



**TIMBERWOLF®**  
Lead the pack

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**TW 280TDHB/(a) WOOD CHIPPER**  
**UK INSTRUCTION MANUAL**  
**(ORIGINAL INSTRUCTIONS)**



**[timberwolf-uk.com](http://timberwolf-uk.com)**

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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 280TDHB, 280TDHB(a) and optional Timberwolf Safety Plus Kit. 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 4 to 14. Ensure that all operators are **properly trained** for operating this machine, especially in **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.



### CAUTION or WARNING

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

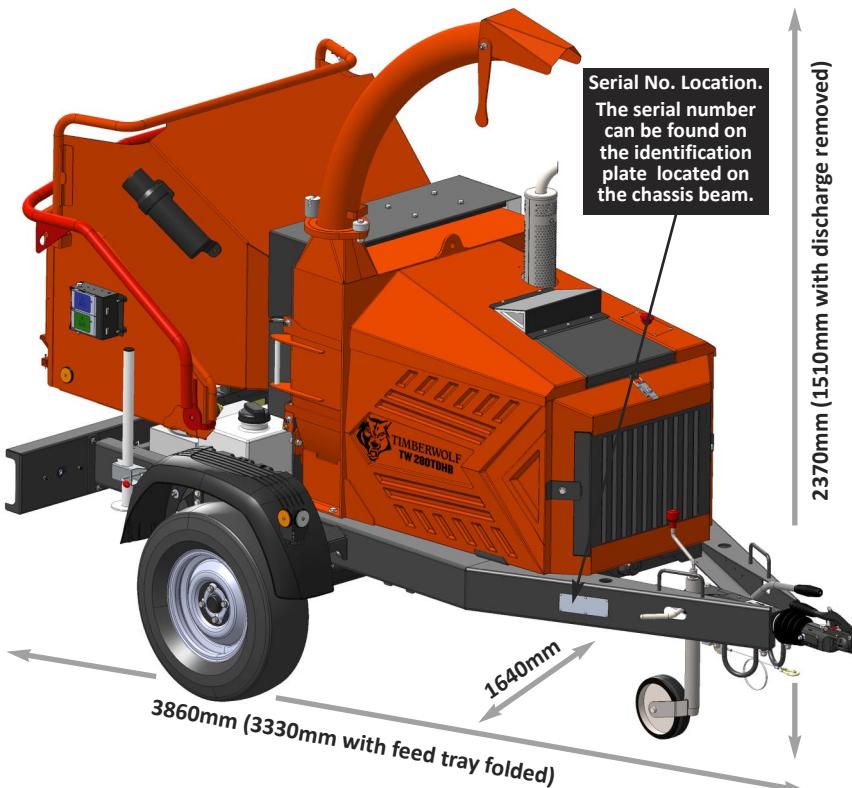
**THIS SYMBOL INDICATES  
IMPORTANT SAFETY  
MESSAGES IN THIS MANUAL.  
WHEN YOU SEE THIS  
SYMBOL, BE ALERT TO THE  
POSSIBILITY OF INJURY TO  
YOURSELF OR OTHERS AND  
CAREFULLY READ THE  
MESSAGE THAT FOLLOWS.**

**ALWAYS FOLLOW SAFE  
OPERATING AND  
MAINTENANCE PRACTICES**

## PURPOSE

The Timberwolf TW 280 range is designed to chip solid wood material up to 210mm in diameter and capable of chipping over 6.5 tonnes of brushwood per hour.

## DIMENSIONS

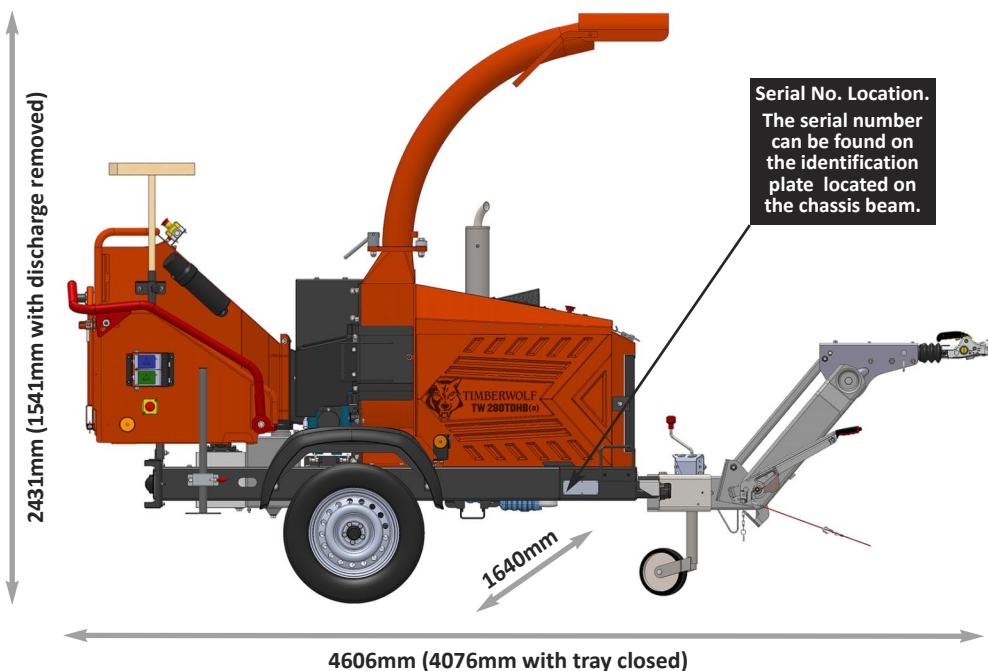


## TW 280TDHB SPECIFICATION

<b>Engine type:</b>	Kubota 4-cylinder turbo diesel
<b>Maximum power:</b>	33kW (45hp)
<b>Cooling method:</b>	Water cooled
<b>Overall weight:</b>	1180kg
<b>Starting method:</b>	Electric
<b>Roller feed:</b>	Twin series hydraulic motors
<b>Maximum diameter material:</b>	210mm (8 1/4")
<b>Fuel capacity:</b>	36 litres
<b>Hydraulic oil capacity:</b>	15 litres
<b>Material processing capacity:</b>	Up to 6.5 tonnes/hr
<b>Fuel type:</b>	Diesel

## TW 280TDHB(a)

### DIMENSIONS WITH ADJUSTABLE TOWHEAD

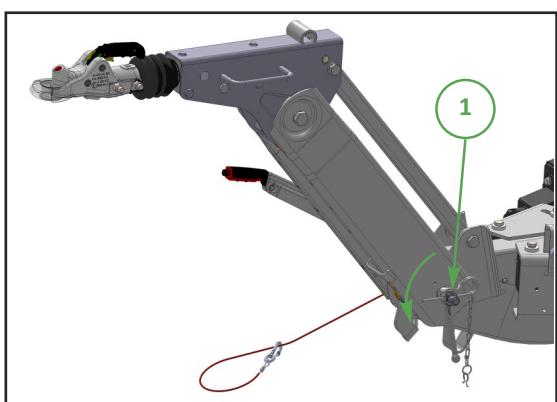


### TW 280TDHB(a) SPECIFICATION

**Engine type:** Kubota 4-cylinder turbo diesel  
**Maximum power:** 33kW (45hp)  
**Cooling method:** Water cooled  
**Overall weight:** 1240kg  
**Starting method:** Electric  
**Roller feed:** Twin series hydraulic motors  
**Maximum diameter material:** 210mm (8  $\frac{1}{4}$  ")  
**Fuel capacity:** 36 litres  
**Hydraulic oil capacity:** 15 litres  
**Material processing capacity:** Up to 6.5 tonnes/hr  
**Fuel type:** Diesel

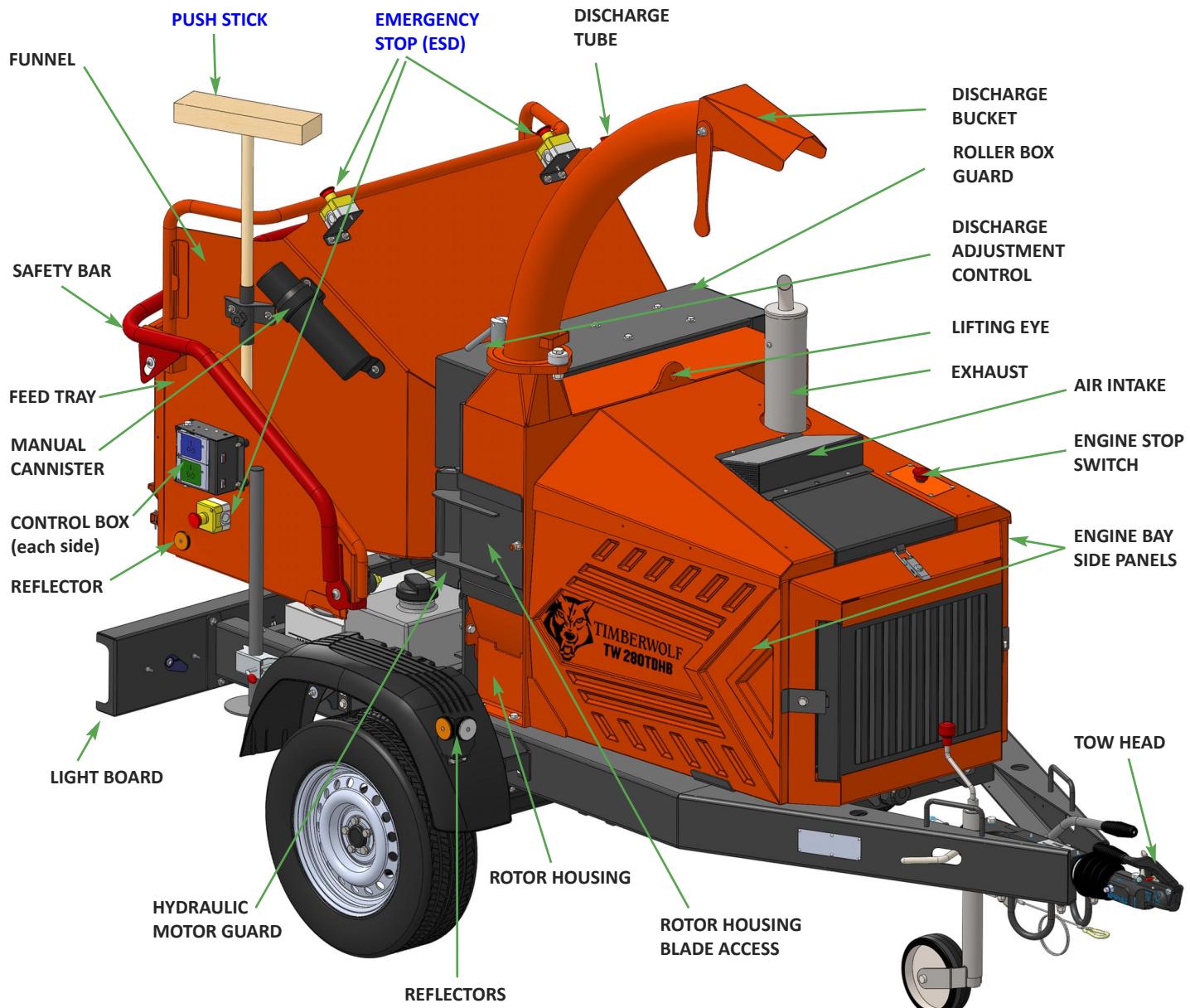
### ADJUSTING THE TOWHEAD HEIGHT

The TW 280TDHB(a) chipper has the ability to adjust the towhead height to correspond with the vehicles towing point. The preferred towing angle of any chipper is with the chassis level to the ground. The adjustable head has the ability to move between 432mm from the ground to 1005mm giving an overall adjustment of 573mm.



The adjustable towhead fundamentally works the same as a fixed standard towhead, however the front section of the head is retained in position via 2 locking rings.

To adjust the height the locking handles located on the side of the head (1) are turned in an anticlockwise direction to allow for the locking ring to disengage from its apposing ring. Once the desired height has been achieved the locking handles are turned clockwise until tight. The latching of the hitch is as normal as is the fitting of the light plug and breakaway cable as outlined in the 'Hitching onto the tow ball' section on page 8.



**THE TW 280TDHB/(a) HAS THE FOLLOWING FIXED GUARDS FOR PROTECTION OF THE OPERATOR, CHIPPER AND ENVIRONMENT:**

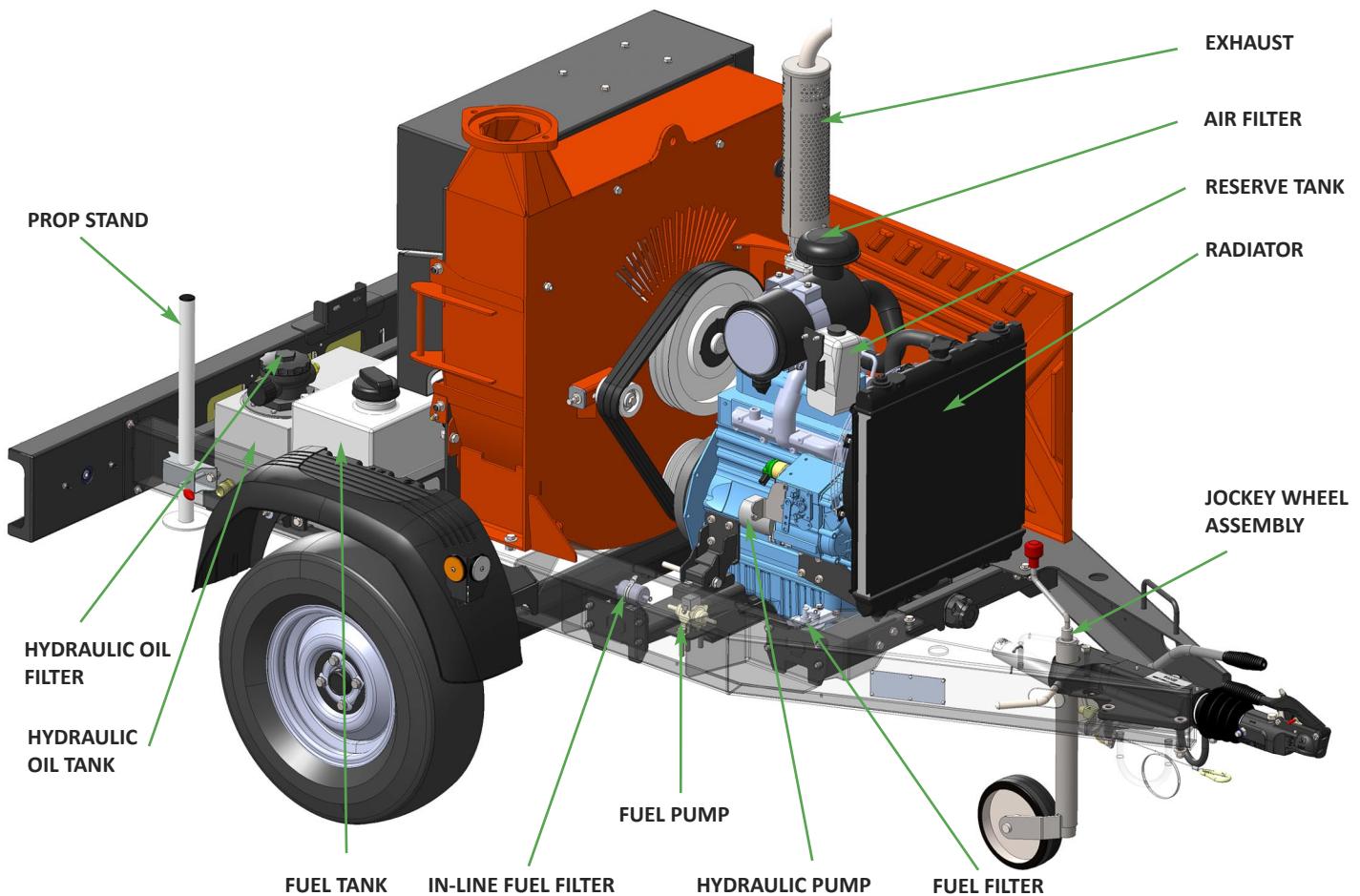
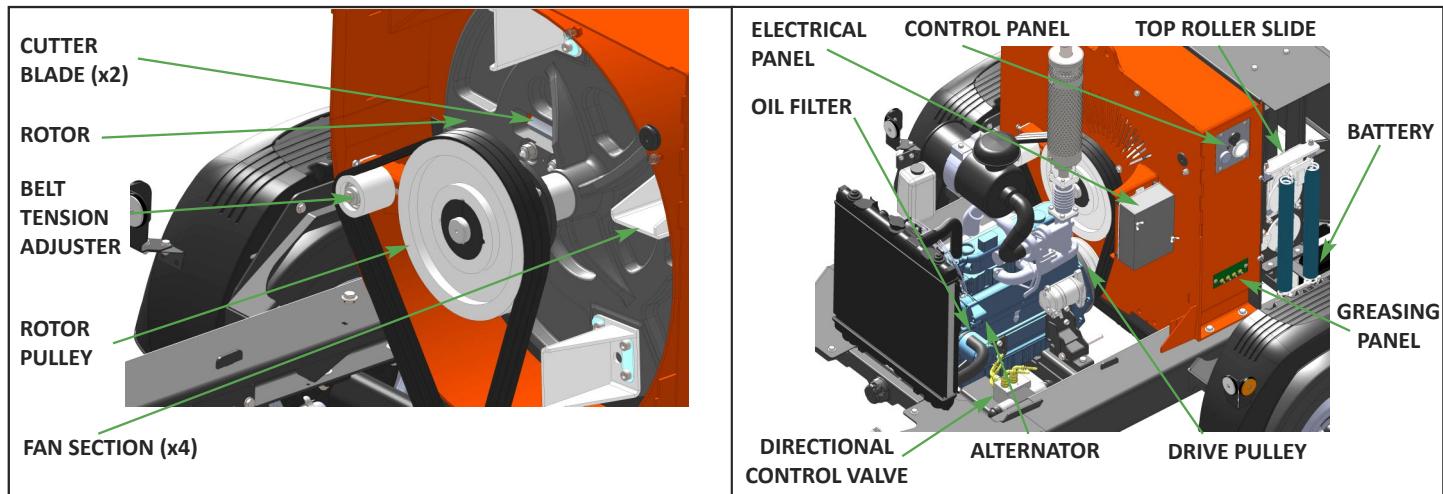
- Roller Box Guard:** Protects rotor housing from damage or foreign matter. Protects the user from injuries from moving rollers and ejected material during operation.
- Hydraulic Motor Guard:** Protects hydraulic motors from damage. Protects the user from injuries from heat and movement of motor.
- Rotor Housing Blade Access:** Protects user from rotational parts e.g. cutting blades. The interlocking switch disengages the engine when the hatch is opened to stop the chipper running.
- Engine Bay Side Panels:** Protects the user from rotational parts e.g. belts and pulleys, hot surfaces, and engine fluids. Protects machine from ingress of environmental debris.

Guards may be removed for maintenance only, as described in the Service Instruction pages of this manual. **Ensure guards remain in place throughout operation.**

**THE OPTIONAL TIMBERWOLF SAFETY PLUS KIT (“-FR” MODELS) INCLUDE THE FOLLOWING ADDITIONAL FEATURES:**

- Emergency Stop Devices (ESD) fitted to the top and either side of the funnel (indicated above in blue text).
- New electrical wiring looms for functionality of ESDs.
- Security fasteners on safety bar.
- Push Stick tool (indicated above in blue text).
- Additional safety decals.

**NOTE:** Instructions for this kit are given in blue text throughout this manual. These do not apply to standard models. The push stick does not contain metal parts, so the chipper will not be damaged if the tool accidentally enters the machine. **Designed to be mounted on the side of the funnel when not in use.**

**TOOL BOX CONTENTS:**

- Copper Ease
- Rotor locking tool
- Combination Spanner (17mm/19mm)
- Lock Unit Keys x 2
- Ignition Keys x 2
- Access Cover Keys x 2
- Keyring

## OPERATOR'S PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Chainsaw safety helmet (EN 397) fitted with mesh visor (EN 1731) and ear defenders (EN 352).
- Work gloves with elasticated wrist.
- Steel toe cap safety boots (EN 345-1).
- Close fitting heavy-duty non-snag clothing. High-visibility clothing (EN 471) if risk assessment identifies the need.
- 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 face mask 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.
- Never leave the chipper unattended when running. Machines must be supervised at all times when in use.
- In the event of an accident, stop the machine, remove the key and call the emergency services immediately.

## GENERAL SAFETY MATTERS

- Always stop the chipper engine before making any adjustments, refuelling or cleaning.
- Always check the rotor has stopped rotating and remove the chipper ignition key before maintenance of any kind, or whenever the machine is to be left unattended. If in doubt, look through the in-feed funnel to see if rotor is still moving.
- Always check the machine is well supported and cannot move. If working on an incline, position on solid ground, across the slope.
- Always operate the chipper with the engine set to maximum speed when chipping.
- Always check (visually) for fluid leaks. If found, resolve the leak before operating the chipper.
- 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 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.
- Ensure a fire extinguisher is available on site.
- Ensure a personal first aid kit and hand cleaning materials are available (e.g. waterless skin cleanser).



### 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.



## GENERAL SAFETY MATTERS

- 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 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 the machine is running.
- Do not use the chipper inside buildings.



**DO NOT ALLOW THE FOLLOWING TO ENTER THE MACHINE, AS DAMAGE IS LIKELY**



CLOTH



PLASTIC



STONES



METAL



GLASS



RUBBER



BRICKS



STRING



ROOTS



BEDDING PLANTS

## NOISE TEST

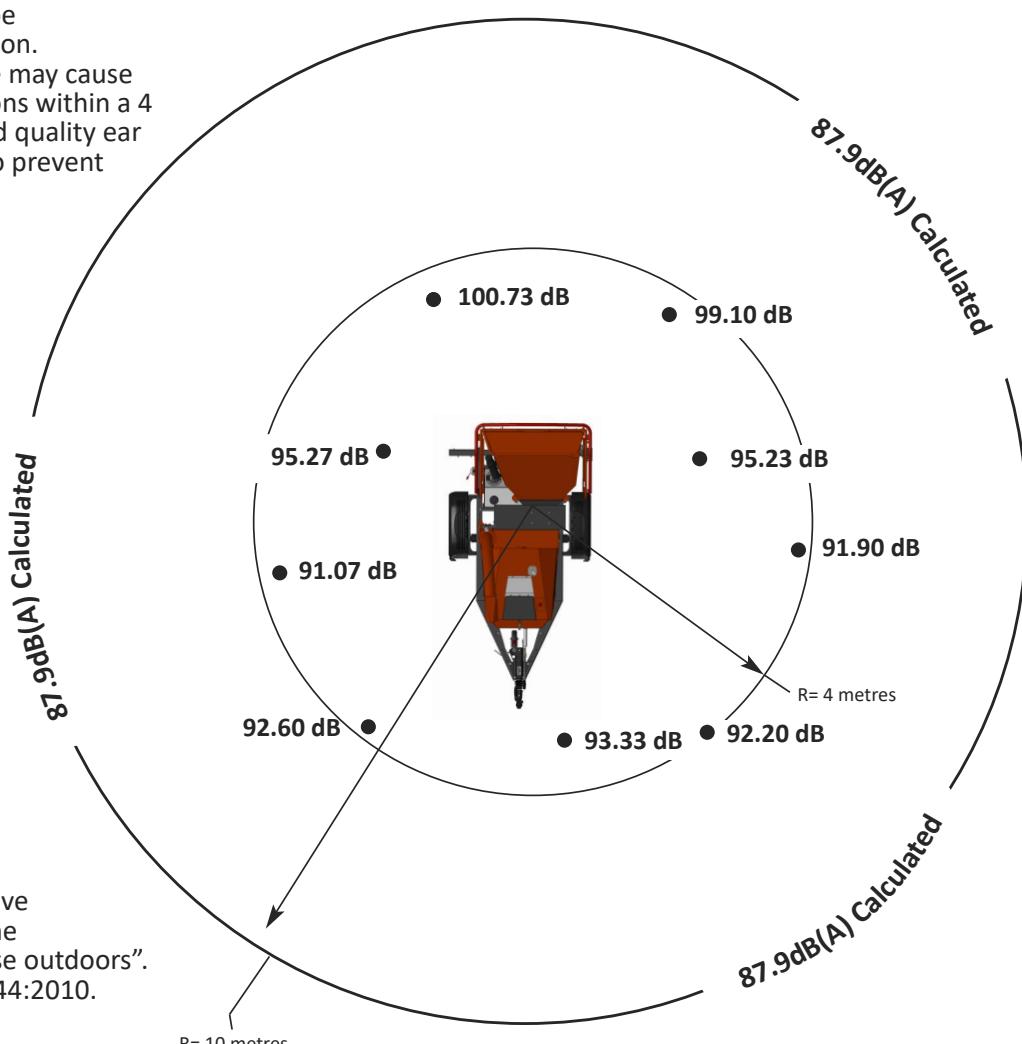
**Machine: TW 280TDHB**

**Notes: Tested chipping 200mm x 200mm corsican pine 1.5m in length**

Noise levels above 80dB (A) will be experienced at the working position.

Prolonged exposure to loud noise may cause permanent hearing loss. All persons within a 4 metre radius must also wear good quality ear protection (EN 352) at all times to prevent possible damage to hearing.

Guaranteed Sound Power: 118dB (A)



As required by Annex III of Directive 2000/14/EC "Noise Emission in the environment by equipment for use outdoors".  
Tested according to BS EN ISO 3744:2010.

## SAFE TRANSPORTATION

- When towing a chipper the maximum speed limit is 60 mph (96 km/h).
- On rough or bumpy road surfaces reduce speed accordingly to protect your machine from unnecessary vibration.
- When towing off road be aware of objects that may catch the chipper undergear.
- When towing off road ensure inclination is not excessive.
- Avoid excessively pot holed ground.
- When reversing the chipper the short wheel base will react quickly to steering.
- Always check the discharge is tight before moving.
- Keep tyre pressures inflated to 3.4 bar or 50 psi.

- Check wheel nuts are tightened to 65 lb ft (88 Nm).
- Clear loose chippings and debris from the machine before departing.
- Ensure feed funnel is closed and the catch is properly engaged before departing.
- NEVER transport any items in feed funnel.
- Ensure tow hitch lock mechanism is locked before transporting.



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

## 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.
- Check jockey wheel handle is secure before transportation. Do not overtighten jockey wheel handle.
- 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 and stow in the dock provided on the chassis when not in use.
- Release breakaway cable and stow in the dock provided on the chassis when not in use.
- 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. Do not overtighten jockey wheel handle.
- 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 level and made secure before starting work by applying the handbrake and lowering the prop stand and jockey wheel (b).

During unhitched storage the chipper must be level with the discharge chute pointing towards the towhead.



## STORING THE CHIPPER

Perform the following tasks at the storage intervals indicated, following procedures described within this manual.

Maintenance Tasks	Storage time			
	<1 month	1-6 months	6-12 months	>12 months
Allow the engine to cool down.	✓	✓	✓	✓
Clean the chipper, removing all woodchips.	✓	✓	✓	✓
Perform routine maintenance.	✓	✓	✓	✓
Check all fasteners and retighten.	✓	✓	✓	✓
Remove all fuel from the tank. NOTE: Either allow the machine to run until all fuel has been used, or drain from the plug provided. If necessary, siphon the fuel into an approved storage container (refer to re-fuelling section). Drain prior to moving machinery, to prevent spillage.	✓	✓	✓	✓
Disassemble the spark plug (petrol machines) or remove battery cables (diesel machines).	✓	✓	✓	✓
Where paint is damaged, touch up paint or treat with a lubricant. NOTE: Original paint colours are available from Timberwolf dealers.	✓	✓	✓	✓
Store the chipper in a dry place at +5°C to +40°C. NOTE: Timberwolf strongly recommends the machine is stored in a sheltered location, protected from rain. If the machine is stored outside, it must be well protected with tarpaulin.	X	✓	✓	✓
If relative humidity of the storage environment is > 60%, the shaft of the engine must be rotated by hand 1-2 revolutions bi-weekly. Prior to rotating the shaft, 20 to 30 ml of engine oil should be poured onto the bearing liner.	X	✓	✓	✓
Every 3 months, inspect the machine as per <1 month column.	X	X	✓	✓
Clean out and drain all lubrication lines, including grease pipes, coolant reservoirs, fuel lines, oil reservoirs. Replace with new lubricants. NOTE: This should be performed at 6 month intervals (months 6 & 12) until recommissioned. Drain prior to moving machinery, to prevent spillage.	X	X	✓	✓
Release and reapply handbrake to confirm it has not become sticky or faulty.	X	X	✓	✓
Check and restore tyre pressure levels.	X	X	✓	✓
Keep machine in original container/packaging or equivalent protection and store in a location free from extremes in temperature, at a min. temp. of +5°C and max. +40°C, humidity and corrosive environments. NOTE: If the storage location is cold, damp or severe humidity changes exist, adequate action should be taken to safeguard machinery.	X	X	X	✓
If machine is exposed to environmental conditions such as humidity during storage, inspect bearing lubrication system for presence of water. If water is detected in the lubricant, flush out the bearing housing and re-lubricate immediately.	X	X	X	✓
All breathers and drains are to be operable while in storage and/or the moisture drain plugs removed. The machinery must be stored so the drain(s) are at the lowest point, while the machine is in its stable position.	X	X	X	✓
Follow the recommissioning process before operation.	X	✓	✓	✓

### NOTE:

Regardless of storage time, all Timberwolf machines must be in a stable, level position when unhitched from a vehicle. Lower the Jockey wheel, unhitch and lower the prop stand, to ensure the machine is unable to roll or move unintentionally during storage. The discharge tube must be pointing towards the tow head. Braked machines should have the brake applied.

## RECOMMISSIONING AFTER STORAGE

- Ensure machine is stable.
- Remove all guards and check all fasteners. If necessary, retighten as described within this manual.
- Ensure discharge tube is correctly fastened, free of objects or blockages and rotates around its pivot without being directed to face the point of operation (danger zone).
- Ensure feed funnel is free from foreign objects e.g. tools and clothing.
- Lower and raise feed funnel into its open and closed positions to confirm functionality.
- Check fuel and hydraulic fluid levels within engine and reservoir and top up accordingly. \*
- Inspect all internal parts e.g. drive belts, taper locks and shaft keyways.
- Check belt tension as described within this manual.

- Inspect cutting blades to confirm they are sharp and suitable for use.
- Re-connect the battery to its positive and negative terminals.
- Undertake electrical diagnostic continuity check, to confirm circuit is complete.
- Check tyre pressures.
- Re-lubricate all grease pipes. Remove pipes and bleed the system prior to use, if necessary. \*
- Follow daily checks before starting, as described within this manual.
- Start the machine.
- Run for 15 minutes at half throttle, prior to any cutting activity, to clear the combustion engine. Once complete, bring the machine onto full throttle for a further 5 minutes.

\*Storage fluids should be replaced, DO NOT USE old stagnate fluids.

## DELIVERY

All Timberwolf TW 280TDHB/(a) 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 6-8 which contain important health and safety information and advice.

## MANUAL CONTROLS

Roller control boxes: a control box is located on either side of the feed funnel. Their function is to control the feed roller whilst processing material. They do 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** feed control.

### Red Safety Bar Test

To ensure the safety bar is always operational it must be activated once before each work session.

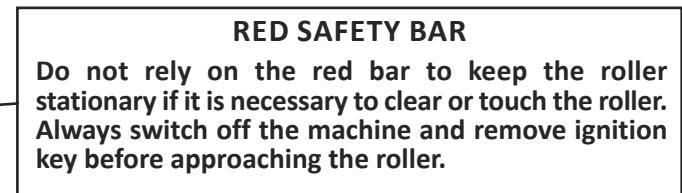
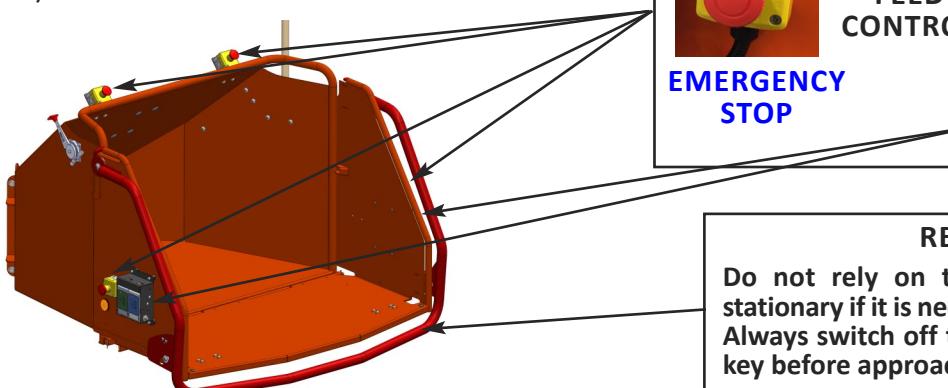
**GREEN FEED CONTROL:** forward feed - push the feed control once - this activates the rollers and will allow you to start chipping (if the rotor speed is high enough).

**BLUE FEED CONTROL:** 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 feed control.



### Control Box Diagram

There are two control boxes, located on either side of the feed tray.



Note: Emergency Stops shown are only included on the Timberwolf Safety Plus Kit model.

## AUTO CONTROLS

The no stress control unit controls the feed rate of the material going into the chipping chamber. If the engine speed is below the predetermined level, the no stress unit will not allow the feed rollers to work in the forward "infeed" 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 engine speed.

## EMERGENCY STOPPING

There are two ways of stopping the TW 280TDHB/(a) chipper in the event of an emergency.

### Stopping the rollers

Activating the **red safety bar** will stop the rollers immediately. The rotor will still be turning, the engine must be powered down to stop the rotor. Turn off the engine ignition key. To restart the rollers, just push the **green forward** or **blue reverse** feed control.

**Stopping the engine:** Should the engine need to be stopped in an emergency, the **engine stop switch** on top of the engine bay should be pushed. This will shut down the engine in the shortest possible time. The engine cannot be restarted until the engine stop switch is pulled out and the main ignition switch is turned off to reset the machine.

**Stopping the rollers and the engine:** Should the entire machine need to be stopped in an emergency, activate one of the **red emergency stop** buttons positioned on top of the funnel or on either sides of the feed tray. This function kills all power to both the engine and the rollers, bringing the machine to a complete stop. The engine cannot be restarted until the button is restored to its original position and the main ignition switch is turned off to reset the machine. Before disengaging the emergency stop button, inspect the machinery to determine the reason for activation.



## 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 mounted on the feed funnel.

## DAILY CHECKS BEFORE STARTING

- LOCATE the machine on firm level ground.
- CHECK the machine is well supported and cannot move.
- CHECK the jack stand is lowered and secure.
- CHECK all guards are fitted and secure.
- CHECK the discharge unit is in place and fastened securely.
- CHECK the discharge tube is pointing in a safe direction.
- CHECK the feed funnel to ensure no objects are inside.
- CHECK the feed tray is in up position - to prevent people reaching rollers.

- CHECK the controls as described below.
- CHECK (visually) for fluid leaks.
- CHECK fuel and hydraulic oil levels.
- If still hitched, ensure tow vehicle is isolated prior to operation of the chipper.

For parts location see diagrams on pages 4 - 5.

## 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

1



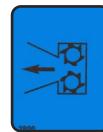
PRESS THE GREEN FEED CONTROL  
THE IN-FEED SHOULD TURN  
FORWARDS

2



PRESS THE RED SAFETY  
BAR  
THE IN-FEED SHOULD STOP

3



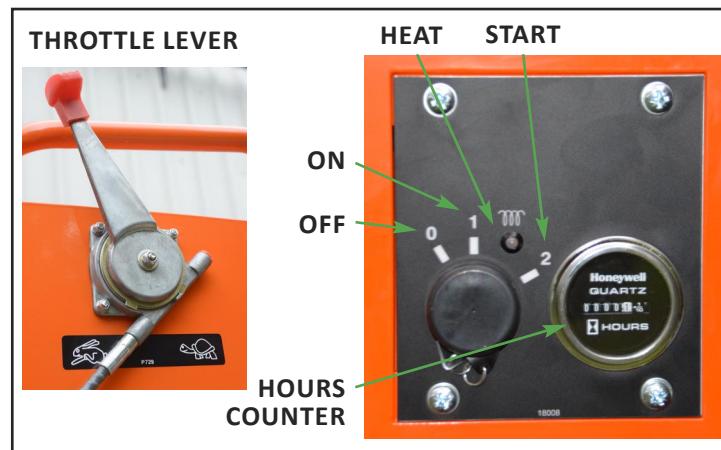
PRESS THE BLUE FEED CONTROL  
THE IN-FEED SHOULD TURN BACKWARDS ONLY  
WHILE THE FEED CONTROL IS PRESSED

## 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. Refer to Troubleshooting.**

**When the engine stop button (or ESD) is pressed it must be pulled out again and the ignition switch turned off to reset the machine before attempting to restart.**



## CONTROLLING THE ENGINE SPEED

Always start the engine with the lever in the 'slow' (idle) position. 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 'slow' (idle) position.

## 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.

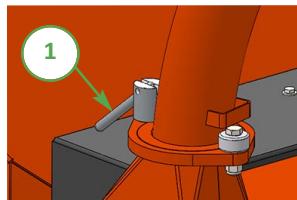
For more detailed information refer to the Engine Owner's Manual.

## DISCHARGE CONTROLS

Controlling the discharge is an essential part of safe working.

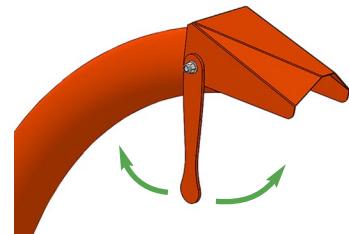
### ROTATION

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



### BUCKET ANGLE

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



## STARTING TO CHIP

- Check that the machine is level. If not attached to a vehicle, ensure the handbrake is applied and the jack stand deployed.
- Release the catches on the feed tray and lower into the working position.
- Perform the "before using the chipper" checks (see page 11). This will take you through the starting procedure and get the machine up to the point of use.
- Press the **green forward** feed control. The rollers will begin to turn in the forward feed direction.
- Immediately check the function of the **red safety bar** and also the **blue reverse** feed controls on both sides of the feed tray.
- Stand to one side of the feed tray.
- Repress the **green forward** feed control.
- Commence feeding material.

## 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** feed control 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** feed control and hold for 2 seconds - then repress the **green forward** feed control. 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.



**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.**

## 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.
- Replace the discharge tube.
- Restart the engine and increase to full speed.

Allow the 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.**

## 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 280TDHB/(a) is fitted with 2 blades 158mm (6") long. They are 100mm 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 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. Refer to filling and draining instructions on page 20.

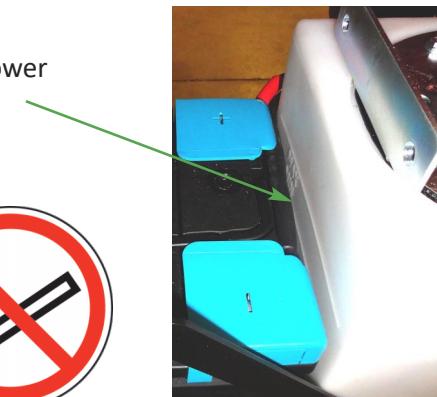
## FUEL LEVEL INDICATOR

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

## REFUELLING

When refuelling, follow standard Health & Safety practices:

- Stop the engine and allow it to cool before refuelling.
- Never smoke or allow naked flames nearby while refuelling.
- Store fuel away from vapour ignition sources such as fires and people smoking.
- Never refuel at operating location, keep a distance of > 10 m to avoid creating fire hazards.
- Fuel storage containers must be approved for appropriate fuel storage and clearly labelled with securely fitting caps.
- Clean the area around the fuel cap and use a funnel for refuelling. Replace the fuel cap securely. Do not fill the tank beyond the max. fill indicator.
- Avoid skin contact with fuel. If it gets into eyes wash out with sterile water immediately and seek medical advice as soon as possible.
- Always clean spillages quickly and change clothes before re-entering the work area if fuel is spilled onto garments.



## TROUBLESHOOTING

This table is a troubleshooting guide to common problems.

If your problem is not listed below, or is unresolved after following the guide, please contact your Timberwolf service agent, whose Timberwolf trained engineers can perform further fault finding. Before you call, please have this operating manual and the machine serial number ready.

Problem	Cause	Solution	Caution - Always ensure appropriate PPE is worn.	
Wood chip ejection stopped / limited	Obstructed discharge	Clear debris from discharge chute.		Ensure machine is off and keys removed.
	Loose drive belts	Refer to manual & tension belts guidelines.		Ensure machine is off and keys removed.
	Broken rotor paddles	Inspect paddles, replace broken / missing paddle.		Ensure machine is off and keys removed. Call engineer for repair.
Rotor does not turn	Obstructed discharge	Clear debris from discharge chute.		Ensure machine is off and keys removed.
	Rotor jammed	Inspect & clear infeed funnel, roller box and rotor housing.		Ensure machine is off and keys removed.
	Drive belt issue	Inspect drive belts, replace if required. Refer to manual & tension belts guidelines.		Ensure machine is off and keys removed.
Slow or not feeding	Low engine speed	Check & inspect throttle and cable. Check throttle is set to specified speed.		Ensure machine is off and keys removed.
	Infeed rollers jammed	Inspect & clear infeed funnel, roller box and rotor housing.		Ensure machine is off and keys removed.
	Hydraulic oil	Check hydraulic oil level, top up if necessary.		Ensure machine is off, cool & pressure isn't present within the system.
	Blades dull	Rotate, sharpen or replace blades.		Ensure machine is off and keys removed.
	Anvils dull	Check anvil has sharp edge, rotate, sharpen or replace if necessary.		Ensure machine is off and keys removed.
	Obstructed discharge	Clear debris from discharge chute.		Ensure machine is off and keys removed.



**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 or modifications, may invalidate warranty and/or regulatory compliance, in whole or in part.

Please refer to your authorised Timberwolf service agent for service and maintenance.

## SERVICE SCHEDULE



## WARNING

ALWAYS IMMOBILISE THE MACHINE BY STOPPING THE ENGINE, REMOVING THE IGNITION KEY AND DISCONNECTING THE BATTERY BEFORE UNDERTAKING ANY MAINTENANCE WORK.

SERVICE SCHEDULE	Daily Check	50 Hours	100 Hours	500 Hours	1 Year
Check coolant.	✓				
Check radiator is clear.	✓				
Check hydraulic oil level	✓				
Check engine oil - top up if necessary (10W-30).	✓				
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.	✓				
Clean air filter element.	DEPENDING ON WORKING ENVIRONMENT				
Check tyre pressure is 3.4 Bar (50 psi).	✓				
Check safety bar mechanism.	✓				
Check for tightness all nuts, bolts and fastenings making sure nothing has worked loose.		✓			
Grease discharge flange.		✓			
Check tension of main drive belts (and tension if necessary).		✓			
Grease the roller box slides.	✓	OR AS REQUIRED - SEE PAGE 21			
Grease the roller spline and bearing.	✓	OR AS REQUIRED - SEE PAGE 21			
Check anvils for wear.		✓			
Check fuel pipes and clamp bands.			✓		
Check battery electrolyte level.			✓		
Check for loose electrical wiring.			✓		
Replace hydraulic oil filter - every year or 100 hours after service or repair work to the hydraulic system.			✓	OR	✓
Replace hydraulic oil.			✓	OR	✓
Replace fuel pipes and clamp bands.	REFER TO YOUR ENGINE SUPPLIERS MANUAL				
Check coolant condition.					
Change engine oil.					
Replace engine oil filter cartridge.					
Check valve clearance.	RETURN TO DEALER FOR ANVIL CHANGE				
Replace anvils when worn.					
Axle maintenance.					
Tow head maintenance.	REFER TO SUPPLIERS INSTRUCTION SHEET				

To assess the wear condition of the braking system, and troubleshoot any problems relating to the braking system or axle, please refer to the 'Brake Operation Handbook' and 'AL-KO document 580458' as supplied.

## SAFE MAINTENANCE

- Handle blades with extreme caution to avoid injury. Gloves should always be worn when handling the cutter blades.
- The drive belts should be connected while changing blades, as this will restrict sudden movement of the rotor.
- The major components of this machine are heavy. Lifting equipment must be used for disassembly.
- Clean machines are safer and easier to service.
- Avoid contact with hazardous materials.



### WARNING

**ALWAYS IMMOBILISE THE ENGINE BEFORE  
UNDERTAKING ANY MAINTENANCE WORK  
ON THE CHIPPER BY REMOVING THE KEY  
AND DISCONNECTING THE BATTERY.  
ENSURE THE CHIPPER IS STABLE BEFORE  
PERFORMING ANY MAINTENANCE.**

## 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. Maximum lift weight is 1400kg, as indicated on the machine.



## 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

- The battery can be located under the funnel.
- Remove the negative lead first and then the positive lead.
- Clean, charge and/or top up the battery as required.
- Refitting is the reverse of removal. Apply a smear of vaseline to the terminals to prevent corrosion.



### WARNING

**REFER TO THE BATTERY SAFETY  
SECTION ON PAGE 18.**

## CHECK FITTINGS

The Timberwolf TW 280TDHB/(a) is subject to large vibrations during the normal course of operation. Consequently there is always a possibility that nuts and bolts will work themselves loose. It is important that periodic checks are made to ensure the security of all fasteners. Fasteners should be tightened using a torque wrench to the required torque (see below). **Uncalibrated torque wrenches can be inaccurate by as much as 25%. It is therefore essential that a calibrated torque wrench is used to achieve the tightening torques listed below.**

	Size	Pitch	Head	Torque lb ft	Torque Nm
Blade Bolts	M16	Standard	24mm Hex	125	170
Anvil Bolts	M12	Standard	M12 Cap	65	88
General	M8	Standard	13 mm Hex	20	27
General	M10	Standard	17 mm Hex	45	61
General	M12	Standard	19 mm Hex	65	88
Tow Head	M16	Standard	24mm Hex	125	170
Bung in Fuel Tank	3/8" BSP	-	22 mm Hex	15	20

## HAZARDOUS MATERIALS & END OF MACHINE LIFE

### During Machine Life

The following hazardous materials are supplied within Timberwolf machines:

- Engine oil
- Coolant
- Battery acid
- Hydraulic oil
- Diesel / Petrol
- Copper Ease

**MATERIAL SAFETY DATA SHEETS FOR HAZARDOUS MATERIALS SUPPLIED WITHIN TIMBERWOLF MACHINES ARE AVAILABLE ON REQUEST. REFER TO THESE FOR FIRST AID AND FIRE PROTECTION MEASURES.**

Always follow recommended procedures for safe handling, removal and disposal of hazardous materials. Safety precautions should be taken when handling hazardous materials (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. Ensure hazardous spillages do not flow into the ground or drainage system and ensure potential environmental damage is controlled safely, according to local laws.

### End of Machine Life

Follow these guidelines using approved local waste and disposal agencies for recycled materials, according to applicable Health, Safety and Environmental laws.

- Position the machine within reach of all necessary lifting equipment.
- Use tools and PPE detailed within maintenance instructions.
- Remove all hazardous materials and battery and store safely before disposal.
- Disassemble the machine structure, referring to the maintenance instructions. Pay attention to parts with mechanical pressure or tension applied, including springs.
- Separate items that continue to have a service life.
- Separate worn items into material groups and where possible, recycle using available agencies for recycled materials. Common types are:

Steel	Plastic materials
Non-ferrous metals	Rubber
Aluminium	Electrical and Electronic Components
Brass	Other materials that can be recycled
Copper	Other materials that cannot be recycled

- If a part is not easily separated into different material groups, it must be added to "general discarded materials".
- Do not burn discarded materials.
- Change the machinery records to show that the machine is out of service and discarded. Supply this serial number to Timberwolf to close their records.

**BATTERY SAFETY INFORMATION****WARNING NOTES AND SAFETY REGULATIONS FOR FILLED LEAD-ACID BATTERIES**

<ul style="list-style-type: none"> <li>For safety reasons, wear eye protection when handling a battery.</li> <li>Keep out of reach of children.</li> <li>Fires, sparks, naked flames and smoking are prohibited.</li> <li>Avoid causing sparks when dealing with cables and electrical equipment, and beware of electrostatic discharges.</li> <li>Avoid short circuits.</li> </ul> <p><b>Explosion hazard:</b></p> <ul style="list-style-type: none"> <li>A highly explosive oxyhydrogen gas mixture is produced when batteries are charged.</li> </ul>	    	<p><b>Corrosive hazard:</b> Battery acid is highly corrosive, therefore:</p> <ul style="list-style-type: none"> <li>Wear protective gloves and eye protection.</li> <li>Do not tilt the battery, acid may escape from the vent openings.</li> </ul> <p><b>First aid:</b></p> <ul style="list-style-type: none"> <li>Rinse off acid splashed in the eyes immediately for several minutes with clear water! Remove contact lenses if worn and continue rinsing. Then consult a doctor immediately.</li> <li>Neutralise acid splashes on the skin or clothes immediately with acid neutraliser (soda) or soap</li> </ul>	<p>suds, and rinse with plenty of water.</p> <ul style="list-style-type: none"> <li>If acid is swallowed, consult a doctor immediately.</li> </ul> <p><b>Warning notes:</b> The battery case can become brittle, to avoid this:</p> <ul style="list-style-type: none"> <li>Do not store batteries in direct sunlight.</li> <li>Discharged batteries may freeze up, therefore store in an area free from frost.</li> </ul> <p><b>Disposal:</b></p> <ul style="list-style-type: none"> <li>Dispose of old batteries at an authorised collection point.</li> <li>The notes listed under item 1 are to be followed for transport.</li> <li>Never dispose of old batteries in household waste.</li> </ul>
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**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 (see no. 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.

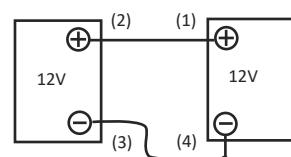
- Switch on the charger only after the battery has been connected, and switch off the charger first after charging has been completed.
- Charging current-recommendation: 1/10 ampere of the battery capacity Ah.
- Use a charger with a constant charging voltage of 14.4V for re-charging.
- If the acid temperature 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 (see no. 4).

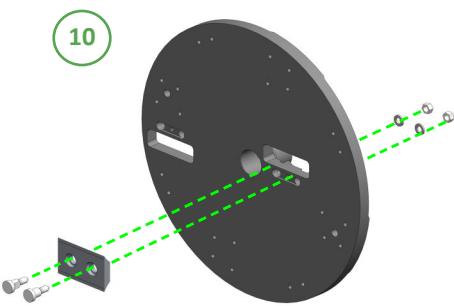
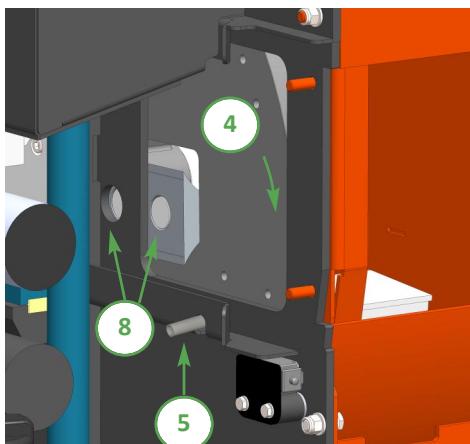
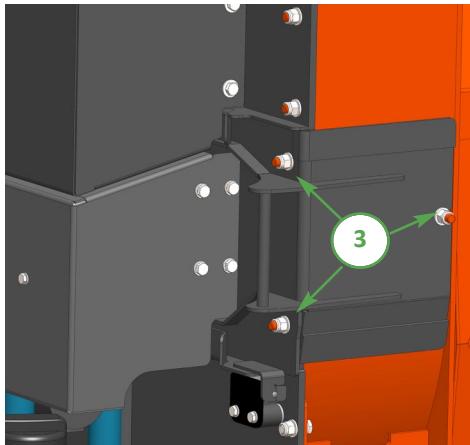
**6. Jump Starting**

- 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 (see no. 4).

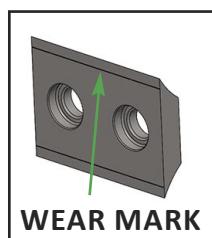
## CHANGE BLADES



- 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 the 3 nuts retaining the rotor housing blade access hatch, slide hatch clear of rotor housing.
  - 4 Turn rotor to blade change position.
  - 5 Insert locking bar into rotor housing and rotor.
  - 6 Brush away all dirt and debris from the rotor and blades.
  - 7 With a 24mm spanner/socket undo the two nyloc nuts and washers that are holding the blade in place.
  - 8 Remove blade bolts while holding blade in position. The inner bolt on the inner blade passes through the hole in the roller box. If necessary tap the bolts to loosen.
  - 9 Grasp the blade by the flat edges while wearing heavy duty gloves.
  - 10 Withdraw the blade from the rotor.
  - 11 Rotate blade to use 2nd edge or replace with a new or sharpened blade.
  - 12 Clean the back surface of the blade, blade bolts and blade area of the rotor before reseating blades. **The blades must not have any material underneath them when tightened. If they are not flat and tight they will become loose very quickly.**
  - 13 Reassemble the blades, bolts, washers and nuts in the order shown in the diagram. Use only genuine Timberwolf nuts and washers, as they are of a higher grade than normally stocked at fastener factories. Failure to use the appropriate grade nuts or washers may result in damage, injury or death. The use of genuine Timberwolf blades and bolts is recommended.
  - 14 Apply a smear of anti seize compound (copper ease) to the bolt threads and back face of the nuts. Do not apply copper grease onto the counter bore faces of the blades or bolts.
  - 15 **A calibrated torque wrench must be used to tighten the bolts to a torque setting of 125lb ft (170Nm).**
  - 16 Remove lock pin, rotate rotor to next blade then replace lock pin and repeat steps 6 - 14.
  - 17 Refit rotor housing blade access hatch.
  - 18 Refit the nuts and tighten to 40 lbs ft (54 Nm).
  - 19 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.**

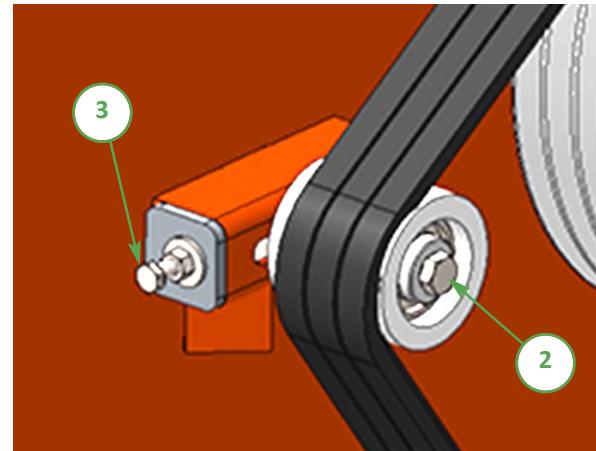
**WEAR MARK**

## TENSION DRIVE BELTS

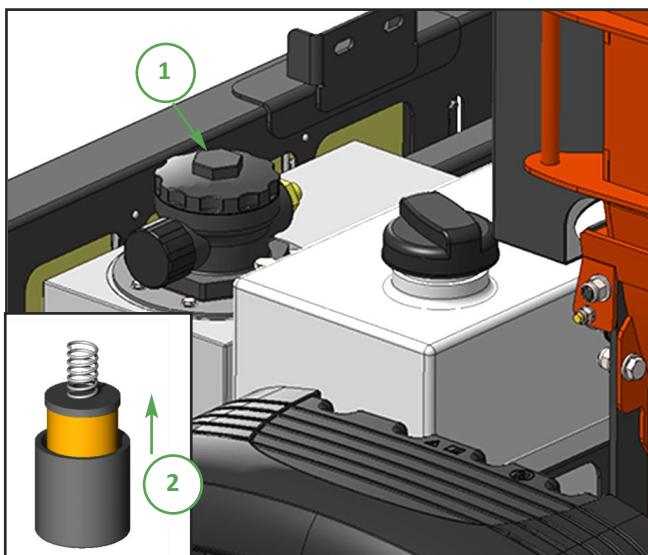
**NOTE:** There will normally be a rapid drop in tension during run-in period for new belts. When new belts are fitted, check the tension every 2 - 3 hours and adjust until the tension remains constant. Belt failures due to lack of correct tensioning will not be covered under your Timberwolf warranty.

- 1 Remove engine bay 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 (page 31).
- 4 Re-tighten bolt in centre of tensioner pulley.
- 5 Run machine and test, recheck belt tension.

**NOTE:** Slack drive belts will cause poor performance and excess belt and pulley wear.



## CHANGE HYDRAULIC OIL AND FILTER



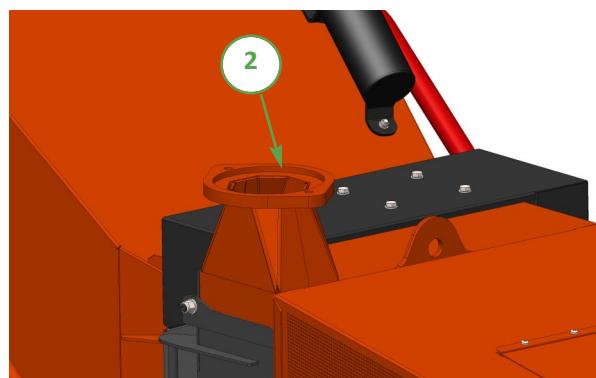
**NOTE:** This is a non-adjustable air breather filter.

- 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

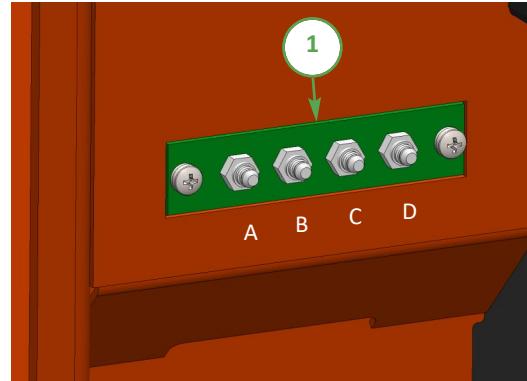
- 1 Remove the discharge tube.
- 2 Apply multipurpose grease to surface shown.
- 3 Refit discharge tube.



## GREASE THE ROLLER SPLINE AND ROTOR BEARINGS

**NOTE:** This should be done regularly. In dirty and dusty conditions or during periods of hard work it should be daily. 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.

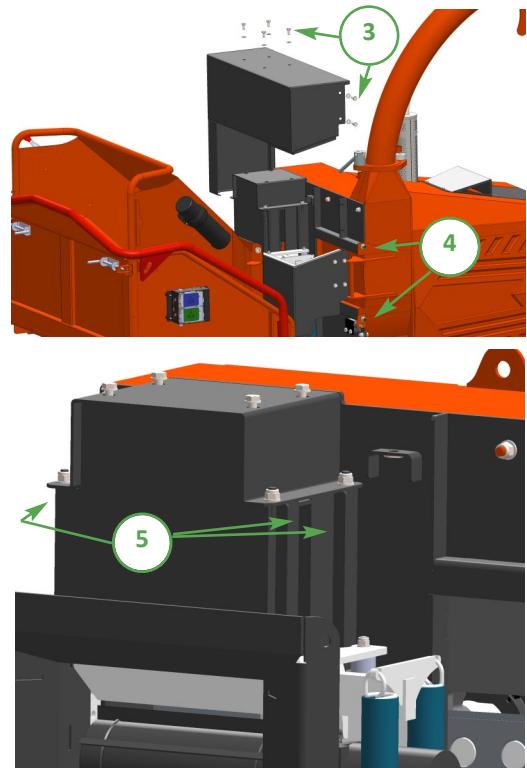
- 1 Locate the greasing panel.
- 2 Apply 4+ pumps of grease to each nipple.
- 3 It is recommended to grease all the nipples whilst the engine is running and rollers are turning to distribute the grease evenly. DO NOT USE GRAPHITE BASED GREASE.
- 4 Both front and rear bearings are greased by nipples A and B. The top and bottom roller splines are greased by nipples C and D.



## 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 6 nuts and washers retaining the roller box guard and remove guard.
- 4 Remove the rotor housing blade access hatch as per blade change procedure.
- 5 Apply thin grease with a brush directly to the slide surfaces indicated, including inner cheeks of slider. DO NOT USE GRAPHITE BASED GREASE.
- 6 Replace rotor housing blade access hatch then top guard. Refit nuts and washers.
- 7 Refit battery leads.



## 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 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.

## TIMBERWOLF NO-NONSENSE WARRANTY

All new Timberwolf machines come with peace of mind built in. Our no-nonsense warranty is your guarantee of your Timberwolf wood chipper not letting you down.

Your warranty statement is included in your manual pack. Please ensure you register your machine with your dealer to ensure you are eligible for the full Timberwolf warranty period.



Timberwolf Ltd  
 Entec House, Tomo Industrial Estate, Stowmarket IP14 5AY  
 Telephone: 01449 765800  
 Email: sales@timberwolf-uk.com Web site: timberwolf-uk.com



**TIMBERWOLF®**  
 Lead the pack

## EC Declaration of Conformity



We

Timberwolf Ltd.

Of

Entec House,  
 Tomo Industrial Estate,  
 Stowmarket,  
 IP14 5AY  
 United Kingdom  
 Tel: 01449 765800  
 Email: sales@timberwolf-uk.com

Hereby declare that this Declaration of Conformity is issued under our sole responsibility and that the following objects of the declaration:

**Product Range:** Timberwolf TW 280 Road Tow and Tracked Diesel 8" Woodchippers

**Model(s):** TW 280TDHB, TW 280TFTR

**Type(s):** TW 280TDHB, TW 280TDHB-FR, TW 280TDHB(a), TW 280TDHB(a)-FR,  
 TW 280TFTR, TW 280TFTR-FR, TW 280TFTRWW, TW 280TFTRWB.

**Serial No(s).:** TW 280TDHB: 45A1JS216037 onwards  
 TW 280TDHB(a): 45A1JS229032 onwards  
 TW 280TFTR: 45A1JS221021 onwards

Comply with all applicable essential health and safety requirements and are in conformity with the following EU Directives and Union harmonised legislation:

2006/42/EC Machinery Directive

2014/30/EU Electromagnetic Compatibility Directive

2000/14/EC Noise Emission in the Environment by Equipment for Use Outdoors  
 (Guaranteed Sound Power: 118 dB (A); Measured Sound Power Level: 96 dB (A))

The following harmonised standards, including part/clauses of, have been applied:

**Machinery Directive:** BS EN 13525:2020: Forestry machinery —Wood chippers —Safety, BS EN ISO 12100:2010: Safety of Machinery — General principles for design — Risk assessment and risk reduction.

**EMC Directive:** BS EN ISO 14982:2009: Agricultural and forestry machinery — Electromagnetic Compatibility — Test methods and acceptance criteria.

**Noise Directive:** BS EN ISO 3744:2010: Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane.

Signed at Entec House, Stowmarket for and on behalf of Timberwolf Ltd by:

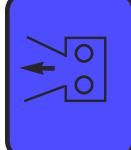
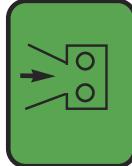
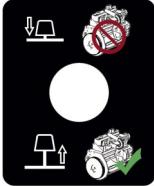
Mr Chris Perry (Managing Director):

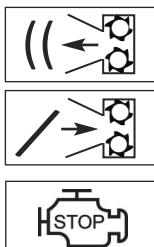
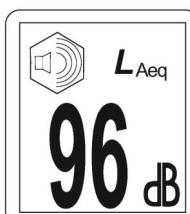
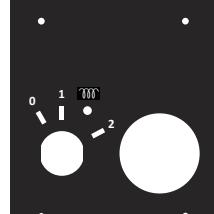
Dated: 14<sup>th</sup> June 2021

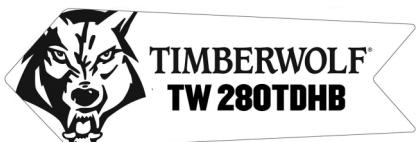
Timberwolf Ltd registered in England under No. 03477258. Registered office as above.

Types with Timberwolf Safety Plus Kit (-FR) also comply with Technical Instruction SG/SAFSL/SDTPS/2016-700 of 31 August 2016 of the French Ministry of Agriculture.



Decal	Description	Decal	Description
	616 Warning. Hot exhaust.		4099 Danger. Rotating blades. Keep hands and feet out.
	617 Warning. High velocity discharge - keep clear.		2800 Reverse feed
	670 Personal Protective Equipment required. See Page 6.		2801 Forward feed
	1661 Read the instruction manual for greasing and maintenance information.		19517 Warning Do not engage starter motor for more than 20 seconds. Allow one minute before attempting to start. Investigate reasons for failure to start. Excessive cranking will result in starter motor failure. This will not be covered under warranty.
	1662 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.		2949 Lifting eye is designed to lift the machine's weight only. Do not use hoist hook 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.
	1399 Push safety bar to stop.		3022 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.
	P691 Do not pull here.		18393 New drive belts need re-tensioning. When new belts are fitted check tension every 2-3 hours & adjust until tension remains constant.
	P1301 Push to stop, Pull to reset. (engine)		C192-0112 Fuel Here. Risk of fire. Allow engine to cool for 1 minute before refuelling. Use diesel fuel only.
	P3611 Danger Rotating blades. Keep hands and feet out.		C192-0102 Danger Do not climb into the feed funnel.

Decal	Description	Decal	Description						
	P637  Danger. Do not operate without this cover in place.		P653  Danger. Rotating blades inside. Stop engine and remove key before removing discharge unit.						
	P652  Caution. Do not put road sweepings in machine as grit will damage blades.		P654  Caution. When transporting, discharge clamps may work loose. Check frequently.						
	P655  Caution. Avoid standing directly in front of feed funnel to reduce exposure to noise, dust and risk from ejected particles.		P656  Danger. Do not use this machine without the discharge unit fitted. Failure to comply may result in serious injury or damage.						
	1258  Warning Failure to maintain brake adjustment will result in damper failure. No warranty liability will be accepted on this item.		P650  Danger. Autofeed system fitted. Rollers may turn without warning! When the engine is switched off the rollers will turn during the run down period.						
	P1809  To go on relays: Auto Back-off  P1810  Forward Latch  P1811  Engine Safety		P1812  Torque blade bolts to 125 lbs ft (170 Nm).						
	C192 - 0100		C192 - 0101		18008		1363		C192-0144



P2743

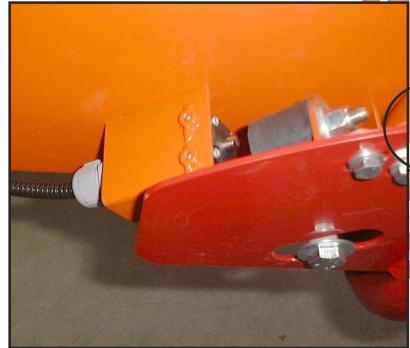
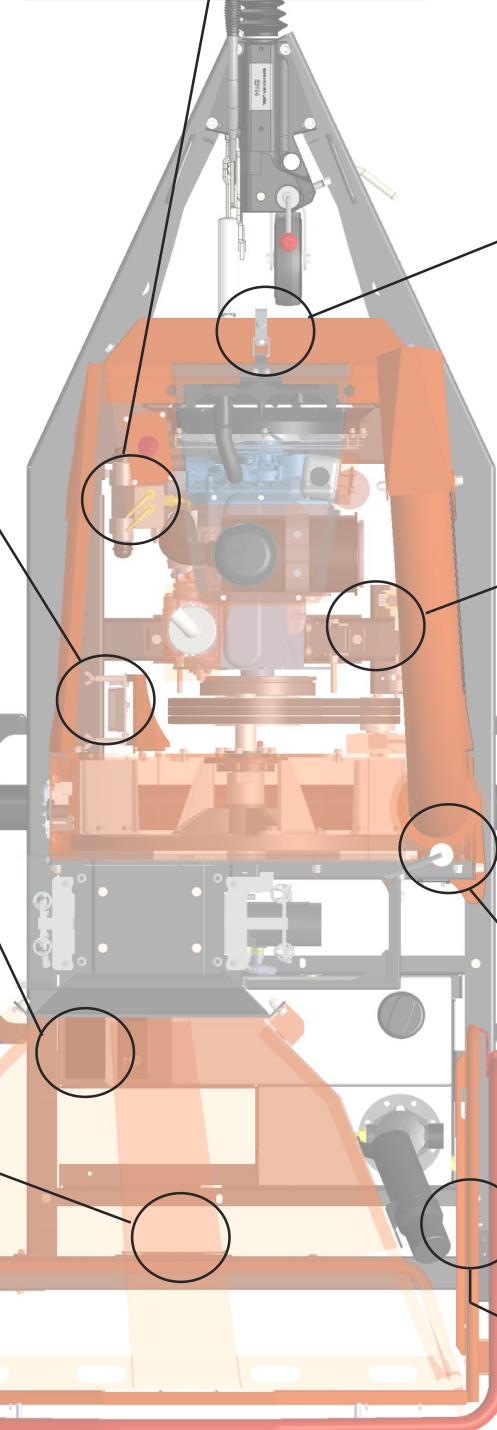
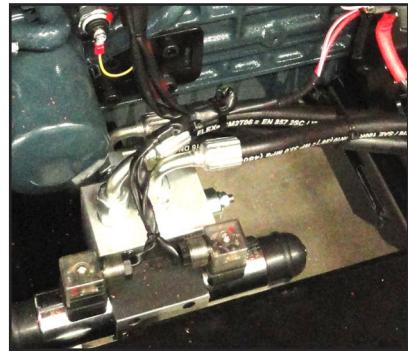
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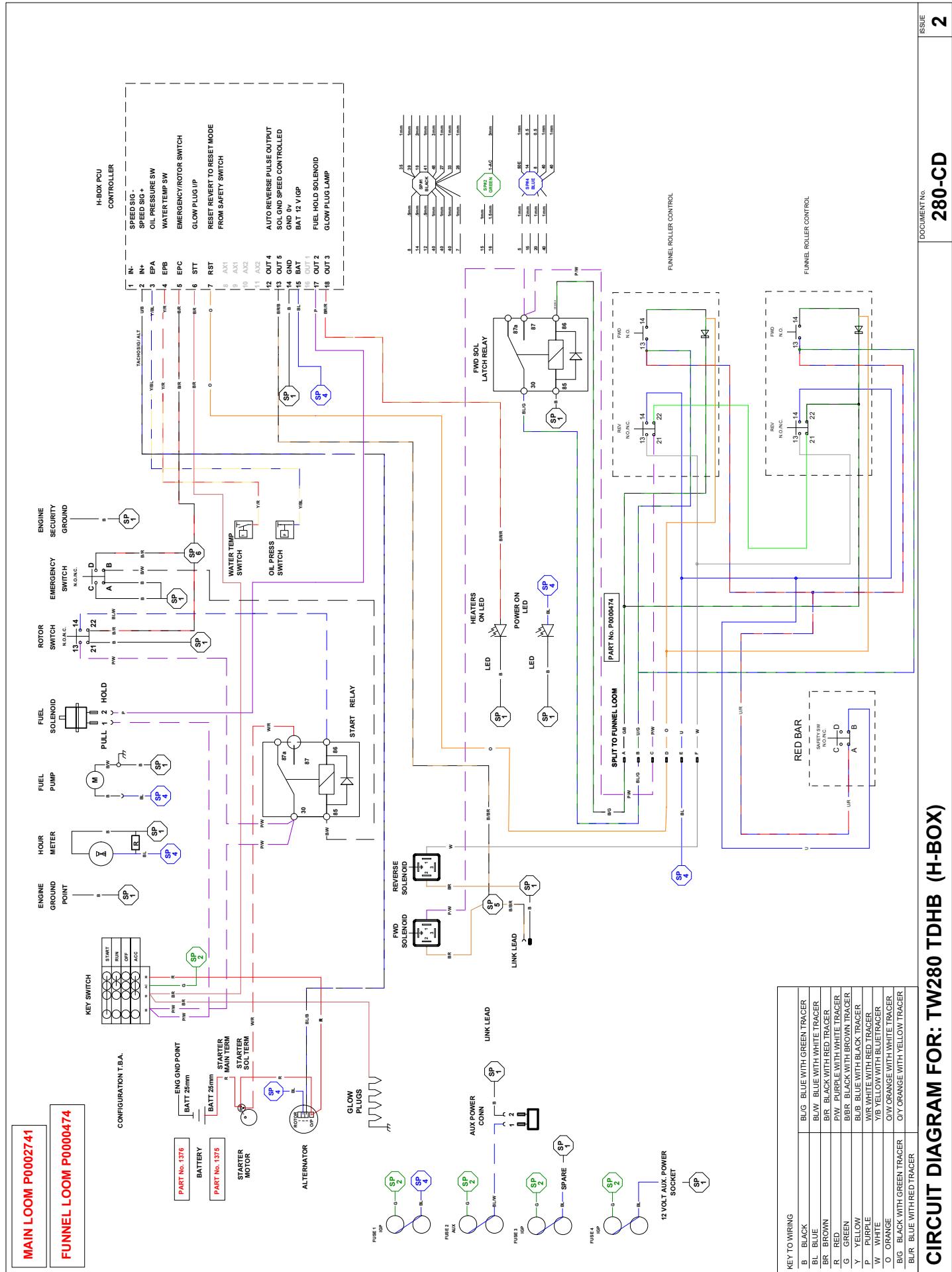
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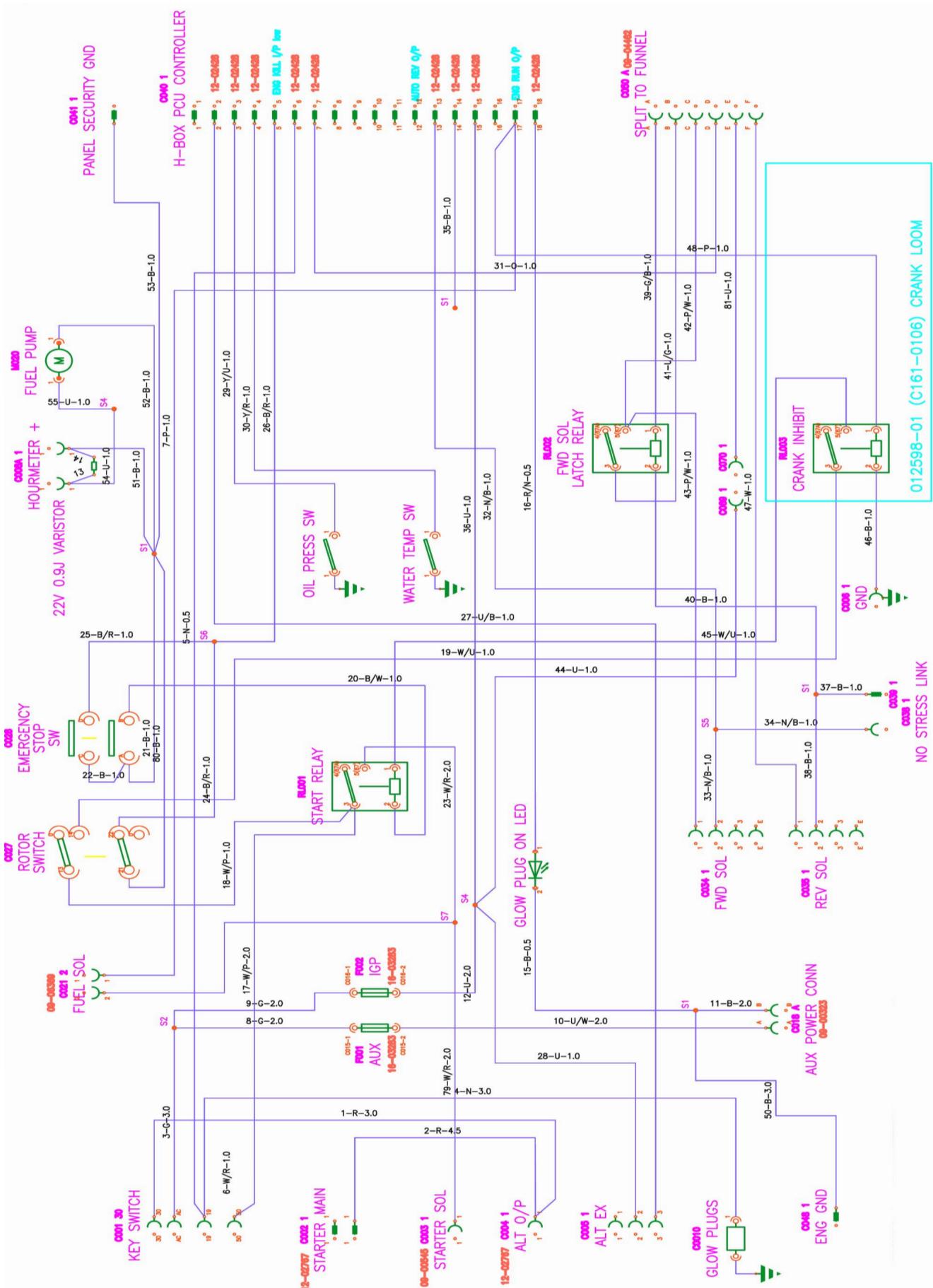
C192-0110

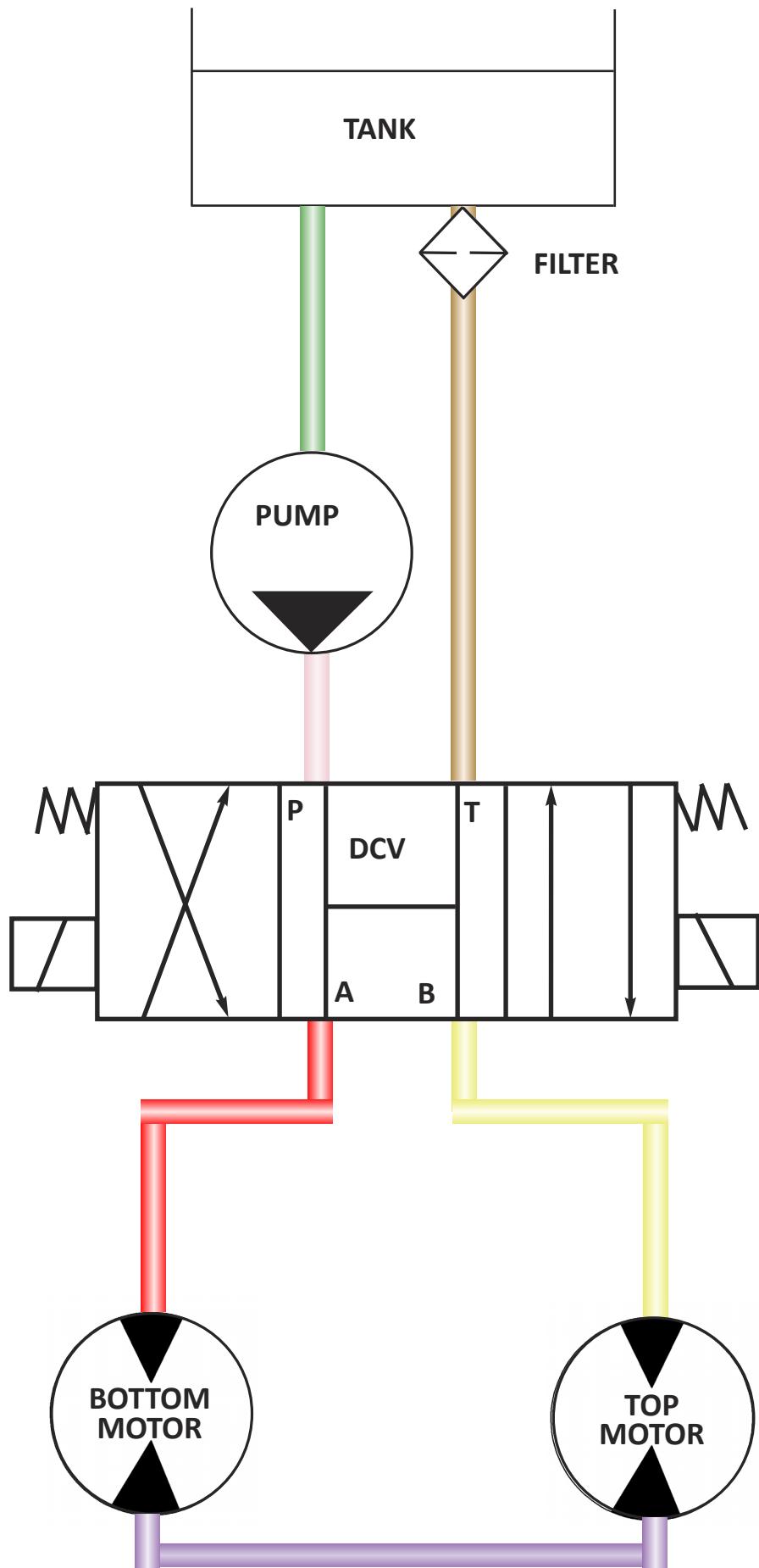
C192-0109





## P\*2741 plus C161-0106 Crank Loom

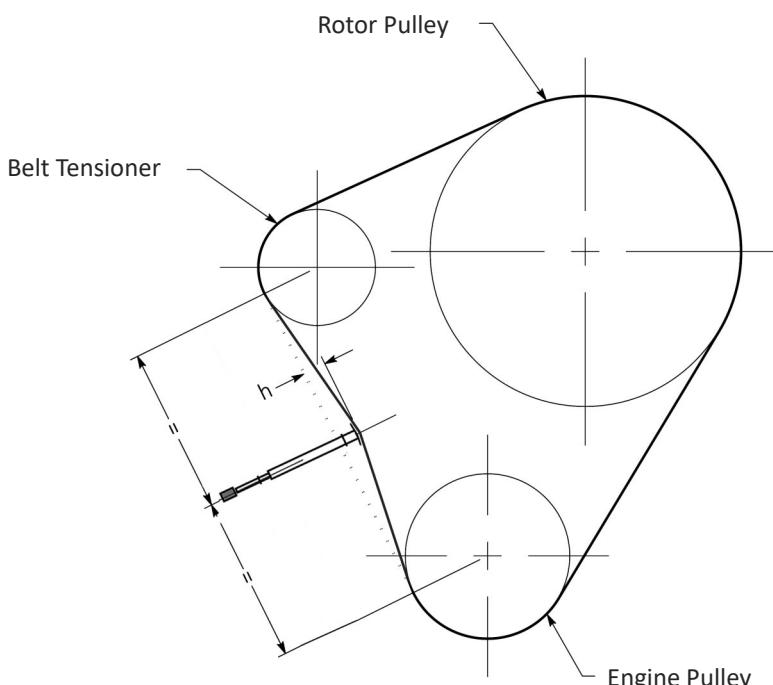




**METHOD:**

- 1 Set the deflection distance on the lower scale of the tension gauge so that the underside of the 'o'-ring equals the 'h' value given in the table.
- 2 Ensure that the deflection force scale is zero'd by pushing the upper 'o'-ring all the way down.
- 3 Place the tension gauge in the centre of the belt span as shown in the diagram.
- 4 Press downwards on the rubber buffer, deflecting the belt until the underside of the lower 'o'-ring is level with the belt behind (use a straight edge if there is only 1 belt).
- 5 Take the reading from the deflection scale of the tension meter (read at the lower edge of the 'o'-ring) & compare this value with that given in the table.
- 6 Tighten or loosen belts as required following procedure given in this operator's manual.

*Tension gauges are available from Timberwolf spares, quoting part no. 18091*



280TDHB/(a)		Rotor Belts
Belt Mfr / Type		Gates Super HC-MN
Belt Pitch Designation		SPB
Belt Length in mm		1600
Belt Deflection in mm	= h	3.9
Force Reading (Kg)	New belt	2.6 - 2.8
	Used Belt	2.2 - 2.4

**TIPS ON BELT TIGHTENING:**

- There will normally be a rapid drop in tension during the run-in period for new belts. When new belts are fitted, check the tension every 2-3 hours & adjust until the tension remains constant.
- The best tension for V-belt drives is the lowest tension at which the belts do not slip or ratchet under the highest load condition.
- Too much tension shortens belt & bearing life.
- Too little tension will affect the performance of your machine especially in respect of no-stress devices.
- Ensure that belt drives are kept free of any foreign materials.
- If a belt slips - tighten it!

Model number:		Serial number:	
Date of delivery/ handover:		Options/extras:	
Dealer pre delivery check:			
Inspected by:			

**50 HOUR WARRANTY SERVICE CHECK**

Date:	
Hours:	
Invoice number:	
Signature:	
Next service due:	

Authorised dealer stamp

**11 MONTH WARRANTY SERVICE CHECK**

Date:	
Hours:	
Invoice number:	
Signature:	
Next service due:	

Authorised dealer stamp

**23 MONTH WARRANTY SERVICE CHECK**

Date:	
Hours:	
Invoice number:	
Signature:	
Next service due:	

Authorised dealer stamp



Date:

Authorised dealer stamp

Hours:

Invoice number:

Signature:

Next service due:

Date:

Authorised dealer stamp

Hours:

Invoice number:

Signature:

Next service due:

Date:

Authorised dealer stamp

Hours:

Invoice number:

Signature:

Next service due:

Date:

Authorised dealer stamp

Hours:

Invoice number:

Signature:

Next service due:

## 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.

	Page No.
BELT TENSIONER	35
CHASSIS - LIGHTBOARD	36
CHASSIS - 1- ADJUSTABLE TOWHEAD	37
CHASSIS - 1	38
CHASSIS - 2	39
CHASSIS - 3	40
CONTROL BOX	41
CONTROL PANEL	42
DISCHARGE	43
<b>DISCHARGE</b>	<b>44</b>
DRIVE TRAIN	45
ELECTRICAL LAYOUT	46
<b>ELECTRICAL LAYOUT</b>	<b>47</b>
ELECTRICAL PANEL	48
<b>ELECTRICAL PANEL</b>	<b>49</b>
ENGINE	50
ENGINE BAY	51
FUEL TANK	52
FUNNEL	53
FUNNEL - TRAY	54
<b>FUNNEL</b>	<b>55</b>
<b>FUNNEL - TRAY</b>	<b>56</b>
HYDRAULIC HOSES	57
HYDRAULIC TANK	58
ROLLER BOX	59
ROLLER BOX GUARDS	60
ROLLER SLIDES	61
ROTOR	62
ROTOR HOUSING	63
DECALS	64

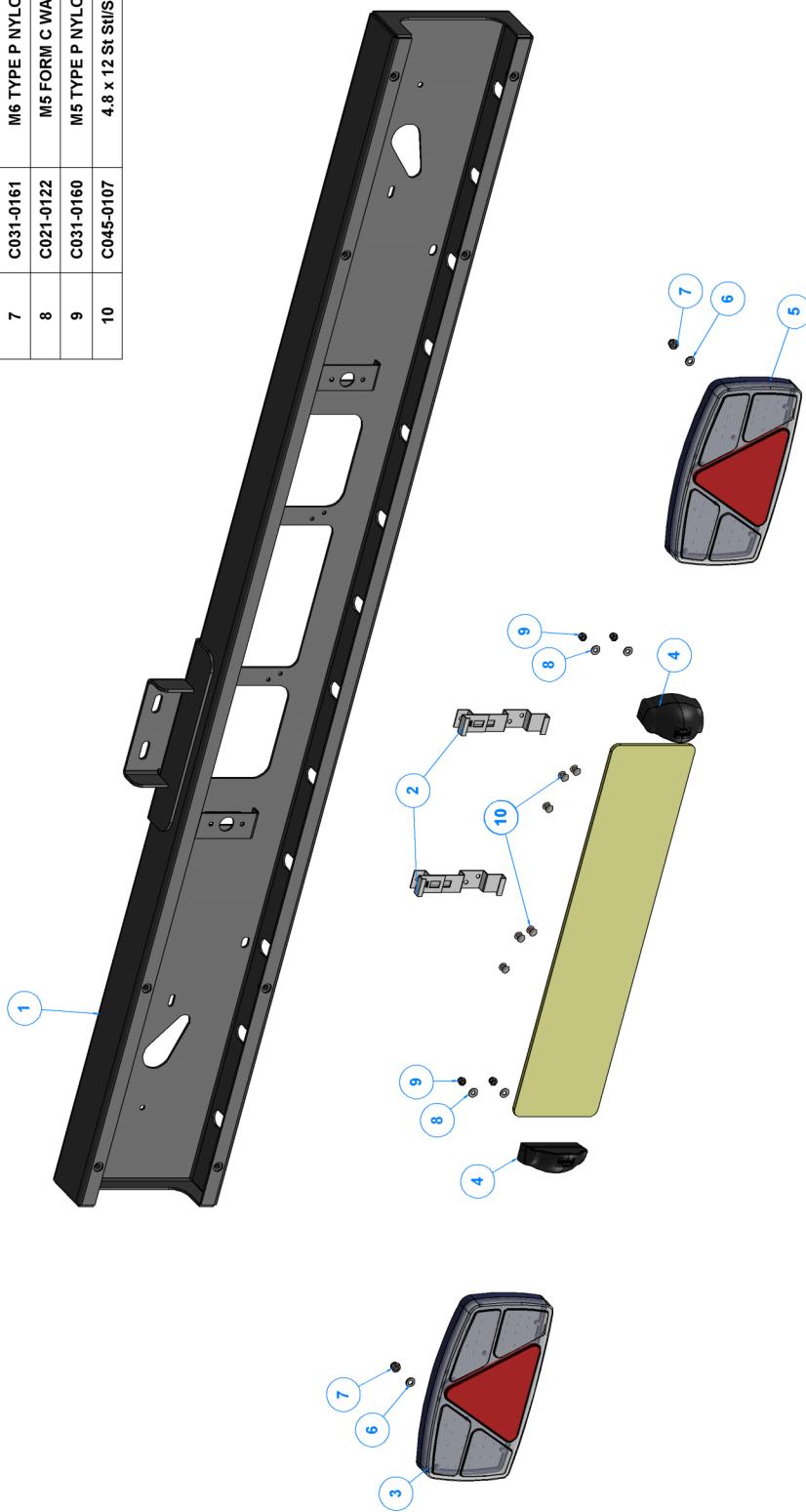
### TW 280TDHB/(a) OPTIONAL ACCESSORIES:

ITEM	PART NUMBER
Spare wheel	1932
Incandescent bulbs	C165-0100 x 1, 0101 x 1, 0102 x 2
Feed Funnel Curtains	P0003444

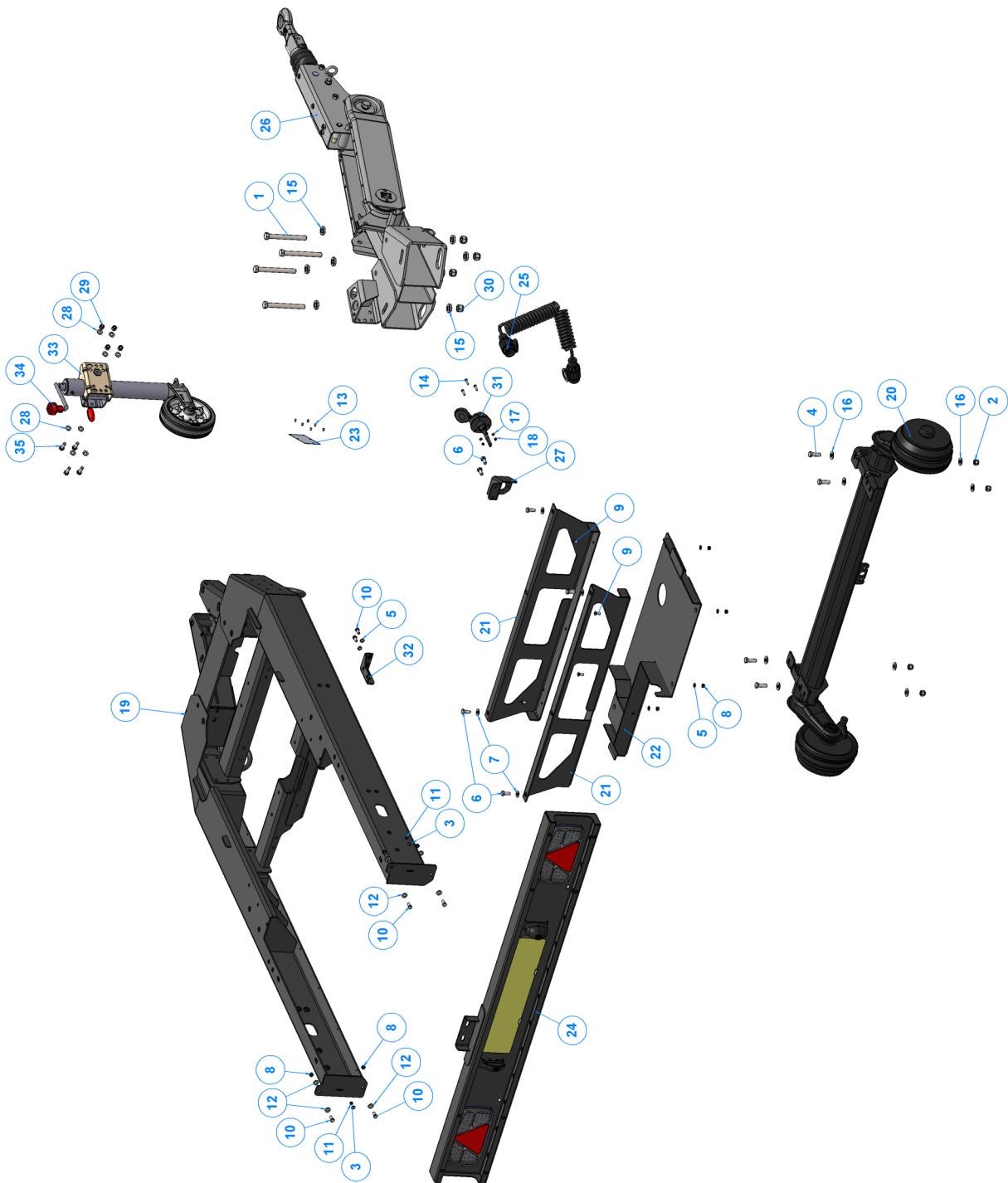
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	P0002690M	Pulley SPB - 3 - 118 Tensioner	1
2	C128-0109	Bearing 6307	2
3	P0002691M	Belt Tensioner Shaft	1
4	P0002692M	Belt Tensioner Washer	1
5	C008-0824	M12x100 Hex Bolt ZP Grade 8.8	1
6	C002-0627	M8x130 Hex Set ZP Grade 8.8	1
7	0469MVS	Block Pulley Tension Adjuster	1
8	WA712	Washer M8 C ZP	1
9	C030-0123	M8 HEX NUT- ZP - GRADE 10	1
10	P0002394	Profile Belt Tensioner	1
11	C082-0105	M12 Belt Tensioner Assy Spacer 050 x2mm	2



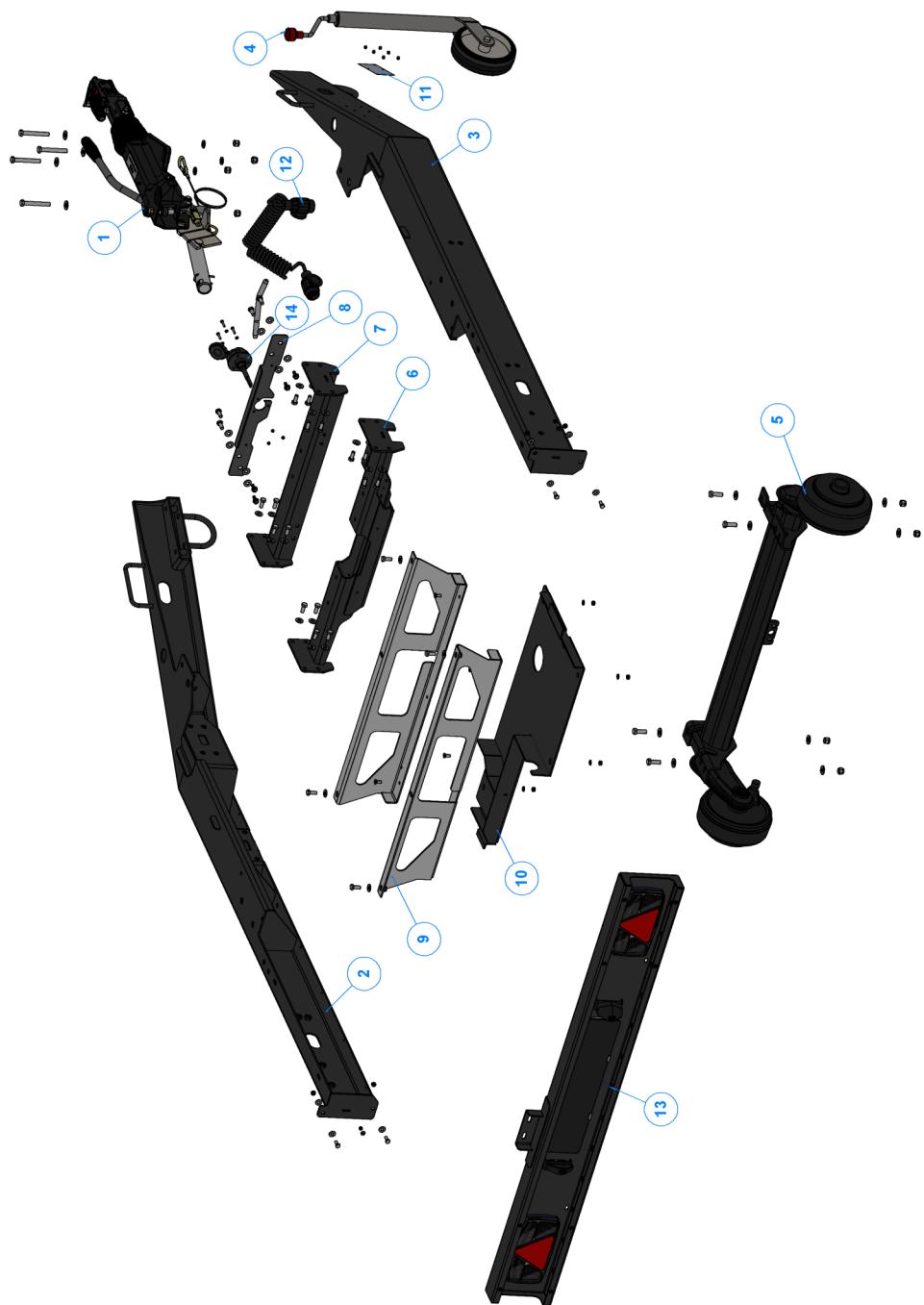
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	P0001878F	Bracket Light Board 1640 Length	1
2	17885	Clip Number Plate	2
3	P0001405	N/S LED Cluster	1
4	P0001407	Lighting Assembly LED	2
5	P0001406	O/S Led Cluster	1
6	C021-0123	M6 FORM C WASHER Z/P	2
7	C031-0161	M6 TYPE P NYLOC NUT Z/P	2
8	C021-0122	M5 FORM C WASHER Z/P	4
9	C031-0160	M5 TYPE P NYLOC NUT Z/P	4
10	C045-0107	4.8 x 12 St S/st St/Rivet	6



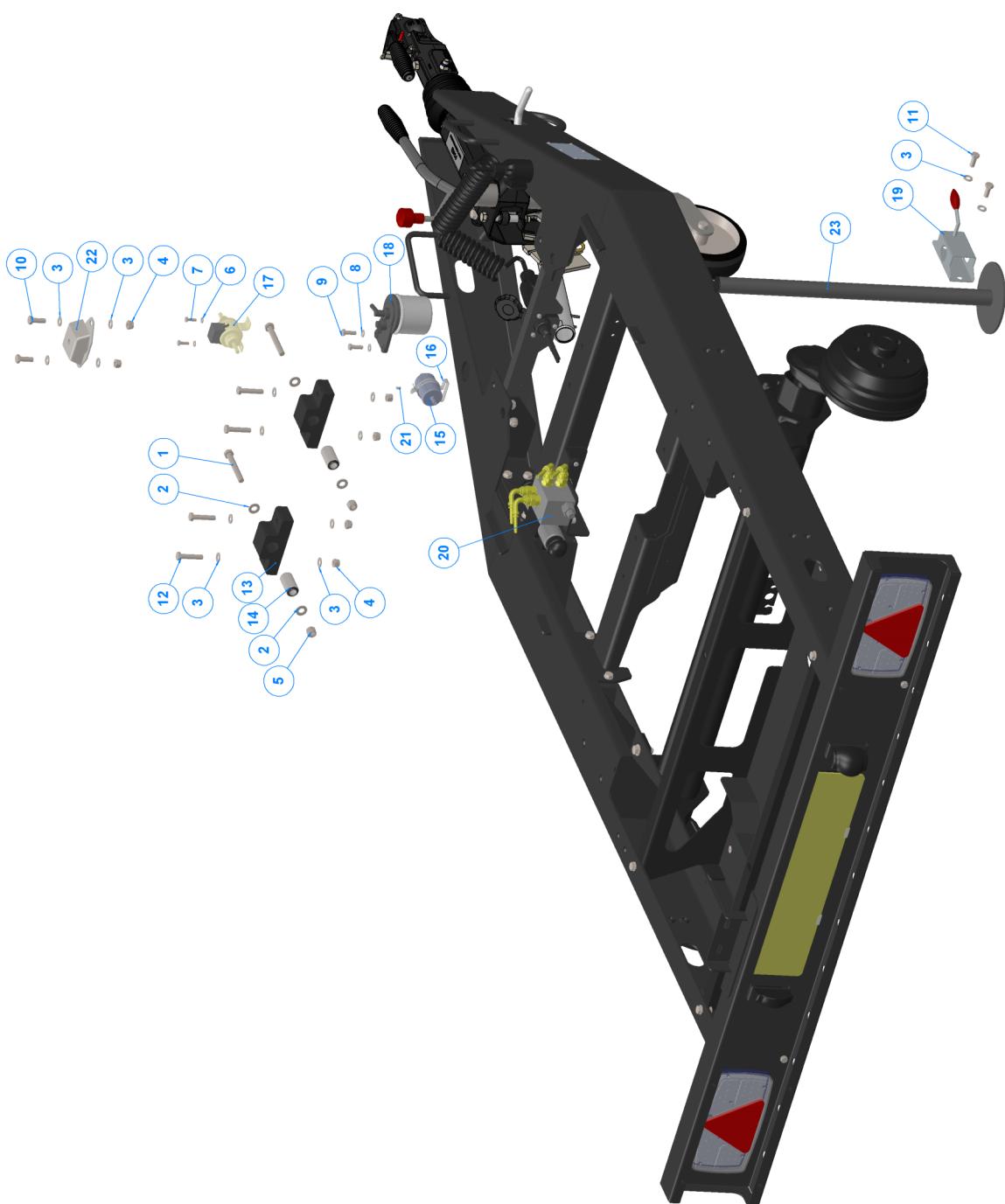
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C008-1029	M16 x 150 HEX BOLT Z/P 8.8	4
2	C031-0165	Nut M12 P Nyloc	4
3	C021-0123	M6 FORM C WASHER Z/P	2
4	C016-0811	M12 x 1.25 x 35 HEX SET SIC 8.8	4
5	C021-0105	M8 FORM A WASHER Z/P	6
6	C002-0709	M10 x 25 HEX SET Z/P 8.8	6
7	C021-0126	M10 FORM C WASHER Z/P	4
8	C031-0123	M8 TYPE T NYLOC NUT Z/P	8
9	C015-0607	M8 x 20 SKT CSK SET Z/P 10.9	4
10	C002-0607	M8 x 20 HEX SET Z/P 8.8	6
11	C031-0121	M6 TYPE T NYLOC NUT Z/P	2
12	C021-0125	M8 FORM C WASHER Z/P	8
13	C045-0108	4 x 12 Alu/Steel Rivet	6
14	C013-0308	M5 x 25 PAN POZI Z/P	3
15	C024-0106	M16 HEAVY WASHER	8
16	C021-0127	M12 FORM C WASHER Z/P	8
17	C021-0102	M5 FORM A WASHER Z/P	3
18	C031-0120	M5 TYPE T NYLOC NUT Z/P	3
19	C131-0117	Chassis 280 Adjustable Assy	1
20	P0001646	Axle 1490 OHF - 930 CRS	1
21	P0001835F	Bracket Tanks & Battery Support Side	2
22	P0001831F	Bracket Tanks & Battery Support Bottom Assy	1
23	19600	Plate Machine Identification	1
24	TW280 TDHB(a) Light Board		1
25	19658	13 Pin Plug	1
26	C103-0100	Adjustable Tow Head 162 VB-2; 1600Kg	1
27	C131-0118	Bracket 13 Pin Socket	1
28	C021-0106	M10 FORM A WASHER Z/P	8
29	C031-0164	M10 TYPE P NYLOC NUT Z/P	4
30	C031-0167	M16 TYPE P NYLOC NUT Z/P	4
31	P-010TIM	Led Light Harness	1
32	C131-0134	Bracket Fuel Filter Bolted On	1
33	C108-0101	Jockey Wheel Clamp OD60 - 4 Mounting Holes	1
34	C108-0102	Jockey Wheel - 500Kg rate	1
35	C002-0710	M10 x 30 HEX SET Z/P 8.8	4



ITEM NO.	PART NUMBER	DESCRIPTION	Stage 1 QTY.
1	P0001656	Cast Tow Head Bradley Doublelock	1
2	P0001586F	Beam Chassis 2612x165.75x155' NS Assy (Opp Hand of P0001587F)	1
3	P0001587F	Beam Chassis 2612x165.75x155' OS Assy (Opp Hand of P0001586F)	1
4	17478	Jockey Wheel	1
5	P0001646	Axle - Suits 140mm PCD Wheel - Pre FEB '19	1
5	C104-0107	Axle - Suits 112mm PCD Wheel - Post FEB '19	1
6	P0001641F	Bracket Engine Rear Lower	1
7	P0001647F	Bracket Engine Front Lower	1
8	P0000865F	Bracket Light Socket	1
9	P0001830F	Bracket Tanks & Battery Support Side	2
10	P0001831F	Bracket Tanks & Battery Support Bottom Assy	1
11	19600	Plate Machine Identification	1
12	19658	3.0M Curly Cable 13 Pin Euro	1
13	TW280 TDHB Light Board		1
14	P0001404	Led Light Harness	1



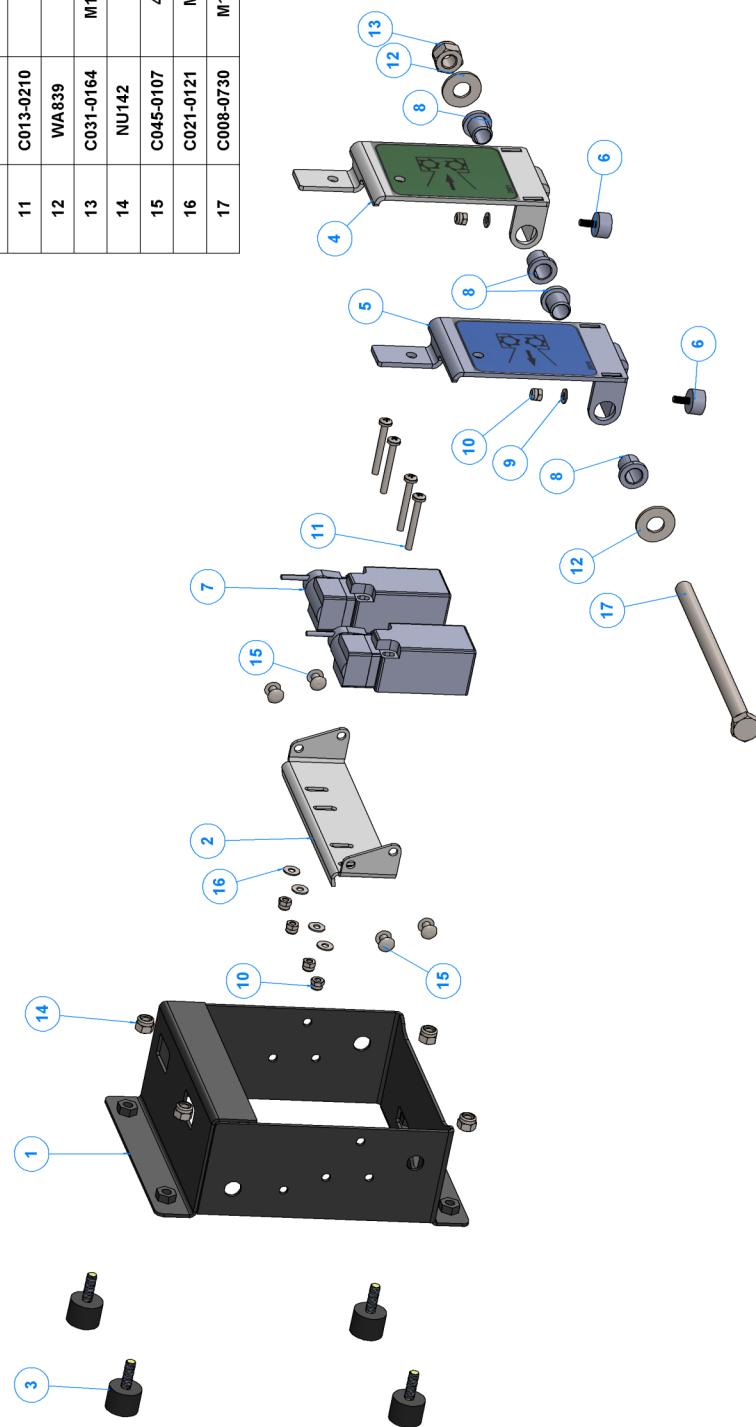
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C008-0822	M12 x 90 HEX BOLT Z/P 8.8	2
2	C021-0107	M12 FORM A WASHER Z/P	4
3	C021-0106	M10 FORM A WASHER Z/P	16
4	C031-0164	M10 TYPE P NYLOC NUT Z/P	10
5	C031-0165	M12 TYPE P NYLOC NUT Z/P	2
6	C021-0123	M6 FORM C WASHER Z/P	2
7	C002-0407	M6 x 20 HEX SET Z/P 8.8	2
8	C021-0105	M8 FORM A WASHER Z/P	2
9	C002-0609	M8 x 25 HEX SET Z/P 8.8	2
10	C002-0710	M10 x 30 HEX SET Z/P 8.8	2
11	C002-0709	M10 x 25 HEX SET Z/P 8.8	4
12	C008-0714	M10 x 50 HEX BOLT Z/P 8.8	4
13	P0001635M	Square Boss AV Mount Engine	2
14	18522	AV Mount M12 CY 27 56	2
15	4315	Pre-Fuel Filter	1
16	18197	Spring Clip	1
17	0807	Fuel Pump	1
18	0085	Fuel Filter	1
19	AX017	Clamp Jack Stand	1
20	TW280 TDHB DCV & bracket	CeeTop Valve with Bracket	1
21	C045-0108	4 x 12 Alu/Steel Rivet	1
22	P0002458	Engine AV Mount 70	1
23	P0002798F	Prop Stand OD156mm	1



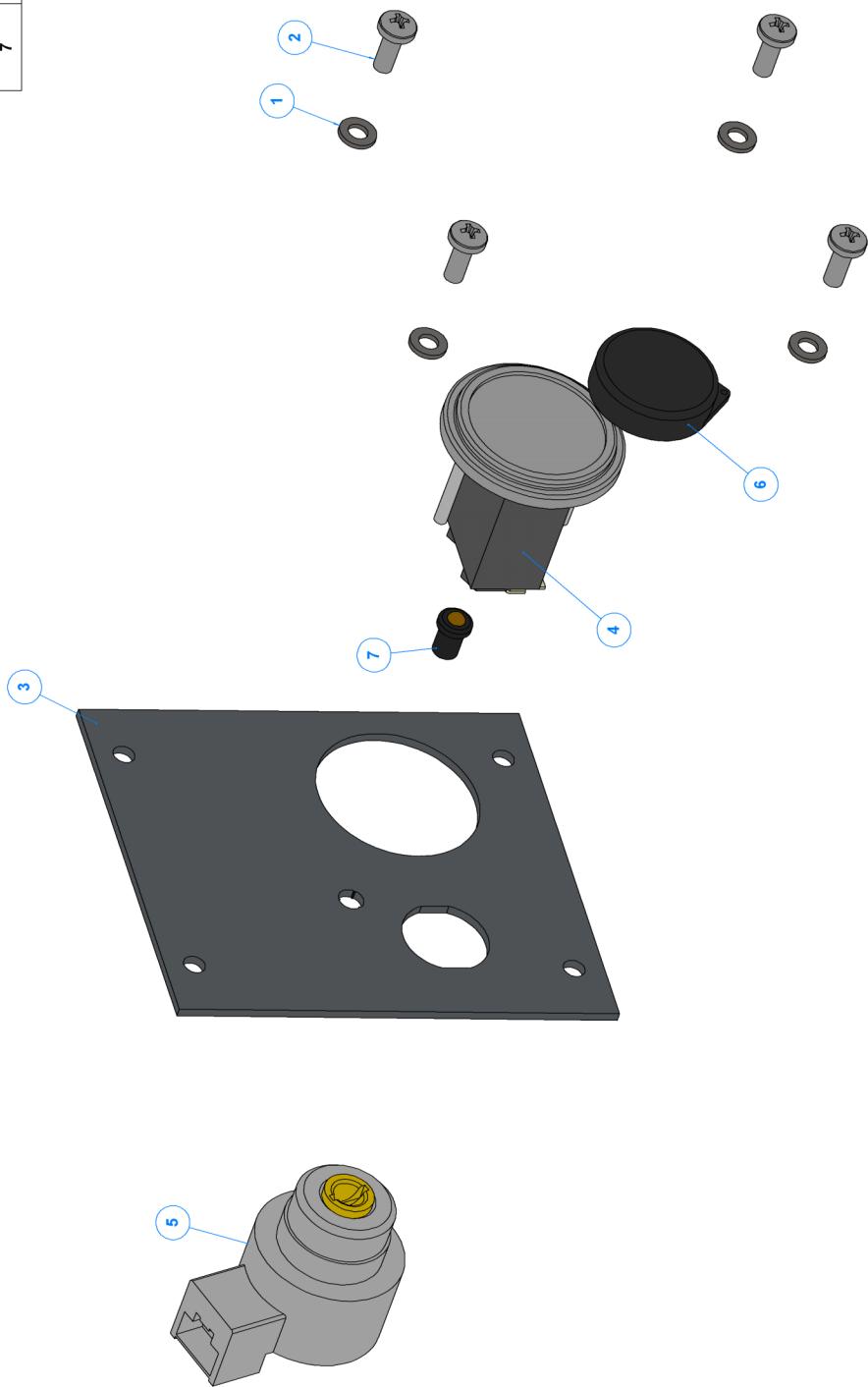
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	WA701	Washer M10 A BZP	6
2	Wheel bolt	Bolt M12 1.5 Wheel - Supp'd with a axle	10
3	WA712	Washer M8 C BZP	14
4	C002-0609	M8 x 25 HEX SET ZIP 8.8	8
5	NU479	Nut M8 1.25 Nyloc P	14
6	WA839	Washer M10 C BZP	8
7	C002-0710	M10 x 30 HEX SET ZIP 8.8	8
8	WA714	M8x30 Mudguard washer Bzp.	8
9	C002-0709	M10 x 25 HEX SET ZIP 8.8	2
10	WA711	Washer M8 A BZP	6
11	C002-0607	M8 x 20 HEX SET ZIP 8.8	6
12	P0002385F	Bracket Mudguard Wheel 14 inches	2
13	P0001881	Mudguard Plastic EA-220	2
14	4210	Battery 12V	1
15	4074	Battery Terminals Kit	1
16	17776F	Battery Strap	1
17	C002-0607	M8 x 20 HEX SET ZIP 8.8	2
18	WA711	Washer M8 A BZP	4
19	NU479	Nut M8 1.25 Nyloc P	2
20	C013-0307	M5 x 20 PAN POZI Z/P	2
21	C021-0102	M5 FORM A WASHER Z/P	2
22	NU236	Nut M5 F Nyloc	2
23	P0001250F	Bracket Reflector Mudguard NS Opposite of P0001251F	1
24	18922	Reflector clear round front	1
25	18923	Reflector amber round side	1
26	18919	Support for Light Reflector	1
27	C013-0307	M5 x 20 PAN POZI Z/P	2
28	C021-0102	M5 FORM A WASHER Z/P	2
29	NU236	Nut M5 F Nyloc	2
30	C002-0607	M8 x 20 HEX SET ZIP 8.8	2
31	WA711	Washer M8 A BZP	4
32	NU479	Nut M8 1.25 Nyloc P	2
33	P0001251F	Bracket Reflector Mudguard OS Opposite of P0001250F	1
34	18923	Reflector amber round side	1
35	18922	Reflector clear round front	1
36	18919	Support for Light Reflector	1
37	P0002231F	Bracket Cee Top Valve	1
38	19369	19369 Directional Control Valve No Filter	1
39	BO372	Socket Head Cap M8 1.25 20	2
40	WA712	Washer M8 C BZP	2
41	1932	Wheel 195 70R 14inches 96N	2



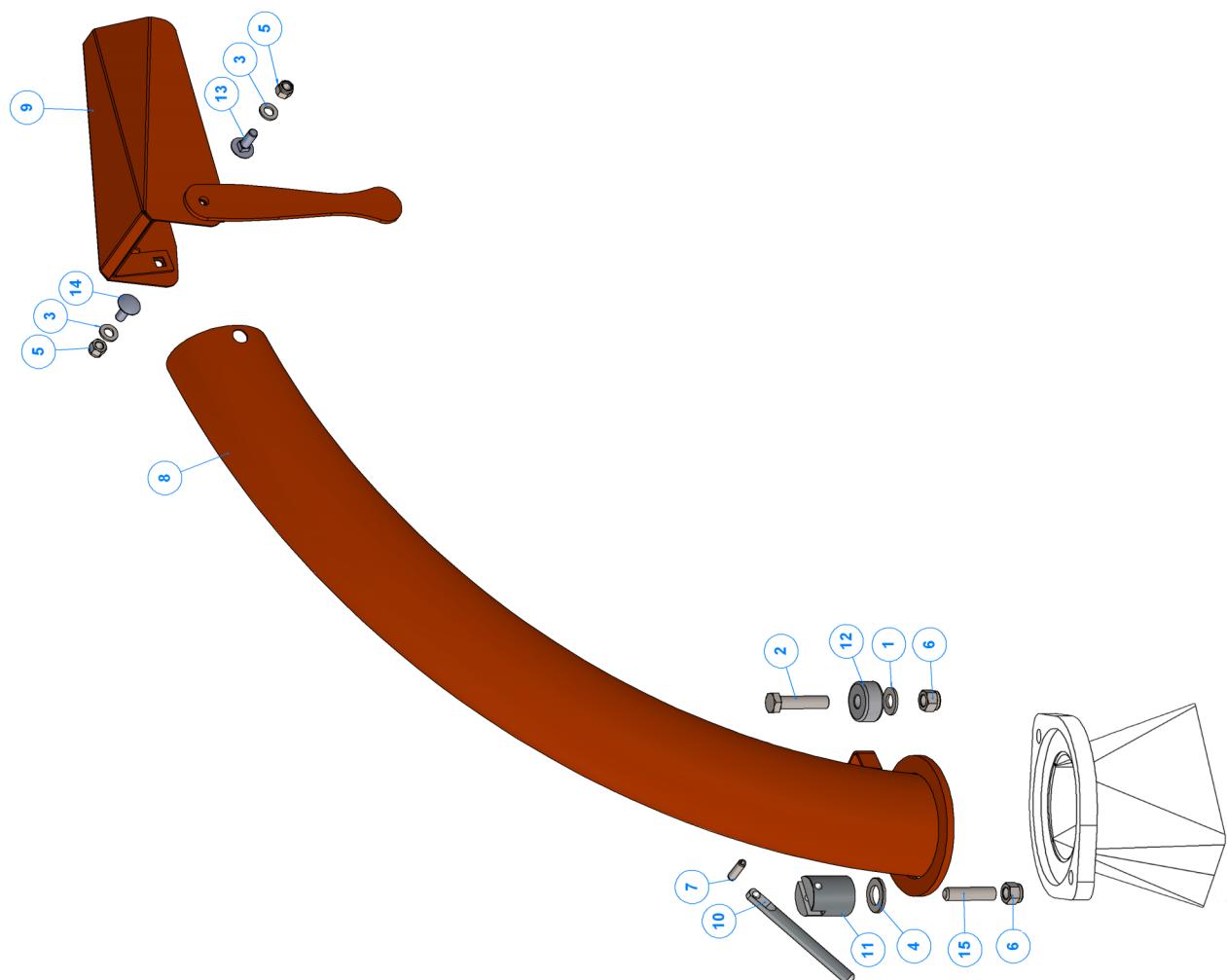
ITEM NO.	PART NUMBER	DESCRIPTION	Manual Page/QTY
1	17802F	Control Box Cover	1
2	17805F	Switch Mounting Plate Control Box	1
3	18000	AV Mount M6 MF 20 14.5	4
4	17803F	Finger Plate	1
5	17803F	Finger Plate	1
6	2834	Av Mount VE Type	2
7	17927	Limit Switch	2
8	2804	Bush M10 Top Hat	4
9	C021-0101	M4 FORM A WASHER Z/P	2
10	C035-0102	M4 TYPE P NYLOC NUT Z/P	6
11	C013-0210	M4 x 35 PAN POZI Z/P	4
12	WA839	Washer M10 C B/P	2
13	C031-0164	M10 TYPE P NYLOC NUT Z/P	1
14	NU142	Nut M6 P Nyloc	4
15	C045-0107	4.8 x 12 St/St/Si Rivet	4
16	C021-0121	M4 FORM C WASHER Z/P	4
17	C008-0730	M10 x 160 HEX BOLT Z/P 8.8	1



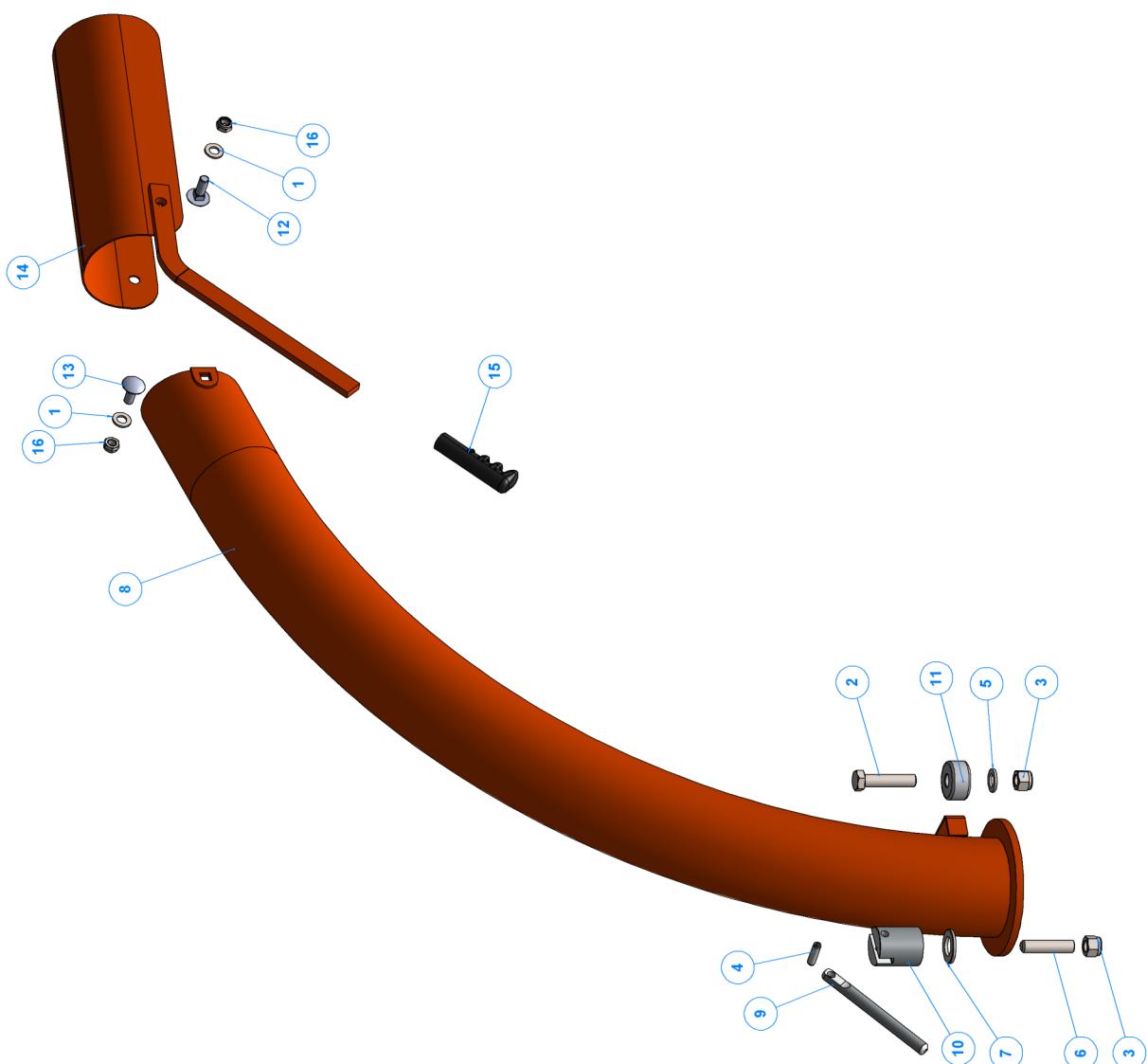
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0103	M6 STD A WASHER Z/P 8.8	4
2	C013-0405	M6 x 16 Pozi Pan Z/P 4.8	4
3	C160-0106	PROFILE CONTROL PANEL NO 12V CUT-OUT	1
4	0327	Hours Counter	1
5	Kubota Ignition Switch	Supp'd with engine	1
6	1470	Rubber Protector	1
7	1757	Amber LED	1



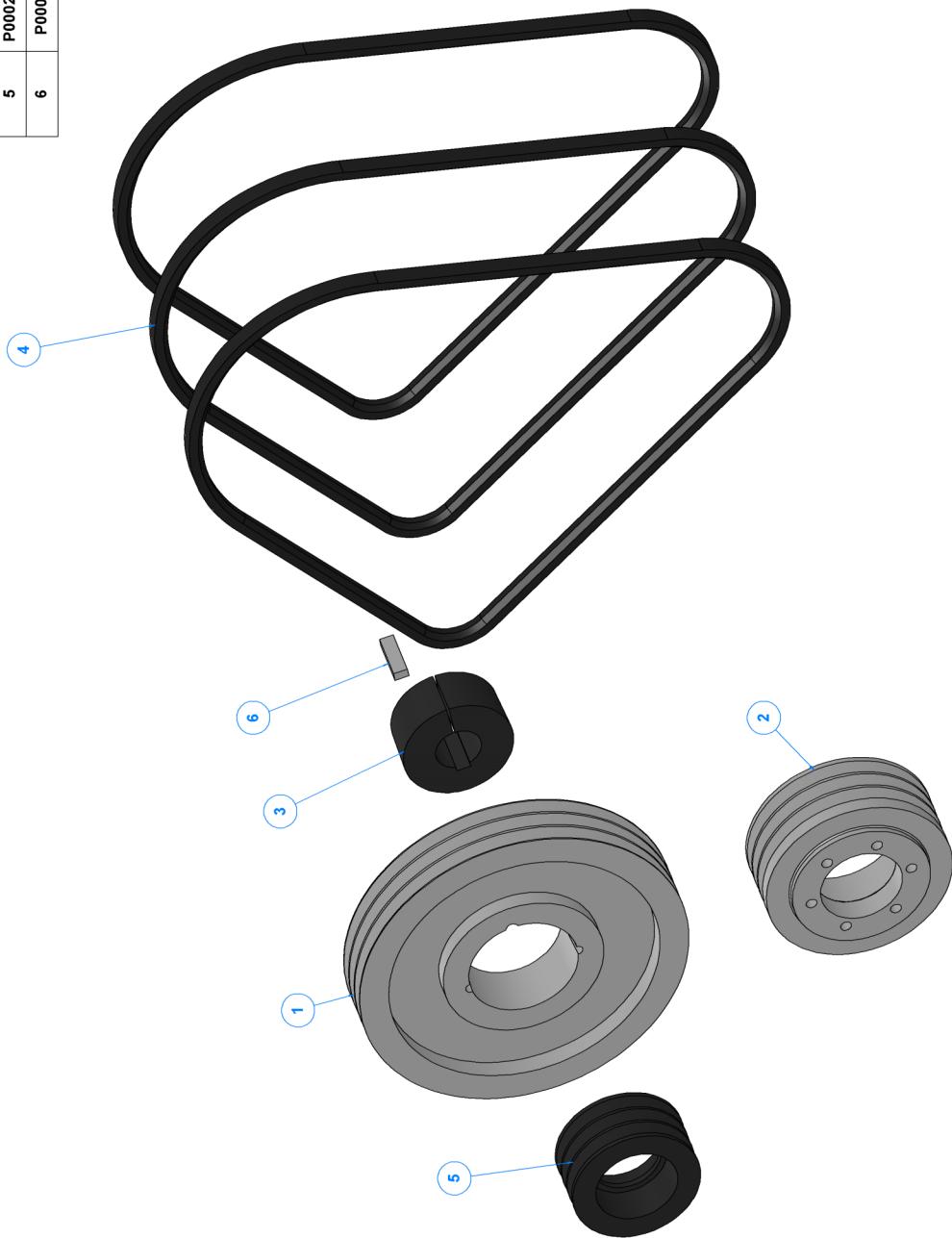
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	WA1354	Washer M16 C BzP	1
2	BO434	Bolt M16/70	1
3	WA702	Washer M12 A BzP	2
4	18190	Washer M24 B BzP	1
5	NU644	Nut M12 P Nyloc	2
6	NU1511	Nut M16 P Nyloc	2
7	4131	Roll Pin	1
8	P0001147	Discharge Tube Assy	1
9	P0001411	Bucket Discharge Tube Assy	1
10	1649M	Tommy Bar	1
11	4109M	M16 Clamp Nut	1
12	2837M	Clamp Discharge	1
13	BO430	Bolt M12/35 Cup Square Bzp	1
14	19282	M12/30 Cup Square	1
15	1507	Socket Set Screw M16x1.5x60	1

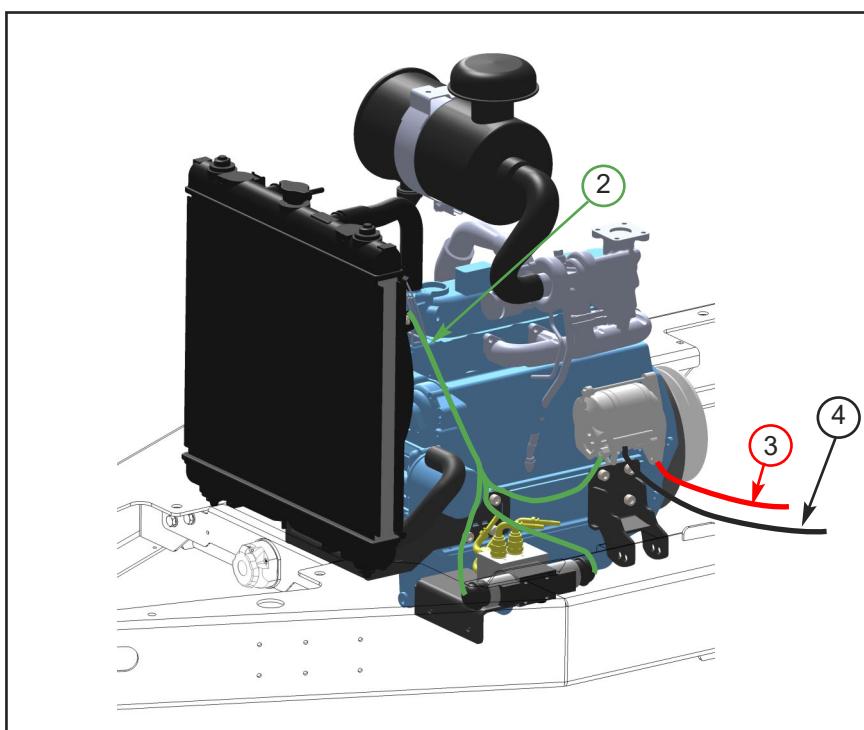
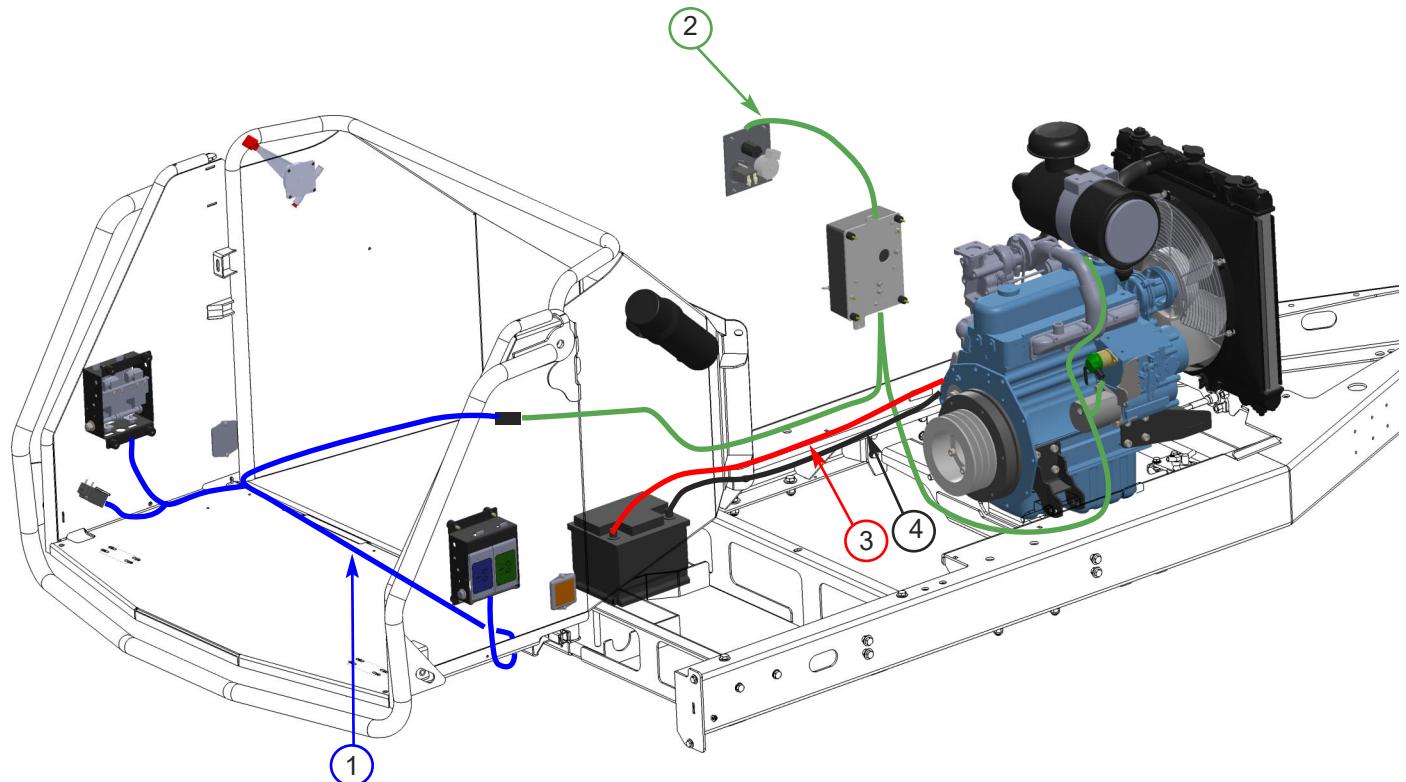


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0107	M12 FORM A WASHER Z/P	2
2	BO434	Bolt M16/70	1
3	C031-0167	M16 TYPE P NYLOC NUT Z/P	2
4	4131	Roll Pin	1
5	C021-0129	M16 FORM C WASHER Z/P	1
6	1507	Socket Set Screw M16x1.5x60	1
7	C021-0133	M24 FORM C WASHER MS Z/P	1
8	0904	Discharge Tube Assy	1
9	1649M	Tommy Bar	1
10	4109M	M16 Clamp Nut	1
11	2837M	Clamp Discharge	1
12	BO430	Bolt M12/35 Cup Square Bzp	1
13	19282	M12/30 Cup Square	1
14	0523F	Discharge Bucket Rounded Assy	1
15	IN134	Handle Grip Discharge Bucket (4 1/2 X 7 1/8)	1
16	C031-0125	M12 TYPE T NYLOC NUT Z/P	2

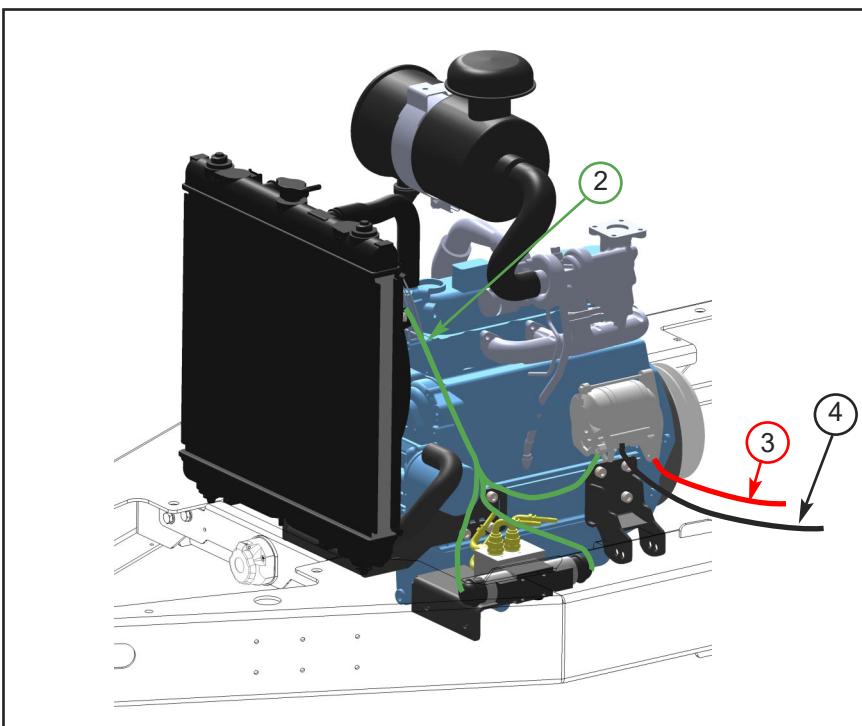
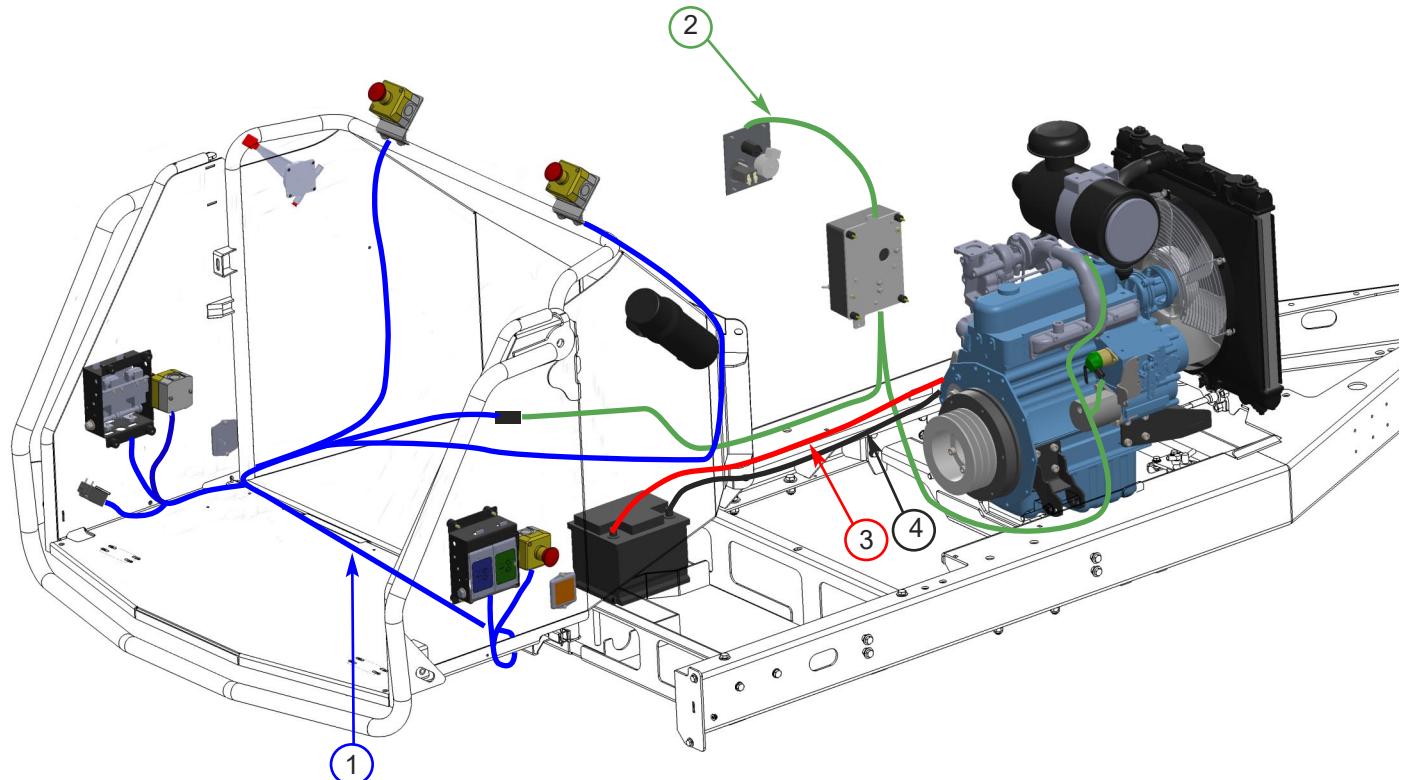


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	P0001655	Pulley SPB 3 315	1
2	P0001029M	Pulley SPB 3 175 Z	1
3	P0001826	Taperlock Bush 3020 45	1
4	P0002215	Belt SPB 1600	3
5	P0002890M	Pulley SPB - 3 - 118 Tensioner	1
6	P0002216	Key 14x9x50	1



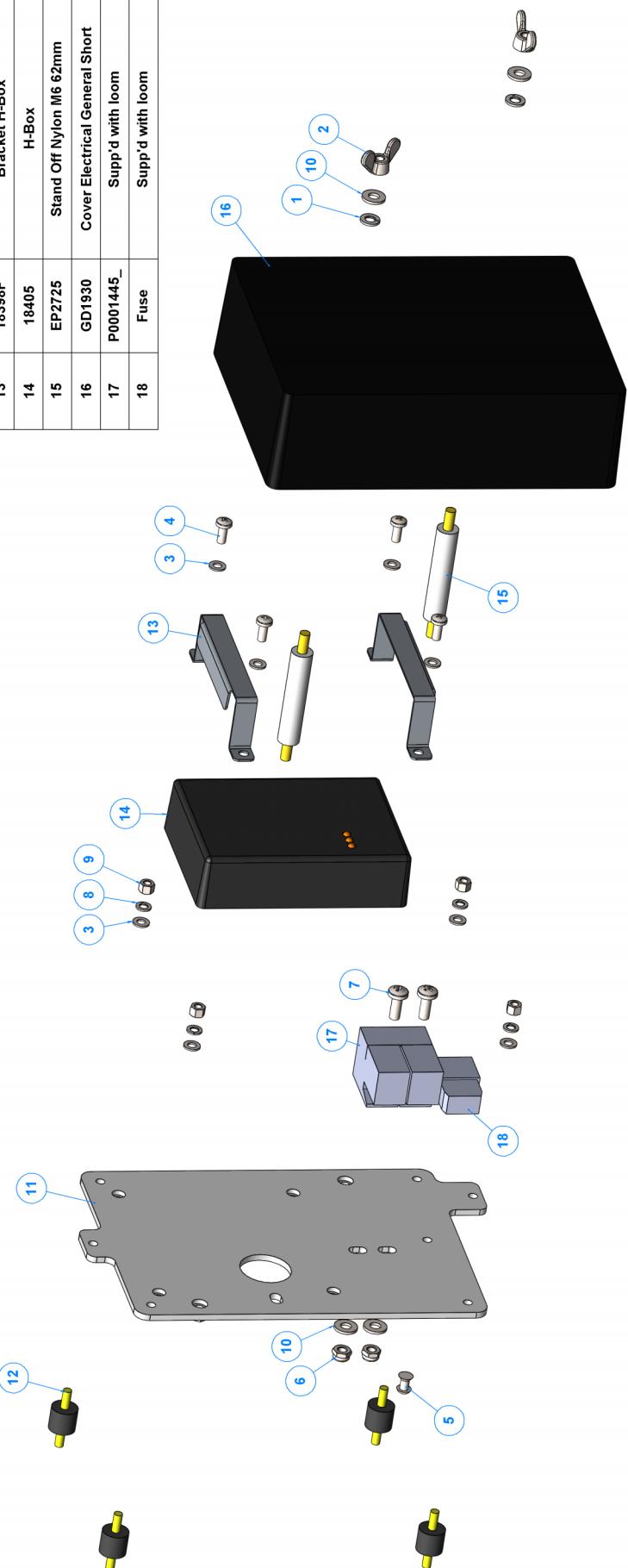


ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	17809	Funnel Loom	1	3	P2131	+VEBattery Cable	1
2	P2741	Main Engine Loom	1	4	P2132	-VEBattery Cable	1

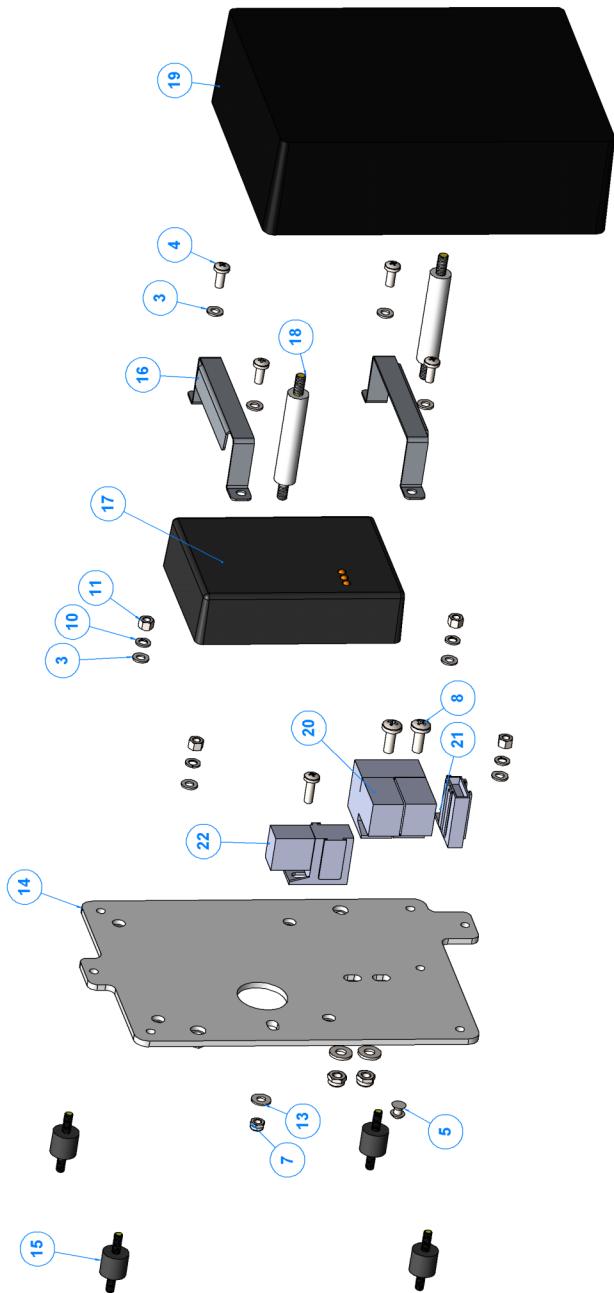
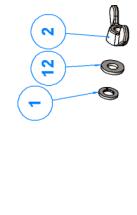


ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	C161-0119	Funnel Loom	1	3	P2131	+VEBattery Cable	1
2	P2741	Main Engine Loom	1	4	P2132	-VEBattery Cable	1

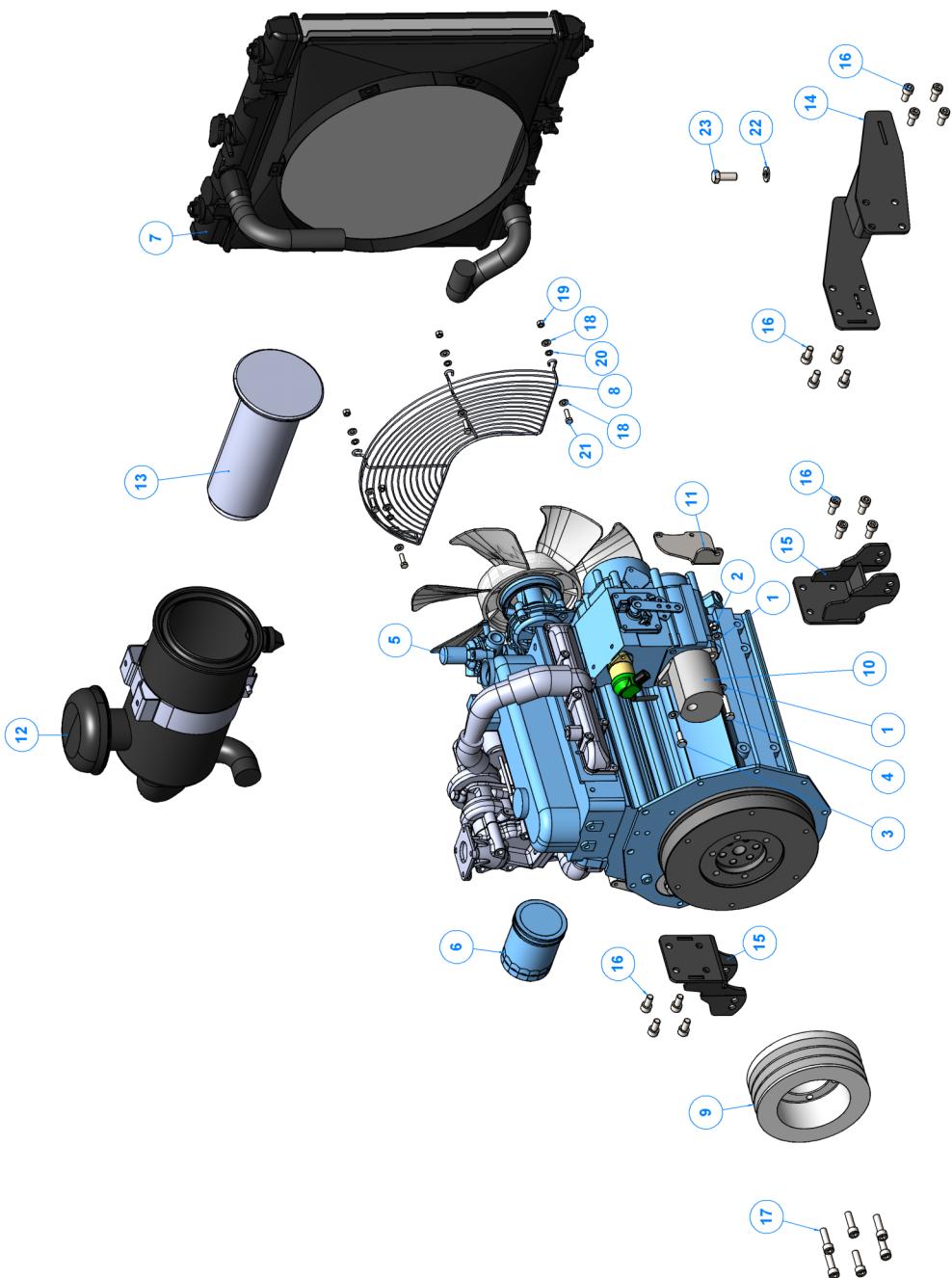
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	18106	Washer M6 Spring BZP	2
2	18107	M6 Wing Nut	2
3	WA857	Washer M5 5.3 A BZP	8
4	18104	Pan Head Pozi M5 0.8 12 BZP	4
5	1151	Countersunk Pop Rivet	1
6	NU391	Nut M6 1.0 Nyloc T	2
7	BO438	Pan Head Pozi M6 1.0 16 BZP	2
8	3024	Washer M5 Spring BZP	4
9	18291	Nut M5 0.8 Plain BZP	4
10	WA709	Washer M6 C BZP	4
11	P0000856F	Plate H-Box Assy	1
12	4033	AV Mount M5 x 13mm Green Spot	4
13	18398F	Bracket H-Box	2
14	18405	H-Box	1
15	EP2725	Stand Off Nylon M6 62mm	2
16	GD1930	Cover Electrical General Short	1
17	P0001445_-	Supp'd with loom	2
18	Fuse	Supp'd with loom	1



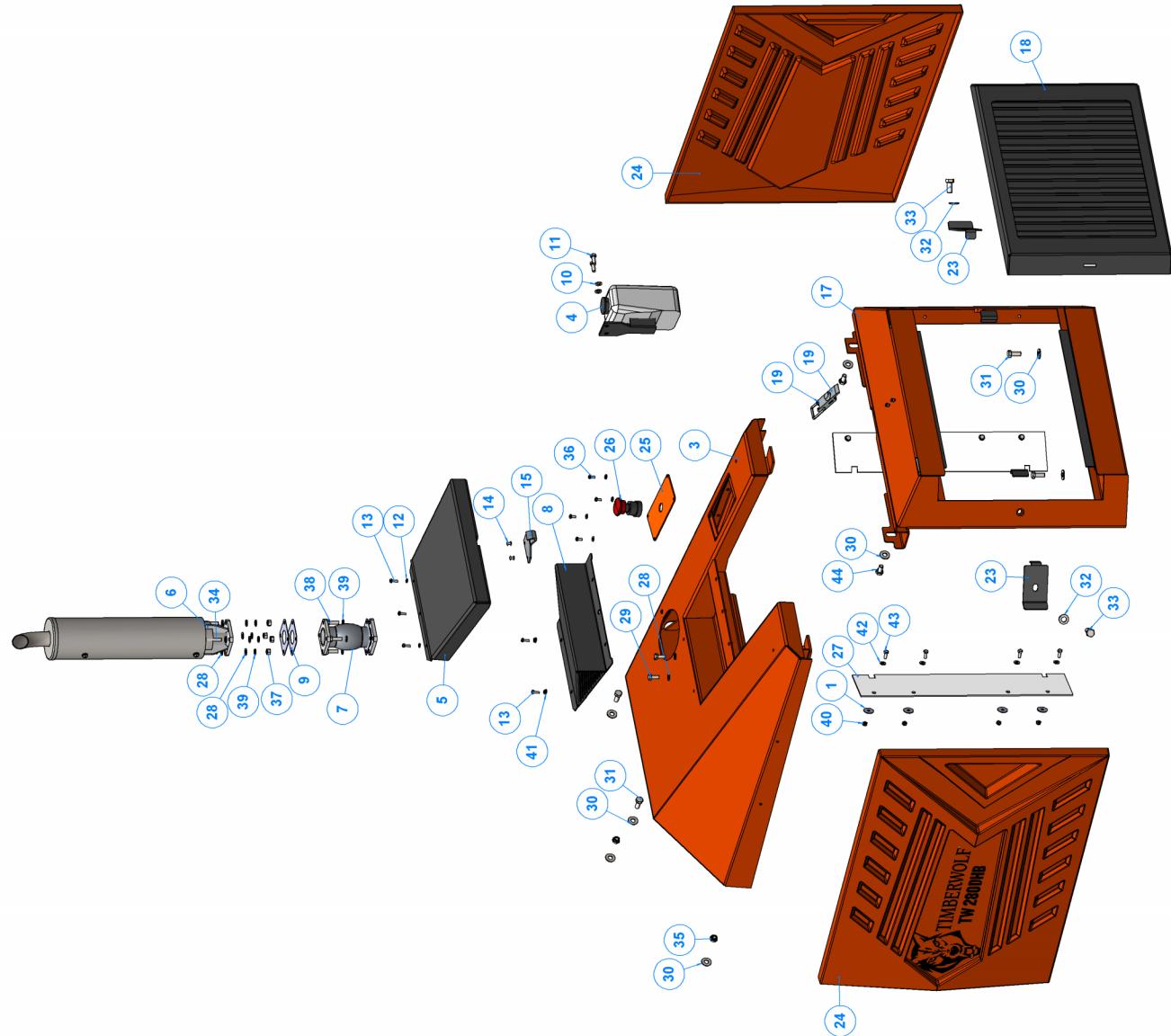
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C023-0103	M6 SPRING WASHER - ZP	2
2	C032-0114	M6 WING NUT Z/P	2
3	C021-0102	M5 FORM A WASHER Z/P	8
4	C013-0303	M5 x 12 PAN POZI Z/P	4
5	C045-0102	4.8 x 12 Alu/Steel CSK Rivet	1
6	C031-0121	M6 TYPE T NYLOC NUT Z/P	2
7	18102	Nut M5 0.8 Nyloc T	1
8	C013-0405	M6 x 16 PAN POZI Z/P	2
9	C013-0305	M5 x 16 PAN POZI Z/P	1
10	C023-0102	M5 SPRING WASHER - ZP	4
11	C030-0120	M5 HEX NUT - ZP - GRADE 10	4
12	WA709	Washer M6 C BZP	4
13	C021-0122	M5 FORM C WASHER Z/P	1
14	P0000856F	Plate H-Box Assy.	1
15	4033	AV Mount M5 x 13mm Green Spot	4
16	18398F	Bracket H-Box	2
17	18405	H-Box	1
18	EP2725	Stand Off Nylon M6 62mm	2
19	GD1930	Cover Electrical General Short	1
20	P0001445_	Supp'd with loom	1
21	Fuse	Supp'd with loom	1
22	P0001445	Supp'd with loom	1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	WA711	Washer M8 A BZP	3
2	NU0479	Nut M8 1.25 Nyloc P	1
3	BO346	Set Screw M8 1.25 20 BZP	1
4	BO352	Set Screw M8 1.25 40 BZP	1
5	4313	Kubota 1505 Turbo Engine	1
6	0095	Oil Filter 1505	1
7	4319	Radiator Kit (1G66-72001)	1
8	4335	Radiator Fan Guard	1
9	P0001029M	Pulley SPB 3 175	1
10	MO1660	Pump Hydraulic Engine Driven 6.61Cc	1
11	P0000756	Bracket Throttle Cable	1
12	4316	Air Filter Housing (1661711002_M)	1
13	18345	Air Filter	1
14	P0001662F	Bracket Engine Front Upper	1
15	P0001636F	Bracket Engine Rear Upper	2
16	P0000389	Socket Head Cap M10 1.25 20	16
17	4054	Socket Head Cap M10 1.25 35	6
18	WA709	Washer M6 C BZP	8
19	NU392	Nut M6 1 Plain BZP	4
20	18106	Washer M6 Spring BZP	4
21	BO1236	Set Screw M6 20 BZP	4
22	WA702	Washer M12 A BZP	1
23	BO321	Set Screw M12 30 BZP	1

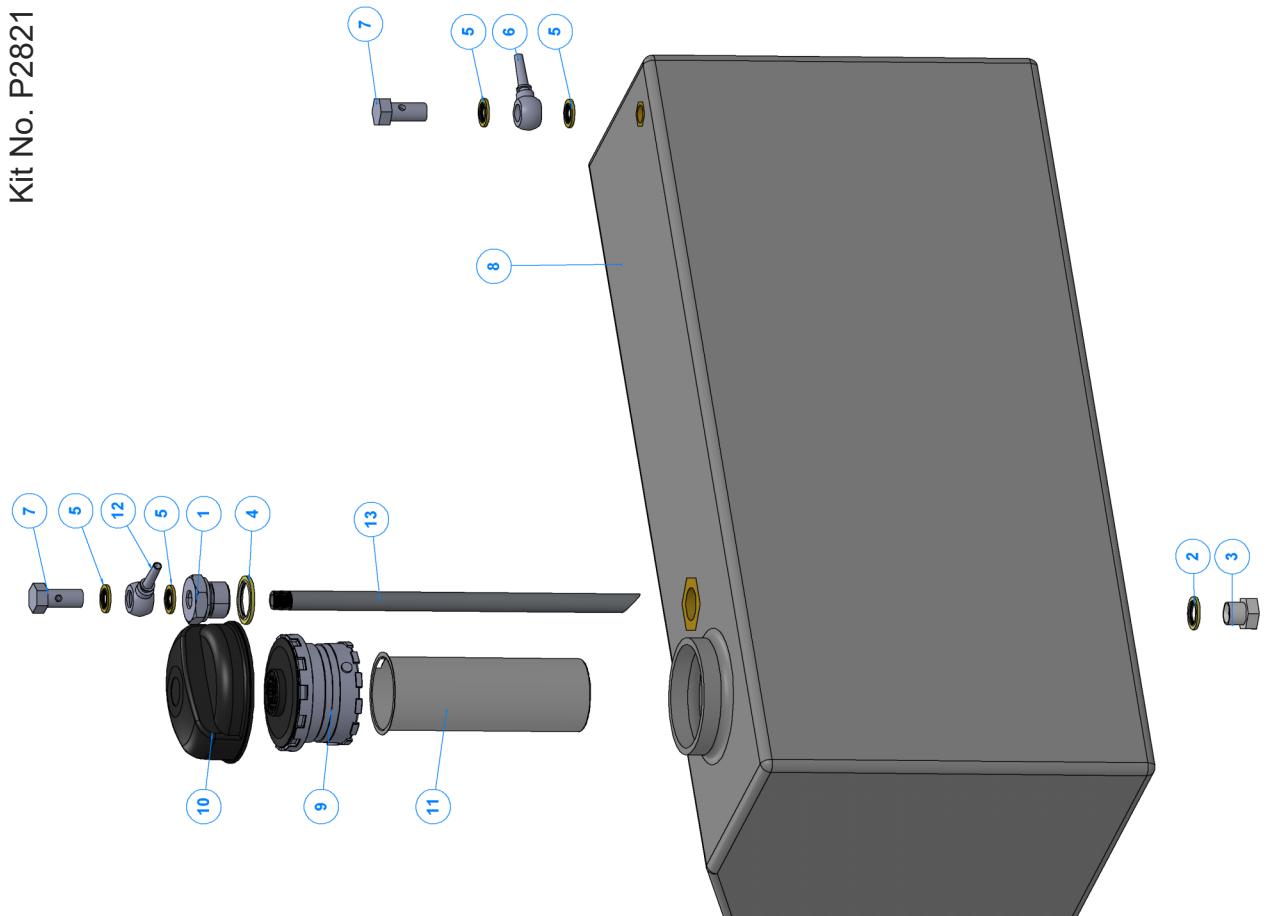


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	4343	M6 x 24 Mudguard Washer	8
2	TW 280TDHB Top Bonnet		1
3	P0002365F	Top Bonnet Angular 9°	1
4	4320	Reserve Tank Radiator	1
5	P0002525F	Access Cover Tapered Assy	1
6	18327FB	S/Stl Exhaust Muffler. (Road Tow)	1
7	18456F	Flexible Exhaust Adapter	1
8	P0002933F	Guard Air Intake	1
9	17988	Gasket Muffler	3
10	WA711	Washer M8 A BZP	2
11	C002-0607	M8 x 20 HEX SET Z/P 8.8	2
12	C021-0102	M5 FORM A WASHER Z/P	5
13	C013-0305	M5 x 16 PAN POZI Z/P	5
14	C045-0107	4.8 x 12 St/St Rivet	2
15	C137-0102	Access Cover Tapered Catch	1
16	TW 280TDHB Front Grill & Grill		1
17	P0002517F	Guard Front Angular Assy	1
18	P0002380F	Bracket Front Grill Assy	1
19	0235	Catch Assy	1
20	C005-0305	M5 x 16 SIKT CAP SET Z/P 12.9	2
21	C021-0102	M5 FORM A WASHER Z/P	2
22	NU236	Nut M5 P Nyloc	2
23	P0002521F	Bracket Side Panel & Front Guard Stop	2
24	P0001740	Panel Side Plastic Sharp Design	2
25	P0002600	Profile E Stop	1
26	2627	Emergency Stop Switch	1
27	P0002796	Plastic Strip Radiator	2
28	WA711	Washer M8 A BZP	10
29	C002-0607	M8 x 20 HEX SET Z/P 8.8	2
30	WA339	Washer M10 C BZP	8
31	C002-0709	M10 x 25 HEX SET Z/P 8.8	4
32	WA702	Washer M12 A BZP	2
33	C002-3809	M12 x 25 HEX SET Z/P 8.8	2
34	C002-0612	M8 x 40 HEX SET Z/P 8.8	4
35	C031-0124	M10 TYPE T NYLOC NUT Z/P	2
36	C013-0303	M5 x 12 PAN POZI Z/P	4
37	C030-0423	M8 HEX NUT -ZP - GRADE 10	4
38	C002-0609	M8 x 25 HEX SET Z/P 8.8	4
39	C023-0105	M8 SPRING WASHER -ZP	8
40	C031-0121	M6 TYPE T NYLOC NUT Z/P	8
41	C021-0122	M5 FORM C WASHER Z/P	6
42	WA709	Washer M6 C BZP	8
43	C002-0405	M6 x 16 HEX SET Z/P 8.8	8
44	B0878	Bolt M10 20 BZP	2

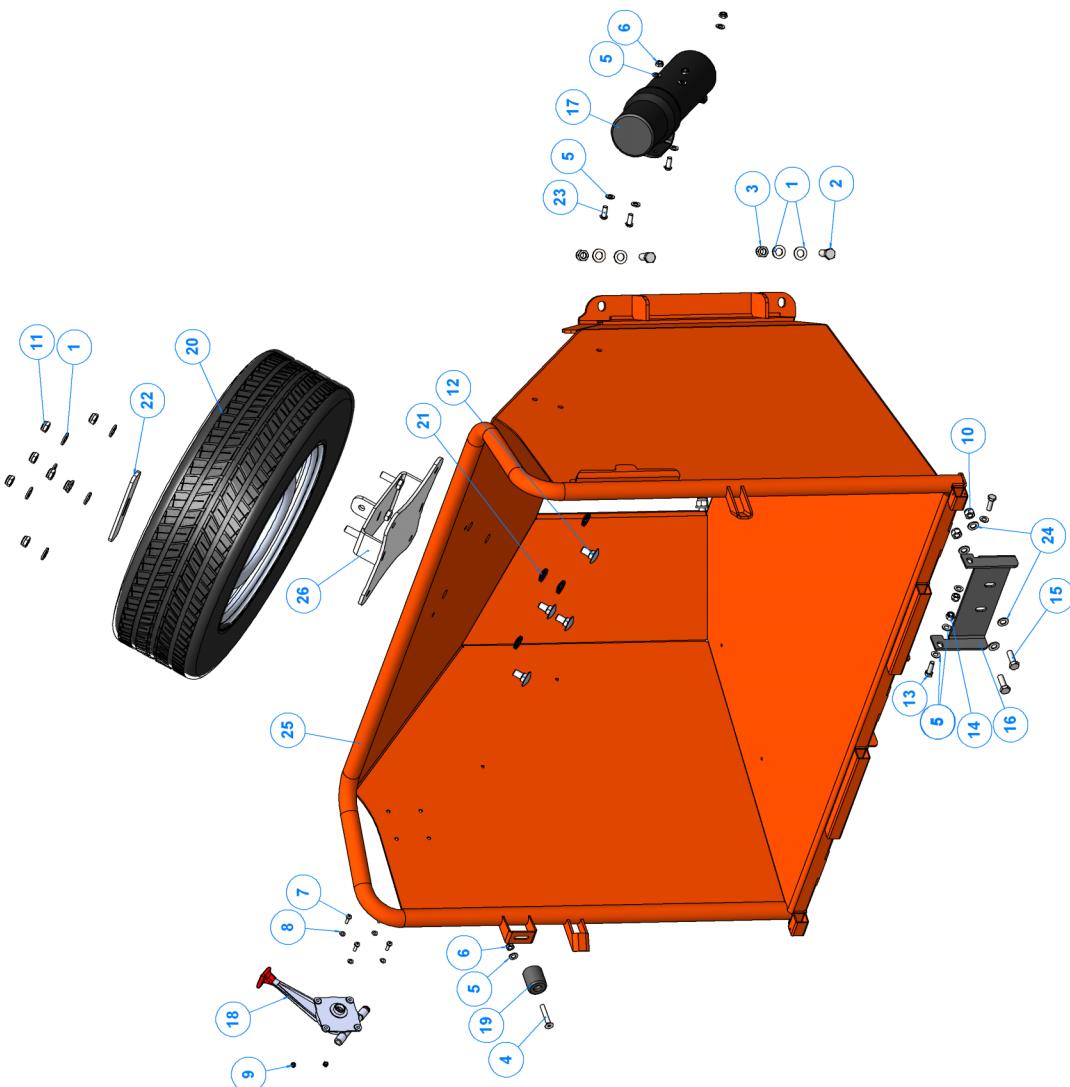


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	18568	18568 Reducer Bush (Dowty) 3-4M x 1-4F	1
2	HY396	Washer Dowty 3/8"	1
3	HY211	3/8" Drain Plug	1
4	HY152	Washer Dowty 3/4"	1
5	HY395	1/4" Dowty Washer	4
6	17998	Quarter Inch Banjo Fitting No Bolt	1
7	4059	Quarter Inch Banjo Bolt	2
8	P0001710	Tank Fuel 38 Litre	1
9	P0001815	Threaded Filler Neck OD65	1
10	P0001817	P0001817 Fuel Tank Cap	1
11	P0001816	SS Strain for Tanks with Reinforcement Ring	1
12	C070-0104	Quarter Inch Banjo Fitting	1
13	C172-0101	Threaded Fuel Pick Up 280mm	1

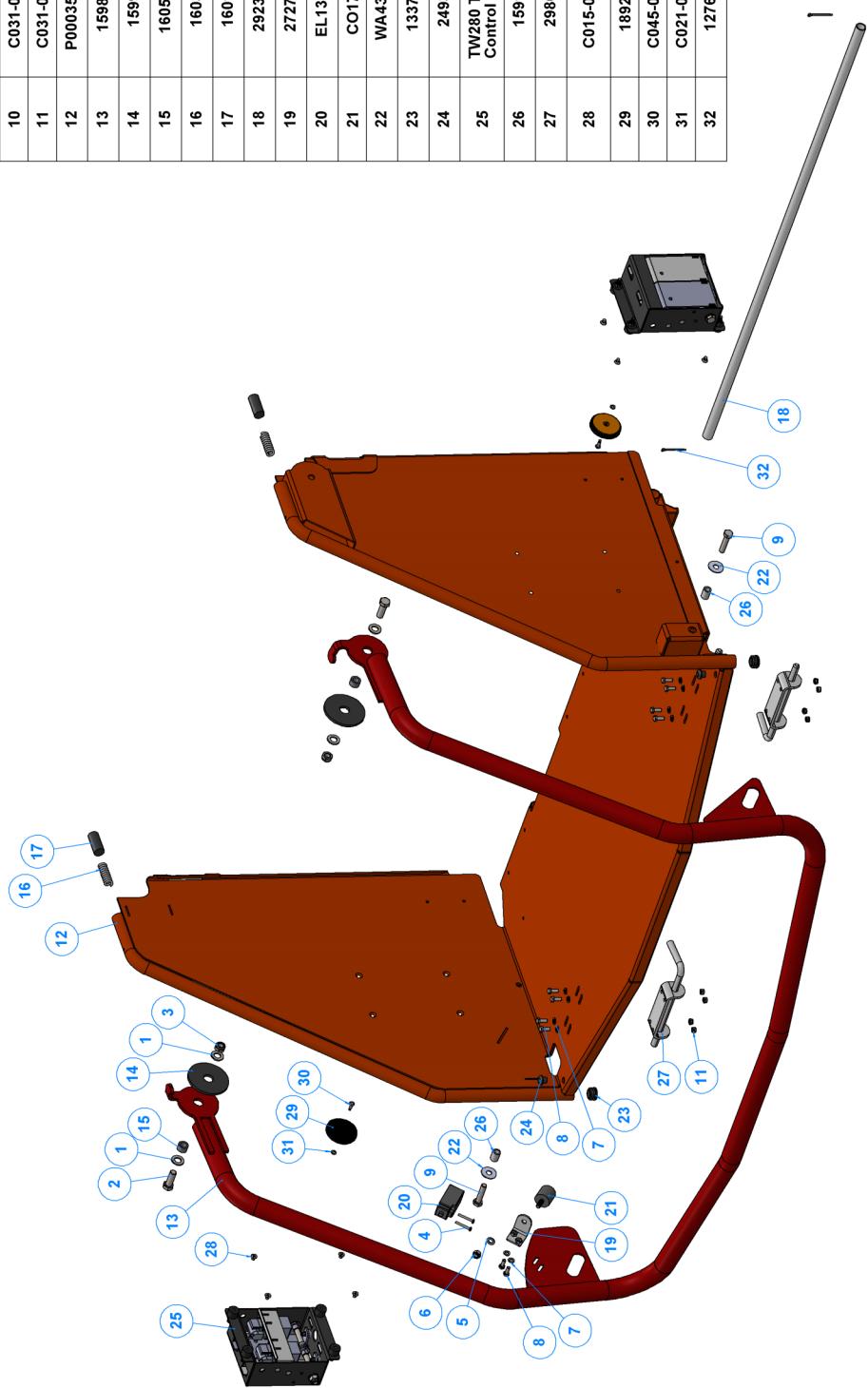
Kit No. P2821



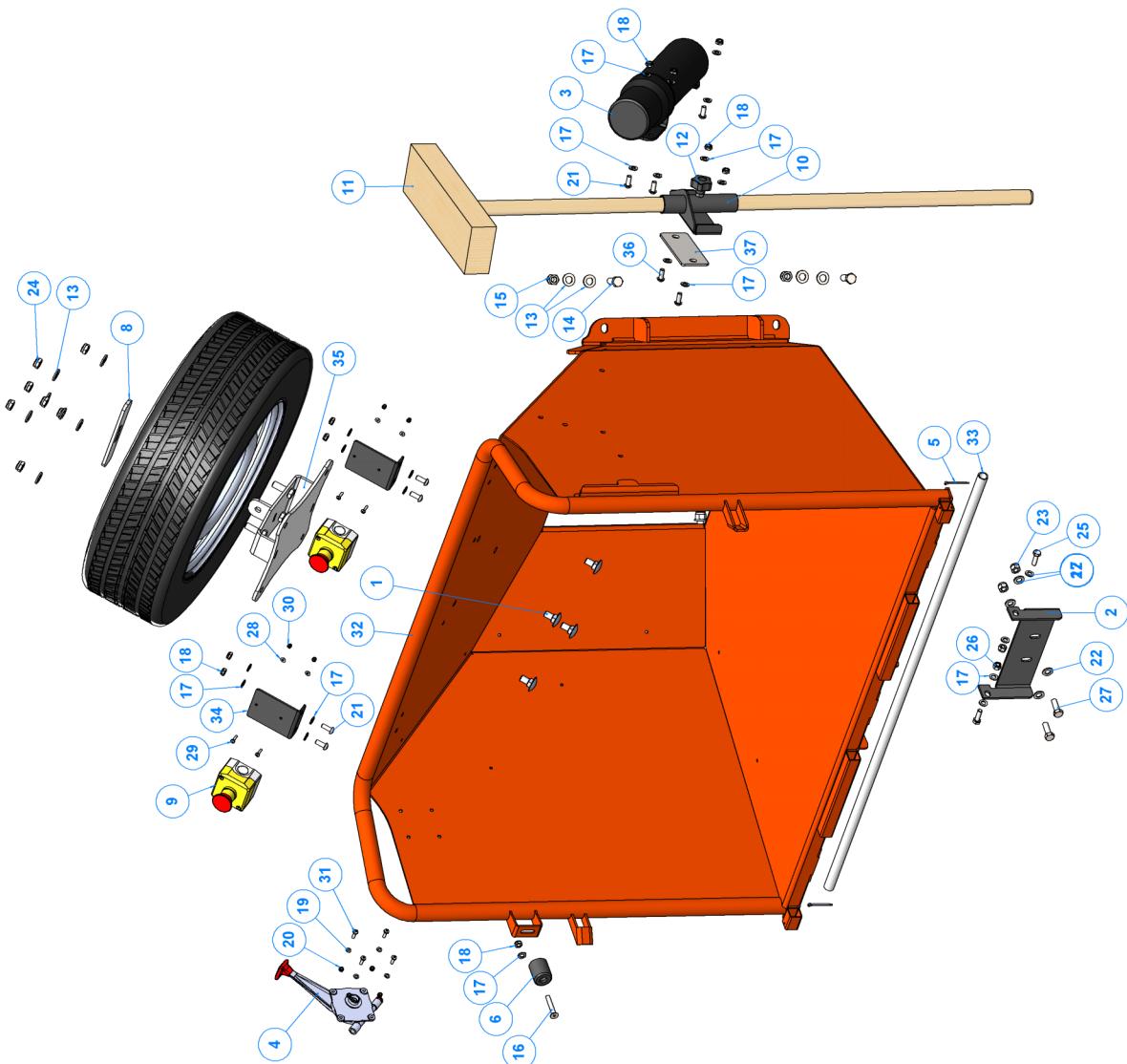
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0127	M12 FORM C WASHER Z/P	15
2	C002-0811	M12 x 35 HEX SET Z/P 8.8	4
3	C031-0165	M12 TYPE P NYLOC NUT Z/P	4
4	C015-0614	M8 x 50 SKT CSK SET Z/P 10.9	1
5	C021-0125	M8 FORM C WASHER Z/P	11
6	C031-0123	M8 TYPE T NYLOC NUT Z/P	4
7	C013-0305	M5 x 16 PAN POZI Z/P	4
8	C021-0102	M5 FORM A WASHER Z/P	4
9	C031-0120	M5 TYPE T NYLOC NUT Z/P	4
10	C031-0164	M10 TYPE P NYLOC NUT Z/P	2
11	C031-0125	M12 TYPE T NYLOC NUT Z/P	7
12	BO320	M12 x 25 CUP SQ BOLT Z/P	4
13	C002-0609	M8 x 25 HEX SET Z/P 8.8	2
14	C031-0163	M8 TYPE P NYLOC NUT Z/P	2
15	C002-0710	M10 x 30 HEX SET Z/P 8.8	2
16	P0001784F	Bracket Funnel 280 x 203 Support	1
17	P0000144	Operator's Manual Canister	1
18	P0003532	Throttle	1
19	4206	Nylon Bush	1
20	1932	Wheel 195 7R 14Inches 96N	1
21	IN654	Grommet Hole OD19.05mm	4
22	P0000758	Profile Bracket Spare Wheel Lock	1
23	C011-0607	M8 x 20 SKT Button Set Z/P 10.9	3
24	C021-0126	M10 FORM C WASHER Z/P	4
25	P0001566F	Funnel 280 x 203	1
26	C131-0208	Spare Wheel Bracket Assembly	1



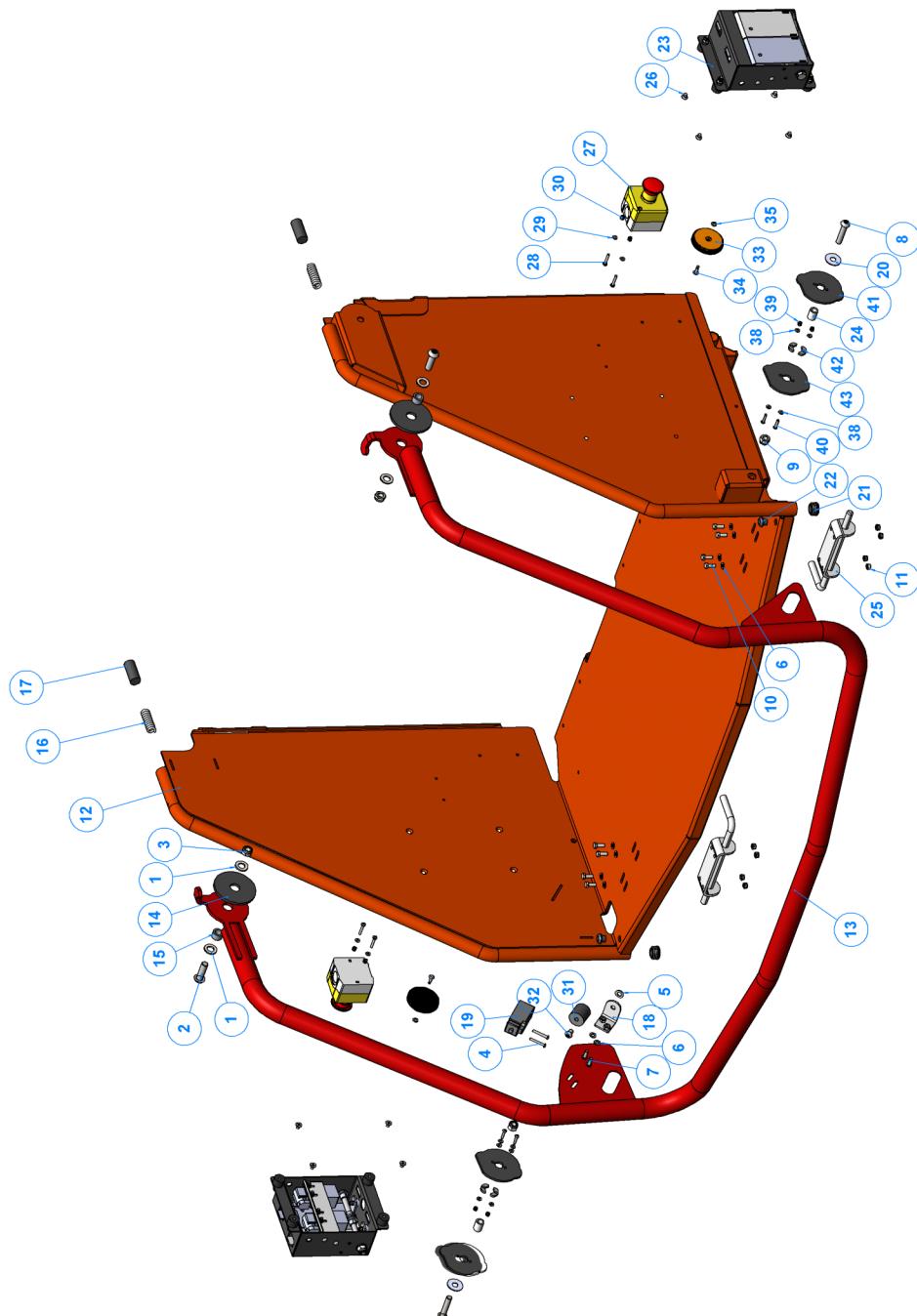
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0127	M12 FORM C WASHER Z/P	4
2	C002-0811	M12 x 35 HEX SET ZP 8.8	2
3	C031-0125	M12 TYPE T NYLOC NUT Z/P	2
4	C013-0209	M4 x 30 PAN POZI Z/P	2
5	C021-0125	M8 FORM C WASHER Z/P	1
6	C031-0163	M8 TYPE P NYLOC NUT Z/P	1
7	C021-0123	M6 FORM C WASHER Z/P	10
8	C002-0405	M6 x 16 HEX SET ZP 8.8	10
9	C002-0713	M10 x 45 HEX SET ZP 8.8	2
10	C031-0164	M10 TYPE P NYLOC NUT Z/P	2
11	C031-0121	M6 TYPE T NYLOC NUT Z/P	8
12	P003501F	Feed Tray	1
13	1658F	Control Bar Assy High Funnel	1
14	1599	Bearing Washer	2
15	1605M	Stainless Spacer	2
16	1603	Spring Die (Stop Bar)	2
17	1601	Nylon Piston OD20 - 45mm	2
18	2923F	Hinge Pin	1
19	2727F	Bracket Actuator Control Bar Assy	1
20	E11348	Switch Limit (Metal Plunger)	1
21	C0178	Buffer Rubber	1
22	WA4344	Washer M10 29.75 Panzy BZP	2
23	1337_	Rubber Cap	2
24	2493	Rubber Cap	2
25	TW280 TDHB Control Box		2
26	1591	Spacer 10x15x20	2
27	2986	Spring Bolt	2
28	C015-0401	C'SUNK SCREW M6x8 ZP GRADE 10.9	8
29	18923	REFLECTOR AMBER ROUND SIDE	2
30	C045-0109	4.8 x 18 ALU/STEEL RIVET	2
31	C021-0102	M5 FORM A WASHER Z/P	2
32	1276	Split Pin	2



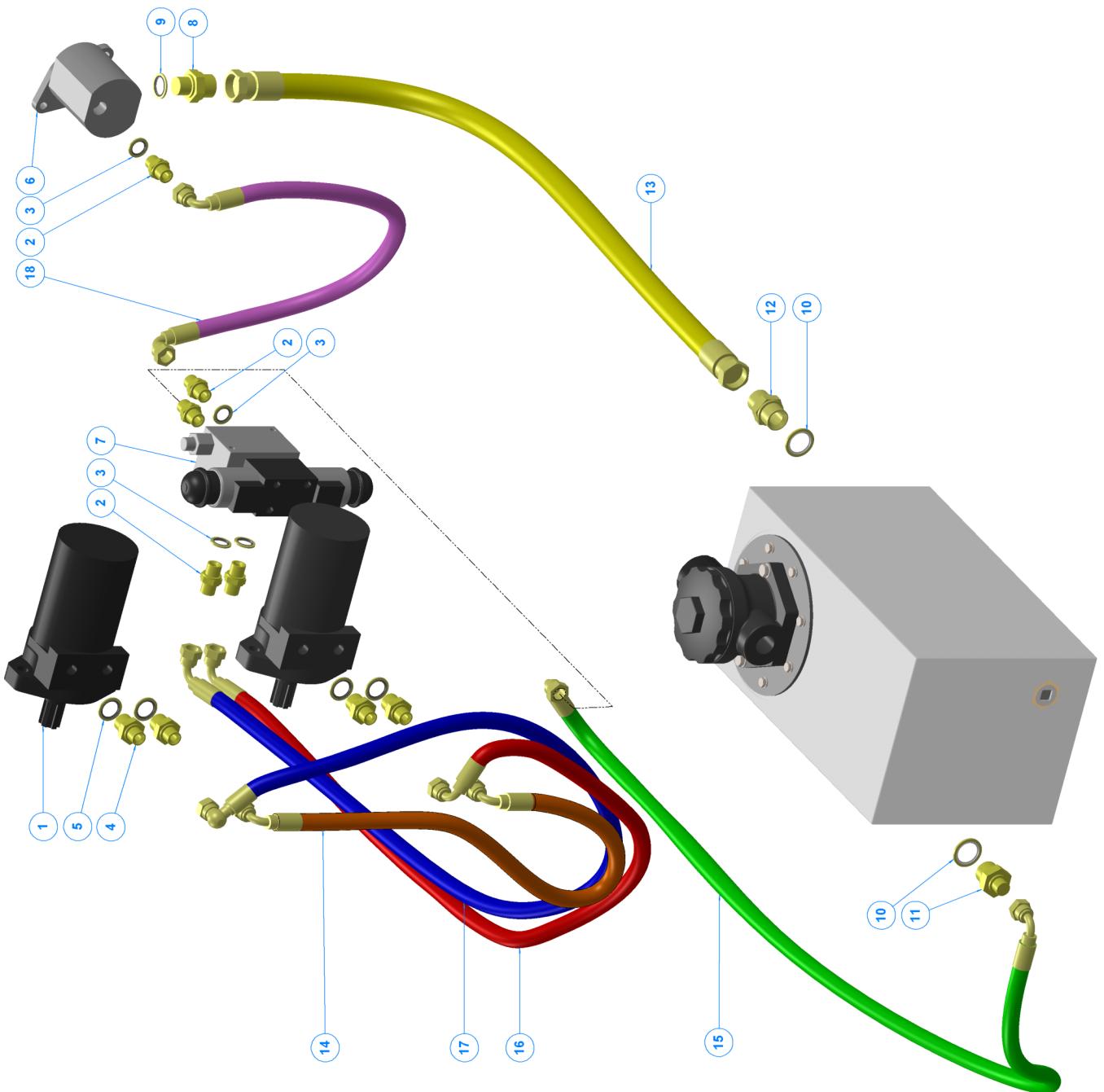
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B0320	M12 x 25 CUP SQ BOLT Z/P	4
2	P0001784F	Bracket Funnel 280 x 203 Support	1
3	P0000144	Operator's Manual Canister	1
4	P0003532	Throttle	1
5	1276	Split Pin	2
6	4206	Nylon Bush	1
7	1932	Wheel 195 70R 14Inches 96N	1
8	P0000758	Profile Bracket Spare Wheel Lock	1
9	C162-0100	ESD - Schneider XALK178F 2NC, 1NO	2
10	P0003647F	Infeed Aid Tool Assy	1
11	C200-0101	Infeed Aid Tool	1
12	C053-0100	M8 x 16 Black Knob	1
13	C021-0127	M12 FORM C WASHER Z/P	15
14	BO429	Set Screw M12 35BZP	4
15	C031-0165	M12 TYPE P NYLOC NUT Z/P	4
16	0353	M8/50 Csk Soc	1
17	C021-0125	M8 FORM C WASHER Z/P	23
18	C031-0123	M8 TYPE T NYLOC NUT Z/P	10
19	C021-0102	M5 FORM A WASHER Z/P	4
20	C031-0120	M5 TYPE T NYLOC NUT Z/P	4
21	C011-0607	M8 x 20 SKT Button Set Z/P 10.9	7
22	C021-0126	M10 FORM C WASHER Z/P	4
23	C031-0164	M10 TYPE P NYLOC NUT Z/P	2
24	C031-0125	M12 TYPE T NYLOC NUT Z/P	7
25	BO350	Set Screw M8 25 BZP	2
26	C031-0163	M8 TYPE P NYLOC NUT Z/P	2
27	BO382	Set Screw M10 30 BZP	2
28	C021-0121	M4 FORM C WASHER Z/P	4
29	P0002075	Pan Head Pozi M4 0.7 16 BZP	4
30	C035-0102	M4 TYPE P NYLOC NUT Z/P	4
31	C013-0305	M5 x 16 PAN POZI Z/P	4
32	C138-0143	TW280 FRENCH FUNNEL ASSEMBLY	1
33	2923F	Hinge Pin	1
34	P0003651F	Emergency Stop Bracket	2
35	C131-0208	Spare Wheel Bracket Assembly	1
36	C010-0607	M8 x 20 SKT BUTTON SET SIC 10.9	2
37	18023PS	Guard Stand-Off Plate	1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0127	M12 FORM C WASHER Z/P	4
2	C086-0812	M12 x 40 Button Head Pin Hexagon Machine Screw	2
3	C031-0125	M12 TYPE T NYLOC NUT Z/P	2
4	C086-0210	M4 x 30 Button Head Pin Hexagon Machine Screw	2
5	C021-0125	M8 FORM C WASHER Z/P	1
6	C021-0123	M6 FORM C WASHER Z/P	10
7	C086-0405	M6 x 16 Button Head Pin Hexagon Machine Screw	2
8	C086-0714	M10 x 50 Button Head Pin Hexagon Machine Screw	2
9	C031-0164	M10 TYPE P NYLOC NUT Z/P	2
10	BD347	Set Screw M6x16 BZP	8
11	C031-0121	M6 TYPE T NYLOC NUT Z/P	8
12	C138-0145	TW280 FRENCH FEED TRAY ASSEMBLY	1
13	1598F	Control Bar Assy High Funnel	1
14	1599	Bearing Washer	2
15	1605M	Stainless Spacer	2
16	1603	Spring Die (Stop Bar)	2
17	1601	Nylon Piston OD20 - 45mm	2
18	2727F	Bracket Actuator Control Bar Assy	1
19	EL1348	Switch Limit (Metal Plunger)	1
20	WA4344	M10 x 30 Washer	2
21	1337_	Rubber Cap	2
22	2493	Rubber Cap	2
23		TW280 TDHB Control Box	2
24	1591	Spacer 10x15x20	2
25	2986	Spring Bolt	2
26	C015-0401	C'SUNK SCREW M6x8 ZP GRADE 10.9	8
27	C162-0100	ESD - Schneider XALK178F 2NC, 1NO	2
28	P002076	Pan Head Pozi M4 0.7 25 BZP	4
29	C021-0101	M4 FORM A WASHER Z/P	4
30	C035-0102	M4 TYPE P NYLOC NUT Z/P	4
31	C076-0100	M8 Female Cylindrical Buffer (30 x 30) 70 Shore	1
32	C086-0603	M8 x 12 Button Head Pin Hexagon Machine Screw	1
33	18923	REFLECTOR AMBER ROUND SIDE	2
34	C045-0109	4.8 x 18 ALU/STEEL RIVET	2
35	C021-0102	M5 FORM A WASHER Z/P	2
36	C200-0110	Safety Bar Activation Slot Kit	1
37	C200-0110 opp Hand	Safety Bar Activation Slot Kit	1
38	C021-0101	M4 FORM A WASHER Z/P	4
39	C035-0102	M4 TYPE P NYLOC NUT Z/P	2
40	C086-0207	M4 x 30 Button Head Pin Hexagon Machine Screw	2
41	C200-0107	Safety Bar Activation Slot Guard OS	1
42	C200-0109	Safety Bar Activation Slot Spacer	2
43	C200-0108	Safety Bar Activation Slot Guard IS	1

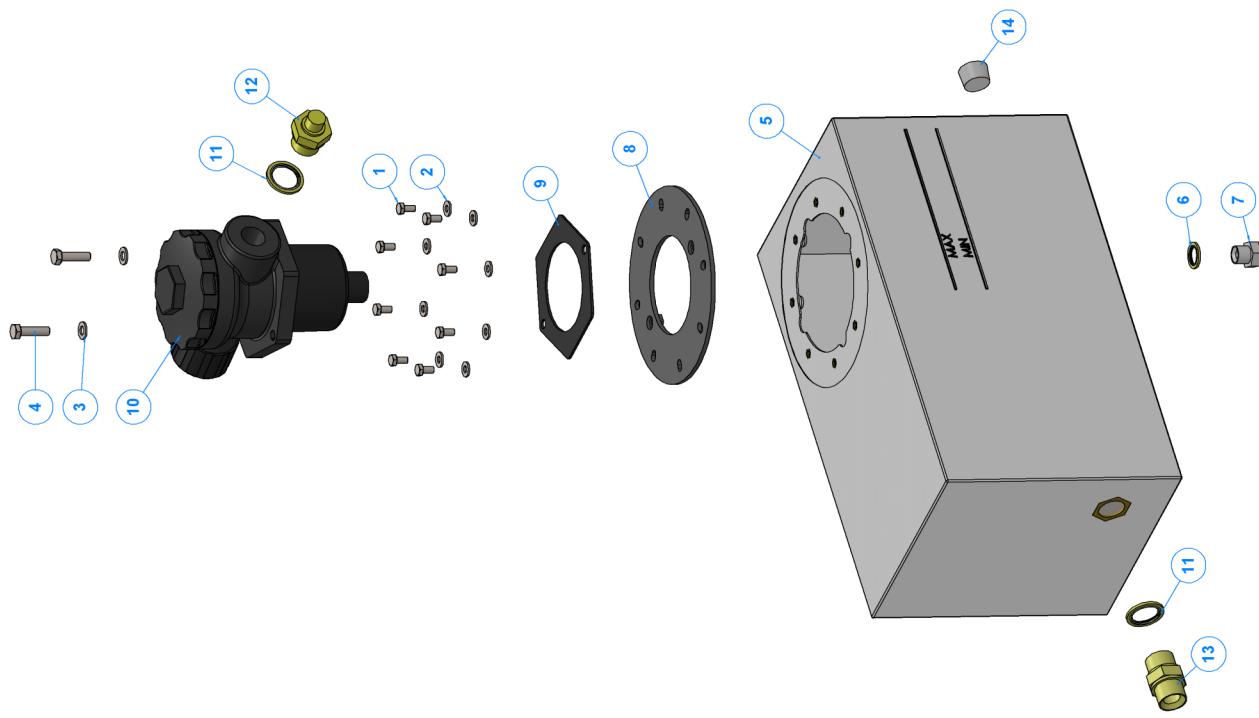


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2982B	Parker Motor	2
2	HY161	Adaptor Mm 3/8 - 3/8	5
3	HY396	Washer Dowty 38	6
4	HY026	Adapter 3/8 - 1/2	4
5	HY398	Washer Dowty 12	4
6	MC1660	Pump Hydraulic Engine Driven 6.61Cc	1
7	19369	19369 Directional Control Valve No Filter	1
8	1583	Adaptor 1/2" - 3/4" BSP	1
9	HY398	Washer Dowty 12	1
10	HY152	Washer Dowty 3/4"	2
11	HY225	Adaptor 3/8" - 3/4" BSP	1
12	HY1766	Adaptor 3/4" - 3/4" BSP	1
13	P3507	3/4" Hose - Tank to Pump	1
14	P2791	3/8" Hose - Parker Motor to Parker Motor	1
15	P3506	3/8" Hose - Bank to Tank Return	1
16	P2790	3/8" Hose - DCV to Lower Parker Motor	1
17	P2792	3/8" Hose - DCV to Upper Parker Motor	1
18	P3505	3/8" Hose - Pump to DCV	1

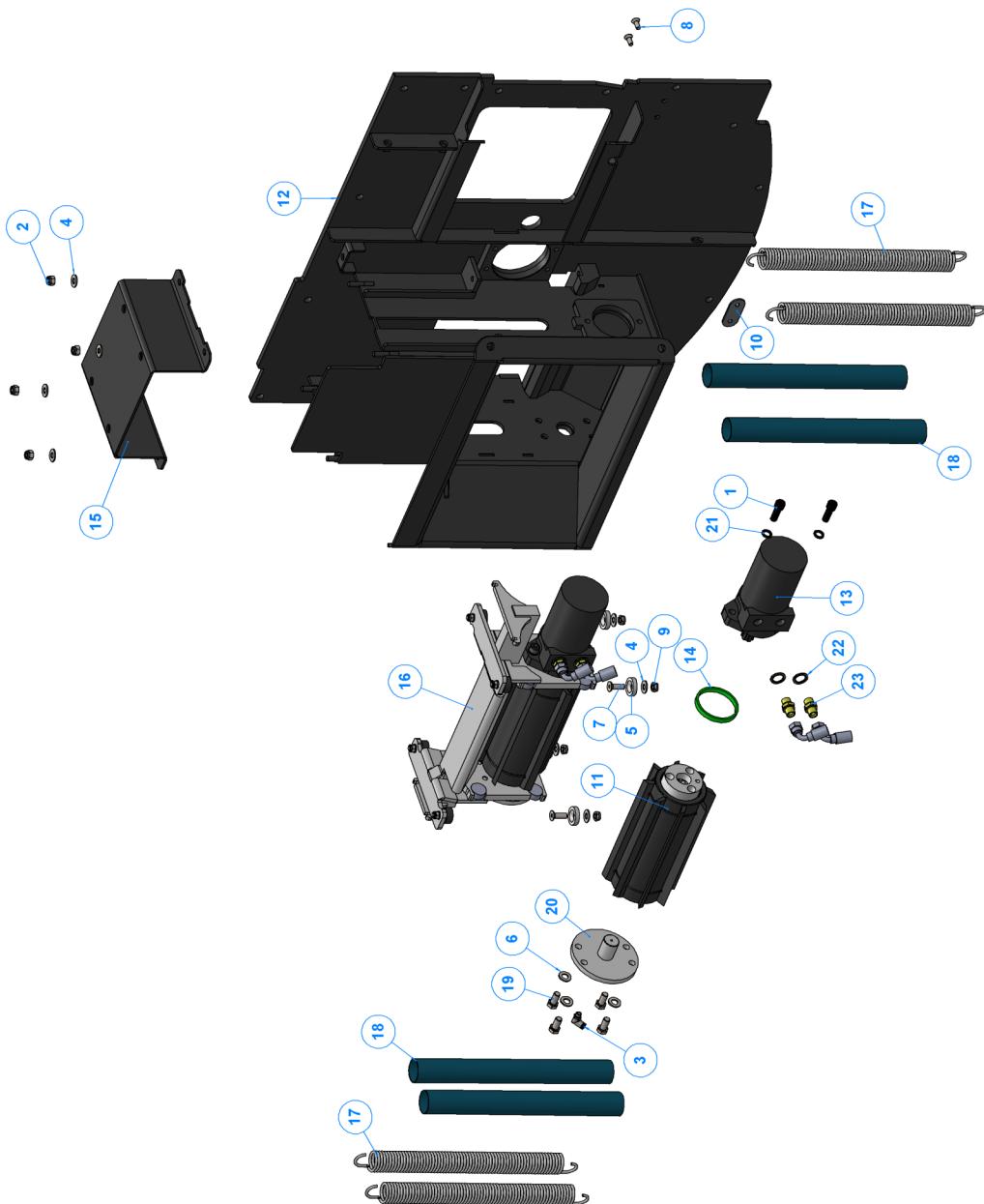


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	BO1658	Set Screw M6 12 BZP	8
2	WA709	Washer M6 C BZP	8
3	WA711	Washer M8 A BZP	2
4	BO351	Set Screw M8 30 BZP	2
5	1703	Hydraulic Oil Tank	1
6	HY396	Washer Dowty 38	1
7	HY211	3/8" Drain Plug	1
8	1702F	Tank Top Adapter Plate	1
9	HY1434F	Tank Top Filter Gasket	1
10	HY1434	In Tank Filter	1
11	HY152	Washer Dowty 3/4"	2
12	HY225	Adaptor 3/8" - 3/4" BSP	1
13	HY1766	Adaptor 3/4" - 3/4" BSP	1
14	4219	3/4" Tapered Blanking Plug	1

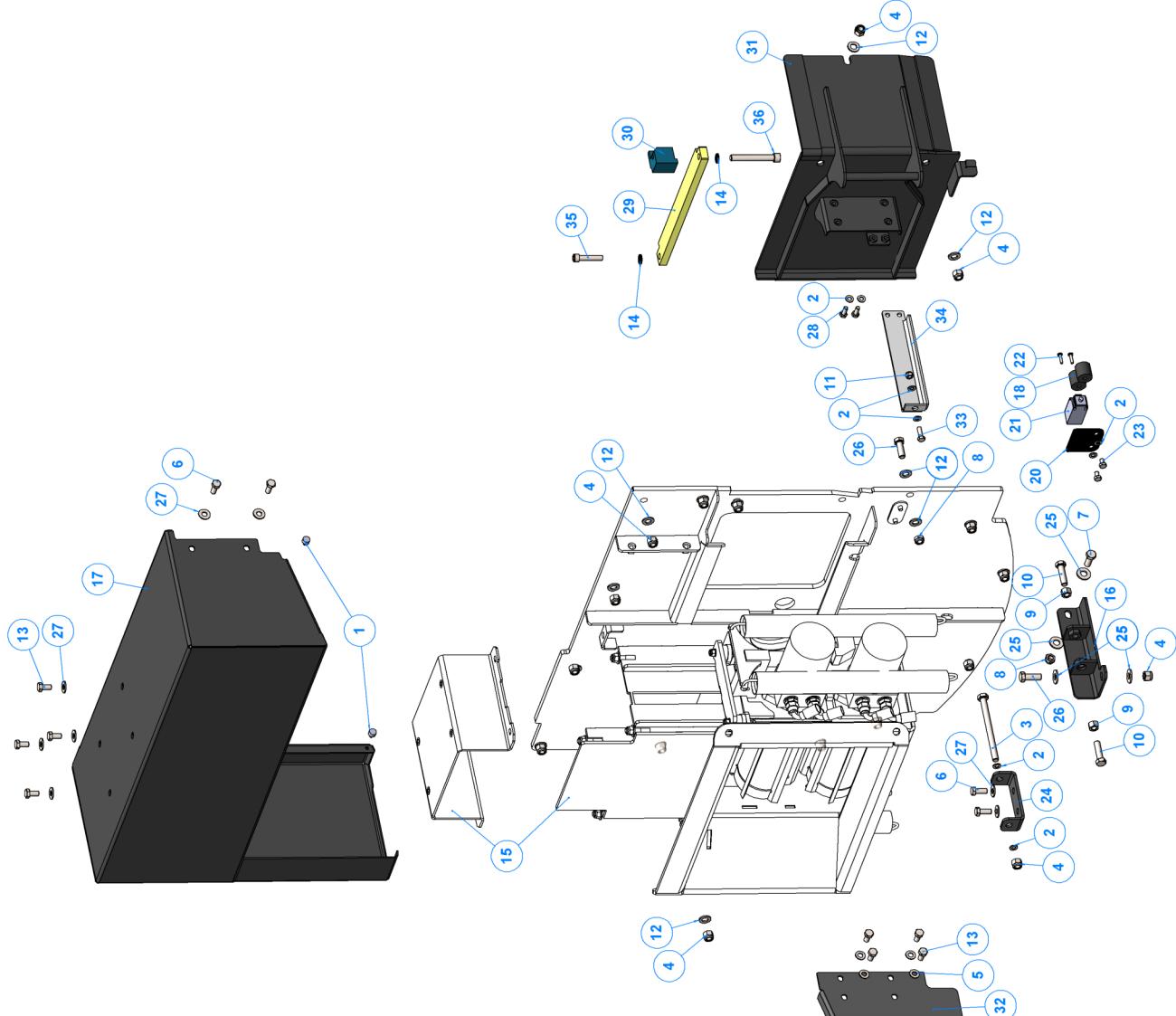
Hydraulic oil filter: FL100



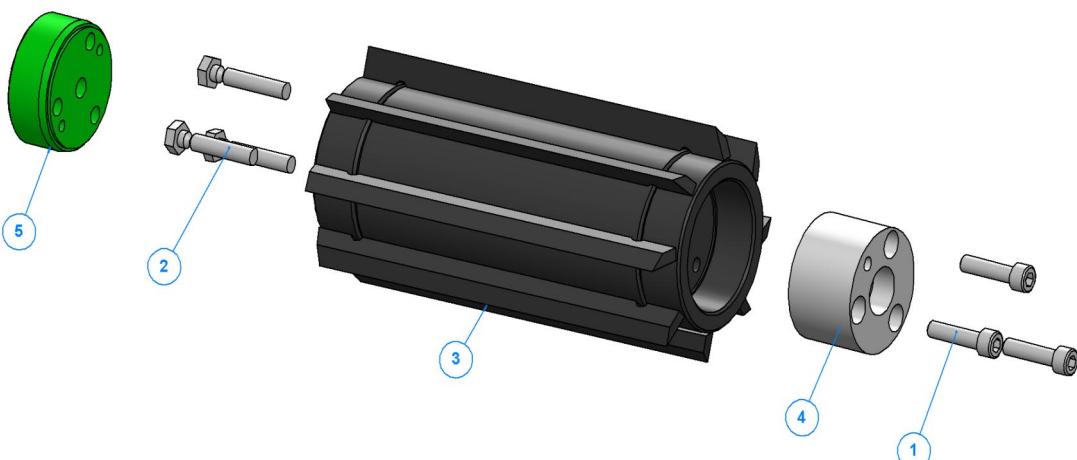
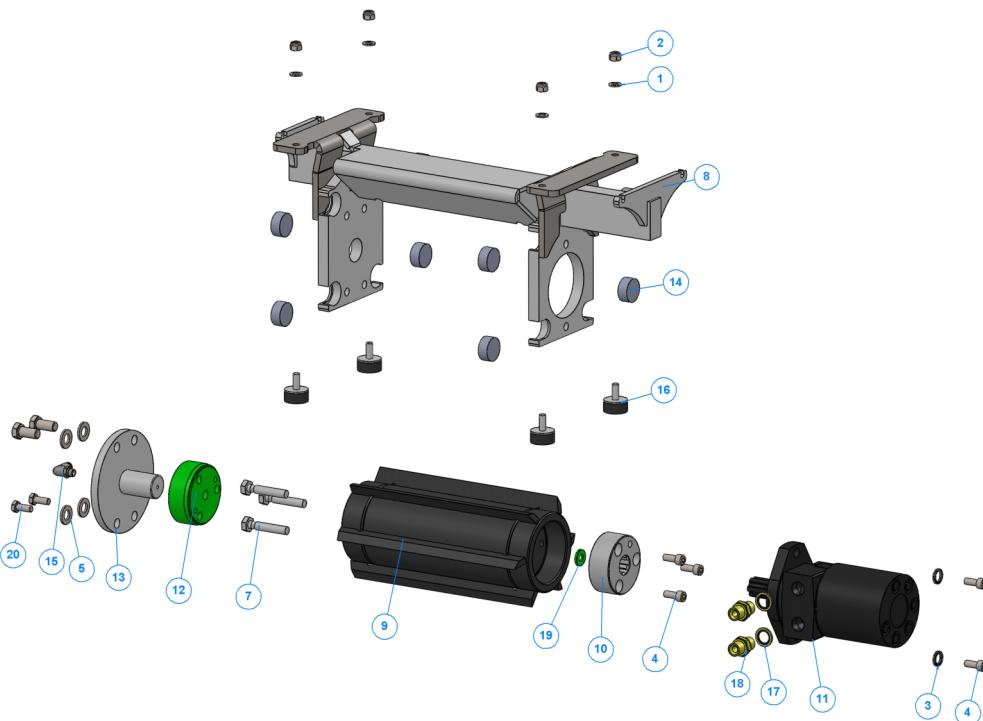
ITEM NO.	PART NUMBER	DESCRIPTION	Default QTY.
1	19730	Bolt M12 1.75 35 BZP	2
2	4345	Nut M10 P Nyloc	4
3	18474	Fitting Grease Point Right Angle	1
4	WA839	Washer M10 C BZP	8
5	C024-0107	M12 CSK HEAVY WASHER ACCEPTS M12/30CSK	4
6	WA702	Washer M12 A BZP	4
7	P0000014	Screw M10 1.5 30 CSK	4
8	BO348	Screw M8 20 Csk Socket Plain	2
9	NU052	Nut M10 Nyloc T	4
10	P0000993	Profile Roller Box Hatch Switch Mount	1
11	TW280 TDHB Roller Bottom		1
12	P0002698F	Roller Box 280x210	1
13	2982B	Parker Motor	1
14	P0002931M	Bottom Bearing Bush	1
15	P0001582F	Bracket Roller Box Guard Mount 156x232	1
16	TW 280 Top Slide Assembly		1
17	2116	Spring 387 Free Length	4
18	2888	Layflat 2 inches Spring	4
19	BO277	Set Screw M12 1.75 25 BZP	4
20	P0002678F	Stub Shaft Bottom	1
21	19259	Nordlock Washer M12	2
22	HY398	Washer Dowty 12	4
23	HY161	Adaptor Mm 3/8 - 3/8	4



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2834	Av Mount VE Type	2
2	WA711	Washer M8 A BZP	8
3	P0001395	Bolt M12 1.75x150 BZP	1
4	NU644	Nut M12 P Nyloc	17
5	WA701	Washer M10 A BZP	4
6	BO360	Set Screw M10 25x32P	4
7	BO321	Set Screw M12 30x32P	1
8	NU045	Nut M12 1.75 Nyloc T	2
9	NU046	Nut M12 1.75 Plain BZP	2
10	18172	M12 X 45 Ht Set Z/P	2
11	NU479	Nut M8 1.25 Nyloc P	1
12	WA702	Washer M12 A BZP	17
13	BO878	Bolt M10 20 BZP	8
14	19259	Nordlock Washer M12	2
15	TW280 TDHB Roller Box		1
16	P0001650F	Bracket Spring Carrier OS	1
17	P0001773F	Guard Roller Box 82x279	1
18	P0001375	AV Mount M8 FF 30x30 60 (3030DD08- 60)	2
19	TW280 TDHB Switch Mounting Roller Box		1
20	P0001080F	Bracket Access Hatch Switch	1
21	EL1348	Switch Limit (Metal Plunger)	1
22	BO856	Screw M5/20 Pan Pozi BzP	2
23	18037	Set Screw M8 1.25x12 BZP	2
24	P0002644F	Bracket Spring Hanger	1
25	WA704	Washer M12 C BZP	4
26	BO429	Set Screw M12 35x32P	2
27	WA839	Washer M10 C BZP	8
28	BO0346	Set Screw M8 1.25x20 BZP	2
29	P0002676M	Hardox Anvil Insert	1
30	P0002677M	Vertical Anvil	1
31	P0002914F	Access Hatch Assembly	1
32	P0001770F	Guard Roller Box Moving 255.5x329	1
33	BO350	Set Screw M8 25 BZP	1
34	P0002930F	Access Hatch Guard Stay	1
35	CO18-0714	M10 x 1.25x 50 Fine Thread SKT Cap	1
36	P0002643	M12 1.75 90 Socket Cap Head	1

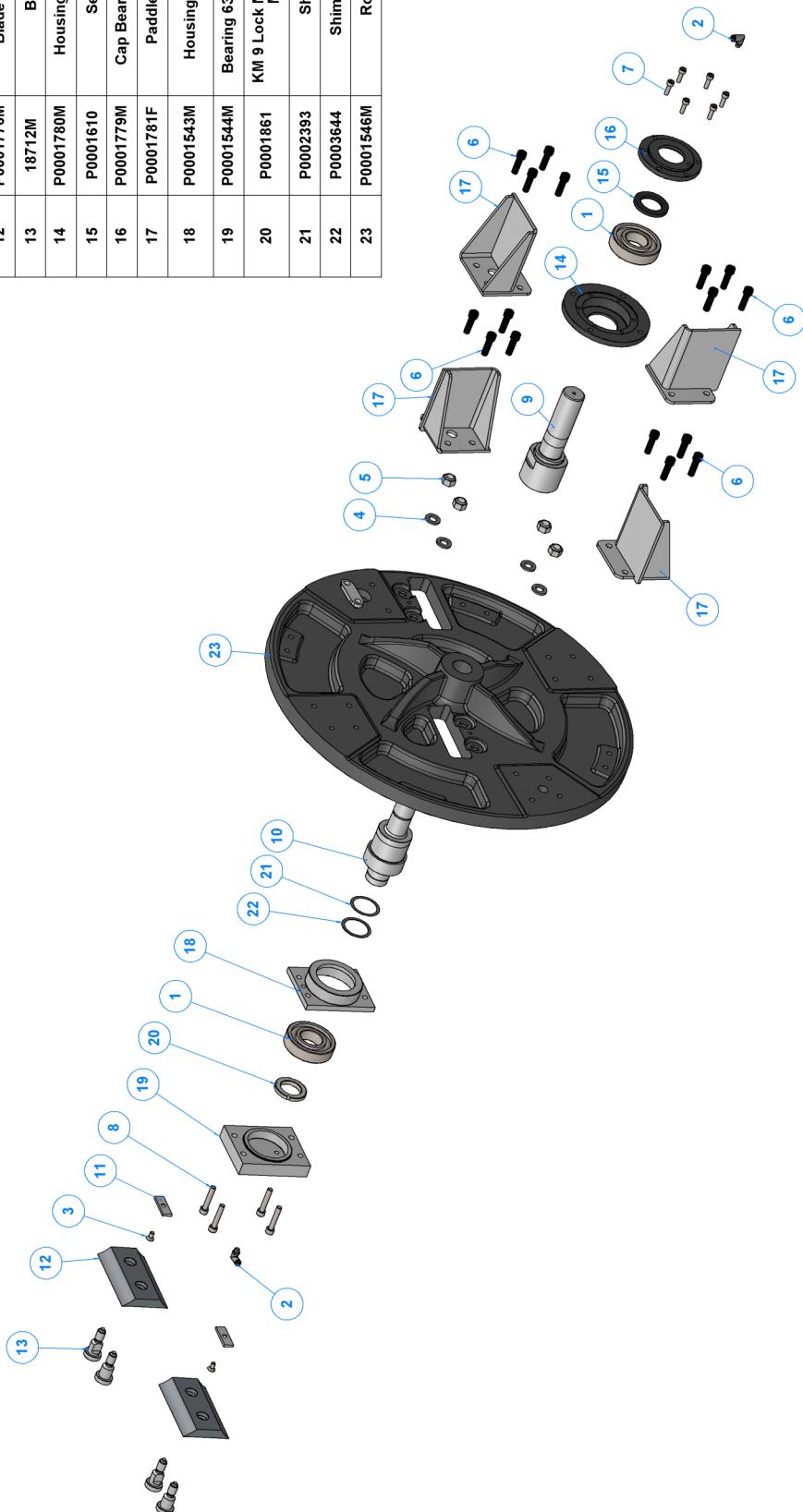


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0105	M8 FORM A WASHER Z/P	4
2	C031-0163	M8 TYPE P NYLOC NUT Z/P	4
3	19259	NORDLOCK WASHER M12	2
4	C005-0607	M8 X 20 SKT CAP SET Z/P 12.9	5
5	C021-0107	M12 FORM A WASHER Z/P	4
6	BO277	SET SCREW M12 1.75 25 BZP	2
7	P0001401	BOLT SHEAR 1.5 55	3
8	P0002688F	TOP SLIDE ROLLER BOX 280 IS NEW	1
9	P0002623F	ROLLER INFEED Ø142 X 276 - 6 BLADES	1
10	1361M	BUSH SPLINE TOP ROLLER DRIVE Ø74.9 - 23.5	1
11	2982B	PARKER MOTOR	1
12	P0001327M	ROLLER NYLON BEARING	1
13	P0002682F	STUB SHAFT TOP	1
14	3009	SLIDE PLUG	8
15	18474	FITTING GREASE POINT RIGHT ANGLE	1
16	P0002613	MALE CYLINDRICAL BUFFER 3015VE20 70 SHORE 30 X 15 - M8 X 20 STUD	4
17	HY396	WASHER DOWTY 3/8"	2
18	HY161	ADAPTOR MM 3/8 - 3/8	2
19	P0002932M	SPACER TOP ROLLER SPLINE	1
20	BO0346	SET SCREW M8 1.25 20 BZP	2

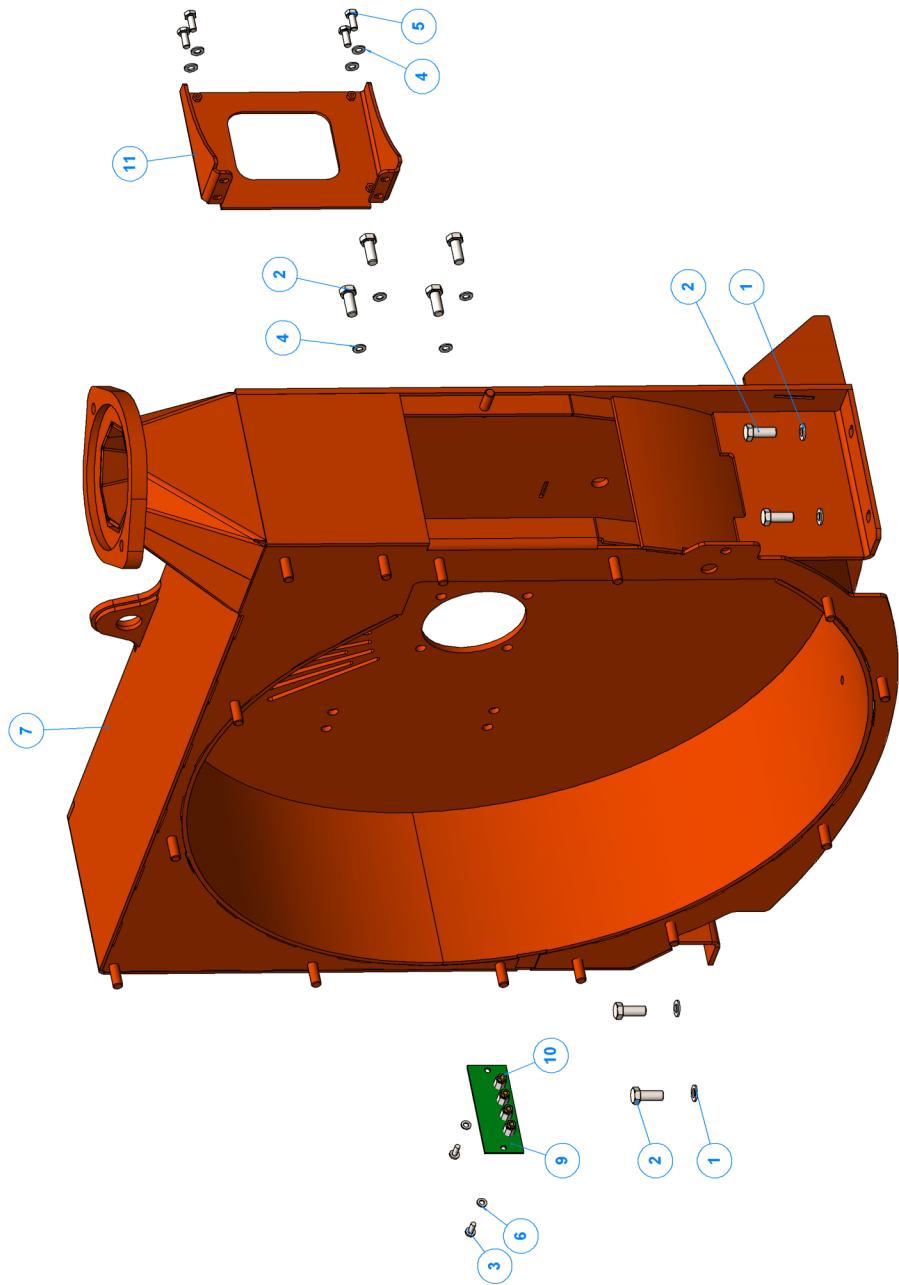
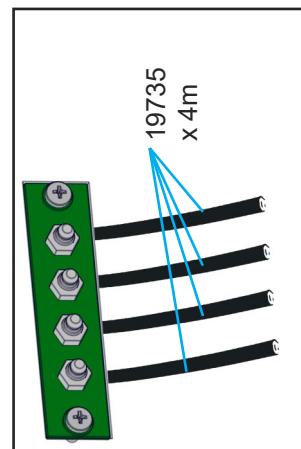


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C005-0712	M10 X 40 SKT CAP Z/P 12.9	3
2	P0001401	BOLT SHEAR 1.5 55	3
3	P0001553F	ROLLER INFEED Ø142 X 276 - 8 BLADES	1
4	4100M	BUSH SPLINE ROLLER DRIVE	1
5	P0001327M	ROLLER NYLON BEARING	1

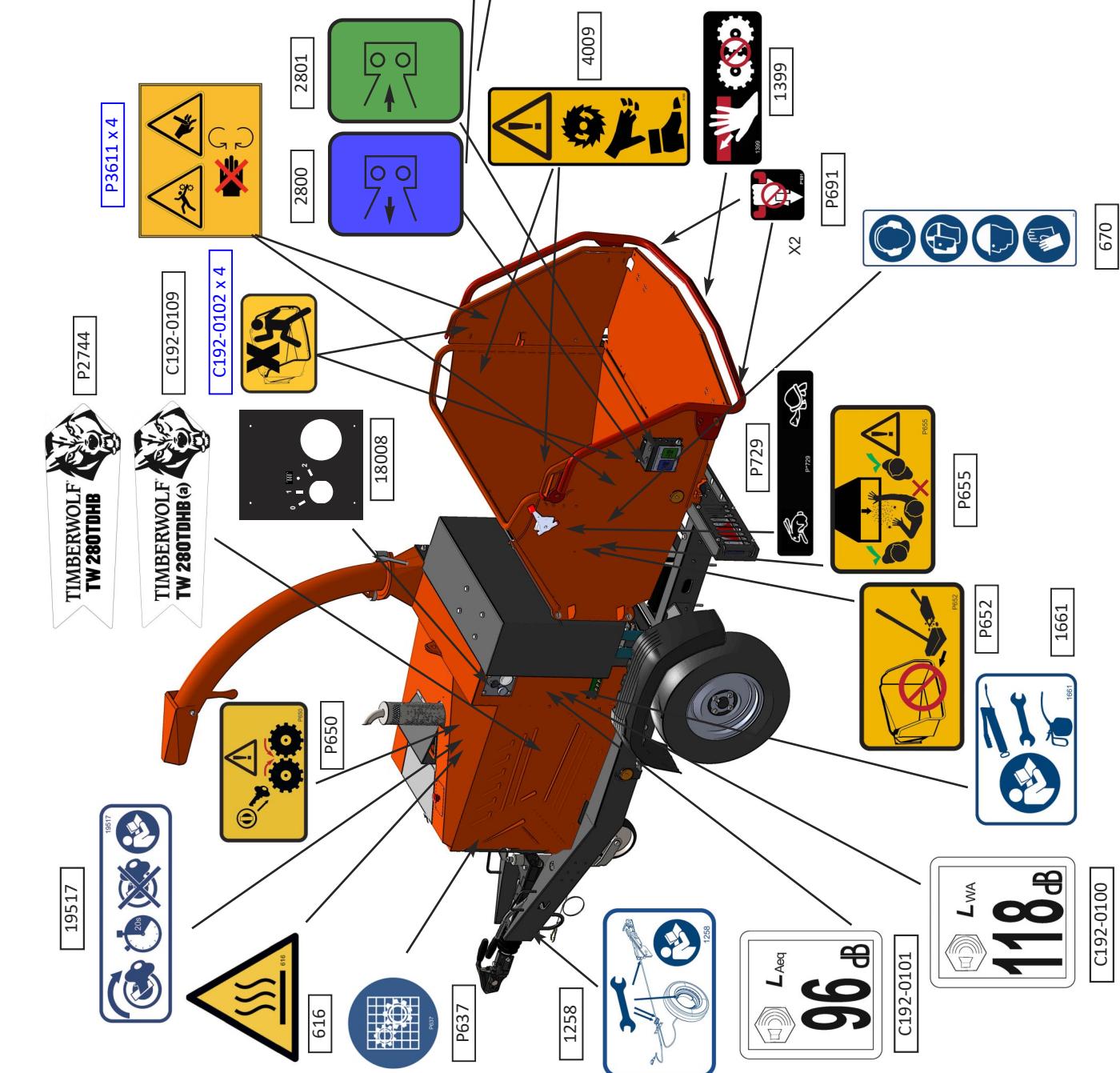
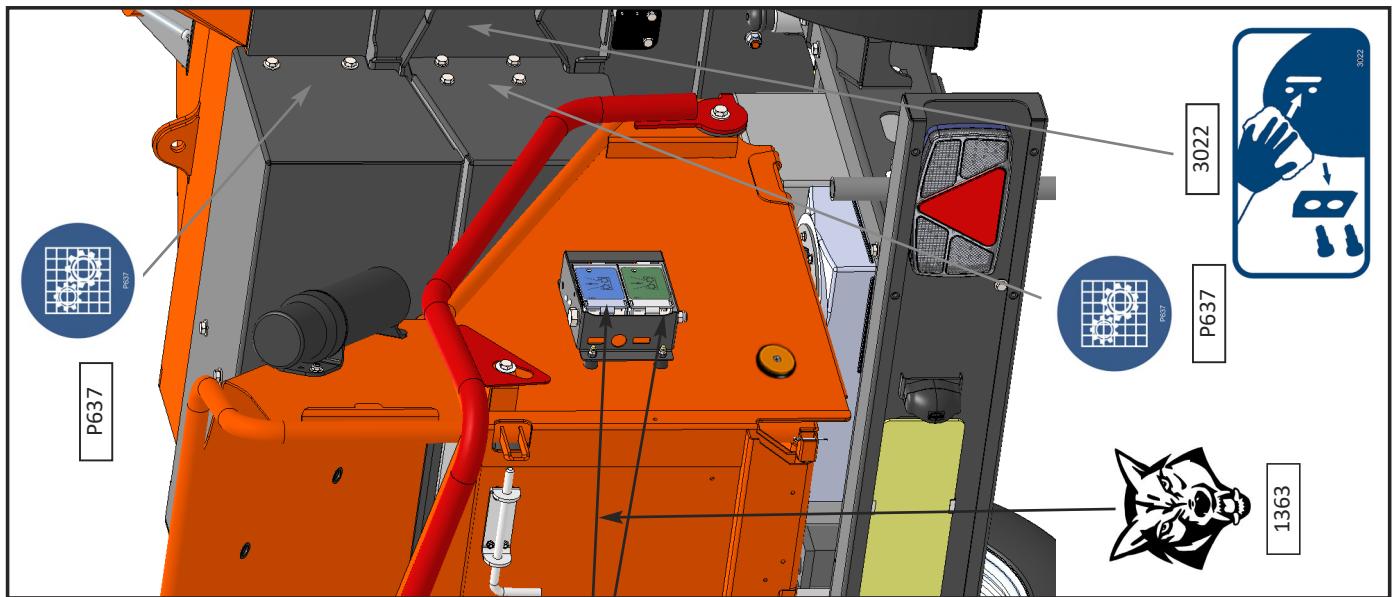
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	P0001659	Bearing 6309 C3	2
2	18474	Fitting Grease Point Right Angle	2
3	BO355	Csk Socket M8 16	2
4	WA1218	Washer M16 30 Hard.SLDPR	4
5	NU1284	Nut M16 Nyloc T 1.50 Fine Bzp	4
6	BO1517	Bolt M12/40 Cap Screw	16
7	BO1527	Socket Head Cap M8 1.25 25	6
8	P0001879	Socket Head Cap M10 1.25 55	4
9	P0001778M	Shaft Rotor Ø750	1
10	P0001777M	Shaft Nose Rotor Ø750	1
11	P0001649M	Plate Blade Cutter 158 Length Bolt Anti Rotation 57 x 20mm	2
12	P0001776M	Blade Cutter 158 Length	2
13	18712M	Bolt M16 Blade	4
14	P0001780M	Housing Bearing 6309 Rear	1
15	P0001610	Seal 45 X 70 X 7	1
16	P0001779M	Cap Bearing 6309 Rear Ø55 ID	1
17	P0001781F	Paddle Rotor 152 Height	4
18	P0001543M	Housing Bearing 6309 Front	1
19	P0001544M	Bearing 6309 Cap Front External	1
20	P0001861	KM 9 Lock Nut (Lock Washer Type) M45 x 1.5mm	1
21	P0002393	Shim Shaft ID45	1
22	P0003644	Shim Shaft 280 - 1mm	1
23	P0001546M	Rotor Disc Ø750	1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0126	M10 FORM C WASHER Z/P	4
2	C002-0810	M12 x 30 HEX SET Z/P 8.8	8
3	C013-0405	M6 x 16 PAN POZI Z/P	2
4	C021-0105	M8 FORM A WASHER Z/P	8
5	C016-0607	M8 x 1 x 20 HEX SET SIC 8.8	4
6	C021-0123	M6 FORM C WASHER Z/P	2
7	P0001721F	Rotor Housing Ø750 - 221	1
8	TW280 TDHB	Grease Point 128.5x49x3 Assy	1
9	P0001737	Profile 128.5x49x3 Grease Point	1
10	C072-0101	45° Grease Nipple 1-8" BSP Kit	4
11	P0002316F	Bracket Rotor Housing Electrical Panel Assy	1









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