



TIMBERWOLF[®]
Lead the pack

TW 280TVGTR WOOD CHIPPER
INSTRUCTION MANUAL
(ORIGINAL INSTRUCTIONS)



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 280TVGTR 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 3 to 12. 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.

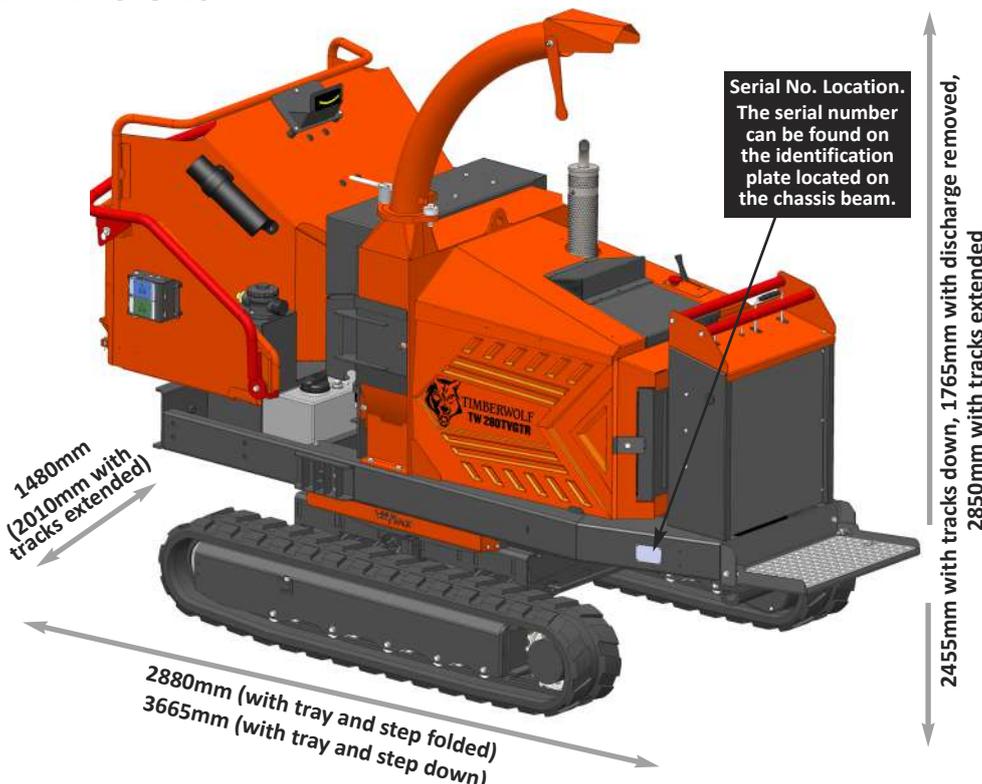
THIS SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, BE ALERT TO THE POSSIBILITY OF INJURY TO YOURSELF OR OTHERS AND CAREFULLY READ THE MESSAGE THAT FOLLOWS.

ALWAYS FOLLOW SAFE OPERATING AND MAINTENANCE PRACTICES

PURPOSE

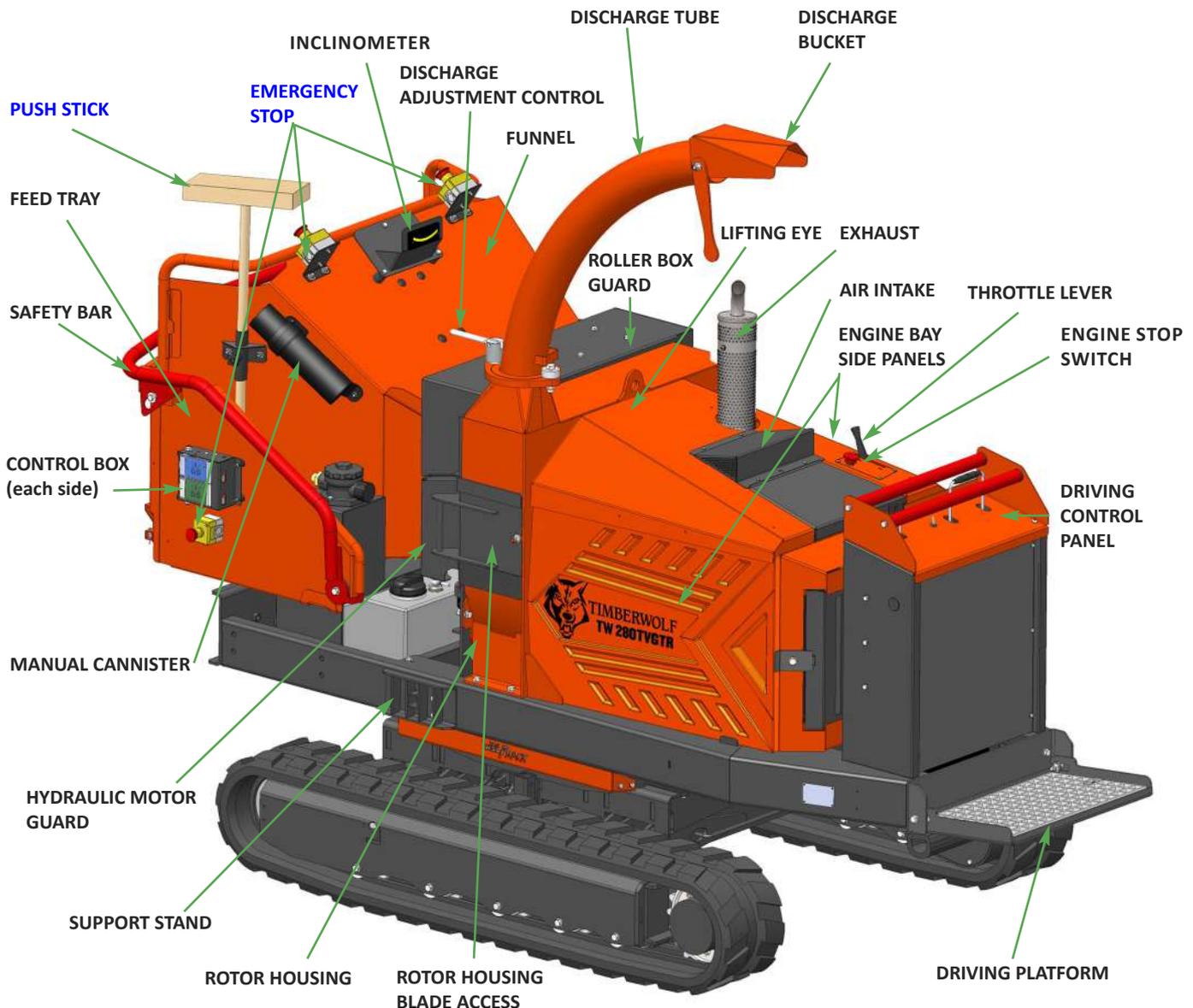
The Timberwolf TW 280TVGTR is designed to chip solid wood material up to 210mm in diameter and capable of chipping over 6.5 tonnes of brushwood per hour.

DIMENSIONS



SPECIFICATION

- Engine type:** Kubota 4-cylinder turbo diesel
- Maximum power:** 33kW (45hp)
- Cooling method:** Water cooled
- Overall weight:** 2089kg (2155kg with winch)
- Starting method:** Electric
- Roller feed:** Twin series hydraulic motors
- Maximum diameter material:** 210mm (8 1/4")
- Fuel capacity:** 36 litres
- Hydraulic oil capacity:** 50 litres
- Material processing capacity:** Up to 6.5 tonnes/hr
- Fuel type:** Diesel



THE TW 280TVGTR 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.

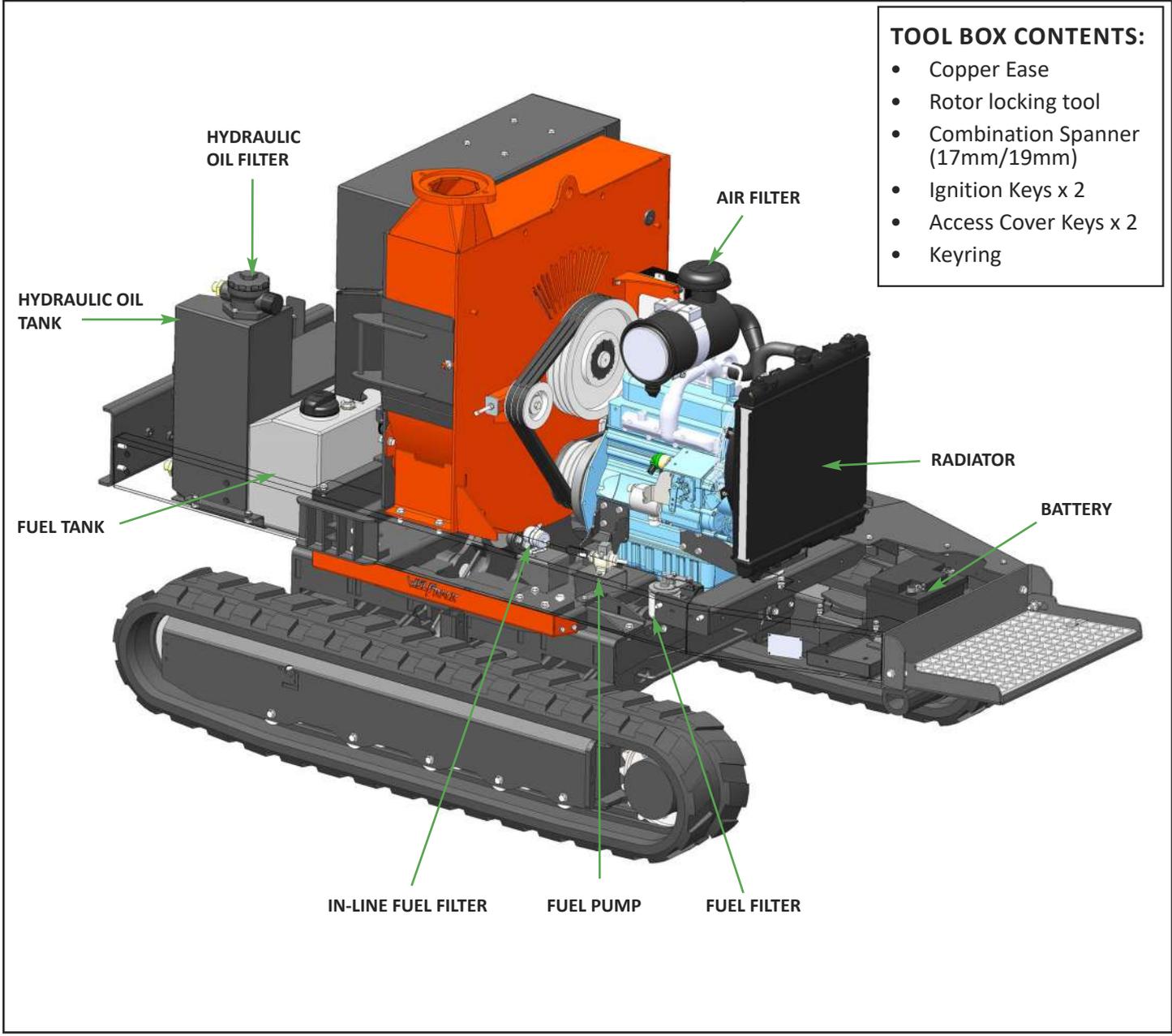
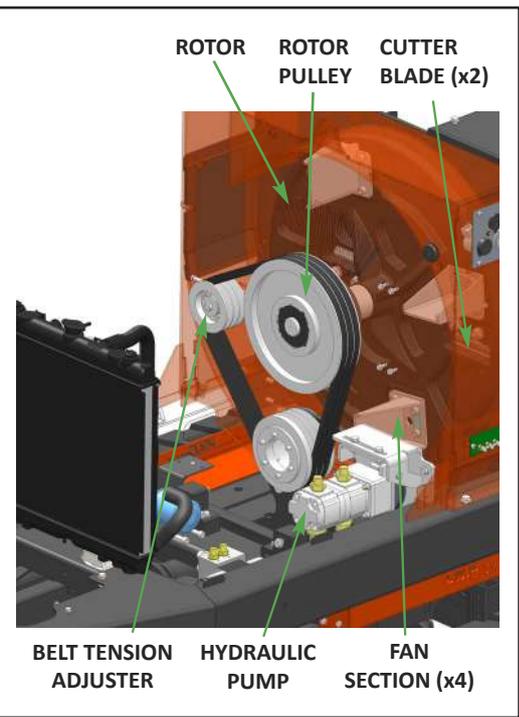
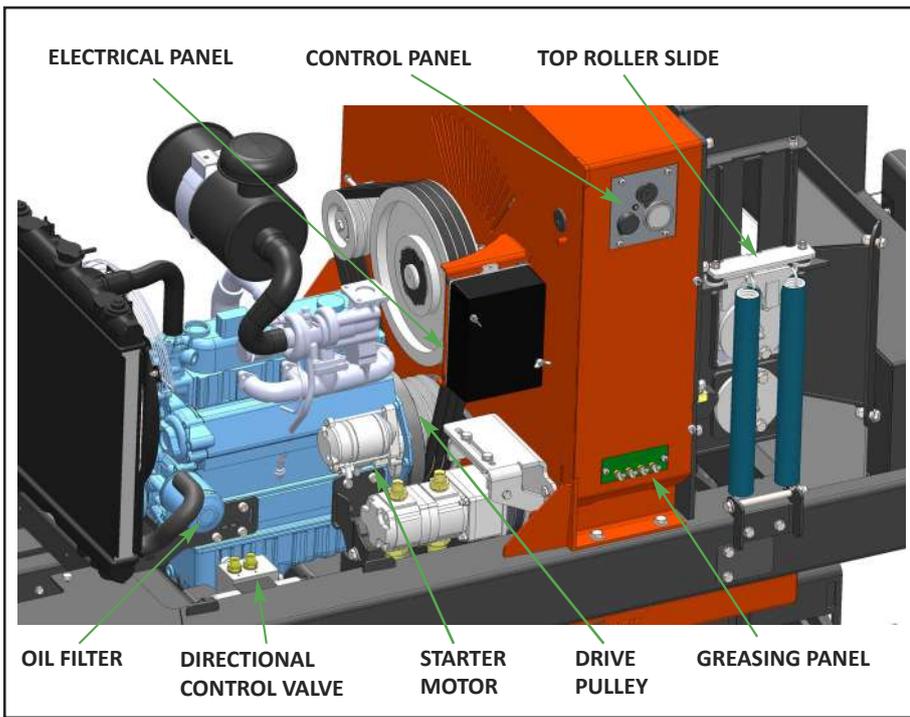
Guards may be removed for maintenance only, as described in the Service Instruction pages of this manual. **Ensure guards remain in place throughout operation.**

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.

NOTES: 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 tunnel when not in use.



- TOOL BOX CONTENTS:**
- Copper Ease
 - Rotor locking tool
 - Combination Spanner (17mm/19mm)
 - 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-s 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.



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.

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 brush may push you to one side causing danger. Badly twisted brush should be trimmed before being chipped to avoid thrashing in the feed funnel.
- Be aware that the chipper can eject chips out of the feed funnel with considerable force. Always wear full head and face protection.
- Always work on the side of the machine furthest from any local danger, e.g. not road side.
- 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).



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 use the feed funnel to transport any items.



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



CLOTH



PLASTIC



STONES



METAL



GLASS



RUBBER



BRICKS



STRING



ROOTS



BEDDING PLANTS

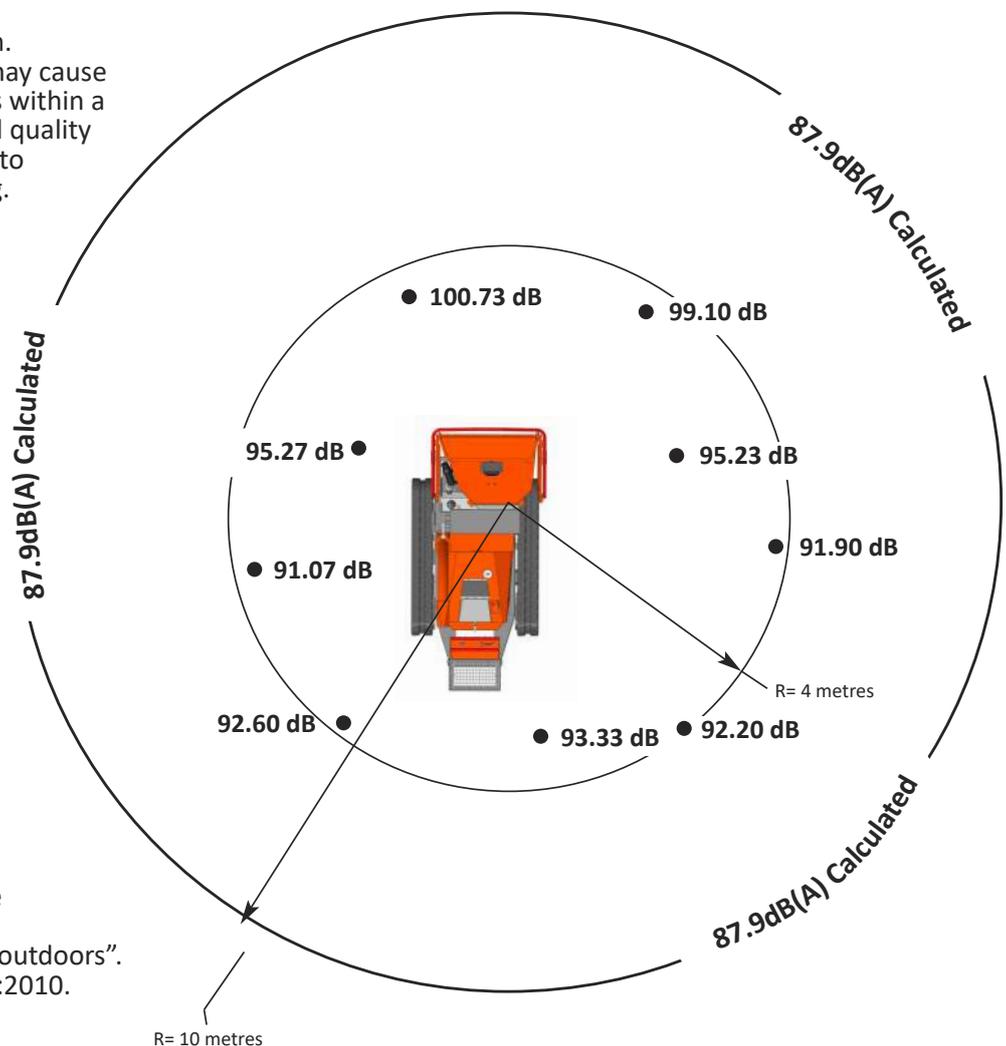
NOISE TEST

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.

R= 10 metres

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	✓	✓
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 with the discharge tube pointing away from the driver's platform.

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.
- 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.

VIBRATION DATA

This data is provided to enable assessment of vibration exposure, when the machine is operated in the modes described. Please refer to local Health & Safety Regulations to determine the daily exposure action and limit values.

TW 280TVGTR, Tracked Hydraulic Fed Chipper, 45hp 1498cc Diesel Engine		
Declared vibration emission value in accordance with BS EN 12096:1997		
	Whole Body Vibrations (m/s²)	Hand Arm Vibrations (m/s²)
Measured vibration emission value <i>a</i>	1.55	4.55
Uncertainty <i>K</i> *	0.62	2.28
Values determined when standing on driver's platform tracking over soft grassy ground.		
Measured vibration emission value <i>a</i>	1.80	5.05
Uncertainty <i>K</i> *	0.72	2.02
Values determined when standing on driver's platform tracking over hard paved ground.		
* <i>K</i> value calculated according to provisions in BS EN 12096:1997		

DELIVERY

All Timberwolf TW 280TVGTR machines have a full pre - delivery inspection before leaving the factory and are ready to use. Read and understand this instruction manual before attempting to operate the chipper. In particular, read pages 5-6 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** controls.

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.

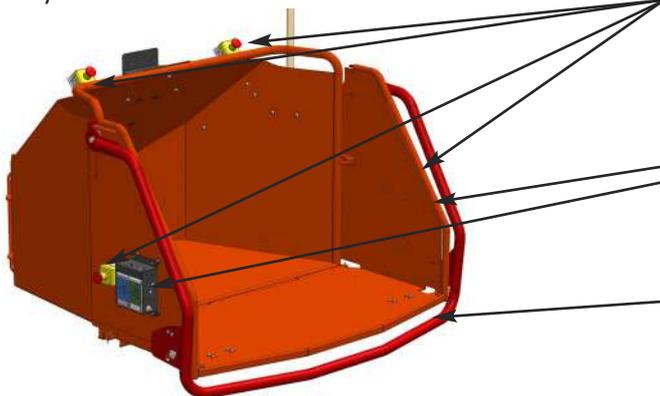


WARNING

DO NOT REMOVE, JAM, DISABLE, BYPASS, OVERRIDE OR OTHERWISE IMPEDE THE EFFECTIVENESS OF THE RED SAFETY BAR.

Control Box Diagram

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





EMERGENCY STOP (ESD)

BLUE REVERSE FEED CONTROL



GREEN FORWARD FEED CONTROL

RED SAFETY BAR

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

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

AUTO CONTROLS

The no stress 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 280TVGTR 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** located 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 on the bonnet next to the engine stop switch (see parts locator on page 3).



CRAWLER TRACK CONTROLS

The TW 280TVGTR is designed to operate in either chip or track mode, but not both at the same time. The modes can be selected using the toggle switch located on the driving control panel. The lift function to adjust the gradient and height of machine is available in both modes.

Chipping Mode

Power is supplied for the chipping function. The feed rollers can be operated as detailed on page 9. The machine cannot be tracked in this mode but the lift function is available to adjust the height and incline of machine. During any adjustment power will be diverted from the feed rollers.

Crawler Track Mode

Power is supplied for the tracking function only - the machine can be tracked in this mode. The rotor and blades will remain spinning, but the feed roller controls are inoperable, the lift function is available to adjust the TW 280TVGTR to suit the terrain.

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

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

Lifting Mode

Power is available for the lift function in both chip and track mode. The machine can be lifted by means of the two control levers, each lever (left and right) controls the lift action of the corresponding track. From its closed position, when the levers are moved forward, the track will move out horizontally before it lifts the machine - take care to allow for the extra width and height when performing this function. To lower the machine, move the lever in the reverse direction, the machine will be lowered first before the track is pulled horizontally back into the closed position.

NOTE: ENSURE TRAY IS ROTATED INTO THE UP/CLOSED POSITION PRIOR TO TRACKING TO AVOID DAMAGE.



The inclinometer (positioned on the top of the feed funnel) indicates the angle of incline of the chipper, on the horizontal plane. The chipper can operate continuously at a 20° incline and up to 10 minutes at 30° incline.



WARNINGS



- ALWAYS WEAR FULL PERSONAL PROTECTIVE EQUIPMENT WHEN DRIVING CHIPPER (SEE PAGE 5) AND ENSURE BUCKET IS CLOSED WITH DISCHARGE POINTING AWAY FROM DRIVING POSITION.
- NEVER LEAVE THE CHIPPER ON A SLOPE UNATTENDED. WHEN TRACKING, MACHINES ARE FOR SINGLE OPERATOR USE ONLY. NEVER TRANSPORT PASSENGERS ON THE DRIVER'S PLATFORM.
- ENSURE THE TRACKS ARE CLEAR OF OBSTRUCTIONS WHEN USING THE VARIABLE GRADE WOLFTRACK™ CHASSIS.
- DO NOT TRACK THE CHIPPER AT FULL HEIGHT WHEN WORKING ON A GRADIENT.
- NEVER POSITION ANY PART OF YOUR BODY UNDER THE MACHINE AS SERIOUS INJURY MAY OCCUR.

DAILY CHECKS BEFORE STARTING

- Locate the machine on firm level ground.
 - Check the machine is well supported and cannot move.
 - Check all guards are fitted and secure.
 - Check the discharge unit is in place and fastened securely.
 - Check 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 on page 11.
 - Check (visually) for fluid leaks.
 - Check fuel and hydraulic oil levels.
- For parts location see diagrams on pages 3 & 4.

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.

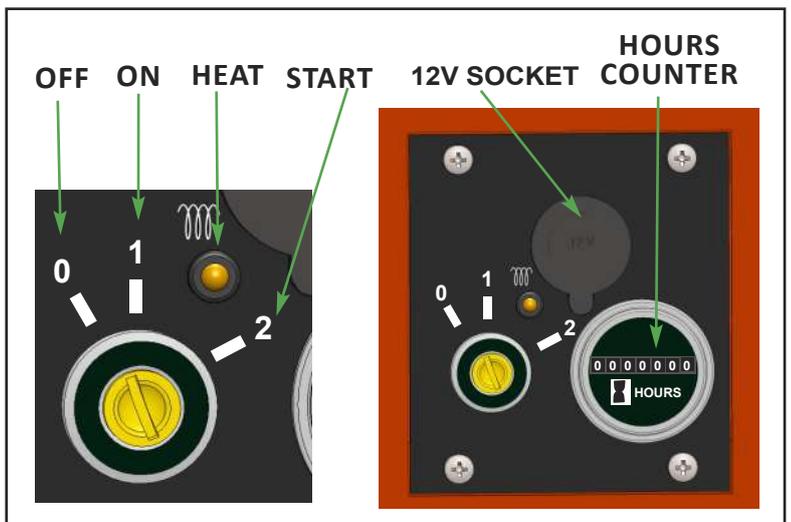


STARTING THE ENGINE

- 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.



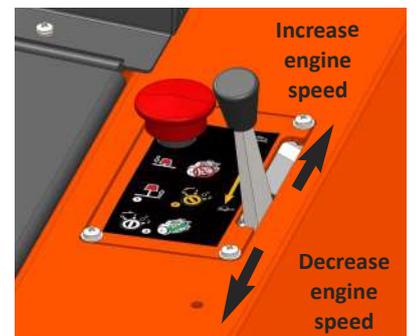
CONTROLLING ENGINE SPEED

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

STOPPING THE ENGINE

- Move the throttle lever to the 'Tortoise' to reduce the engine speed to idle.
- Leave the engine running for 1 minute.
- Turn the power switch to position 0. The engine should stop after a few seconds.
- Remove the ignition key.

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

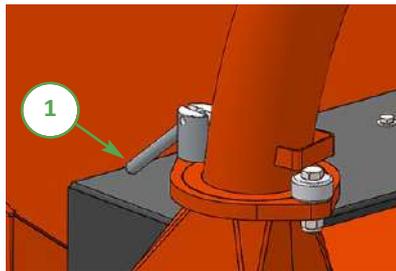


DISCHARGE CONTROLS

Controlling the discharge is an essential part of safe working.

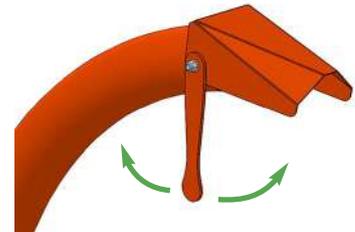
ROTATION

- 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 and running smoothly.
- Release the catches on the feed tray and lower into the working position. Pull to release the red stop button.
- 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.
- Re-press the **green forward** feed control.
- Commence feeding material.



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.

CHIPPING

Chipping must be performed at maximum engine speed. 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 **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', turn the engine off, remove the ignition key and investigate.

BLOCKAGES

Always be aware that what you are putting into the chipper must come out. If the chips stop coming out of the discharge tube but the chipper is taking material in - STOP IMMEDIATELY. Continuing to feed material into a blocked machine may cause damage and will make it difficult to clear.

If the chipper becomes blocked, proceed as follows:

- Stop the engine and remove the ignition keys.
- Remove the discharge tube. Check that it is clear.
- Wearing gloves, reach into the rotor housing and scoop out the majority of the debris causing the blockage.
- Replace the discharge tube.
- Restart the engine and increase to full speed.

In the event of heavy blockages the rotor housing access hatch can be removed (see parts locator on page 3).

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

NOTE

Continuing to feed the chipper with brushwood once it has become blocked will cause the chipper to compact the chips in the rotor housing and it will be difficult and time consuming to clear.

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



WARNING

DO NOT REACH INTO THE ROTOR HOUSING WITH UNPROTECTED HANDS. THERE ARE SHARP BLADES AND ANY SMALL MOVEMENT OF THE ROTOR MAY CAUSE SERIOUS INJURY.

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 280TVGTR 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.

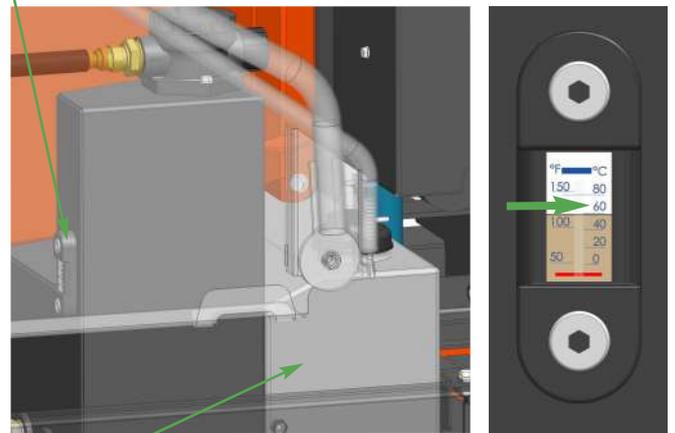
The machine is also fitted with a static blade (anvil). It is important that the anvil is in good condition to allow the cutting blades to function efficiently. Performance will be poor even with sharp cutter blades if the anvil is worn.

HYDRAULIC OIL LEVEL AND TEMPERATURE INDICATOR

The indicator is situated on the side of the hydraulic oil tank. The hydraulic oil level should be within the upper and lower level marks. Refer to filling and draining instructions on page 22.

When the chipper is running, the oil temperature should not exceed 65°C. If it does, stop the machine immediately. Failure to do so may result in damage. Overheating can result from the chipper being worked extremely hard in hot conditions, as the oil is not getting a chance to cool down. Stop the chipper and allow oil to cool before continuing. If the temperature goes above 65°C and the machine is not being worked hard or the air temperature is not particularly high, this indicates low oil, a jammed hydraulic motor or valve. Stop immediately and investigate.

When the chipper is on level ground, the oil level should sit between the red line at the bottom of the gauge and the blue line at the top. If this level drops significantly it indicates an oil leak. Stop immediately and investigate.



FUEL LEVEL INDICATOR

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

REFUELLING

When refuelling, follow standard Health & Safety practices:

- Stop the engine and allow 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 area around 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.



WINCH OPERATION

Where a winch is factory fitted, it is for **recovery purposes only**. Always follow the winch manufacturer's instruction manual provided with the machine. Never winch while an operator is on the driver's platform.

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 level.	✓				
Check radiator is clear.	✓				
Check engine oil - top up if necessary (10W-30).	✓				
Check for engine oil / hydraulic oil leaks.	✓				
Check fuel level.	✓				
Check hydraulic oil level.	✓				
Check feed funnel, feed roller cover, access covers, engine covers and discharge unit are securely fitted.	✓				
Check blades.	✓				
Check air intake is clear.	✓				
Clean air filter element.	DEPENDING ON WORKING ENVIRONMENT				
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 for loose electrical wiring.			✓		
Replace track drive unit oil			FIRST TIME ✓	THEN ✓	OR ✓
Replace hydraulic oil filter - every year or 100 hours after service or repair work to the hydraulic system.			✓	<i>OR</i>	✓
Replace hydraulic oil.			✓	<i>OR</i>	✓
Grease tandem pump spline drive					✓
Replace fuel pipes and clamp bands.	REFER TO YOUR ENGINE SUPPLIER'S MANUAL				
Check coolant condition.					
Change engine oil.					
Replace engine oil filter cartridge.					
Check valve clearance.					
Replace anvils when worn.	RETURN TO DEALER FOR ANVIL CHANGE				

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.

SAFE LIFTING & SECURING DOWN 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 2500kg, as indicated on the machine.

The method of securing the chipper can vary depending on the type of carrier and position of tie down points available on the carrier. Timberwolf recommend where possible to secure machine to carrier using correctly rated ratchet straps as shown.

Securing a Timberwolf chipper ready for transport must be carried out by competent qualified personnel. Failure to observe this procedure could result in chassis and/or undercarriage damage.



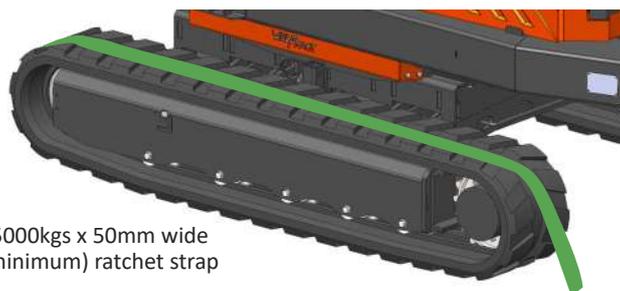


WARNING

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.

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.



5000kgs x 50mm wide (minimum) ratchet strap

BATTERY REMOVAL AND MAINTENANCE

Battery Removal

- 1 The battery is located within the control tower.
- 2 Remove the seven M6 bolts securing the driving controls front guard.
- 3 Remove the two M10 bolts securing the battery clamp.
- 4 Remove the negative battery lead.
- 5 Remove the positive battery lead.

Battery Maintenance

- 1 Remove the seven M6 bolts securing the driving controls front guard.
- 2 The battery can be serviced in this position.



WARNING

REFER TO THE BATTERY SAFETY SECTION ON PAGES 18.

CHECK FITTINGS

The Timberwolf TW 280TVGTR 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
Drain 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"> For safety reasons, wear eye protection when handling a battery. 		<p>Corrosive hazard: Battery acid is highly corrosive, therefore:</p> <ul style="list-style-type: none"> Wear protective gloves and eye protection. 	<p>suds, and rinse with plenty of water.</p> <ul style="list-style-type: none"> If acid is swallowed, consult a doctor immediately.
	<ul style="list-style-type: none"> Keep out of reach of children. 		<ul style="list-style-type: none"> Do not tilt the battery, acid may escape from the vent openings. 	 <p>Warning notes: The battery case can become brittle, to avoid this:</p>
	<ul style="list-style-type: none"> Fires, sparks, naked flames and smoking are prohibited. 			<ul style="list-style-type: none"> Do not store batteries in direct sunlight.
	<ul style="list-style-type: none"> Avoid causing sparks when dealing with cables and electrical equipment, and beware of electrostatic discharges. 		<p>First aid:</p>	<ul style="list-style-type: none"> Discharged batteries may freeze up, therefore store in an area free from frost.
	<ul style="list-style-type: none"> Avoid short circuits. 		<ul style="list-style-type: none"> 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. 	<p>Disposal:</p>
	<p>Explosion hazard:</p> <ul style="list-style-type: none"> A highly explosive oxyhydrogen gas mixture is produced when batteries are charged. 		<ul style="list-style-type: none"> Neutralise acid splashes on the skin or clothes immediately with acid neutraliser (soda) or soap 	<ul style="list-style-type: none"> Dispose of old batteries at an authorised collection point. The notes listed under item 1 are to be followed for transport. Never dispose of old batteries in household waste.

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.

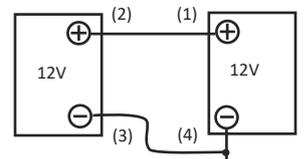
- Switch on the charger only after the battery has been connected, and switch off the charger first after charging has been completed.
- Charging current-recommendation: 1/10 ampere of the battery capacity Ah.
- Use a charger with a constant charging voltage of 14.4V for re-charging.
- If the acid temperature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



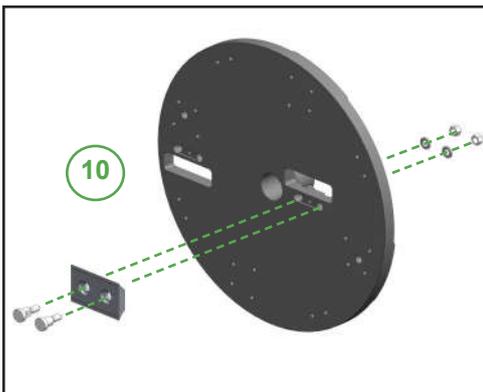
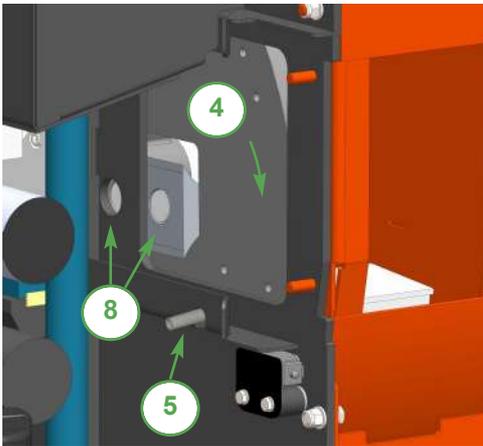
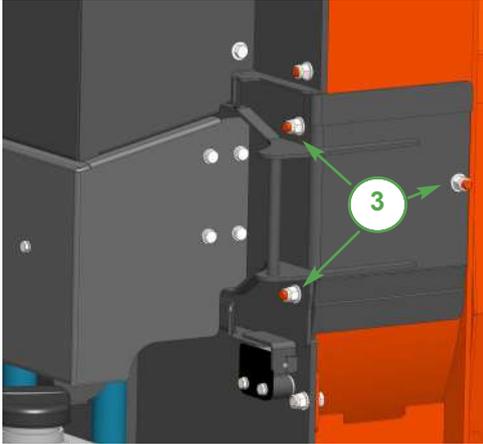
7. Taking the battery out of service

- 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 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 2 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 above. 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 125 lbs ft (170 Nm).**
- 16 Remove lock pin, rotate rotor to next blade then replace lock pin and repeat steps 6 - 14.
- 17 Refit 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.

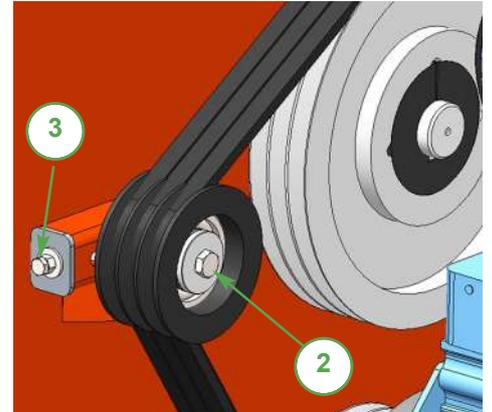


TENSION DRIVE BELTS

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.

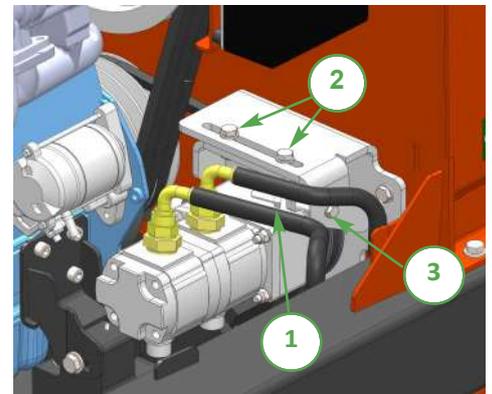
- 1 Remove engine bay side panel.
- 2 Loosen bolt in centre of tensioner pulley with a 19 mm spanner so that pulley is able to slide with minimal wobble.
- 3 Turn nut in end of tensioner pulley slider until correct belt tension is achieved. For instructions on checking belt tension & correct belt tension values, please refer to the Timberwolf V-Belt Tensioning Data Table (page 36).
- 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.



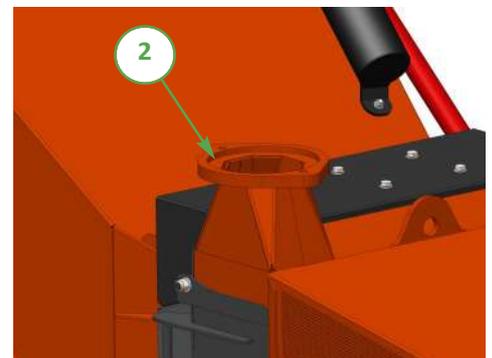
TENSION HYDRAULIC PUMP BELT

- 1 Loosen the M8 hex nut (1) to the end of the thread.
- 2 Loosen the two M10 screws (2) one turn.
- 3 Adjust the long M8 screw (2) to achieve the correct belt tension. For instructions on checking belt tension and correct belt tension values, please refer to the Timberwolf V-Belt Tensioning Data Table (pg. 36).
- 4 Tighten the two M10 securing screws (2)
- 5 Check the belt tension again. If the M10 screws (2) are loosened too much a difference of belt tension will occur after the screws are fastened.
- 6 Tighten the M8 hex nut (1).



GREASE THE DISCHARGE FLANGE

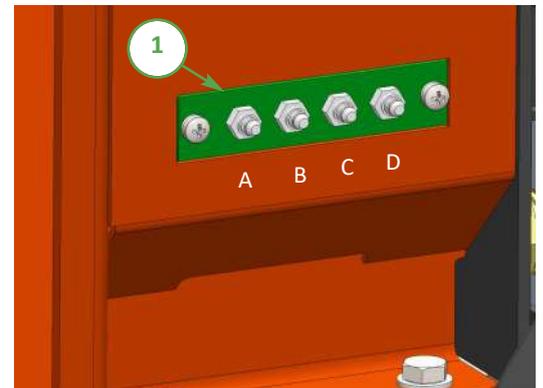
- 1 Remove the discharge tube.
- 2 Apply multipurpose grease to surface shown.
- 3 Refit discharge tube.



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.

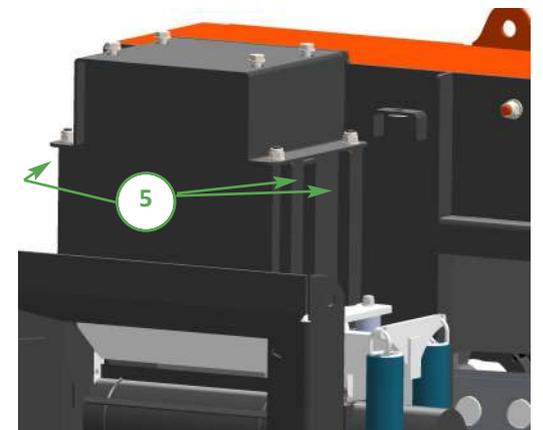
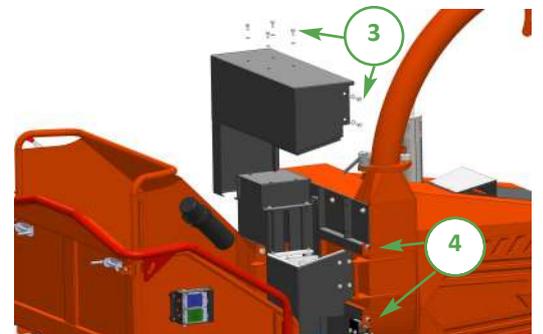
- 1 Locate the greasing panel.
- 2 Apply 4+ pumps of grease to each nipple.
- 3 It is recommended to grease all the nipples whilst the engine is running and rollers are turning to distribute the grease evenly. **DO NOT USE GRAPHITE BASED GREASE.**
- 4 Both front and rear bearings are greased by nipples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



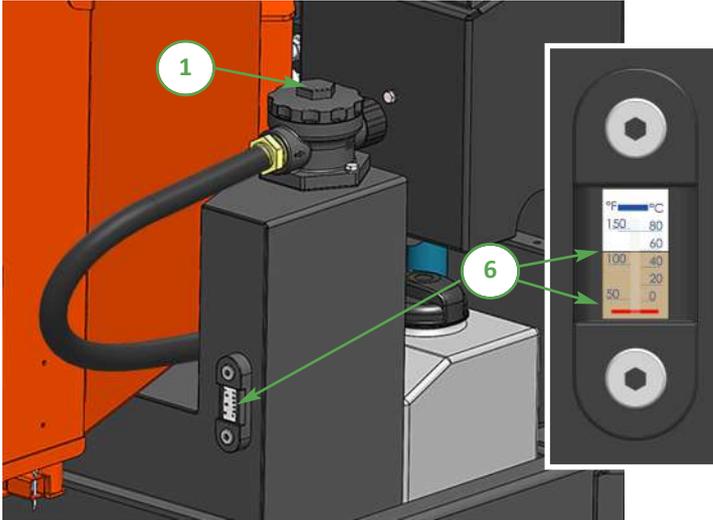
ENGINE SERVICING

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, leaks and overall good condition. Identify the hoses that run to the top motor and track motors as these have the highest chance of damage as they are constantly moving. If any hydraulic components are changed, new seals should be installed during reassembly. Fittings should then be retightened.

CHANGE HYDRAULIC OIL AND FILTER





WARNING

USE PLASTIC GLOVES TO KEEP OIL OFF SKIN AND DISPOSE OF THE USED OIL AND FILTER IN AN ECOLOGICALLY SOUND WAY. THE OIL AND FILTER SHOULD BE CHANGED ONCE A YEAR OR AT ANY TIME IT BECOMES CONTAMINATED. BEFORE STARTING CHECK THAT THE CHIPPER IS STANDING LEVEL AND BRUSH AWAY LOOSE CHIPS.

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

- 1 Remove the black screw cap from the filter housing.
- 2 Partially remove the filter element from the inner cup. Leave the filter to drain for 15 minutes.
- 3 Remove the filter element from the cup when it's clear of hydraulic oil.
- 4 Remove the drain plug and drain the oil into a suitable container.
- 5 Replace the drain plug.
- 6 Refill with VG 32 hydraulic oil until the level is between the min and the max lines marked on the tank (about 48 litres).
- 7 Refit the filter cup, install a new filter element and refit the black screw cap to the filter housing ensuring the o-ring remains in place.

TRACK BASE MAINTENANCE

Safe Maintenance

- Solidly support the under carriage if it needs to be lifted up for maintenance .
- Hydraulic systems may get very hot after working.
- Keep all components in good condition as they are exposed to high pressures.
- Immediately repair damage and replace worn or broken items.

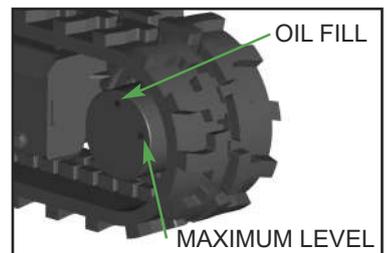
- Keep the tracks clean, removing excess oil, grease and dirt.
- Check for oil leaks and damaged hoses.
- Only use recommended lubricants. Do not mix different brands.
- Keep track stretcher grease nipples clean.

Maintenance intervals are only guidelines. The amount of times maintenance is conducted should be increased beyond recommended guidelines if severe conditions are encountered.

REPLACEMENT OF OIL IN THE TRACK DRIVE UNIT

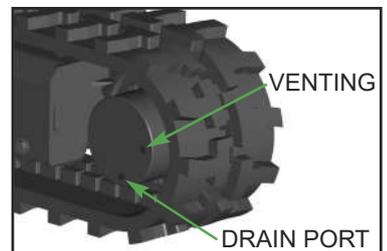
To fill with oil, track the machine until the gearbox casing is level with a plug positioned at 12 o'clock as shown. Unscrew the two plugs and fill from the upper hole until oil reaches the level of the lower hole.

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



DRAINING THE OIL IN THE TRACK DRIVE UNIT

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



REDUCTION UNIT OIL TYPES

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

CHECKING THE RUBBER TRACKS

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

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

Breakages of steel cables and metal cores

Excess track tension can cause steel cables to break. This may be caused by:

- Stones or foreign matter accumulating between the track and the undercarriage frame.
- The track slipping off its guide system.
- Extreme friction such as rapid changes in direction.
- Improper contact between track and sprocket.
- Operation on sandy terrain.

Fatigue cracks and abrasion

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

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

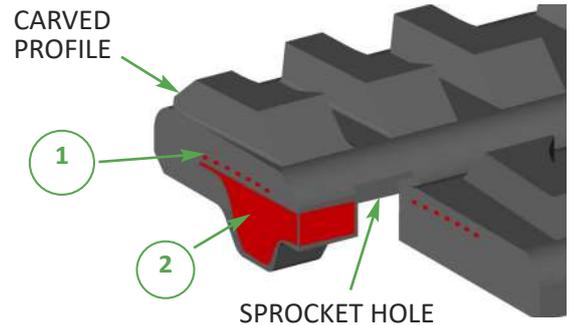
Cracks and abrasions in the rubber on the guide roller paths are caused by compression fatigue of the rubber due to the weight of the wheel combined with operation on sandy terrain or repeated sudden changes in direction.

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

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

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

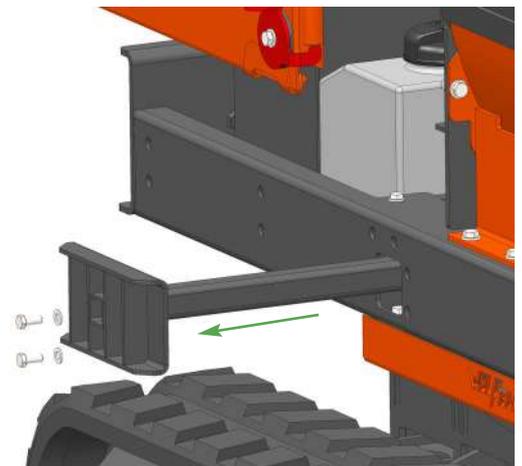
These methods of damage are progressive. The track can continue to be used until wear exposes the metal cores. If this exposure extends for more than half of the circumference of the track then it is time to replace the track, even though it can still be used.



SUPPORT STAND

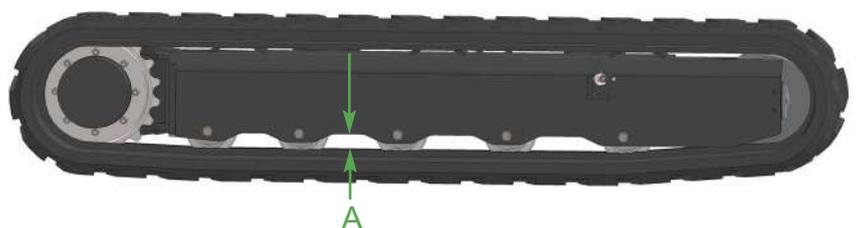
Ensure the machine is on a flat and solid surface.

- 1 Loosen the two M10 screws and remove the support stand from its parked position.
- 2 Ensure both track legs are fully retracted, then extend fully the track leg that needs to be clear of the ground.
- 3 Fit the support stand in its working position (side with the leg extended). Ensure the securing pins are inserted from the correct side and the R clips fitted.
- 4 Carefully retract the track leg until it is clear of the ground.
- 5 After the work is carried out, extend the track leg fully, remove R clips and the securing pins and reposition the support stand to its park position.



CHECKING TRACK TENSION

- 1 Stop your machine on a flat and solid surface.
- 2 Lift it in safe conditions and put stable supports under the undercarriage frame to properly support it.
- 3 Measure distance A at the central roller of the undercarriage from the bottom of the roller to the rigid inside surface of the rubber track. Track tension is normal if dimension A is between 70 and 75 mm.
- 4 Adjust tension as described in the following paragraph if track tension does not comply with these dimensions (loose or too tight).



TRACK LOOSENING/TIGHTENING PROCEDURES

Track tension is maintained by grease in the adjuster unit. Adding more grease will increase track tension, removing grease will decrease it.

The grease contained in the hydraulic track tensioner ram is pressurised. Never release grease nipple (No. 1, Fig. 1) for more than necessary to slowly release grease to a maximum of five turns. If the valve is loosened too much you risk expelling grease under pressure and possible injury to the machine operator. Remove gravel or mud when they are jammed between the sprocket and the track link before loosening the track.

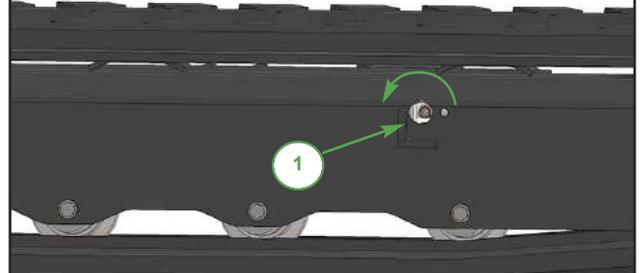
- 1 Locate grease nipple in side frame (Fig. 1) to access the adjustment system.
- 2 To loosen the track turn the grease nipple counter-clockwise slowly, the grease should begin to be expelled after approximately two turns.
- 3 If grease does not start to drain out then slowly rotate the track forward and reverse to free adjuster mechanism - grease may then be expelled under pressure as track tension is relieved.
- 4 When you have obtained correct track tension then turn valve clockwise and tighten it. Clean all traces of extruded grease.
- 5 To stretch the track connect a grease gun to grease nipple and add grease until track tension falls within specified values.



WARNING

IT IS NOT NORMAL FOR THE TRACK TO REMAIN TOO TIGHT AFTER TURNING THE GREASE NIPPLE COUNTER-CLOCKWISE OR FOR IT TO REMAIN LOOSE AFTER INTRODUCING GREASE INTO THE GREASE NIPPLE. NEVER TRY TO REMOVE THE TRACKS OR DISASSEMBLE THE TRACK-STRETCHING CYLINDER SINCE PRESSURE OF THE GREASE INSIDE THE TRACK IS DANGEROUS.

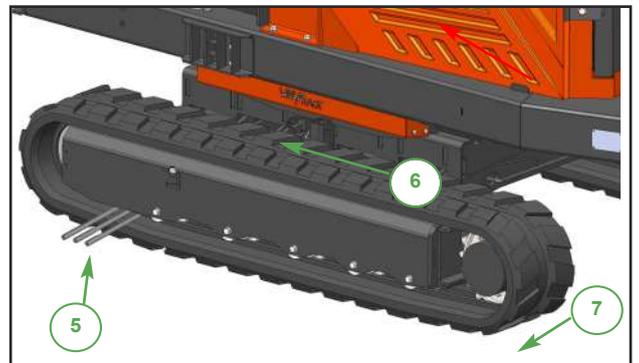
Fig. 1



REMOVING THE RUBBER TRACKS

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

- 1 Stop your machine on a solid and level surface. Lift it up and support it in safe conditions.
- 2 Locate grease nipple in side frame to access to the adjustment system (No. 1, Fig. 1).
- 3 To loosen a track turn the grease nipple counter-clockwise slowly then the grease should begin to be expelled after approximately 2 turns.
- 4 If grease does not start to drain out then slowly rotate the track forward and reverse to free adjuster mechanism.
- 5 Insert three steel tubes inside the track in the space between the rollers.
- 6 Rotate the driving gear in reverse so that the steel tubes proceed with the track and engage in the track-stretching wheel.
- 7 Exercise force sideways to slide the track and lift it off the track-stretching wheel.



WARNING

THE GREASE CONTAINED IN THE HYDRAULIC TENSIONER IS UNDER PRESSURE. NEVER LOOSEN THE GREASE NIPPLE FOR MORE THAN 5 TURNS. IF THE GREASE NIPPLE IS LOOSENED TOO MUCH THEN PRESSURISED GREASE MAY EXIT AND CAUSE INJURY TO THE MACHINE OPERATOR.

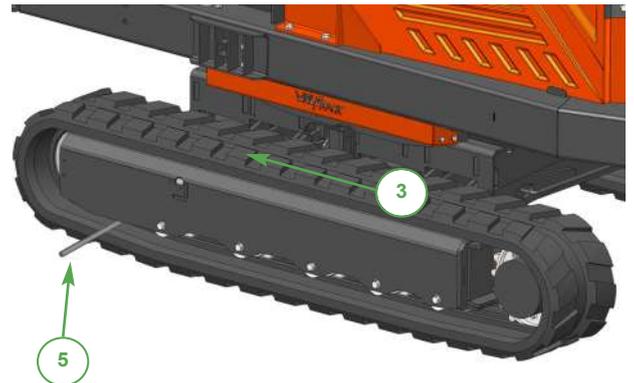
INSTALLING THE RUBBER TRACKS

- 1 Check that the grease contained in the hydraulic cylinder has been removed.
- 2 Mesh the track links in the sprocket and place the other end of the track on the track-stretching wheel.
- 3 Rotate the driving gear in reverse and pull the track soles inside the frame.
- 4 Position the track using a steel tube and turn the driving gear again.
- 5 Make sure track links mesh correctly in the sprocket and in the track stretching wheel.
- 6 Adjust track tension (see track loosening procedures on page 23).
- 7 Set the tracked undercarriage on the ground.



WARNING

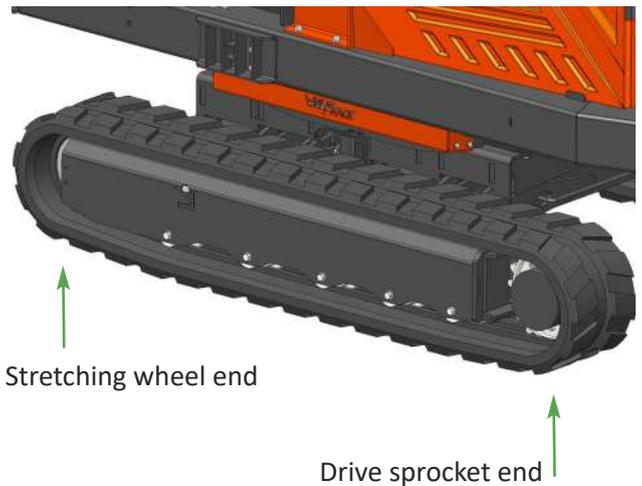
MAKE SURE THAT YOU ARE ALWAYS IN SAFE CONDITIONS WITH THE MACHINE LIFTED TO PERFORM THE OPERATION FOR TRACK INSTALLING.



CHECKING SPROCKET WEAR

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

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



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



EC Declaration of Conformity



We
 Of
 Timberwolf Ltd,
 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 280TVGTR Variable Tracked Diesel 8" Woodchipper
Model(s): TW 280TVGTR
Type(s): TW 280TVGTR, TW 280TVGTR-FR, 280TVGTRWW, 280TVGTRWW-FR
Serial No(s): C45A1J231001 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):

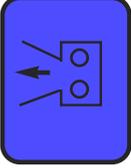
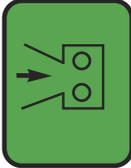


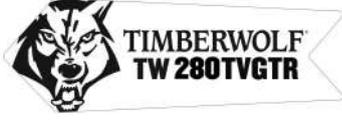
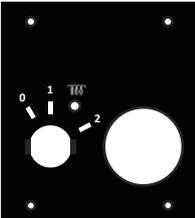
Dated: 14th June 2021

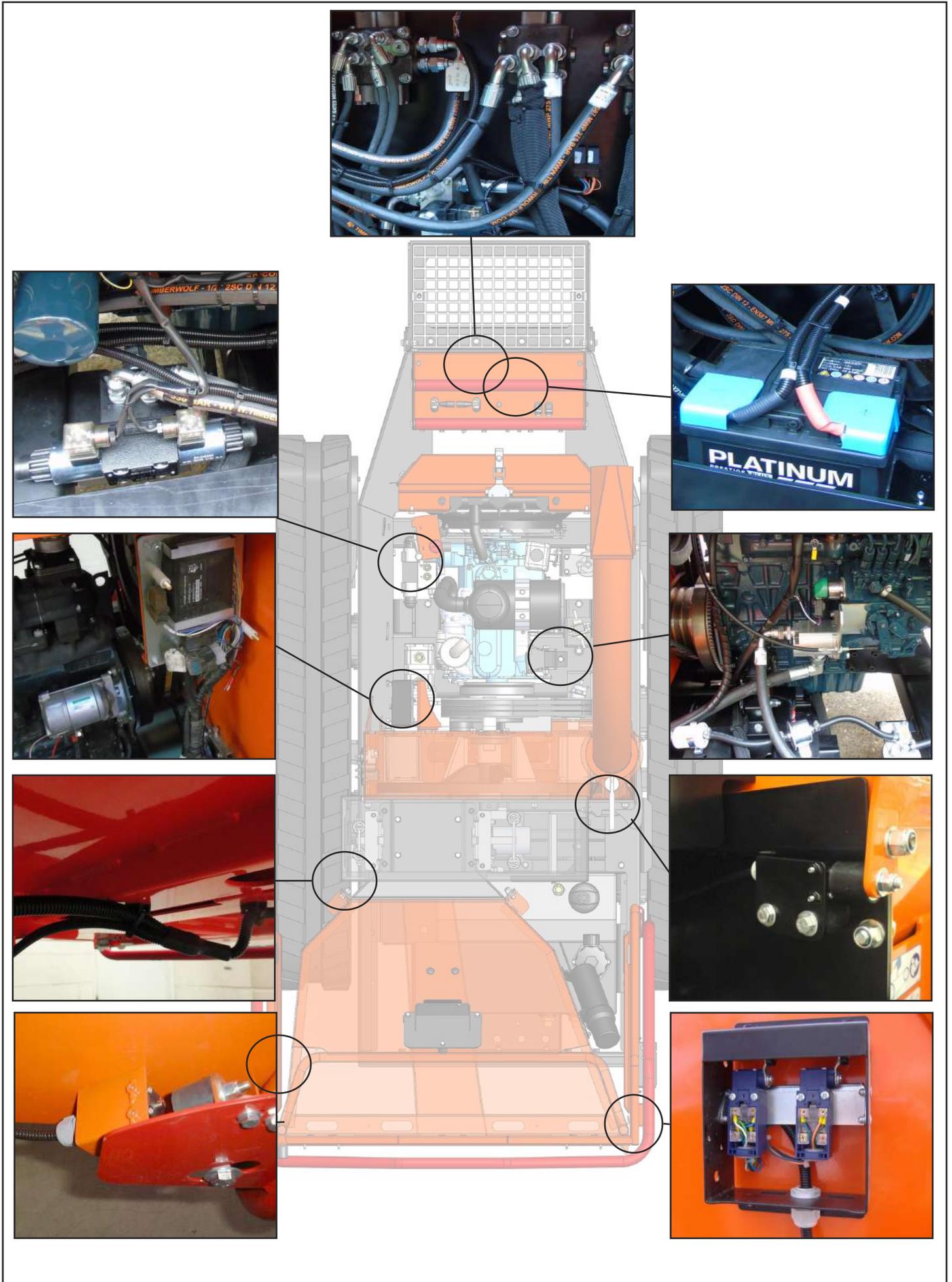
Timberwolf Ltd registered in England under No. 03477258. Registered office as above.

		TIMBERWOLF LTD Entec House, Tomo Industrial Estate, Stowmarket, Suffolk IP14 5AY - UK			
MODEL	<input type="text"/>				
SERIAL NO.	<input type="text"/>				
CARR. TYP/SN.	<input type="text"/>	GROSS WEIGHT	<input type="text"/>		
NOM. PWR	<input type="text"/>	DATE	<input type="text"/>		

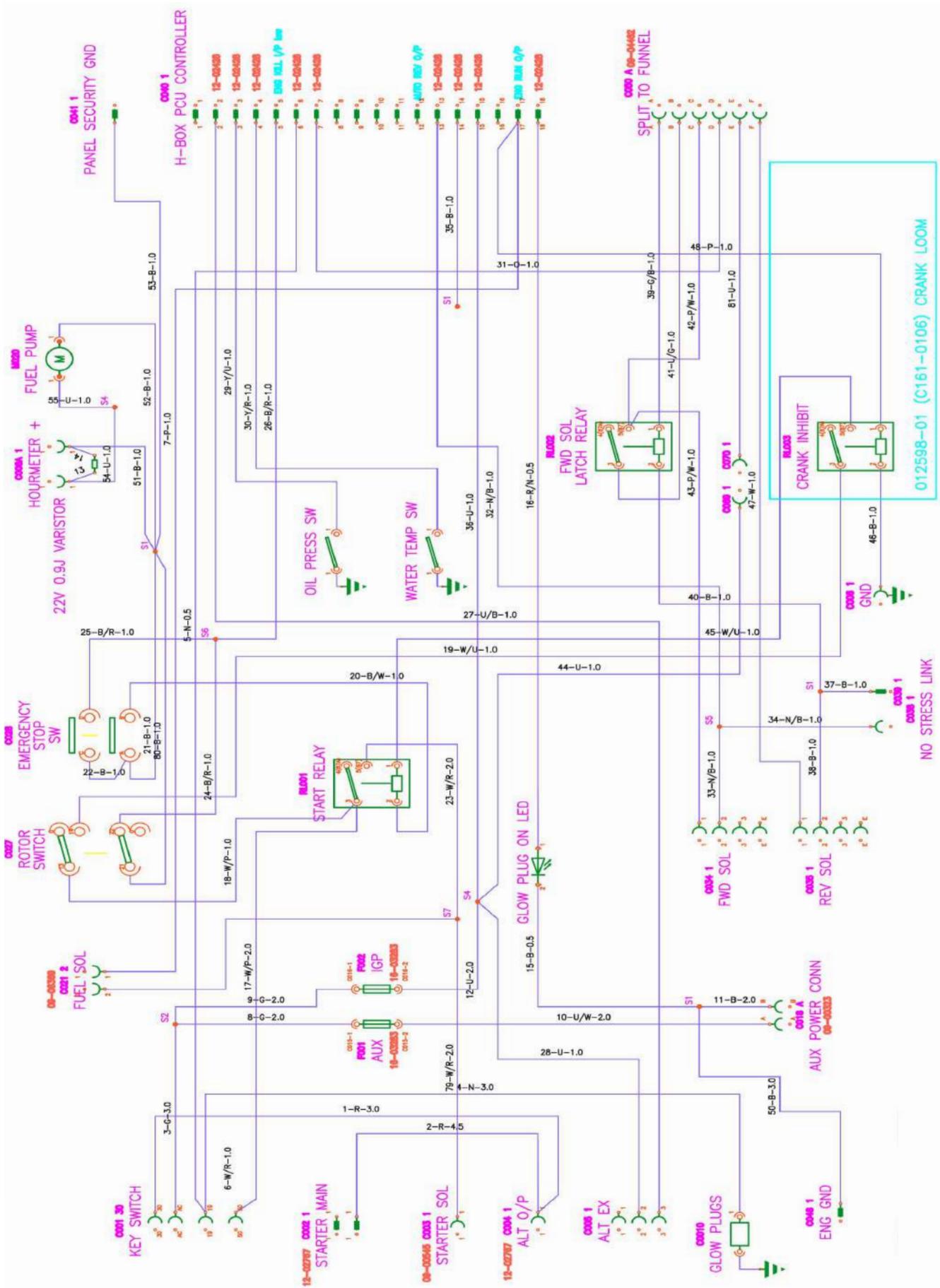
EXAMPLE

DECAL	DESCRIPTION	DECAL	DESCRIPTION
 <p>616</p>	Warning. Hot exhaust	 <p>4099</p>	Danger. Rotating blades. Keep hands and feet out.
 <p>617</p>	Warning. High velocity discharge - keep clear	 <p>2800</p>	Reverse feed
 <p>670</p>	Personal Protective Equipment required. See page 5.	 <p>2801</p>	Forward feed
 <p>1661</p>	Read the instruction manual for greasing and maintenance information.	 <p>19517</p>	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.
 <p>1662</p>	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.	 <p>2949</p>	Lifting eye is designed to lift the machine's weight only. Do not use hoist hook directly on lifting eye. Use correctly rated safety shackle only through lifting eye. Lifting eye to be inspected every 6 months or before each use. Always visually inspect lifting eye prior to each use. Do not use lifting eye if damaged.
 <p>1399</p>	Push safety bar to stop.	 <p>3022</p>	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.
 <p>P*691</p>	Do not pull here.		
 <p>C192-0112</p>	Fuel Here. Risk of fire. Allow engine to cool for 1 minute before refuelling. Use diesel fuel only.	 <p>18393</p>	New drive belts need re- tensioning. When new belts are fitted check tension every 2-3 hours & adjust until tension remains constant.
 <p>C192-0105</p>	When the engine stop button is pressed it must be pulled out again and the ignition switch turned off to reset the machine before attempting to restart.	 <p>P1812</p>	Torque blade bolts to 125 lbs ft (170 Nm).
 <p>P3611</p>	Danger. Rotating blades. Keep hands and feet out.	 <p>C192-0102</p>	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.
 C192-0145	Maximum lift weight.	 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.
 18647	Appropriate supports must be used while servicing the jacking legs.	 18648	Danger Never position any part of your body under the machine. serious injury may occur.
 18653	Close bucket and point discharge away from driving position. Protective equipment must be worn when driving machine.	 1810	To go on relays.
		 P1811	Forward Latch
		 C192-0152	Engine Safety Track/chip relay
 C192-0182	Warning. Ensure the tracks are clear of obstructions when using the variable grade Wolftrack™ chassis.	 C192-0141	 C192-0142
 C192-0101		 18008	
 C192-0100		 1363	
		 C192-0148	
			
C192-0146			



P*2741 plus C161-0106 Crank Loom

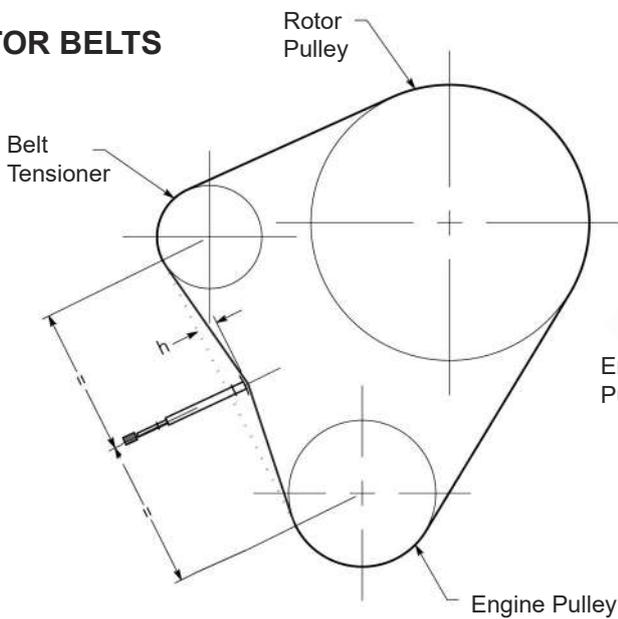


METHOD:

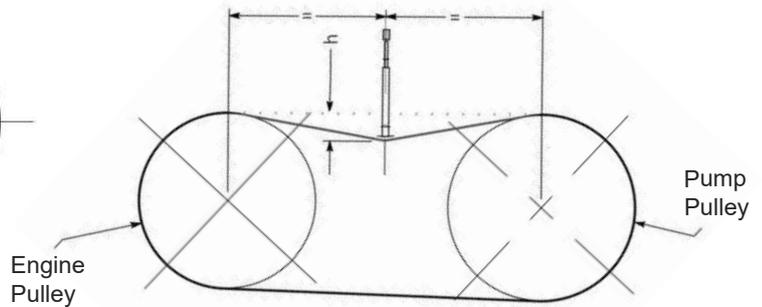
1. Set the deflection distance on the lower scale of the tension gauge so that the underside of the 'o'-ring equals the 'h' value given in the table.
2. Ensure that the deflection force scale is zero'd by pushing the upper 'o'-ring all the way down.
3. Place the tension gauge in the centre of the belt 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

ROTOR BELTS



PUMP BELTS



280TVGTR		Rotor Belts	Pump Belts
Belt Mfr / Type		Gates Super HC-MN	Quad Power III
Belt Pitch Designation		SPB	XPA
Belt Length in mm		1600	982
Belt Deflection in mm	= h	3.8	2.6
Force Reading (Kg)	New belt	2.3 - 2.5	3.5 - 3.8
	Used Belt	2.0 - 2.2	3.0 - 3.3

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	Authorised dealer stamp
Date:	
Hours:	
Invoice number:	
Signature:	
Next service due:	

11 MONTH WARRANTY SERVICE CHECK	Authorised dealer stamp
Date:	
Hours:	
Invoice number:	
Signature:	
Next service due:	

23 MONTH WARRANTY SERVICE CHECK	Authorised dealer stamp
Date:	
Hours:	
Invoice number:	
Signature:	
Next service due:	

Date:	Authorised dealer stamp
Hours:	
Invoice number:	
Signature:	
Next service due:	

Date:	Authorised dealer stamp
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Date:	Authorised dealer stamp
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Next service due:	

Date:	Authorised dealer stamp
Hours:	
Invoice number:	
Signature:	
Next service due:	

PARTS LISTS

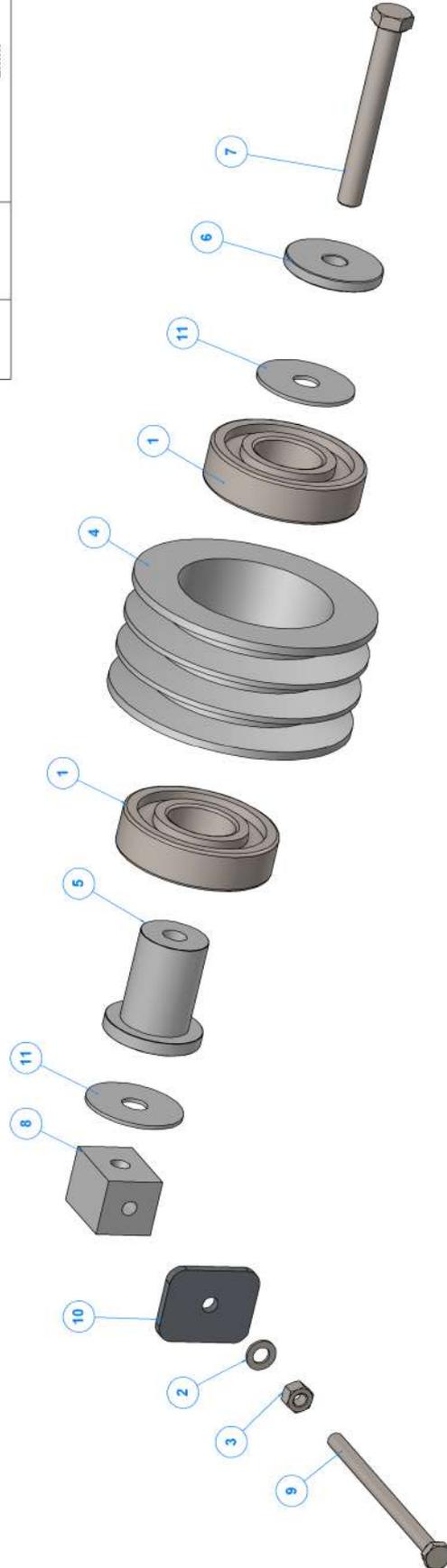
THE FOLLOWING ILLUSTRATIONS ARE FOR PARTS IDENTIFICATION ONLY. THE REMOVAL OR FITTING OF THESE PARTS MAY CAUSE A HAZARD AND SHOULD ONLY BE CARRIED OUT BY TRAINED PERSONNEL.

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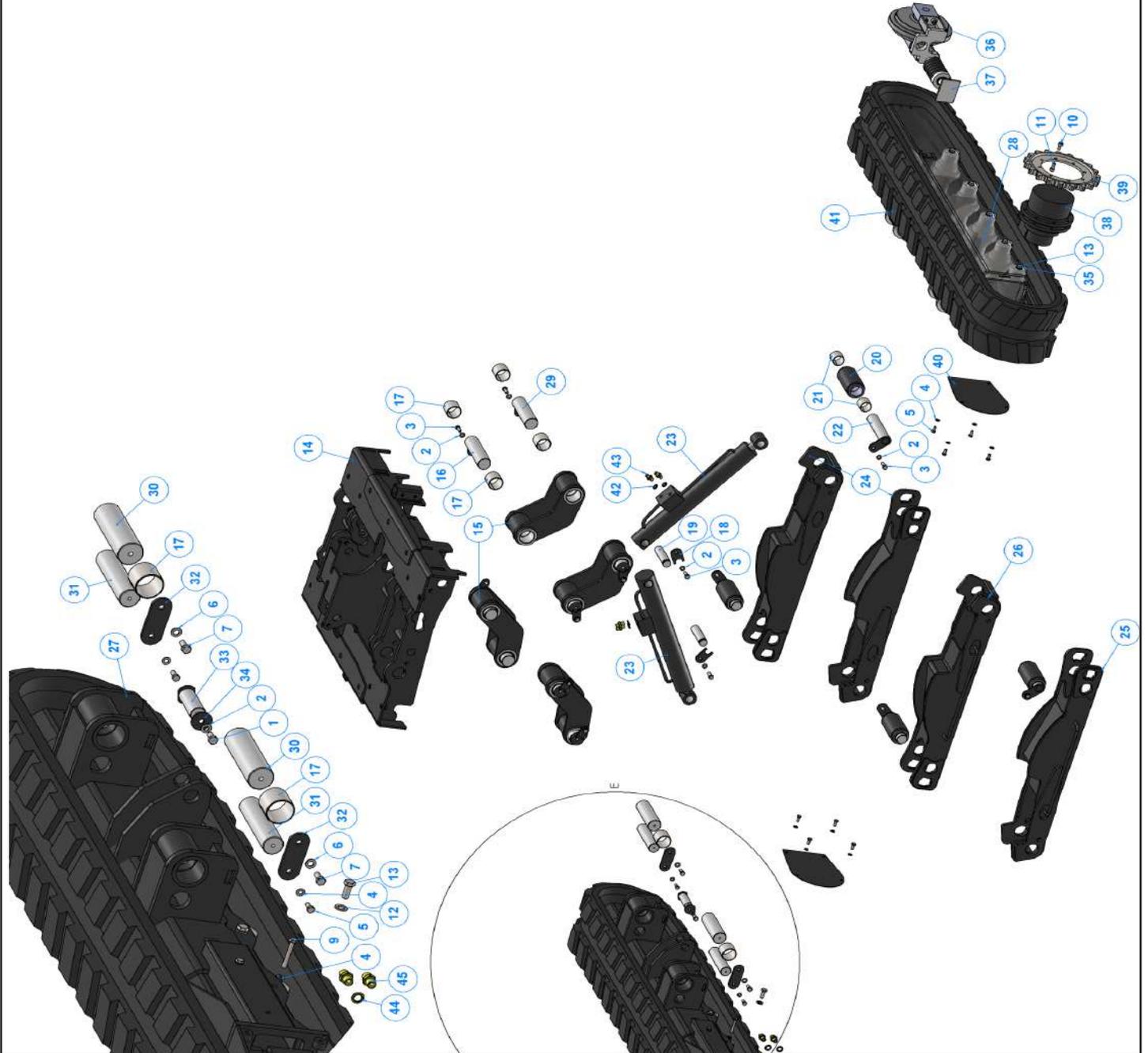
TW 280TVGTR OPTIONAL ACCESSORIES:

ITEM	PART NUMBER
TW 280TVGTR Winch Kit	C184-0120
Feed Funnel Curtains	P0003444

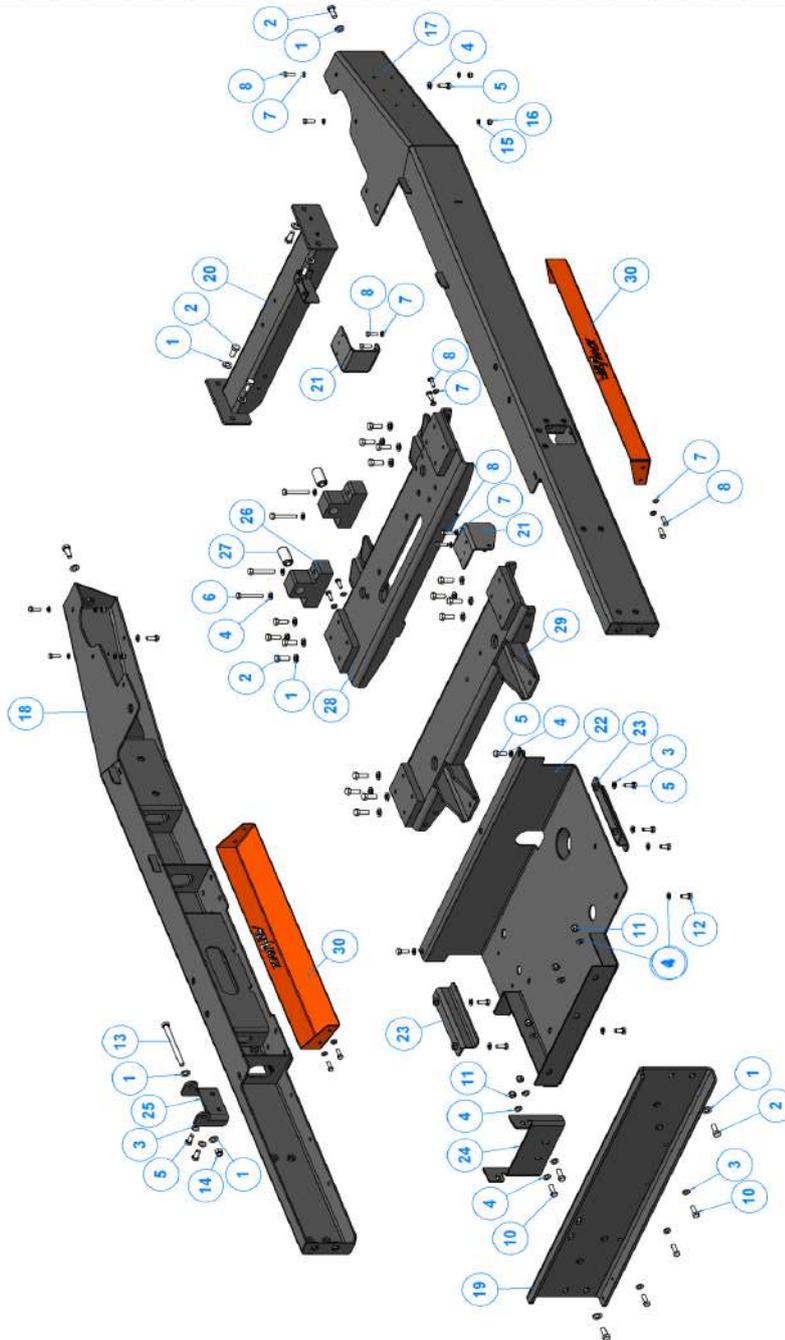
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C128-0109	Bearing 6307 2RS	2
2	C021-0125	M8 FORM C WASHER Z/P	1
3	C030-0123	M8 HEX NUT - ZP - GRADE 10	1
4	P0002690M	Pulley SPB - 3 - 118 Tensioner	1
5	P0002691M	Belt Tensioner Shaft	1
6	P0002692M	Belt Tensioner Washer	1
7	C008-0824	M12x100 Hex Bolt ZP Grade 8.8	1
8	0469MS	Block Pulley Tension Adjuster	1
9	C002-0627	M8x130 Hex Set Z/P Grade 8.8	1
10	P0002394	Profile Belt Tensioner	1
11	C082-0105	M12 Belt Tensioner Assy Spacer Ø50 x 2mm	2



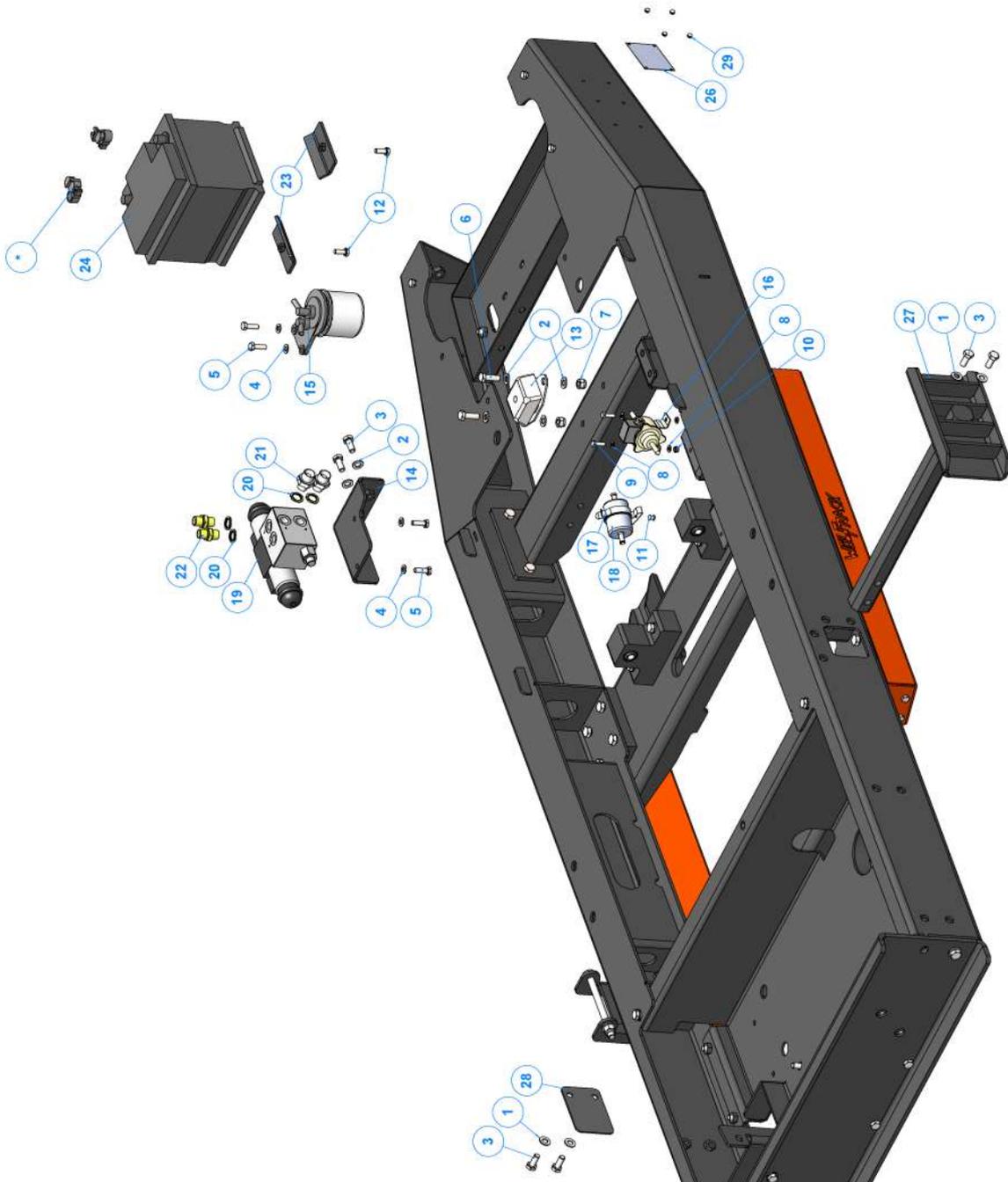
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C002-0707	M10 x 20 HEX SET ZIP 8.8	2
2	C021-0106	M10 FORM A WASHER ZIP	16
3	C002-0710	M10 x 30 HEX SET ZIP 8.8	14
4	C021-0105	M8 FORM A WASHER ZIP	19
5	C002-0607	M8 x 20 HEX SET ZIP 8.8	16
6	C021-0126	M10 FORM C WASHER ZIP	8
7	C002-0709	M10 x 25 HEX SET ZIP 8.8	8
8	C002-0617	M8 x 65 HEX SET ZIP 8.8	1
9	C002-0616	M8 x 60 HEX SET ZIP 8.8	2
10	C005-0707	M10 x 20 SKT CAP SET ZIP	16
11	C005-0709	M10 x 25 SKT CAP SET ZIP	16
12	C021-0107	M12 FORM A WASHER ZIP	21
13	C002-0810	M12 x 30 HEX SET ZIP 8.8	20
14	18660FB	WELDED ASSEMBLY OF TILT CHASSIS	1
15	18641FB	DROP ARM WELDED ASSEM-	4
16	18638F	TOP DROP ARM PIN ASSEM-	4
17	C128-0110	BUSH 501D 550D 50mm long	24
18	18863P	LOCATING PLATE	2
19	18642M	HYDRAULIC CYLINDER TOP	2
20	18640MB	GUIDE ROLLER EXTENSION	4
21	C128-0111	BUSH 401D 440D 40mm long	8
22	18645F	GUIDE ROLLER SUPPORT PIN ASSEMBLY	4
23	18847	HYDRAULIC CYLINDER WITH OVERCENTRE VALVE	2
24	C131-0154	EXTENSION ARM - NO BAR	2
25	C131-0155	EXTENSION ARM - BAR LEFT	1
26	C131-0156	EXTENSION ARM - BAR RIGHT	1
27	19090F-Offside	O/S WELDED TRACK FRAME	1
28	19090F -Nearside	N/S WELDED TRACK FRAME	1
29	18639F	DROP ARM PIN (BOTIOM)	4
30	18759M	Hinge Mechanism Front Pin	4
31	18760M	Hinge Mechanism Front Pin	4
32	18761P	BRACE PLATE	8
33	18646M	HYDRAULIC CYLINDER BOTTOM PIN	2
34	18856P	END CAP FOR BOTTOM CYLINDER PIN	2
35	18886	Small Bottom Roller	10
36	18890	Idler wheel assembly	2
37	18889	tensioner (WADJ015AASSY)	2
38	19068	SINGLE SPEED MOTOR/GEAR-	2
39	18888	SPROCKET	2
40	P0001424	GUARD HOSE	2
41	19143	CRAWLER TRACK	2
42	HY395	1/4" Dowly Washer	4
43	18883	1/4"-1/4" Adapter	4
44	HY396	Washer Dowly 3/8"	4
45	HY161	Adaptor Mm 3/8 - 3/8	4



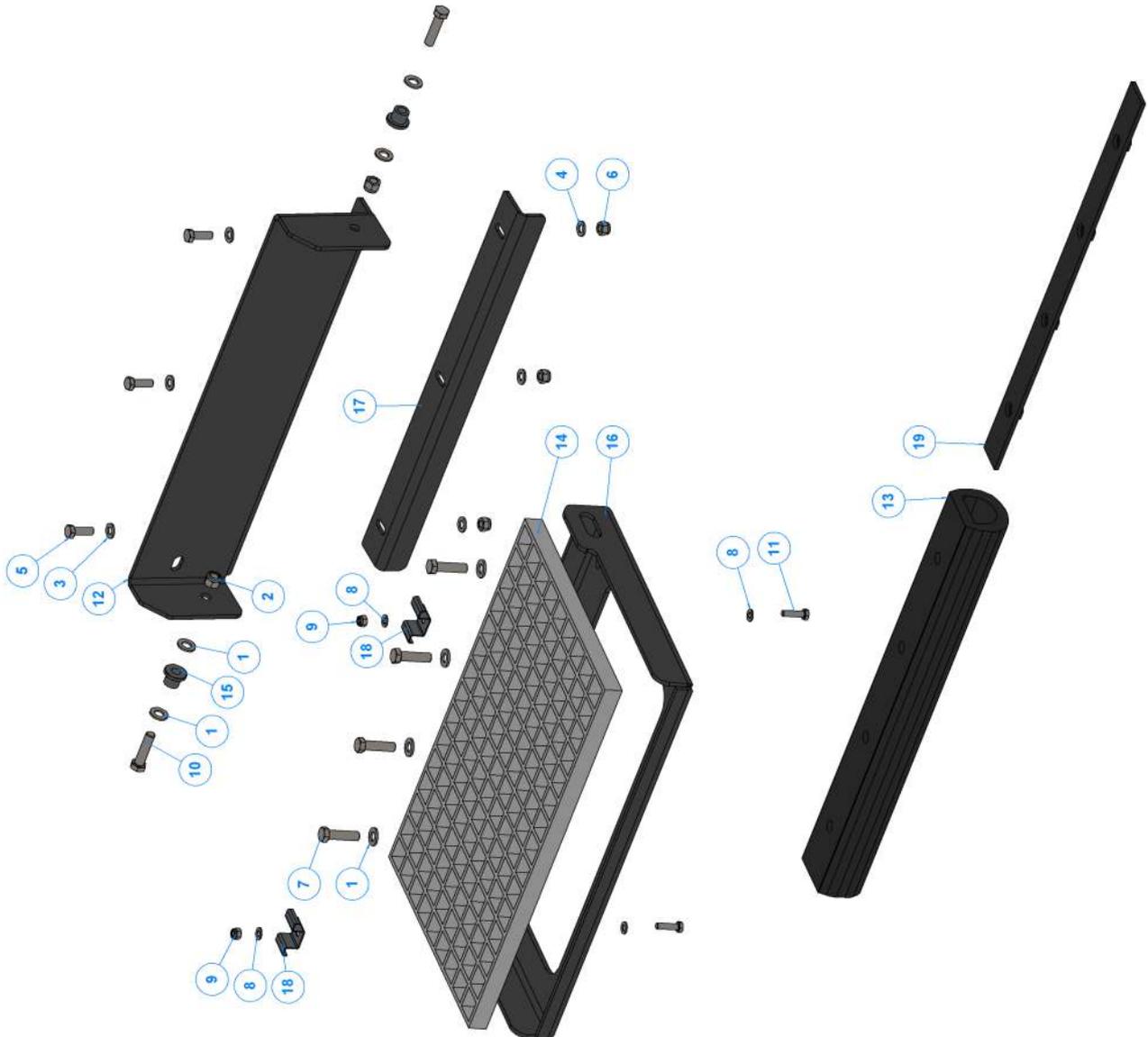
ITEM NO.	PART NUM-BER	DESCRIPTION	QTY.
1	C021-0127	M12 FORM C WASHER ZIP	26
2	C002-0810	M12 x 30 HEX SET ZIP 8.8	24
3	C021-0106	M10 FORM A WASHER ZIP	9
4	C021-0126	M10 FORM C WASHER ZIP	19
5	C002-0709	M10 x 25 HEX SET ZIP 8.8	10
6	C008-0717	M10 x 65 HEX BOLT ZIP 8.8	4
7	C021-0105	M8 FORM A WASHER ZIP	16
8	C002-0609	M8 x 25 HEX SET ZIP 8.8	16
9	C031-0121	M6 TYPE T NYLOC NUT ZIP	1
10	C002-0710	M10 x 30 HEX SET ZIP 8.8	5
11	C031-0164	M10 TYPE P NYLOC NUT ZIP	5
12	C002-0707	M10 x 20 HEX SET ZIP 8.8	4
13	C008-0829	M12 x 150 HEX BOLT ZIP 8.8	1
14	C031-0165	M12 TYPE P NYLOC NUT ZIP	1
15	C021-0125	M8 FORM C WASHER ZIP	4
16	C031-0163	M8 TYPE P NYLOC NUT ZIP	4
17	P0002438F	Chassis Beam Opp To P0002437F	1
18	P0002437F	Chassis Beam Opp To P0002438F	1
19	C132-0166	REAR CHASSIS PLATE ASSEMBLY	1
20	P0002451F	Engine Support Beam	1
21	P0001719F	Bracket Fuel Pump	2
22	P0002454F	Plate Tank Support Guard Assembly	1
23	P0002534F	Bracket Tank Support Assembly	2
24	P0002450F	Bracket Funnel Support	1
25	P0002608F	Spring Hanger	1
26	C130-0117	95mm Engine Mount	2
27	18522	AV Bush Engine Mount M12	2
28	C131-0187	CHASSIS BRIDGE- REAR ASSY	1
29	C131-0183	CHASSIS BRIDGE - FRONT ASSY	1
30	C131-0190	WOLFTRACK CLOSING PANEL	2



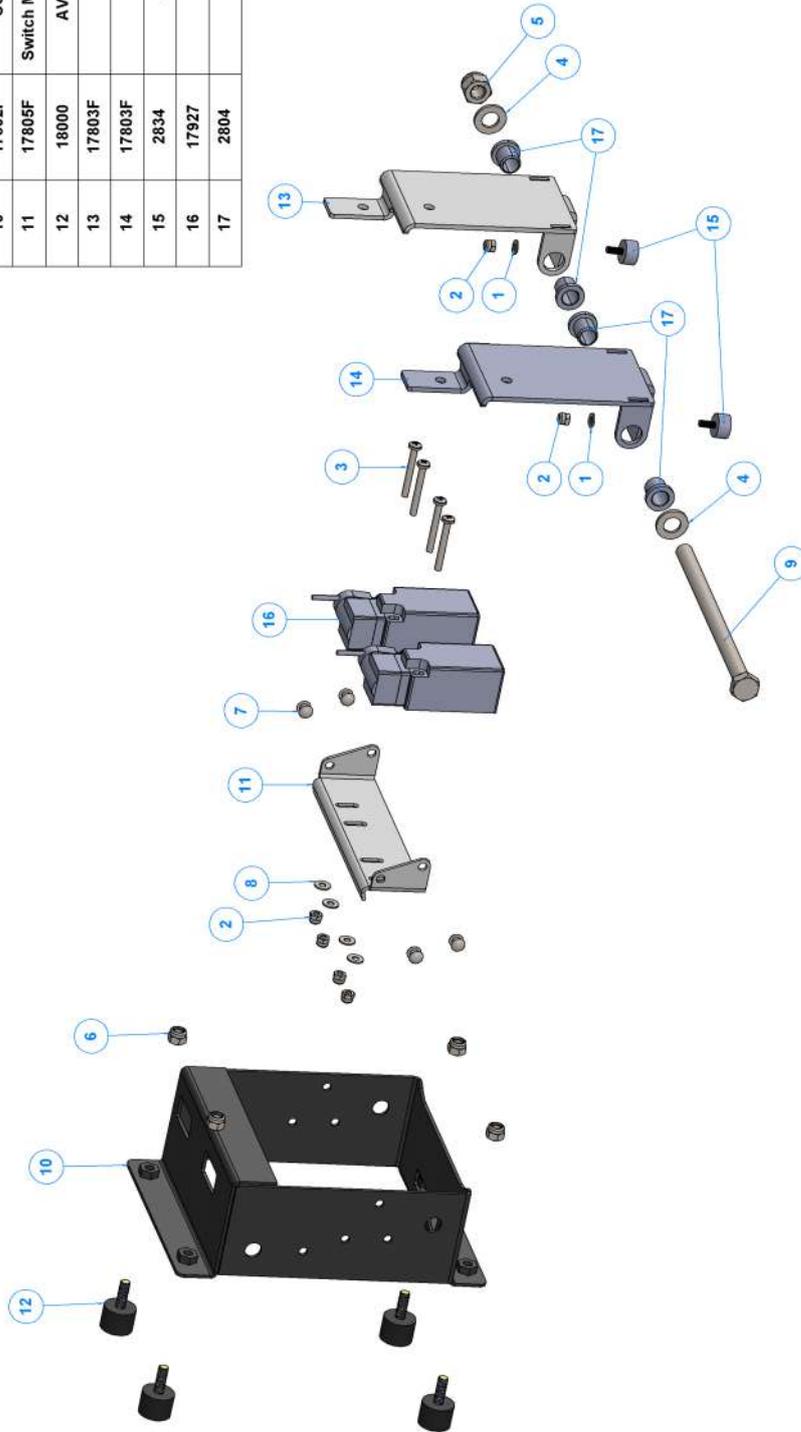
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0106	M10 FORM A WASHER Z/P	4
2	C021-0126	M10 FORM C WASHER Z/P	6
3	C002-0709	M10 x 25 HEX SET Z/P 8.8	6
4	C021-0105	M8 FORM A WASHER Z/P	4
5	C002-0609	M8 x 25 HEX SET Z/P 8.8	4
6	C002-0710	M10 x 30 HEX SET Z/P 8.8	2
7	C031-0164	M10 TYPE P NYLOC NUT Z/P	2
8	C021-0103	M6 FORM A WASHER Z/P	4
9	C002-0407	M6 x 20 HEX SET Z/P 8.8	2
10	C031-0121	M6 TYPE T NYLOC NUT Z/P	2
11	C045-0107	4.8 x 12 St SU/St Stl Rivet	1
12	C002-0607	M8 x 20 HEX SET Z/P 8.8	2
13	P0002458	Engine AV Mount 70	1
14	P0002231F	Bracket CeeTop Valve	1
15	0085	Fuel Filter	1
16	0807	Fuel Pump	1
17	18197	Spring Clip	1
18	4315	Pre- Fuel Filter	1
19	19369	Directional Control Valve No Filter	1
20	HY396	Washer Dowty 3/8"	4
21	HY026	Adapter 3/8 - 1/2	2
22	HY161	Adaptor Mm 3/8 - 3/8	2
23	P0002617F	Battery Clamp	2
24	4210	Battery 12V	1
25	4074	Battery Terminals Kit	1
26	18738	ID PLATE (COMBINED TRAILER/ICE PLATE)	1
27	C131-0245	Jack Stand Assembly	1
28	P0002535	Cover Plate Jacking Beam	1
29	C045-0101	4.8 x 8 Allu/Steel Rivet	4



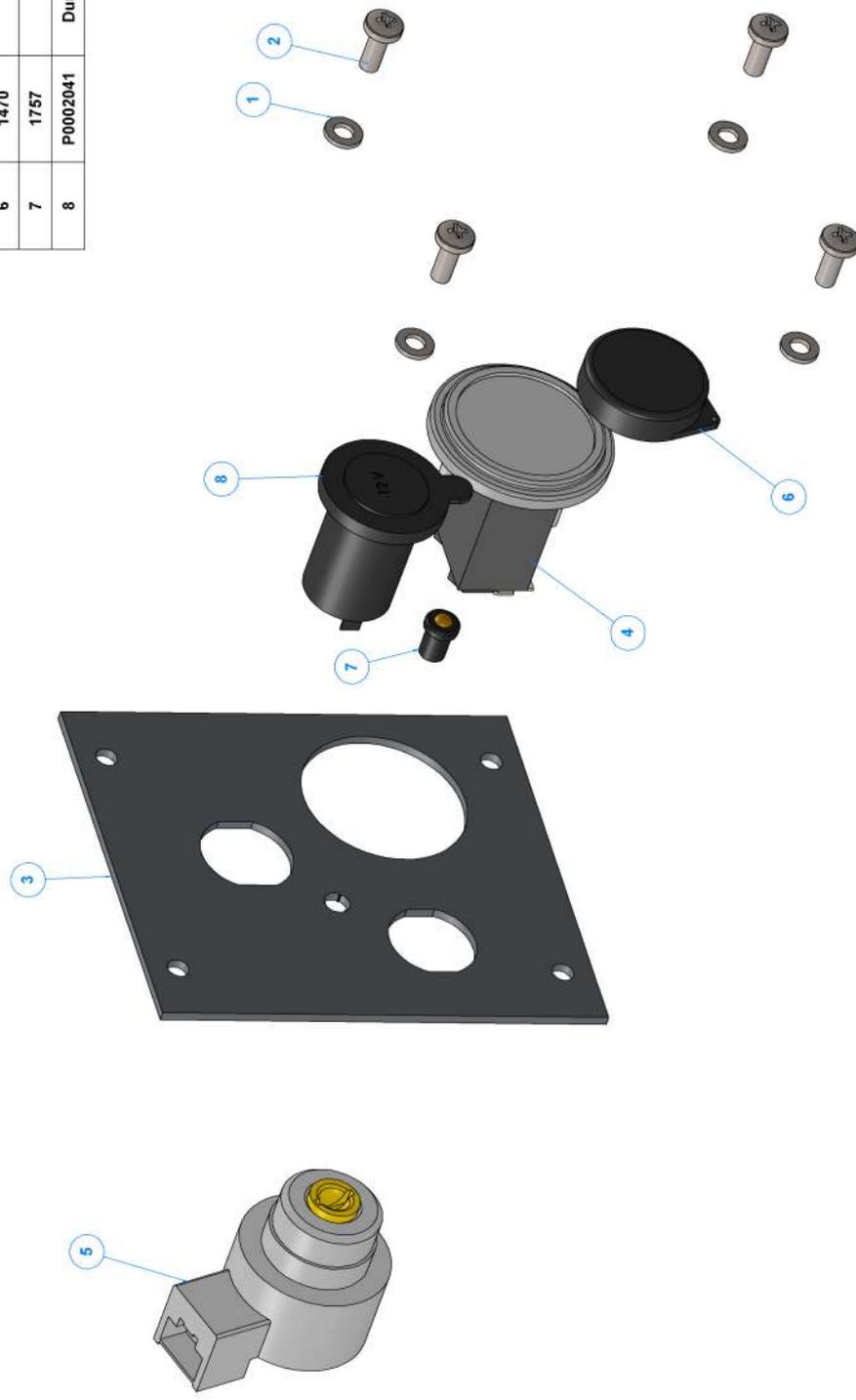
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0107	M12 FORM A WASHER Z/P	8
2	C031-0165	M12 TYPE P NYLOC NUT Z/P	2
3	C021-0106	M10 FORM A WASHER Z/P	3
4	C021-0126	M10 FORM C WASHER Z/P	3
5	C002-0710	M10 x 30 HEX SET Z/P 8.8	3
6	C031-0164	M10 TYPE P NYLOC NUT Z/P	3
7	C002-0813	M12 x 45 HEX SET Z/P 8.8	4
8	C021-0105	M8 FORM A WASHER Z/P	4
9	C031-0163	M8 TYPE P NYLOC NUT Z/P	2
10	C002-0814	M12 x 50 HEX SET Z/P 8.8	2
11	C002-0610	M8 x 30 HEX SET Z/P 8.8	2
12	P0001855F	Bracket Step	1
13	P0001814	Rubber Buffer	1
14	P0001857	Step Grating	1
15	P0001859M	Step Pivot Boss	2
16	P0001856F	Step	1
17	P0001858F	Bracket Step Stop	1
18	P0001865F	Bracket Step Grating Clamp	2
19	P0001864F	Bracket Step Buffer	1



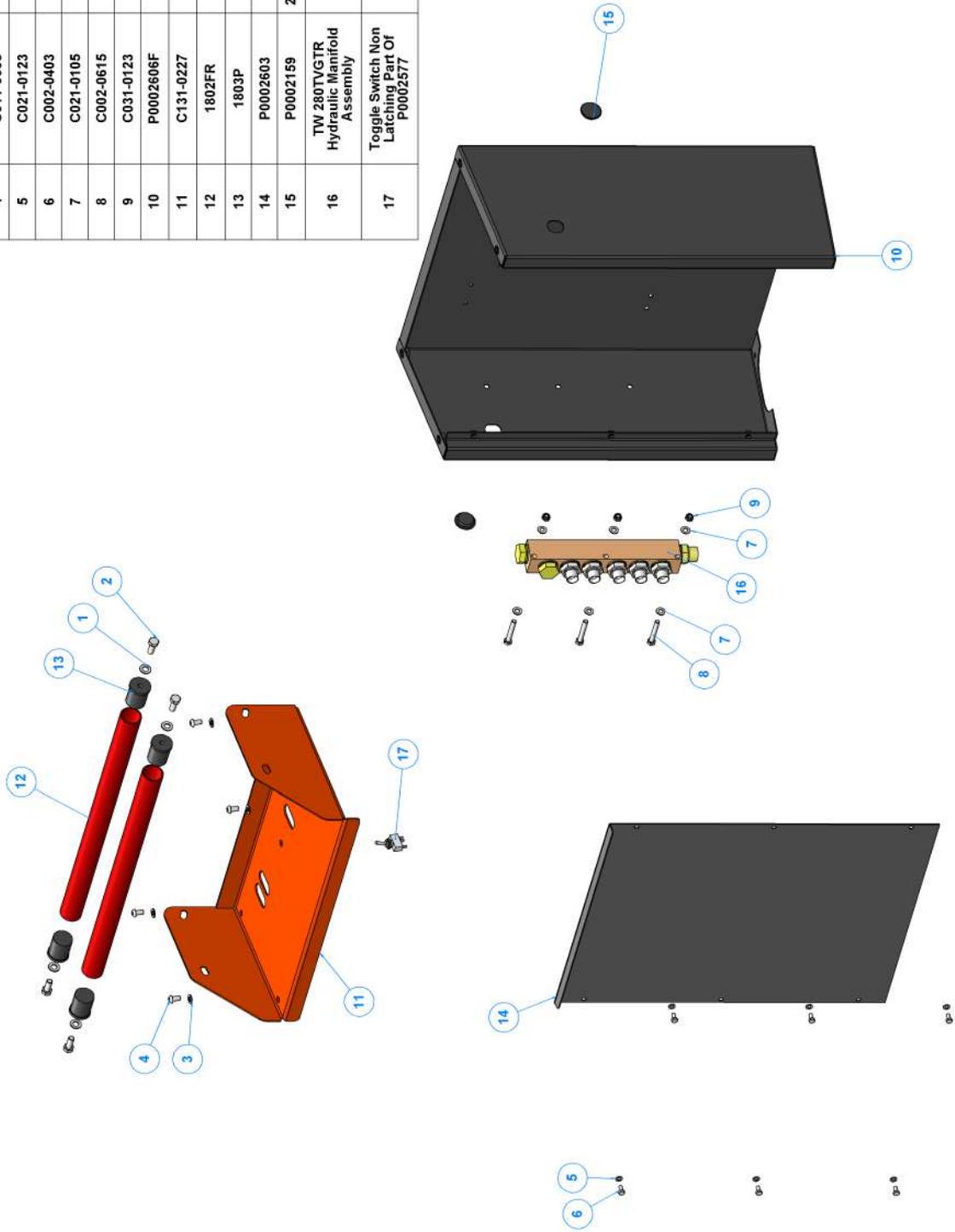
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0101	M4 FORM A WASHER ZIP	2
2	C035-0102	M4 TYPE P NYLOC NUT ZIP	6
3	C013-0210	M4 x 35 PAN POZI ZIP	4
4	C021-0126	M10 FORM C WASHER ZIP	2
5	C031-0164	M10 TYPE P NYLOC NUT ZIP	1
6	C031-0161	M6 TYPE P NYLOC NUT ZIP	4
7	C045-0105	4.8 x 12 Alu/Steel Rivet	4
8	C021-0121	M4 FORM C WASHER ZIP	4
9	C008-0730	M10 x 160 HEX BOLT ZIP 8.8	1
10	17802F	CONTROL BOX COVER	1
11	17805F	Switch Mounting Plate Control Box	1
12	18000	AV Mount M6 MF 20 14.5	4
13	17803F	Finger Plate	1
14	17803F	Finger Plate	1
15	2834	Av Mount VE Type	2
16	17927	Limit Switch	2
17	2804	Bush M10 Top Hat	4



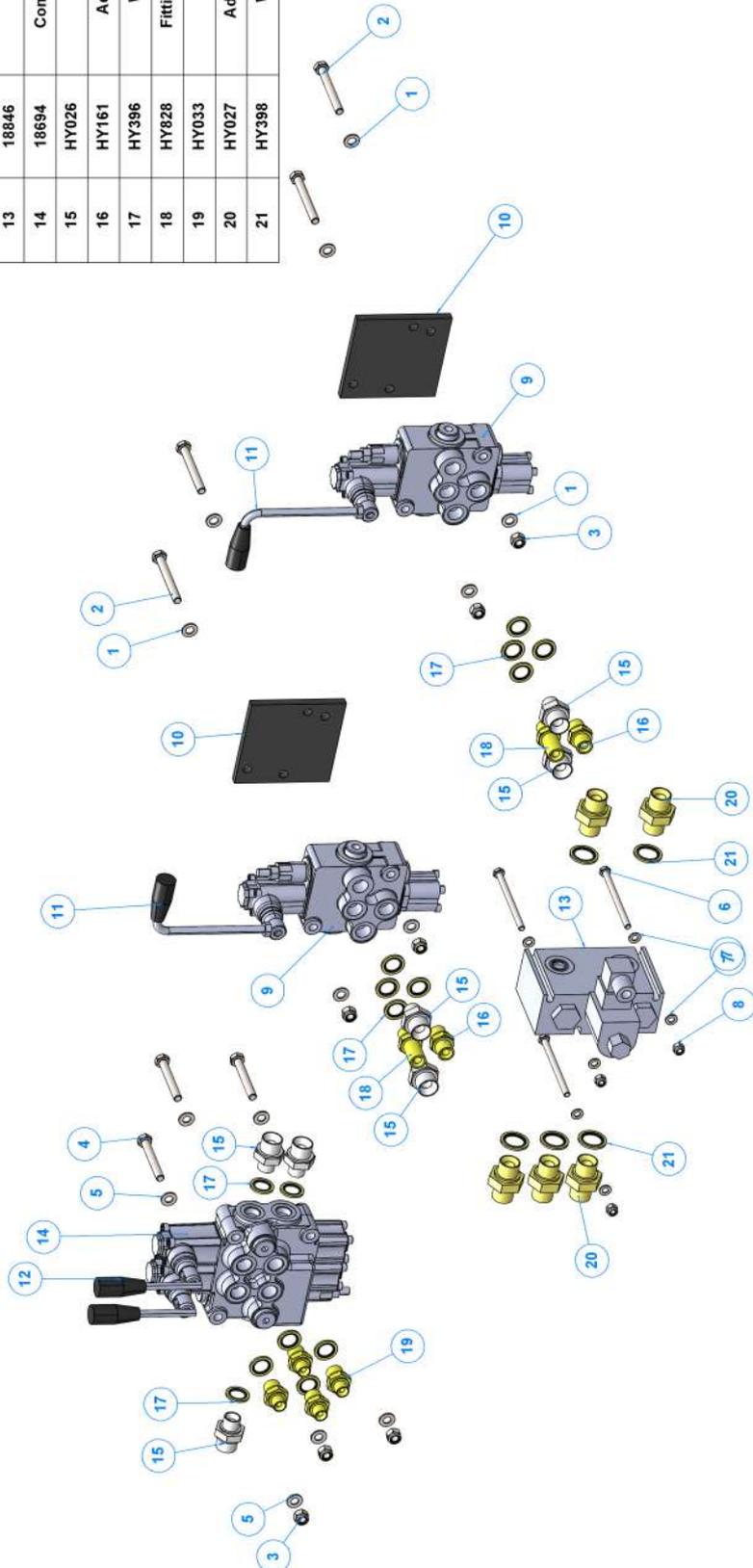
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0123	M6 FORM C WASHER ZIP	4
2	C013-0405	M6 x 16 PAN POZI ZIP	4
3	P0001892	Profile Control Pannel with 12 Volt Cut Out	1
4	0327	Hours Counter	1
5	Kubota Ignition Switch	Supp'd with engine	1
6	1470	Rubber Protector	1
7	1757	Amber LED	1
8	P0002041	Durite 12 Volt Socket 0-601-07	1



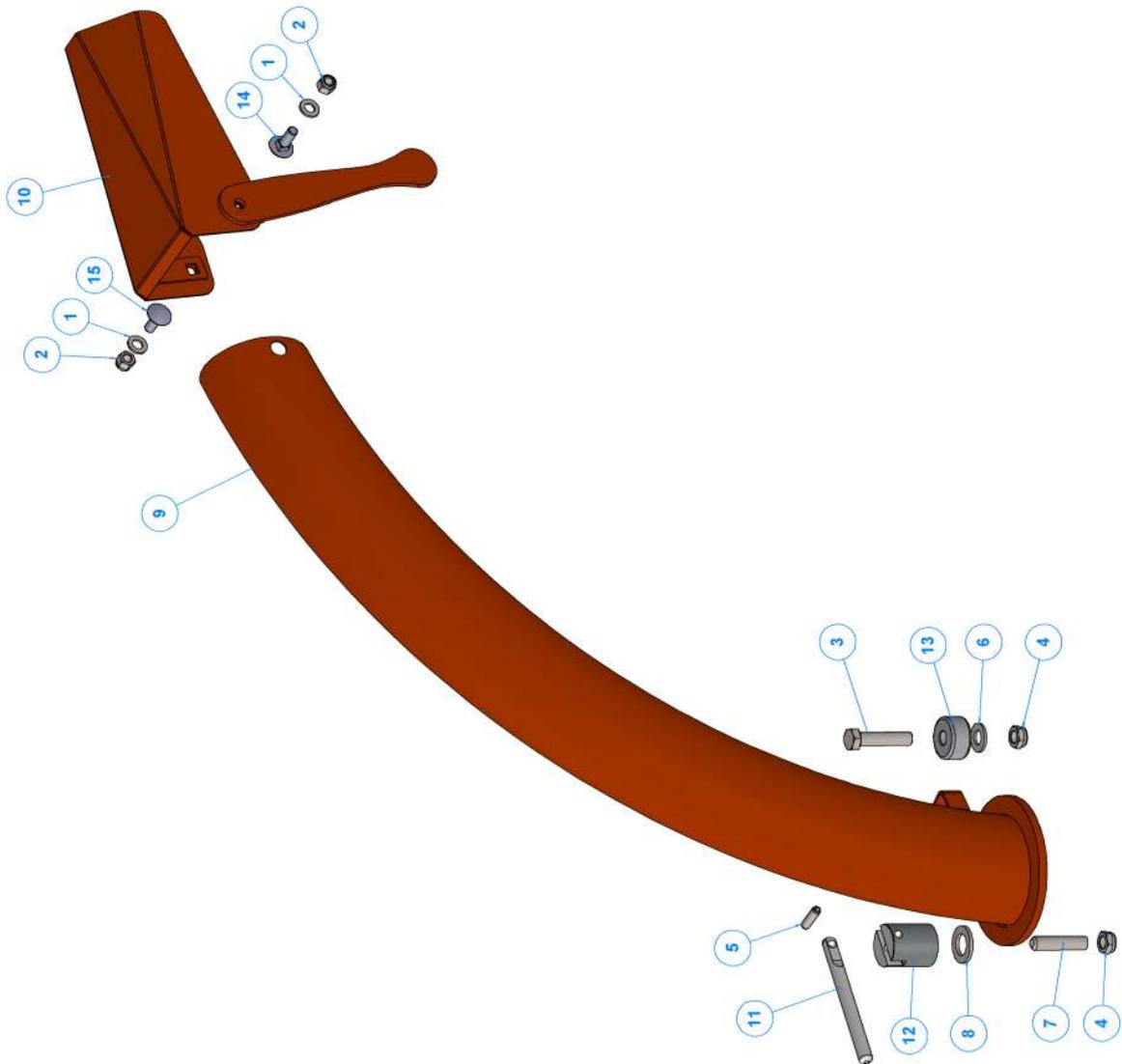
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0126	M10 FORM C WASHER ZIP	4
2	C002-0709	M10 x 25 HEX SET ZIP 8.8	4
3	C021-0125	M8 FORM C WASHER ZIP	4
4	C011-0605	M8 x 16 SKT BUTTON SET ZIP 10.9	4
5	C021-0123	M6 FORM C WASHER ZIP	6
6	C002-0403	M6 x 12 HEX SET ZIP 8.8	6
7	C021-0105	M8 FORM A WASHER ZIP	6
8	C002-0615	M8 x 55 HEX SET ZIP 8.8	3
9	C031-0123	M8 TYPE T NYLOC NUT ZIP	3
10	P0002606F	Control Tower Main Assembly	1
11	C131-0227	Control Tower Top - 4 Lever Slots	1
12	1802FR	Handle Driving Main Tower	2
13	1803P	Threaded Insert M10	4
14	P0002603	Control Tower Front Plate	1
15	P0002159	28mm Dia Rubber Blanking Grommet	2
16	TW 280TVGTR Hydraulic Manifold Assembly	TW 280TVGTR Hydraulic Manifold Assembly	1
17	Toggle Switch Non Latching Part Of P0002577	Toggle Switch Non Latching Part Of P0002577	1



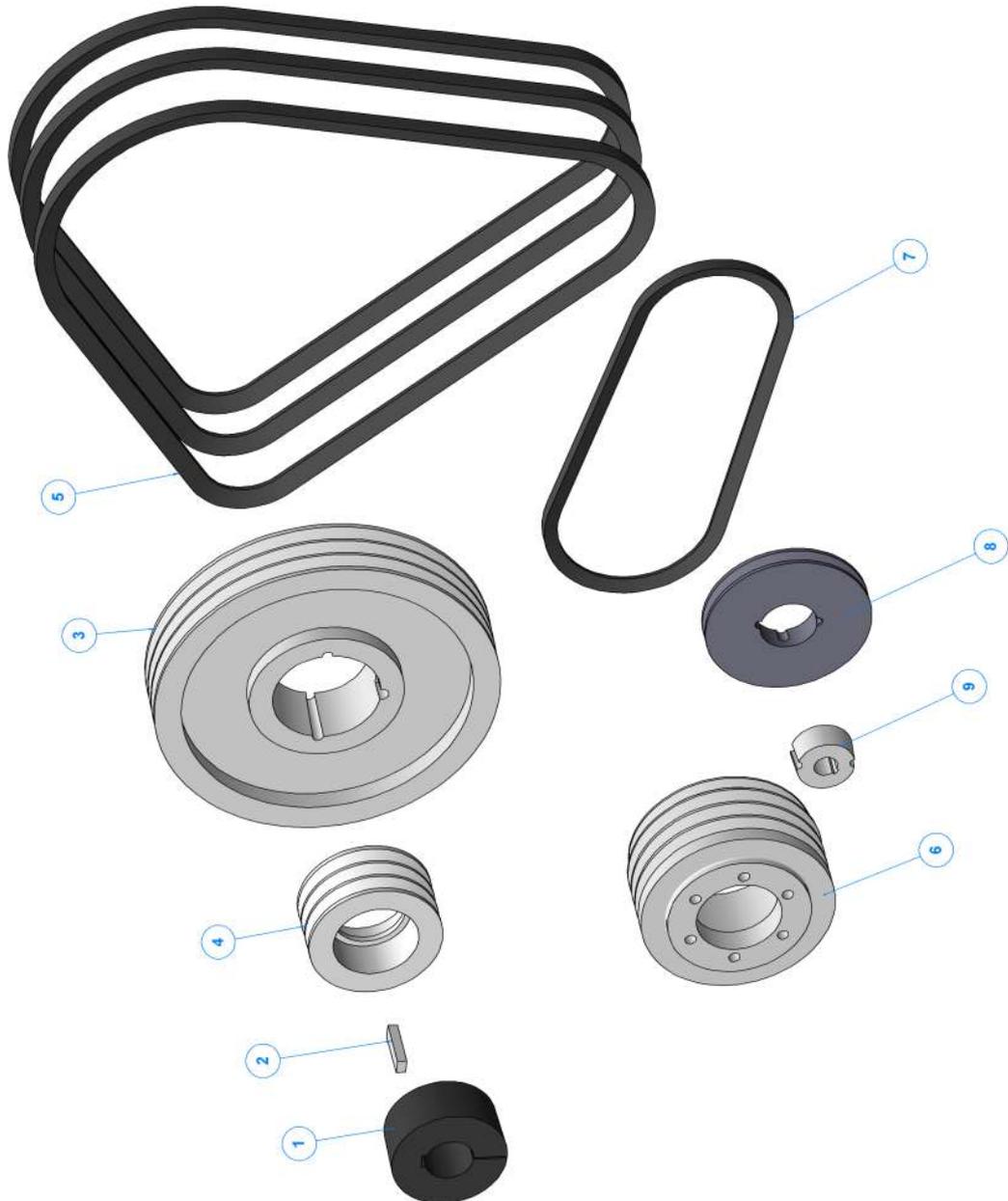
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0125	M8 FORM C WASHER Z/P	8
2	C002-0618	M8 x 70 HEX SET Z/P 8.8	4
3	C031-0163	M8 TYPE P NYLOC NUT Z/P	7
4	C002-0616	M8 x 60 HEX SET Z/P 8.8	3
5	C021-0105	M8 FORM A WASHER Z/P	6
6	C008-0422	M6 x 90 HEX BOLT Z/P 8.8	3
7	C021-0123	M6 FORM C WASHER Z/P	6
8	C031-0161	M6 TYPE P NYLOC NUT Z/P	3
9	P0000024	Proportional Crossover Valve	2
10	P0002284M	Samplierana Proportional Control Valve Shim	2
11	18850F	L-Shaped Track Handle	2
12	1860	M8 Lever	2
13	18846	Solenoid Valve	1
14	18694	Control Valve Mono Block	1
15	HY026	Adapter 3/8 - 1/2	7
16	HY161	Adaptor Mm 3/8 - 3/8	2
17	HY396	Washer Dowty 3/8"	15
18	HY828	Fitting 3/8 to 3/8 Bulkhead	2
19	HY033	Fitting 3/8 to 1/4	4
20	HY027	Adaptor 1/2" - 1/2" BSP	5
21	HY398	Washer Dowty 1/2"	5

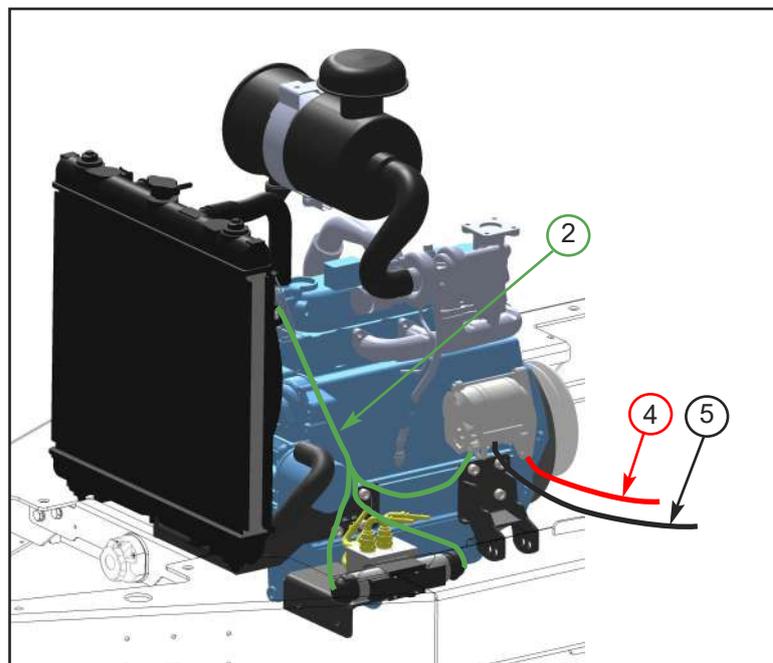
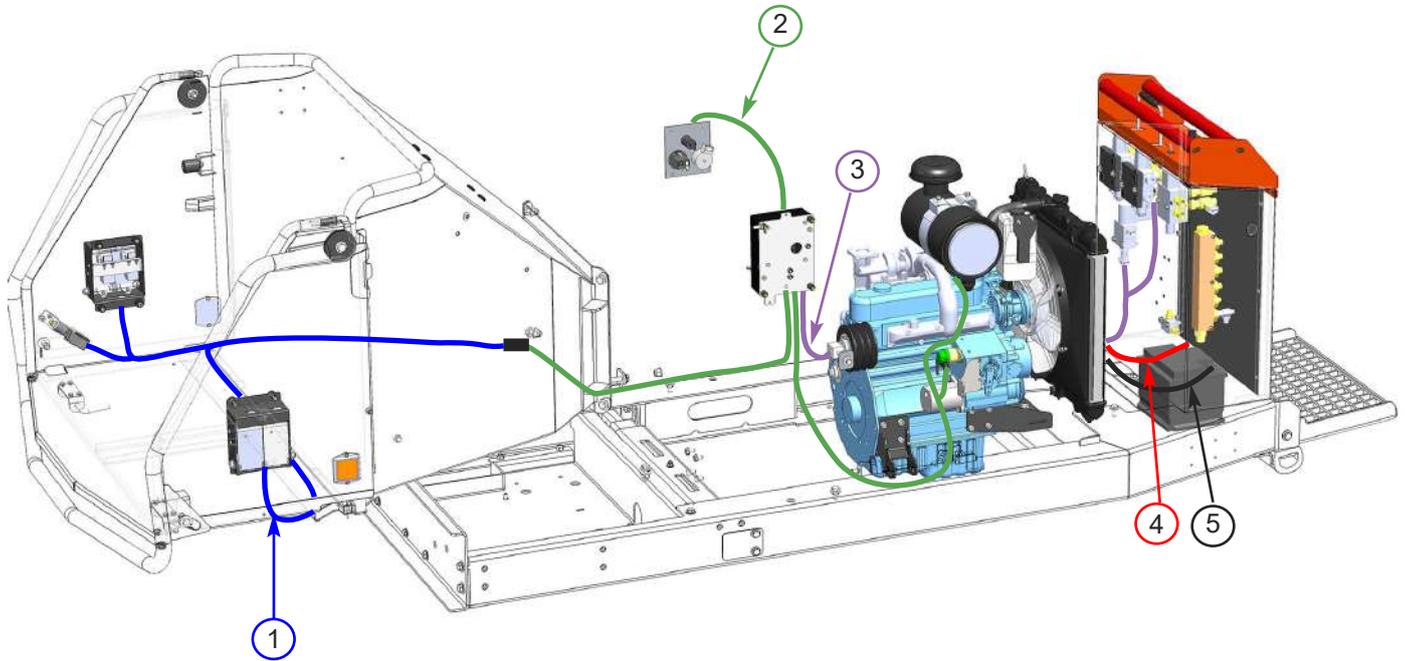


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0107	M12 FORM A WASHER Z/P	2
2	C031-0165	M12 TYPE P NYLOC NUT Z/P	2
3	C002-1018	M16 x 70 HEX SET Z/P 8.8	1
4	C031-0127	M16 TYPE T NYLOC NUT Z/P	2
5	C079-0101	M10 x 36 Roll Pin	1
6	C021-0129	M16 FORM C WASHER Z/P	1
7	C085-0920	Set Socket M16 2 70 8.8	1
8	C021-0133	M24 FORM C WASHER Z/P	1
9	P0001147	Discharge Tube Assy	1
10	P0001411	Bucket Discharge Tube Assy	1
11	1649M	Tommy Bar	1
12	4109M	M16 Clamp Nut	1
13	2837M	Clamp Discharge	1
14	BO430	Bolt M12/35 Cup Square Bzp	1
15	19282	M12/30 Cup Square	1

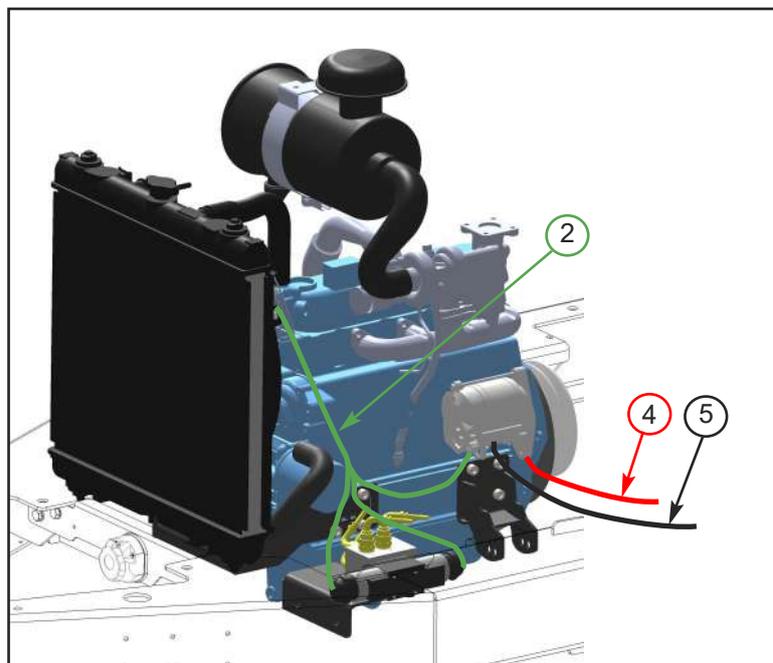
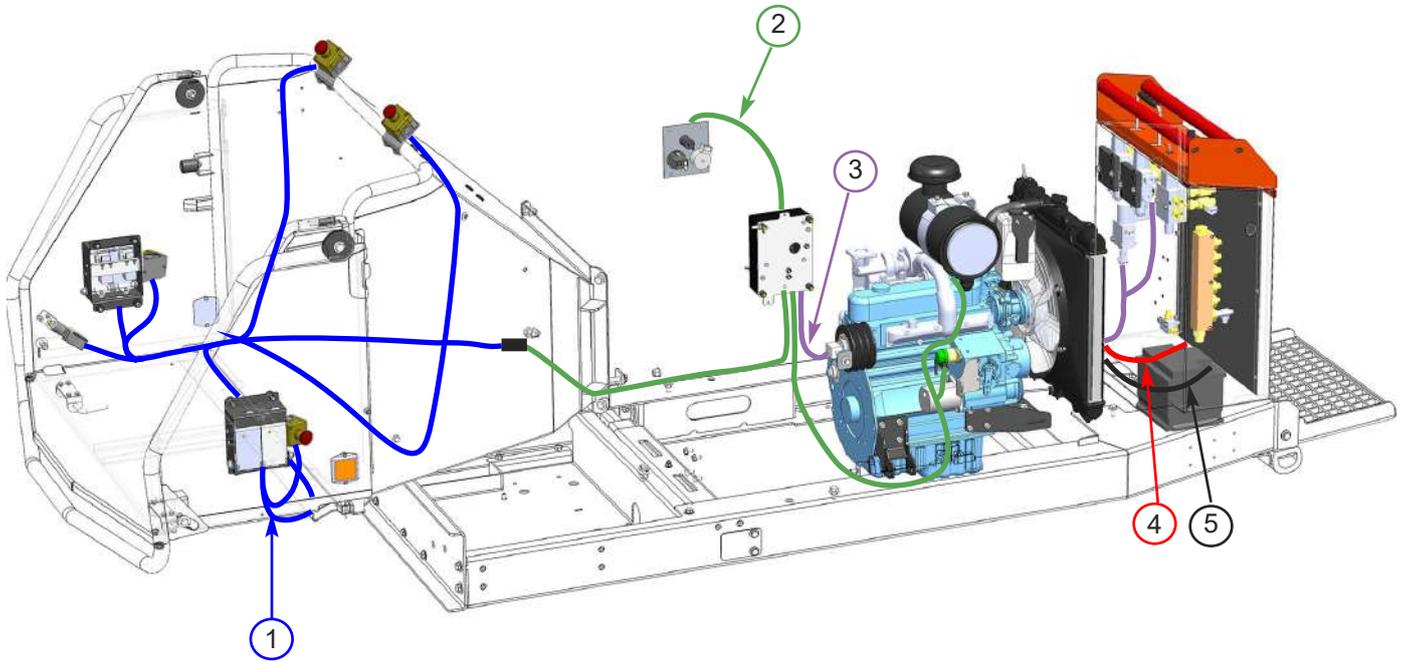


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	P0001826	Taperlock Bush 3020 45	1
2	P0002216	Key 14x9x50	1
3	P0001655	Pulley SPB 3 315	1
4	P0002690M	Pulley SPB - 3 - 118 Tensioner	1
5	C124-B107	Belt SPB 1600	3
6	C121-0102	PULLEY 175 X 3 SPB + 168 X 1 SPA	1
7	C124-A316	Belt XPA 982	1
8	C120-A150.1	Pulley 150 x 1 SPA	1
9	C122-0410	TaperLock 1610 Ø22	1



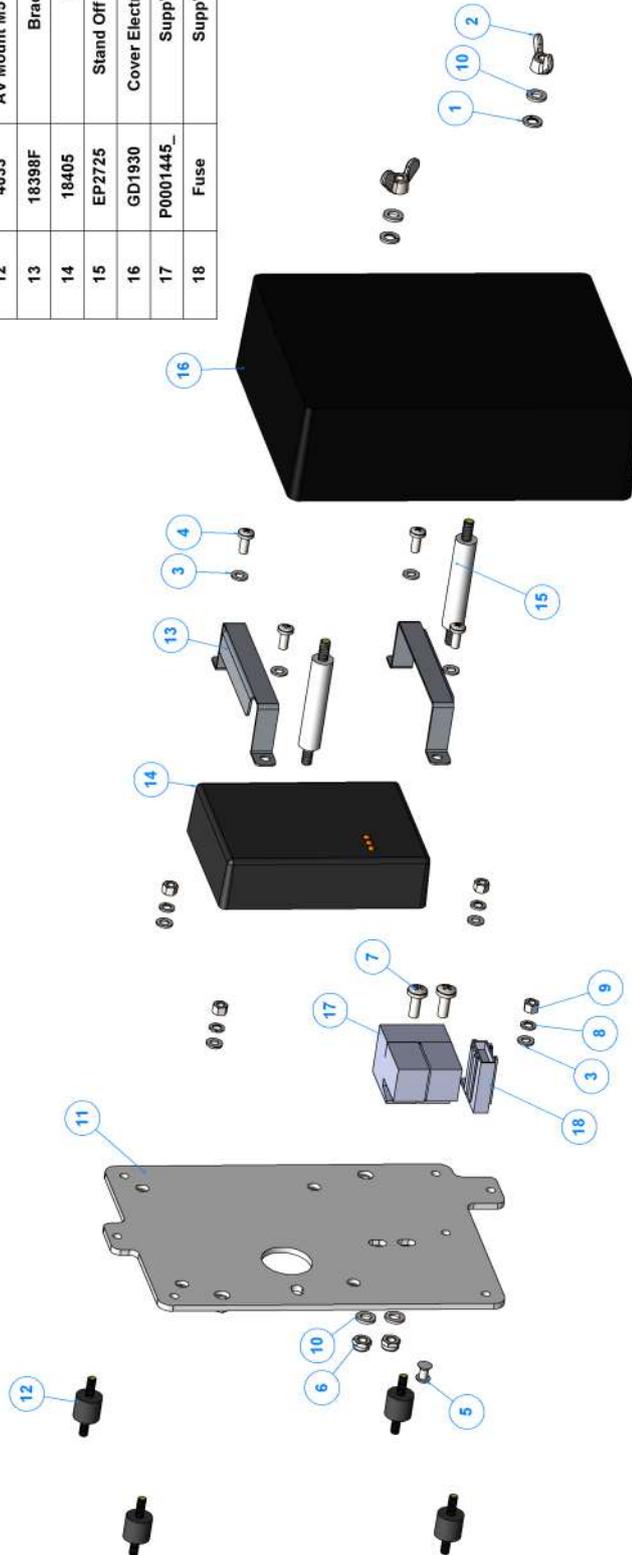


ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	17809	Funnel Loom	1	4	P2512	+VE Battery Cable	1
2	P2741	Main Engine Loom	1	5	P2513	-VE Battery Cable	1
3	C161-0140	Track/Chip Loom	1				

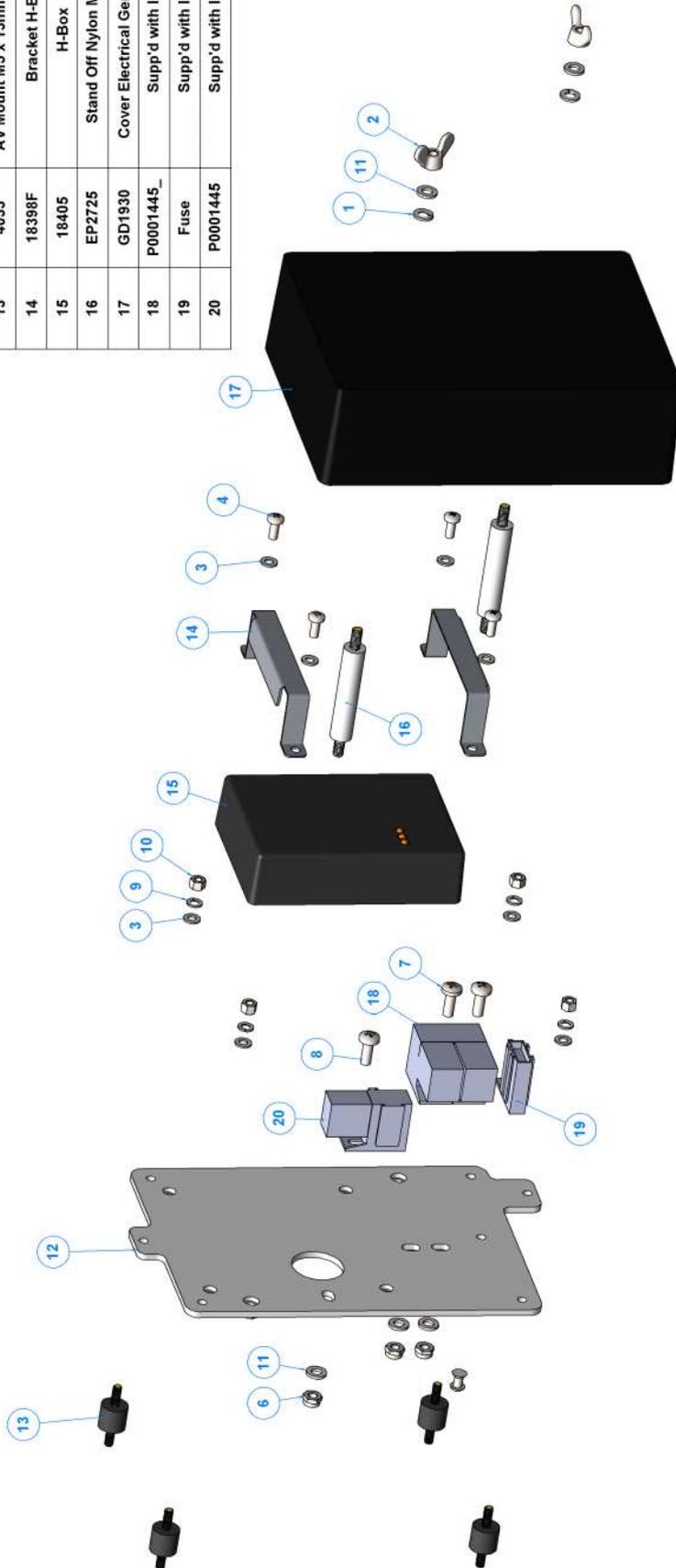


ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	C161-0119	Funnel Loom	1	4	P2512	+VEBattery Cable	1
2	P2741	Main Engine Loom	1	5	P2513	-VEBattery Cable	1
3	C161-0140	Track/Chip Loom	1				

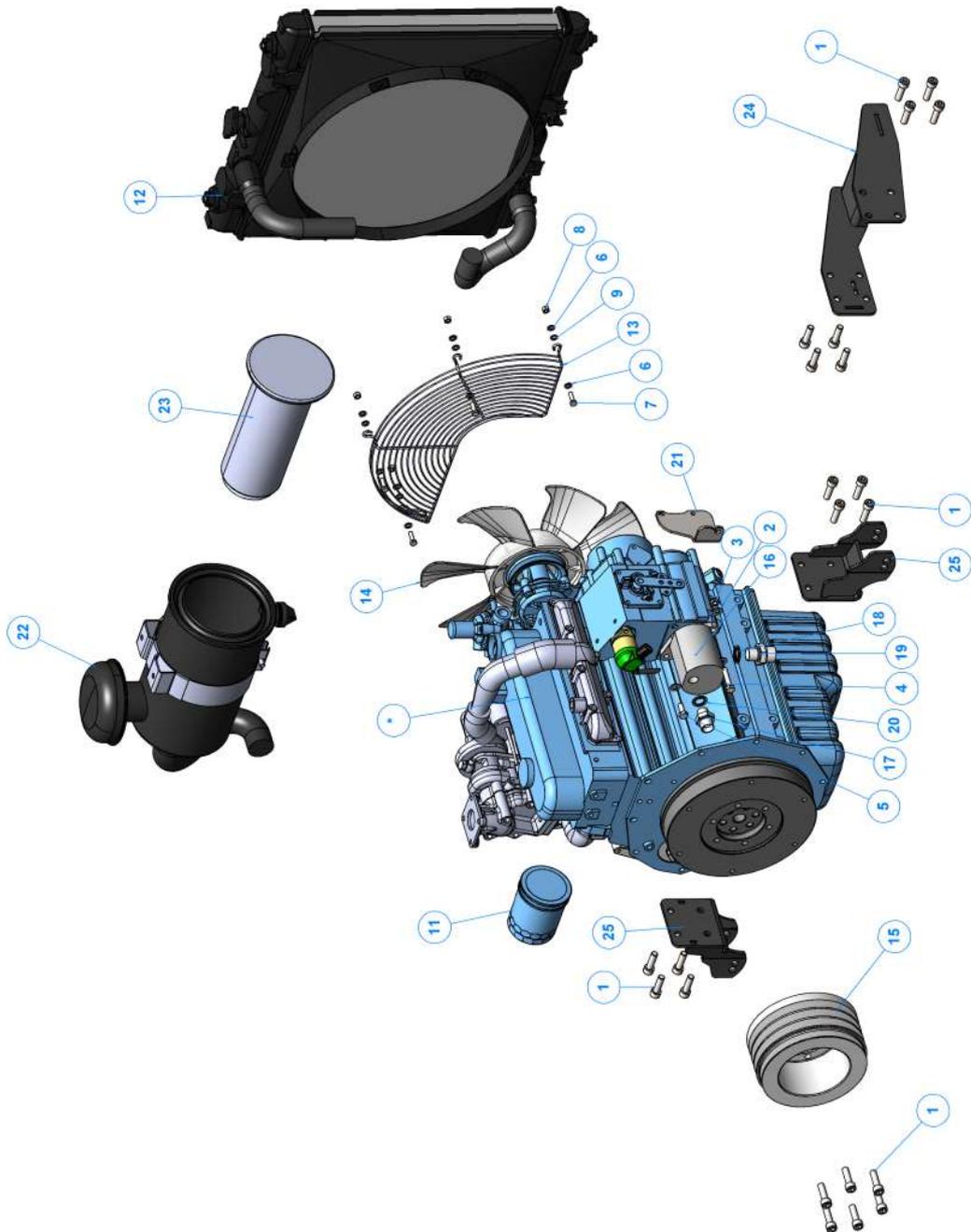
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C023-0103	M6 SPRING WASHER - ZP	2
2	C032-0114	M6 WING NUT Z/P	2
3	C021-0102	M5 FORM A WASHER Z/P	8
4	C013-0303	M5 x 12 PAN POZI Z/P	4
5	1151	Countersunk Pop Rivet	1
6	C031-0121	M6 TYPE T NYLOC NUT Z/P	2
7	C013-0405	M6 x 16 PAN POZI Z/P	2
8	C023-0102	M5 SPRING WASHER - ZP	4
9	C030-0120	M5 HEX NUT - ZP - GRADE 10	4
10	C021-0123	M6 FORM C WASHER Z/P	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	1
18	Fuse	Supp'd with loom	1



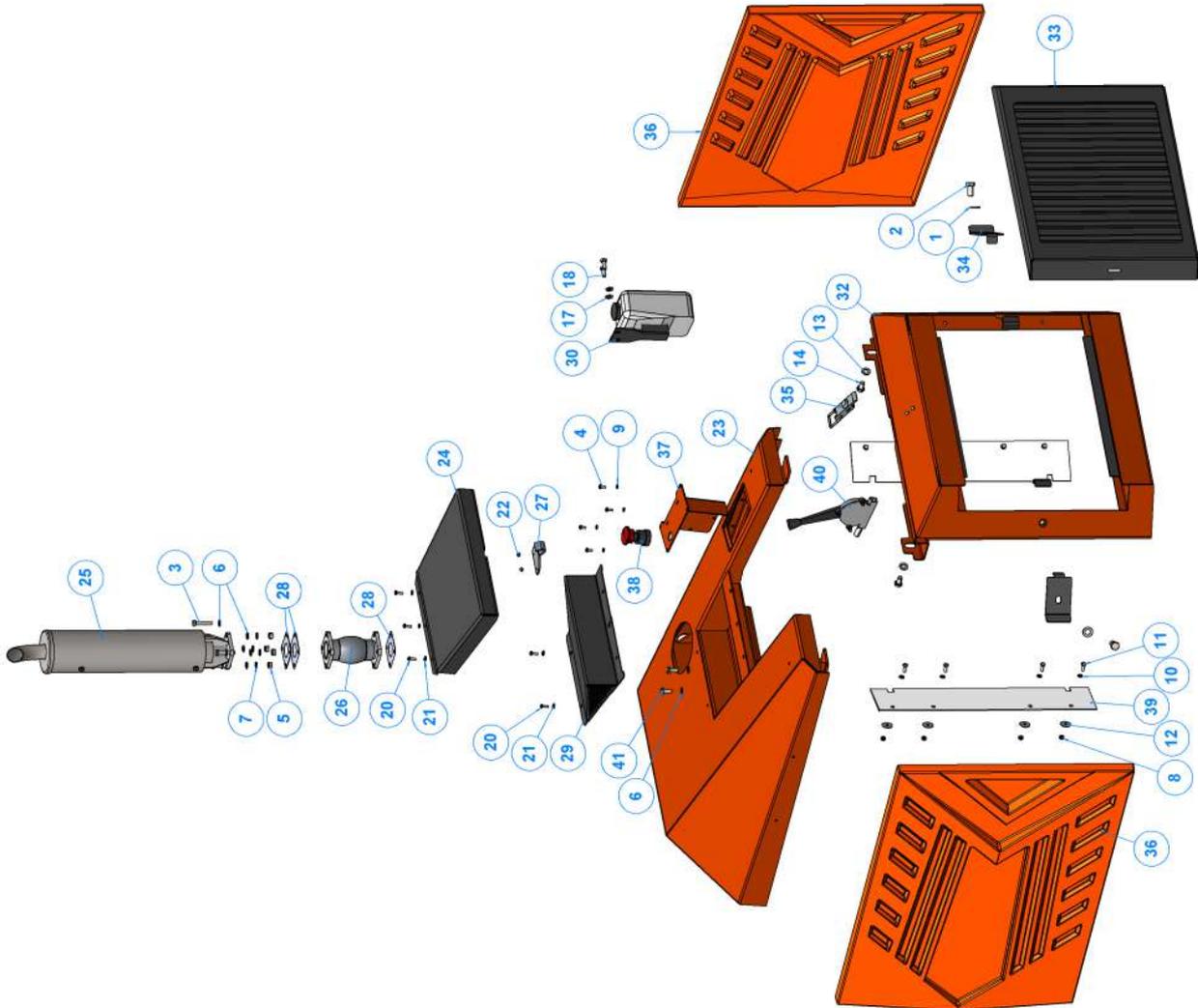
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C023-0103	M6 SPRING WASHER - ZP	2
2	C032-0114	M6 WING NUT Z/P	2
3	C021-0102	M5 FORM A WASHER Z/P	8
4	C013-0303	M5 x 12 PAN POZI Z/P	4
5	1151	Countersunk Pop Rivet	1
6	C031-0121	M6 TYPE T NYLOC NUT Z/P	3
7	C013-0405	M6 x 16 PAN POZI Z/P	2
8	BO438	Pan Head Pozi M6 1.0 16 BZP	1
9	C023-0102	M5 SPRING WASHER - ZP	4
10	C030-0120	M5 HEX NUT - ZP - GRADE 10	4
11	C021-0123	M6 FORM C WASHER Z/P	5
12	P0000856F	Plate H-Box Assy	1
13	4033	AV Mount M5 x 13mm Green Spot	4
14	18398F	Bracket H-Box	2
15	18405	H-Box	1
16	EP2725	Stand Off Nylon M6 62mm	2
17	GD1930	Cover Electrical General Short	1
18	P0001445_	Supp'd with loom	1
19	Fuse	Supp'd with loom	1
20	P0001445	Supp'd with loom	1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C018-0711	M10 x 1.25 x 35 SKT CAP SET S/C 12.9	22
2	C021-0105	M8 FORM A WASHER Z/P	3
3	C031-0123	M8 TYPE T NYLOC NUT Z/P	1
4	C002-0612	M8 x 40 HEX SET Z/P 8.8	1
5	C002-0607	M8 x 20 HEX SET Z/P 8.8	1
6	C021-0123	M6 FORM C WASHER Z/P	8
7	C002-0407	M6 x 20 HEX SET Z/P 8.8	4
8	C030-0121	M6 HEX NUT - ZP - GRADE 10	4
9	C023-0103	M6 SPRING WASHER - ZP	4
10	4313	Kubota 1505 Turbo Engine	1
11	0095	Oil Filter 1505	1
12	4319	Radiator Kit (1G666-72001)	1
13	4335	Radiator Fan Guard	1
14	Supplied with Engine	Radiator Fan Seven Blade	1
15	C121-0102	PULLEY 175 X 3 SPB + 168 X 1 SPA	1
16	MO1660	Pump Hydraulic Engine Driven 6.61Cc	1
17	HY026	Adapter 3/8 - 1/2	1
18	HY398	Washer Dowty 1/2"	1
19	1583	Adaptor 1/2" - 3/4" BSP	1
20	HY396	Washer Dowty 3/8"	1
21	P0000756	Bracket Throttle Cable	1
22	4316	Bracket Engine Front Upper	1
23	18345	Air Filter	1
24	P0001662F	Bracket Engine Front Upper	1
25	P0001636F	Bracket Engine Rear Upper	2

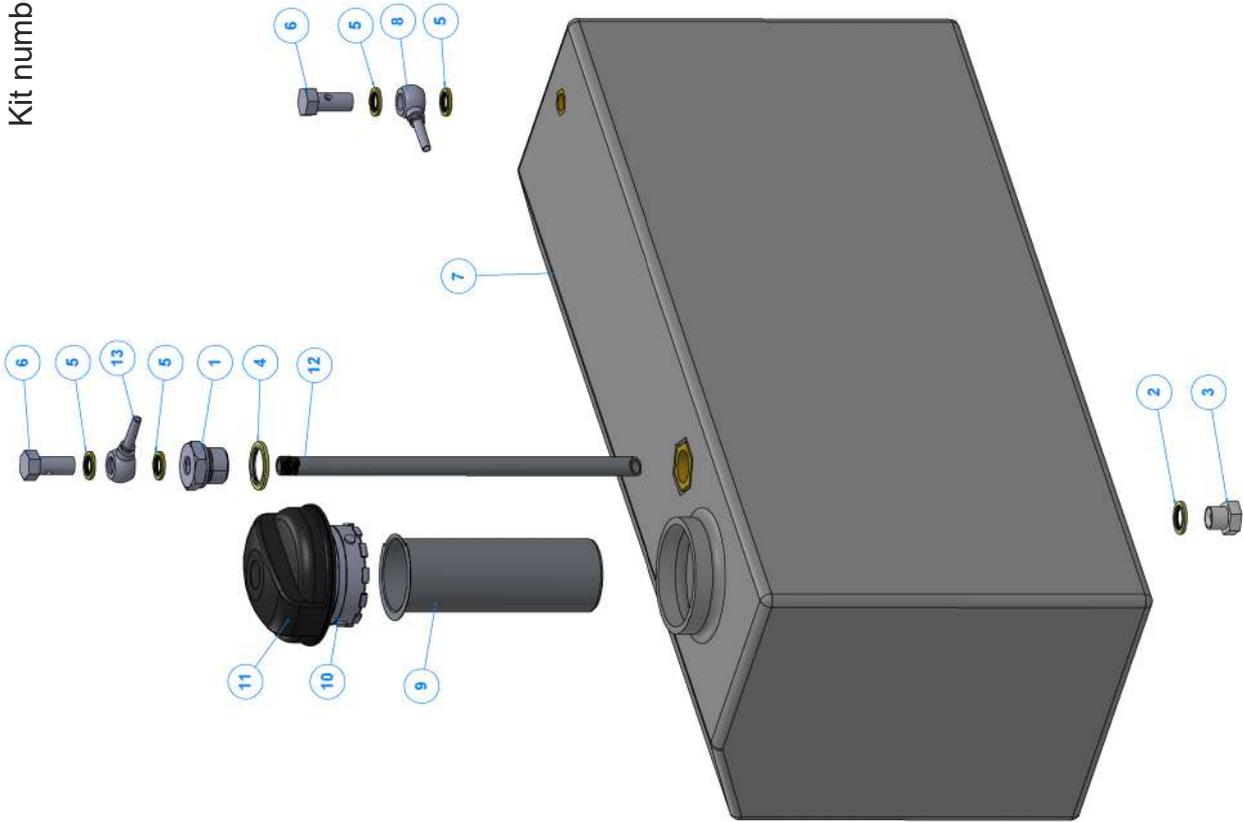


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0127	M12 FORM C WASHER Z/P	2
2	C002-0809	M12 x 25 HEX SET Z/P 8.8	2
3	C008-0612	M8 x 40 HEX BOLT Z/P 8.8	4
4	C013-0303	M5 x 12 PAN POZI Z/P	4
5	C030-0123	M8 HEX NUT - ZP - GRADE 10	4
6	C021-0105	M8 FORM A WASHER Z/P	10
7	C023-0105	M8 SPRING WASHER - ZP	4
8	C031-0121	M6 TYPE T NYLOC NUT Z/P	8
9	C021-0102	M5 FORM A WASHER Z/P	10
10	C021-0123	M6 FORM C WASHER Z/P	8
11	C002-0405	M6 x 16 HEX SET Z/P 8.8	8
12	4343	M6 x 24 Mudguard Washer	8
13	C021-0126	M10 FORM C WASHER Z/P	2
14	C002-0707	M10 x 20 HEX SET Z/P 8.8	2
15	C013-0307	M5 x 20 PAN POZI Z/P	3
16	C031-0160	M5 TYPE P NYLOC NUT Z/P	3
17	C021-0105	M8 FORM A WASHER Z/P	2
18	C002-0607	M8 x 20 HEX SET Z/P 8.8	2
19	C021-0102	M5 FORM A WASHER Z/P	1
20	C013-0305	M5 x 16 PAN POZI Z/P	5
21	C021-0122	M5 FORM C WASHER Z/P	4
22	C045-0101	4.8 x 8 Alu/Steel Rivet	2
23	P0002365F	Top Bonnet Angular 9°	1
24	P0002525F	Access Cover Tapered Assy	1
25	18327FB	S/SH Exhaust Muffler. (Road Tow)	1
26	18456F	Flexible Exhaust Adapter	1
27	C137-0102	Access Cover Tapered Catch	1
28	17988	Gasket Muffler	3
29	P0002933F	Guard Air Intake	1
30	4320	Reserve Tank Radiator	1
31	C045-0105	4.8 x 12 Alu/Steel Rivet	2
32	P0002517F	Guard Front Angular Assy	1
33	P0002380F	Bracket Front Grill Assy	1
34	P0002521F	Bracket Side Panel & Front Guard Stop	2
35	0235	Catch Assy	1
36	P0001740	Panel Side Plastic Sharp Design	2
37	P0002550F	Throttle Bracket	1
38	2627	Emergency Stop Switch	1
39	P0002796	Plastic Strip Radiator	2
40	2946	Throttle Cable	1
41	C002-0607	M8 x 20 HEX SET Z/P 8.8	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	4059	Quarter Inch Banjo Bolt	2
7	P0001710	Tank Fuel 38 Litre	1
8	17998	1/4" BSPP Banjo Insert x 1/4" hosetail	1
9	P0001816	Tank Filler Strainer	1
10	P0001815	Threaded Filler Neck OD65	1
11	P0001817	P0001817 Fuel Tank Cap	1
12	C172-0101	Threaded Fuel Pick Up .280mm	1
13	C070-0104 Quarter Inch Banjo Fitting	1/4" Banjo to suit 5/16" Hosetail	1

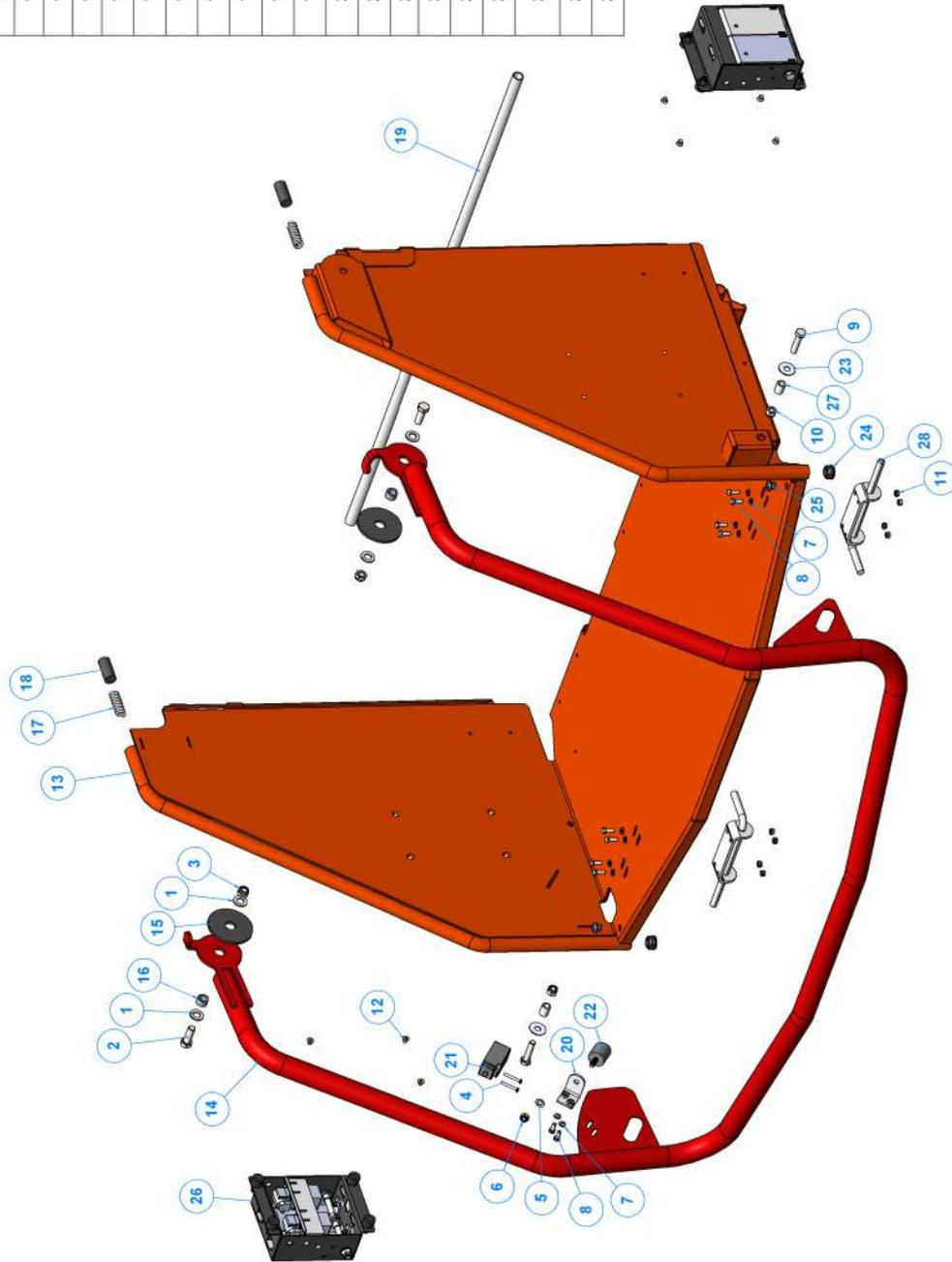
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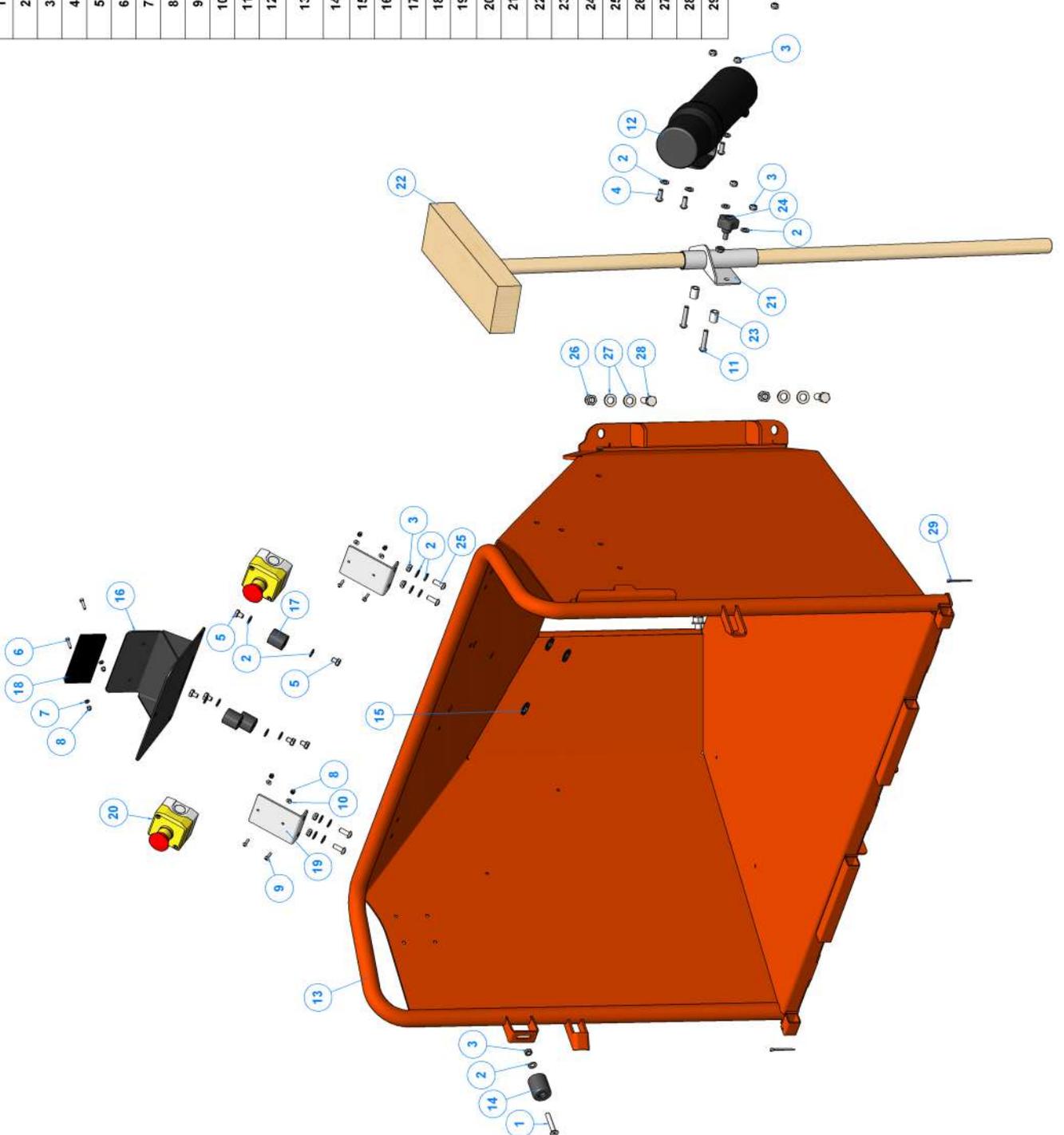
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C015-0614	M8 x 50 SKT CSK SET Z/P 10.9	1
2	C021-0125	M8 FORM C WASHER Z/P	13
3	C031-0123	M8 TYPE T NYLOC NUT Z/P	4
4	C011-0607	M8 x 20 SKT BUTTON SET Z/P 10.9	3
5	C002-0602	M8 x 10 HEX SET Z/P 8.8	6
6	C005-0207	M4 x 20 SKT CAP SET Z/P 12.9	2
7	C021-0101	M4 FORM A WASHER Z/P	2
8	C035-0102	M4 TYPE P NYLOC NUT Z/P	2
9	P0000144	Operator's Manual Canister	1
10	P0001566F	Funnel 280 x 203	1
11	4206	Nylon Bush	1
12	IN654	Grommet Hole OD19.05mm	4
13	C131-0232	Inclinometer Bracket Assembly	1
14	1644	AV Rubber Mount	3
15	C144-0100	Inclinometer	1
16	BO429	Set Screw M12.35 BZP	4
17	C021-0127	M12 FORM C WASHER Z/P	8
18	C031-0165	M12 TYPE P NYLOC NUT Z/P	4



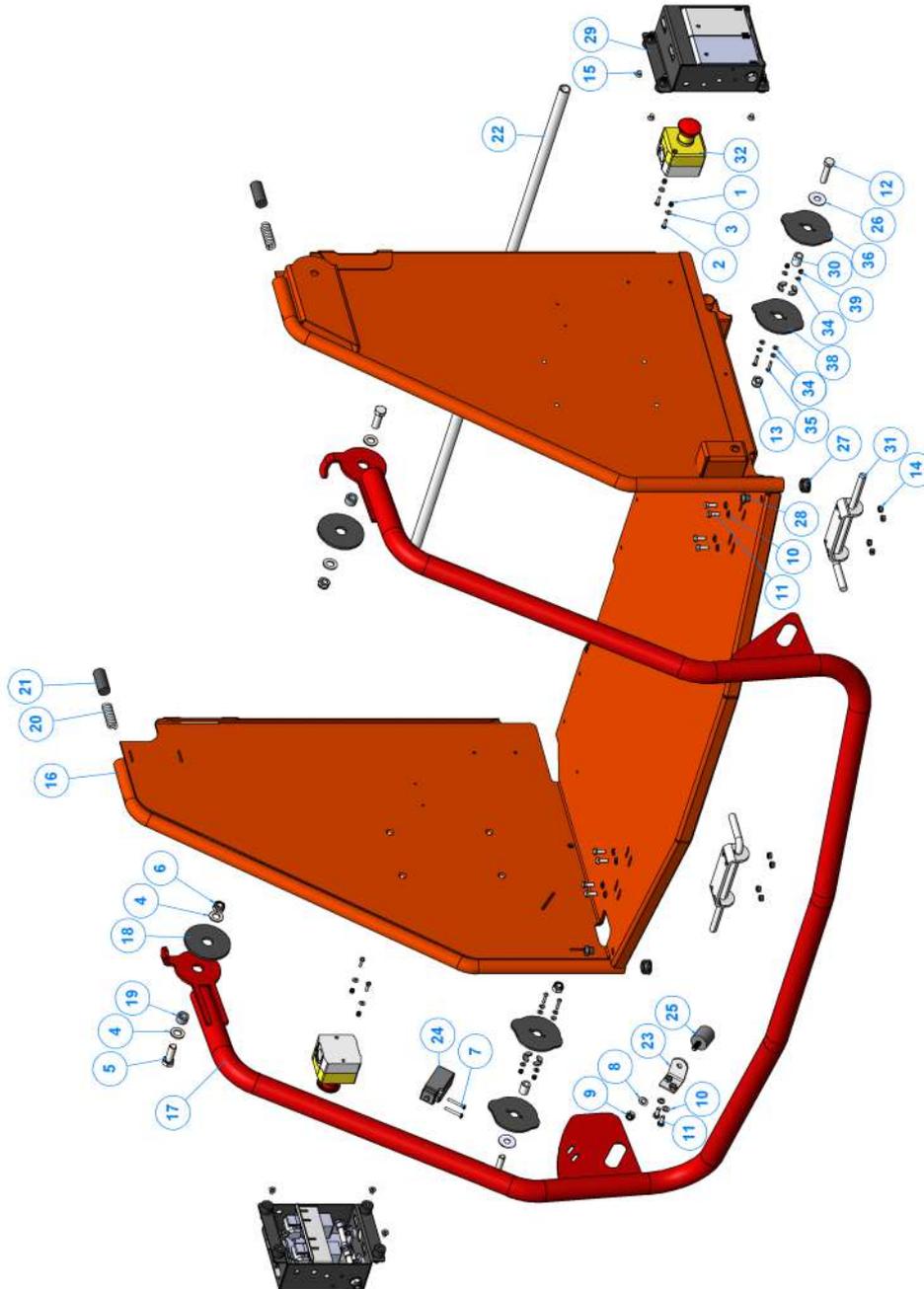
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0127	M12 FORM C WASHER ZIP	4
2	C002-0811	M12 x 35 HEX SET ZIP 8.8	2
3	C031-0125	M12 TYPE T NYLOC NUT ZIP	2
4	C013-0209	M4 x 30 PAN POZI ZIP	2
5	C021-0125	M8 FORM C WASHER ZIP	1
6	C031-0163	M8 TYPE P NYLOC NUT ZIP	1
7	C021-0123	M6 FORM C WASHER ZIP	10
8	C002-0405	M6 x 16 HEX SET ZIP 8.8	10
9	C002-0713	M10 x 45 HEX SET ZIP 8.8	2
10	C031-0164	M10 TYPE P NYLOC NUT ZIP	2
11	C031-0121	M6 TYPE T NYLOC NUT ZIP	8
12	C015-0401	C'SUNK SCREW M6x8 ZP GRADE 10.9	8
13	P0003501F	Feed Tray	1
14	1598F	Control Bar Assy High Funnel	1
15	1599	Bearing Washer	2
16	1605M	Stainless Spacer	2
17	1603	Spring Die (Stop Bar)	2
18	1601	Nylon Piston OD20 - 45mm	2
19	2923F	Hinge Pin	1
20	2727F	Bracket Actuator Control Bar Assy	1
21	EL1348	Switch Limit (Metal Plunger)	1
22	CO178	Buffer Rubber	1
23	WA4344	Washer M10 29.75 Penny BZP	2
24	1337_	Rubber Cap	2
25	2493	Rubber Cap	2
26	TW 280TVGTR Control Box	TW 280TVGTR Control Box	2
27	1591	Spacer 10x15x20	2
28	2986	Spring Bolt	2



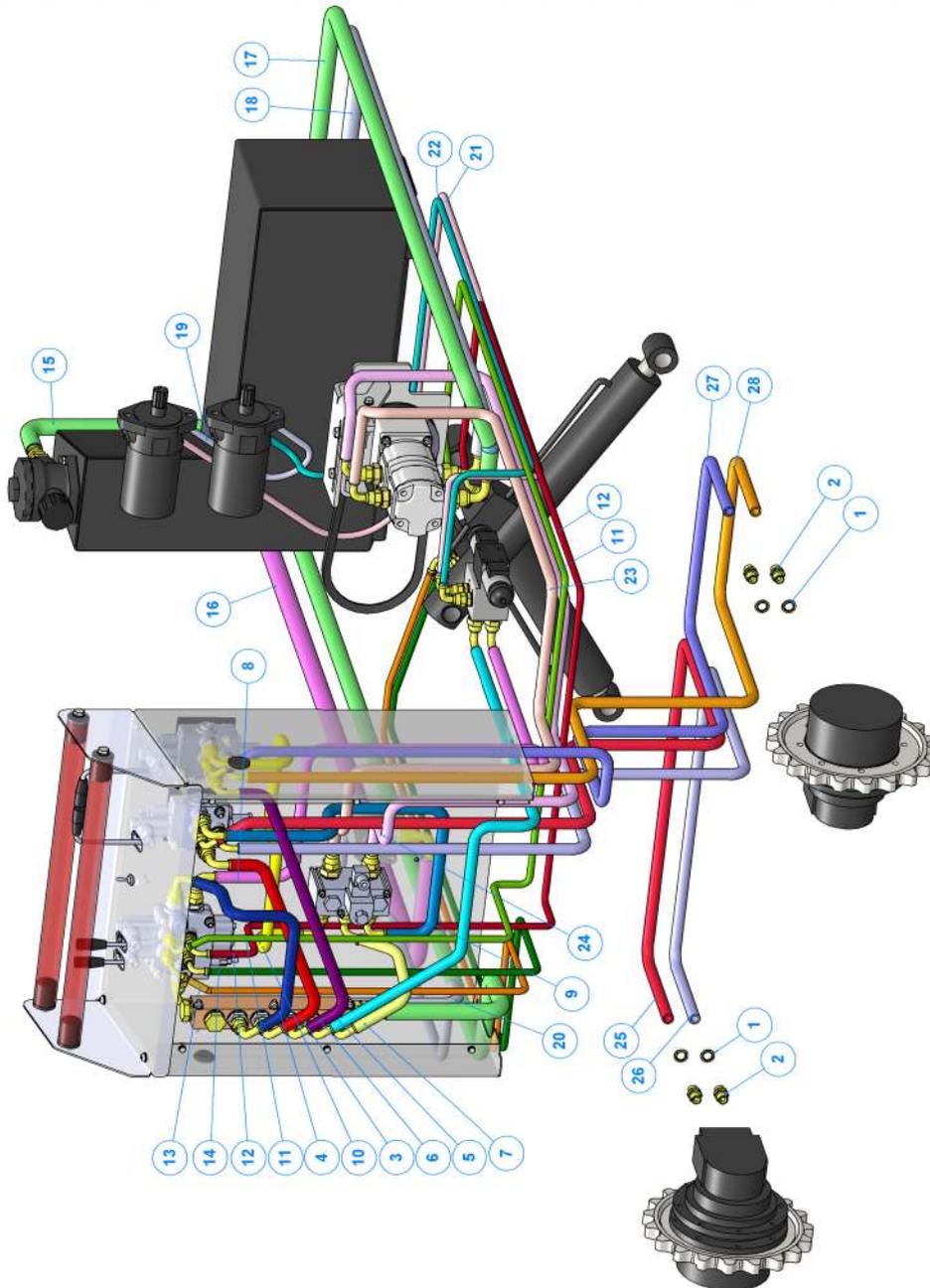
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C015-0614	M8 x 50 SKT CSK SET Z/P 10.9	1
2	C021-0125	M8 FORM C WASHER Z/P	25
3	C031-0123	M8 TYPE T NYLOC NUT Z/P	10
4	C010-0607	M8 x 20 SKT BUTTON SET S/C 10.9	3
5	C002-0602	M8 x 10 HEX SET Z/P 8.8	6
6	C005-0207	M4 x 20 SKT CAP SET Z/P 12.9	2
7	C021-0101	M4 FORM A WASHER Z/P	2
8	C035-0102	M4 TYPE P NYLOC NUT Z/P	6
9	C013-0205	M4 x 16 PAN POZI Z/P	4
10	C021-0121	M4 FORM C WASHER Z/P	4
11	C010-0612	M8 x 40 SKT BUTTON SET S/C 10.9	2
12	P0000144	Operator's Manual Canister	1
13	C138-0143	TW280 FRENCH FUNNEL ASSEMBLY 280 x 203	1
14	4206	Nylon Bush	1
15	IN654	Grommet Hole OD19.05mm	4
16	C131-0232	Inclinometer Bracket Assembly	1
17	1644	AV Rubber Mount	3
18	C144-0100	Inclinometer	1
19	P0003651F	Emergency Stop Bracket	2
20	C162-0100	ESD - Schneider XALK178F 2NC, 1NO	2
21	P0003647F	Infeed Aid Tool Assy	1
22	C200-0101	Infeed Aid Tool	1
23	1591	Spacer 10x15x20	2
24	C053-0100	M8 x 16 Black Knob	1
25	C011-0607	M8 x 20 SKT BUTTON SET Z/P 10.9	4
26	C031-0165	M12 TYPE P NYLOC NUT Z/P	4
27	C021-0127	M12 FORM C WASHER Z/P	8
28	BO429	Set Screw M12 35 BZP	4
29	1276	Split Pin	2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C035-0102	M4 TYPE P NYLOC NUT Z/P	4
2	C013-0205	M4 x 16 PAN POZI Z/P	4
3	C021-0121	M4 FORM C WASHER Z/P	4
4	C021-0127	M12 FORM C WASHER Z/P	4
5	C002-0811	M12 x 35 HEX SET Z/P 8.8	2
6	C031-0125	M12 TYPE T NYLOC NUT Z/P	2
7	C013-0209	M4 x 30 PAN POZI Z/P	2
8	C021-0125	M8 FORM C WASHER Z/P	1
9	C031-0163	M8 TYPE P NYLOC NUT Z/P	1
10	C021-0123	M6 FORM C WASHER Z/P	10
11	C002-0405	M6 x 16 HEX SET Z/P 8.8	10
12	C002-0713	M10 x 45 HEX SET Z/P 8.8	2
13	C031-0164	M10 TYPE P NYLOC NUT Z/P	2
14	C031-0121	M6 TYPE T NYLOC NUT Z/P	8
15	C015-0401	C'SUNK SCREW M6x8 ZP GRADE 10.9	8
16	C138-0145	Feed Tray	1
17	1598F	Control Bar Assy High Funnel	1
18	1599	Bearing Washer	2
19	1605M	Stainless Spacer	2
20	1603	Spring Die (Stop Bar)	2
21	1601	Nylon Piston OD20 - 45mm	2
22	2923F	Hinge Pin	1
23	2727F	Bracket Actuator Control Bar Assy	1
24	EL1348	Switch Limit (Metal Plunger)	1
25	CO178	Buffer Rubber	1
26	WA4344	Washer M10 29.75 Penny BZP	2
27	1337_	Rubber Cap	2
28	2493	Rubber Cap	2
29	TW 280TVGTR Control Box	TW 280TVGTR Control Box	2
30	1591	Spacer 10x15x20	2
31	2986	Spring Bolt	2
32	C162-0100	ESD - Schneider XALK178F 2NC, 1NO	2
33	C200-0110	Safety Bar Activation Slot Kit	2
34	C021-0101	M4 FORM A WASHER Z/P	6
35	C086-0207	M4 x 30 Button Head Pin Hexagon Machine Screw	2
36	C200-0107	Safety Bar Activation Slot Guard OS	1
37	C200-0109	Safety Bar Activation Slot Spacer	2
38	C200-0108	Safety Bar Activation Slot Guard IS	1
39	C035-0101	M4 TYPE T NYLOC NUT Z/P	2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	HY396	Washer Dowty 3/8"	4
2	HY161	Adaptor Mm 3/8 - 3/8	4
3	C073-0133	HOSE 1/2" 465MM 90° SWEPT, 90° SWEPT, NO ROTATION	1
4	C073-0132	HOSE 1/2" 463MM 90° SWEPT, 90° SWEPT, 80° ROTATION	1
5	C073-0135	HOSE 1/2" 1430MM 90° SWEPT, 90° SWEPT, 135° ROTATION	1
6	C073-0134	HOSE 1/2" 623MM 90° SWEPT, 90° SWEPT, NO ROTATION	1
7	C073-0136	HOSE 1/2" 325MM 90° SWEPT, 90° SWEPT, 135° ROTATION	1
8	C073-0137	HOSE 1/2" 1400MM 90° SWEPT, 90° SWEPT, 180° ROTATION	1
9	C073-0138	HOSE 1/2" 890MM 90° SWEPT, 90° SWEPT, 80° ROTATION	1
10	C073-0139	HOSE 1/2" 1125MM 45° SWEPT, 90° SWEPT, 80° ROTATION	1
11	C073-0140	HOSE 1/4" 2575MM 45° SWEPT, 90° SWEPT, NO ROTATION	1
12	C073-0141	HOSE 1/4" 2575MM 45° SWEPT, 90° SWEPT, NO ROTATION	1
13	C073-0142	HOSE 1/4" 2305MM STRAIGHT, 90° SWEPT, NO ROTATION	1
14	C073-0143	HOSE 1/4" 2575MM 45° SWEPT, 90° SWEPT, NO ROTATION	1
15	C073-0144	HOSE 3/4" 3990MM STRAIGHT, STRAIGHT, NO ROTATION	1
16	C073-0145	HOSE 3/4" 2560MM COMPACT, COMPACT, 90° ROTATION	1
17	C073-0146	HOSE 3/4" 1845MM, COMPACT, 90° SWEPT, 90° ROTATION	1
18	C073-0147	HOSE 3/4" 1675MM, COMPACT, 90° SWEPT, 90° ROTATION	1
19	C073-0148	HOSE 3/8" 950MM, 90° SWEPT, COMPACT, NO ROTATION	1
20	C073-0149	HOSE 1/2" 1640MM, 90° SWEPT, COMPACT, 45° ROTATION	1
21	C073-0150	HOSE 3/8" 2040MM, 90° SWEPT, 90° SWEPT, 270° ROTATION	1
22	C073-0151	HOSE 3/8" 1370MM, 90° SWEPT, 90° SWEPT, 225° ROTATION	1
23	C073-0152	HOSE 1/2" 1420MM, STRAIGHT, 90° SWEPT, NO ROTATION	1
24	C073-0153	HOSE 1/2" 1435MM, STRAIGHT, 90° SWEPT, NO ROTATION	1
25	C073-0154	HOSE 3/8" 3765MM, STRAIGHT, 90° SWEPT, NO ROTATION	1
26	C073-0155	HOSE 3/8" 3765MM, STRAIGHT, 90° SWEPT, NO ROTATION	1
27	C073-0156	HOSE 3/8" 2875MM, STRAIGHT, 90° SWEPT, NO ROTATION	1
28	C073-0157	HOSE 3/8" 2875MM, STRAIGHT, 90° SWEPT, NO ROTATION	1



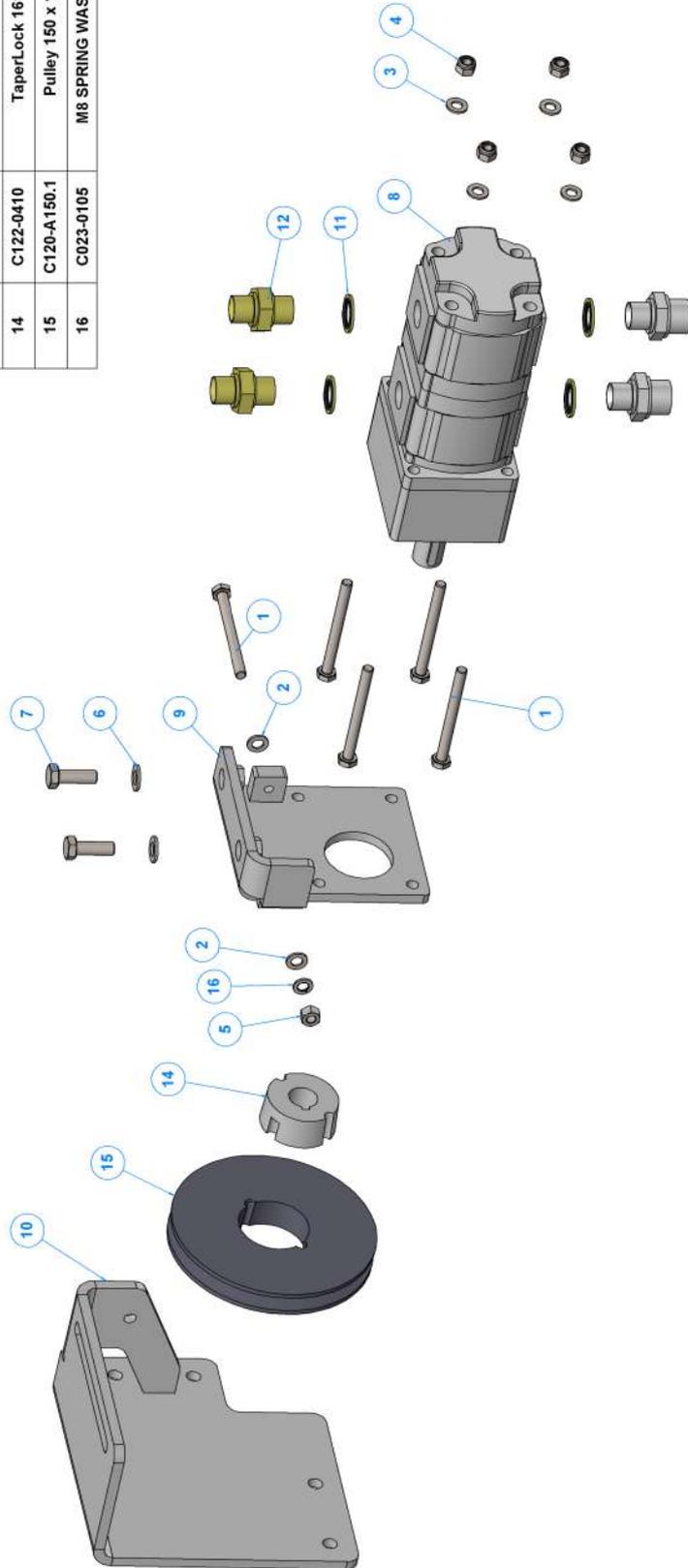
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0105	M8 FORM A WASHER Z/P	2
2	C002-0610	M8 x 30 HEX SET Z/P 8.8	2
3	C143-0100	Hydraulic Tank 50 litre - 3 Feed	1
4	HY1434F Gasket	Tank Top Filter Gasket	1
5	1954	Tank Top Filter	1
6	HY2693	Washer Dowty 1"	4
7	HY396	Washer Dowty 3/8"	1
8	HY211	3/8" Drain Plug	1
9	1163 Hydraulic Oil Level Guage	Hydraulic Oil Level Guage	1
10	2694	Adaptor 1" - 3/4" BSP	4



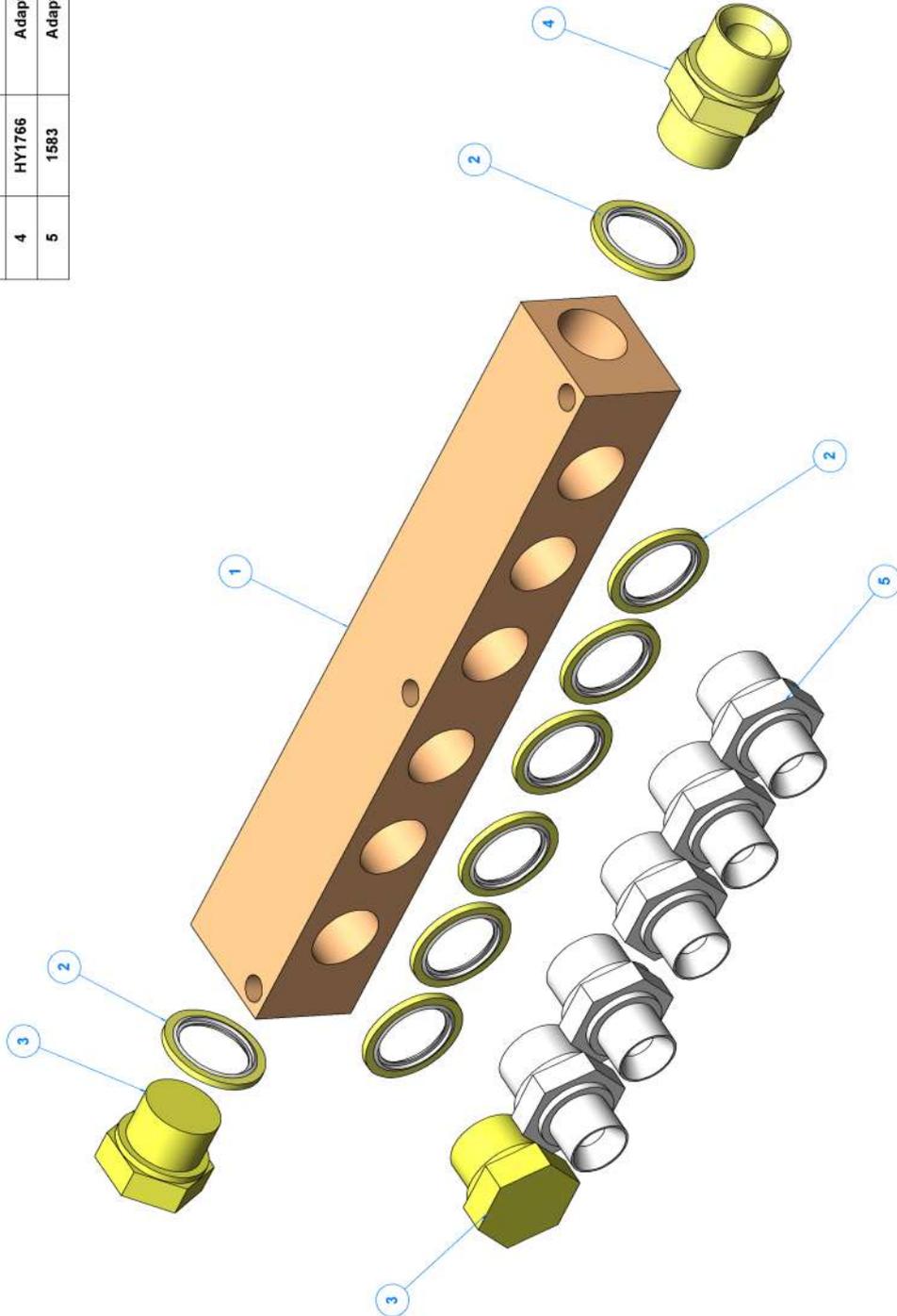
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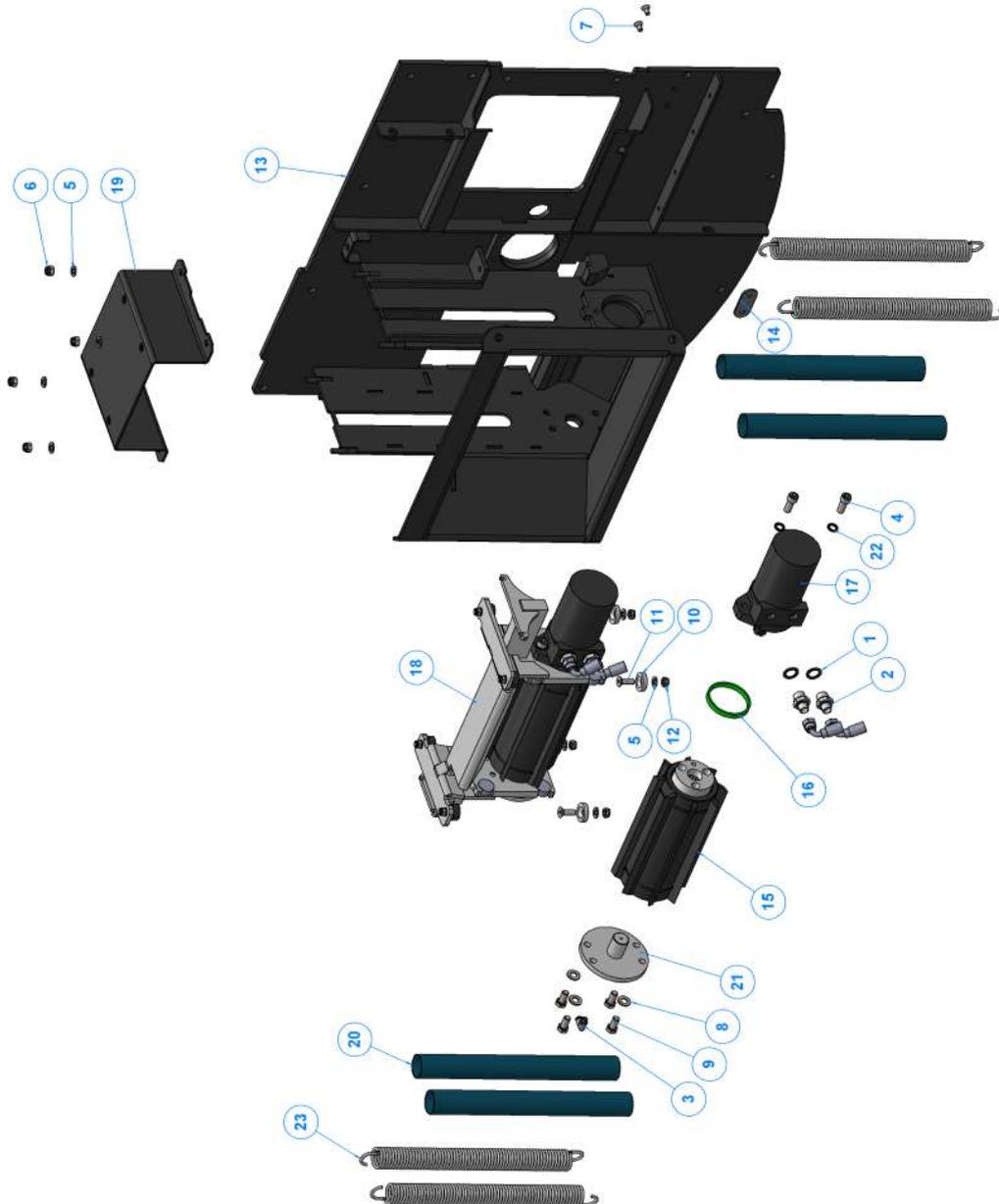
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C002-0622	M8 x 90 HEX SET Z/P 8.8	5
2	C021-0125	M8 FORM C WASHER Z/P	6
3	C021-0105	M8 FORM A WASHER Z/P	4
4	C031-0163	M8 TYPE P NYLOC NUT Z/P	4
5	C030-0123	M8 HEX NUT - ZP - GRADE 10	1
6	C021-0126	M10 FORM C WASHER Z/P	2
7	C002-0710	M10 x 30 HEX SET Z/P 8.8	2
8	18848	Tandem Hydraulic pump 8.25cc	1
9	C131-0209	Oil Pump Bracket Assembly	1
10	C131-0211	Oil Pump Mount	1
11	HY398	Washer Dowty 1/2"	4
12	HY027	Adaptor 1/2" - 1/2" BSP	2
13	1583	Adaptor 1/2" - 3/4" BSP	2
14	C122-0410	TaperLock 1610 Ø22	1
15	C120-A150.1	Pulley 150 x 1 SPA	1
16	C023-0105	M8 SPRING WASHER - ZP	1



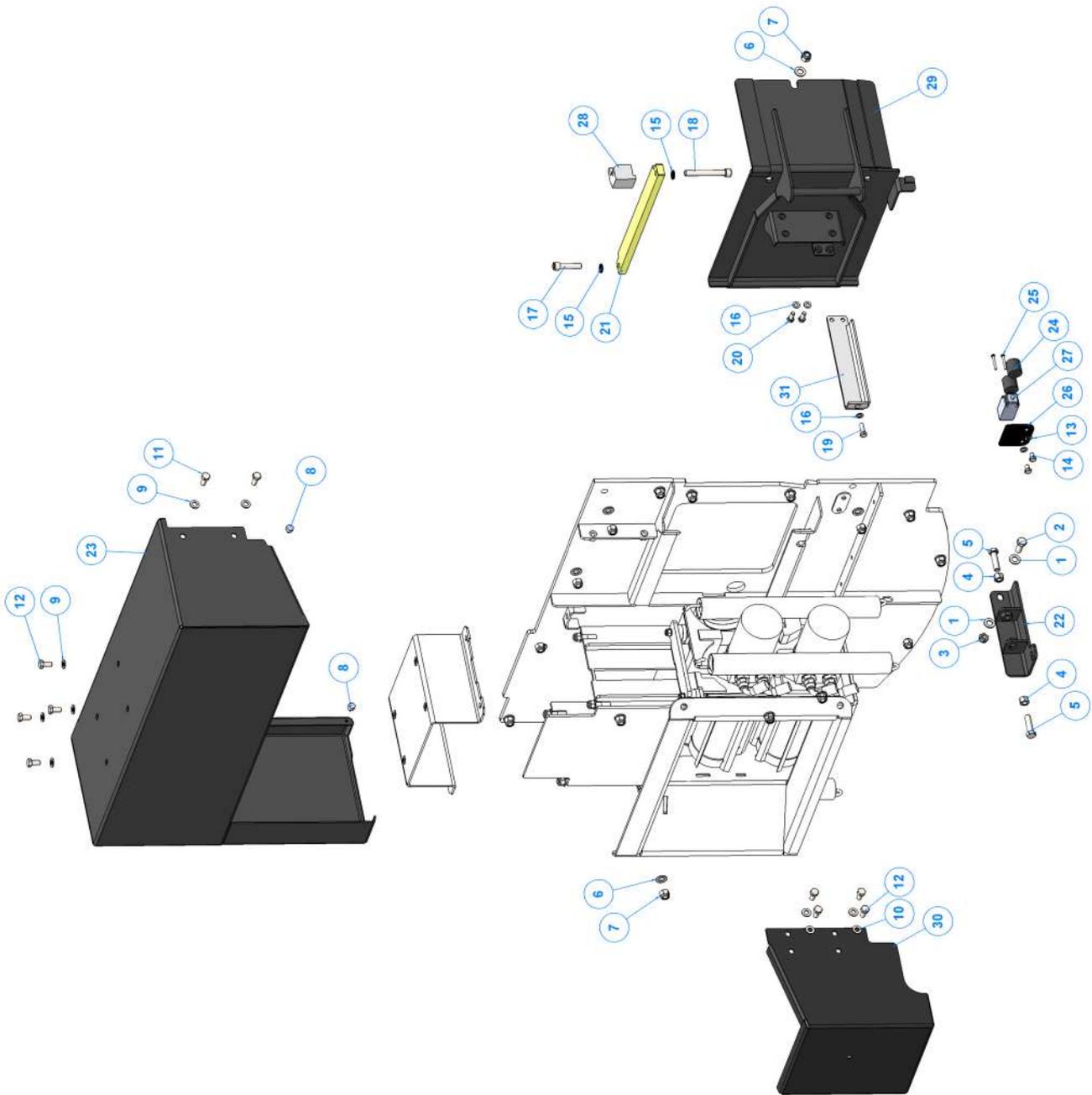
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	18880	8 port manifold	1
2	HY152	Washer Dowty 3/4"	8
3	HY1632	Plug 3/4" BSP	2
4	HY1766	Adaptor 3/4" - 3/4" BSP	1
5	1583	Adaptor 1/2" - 3/4" BSP	5



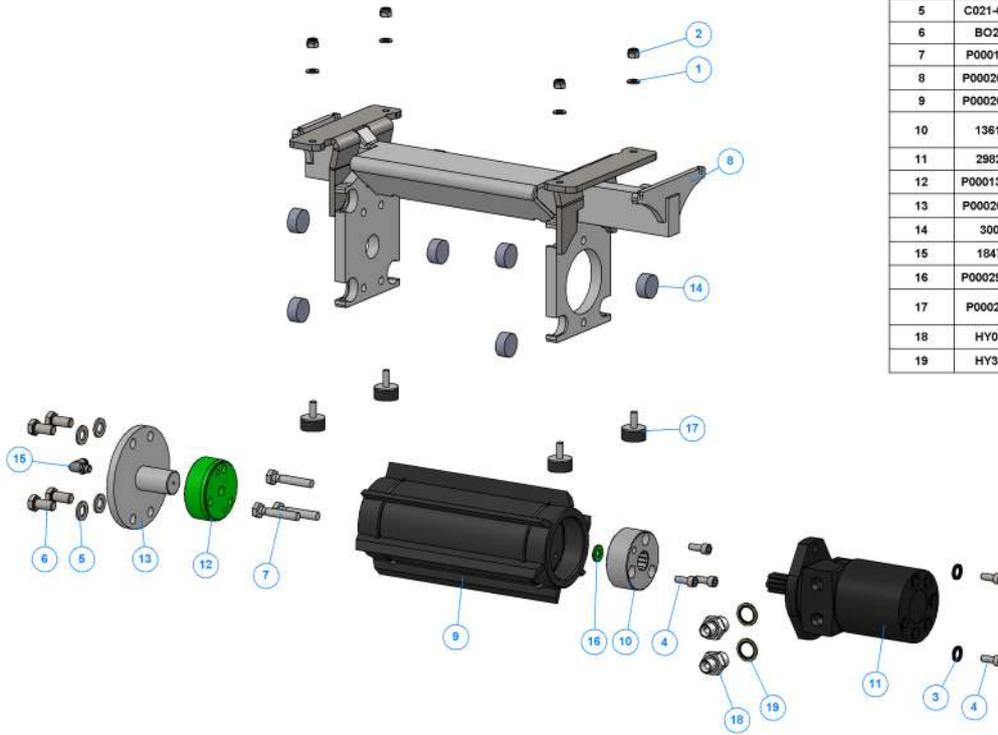
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	HY398	Washer Dowty 1/2"	2
2	HY026	Adapter 3/8 - 1/2	2
3	18474	Fitting Grease Point Right Angle	1
4	C005-0810	M12 x 30 SKT CAP SET Z/P 12.9	2
5	C021-0126	M10 FORM C WASHER Z/P	8
6	C031-0164	M10 TYPE P NYLOC NUT Z/P	4
7	C015-0605	M8 x 16 SKT CSK SET Z/P 10.9	2
8	C021-0107	M12 FORM A WASHER Z/P	4
9	C002-0809	M12 x 25 HEX SET Z/P 8.8	4
10	C024-0107	M12 CSK HEAVY WASHER ACCEPTS M12/30CSK	4
11	C015-0710	M10 x 30 SKT CSK SET Z/P 10.9	4
12	C031-0124	M10 TYPE T NYLOC NUT Z/P	4
13	P0002698F	Roller Box 280x210	1
14	P0000993	Profile Roller Box Hatch Switch Mount	1
15	TW 280TVGTR Roller Bottom	TW 280TVGTR Roller Bottom	1
16	P0002931M	Bottom Bearing Bush	1
17	2982B	Parker Motor	1
18	TW 280TVGTR Top Slide Assembly	TW 280TVGTR Top Slide Assembly	1
19	P0001582F	Bracket Roller Box Guard Mount 156x232	1
20	2888	Layflat 2 inches Spring	4
21	P0002678F	Stub Shaft Bottom	1
22	19259	Nordlock Washer M12	2
23	2116	Spring 387 Free Length	4



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0127	M12 FORM C WASHER Z/P	2
2	C002-0810	M12 x 30 HEX SET Z/P 8.8	1
3	C031-0125	M12 TYPE T NYLOC NUT Z/P	1
4	C030-0125	M12 HEX NUT - ZP - GRADE 10	2
5	C002-0813	M12 x 45 HEX SET Z/P 8.8	2
6	C021-0107	M12 FORM A WASHER Z/P	16
7	C031-0165	M12 TYPE P NYLOC NUT Z/P	16
8	2834	Av Mount VE Type	2
9	C021-0126	M10 FORM C WASHER Z/P	6
10	C021-0106	M10 FORM A WASHER Z/P	4
11	C002-0709	M10 x 25 HEX SET Z/P 8.8	2
12	C002-0707	M10 x 20 HEX SET Z/P 8.8	8
13	C021-0125	M8 FORM C WASHER Z/P	2
14	C002-0603	M8 x 12 HEX SET Z/P 8.8	2
15	19259	Nordlock Washer M12	2
16	C021-0105	M8 FORM A WASHER Z/P	3
17	C005-0814	M12 x 50 SKT CAP SET Z/P 12.9	1
18	C005-0822	M12 x 90 SKT CAP SET Z/P 12.9	1
19	C002-0609	M8 x 25 HEX SET Z/P 8.8	1
20	C002-0607	M8 x 20 HEX SET Z/P 8.8	2
21	P0002676M	Hardox Anvil Insert	1
22	P0001650F	Bracket Spring Carrier OS	1
23	P0001773F	Guard Roller Box 824x279	1
24	P0001375	AV Mount M8 FF 30x30 60 (3030DD08-60)	2
25	C013-0210	M4 x 35 PAN POZI Z/P	2
26	P0001080F	Bracket Access Hatch Switch	1
27	EL1348	Switch Limit (Metal Plunger)	1
28	P0002677M	Vertical Anvil	1
29	P0002914F	Access Hatch Assembly	1
30	P0001770F	Guard Roller Box Moving 255.5x329	1
31	P0002930F	Access Hatch Guard Stay	1

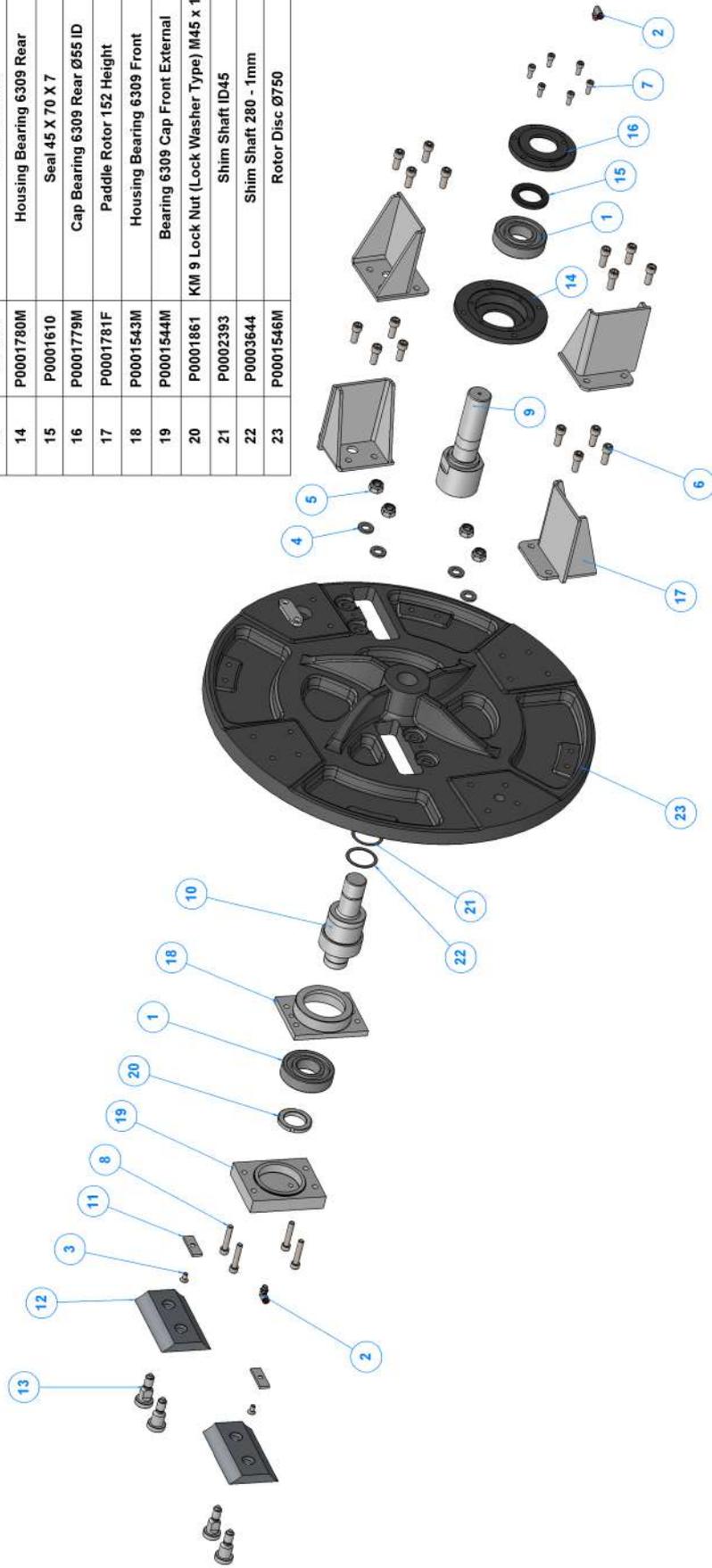


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0105	M8 FORM A WASHER Z/P	4
2	C031-0163	M8 TYPE P NYLOC NUT Z/P	4
3	19259	NORDLOCK WASHER M12	2
4	C005-0607	M8 X 20 SKT CAP SET Z/P 12.9	6
5	C021-0107	M12 FORM A WASHER Z/P	4
6	BO277	SET SCREW M12 1.75 25 BZP	4
7	P0001401	BOLT SHEAR 1.5 55	3
8	P0002688F	TOP 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 - 29.5	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	P0002932M	SPACER TOP ROLLER SPLINE	1
17	P0002613	MALE CYLINDRICAL BUFFER 3015/E20 70 SHORE 30 X 15 - M8 X 20 STUD	4
18	HY026	ADAPTER 3/8 - 1/2	2
19	HY398	WASHER DOWTY 1/2"	2

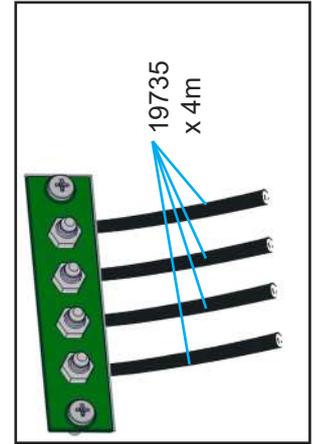
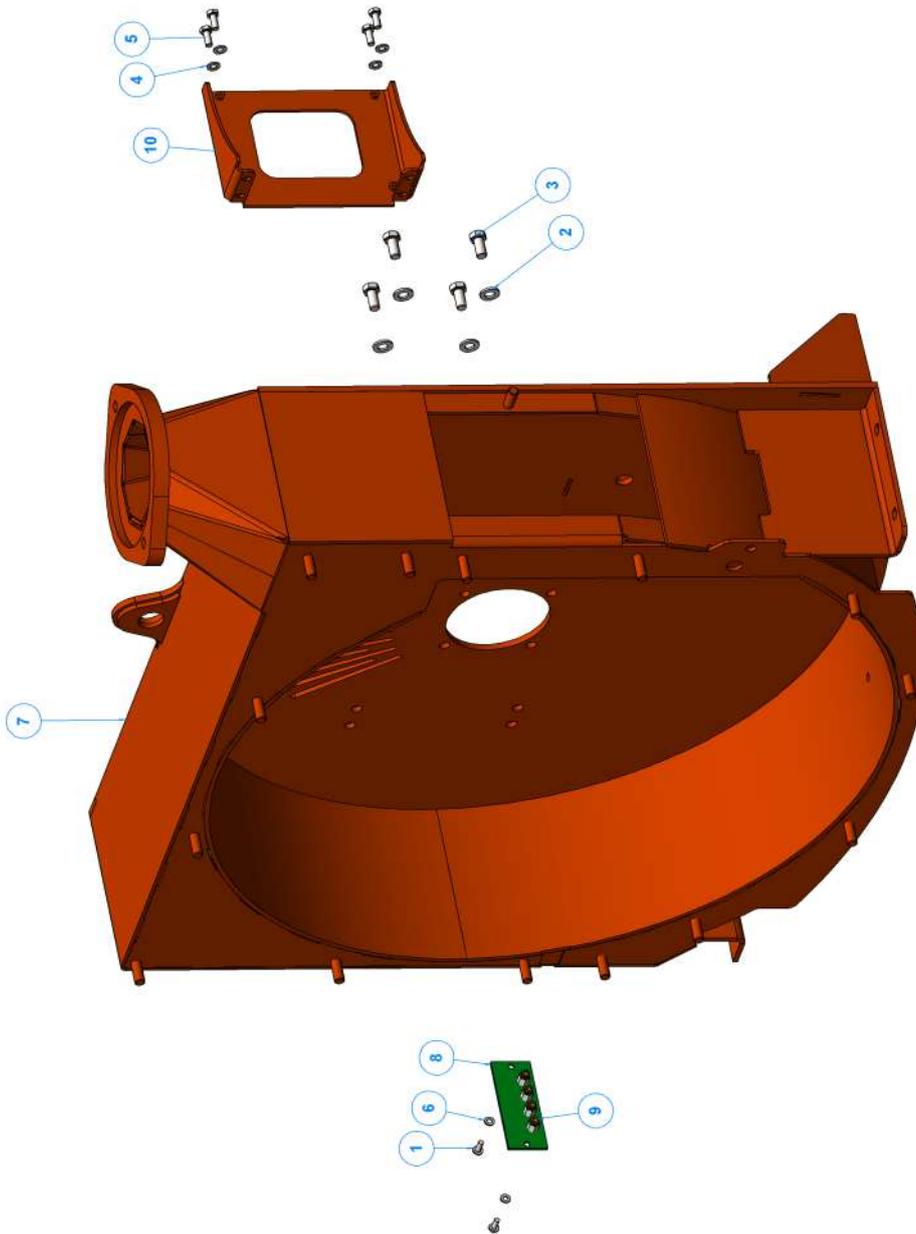


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C005-0712	M10 X 40 SKT CAP Z/P 12.9	3
2	P0001401	BOLT SHEAR 1.5 55	3
3	P0001553F	ROLLER INFEED Ø142 X 276 - 8 BLADES	1
4	4100M	BUSH SPLINE ROLLER DRIVE	1
5	P0001327M	ROLLER NYLON BEARING	1

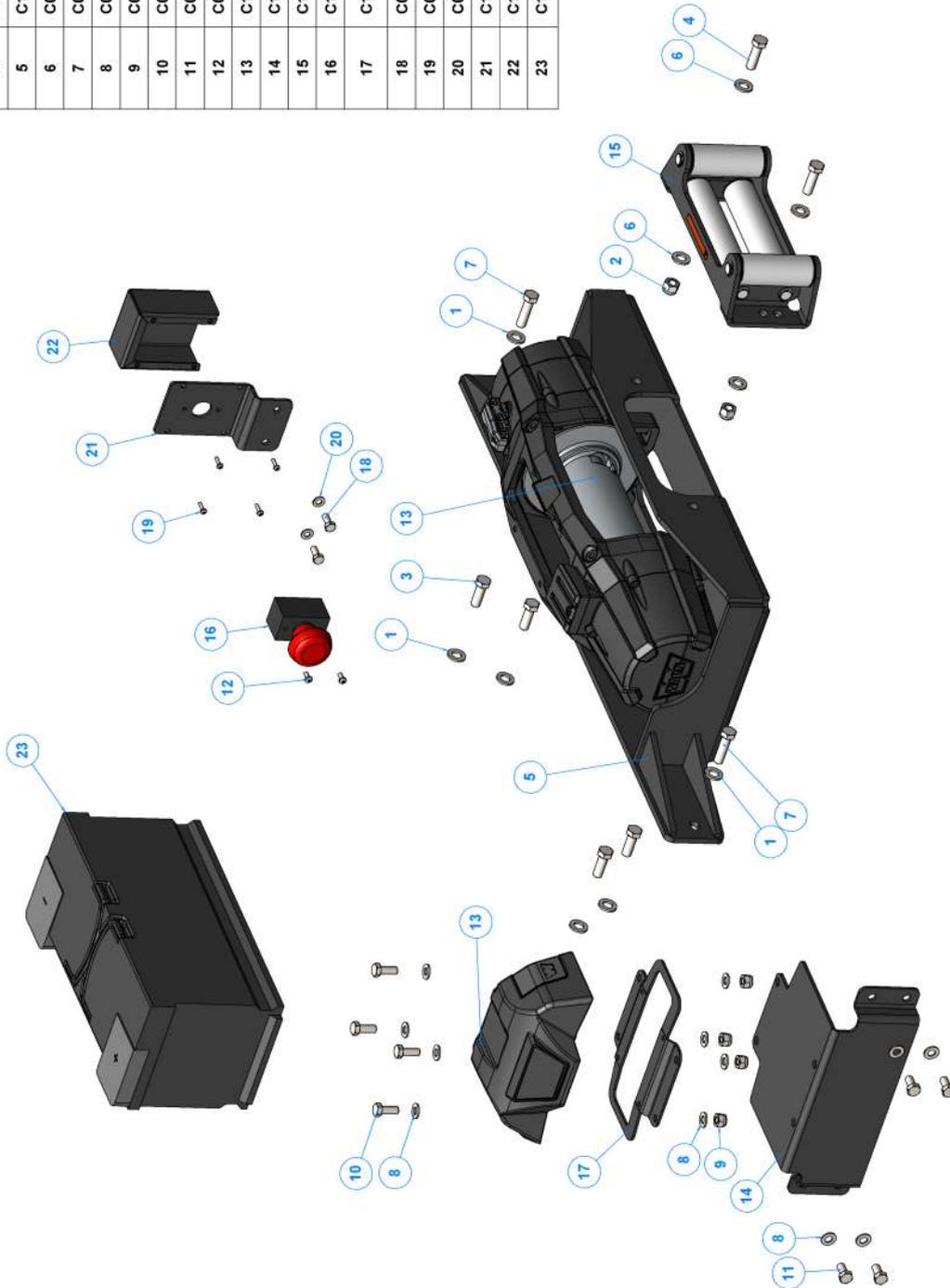
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C128-0108	Bearing 6309 C3	2
2	18474	Fitting Grease Point Right Angle	2
3	C015-0605	M8 x 16 SKT CSK SET Z/P 10.9	2
4	C028-0109	Washer M16 30 Hard.SLDPRT	4
5	C035-0100	M16 x 1.5 T TYPE NYLOC NUT Z/P YELLOW	4
6	C005-0810	M12 x 30 SKT CAP SET Z/P 12.9	16
7	C005-0607	M8 x 20 SKT CAP SET Z/P 12.9	6
8	C018-0715	M10 x 1.25 x 55 SKT CAP SET S/C 12.9	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



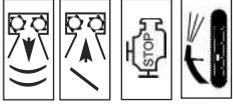
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C013-0405	M6 x 16 PAN POZI ZIP	2
2	C021-0107	M12 FORM A WASHER ZIP	4
3	C002-0809	M12 x 25 HEX SET ZIP 8.8	4
4	C021-0105	M8 FORM A WASHER ZIP	4
5	C002-0607	M8 x 20 HEX SET ZIP 8.8	4
6	C021-0123	M6 FORM C WASHER ZIP	2
7	P0001721F	Rotor Housing Ø750 - 221	1
8	P0001737	Profile 128.5x49x3 Grease Point	1
9	C072-0101	45° Grease Nipple 1-8" BSP Kit	4
10	P0002316F	Bracket Rotor Housing Electrical Panel Assy	1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C021-0127	M12 FORM C WASHER ZIP	6
2	C031-0165	M12 TYPE P NYLOC NUT ZIP	2
3	C002-0811	M12 x 35 HEX SET ZIP 8.8	4
4	C002-0812	M12 x 40 HEX SET ZIP 8.8	2
5	C131-0237	Winch Bracket	1
6	C021-0107	M12 FORM A WASHER ZIP	4
7	C002-0813	M12 x 45 HEX SET ZIP 8.8	2
8	C021-0106	M10 FORM A WASHER ZIP	12
9	C031-0164	M10 TYPE P NYLOC NUT ZIP	4
10	C002-0709	M10 x 25 HEX SET ZIP 8.8	4
11	C002-0707	M10 x 20 HEX SET ZIP 8.8	4
12	C013-0303	M5 x 12 PAN POZI ZIP	2
13	C184-0121	WARN ZEON 8 WINCH	1
14	C131-0249	WARN CONTROLLER MOUNT	1
15	C184-0124	WARN ROLLER FAIRLEAD	1
16	C184-0126	WARN E-STOP SWITCH	1
17	C184-0128	WARN ZEON 8 SHORT RELOCATION KIT	1
18	C002-0607	M8 x 20 HEX SET ZIP 8.8	2
19	C013-0205	M4 x 16 PAN POZI ZIP	4
20	C021-0105	M8 FORM A WASHER ZIP	2
21	C131-0251	ISOLATOR BRACKET ASSEMBLY	1
22	C131-0252	ISOLATOR COVER	1
23	C166-0100	020 Battery	1



TO GO ON RELAYS



P1809

P1810

P1811

C192-0152

617



1662



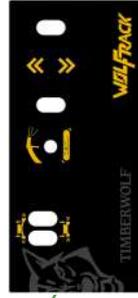
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C192-0182



C192-0105



C192-0148



18653

P653



2949



C192-0145

P637



18648



18393



18647



P656



P656



P654



C192-0112



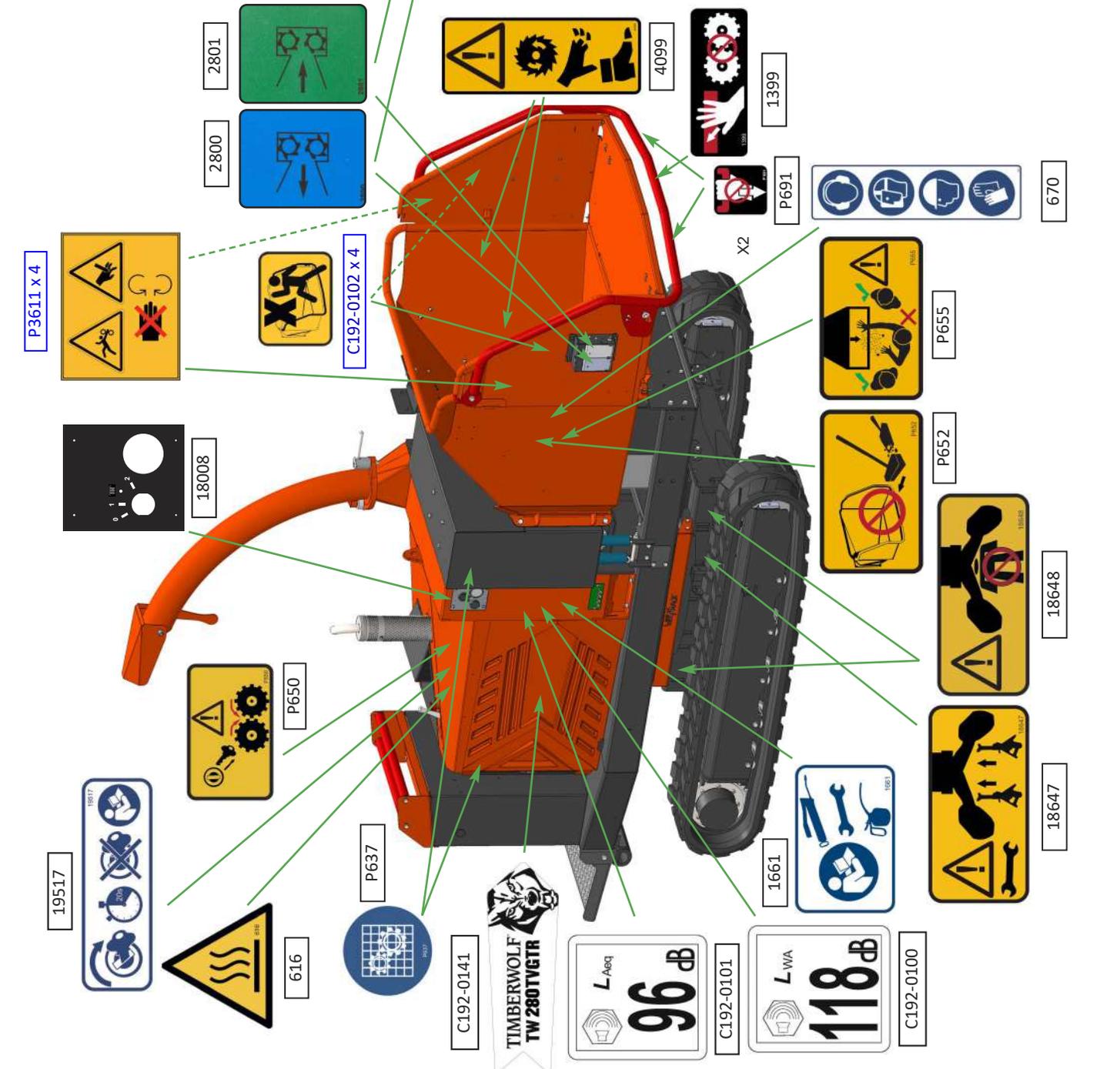
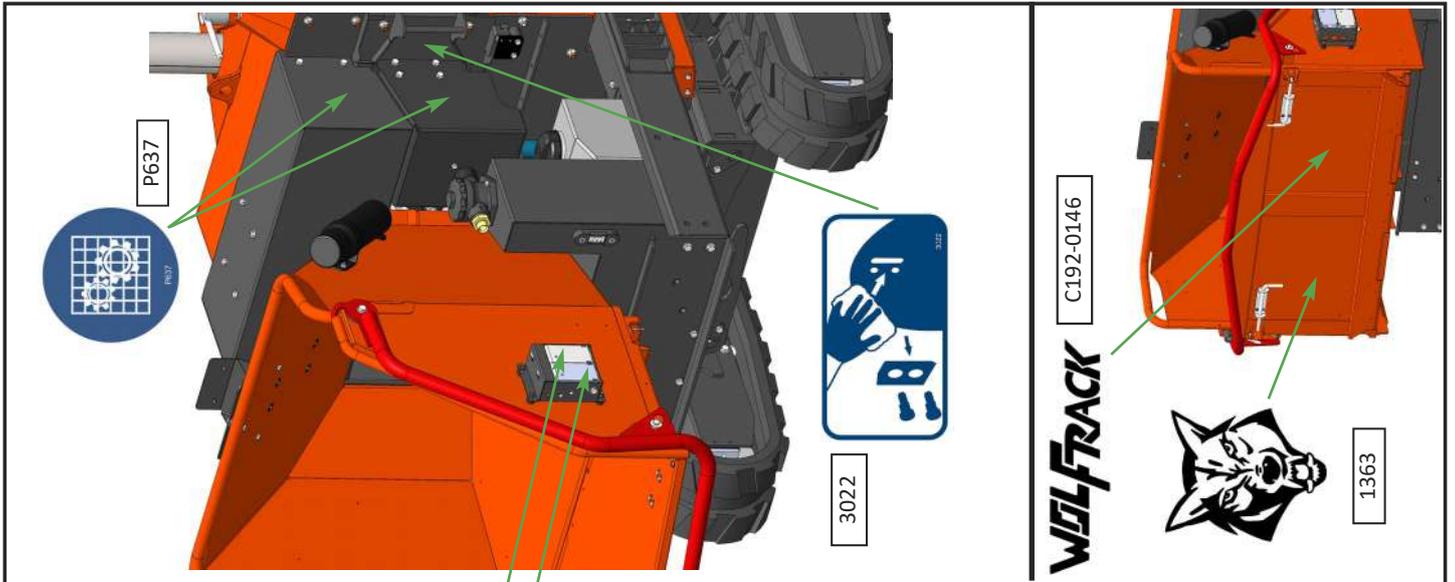
C192-0142

P1812



18393







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