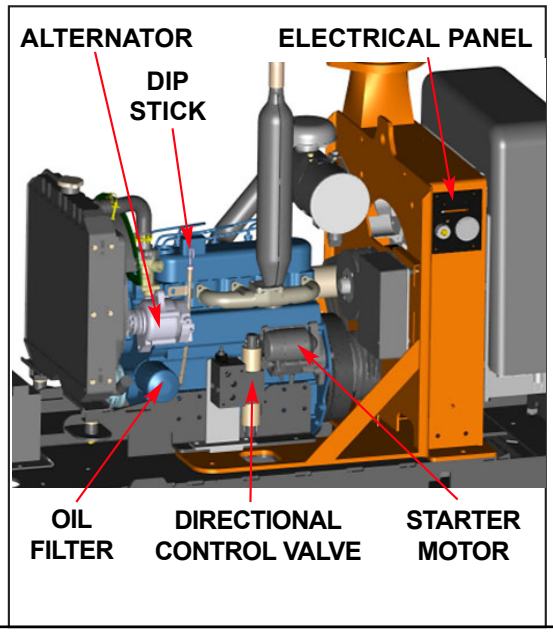


TW 150FTR/VTR WITH HIGH FUNNEL




AIR FILTER
EXHAUST
FUEL TANK
HYDRAULIC OIL TANK
RADIATOR
BELT TENSION ADJUSTER
HYDRAULIC PUMP
FUEL PUMP
ENGINE BLOCK
FUEL FILTER
BATTERY


ROLLER BOX TOP SLIDE
FAN
ROTOR
DRIVE PULLEY
ROTOR PULLEY
CONTROL PANEL

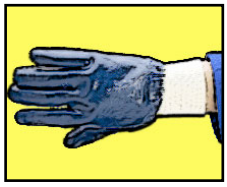

ALTERNATOR
ELECTRICAL PANEL
DIP STICK
OIL FILTER
DIRECTIONAL CONTROL VALVE
STARTER MOTOR

WARNING

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

OPERATOR'S PERSONAL PROTECTIVE EQUIPMENT REQUIRED

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



Work gloves with elasticated wrist.

Steel toe cap safety boots.

Close fitting heavy-duty non-snag clothing.

Face mask if appropriate.

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

BASIC WOODCHIPPING SAFETY

The operator should be aware of the following points:

- MAINTAIN A SAFETY EXCLUSION ZONE around the chipper of at least 10 metres for the general public or employees without adequate protection. Use hazard tape to identify this working area and keep it clear from debris build up. Chips should be ejected away from any area the general public have access to.

- HAZARDOUS MATERIAL - Some species of trees and bushes are poisonous. The chipping action can produce vapour, spray and dust that can irritate the skin. This may lead to respiratory problems or even cause serious poisoning. Check the material to be chipped before you start. Avoid confined spaces and use a facemask if necessary.

- BE AWARE when the chipper is processing material that is an awkward shape. The material can move from side to side in the funnel with great force. If the material extends beyond the funnel, the brash may push you to one side causing danger. Badly twisted brash should be trimmed before being chipped to avoid thrashing in the feed funnel.

- BE AWARE that the chipper can eject chips out of the feed funnel with considerable force. Always wear full head and face protection.

- ALWAYS work on the side of the machine furthest from any local danger, e.g. not road side.

GENERAL SAFETY MATTERS

DO'S AND DON'TS

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

ALWAYS check machine has stopped rotating and remove chipper ignition key before maintenance of any kind, or whenever the machine is to be left unattended.

ALWAYS check machine is well supported and cannot move.

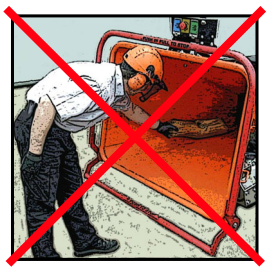
ALWAYS run with the engine set to maximum speed.

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 use chipper in a well ventilated area - exhaust fumes are dangerous.

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

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

DO NOT start the chipper running unless properly guarded.

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. Petrol/diesel fuel is explosive!

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.

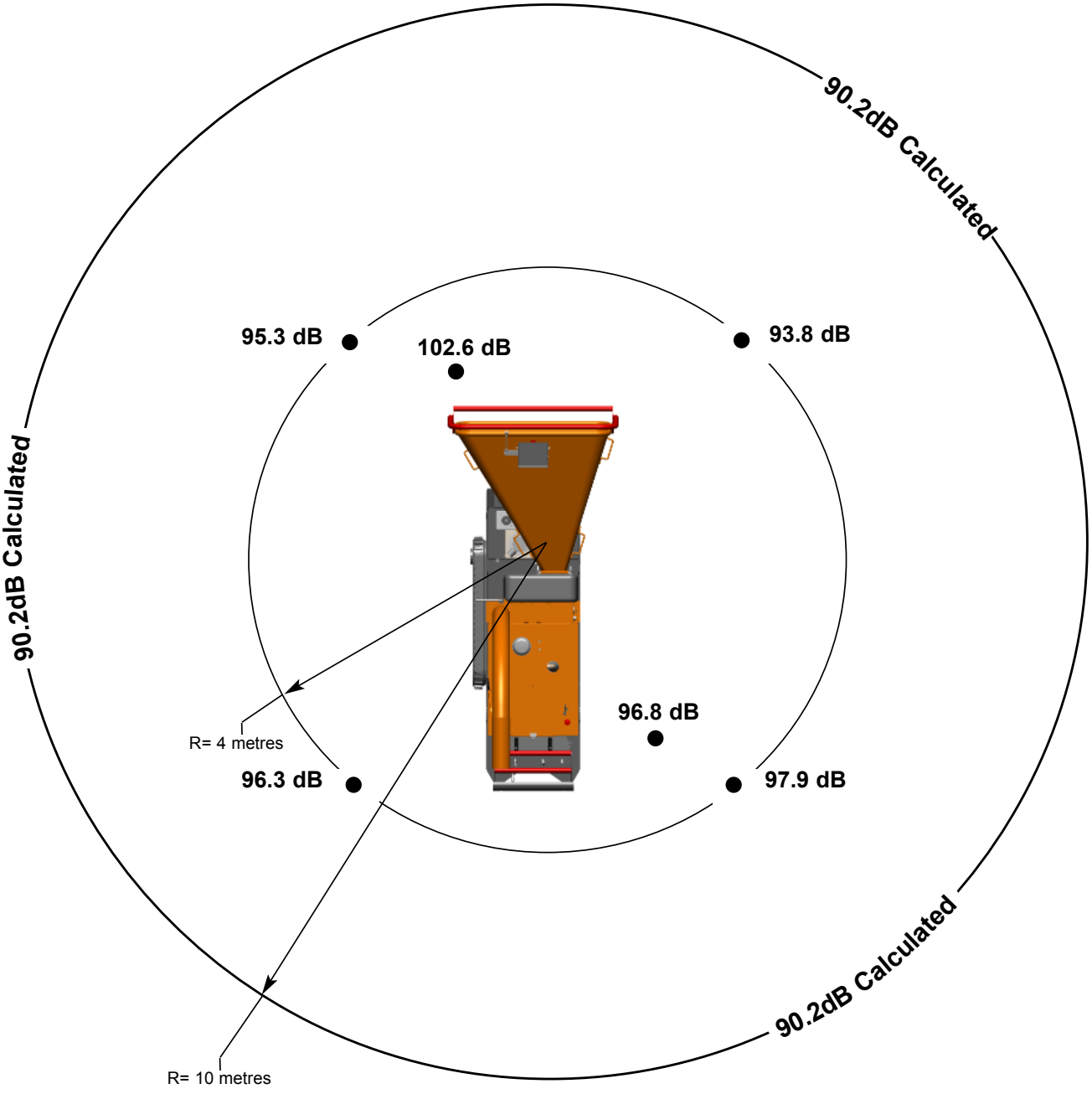
WARNING

NEVER LEAVE CHIPPER ON A SLOPE UNATTENDED.

NOISE TEST

MACHINE:	TW 150FTR/VTR
NOTES:	Tested Chipping 120 mm x 120 mm Corsican Pine 1.5m in length

Noise levels above 85dB (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: 119dB (A)

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

DELIVERY

All Timberwolf 150FTR/VTR 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 Work gloves with elasticated wrist.
- 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.***

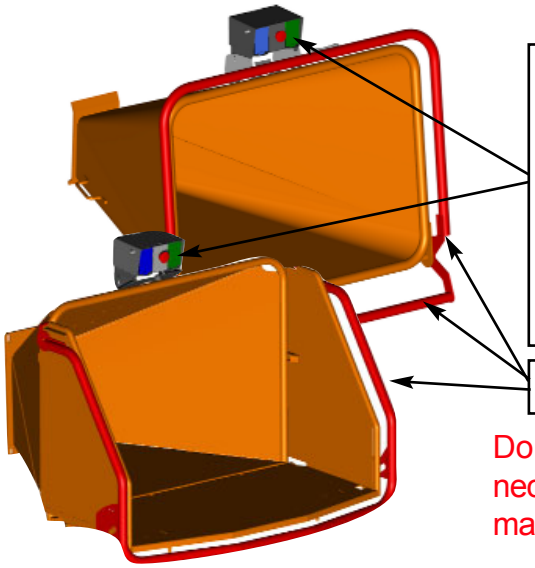
RED SAFETY BAR = This is the large red bar that surrounds the sides and top of the feed funnel (sides and bottom on high funnel). The bar is spring loaded and connected to a switch that will interrupt the power to the rollers. The switch is designed so that it only activates if the bar is pushed (pushed or pulled...low funnel only) 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.

LOW SAFETY BAR = An additional safety bar is located along the bottom of the low funnel. This is linked directly to the main bar, and will stop the rollers if pushed *only.* Pulling this bar will only move it into its 'stowed' (up) position.

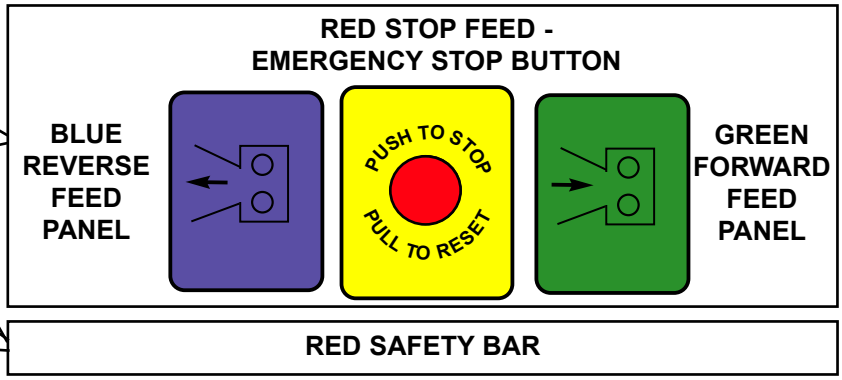
GREEN BUTTON = Forward feed - Push the button once - this activates the rollers and will allow you to start chipping (if the rotor speed is high enough).

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. Pull the button out to reset, 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. NOTE: This reverse function will work even if the safety bar is pushed *or* pulled.



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.

CRAWLER TRACK CONTROLS

WARNING

NEVER LEAVE CHIPPER ON A SLOPE UNATTENDED.

The chipper is designed to operate in either chipper or crawler mode, but not both at the same time.

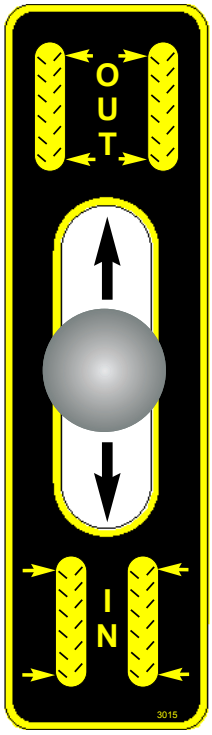
CHIPPING MODE

Power is available to the feed rollers. The cutting disc is rotating but the unit is stationary.

CRAWLER TRACK MODE

Power is available to the crawler tracks. The cutting disc is rotating but the feed rollers are stationary.

To switch between modes, a lever is operated (see diagram below). This is located on the driving control panel (see parts locator on page 3). It is clearly marked.



When Track mode is selected the two track control valves may be operated. These have direct control over the track relevant to each side of the machine. They are proportional valves, so increased movement will result in increased track speed.

Tracking may be done at either high or low engine speed. Manoeuvring the machine in tight spaces and while loading and unloading should be done with the engine on low speed.

NOTE: Ensure low safety bar on low funnel is rotated into the 'stowed' (up) position prior to tracking to avoid damage to the bar.

For machines fitted with variable tracks, track width adjustment is only possible with the track/chip control in the chip position. Track adjust handle is spring loaded to the middle (see diagram, right). The more you move the handle, the more the tracks adjust. To move the tracks outward, move the track adjust handle *up.* To bring tracks inward, move the track adjust handle *down.*

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 feed direction, until the rotor speed rises above the predetermined level. At this point the feed rollers will start turning without warning. The reverse function will work at any speed.

EMERGENCY STOPPING

There are three ways of stopping the TW 150FTR/VTR chipper in the event of an emergency.

STOPPING THE ROLLERS

-Activating the red safety bar will stop the rollers immediately. To restart the rollers, just push the green forward button or blue reverse button.

-Pushing the red Emergency button on the roller control box will also stop the rollers immediately. The button will stay in the "pushed in" position, and will require resetting (pulling out) before being able to restart the roller functions.

STOPPING THE ENGINE

Should the entire machine need to be stopped in an emergency, the red button on top of the engine guard should be pushed. This will shut down the engine in the shortest possible time. The engine cannot be restarted until the button is pulled out again to reset it.

DAILY CHECKS BEFORE STARTING

- LOCATE the machine on firm level ground.
- CHECK machine is well supported and cannot move.
- 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 controls as described below.
- CHECK (visually) for fluid leaks.
- CHECK fuel and hydraulic oil levels.

For parts location see diagrams on pages 3 & 4.

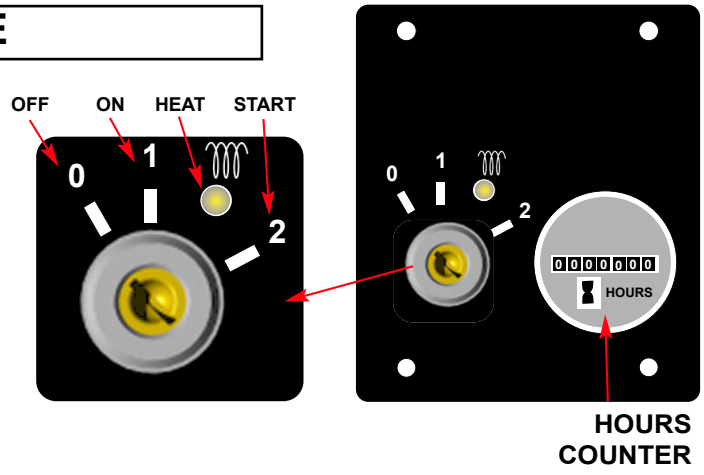
ENGINE CONTROLS

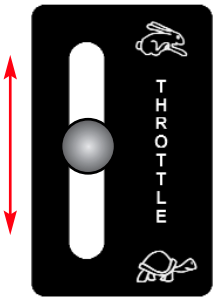
The engine controls are in two locations. The engine ignition is on the control panel in the centre of the machine, and the throttle lever is on the bonnet next to the engine emergency stop switch (see parts locator on page 4).

STARTING THE ENGINE

- INSERT key.Turn to heat.
- HEATER LED comes on.
- WAIT FOR HEATER LED TO GO OUT.
- TURN key to start position until it fires.
- RELEASE key.

If the engine fails to start after 10 seconds leave for 1 minute and try again.





CONTROLLING ENGINE SPEED

The engine has two throttle settings, idle and fast. These are controlled by the throttle lever on the bonnet. Moving the lever towards the ‘Hare’ on the pictogram will increase engine speed while moving it towards the ‘Tortoise’ will decrease the engine speed.

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.

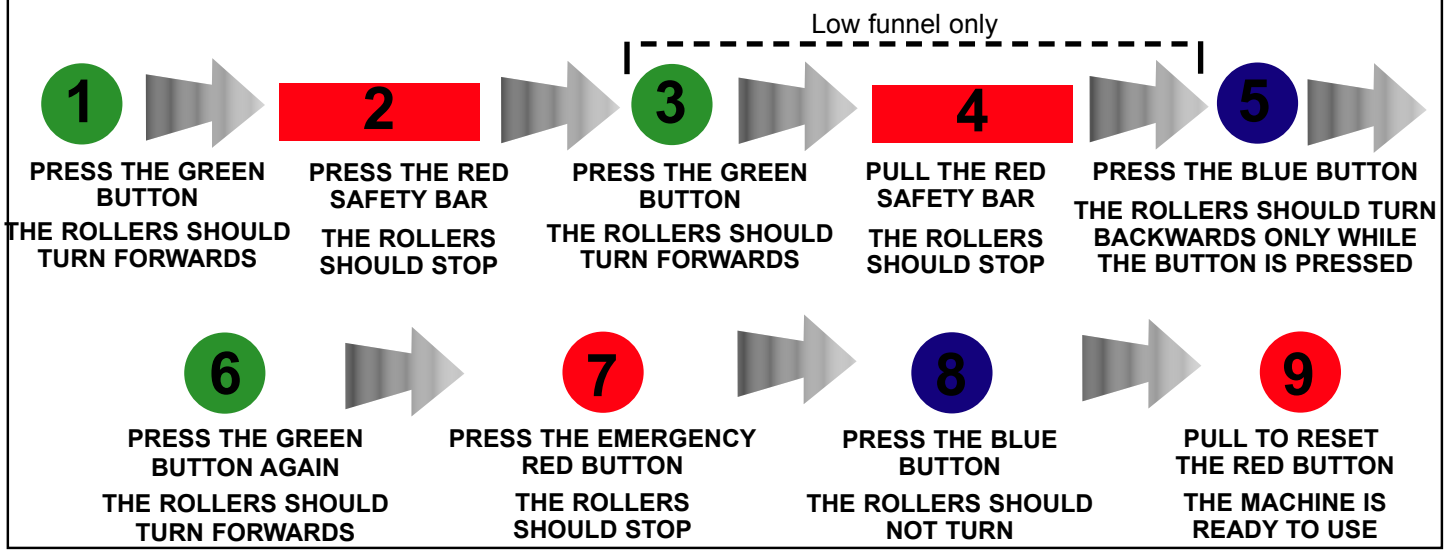
FUEL LEVEL INDICATOR

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

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.

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 chipper is running smoothly.
- PULL to release the red emergency stop button.
- 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 150 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. 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.

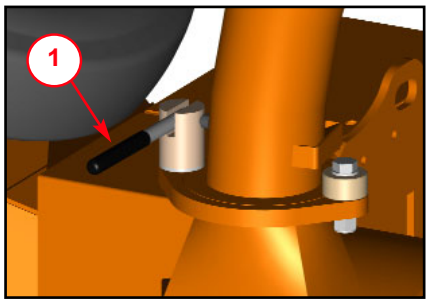
Both feed rollers should always turn at the same speed. If one or both rollers stop or suddenly slow down it may be that a piece of wood has become stuck behind one of the rollers. If this occurs press the BLUE REVERSE button and hold for 2 seconds - then repress GREEN FEED button. This should enable the rollers to free the offending piece of material and continue rotation at the correct speed. If the rollers continue to stall in the 'forward feed' or 'reverse feed' position push the RED STOP BUTTON, turn engine off, remove ignition key and investigate.

DISCHARGE CONTROLS

Controlling the discharge is an essential part of safe working.

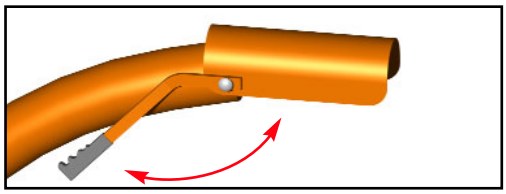
ROTATION

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.



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.

- 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.
- 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 whilst 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.

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.

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.

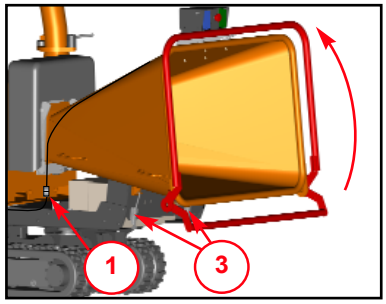
REMOVING THE FUNNEL

1. DISCONNECT the control box loom from the engine loom at the connection point location under the near side of the funnel.

2a. ON the high funnel / tray, ensure tray is closed and catches are latched.
2b. ON the low funnel, rotate low safety bar into its ‘stowed’ (up) position.

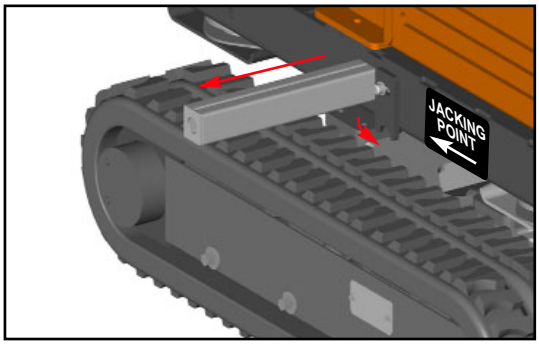
3. RELEASE the two catches that secure the funnel to the chassis, located underneath funnel. (Only one catch on high funnel).

4. WITH two people in position, lift the funnel by the handles (if fitted), ensure the wide end is lifted first then release the narrow end from the roller box assembly.



CHASSIS JACKING POINT

1. LOOSEN the cover plate bolt on the appropriate side of the chipper.
2. ROTATE cover plate, allowing it to remain attached to the chassis.
3. PULL the jacking beam from the access hole to its fullest extent (approx 300 mm).
4. AFTER use, push beam back into access hole and secure cover plate.



SERVICE SCHEDULE

WARNING

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

Table 1. Service Schedule Do jobs below:	Daily Check	50 Hours	100 Hours	500 Hours	1 Year
Check engine oil - top up if necessary.	●				
Check for engine oil / hydraulic oil leaks.	●				
Check fuel level.	●				
Check feed funnel, feed roller cover, access covers, engine covers and discharge unit are securely fitted.	●				
Check blades.	●				
Check radiator is clear.	●				
Check air intake is clear.	●				
Clean air filter element.	DEPENDING ON WORKING ENVIRONMENT				
Lubricate variable track base slides (VTR only).	WEEKLY, DEPENDING ON WORKING ENVIRONMENT				
Check for tightness all nuts, bolts and fastenings making sure nothing has worked loose.		●			
Grease discharge flange.		●			
Tension main drive belts.		●			
Grease the roller drive splines.		●			
Check safety bar mechanism.			●		
Check fuel pipes and clamp bands.			●		
Check battery electrolyte level.			●		
Check for loose electrical wiring.			●		
Replace track drive unit oil.		(1st time)	●	then ●	OR ●
Replace hydraulic oil filter - as service schedule and after service or repair work to the hydraulic system.				●	OR ●
Replace hydraulic oil.				●	OR ●
Replace front rotor bearings*.	} RETURN TO DEALER			●	OR ●
Turn / replace anvils.				●	

REFER TO YOUR ENGINE SUPPLIERS MANUAL FOR ALL ENGINE MAINTENANCE PROCEDURES.

***NOTE:** Main Rotor Bearings are sealed for life. No greasing or lubrication is necessary.

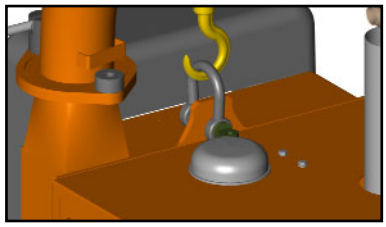
SAFE MAINTENANCE

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

- HANDLE blades with extreme caution to avoid injury. Gloves should always be worn when handling the cutter blades.
- AVOID contact with hydraulic oil and fuel.
- 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.

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 15-16.

BATTERY REMOVAL

1. Remove the seven M6 bolts securing the tracking controls front guard.
2. Remove the two M10 bolts securing the battery clamp.
3. Remove the negative battery lead.
4. Remove the positive battery lead.

BATTERY MAINTENANCE

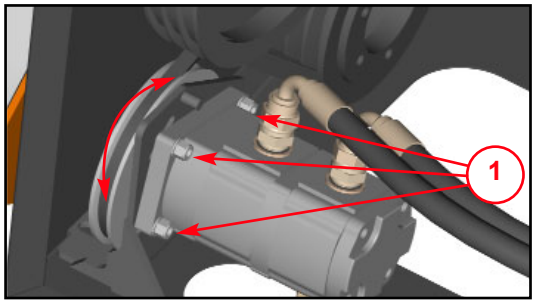
1. Remove the seven M6 bolts securing the tracking controls front guard.

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

2. The battery can be serviced in this position.

TENSION HYDRAULIC PUMP BELT

1. Loosen the three outermost M8 nuts and bolts.
2. Pivot pump assembly up or down to achieve the correct belt tension of 10 mm deflection each way (20 mm total).
3. Hold assembly at this position while tightening the three M8 nuts and bolts.



COPPER EASE SAFETY INFORMATION

Product name: Copper Ease.

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

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

FIRST AID

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

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

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

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

BATTERY SAFETY INFORMATION

WARNING NOTES AND SAFETY REGULATIONS FOR FILLED LEAD-ACID BATTERIES

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

Keep children away from acid and batteries.

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

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

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

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

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

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

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

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

BATTERY SAFETY INFORMATION...cont.

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

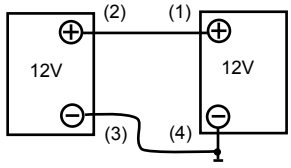
2. Initial operation
- The batteries are filled with acid at a density of 1.28g/ml during the manufacturing process and are ready for use.
- Recharge in case of insufficient starting power (cf. section 4).

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

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

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

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



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

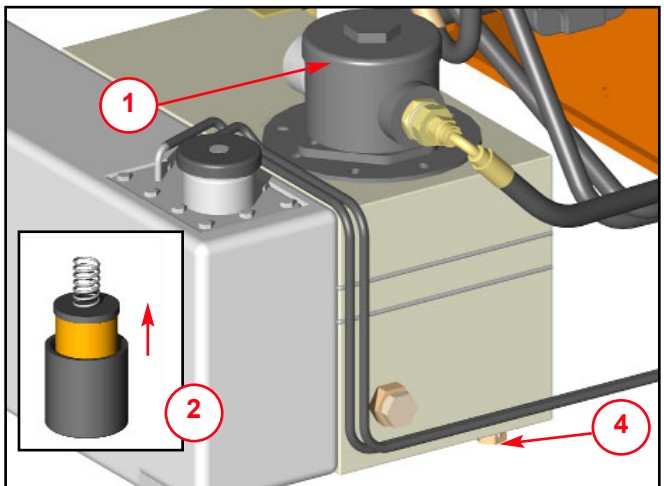
7. Taking the battery out of service
- Charge the battery; store in a cool place or in the vehicle with the negative terminal disconnected.
- Check the battery state of charge at regular intervals, and correct by recharging when necessary (cf. section 4).

CHANGE 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. 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 marks (about 15 litres).



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

7. Refit the filter cup, install a new filter element and refit the black screw cap, with threadlock, to the filter housing, ensuring o-ring remains in place.

CHECK FITTINGS

The Timberwolf TW 150FTR/VTR 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).

	Size	Pitch	Head	Torque lbft	Torque Nm
Blade Bolts	M10	Standard	T50 Torx	40	54
Hyd Motor Retaining Bolts	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

CHECK HOSES

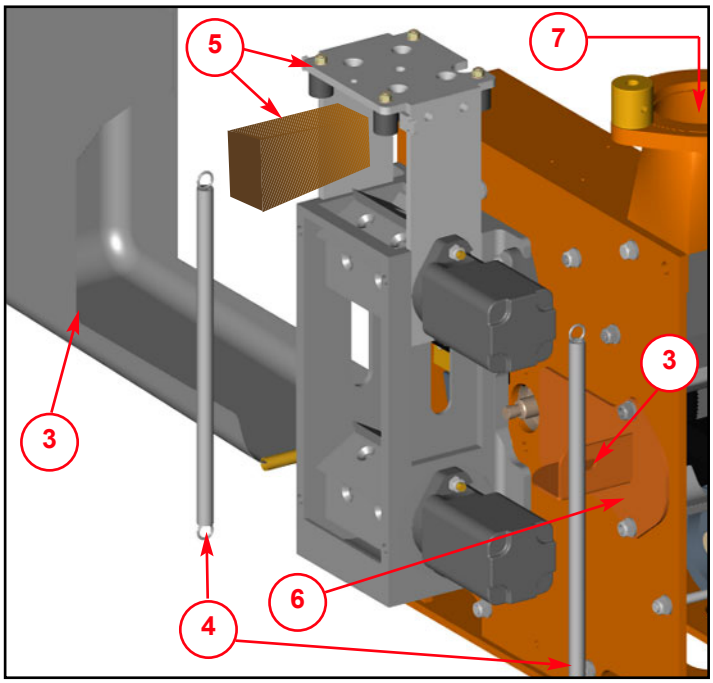
All the hydraulic hoses should be regularly inspected for chafing and leaks. The hydraulic system is pressurized to over 150 Bar (2175 PSI) and thus the equipment containing it must be kept in good condition.

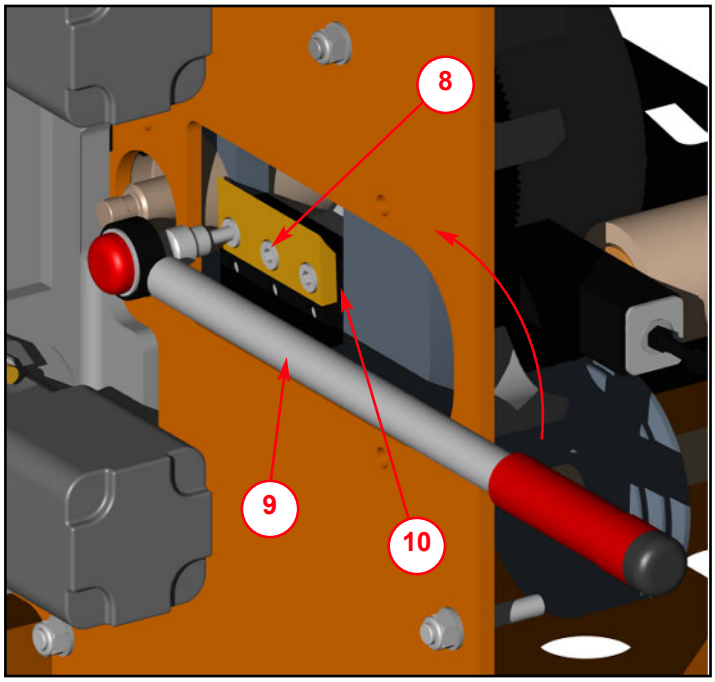
Identify the hoses that run to the top motor. These have the highest chance of damage as they are constantly moving. If any hydraulic components are changed new seals should be installed during reassembly. Fittings should then be retightened.

CHANGE BLADES

WARNING

Wear riggers gloves for the blade changing operation.



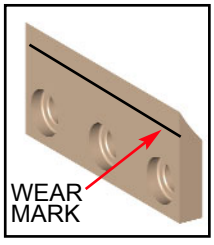


1. Turn the chipper off and remove the ignition keys.
2. Remove battery leads.
3. Remove bolt and washer retaining roller box guard and lift guard.
4. Remove the two springs on the roller box slide.
5. ***NOTE: Rollerbox slide weighs in excess of 20kg.*** Lift the roller box slide and wedge a suitably 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,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 and ensure bolt and washer 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.

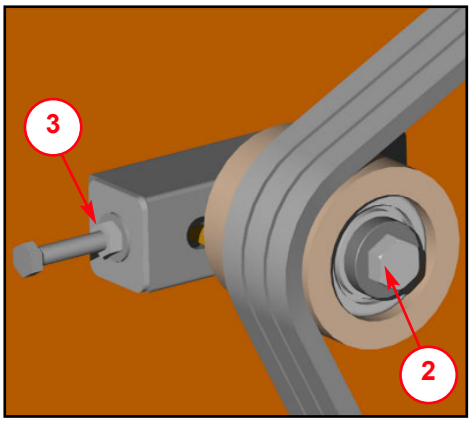


TENSION DRIVE BELTS

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.

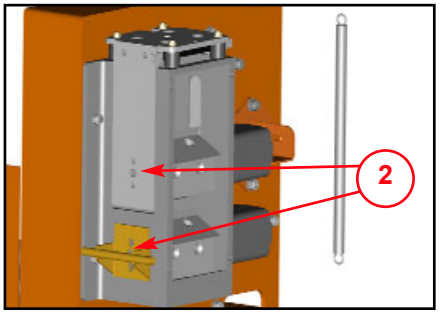
3. Turn nut in end of tensioner pulley slider until correct belt tension is achieved and lock the tensioner pulley bolt back up again. Tension is correct when 4.5kg of force deflects one belt 6 mm at the centre of its span. (Push the belt firmly with your finger; it should deflect to roughly the depth of your fingernail).



4. Run machine and test, recheck belt tension.

5. NOTE: Slack drive belts will cause poor performance and belt / pulley wear.

GREASE THE ROLLER DRIVE SPLINES



NOTE: This should be done four times a year or every 50 hours. If the grease in the splines is allowed to dry out, rapid wear of the roller splines will occur resulting in a breakdown and the need to fit replacement parts. This failure is not warranty.

1. Remove bolt and washer retaining roller box guard and lift guard (as shown in the 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.*
4. Close the roller box guard and refit the washer and bolt.

* DO NOT USE GRAPHITE BASED GREASE

GREASING ROTOR BEARINGS

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

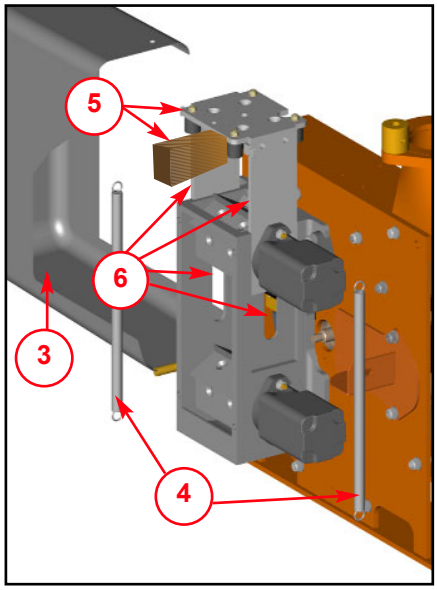
ENGINE MANUFACTURER'S HANDBOOK

Refer to your Engine Manufacturer's Handbook for detailed instructions on the following:

- Changing the fuel filter.
- Checking the engine oil.
- Changing the engine oil.
- Changing the engine oil filter.

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. Remove battery leads - ensure machine has come to a complete stop.
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.*
7. ***NOTE: Rollerbox slide weighs in excess of 20kg.*** Remove wedge, lower roller box slide and replace springs.
8. Close roller box guard and refit bolt and washer.
9. Refit battery leads.

* DO NOT USE GRAPHITE BASED GREASE

TRACK BASE MAINTENANCE

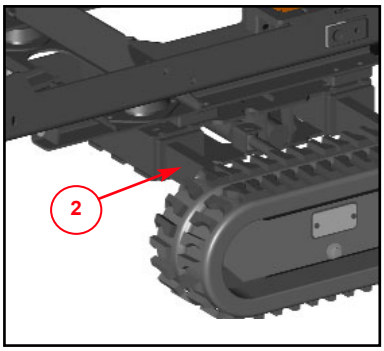
SAFE MAINTENANCE

- Solidly support the under carriage if it needs to be lifted up for maintenance (see Jacking Beam section on page 12).
- Hydraulic systems may get very hot after working.
- Keep all components in good condition as they are exposed to high pressures.
- Immediately repair damage and replace worn or broken items.
- Keep the tracks clean, removing excess oil, grease and dirt.
- Check for oil leaks and damaged hoses.
- Only use recommended lubricants. Do not mix different brands.
- Keep track stretcher grease nipples clean.

Maintenance intervals are only guidelines. They should be increased if severe conditions are encountered. Dispose of lubricants only in accordance with current environmental protection regulations.

LUBRICATE VARIABLE TRACK BASE SLIDES

The variable track base slides must be lubricated weekly or more often depending working conditions to prevent jamming.



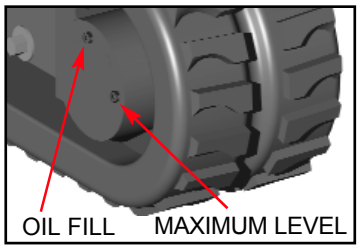
1. Extend tracks fully.
2. Using a brush, generously coat all surfaces of the four slider bars with general purpose grease.*
3. Retract the tracks fully.
4. Cycle tracks in and out two more times.

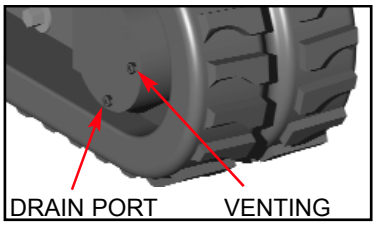
* DO NOT USE GRAPHITE BASED GREASE

REPLACE OIL IN THE TRACK DRIVE UNIT

To fill with oil, track the machine until the gearbox casing is level with a plug positioned at 12 o'clock as shown. Unscrew the two plugs and fill from the upper hole until oil reaches the level of the lower hole.

NOTE - Ensure the correct grade of oil is used: Gear Oil EP80W-90 GL5





DRAINING THE OIL IN THE TRACK DRIVE UNIT

To drain the oil, track the machine until a plug is at 6 o'clock as shown. Unscrew both plugs and allow oil to discharge into a suitable container. Dispose of waste oil in a safe and approved way.

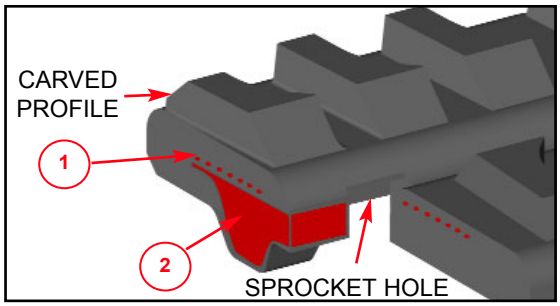
REDUCTION UNIT OIL TYPES

We recommend, for track drive gearboxes, using gear oils with E>P. additives and viscosity to SAE 80W/90 or ISO VG 150. Continuous duty temperature must not exceed 90°C.

CHECKING THE RUBBER TRACKS

The structure of the rubber track is shown in this diagram. The steel cables (1) and metal core (2) are embedded in the rubber.

There are many ways in which rubber tracks may be damaged. Some of these are terminal for the tracks, others are only cosmetic.



BREAKAGES OF STEEL CABLES AND METAL CORES.

- Excess track tension can cause steel cables to break. Excess tension may be caused by;
- Stones or foreign matter accumulating between the track and the undercarriage frame.
- The track slipping off its guide system.
- Extreme friction such as rapid changes in direction.
- Improper contact between track and sprocket.
- Operation on sandy terrain.

FATIGUE CRACKS AND ABRASION.

Cracks at the base of tile carved profiles are caused by rubber fatigue due to bending.

Cracks and bends on the edge of the rubber are caused by manoeuvring the track on concrete edges and curbs.

Cracks and abrasions in the rubber on the guide roller paths are caused by compression fatigue of the rubber due to the weight of the wheel combined with operation on sandy terrain or repeated sudden changes in direction.

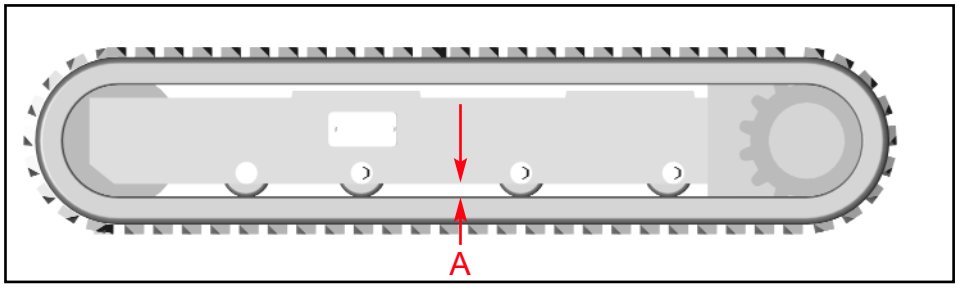
Abrasion of the carved profile may be caused, in particular, by rotation on concrete or gravel surfaces or hard surfaces.

Cracks on the outside surface of the track are often due to contact with gravel, sharp stones and sharp materials such as sheet metal, nails and glass.

Cracks on the inside surface of the circumference and on the edge of the rubber are caused by contact between track and the undercarriage structure or with sharp concrete edges.

These methods of damage are progressive. The track can continue to be used until wear exposes the metal cores. If this exposure extends for more than half of the circumference of the track then it is time to replace the track, even though it can still be used.

CHECKING TRACK TENSION



1. Stop your machine on a flat and solid surface.
2. Lift it in safe conditions and put stable supports under the undercarriage frame to properly support it.
3. Measure distance A at the central roller of the undercarriage from the bottom of the roller to the rigid inside surface of the rubber track. Track tension is normal if dimension A is between 10 and 15 mm.
4. Adjust tension as described in the following paragraph if track tension does not comply with these dimensions (loose or too tight).

TRACK LOOSENING/TIGHTENING PROCEDURES

Track tension is maintained by grease in the adjuster unit. More grease will increase track tension, less grease will decrease it.

The grease contained in the hydraulic track is pressurized. Never loosen the grease valve (No. 2, Fig. 2) for more than one turn. If the valve is loosened too much you risk expelling grease under pressure and possible serious injury to the machine operator. Never loosen the grease nipple (No. 5, Fig. 2). Remove gravel or mud when they are jammed between the sprocket and the track link before loosening the track.

1. Remove the screws and take off the cover to access the adjustment system.

2. To loosen the track turn the valve counter-clockwise no more than one turn. One turn of valve is sufficient for loosening the track.

3. If grease does not start to drain out then slowly rotate the track.

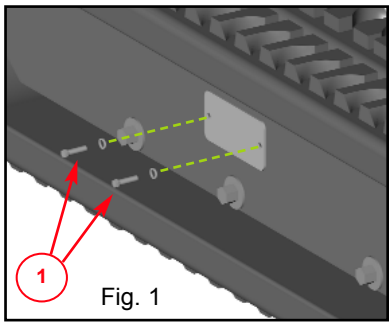


Fig. 1

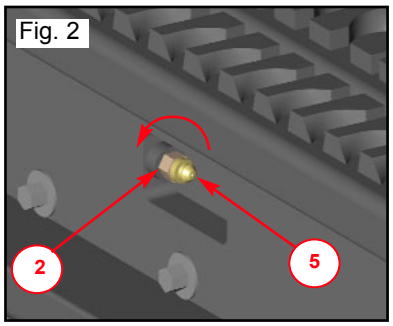


Fig. 2

4. When you have obtained correct track tension then turn valve clockwise and tighten it. Clean all traces of extruded grease.

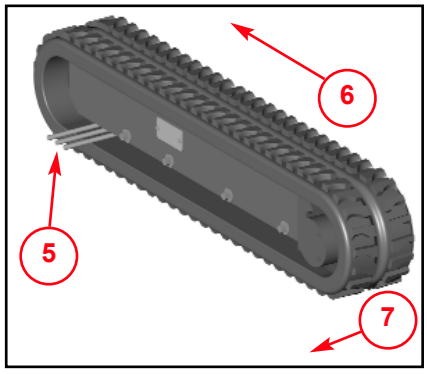
5. To stretch the track connect a grease gun to grease nipple and add grease until track tension falls within specified values.

WARNING

It is not normal for the track to remain too tight after turning the valve counter-clockwise or for it to remain loose after introducing grease into the grease nipple. Never try to remove the tracks or disassemble the track-stretching cylinder since pressure of the grease inside the track is extremely dangerous.

REMOVING THE RUBBER TRACKS

Remove gravel or mud when they are jammed between the sprocket and the track link before loosening the track.



1. Stop your machine on a solid and level surface. Lift it up and support it in safe conditions.
2. Remove the screws and take off the cover that gives access to the adjustment system (Fig. 1, page 22).
3. To loosen a track slowly unscrew valve counter-clockwise for no more than one turn (Fig. 2, page 22). One turn of the valve is sufficient for loosening the track.
4. If grease does not start to drain out then slowly rotate the track.
5. Insert three steel tubes inside the track in the space between the rollers.
6. Rotate the driving gear in reverse so that the steel tubes proceed with the track and engage in the track-stretching wheel.
7. Exercise force sideways to slide the track and lift it off the track-stretching wheel.

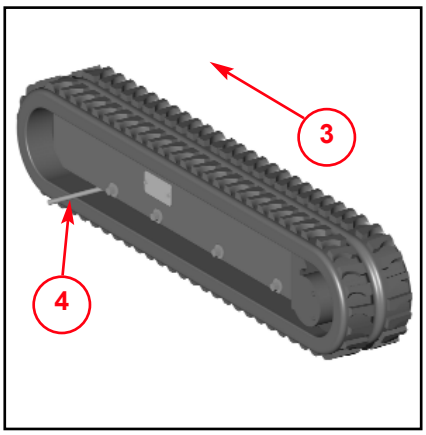
WARNING

The grease contained in the hydraulic tank is under pressure. Never loosen the grease valve for more than 1 turn. If the valve is loosened too much then pressurized grease may exit and cause severe injury to the machine operator. Never loosen the grease nipple.

INSTALLING THE RUBBER TRACKS

WARNING

Make sure that you are always in safe conditions with the machine lifted to perform the operation for track installing.



1. Check that the grease contained in the hydraulic cylinder has been removed.
2. Mesh the track links in the sprocket and place the other end of the track on the track-stretching wheel.
3. Rotate the driving gear in reverse and pull the track soles inside the frame.
4. Position the track using a steel tube and turn the driving gear again.
5. Make sure track links mesh correctly in the sprocket and in the track stretching wheel.
6. Adjust track tension (see track loosening procedures on page 22).
7. Set the tracked undercarriage on the ground.

CHECKING SPROCKET WEAR

Measuring wear on sprocket and driving gear teeth is one of the most difficult measurements to be done. You must always consider the point where wear is greatest.

There should always be enough tooth left on the sprocket to engage fully with the rubber track. When the sprocket meshing distance is reduced significantly the sprocket should be changed.

ENTEC 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 Entec Industries 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 Entec Industries premises or at our option an Entec approved Timberwolf dealer. No liability will be accepted for special, indirect, incidental, or consequential loss or damages of any kind.

WARRANTY STATEMENT

Entec Industries 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 Entec woodchipper you are responsible for the following;
-Operation of the woodchipper in accordance with the Entec instruction manual.
-Performance of the required maintenance listed in your Entec instruction manual.
-In the event of a failure the Entec 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 Entec warranty is restricted to the first end user only and is not transferable except when an authorised Timberwolf Dealer has a woodchipper registered with Entec Industries 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 Entec warranty may be invalidated if any of the following apply;
-The failed parts or assembly is interfered with in any way.
-Normal maintenance in accordance with that set out in the Entec manual has not been performed.
-Incorrect reassembly of components.
-The machine has undergone modifications not approved in writing by Entec Industries.
-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 Entec instruction manual.

WARRANTY SERVICE

To obtain warranty service please contact your nearest Entec approved Timberwolf dealer. To obtain details of the nearest facility please contact Entec Industries 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.

Entec Industries Ltd

Entec House
Creeting Road, Stowmarket
Suffolk IP14 5AY
Tel: 01449 765800 Fax: 01449 765801

E C Declaration of Conformity

CE

Entec Industries Ltd as the designer and manufacturer certifies that the machine stipulated below complies with all the relevant provisions of the:

Machinery Directive (98/37/EC)
(& other relevant directives)

and the National Laws and Regulations adopting these directives.

Designer/Manufacturer	:	Entec Industries Ltd
Description of Machinery	:	Self-powered portable machine intended to chip up tree waste prior to disposal.
Model	:	TW 150TR
Serial No.	:	_____

Harmonised standards applied: (including parts/clauses of):

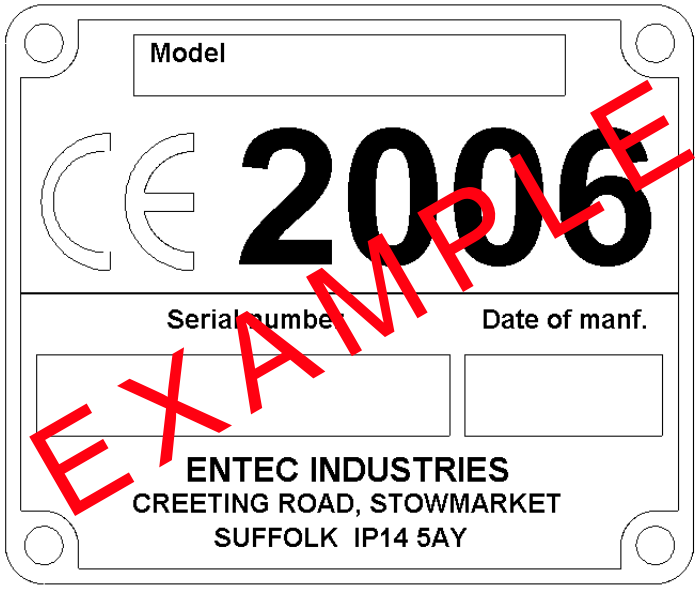
BS EN 292:1991, BSEN 294: 1992, BS EN 60204: 1: 1998, BS EN 563: 1994 -Safety of Machinery – Temperatures of touchable surfaces, BS EN 954-1: 1996 – Safety of Machinery – Safety related parts of control systems, BS EN 982: 1996 – Safety of Machinery – Hydraulics, BS EN 1088: 1995 – Safety of Machinery – Interlocking devices, *pr EN 13525: 1999 – Forestry Machinery – Wood chippers – Safety. BS EN 60204-1: 1998 – Safety of Machinery – Electrical equipment, BS EN 60529: 1991 – Safety of Machinery – Degrees of Protection for Enclosures, BS EN 60947-5-1: 1991 – Safety of Machinery – Low Voltage Switchgear – Electromechanical devices.

Together with all relevant National Technical Standards and Specifications as applicable: - (Including parts/clauses of):

"Responsible" Person empowered to sign: _____ **Mr. John Marshall**
Position in Company: **Director**

Date: 06/07/2004

IDENTIFICATION PLATES



CE PLATE

CHASSIS IDENTIFICATION PLATE

Engine Stop	Forward	Safety	No Stress

1848 ONLY THIS PIECE USED

TIMBERWOLF 1136 x 2

2800

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.

1662

GREASE ROLLER SPINDLE AND SLIDES 1661

17450

SELECT CHIP MODE WHEN ADJUSTING TRACK WIDTH

4090

TIMBERWOLF 4090

PUSH TO STOP / PULL TO RESET 2802 x 2

2801

L_{Aeq} 92 db 3004

L_{WA} 119 db 2998

!! ATTENTION !!

CLEAN UNDER BLADES BEFORE REFITTING OR TURNING

FAILURE TO DO SO MAY RESULT IN BLADE(S) COMING LOOSE AND DAMAGE BEING CAUSED TO THE ROTOR HOUSING

3022

1747 **CHIP**

1745 **TRACK**

3015 OUT (Variable tracks only) IN

JACKING POINT 3059 X 2

SEE MANUAL FOR INSTRUCTIONS

! SAFETY NOTE ! 2949

LIFTING EYE IS DESIGNED TO LIFT THE MACHINE'S WEIGHT ONLY.

DO NOT USE HOIST HOOK DIRECTLY ON LIFTING EYE. USE CORRECTLY RATED SAFETY SHACKLE ONLY THROUGH LIFTING EYE.

LIFTING EYE TO BE INSPECTED EVERY 6 MONTHS OR BEFORE EACH USE.

ALWAYS VISUALLY INSPECT LIFTING EYE PRIOR TO EACH USE. DO NOT USE LIFTING EYE IF DAMAGED.

0670

1746

PUSH *OR* PULL TO STOP

Low Funnel Only 3054

2950 THROTTLE

PUSH TO STOP

Low Funnel Only 4114

0617

HIGH VELOCITY DISCHARGE KEEP CLEAR!

PUSH TO STOP

DO NOT PULL HERE 1399

High Funnel Only

0616

DANGER! KEEP HANDS AND FEET OUT 4099 X 2

2854

WARNING

DO NOT RIDE ON THIS MACHINE AT ANY TIME

1200KG MAX 4284

! HOT EXHAUST

0671

DANGER

SEE NEXT PAGE FOR DETAIL

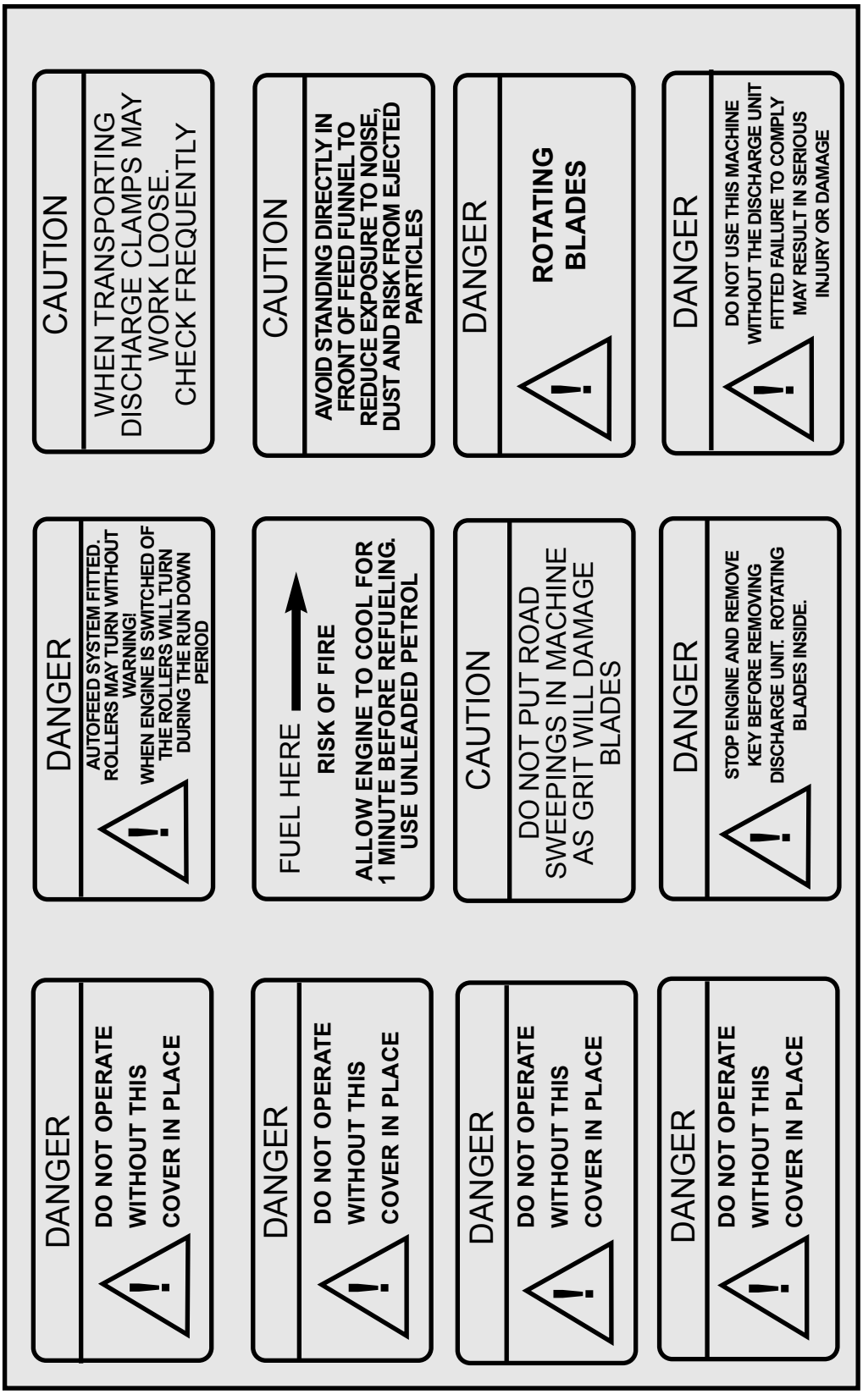
1363 X 2 on low funnel

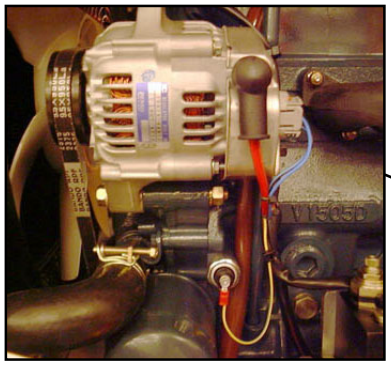
TW 150FTR 4275 X 2

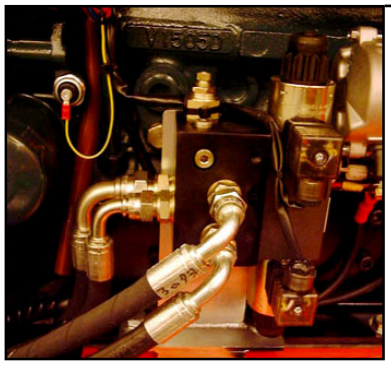
OR

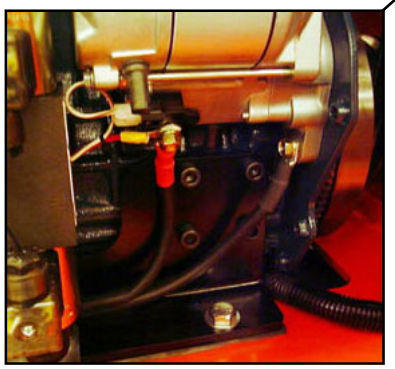
TW 150VTR 4276 X 2

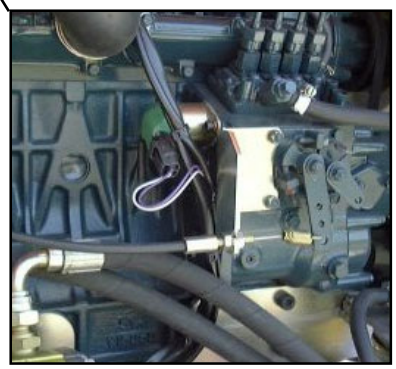
671

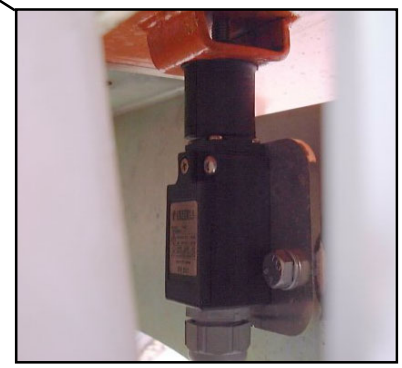

CAUTION
WHEN TRANSPORTING DISCHARGE CLAMPS MAY WORK LOOSE. CHECK FREQUENTLY
CAUTION
AVOID STANDING DIRECTLY IN FRONT OF FEED FUNNEL TO REDUCE EXPOSURE TO NOISE, DUST AND RISK FROM EJECTED PARTICLES
DANGER
ROTATING BLADES
DANGER
DO NOT USE THIS MACHINE WITHOUT THE DISCHARGE UNIT FITTED FAILURE TO COMPLY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



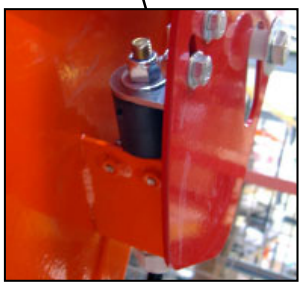




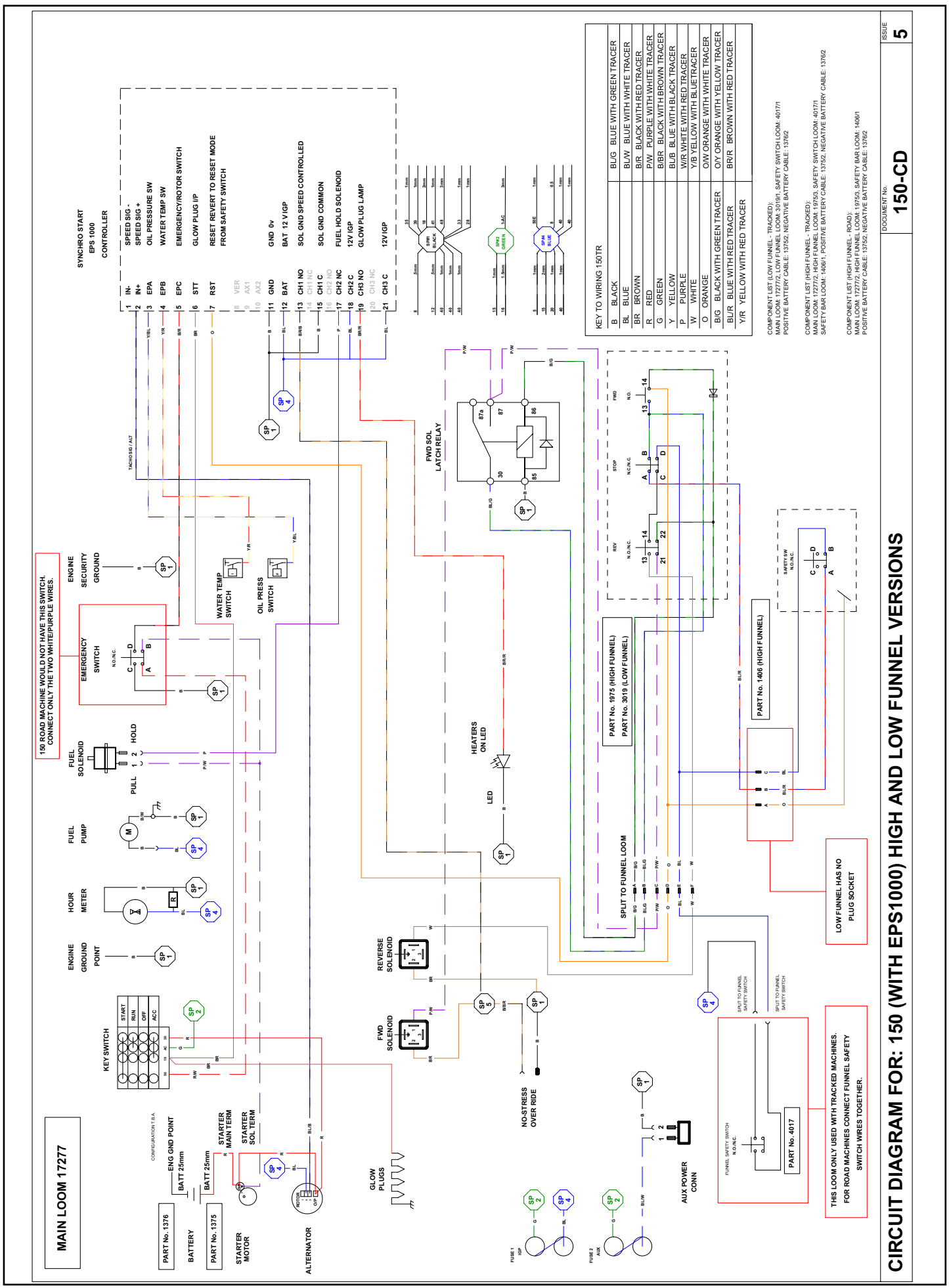




High funnel versions only

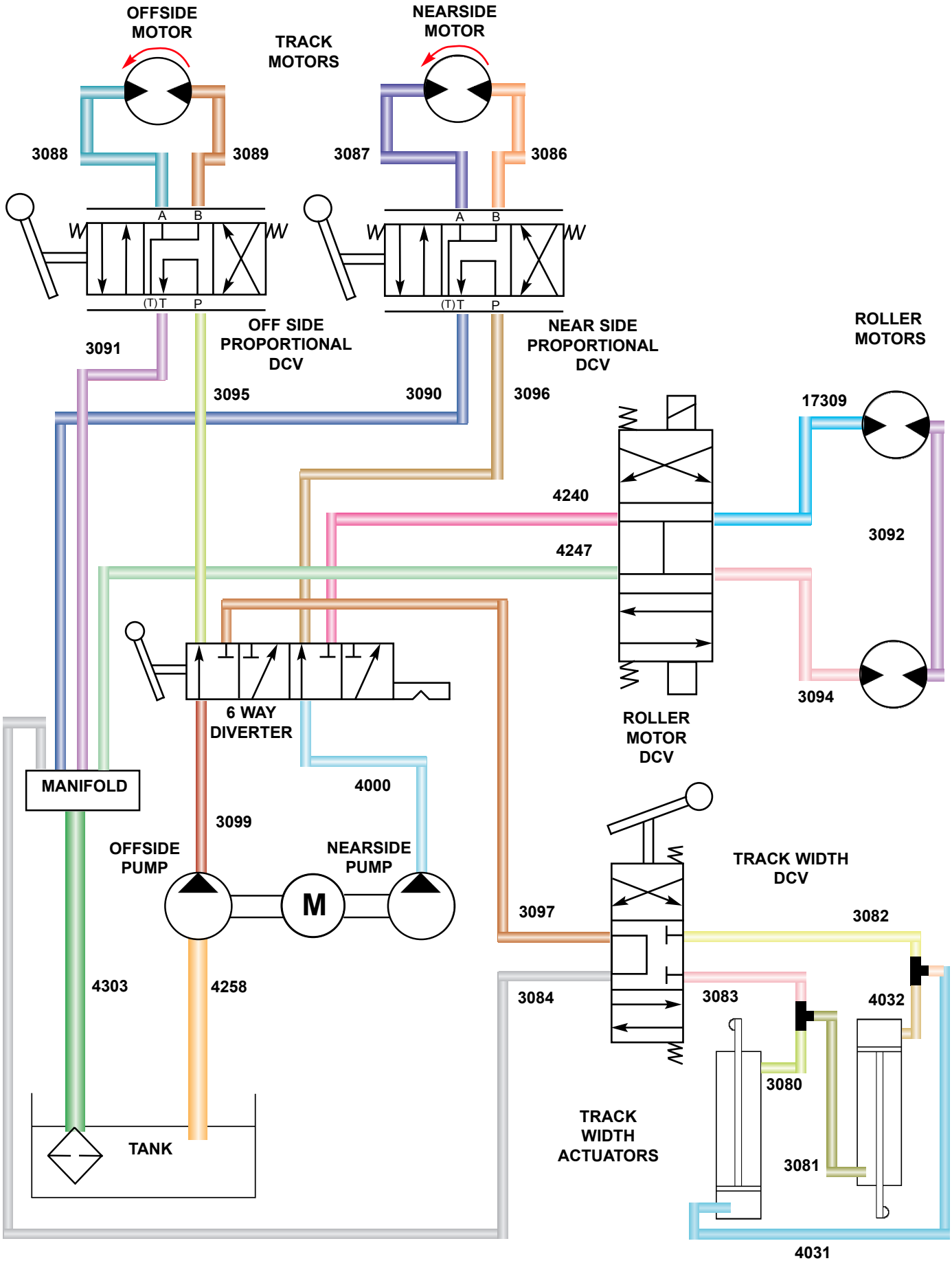


Low funnel versions only



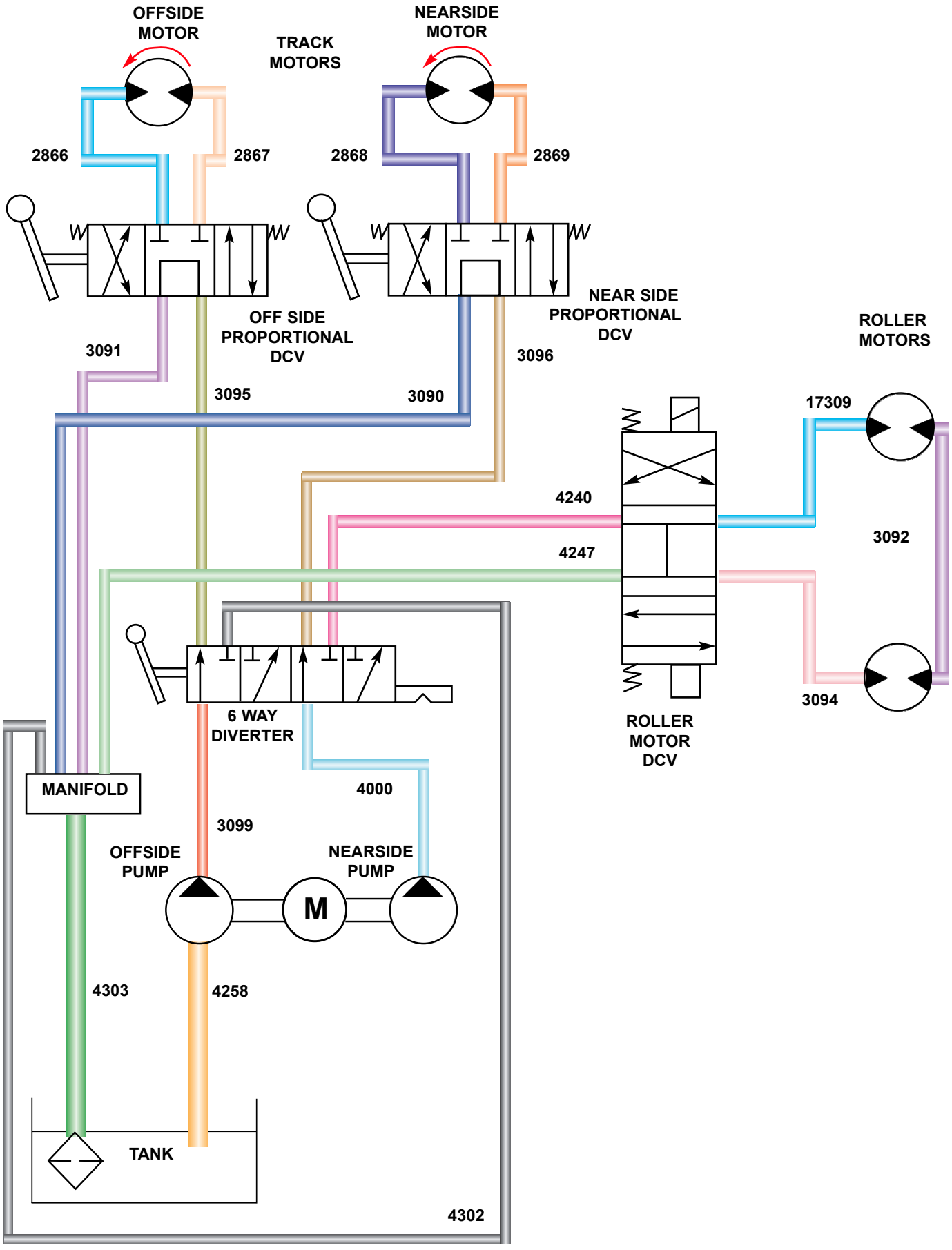
Date Last Modified: 25th Oct 05

KIT NO: 4289



Date Last Modified: 31st Aug 05

KIT NO: 4291



Date Last Modified: 31st Aug 05

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TIMBERWOLF
TW 150FTR/VTR
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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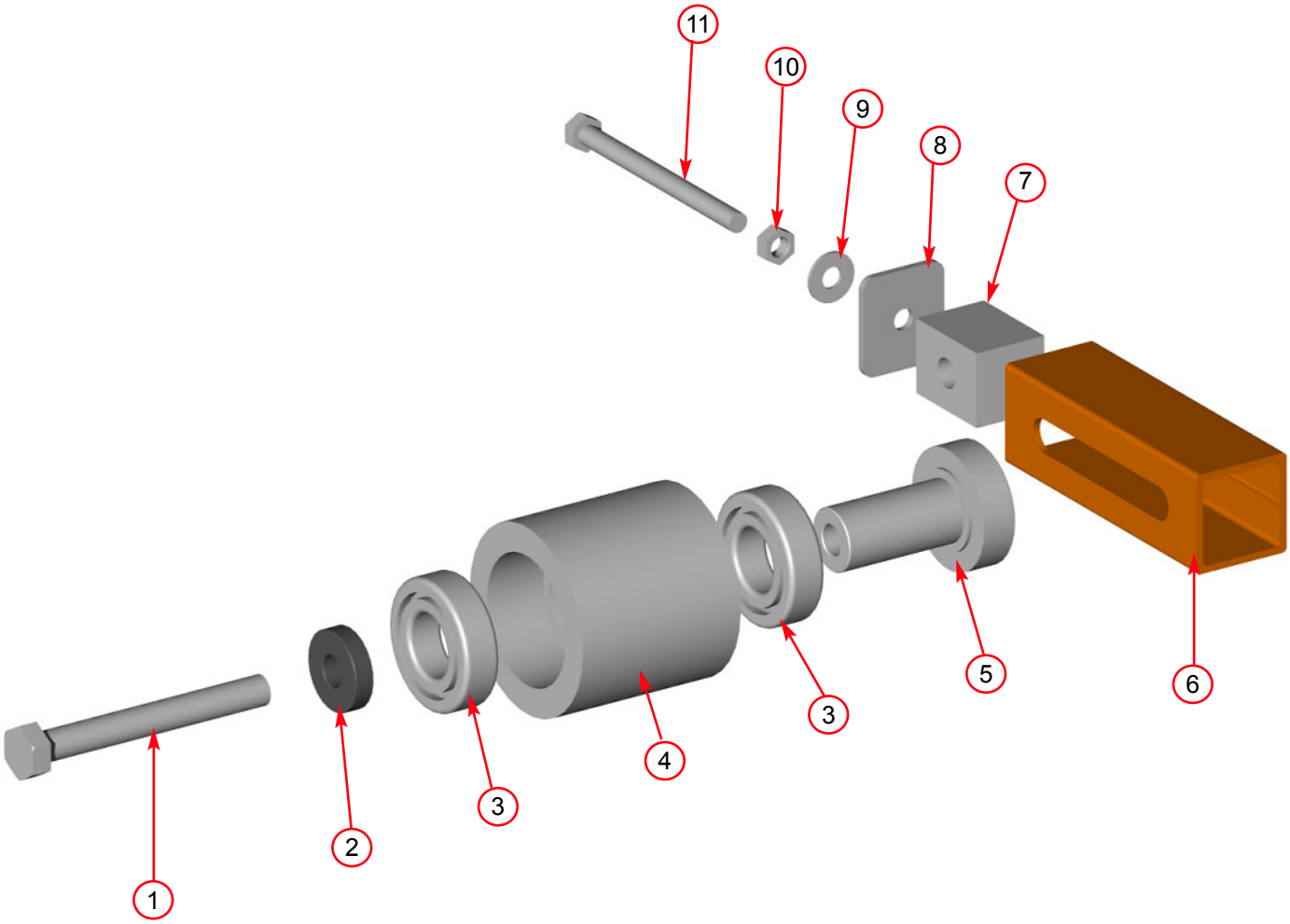
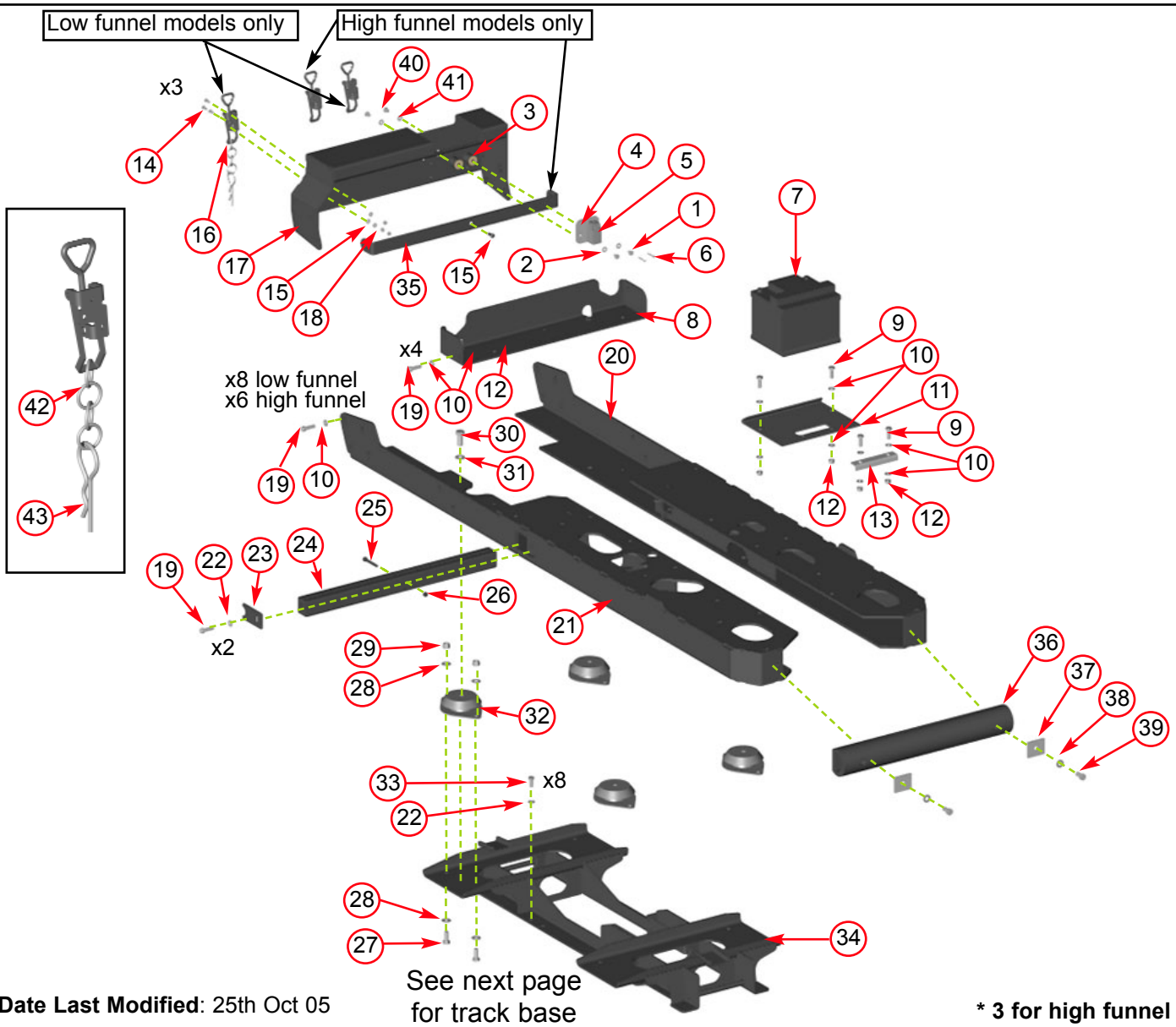


Item	Part No	Part Name	Q'ty
1	0313	M12/100 Bolt	1
2	0415	Heavy Washer	1
3	0491	Bearing	2
4	0411	Pulley	1
5	0472	Pulley Boss	1
6	*N/A to purchase*	Slider	1
7	0469	Slider Block	1
8	1342	End Plate	1
9	*made in production*	Washer	1
10	0476	Plain M8 Nut	1
11	2988	M8/90 Bolt	1

Date Last Modified: 17th Aug 05



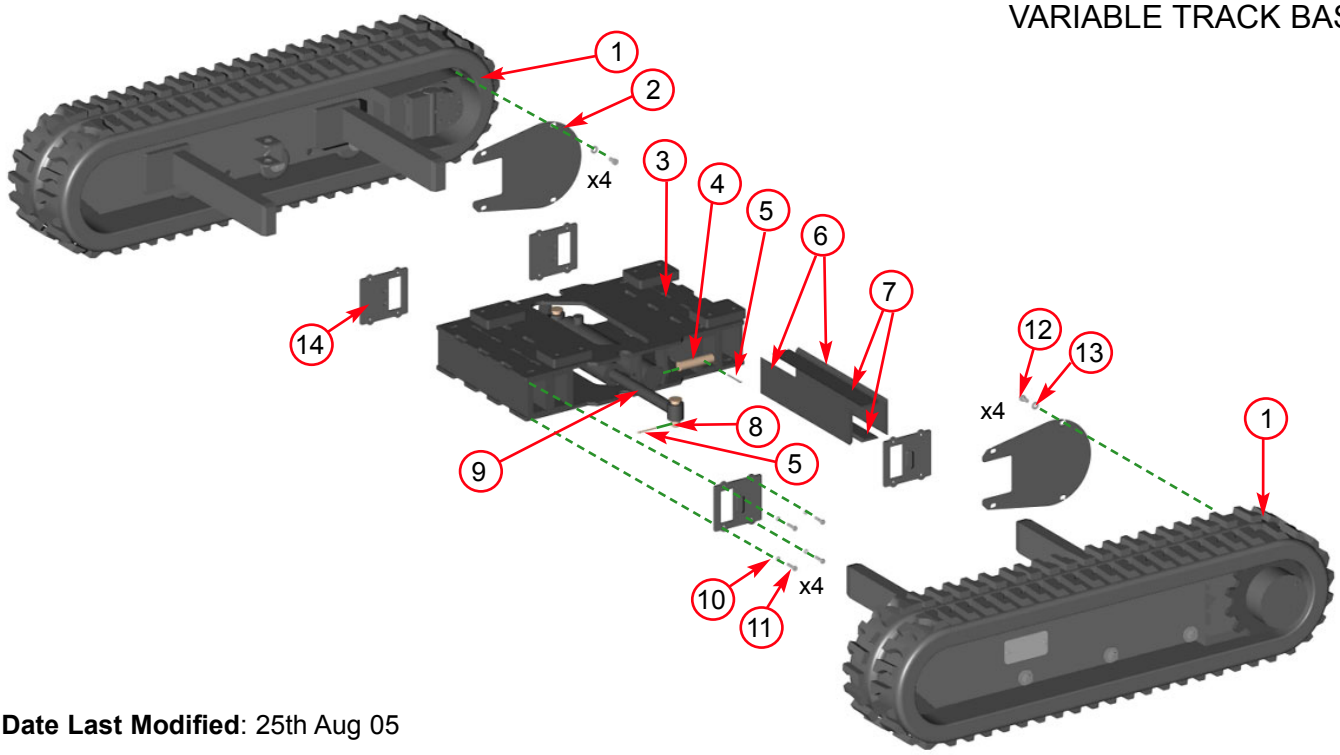
Date Last Modified: 25th Oct 05

*** 3 for high funnel**

Item	Part No	Part Name	Q'ty
1	1721	M8/10 Bolt	2
2	0711	M8 A Washer	2
3	1868	M8 AV Mount	2
4	1691	Switch Back Plate	1
5	1692	Limit Switch	1
6	1006	M4/30 Pan Pozi	2
7	0368	Battery	1
8	3042F	Chassis Bridge	1
9	0382	M10/30 Bolt	4
10	0701	M10 A Washer	24
11	1887	Battery Base Plate	1
12	0052	M10 T Nyloc Nut	8
13	1885F	Battery Bracket Clamp	1
14	0256	M5/16 Csk Socket Screw	6*
15	0347	M8/20 Button Head	1
16	4092	Draw Latch *High Funnel 1, Low Funnel 2*	
17	3010F	Funnel Support	1
18	—	M5 T Nyloc Nut	6*
19	1812	M10/35 Bolt	14
20	2990F	Near Side Beam	1
21	2991F	Off Side Beam	1
22	0839	M10 C Washer	10

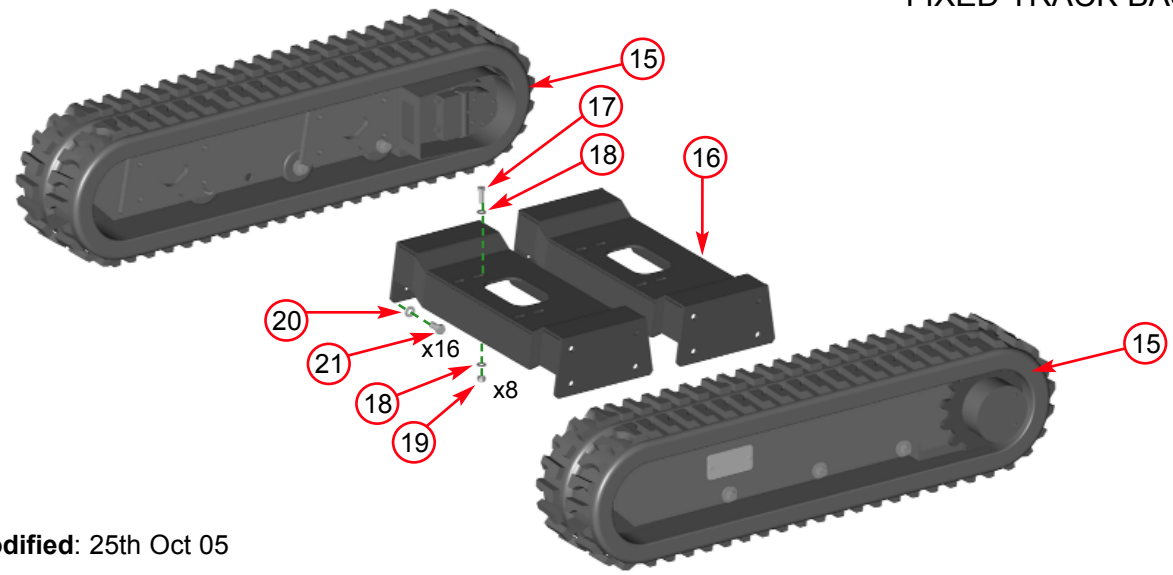
Item	Part No	Part Name	Q'ty
23	4008	Jacking Beam Cover	1
24	4007F	Jacking Beam	1
25	0354	M8/60 Bolt	1
26	0481	M8 T Nyloc Nut	1
27	0321	M12/30 Bolt	8
28	0704	M12 C Washer	16
29	0644	M12 P Nyloc Nut	8
30	1628	M16/35 Bolt	4
31	1143	M16 A Washer	4
32	1796	M16 AV Mount	4
33	0360	M10/25 Bolt	8
34	1869F	Track Mount Adapter Bracket	1
35	4106F	Tank Stop Bar	1
36	2930	Rubber Buffer	1
37	4067	D Rubber Fixing Plate	1
38	0702	M12 A Washer	2
39	0431	M12/40 Bolt	2
40	—	M8/12 Bolt	2
41	0712	M8 C Washer	2
42	4105	Chain 40 x 16 x 3.8	2
43	4094	R Clip 5 mm x 85	2

VARIABLE TRACK BASE



Date Last Modified: 25th Aug 05

FIXED TRACK BASE

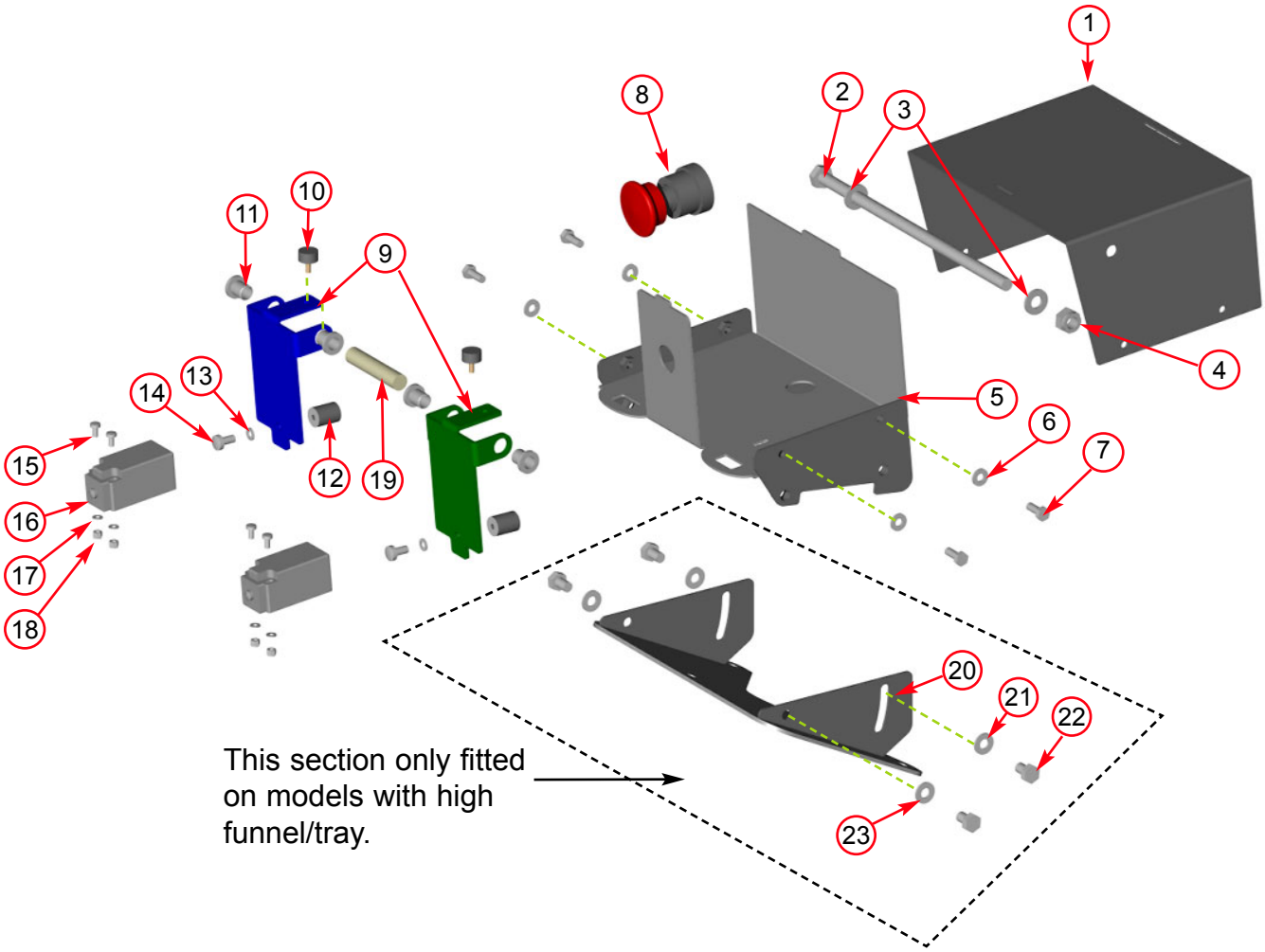


Date Last Modified: 25th Oct 05

Item	Part No	Part Name	Q'ty
1	4052F	Crawler Track Assy	2
2	17298	Track Motor Guard	2
3	3074F	Variable Track Bridge	1
4	4047	Nylon Pin	2
5	1276	Split Pin	4
6	4045	Plastic Strip	8
7	4044	Plastic Strip	8
8	4048	Steel Cylinder Pin	2
9	4046	Hydraulic Cylinders	2
10	0708	M5 C Washer	16
11		M5/20 Bolt	16

Item	Part No	Part Name	Q'ty
12	0344	M8/16 Bolt	8
13	0711	M8 A Washer	8
14	3077F	Slip Retainer	4
15	4084	Crawler Tracks (pair)	1
16	4209F	Joining Bridge	2
17	0429	M12/35 Bolt	8
18	0702	M12 A Washer	16
19	0644	M12 P Nyloc	8
20	1143	M16 A Washer	16
21		M16/25 Bolt	16

CONTROL BOX (UPPER SECTION) 38

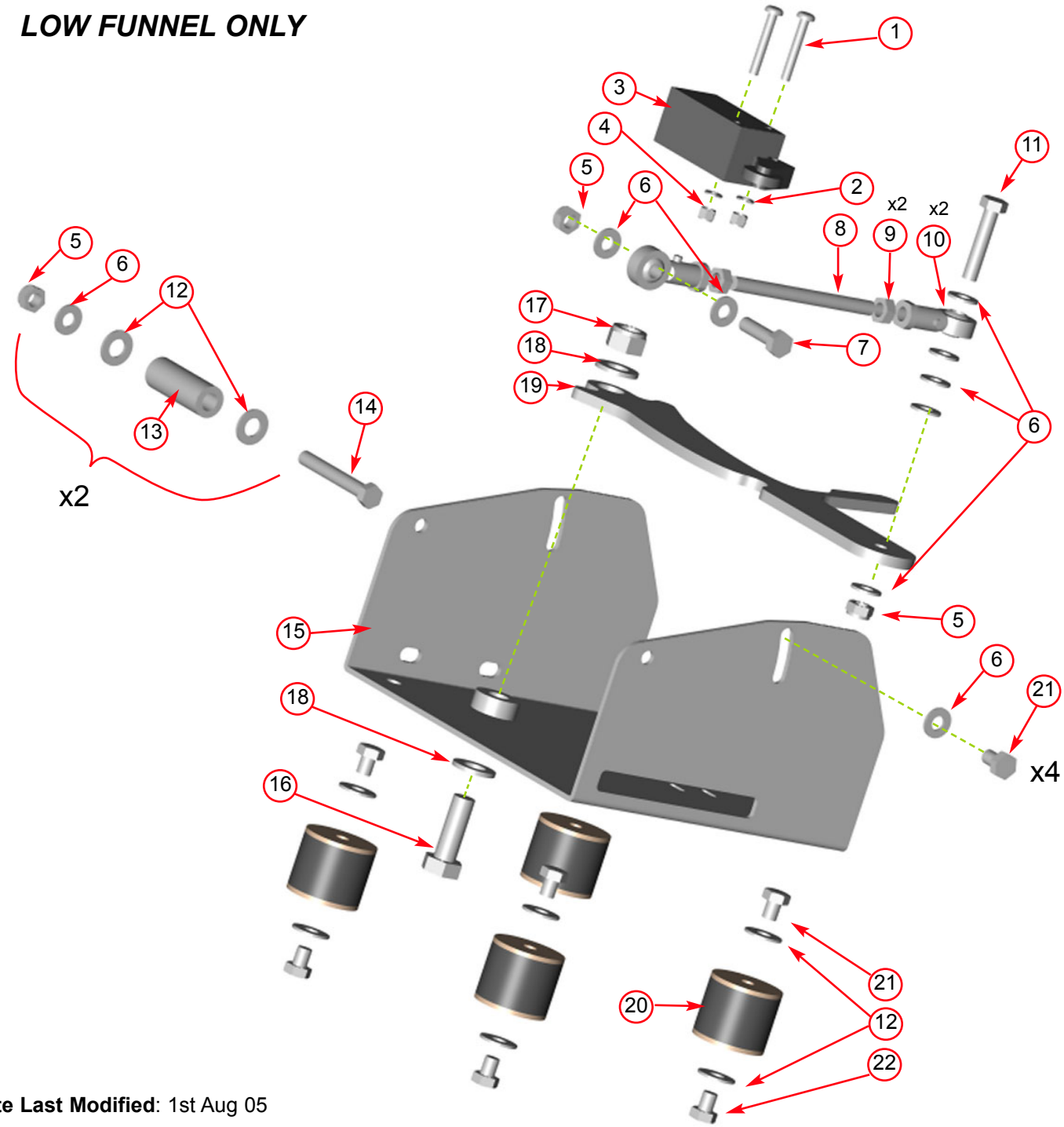


Date Last Modified: 21st July 05

Item	Part No	Part Name	Q'ty
1	2794F	Control Box Cover	1
2	2803	M10/240 Bolt	1
3	0839	M10 C Washer	2
4	4345	M10 P Nyloc Nut	1
5	2795F	Control Box Base	1
6	0709	M6 C Washer	4
7	1658	M6/12 Bolt	4
8	2853	Stop Switch	1
9	2796F	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	—	M5/8 Pan Pozi	2
15	—	M4/35 Pan Pozi	4
16	1348	Limit Switch	2
17	—	M4 Washer	6
18	—	M4 P Nyloc Nut	6
19	made in production	65mm Spacer	1
20	2793F	Bracket Mounting Control Box	1
21	0712	M8 C Washer	2
22	0344	M8/16 Bolt	4
23	0711	M8 A Washer	2

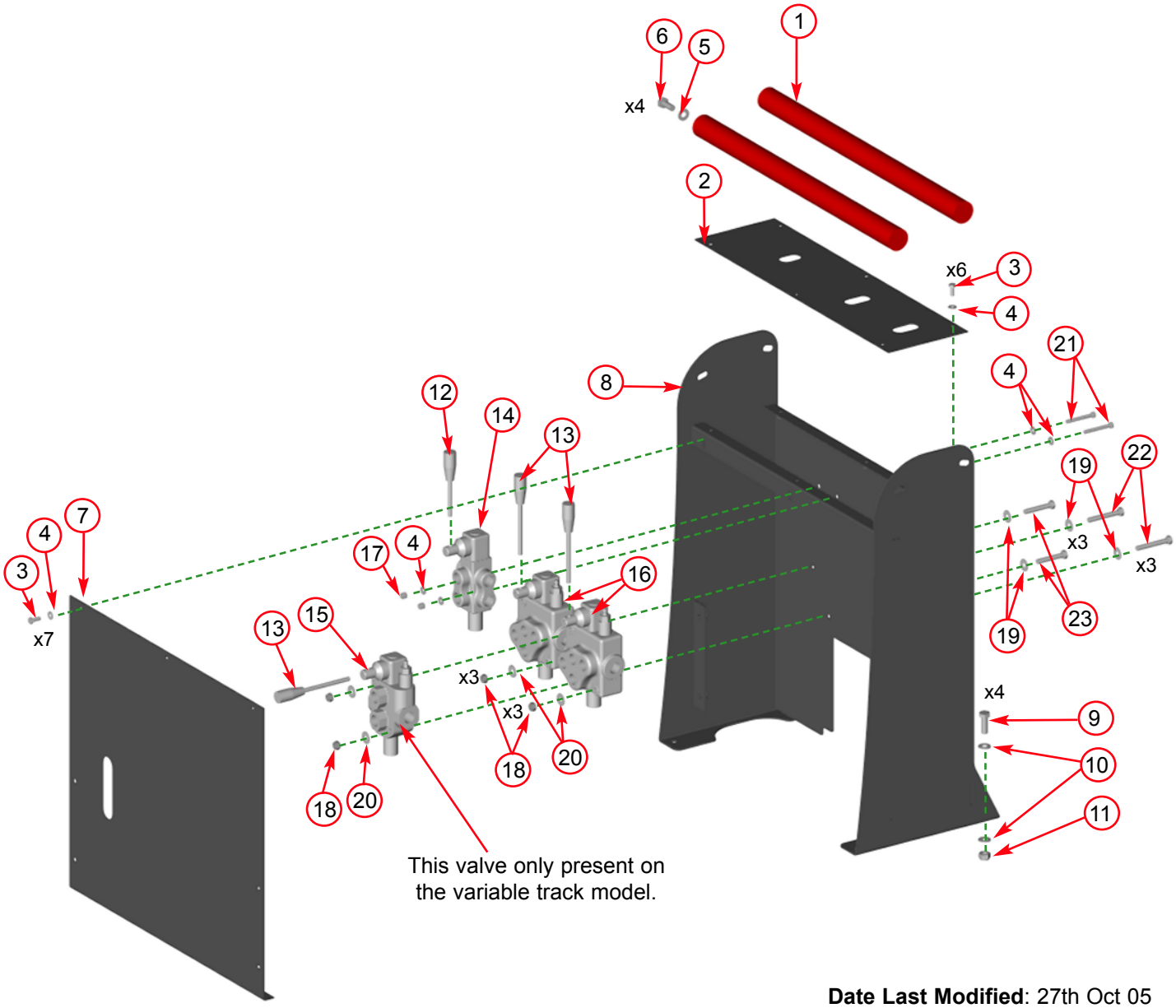
LOW FUNNEL ONLY



Date Last Modified: 1st Aug 05

Item	Part No	Part Name	Q'ty
1	—	M4/35 Pan Pozi	2
2	—	M4 A Washer	2
3	1692	Limit Switch	1
4	—	M4 P Nyloc Nut	2
5	0481	M8 T Nyloc Nut	4
6	0711	M8 A Washer	13
7	0351	M8/30 Bolt	1
8	—	M8 Threaded Rod	1
9	0476	M8 Plain Nut	2
10	0925	Rose Joint Rod End	2
11	—	M8/35 Bolt	1

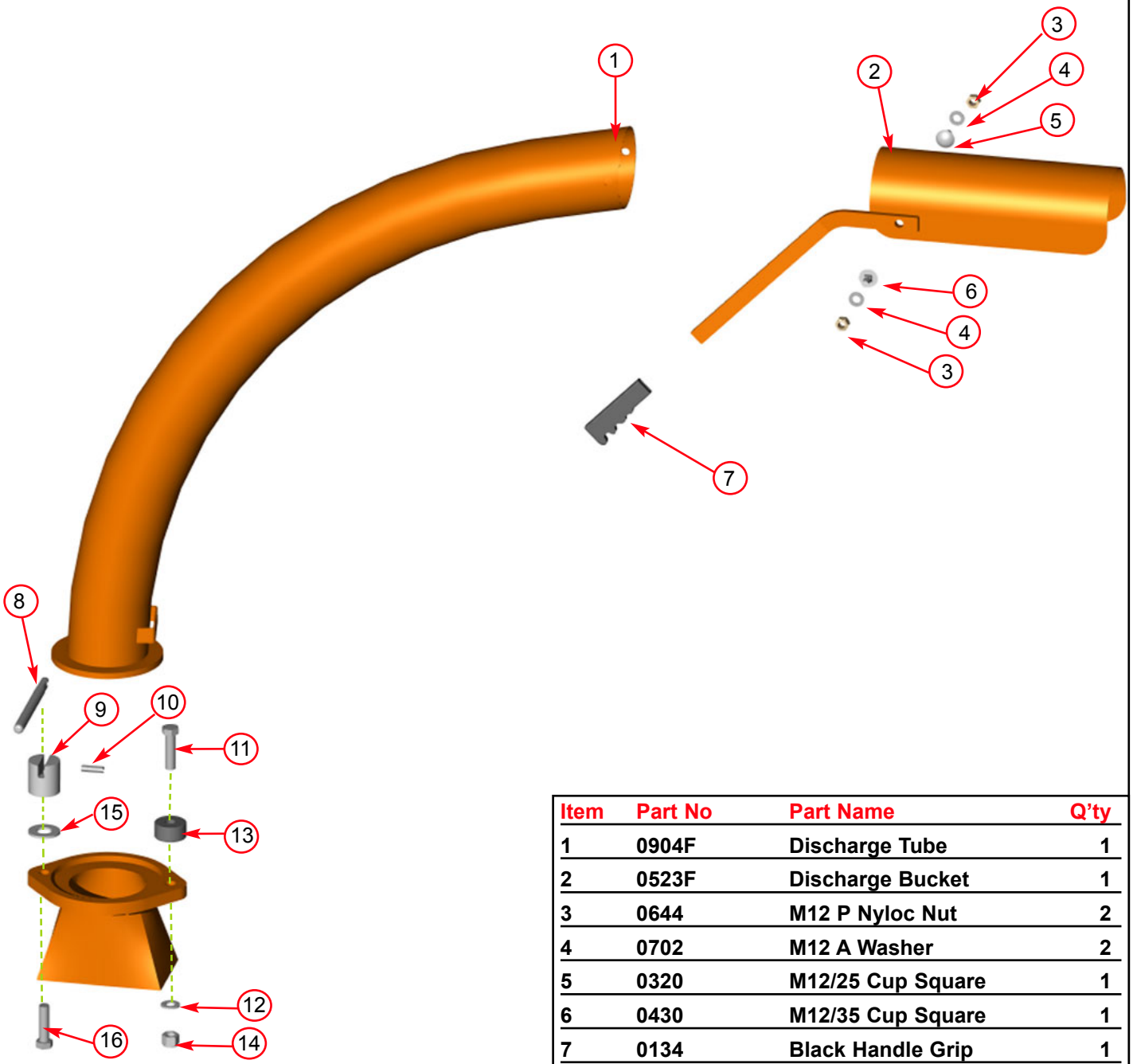
Item	Part No	Part Name	Q'ty
12	0712	M8 C Washer	12
13	1603	Spring	2
14	0354	M8/60 Bolt	2
15	3055	Link Mechanism Casing	1
16	0429	M12/35 Bolt	1
17	0045	M12 T Nyloc Nut	1
18	0702	M12 A Washer	2
19	3058	Link Mechanism Arm	1
20	1868	AV Mount	4
21	—	M8/12 Bolt	4
22	1721	M8/10 Bolt	8



Date Last Modified: 27th Oct 05

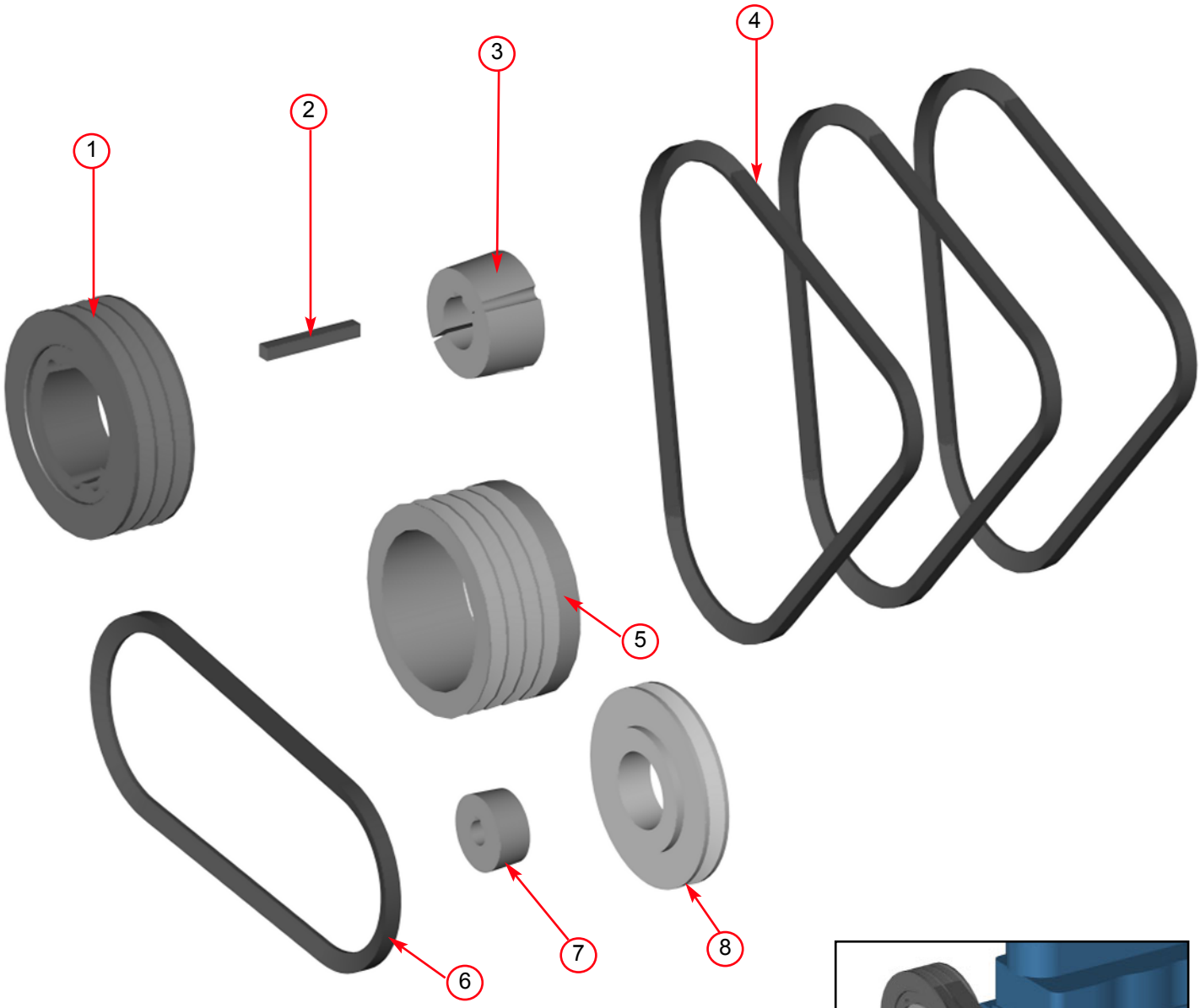
Item	Part No	Part Name	Q'ty
1	1802F	Cross Bar	2
2	1879F	Control Panel Tracked	1
3	0437	M6/16 Bolt	13
4	0709	M6 C Washer	17
5	0701	M10 A Washer	4
6	0360	M10/25 Bolt	4
7	1882F	Hose Guard	1
8	1883F	Control Tower Tracked	1
9	0382	M10/30 Bolt	4
10	0839	M10 C Washer	8
11	0052	M10 T Nyloc Nut	4
12	1860	M8 Lever	1

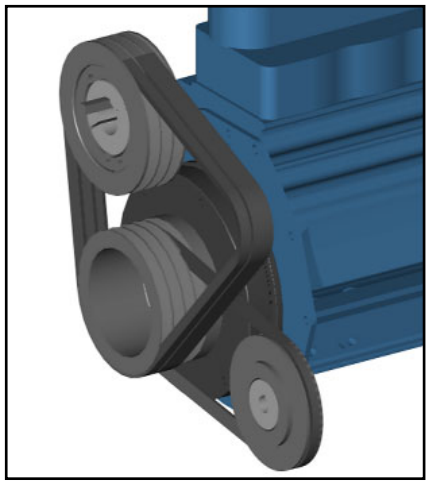
Item	Part No	Part Name	Q'ty
13	1737	M8 Lever	3
14	1738	Six Way Diverter Valve	1
15	3005	Four Port Valve	1
16	4261	Proportional Crossover Valve	2
17	0142	M6 P Nyloc Nut	2
18	0481	M8 T Nyloc Nut	8
19	0711	M8 A Washer	8
20	0712	M8 C Washer	8
21	0341	M6/50 Bolt	2
22	0354	M8/60 Bolt	6
23	1319	M8/50 Bolt	2



Item	Part No	Part Name	Q'ty
1	0904F	Discharge Tube	1
2	0523F	Discharge Bucket	1
3	0644	M12 P Nyloc Nut	2
4	0702	M12 A Washer	2
5	0320	M12/25 Cup Square	1
6	0430	M12/35 Cup Square	1
7	0134	Black Handle Grip	1
8	1649F	Discharge Clamp Handle	1
9	4109M	M16 Clamp Nut	1
10	4131	Roll Pin	1
11	0434	M16/70 Hex Bolt	1
12	1354	M16 C Washer	1
13	2837M	Clamp Nut Small	1
14	1511	M16 P Nyloc Nut	1
15	0832	M24 Washer	1
16	0333	M16/60 Hex Bolt	1

Date Last Modified: 19th July 05

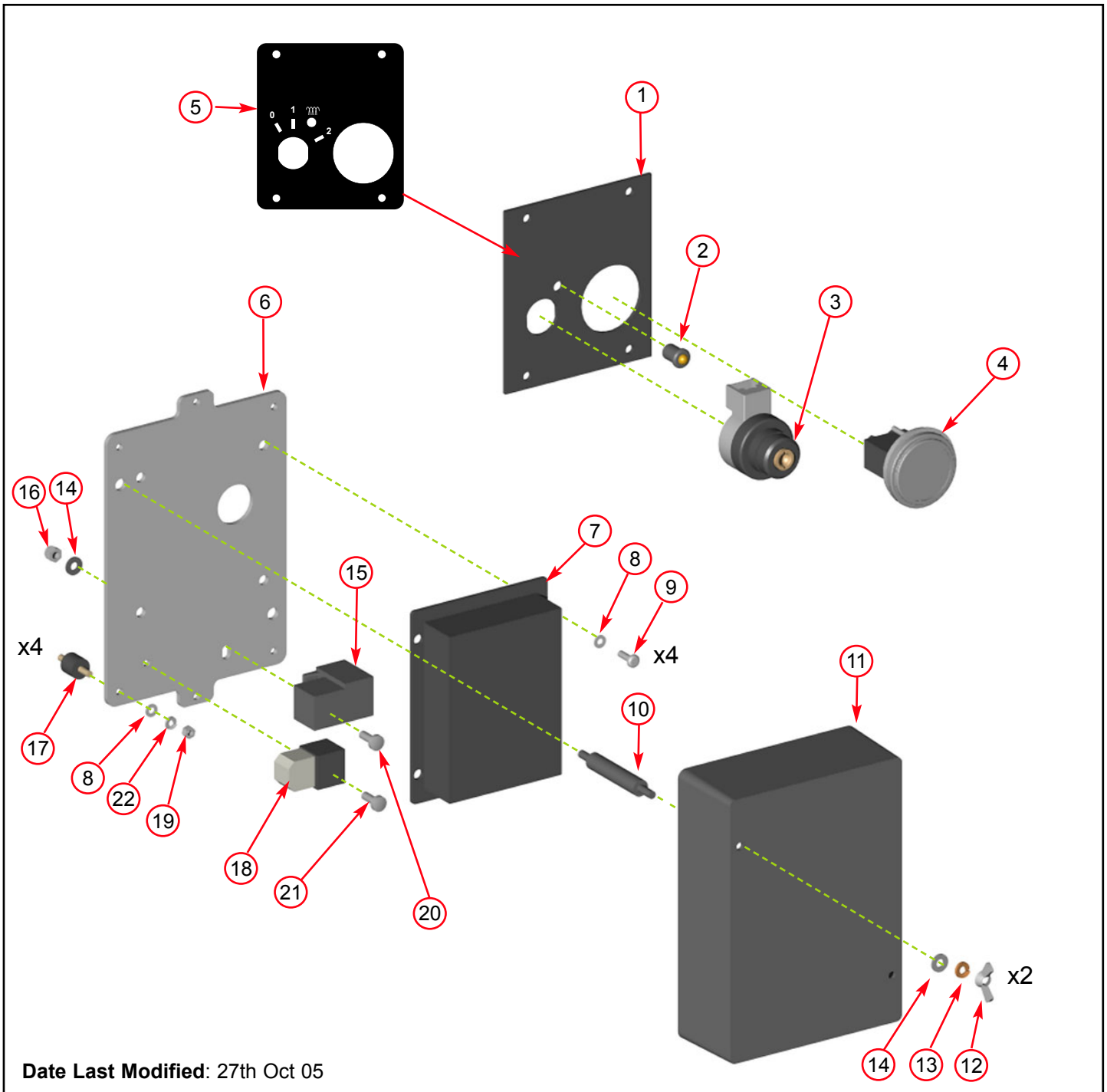




Date Last Modified: 29th June 05

Item	Part No	Part Name	Q'ty
1	1175	Rotor Pulley	1
2	0072	Key	1
3	1410	Taper Lock Bush 2517	1
4	0310	Belt SPA 1060	3

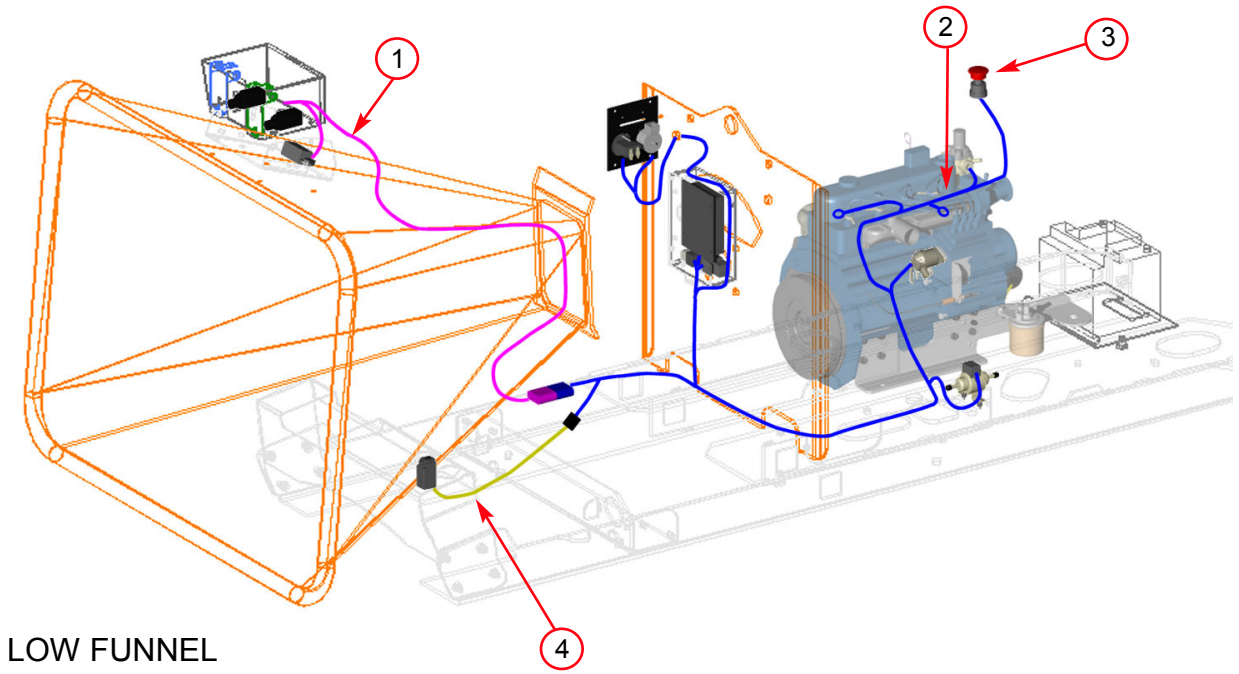
Item	Part No	Part Name	Q'ty
5	1170	Engine Pulley	1
6	1533	Vee Belt SPA 900	1
7	2975	Taper Lock Bush 1610 18 mm	1
8	2974	Pulley 140 x 1 SPA	1



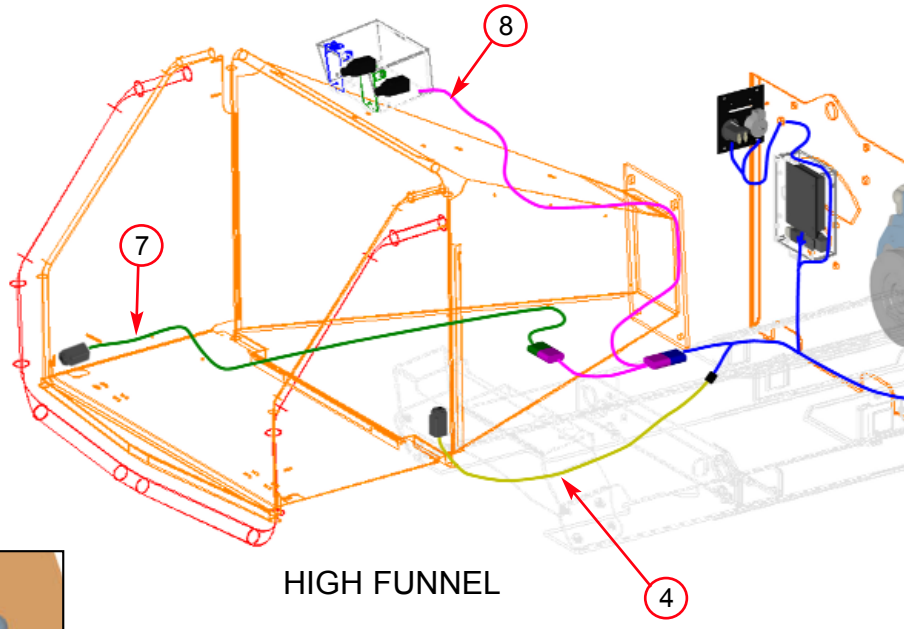
Date Last Modified: 27th Oct 05

Item	Part No	Part Name	Q'ty
1	4006	Control Panel	1
2	1757	Amber LED	1
3	*Supp'd with engine*	Ignition Switch	1
4	0327	Hours Counter	1
5	1756	Control Panel Decal	1
6	3038F	Electrical Panel	1
7	2962	Engine Management System	1
8	0857	M5 A Washer	8
9	0435	M5/16 Pan Pozi	4
10	2725	Electrical Cover Stand Off	2
11	1930	Electrical Cover	1

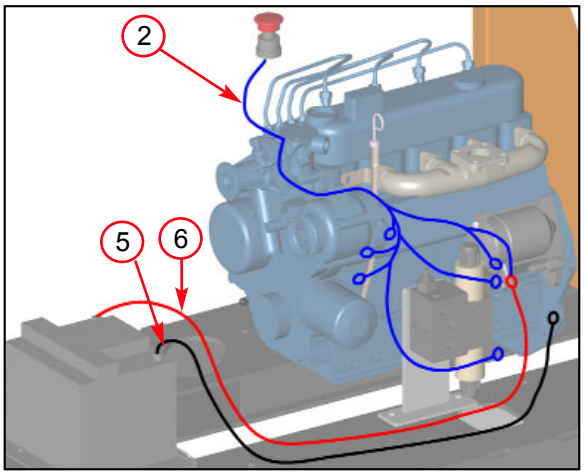
Item	Part No	Part Name	Q'ty
12	—	M6 Wing Nut	2
13	—	M6 Spring Washer	2
14	0709	M6 C Washer	4
15	*Supp'd with loom*	Relay	1
16	0391	M6 T Nyloc Nut	2
17	4033	M5 AV Mount	4
18	*Supp'd with loom*	Fuse	2
19	—	M5 Plain Nut	4
20	0438	M6/16 Pan Pozi	1
21	1151	Countersunk Pop Rivet	1
22	—	M5 Spring Washer	4



LOW FUNNEL



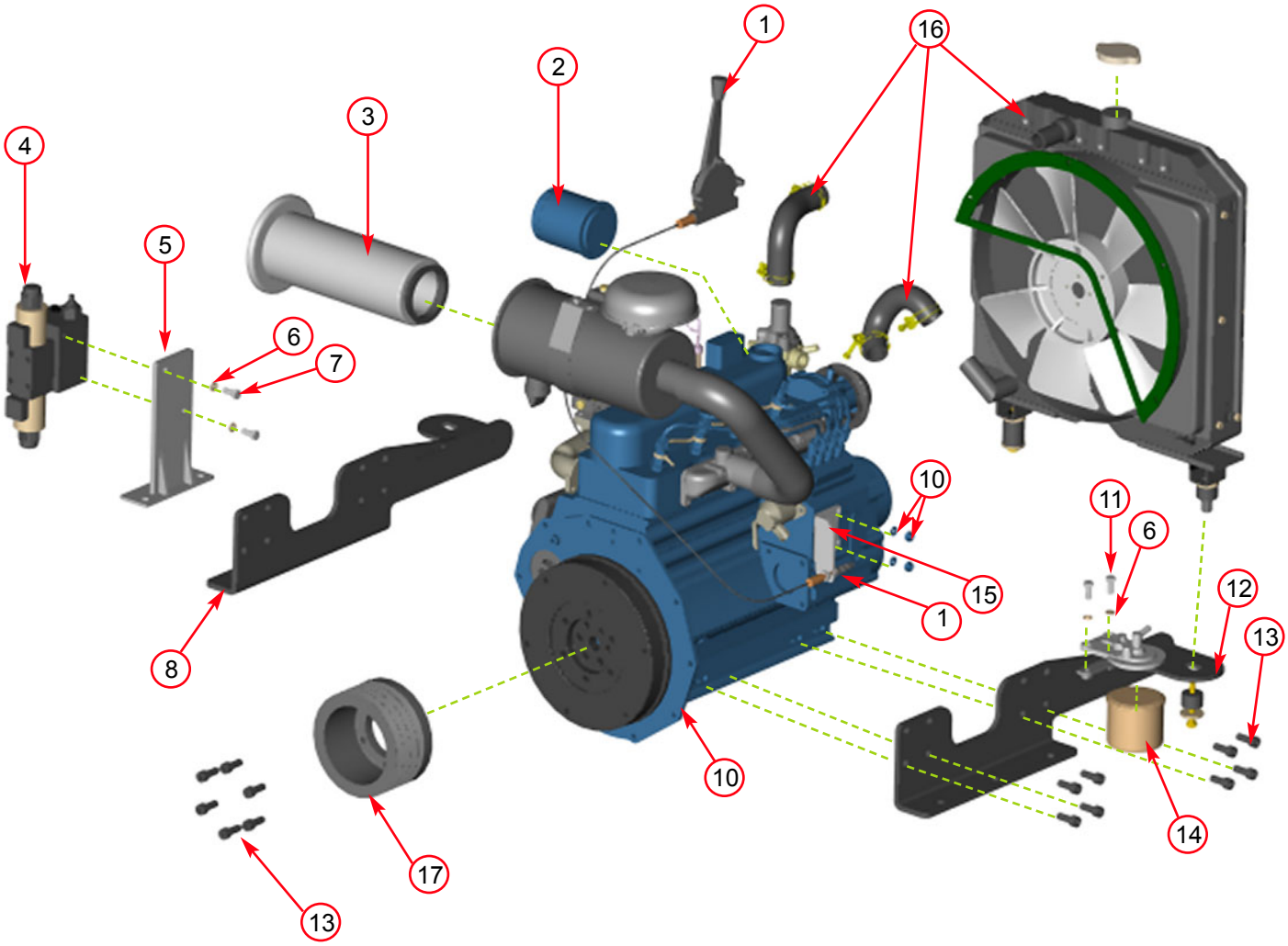
HIGH FUNNEL



Date Last Modified: 24th Feb 06

Item	Part No	Part Name	Q'ty
1	3019	Control Box Loom	1
2	17277	Engine Loom	1
3	2627	Emergency Stop Switch	1
4	4017	Safety Switch Loom	1

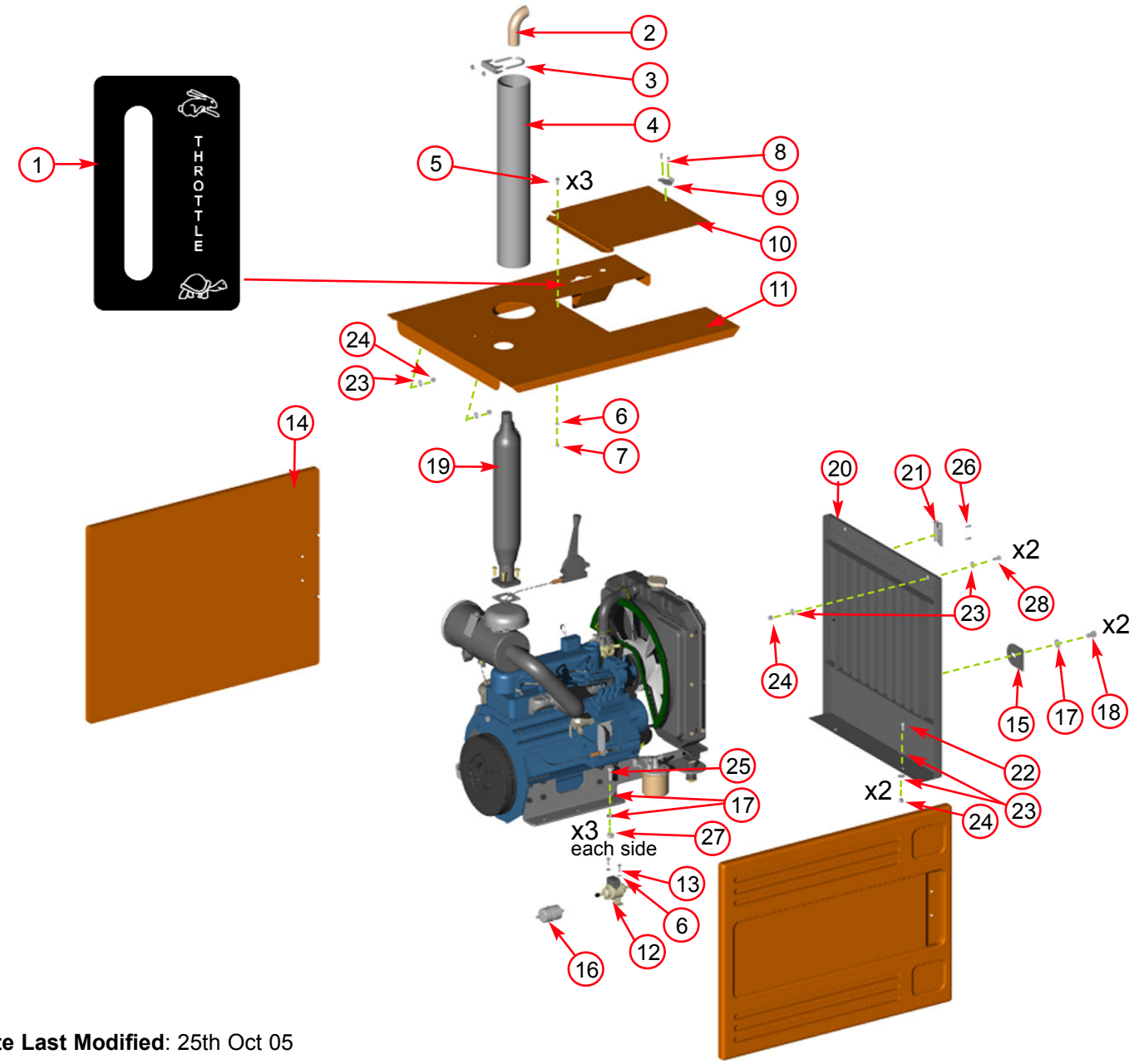
Item	Part No	Part Name	Q'ty
5	1376	$^{-}$VE Battery Cable	1
6	1375	$^{+}$VE Battery Cable	1
7	1406	Safety Bar Loom	1
8	1975	Control Box Loom	1



Date Last Modified: 25th Jan 06

Item	Part No	Part Name	Q'ty
1	2946	Throttle Cable	1
2	0095	Oil Filter	1
3	0086	Air Filter	1
4	4252	Directional Control Valve	1
5	4204F	Directional Control Valve Bracket	1
6	0711	M8 A Washer	4
7	0346	M8/20 Bolt	2
8	512F	Bracket Engine Mount	1

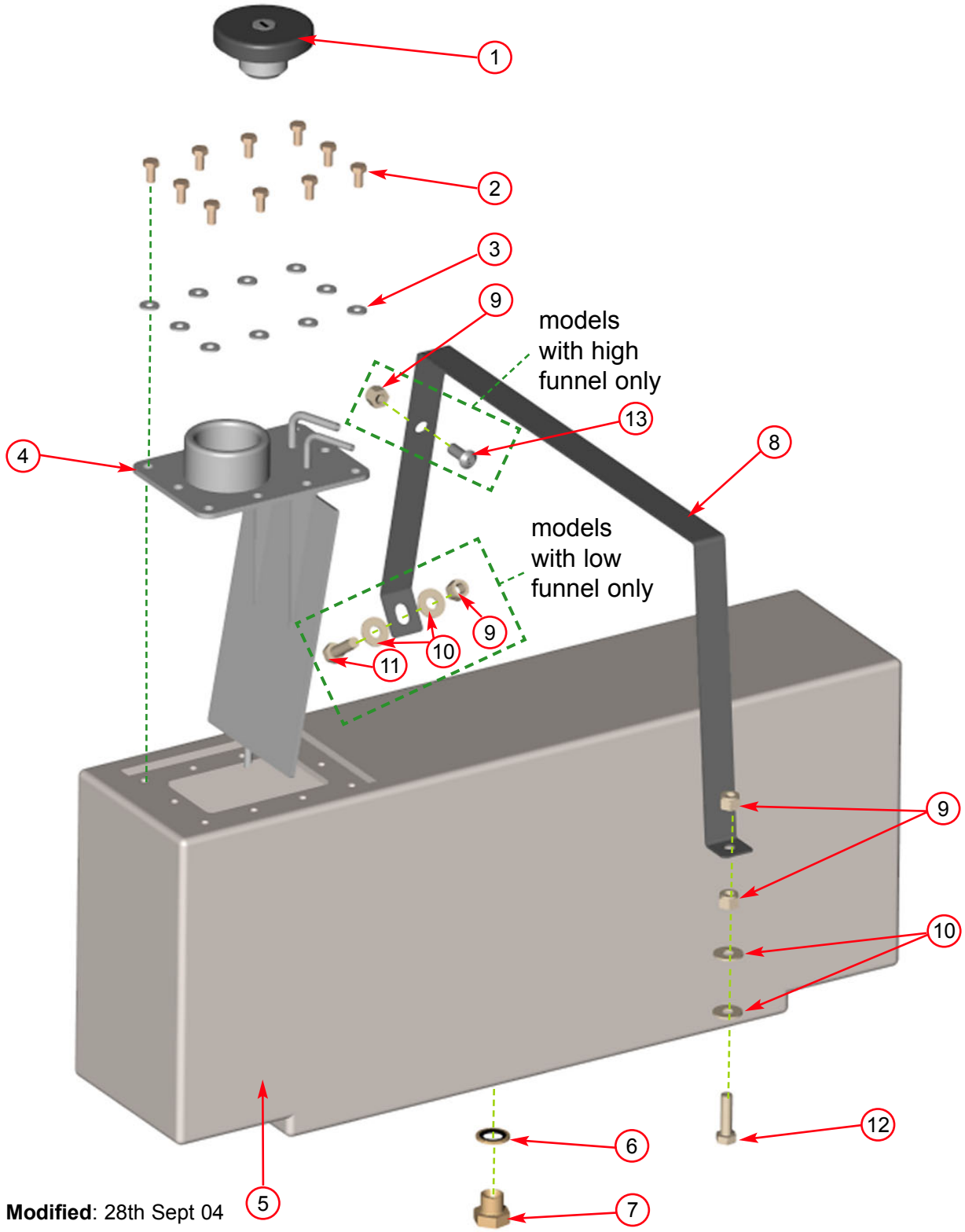
Item	Part No	Part Name	Q'ty
9	1170	Pulley Engine 150 x 4	1
10	0879	Engine	1
11	0350	M8/25 Bolt	2
12	513F	Bracket Engine Mount	1
13	0304	M10/25 Fine Thread Socket Cap	22
14	0085	Fuel Filter	1
15	2954	Throttle Cable Bracket	1
16	Supp'd with engine	Radiator Kit	1



Date Last Modified: 25th Oct 05

Item	Part No	Part Name	Q'ty
1	2950	Throttle Decal	1
2	1312	Exhaust Deflector	1
3	0264	Exhaust Clamp	1
4	0425	Exhaust Shield	1
5	0438	M6/16 Pan Pozi	3
6	0709	M6 C Washer	5
7	0391	M6 T Nyloc Nut	3
8	—	Pop Rivet 4.8 x 6	2
9	4088	Catch Plate	1
10	0607	Access Cover	1
11	2952F	Top Bonnet	1
12	Supp'd with Engine	Fuel Pump	1
13	0437	M6/16 Bolt	2
14	765O	Side Panel	2

Item	Part No	Part Name	Q'ty
15	2836	Engine Guard Retainer	2
16	Supp'd with Engine	In-Line Fuel Filter	1
17	0704	M12 C Washer	14
18	0318	M12/20 Bolt	2
19	Supp'd with Engine	Exhaust & Fittings	1
20	1750	Radiator Shroud	1
21	0235	Catch	1
22	0350	M8/25 Bolt	2
23	0712	M8 C Washer	10
24	1757	M8 P Nyloc Nut	6
25	0431	M12/40 Bolt	6
26	0067	Pop Rivet 4.8 x 12	2
27	0644	M12 P Nyloc Nut	6
28	0346	M8/20 Bolt	2

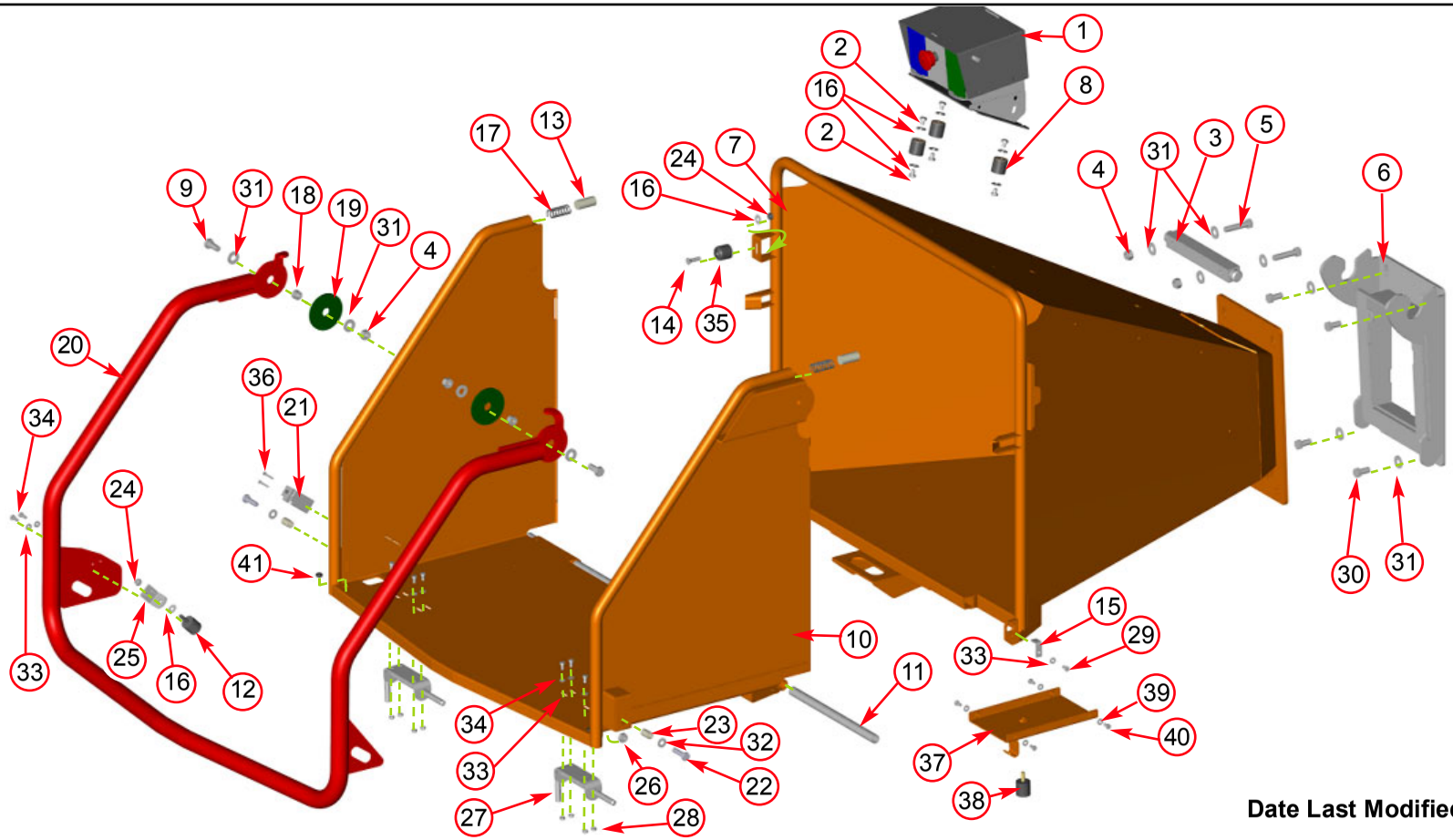


Date Last Modified: 28th Sept 04

Item	Part No	Part Name	Q'ty
1	1374	Locking Tank Cap	1
2	1658	M6/12 Bolt	10
3	0709	M6 C Washer	10
4	1576	Tank Top	1
5	1566	Fuel Tank	1
6	0396	3/8" Dowty Washer	1
7	0211	3/8" Drain Plug	1

Item	Part No	Part Name	Q'ty
8	4087F	Tank Strap	1
9	1757	M8 P Nyloc Nut	4
10	0712	M8 C Washer	4
11	0346	M8/20 Bolt	1
12	0351	M8/30 Bolt	1
13	0347	M8/20 Button Head	1

FUNNEL (HIGH)

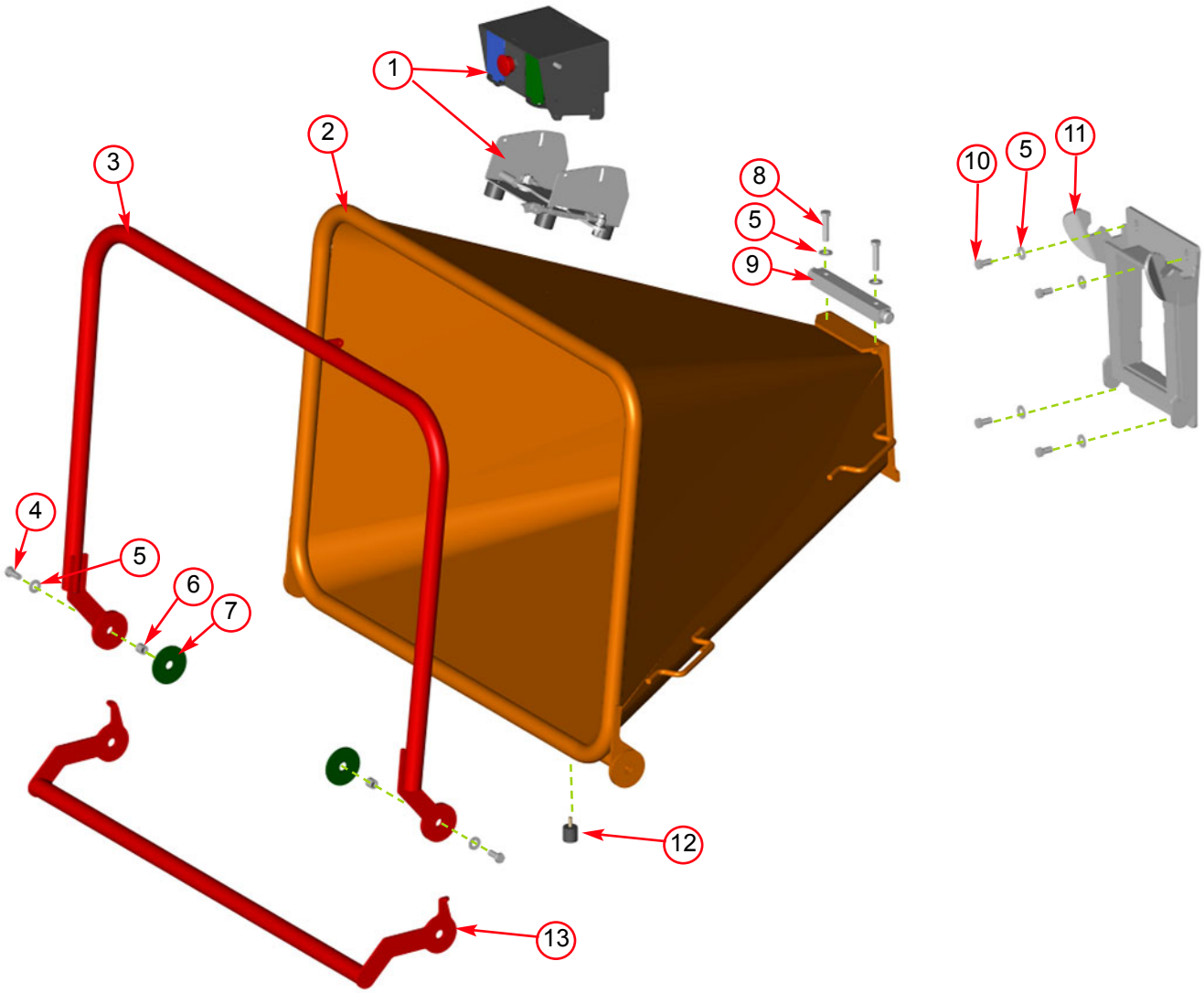


Date Last Modified: 28th March 06

Item	Part No	Part Name	Q'ty
1	2809F	Control Box (detail on pages 38/39)	1
2	1721	M8/10 Bolt	6
3	4282M	Quick Release Pivot Bar	1
4	0045	M12 T Nyloc	4
5	0432	M12/50 Bolt	2
6	4283F	Quick Release Mechanism	1
7	4238F	Funnel	1
8	1644	M8 Anti-Vibration Mount	3
9	0429	M12/35 Bolt	2
10	2919F	Feed Tray	1
11	2922F	Hinge Pin	2
12	0178	Rubber End Stop	1
13	1600	Nylon Pistons	2
14	—	M8/30 Csk Soc.	1

Item	Part No	Part Name	Q'ty
15	4018	Pin Bracket	2
16	0712	M8 C Washer	8
17	1603	Die Springs	2
18	1605	Stainless Spacer	2
19	1599	Bearing Washer	2
20	1570	Safety Bar	1
21	1348	Limit Switch	1
22	1520	M10/45 Bolt	2
23	1591	Nylon Spacer	2
24	0479	M8 P Nyloc Nut	2
25	2727	Bracket Actuator	1
26	4345	M10 P Nyloc Nut	2
27	2986	1/2" Spring Bolt	2
28	0391	M6 T Nyloc Nut	8

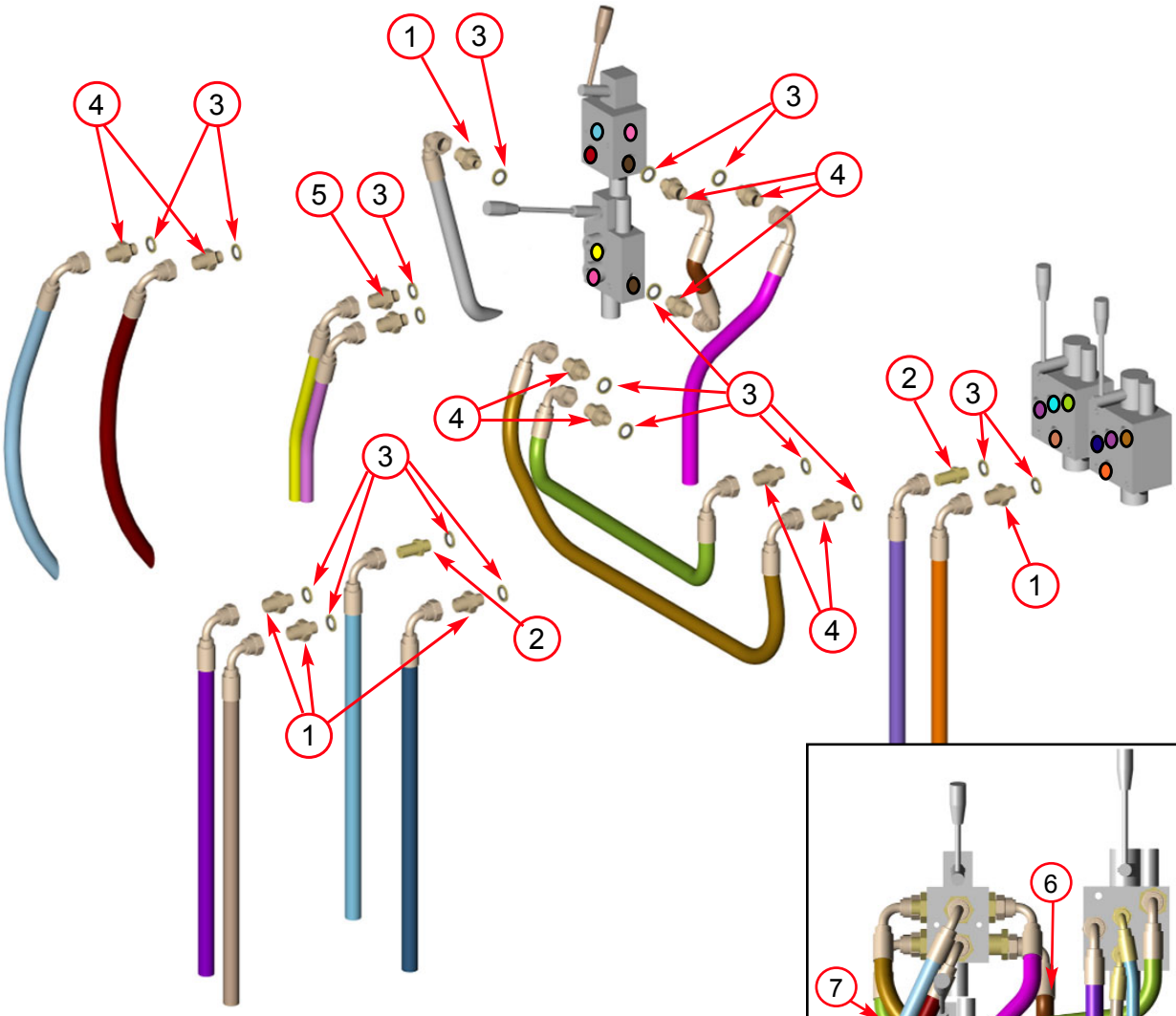
Item	Part No	Part Name	Q'ty
29	1236	M6/20 Bolt	2
30	0321	M12/30 Bolt	4
31	0704	M12 C Washer	12
32	—	M10 Repair Washer	2
33	0709	M6 C Washer	12
34	0437	M6/16 Bolt	10
35	4206	Nylon Bush	1
36	1006	M4/30 Pan Pozi	2
37	4107F	Retro High Funnel Bracket	1
38	17421	AV Mount	1
39	—	M6 A Washer	4
40	0439	M6/20 Hex Screw	4
41	2493	Rubber Cap	2

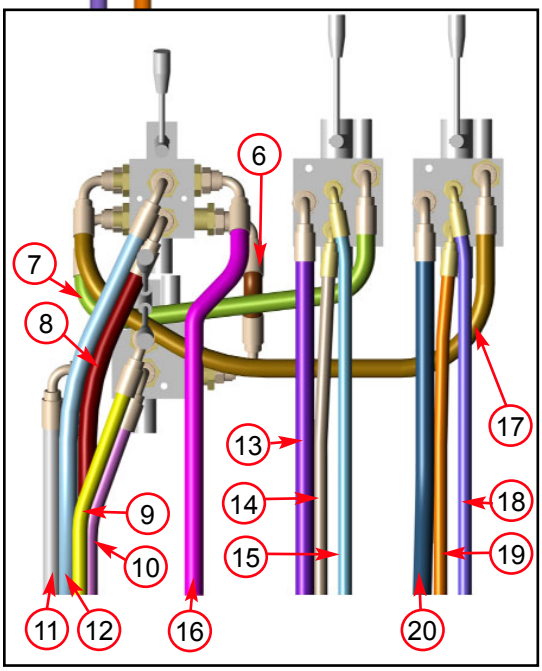


Date Last Modified: 28th March 06

Item	Part No	Part Name	Q'ty
1	See pages 38/39	Control Box	1
2	3008	Funnel	1
3	2989	Safety Bar	1
4	0431	M12/40 Bolt	2
5	0704	M12 C Washer	8
6	4116M	Spacer Tube	2
7	1599	Bearing Washer	2

Item	Part No	Part Name	Q'ty
8	—	M12/55 Bolt	2
9	4282M	Quick Release Pivot Bar	1
10	0277	M12/25 Bolt	4
11	4283F	Quick Release Mechanism	1
12	17421	AV Mount	1
13	4115	Underslung Safety Bar	1

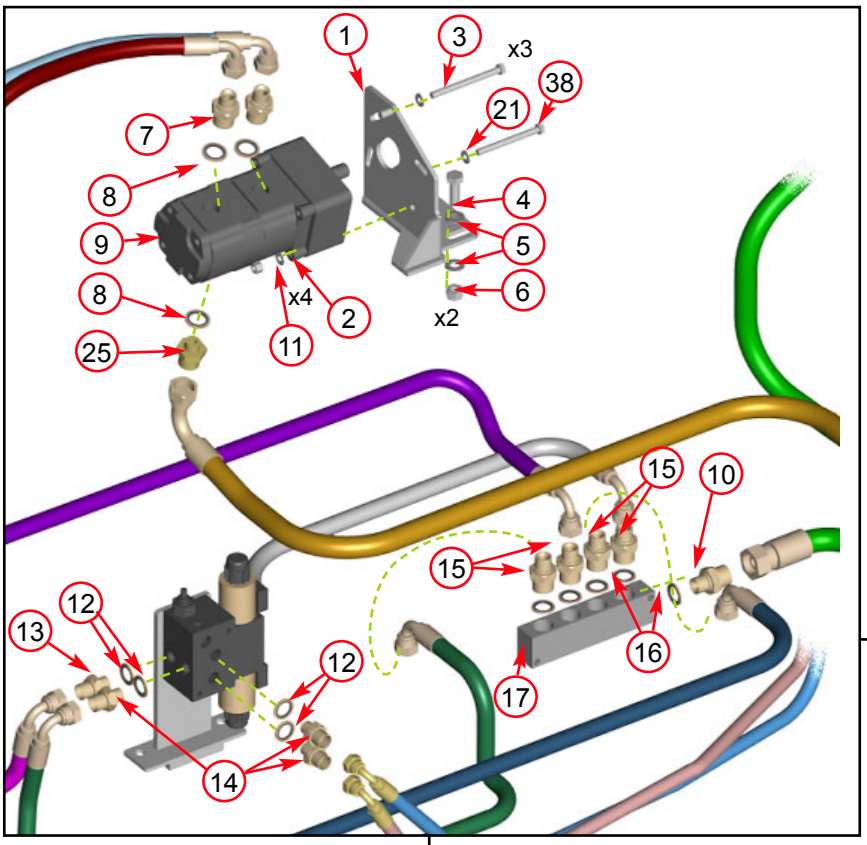


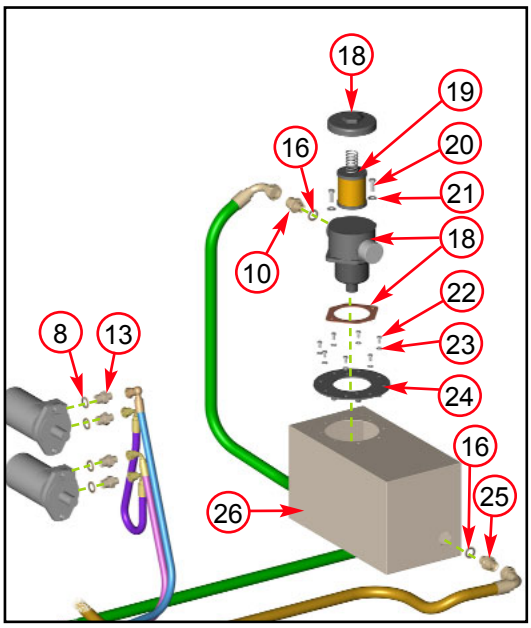


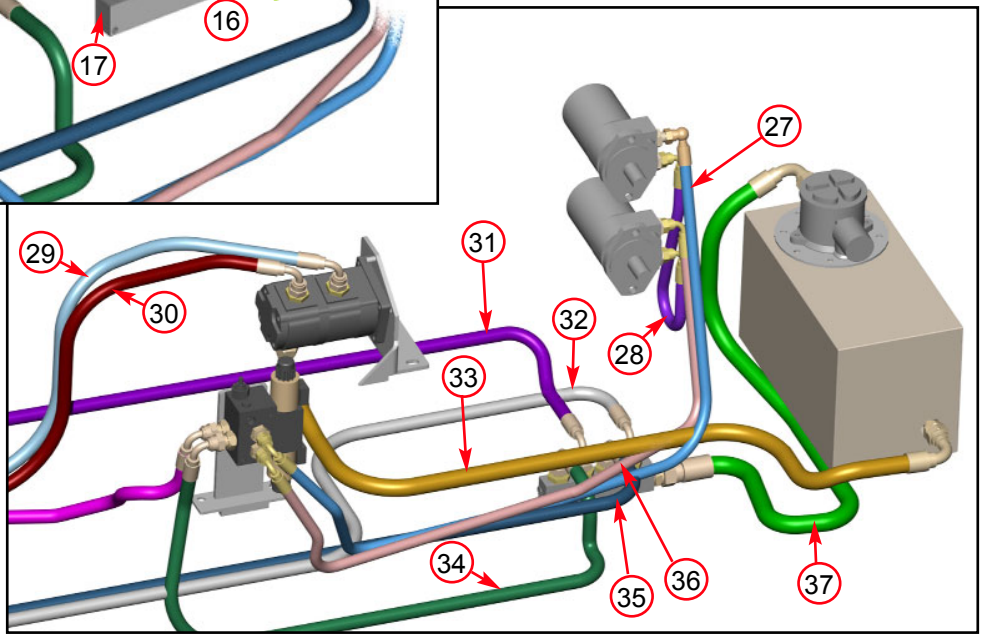
Date Last Modified: 3rd May 05

Item	Part No	Part Name	Q'ty
1	0161	3/8" - 3/8" Adapter	5
2	0828	3/8" Bulk Head Adapter	2
3	0396	3/8" Dowty Washer	18
4	0026	3/8" - 1/2" Adapter	9
5	0033	1/4" - 3/8" Adapter	2
6	3097	1/2" Hose, 6-way to 4-way valve	1
7	3095	1/2" Hose, 6-way to prop. valve	1
8	3099	1/2" Hose to pump front	1
9	3082	1/4" Hose, cylinder feed	1
10	3083	1/4" Hose, cylinder return	1

Item	Part No	Part Name	Q'ty
11	3084	3/8" Hose to manifold rear	1
12	4000	1/2" Hose to pump rear connection	1
13	3091	3/8" Hose to manifold	1
14	3089	3/8" Hose to bottom of track motor	1
15	3088	3/8" Hose to top of track motor	1
16	4240	1/2" Hose to DCV port 'P'	1
17	3096	1/2" Hose, 6-way to prop. valve	1
18	3087	3/8" Hose to top of track motor	1
19	3086	3/8" Hose to bottom of track motor	1
20	3090	3/8" Hose to manifold	1



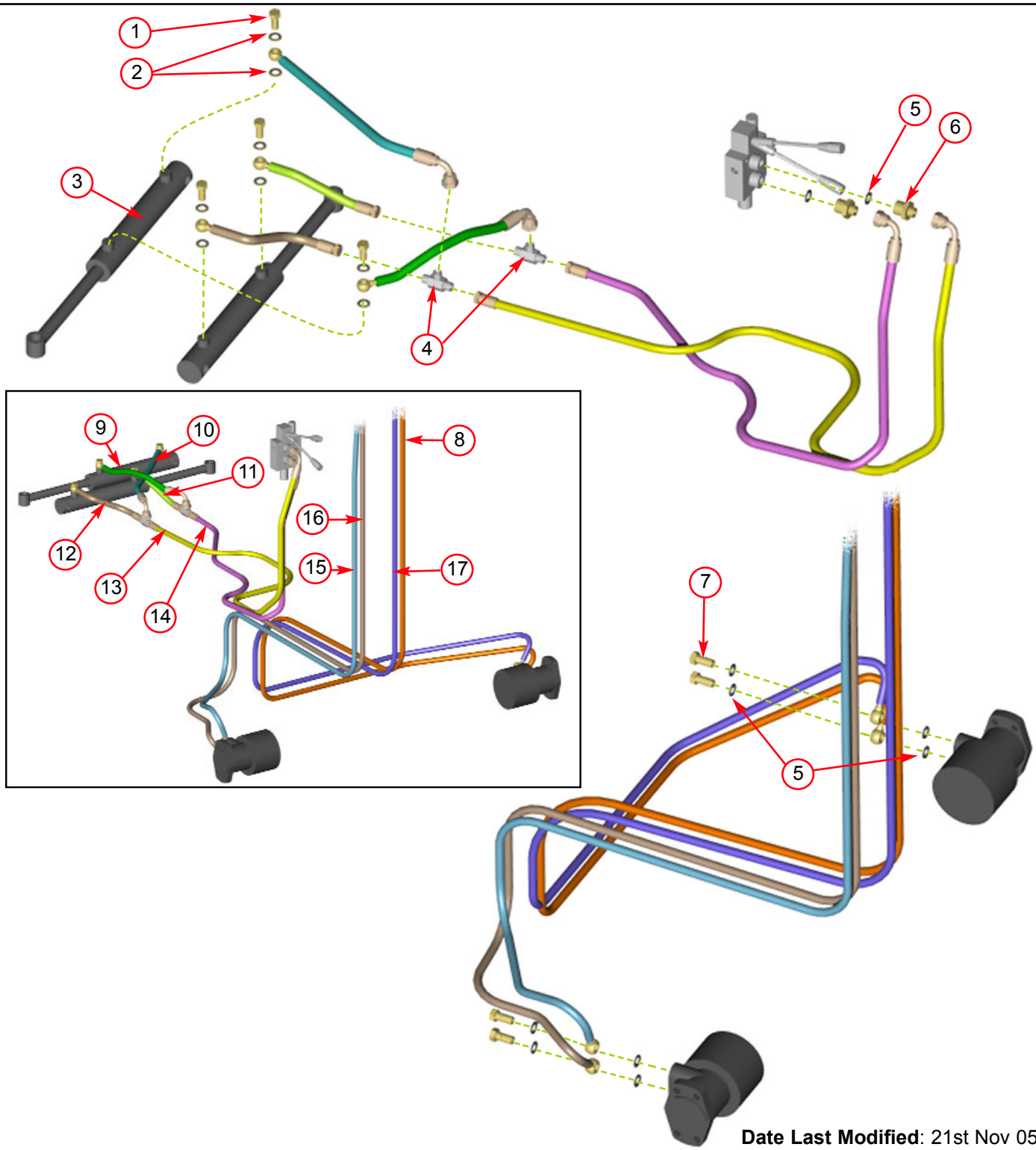




Date Last Modified: 23rd May 06

Item	Part No	Part Name	Q'ty
1	1913	Pump Bracket	1
2	0711	M8 A Washer	4
3	0342	M8/100 Bolt	3
4	0429	M12/35 Bolt	2
5	0702	M12 A Washer	4
6	0479	M12 P Nyloc Nut	2
7	0027	1/2" - 1/2" Adapter	2
8	0398	1/2" Dowty Seal	7
9	17344	Hydraulic Pump	1
10	0028	1/2"- 3/4" Adapter	2
11	0481	M8 T Nyloc Nut	4
12	0396	3/8" Dowty Seal	4
13	0026	3/8" - 1/2" Adapter	5
14	0161	3/8" - 3/8" Adapter	3
15	0225	3/4" - 3/8" Adapter	4
16	0152	3/4" Dowty Seal	7
17	1839	Manifold	1
18	1954	Tank Top Filter	1
19	0100	Filter Element	1

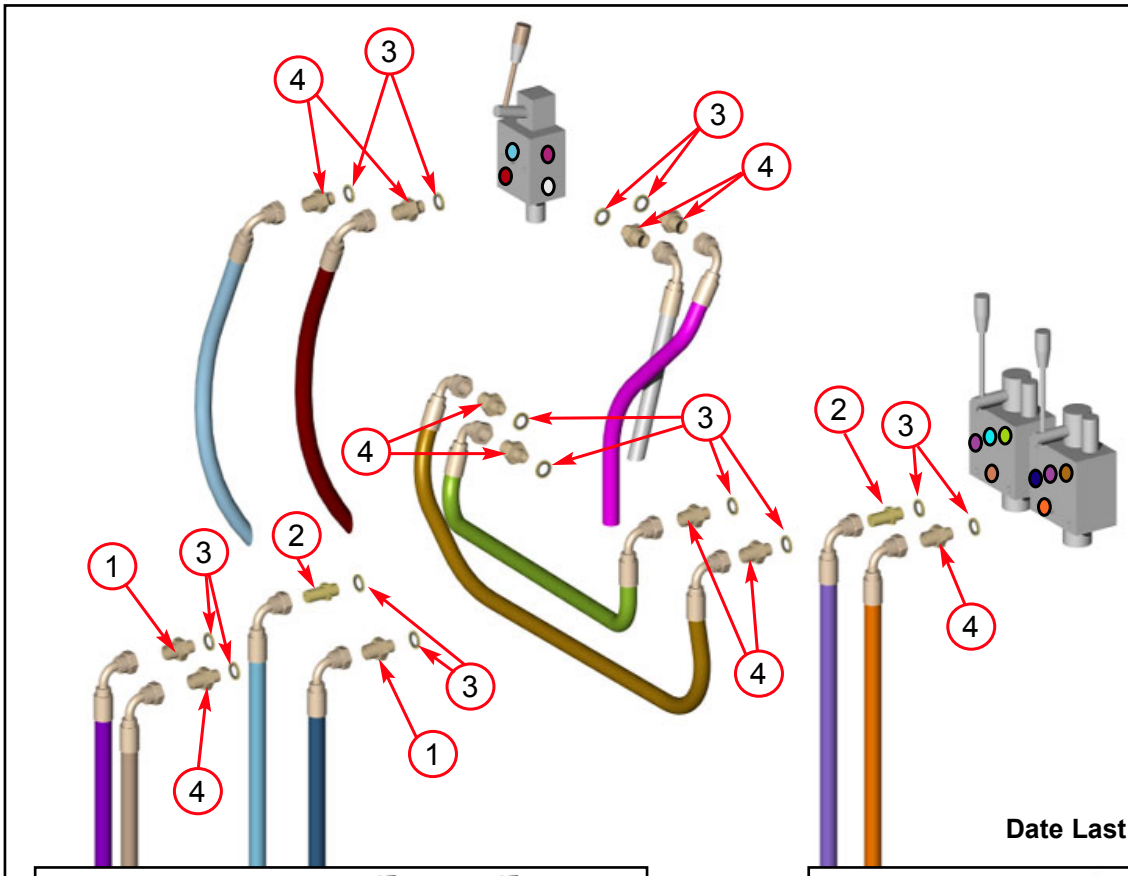
Item	Part No	Part Name	Q'ty
20	0350	M8/25 Bolt	2
21	0712	M8 C Washer	6
22	1658	M6/12 Bolt	8
23	0709	M6 C Washer	8
24	1702F	Tank Top Plate	1
25	2694	3/4" - 1" Adapter	2
26	1703	Hydraulic Tank	1
27	17309	3/8" Hose, DCV to upper motor	1
28	3092	3/8" Hose, motor to motor	1
29	4000	1/2" Hose, pump rear to 6-way valve	1
30	3099	1/2" Hose, pump front to 6-way valve	1
31	3091	3/8" Hose, manifold to LH valve	1
32	3084	3/8" Hose, manifold to 4-port valve	1
33	4258	1" Hose, tank to pump front	1
34	4247	3/8" Hose, manifold to DCV	1
35	3090	3/8" Hose, manifold to RH valve	1
36	3094	3/8" Hose, DCV to lower motor	1
37	4303	1/2" Hose, manifold to hyd filter	1
38	2988	M8/90 Bolt	1



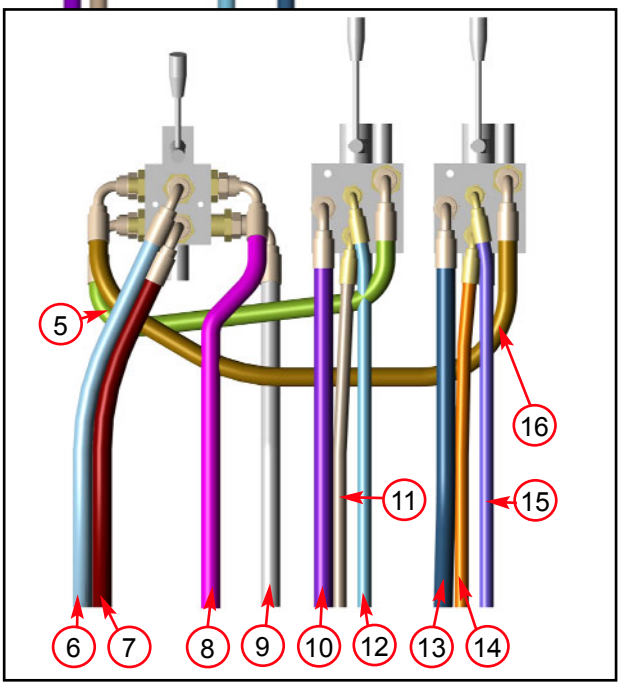
Date Last Modified: 21st Nov 05

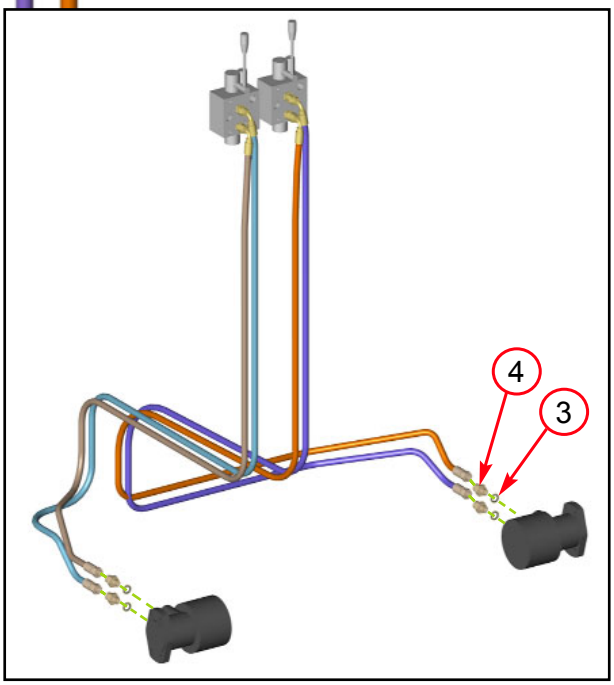
Item	Part No	Part Name	Q'ty
1	4059	1/4" Banjo Bolt	4
2	0395	1/4" Dowty Washer	8
3	4046	Hydraulic Cylinders	2
4	4058	1/4" Tee Adapter	2
5	0396	3/8" Dowty Washer	10
6	0033	1/4" - 3/8" Adapter	2
7	4060	3/8" Banjo Bolt	2
8	3086	3/8" Hose, RH lower trk motor - valve	1
9	3081	1/4" Hose, LH track retract	1

Item	Part No	Part Name	Q'ty
10	4031	1/4" Hose, LH track extend	1
11	3080	1/4" Hose, RH track retract	1
12	4032	1/4" Hose, RH track extend	1
13	3083	1/4" Hose, trk extend feed	1
14	3082	1/4" Hose, trk retract feed - valve	1
15	3088	3/8" Hose, LH upper trk motor - valve	1
16	3089	3/8" Hose, LH lower trk motor - valve	1
17	3087	3/8" Hose, RH upper trk motor - valve	1



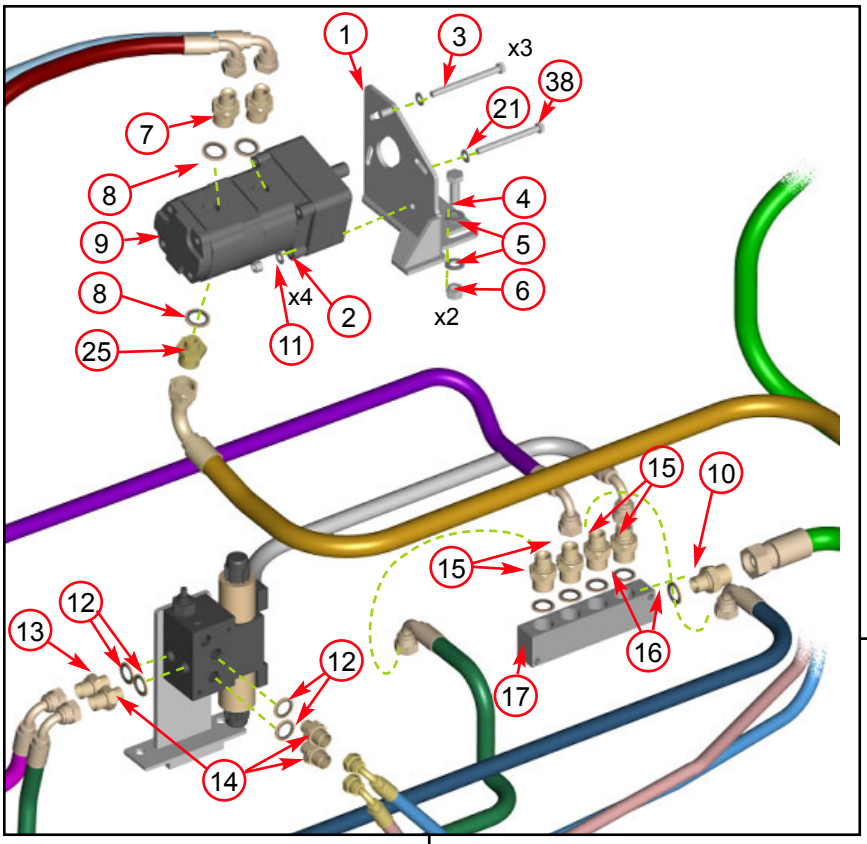
Date Last Modified: 29th April 05

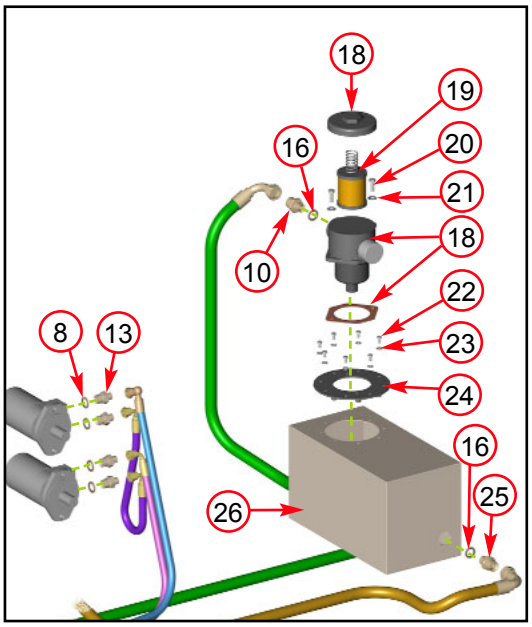


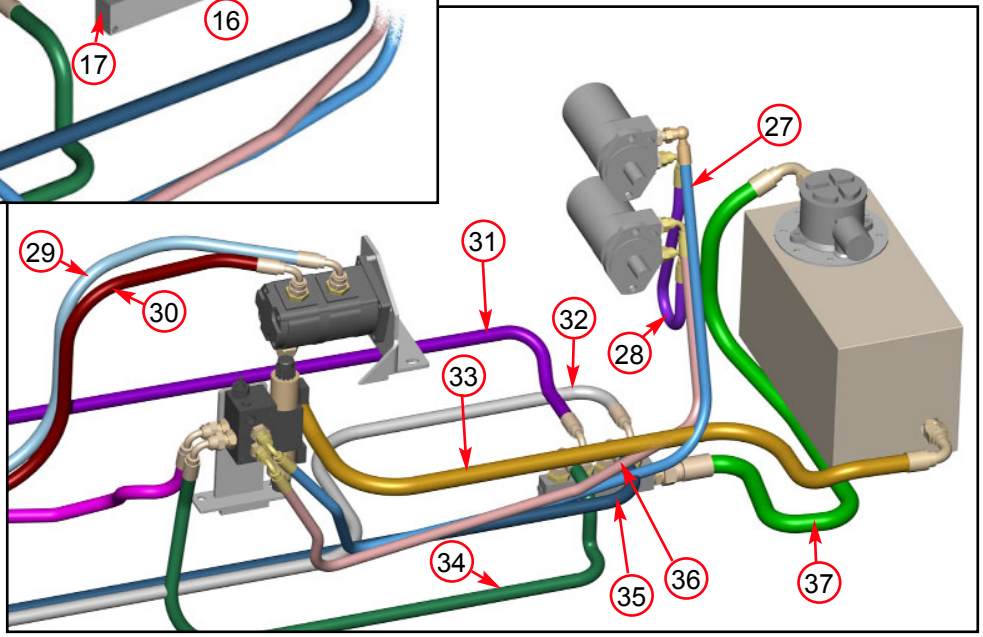


Item	Part No	Part Name	Q'ty
1	0161	3/8" - 3/8" Adapter	2
2	0212	1/2" Bulk Head Adapter	2
3	0396	3/8" Dowty Washer	18
4	0026	3/8" - 1/2" Adapter	14
5	3095	1/2" Hose, 6-way to prop. valve	1
6	4000	1/2" Hose to pump rear connection	1
7	3099	1/2" Hose to pump front	1
8	4240	1/2" Hose to DCV port 'P'	1

Item	Part No	Part Name	Q'ty
9	4302	1/2" Hose to manifold rear	1
10	3091	3/8" Hose to manifold	1
11	2867	1/2" Hose to bottom of track motor	1
12	2866	1/2" Hose to top of track motor	1
13	3090	3/8" Hose to manifold	1
14	2869	1/2" Hose to bottom of track motor	1
15	2868	1/2" Hose to top of track motor	1
16	3096	1/2" Hose, 6-way to prop. valve	1



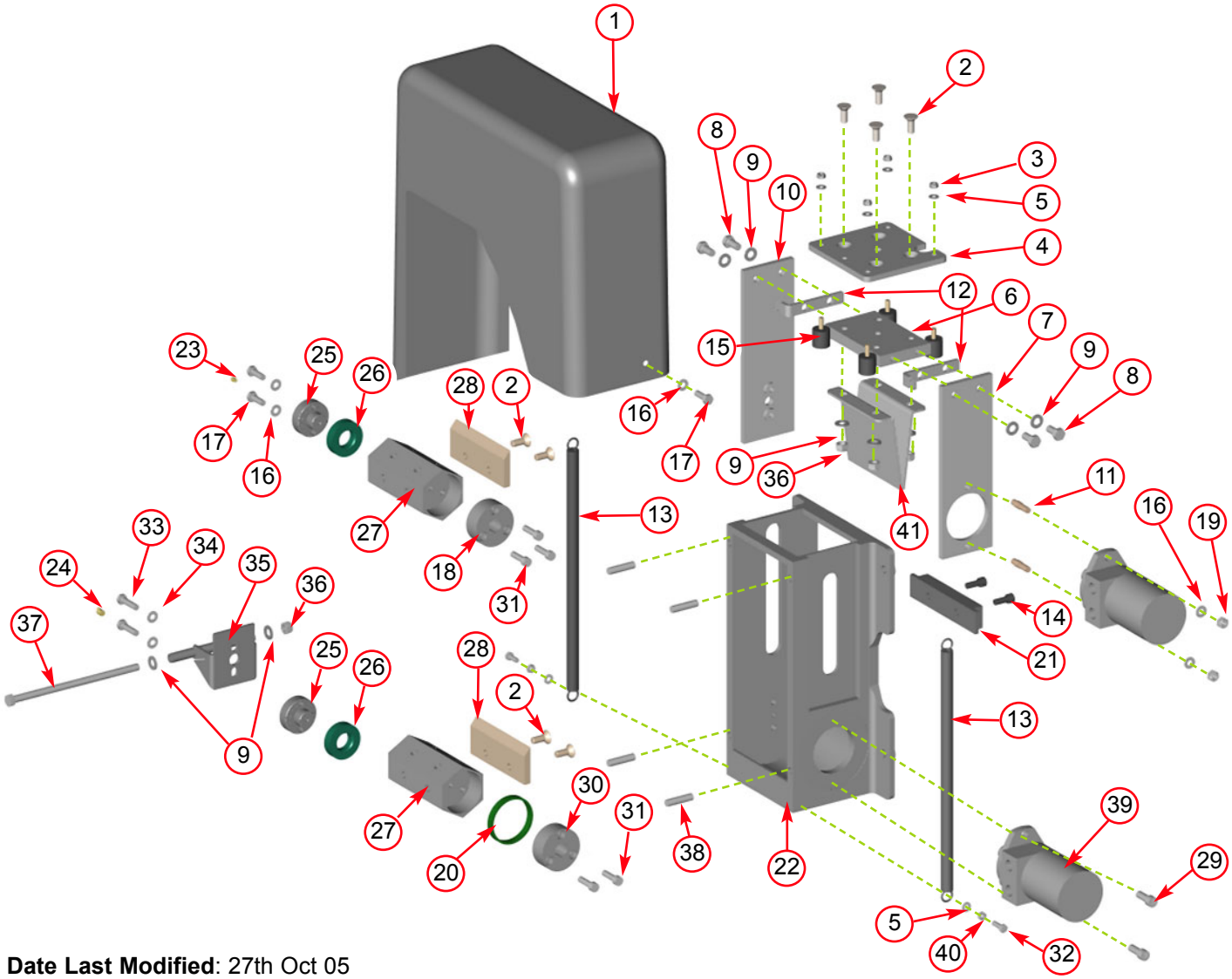




Date Last Modified: 23rd May 06

Item	Part No	Part Name	Q'ty
1	1913	Pump Bracket	1
2	0711	M8 A Washer	4
3	0342	M8/100 Bolt	3
4	0429	M12/35 Bolt	2
5	0702	M12 A Washer	4
6	0479	M12 P Nyloc Nut	2
7	0027	1/2" - 1/2" Adapter	2
8	0398	1/2" Dowty Seal	7
9	17344	Hydraulic Pump	1
10	0028	1/2"- 3/4" Adapter	2
11	0481	M8 T Nyloc Nut	4
12	0396	3/8" Dowty Seal	4
13	0026	3/8" - 1/2" Adapter	5
14	0161	3/8" - 3/8" Adapter	3
15	0225	3/4" - 3/8" Adapter	4
16	0152	3/4" Dowty Seal	7
17	1839	Manifold	1
18	1954	Tank Top Filter	1
19	0100	Filter Element	1

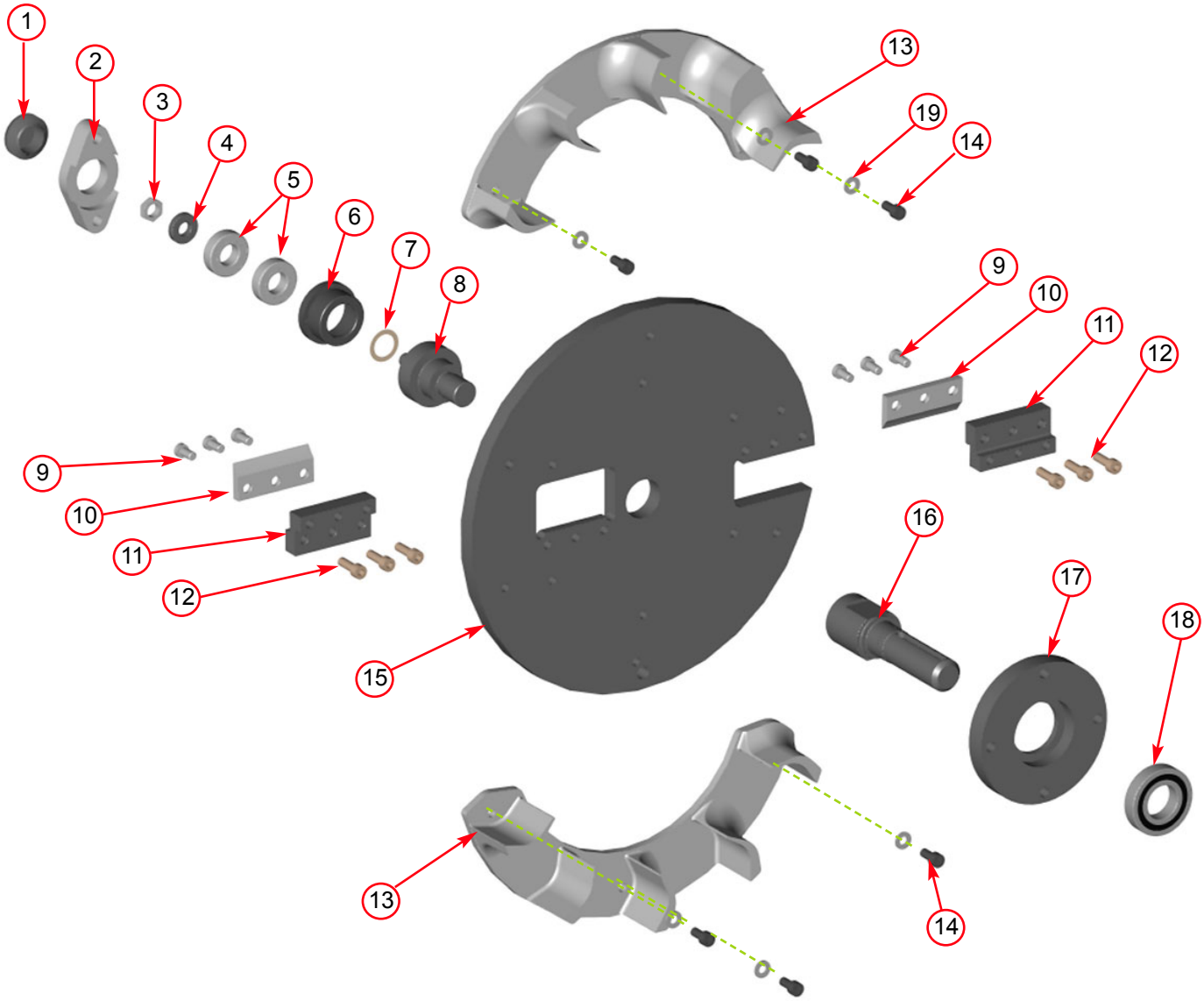
Item	Part No	Part Name	Q'ty
20	0350	M8/25 Bolt	2
21	0712	M8 C Washer	6
22	1658	M6/12 Bolt	8
23	0709	M6 C Washer	8
24	1702F	Tank Top Plate	1
25	2694	3/4" - 1" Adapter	2
26	1703	Hydraulic Tank	1
27	17309	3/8" Hose, DCV to upper motor	1
28	3092	3/8" Hose, motor to motor	1
29	4000	1/2" Hose, pump rear to 6-way valve	1
30	3099	1/2" Hose, pump front to 6-way valve	1
31	3091	3/8" Hose, manifold to LH valve	1
32	4302	3/8" Hose, manifold to 4-port valve	1
33	4258	1" Hose, tank to pump front	1
34	4247	3/8" Hose, manifold to DCV	1
35	3090	3/8" Hose, manifold to RH valve	1
36	3094	3/8" Hose, DCV to lower motor	1
37	4303	1/2" Hose, manifold to hyd filter	1
38	2988	M8/90 Bolt	1



Date Last Modified: 27th Oct 05

Item	Part No	Part Name	Q'ty
1	0672	Cover	1
2	0428	M12/30 Csk Soc.	28
3	0481	M8 T Nyloc Nut	4
4	1963F	Plate Top Damper Carrier	1
5	0711	M8 A Washer	6
6	1962F	Block Top Damped	1
7	0487F	Drive Side Plate	1
8	0429	M12/35 Bolt	4
9	0207	M12 A Washer	10
10	0921F	Non Drive Side Plate	1
11	1162	Motor Studs	2
12	1964F	Bracket Spring Hanger	2
13	0423	Roller Box Spring	2
14	0305	M10/25 Caphead	2
15	1768	AV Mount 30x30	4
16	0701	M10 A Washer	5
17	0382	M10/30 Bolt	5
18	1361	Drive Spline	1
19	4345	M10 P Nyloc Nut	4
20	2757	Bush Bearing Spline	1
21	0103	Anvil	1

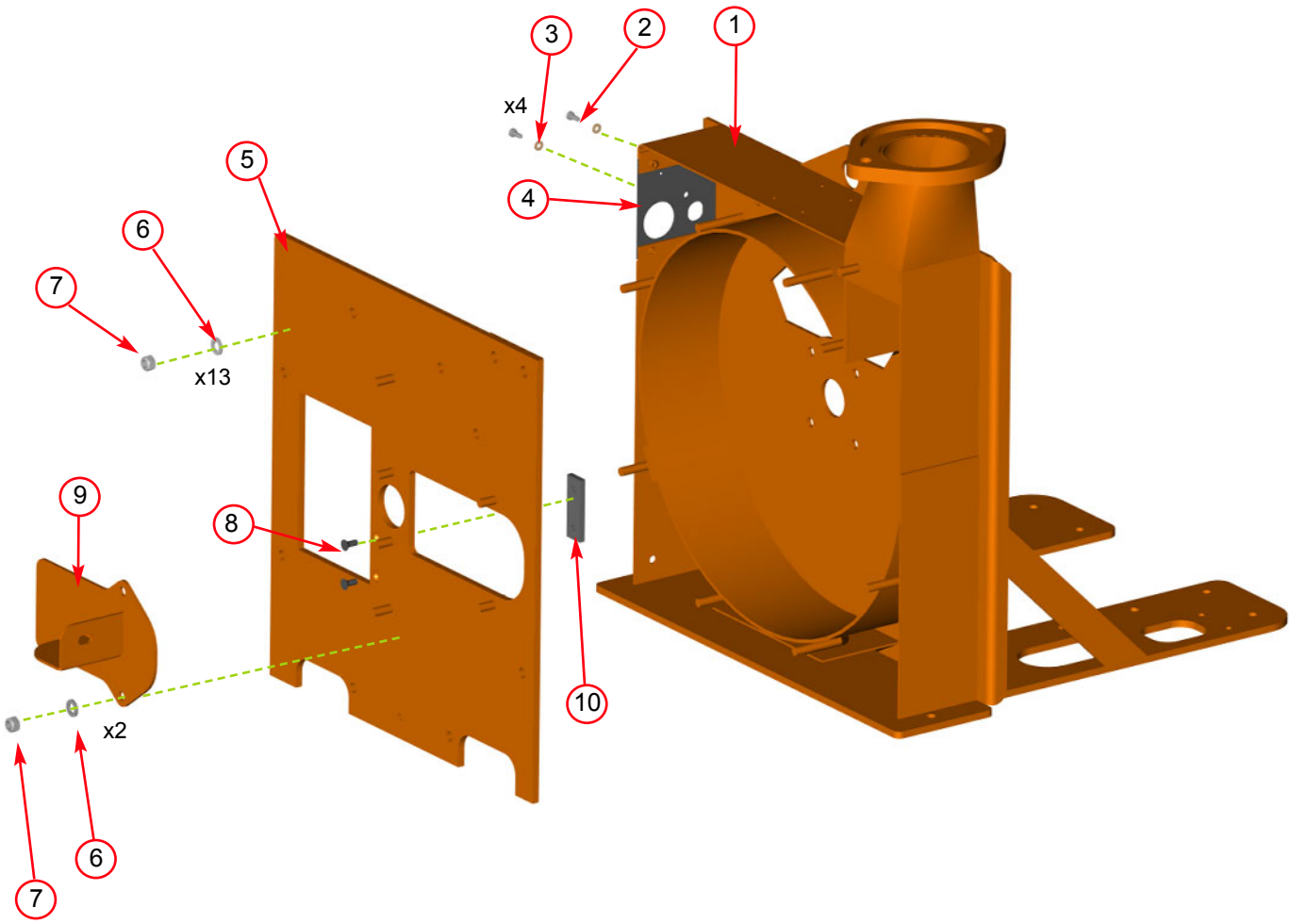
Item	Part No	Part Name	Q'ty
22	0228M	Roller Box	1
23	0985	Straight Grease Nipple	1
24	0986	45° Grease Nipple	1
25	0055	Bearing Boss	2
26	0788	Plastic Bush	2
27	1362	Roller Body	2
28	0325	Roller Blade	12
29	1985	M12/30 Cap Head Bolt	2
30	4100M	Spline 6B Retro Bottom	1
31	0382	M10/30 Cap Screw	5
32	0346	M8/20 Bolt	2
33	4068	M10/40 Cap Head Bolt	2
34	0839	M10 C Washer	2
35	0534F	Cover Bracket	1
36	0045	M12 T Nyloc Nut	5
37	0319	M12/220 Bolt	1
38	0356	Funnel Studs M12/50	4
39	2982	Motor	2
40	0476	M8 Plain Nut	2
41	4013	Rotor Guard	1



Date Last Modified: 1st Aug 05

Item	Part No	Part Name	Q'ty
1	0959	Plastic Cap	1
2	0884	Bearing Housing Rear	1
3	1275	M16 Half Nut	1
4	1412	Washer Heavy Thick	1
5	0491	Bearing 6205	2
6	0883	Bearing Cup	1
7	0796	20 Thou Shim	As Req'd
8	1367	Nose Shaft	1
9	0900	M10/20 Star Cap Screw	6
10	083H	Cutter Blade 4"	2

Item	Part No	Part Name	Q'ty
11	0757	Blade Pocket	2
12	0386	M10/30 Cap Screw	6
13	1571	Fan Section	2
14	0386	M10/30 Caphead	6
15	0880	Rotor	1
16	4062	Rear Shaft	1
17	4063	Bearing Housing Rear	1
18	0495	Bearing 6208	1
19	0701	M10 A Washer	6



Date Last Modified: 14th Nov 05

Item	Part No	Part Name	Q'ty
1	3039F	Rotor Housing	1
2	0438	M6/16 Pozi Pan	4
3	0709	M6 C Washer	4
4	4006	Control Panel	1
5	1267F	Front Plate	1

Item	Part No	Part Name	Q'ty
6	0702	M12 A Washer	17
7	0045	M12 T Nyloc Nut	15
8	0355	M8/16 C/Sunk Bolt	2
9	1268F	Access Cover	1
10	0101	Anvil Vertical	1

Engine Stop	Forward	Safety	No Stress

1848 ONLY THIS PIECE USED

TIMBERWOLF 1136 x 2

2800

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.

1662

GREASE ROLLER SPINDLE AND SLIDES 1661

17450

SELECT CHIP MODE WHEN ADJUSTING TRACK WIDTH

4090

TIMBERWOLF 4090

PUSH TO STOP PULL TO RESET 2802 x 2

2801

L_{Aeq} 92 db 3004

L_{WA} 119 db 2998

!! ATTENTION !!

CLEAN UNDER BLADES BEFORE REFITTING OR TURNING

FAILURE TO DO SO MAY RESULT IN BLADE(S) COMING LOOSE AND DAMAGE BEING CAUSED TO THE ROTOR HOUSING

3022

1747 CHIP

1745 TRACK

3015 OPT (Variable tracks only) – Z

JACKING POINT 3059 X 2

SEE MANUAL FOR INSTRUCTIONS

! SAFETY NOTE !

2949

LIFTING EYE IS DESIGNED TO LIFT THE MACHINE'S WEIGHT ONLY.

DO NOT USE HOIST HOOK DIRECTLY ON LIFTING EYE. USE CORRECTLY RATED SAFETY SHACKLE ONLY THROUGH LIFTING EYE.

LIFTING EYE TO BE INSPECTED EVERY 6 MONTHS OR BEFORE EACH USE.

ALWAYS VISUALLY INSPECT LIFTING EYE PRIOR TO EACH USE. DO NOT USE LIFTING EYE IF DAMAGED.

0670

1746

PUSH *OR* PULL TO STOP

Low Funnel Only 3054

2950 THROTTLE

PUSH TO STOP

Low Funnel Only 4114

0617

HIGH VELOCITY DISCHARGE KEEP CLEAR!

PUSH TO STOP

DO NOT PULL HERE 1399

High Funnel Only

0616

1200KG MAX 4284

DANGER! KEEP HANDS AND FEET OUT 4099 X 2

2854

WARNING

DO NOT RIDE ON THIS MACHINE AT ANY TIME

! HOT EXHAUST

0671

DANGER

1363 X 2 on low funnel

TW 150FTR 4275 X 2

OR

TW 150VTR 4276 X 2