TIMBERWOLF®

Lead the pack

TW 280TFTR WOOD CHIPPER

INSTRUCTION MANUAL

timberwolf-uk.com

CONTENTS

INTRODUCTION

Thank you for choosing Timberwolf. Timberwolf chippers are designed to give safe and dependable service if operated according to the instructions.

IMPORTANT HEALTH AND SAFETY INFORMATION

Before using your new chipper, please take time to read this manual. Failure to do so could result in:

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

This manual covers the operation and maintenance of the Timberwolf TW 280TFTR. 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 2 to 13. Ensure that all operators are **properly trained** for operating this machine, especially **safe working practices**.

Timberwolf's policy of regularly reviewing and improving their products may involve major or minor changes to the chippers or their accessories. Timberwolf reserves the right to make changes at any time without notice and without incurring any obligation.

Due to improvements in design and performance during production there may be, in some cases, minor discrepancies between the actual chipper and the text in this manual.

The manual should be considered an important part of the machine and should remain with it if the machine is resold.

ALWAYS FOLLOW SAFE OPERATING AND MAINTENANCE PRACTICES

CAUTION or WARNING

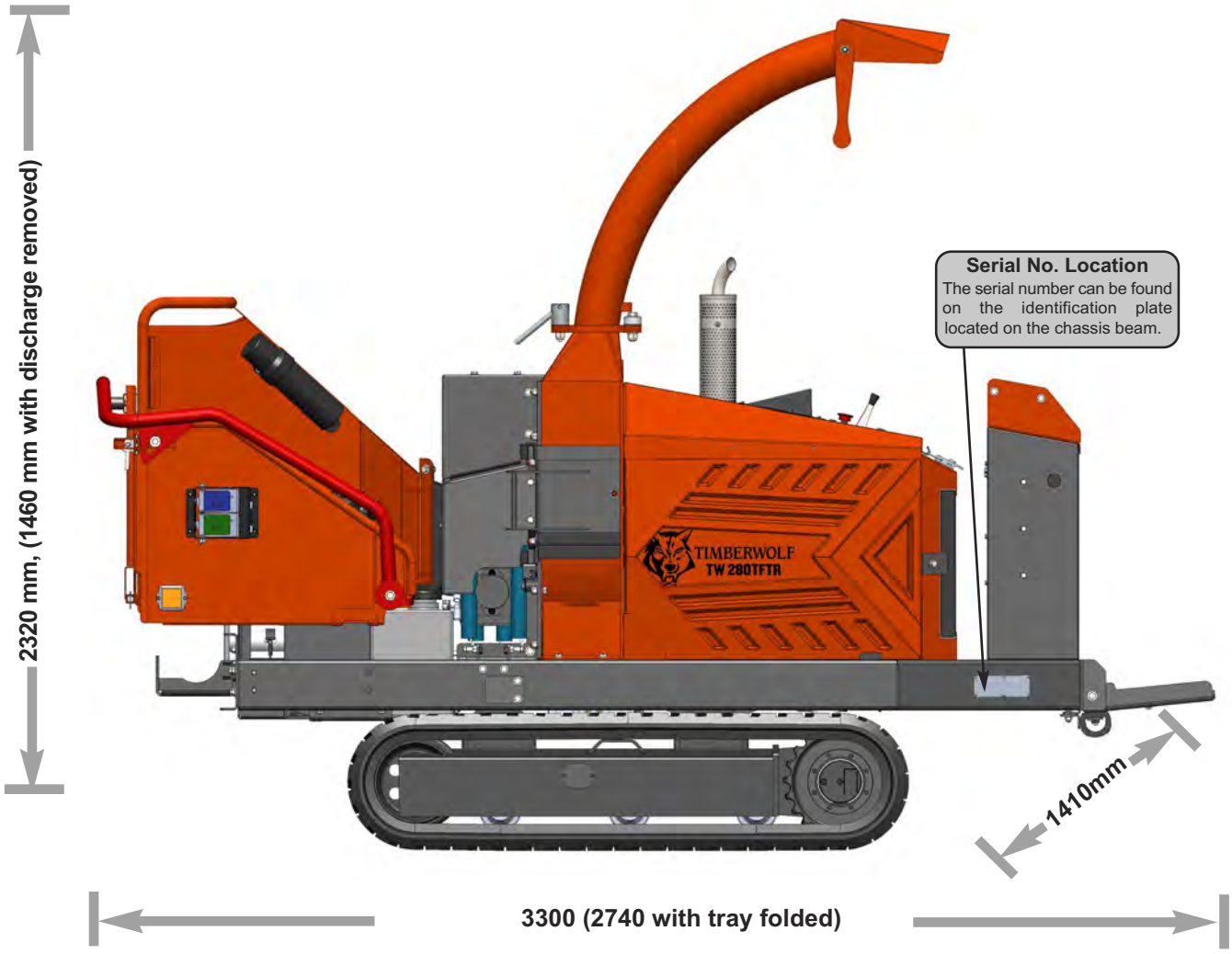
BE AWARE OF THIS SYMBOL AND WHERE SHOWN, CAREFULLY FOLLOW THE INSTRUCTIONS.

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

The Timberwolf TW 280TFTR

Designed to chip solid wood material up to 200mm in diameter and capable of chipping up to 6.5 tonnes of brushwood per hour.

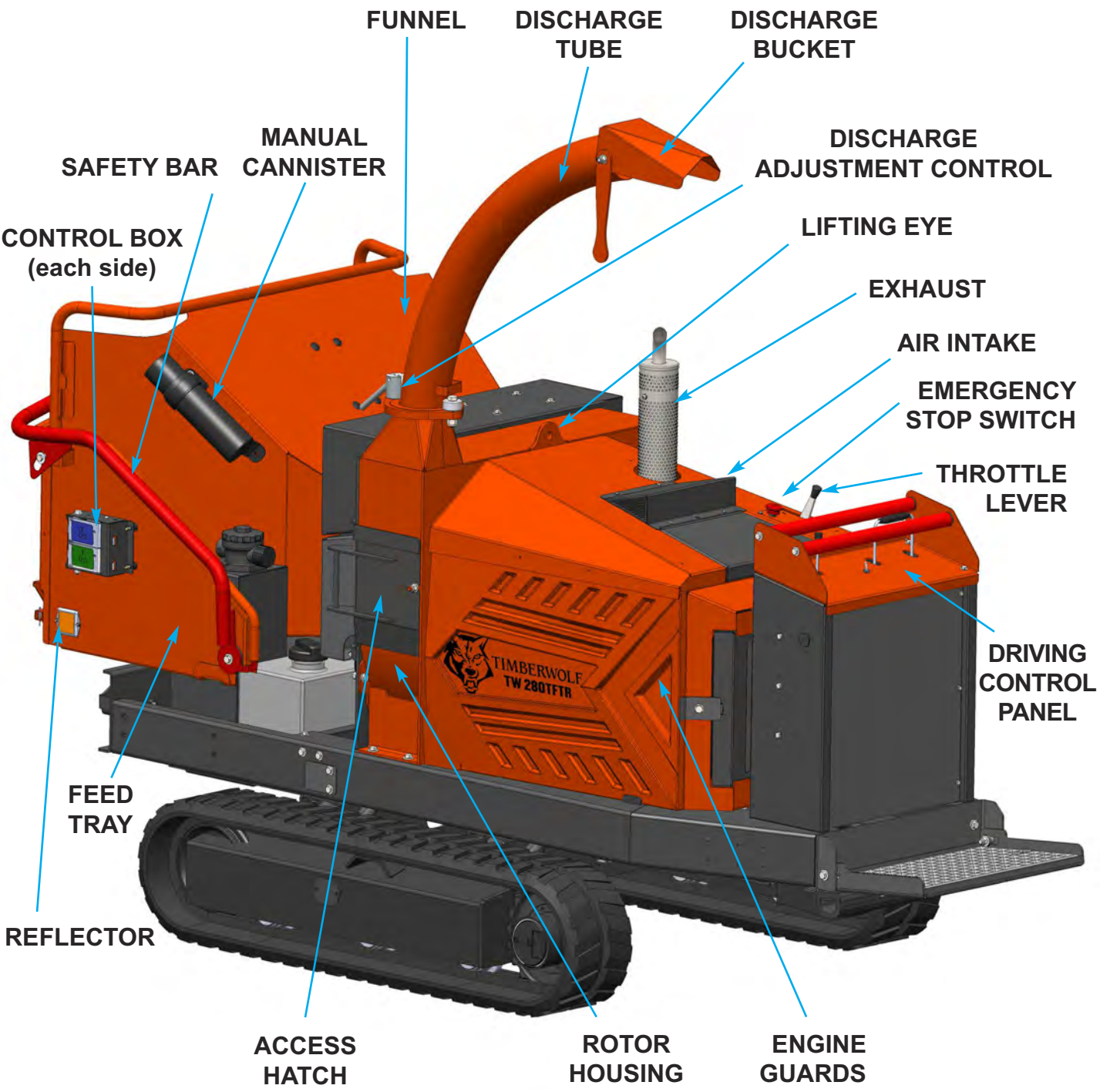
DIMENSIONS



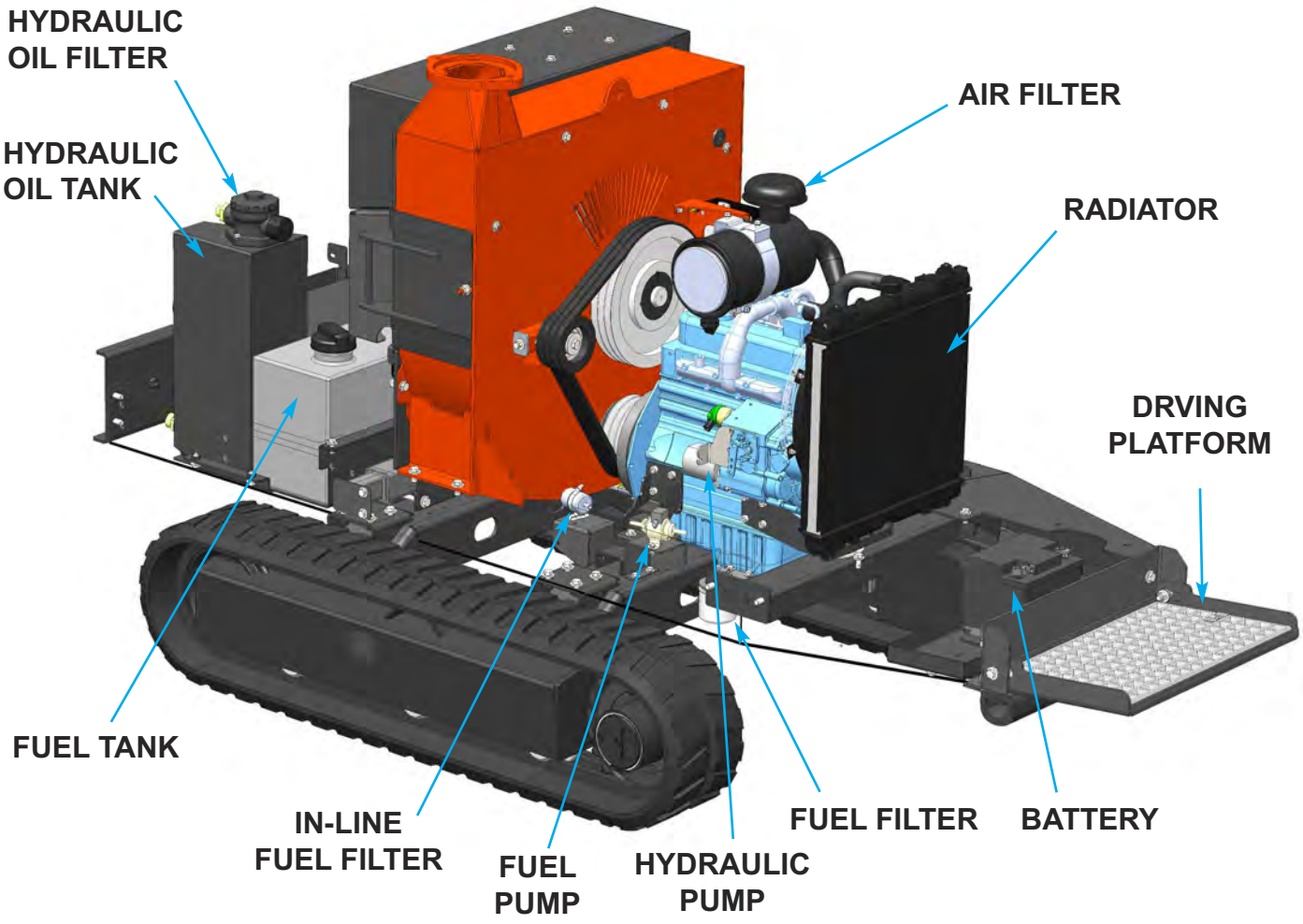
TIMBERWOLF TW 280TFTR SPECIFICATION

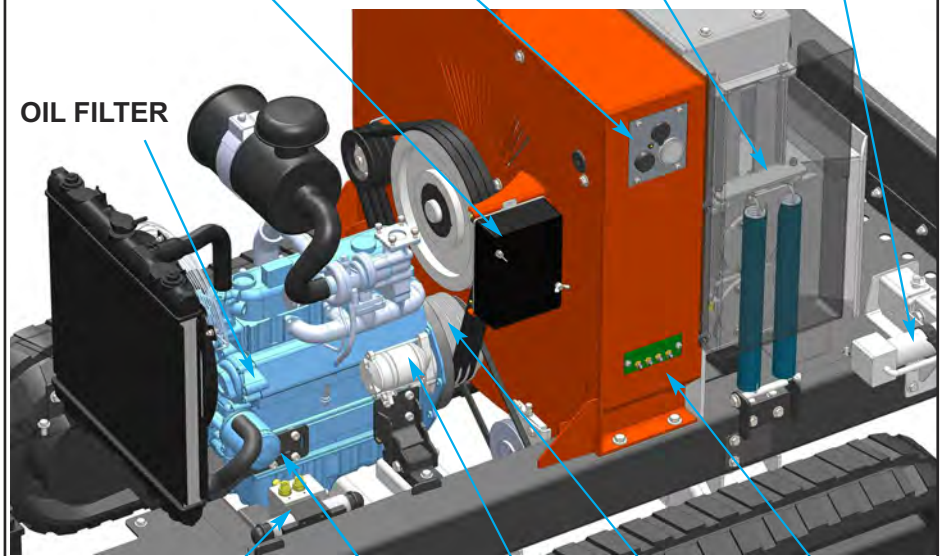
Engine type	*Kubota 4-cylinder turbo diesel*	Maximum diameter material	*210mm (8.26")*
Maximum power	*33kW (45hp)*	Fuel capacity	*36 litres*
Cooling method	*Water cooled*	Hydraulic oil capacity	*50 litres*
Overall weight	*1600kg*	Material processing capacity	*up to 6.5 tonnes/hr*
Starting method	*Electric*	Fuel type	*Diesel*
Roller feed	*Twin series hydraulic motors*		

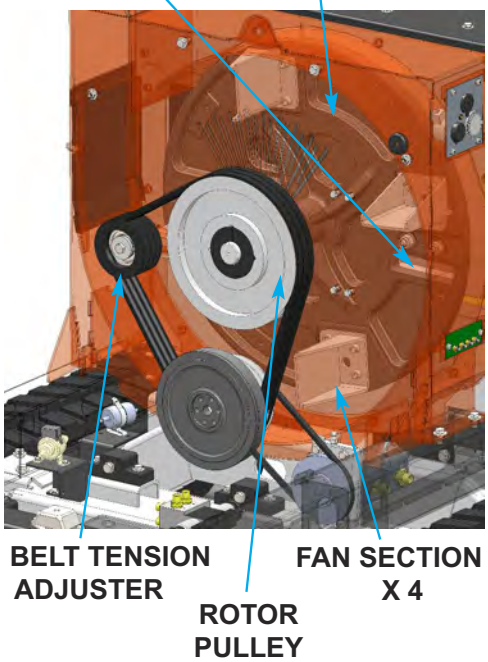
PARTS LOCATOR



PARTS LOCATOR







WARNING

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

OPERATOR'S PERSONAL PROTECTIVE EQUIPMENT REQUIRED

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

Close fitting heavy-duty non-snag clothing.

Work gloves with elasticated wrist.

Face mask if appropriate.

Steel toe cap safety boots.

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

BASIC WOODCHIPPING SAFETY

The operator should be aware of the following points:

- MAINTAIN A SAFETY EXCLUSION ZONE around the chipper of at least 10 metres for the general public or employees without adequate protection. Use hazard tape to identify this working area and keep it clear from debris build up. Chips should be ejected away from any area the general public have access to.
- HAZARDOUS MATERIAL - Some species of trees and bushes are poisonous. The chippingaction can produce vapour, spray and dust that can irritate the skin. This may lead to respiratory problems or even cause serious poisoning. Check the material to be chipped before you start. Avoid confined spaces and use a facemask if necessary.
- BE AWARE when the chipper is processing material that is an awkward shape. The material can move from side to side in the funnel with great force. If the material extends beyond the funnel, the brash may push you to one side causing danger. Badly twisted brash should be trimmed before being chipped to avoid thrashing in the feed funnel.
- BE AWARE that the chipper can eject chips out of the feed funnel with considerable force. Always wear full head and face protection.
- ALWAYS work on the side of the machine furthest from any local danger, e.g. not road side.

GENERAL SAFETY MATTERS

DO'S AND DON'TS

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

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

ALWAYS check the machine is well supported and cannot move.

ALWAYS operate the chipper with the engine set to maximum speed when chipping.

ALWAYS check (visually) for fluid leaks.

ALWAYS take regular breaks. Wearing personal protective equipment for long periods can be tiring and hot.

ALWAYS keep hands, feet and clothing out of feed opening, discharge and moving parts.

ALWAYS use the next piece of material or a push stick to push in short pieces. Under no circumstances should you reach into the funnel.

ALWAYS keep the operating area clear of people, animals and children.

ALWAYS keep the operating area clear from debris build up.

ALWAYS keep clear of the chip discharge tube. Foreign objects may be ejected with great force.

ALWAYS ensure protective guarding is in place before commencing work. Failure to do so may result in personal injury or loss of life.

ALWAYS operate the chipper in a well ventilated area - exhaust fumes are dangerous.

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

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

DO NOT stand directly in front of the feed funnel when using the chipper. Stand to one side.

DO NOT allow -

- to enter the machine, as damage is likely.

DO NOT smoke when refuelling.

DO NOT let anyone who has not received instruction operate the machine.

DO NOT climb on the machine at any time.

DO NOT handle material that is partially engaged in the machine.

DO NOT touch any exposed wiring while machine is running.

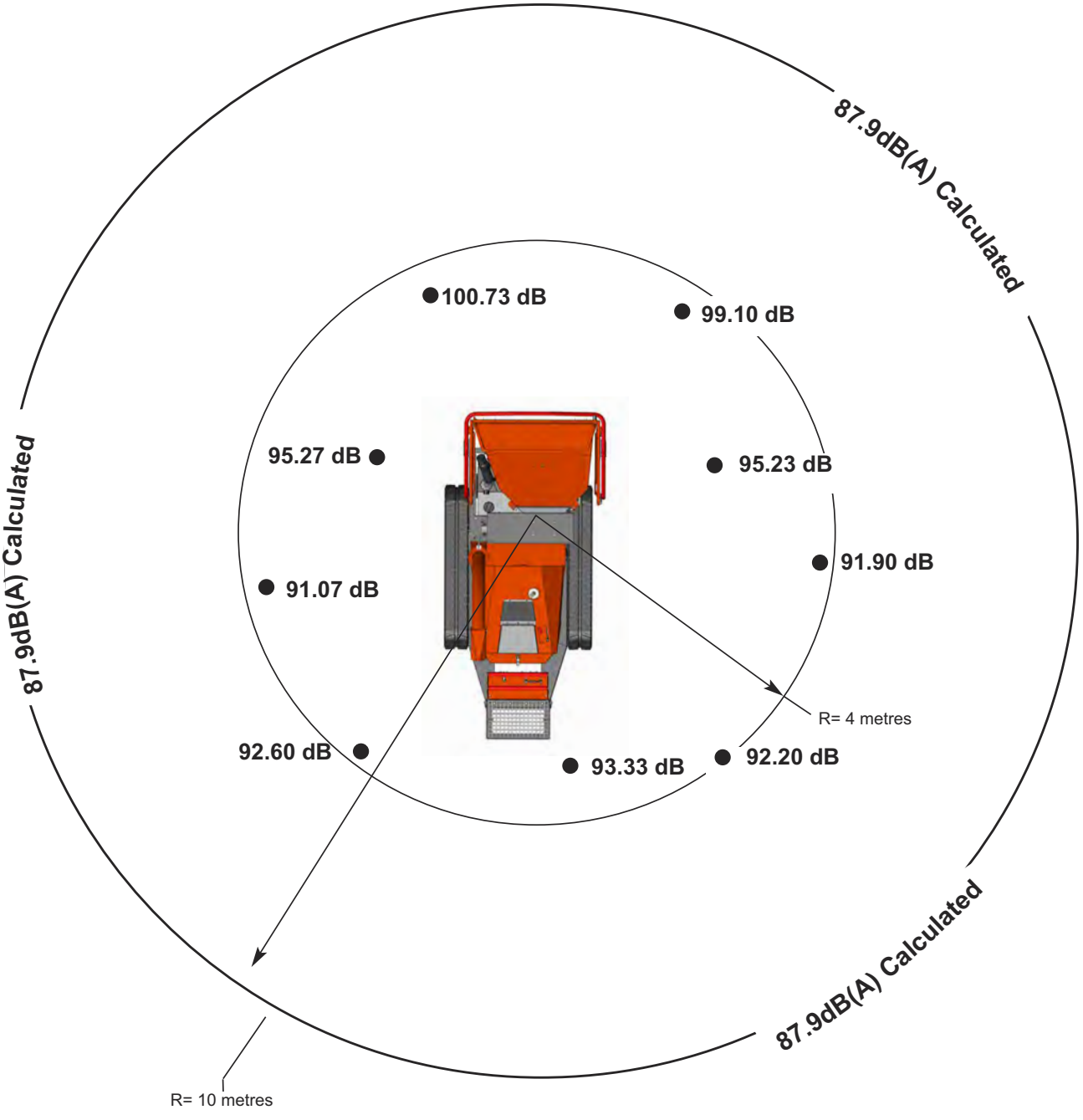
DO NOT use the chipper inside buildings.

NOISE TEST

MACHINE: TW 280TFTR

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

Noise levels above 80dB (A) will be experienced at the working position. Wear ear protection at all times to prevent possible damage to hearing. All persons within a 4 metre radius must also wear good quality ear protection.



Guaranteed Sound Power: 118dB (A)

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

DELIVERY

All Timberwolf TW 280TFTR machines have a full pre - delivery inspection before leaving the factory and are ready to use. Read and understand this instruction manual before attempting to operate the chipper. In particular, read pages 5-7 which contain important health and safety information and advice.

OPERATOR'S PERSONAL PROTECTIVE EQUIPMENT REQUIRED

- CHAINSAW safety helmet fitted with visor and recommended ear defenders to an appropriate specification.
- HEAVY-DUTY gloves with elasticated wrist area.
- CLOSE - FITTING heavy-duty non-snag clothing.
- SAFETY footwear.
- FACE MASK (if appropriate).

See page 5 for more detailed information.

MANUAL CONTROLS

Roller control boxes- 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 control buttons.

RED SAFETY BAR TEST

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

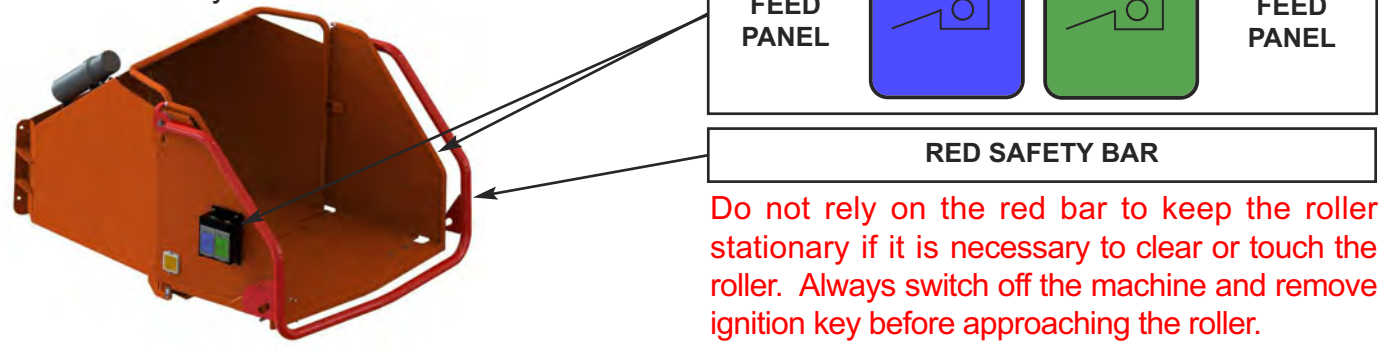
WARNING **DO NOT remove, jam, disable, bypass, override or otherwise impede the effectiveness of the red safety bar.**

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

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

Control Box Diagram

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



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.

AUTO CONTROLS

The engine management unit controls the feed rate of the material going into the chipping chamber. If the engine speed is below the predetermined level, the engine management unit will not allow the feed rollers to work in the forward “infeed” direction, 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 280TFTR chipper in the event of an emergency.

STOPPING THE ROLLERS

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

STOPPING THE ENGINE

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

DAILY CHECKS BEFORE STARTING

- LOCATE the machine on firm level ground.
- CHECK machine is well supported and cannot move.
- CHECK jack stand is lowered and secure.
- CHECK all guards are fitted and secure.
- CHECK the discharge unit is in place and fastened securely.
- CHECK discharge tube is pointing in a safe direction.
- CHECK the feed funnel to ensure no objects are inside.
- CHECK feed tray is in up position - to prevent people reaching rollers.
- CHECK controls as described on page 11.
- CHECK (visually) for fluid leaks.
- CHECK fuel and hydraulic oil levels.

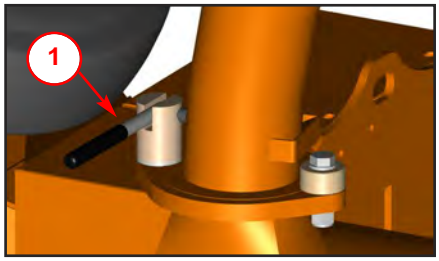
For parts location see diagrams on pages 3 & 4.

DISCHARGE CONTROLS

Controlling the discharge is an essential part of safe working.

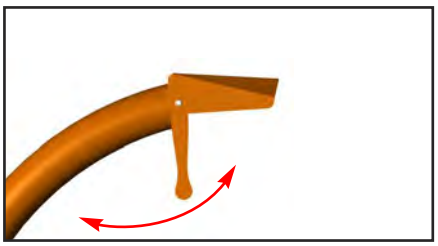
ROTATION

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



BUCKET ANGLE

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



CRAWLER TRACK CONTROLS

WARNING **NEVER LEAVE THE CHIPPER ON A SLOPE UNATTENDED.**

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

CHIPPING MODE

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

CRAWLER TRACK MODE

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

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

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

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

NOTE: Ensure tray is rotated into the up/closed position prior to tracking to avoid damage.

There are two tracking speeds which can be selected via the speed selection switch on the control panel. Speed can be further controlled with the throttle. It is recommended that manoeuvring in tight spaces, loading, unloading and tracking up gradients should be performed in speed one. Speed two should only be selected for tracking on level ground.

BEFORE USING THE CHIPPER

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

WITH THE ENGINE RUNNING AT FULL SPEED

1	2	3
PRESS THE GREEN BUTTON THE IN-FEED SHOULD TURN FORWARDS	PRESS THE RED SAFETY BAR THE IN-FEED SHOULD STOP	PRESS THE BLUE BUTTON THE IN-FEED SHOULD TURN BACKWARDS ONLY WHILE THE BUTTON IS PRESSED

ENGINE CONTROLS

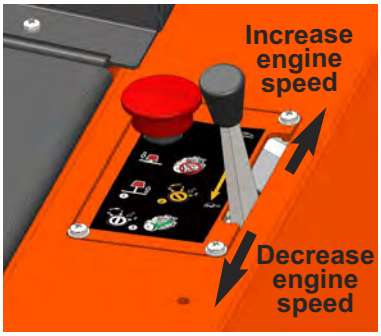
The engine controls are in two locations. The engine ignition is on the control panel in the centre of the machine, and the throttle lever is on the bonnet next to the engine emergency stop switch (see parts locator on page 3).

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.

When the emergency stop button 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

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 280TFTR is fitted with 2 blades 158mm (6") long. It is 100 mm wide when new. A new blade should chip for up to 25 hours before it requires sharpening. This figure will be drastically reduced by feeding the machine with stony, sandy or muddy material.

As the blade becomes blunt, performance is reduced. With increased stress and load on the machine the chips will become more irregular and stringy. At this point the blade should be sent to a reputable blade sharpening company. The blade can be sharpened several times in its life. A wear mark on the reverse side indicates the safe limit of blade wear. Replace when this line is exceeded.

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

STARTING TO CHIP

WARNING **Do not use or attempt to start the chipper without the protective guarding and discharge unit securely in place. Failure to do so may result in personal injury or loss of life.**

- CHECK that the chipper is running smoothly.
- RELEASE the catches on the feed tray and lower. Pull to release the red stop button.
- PERFORM the “before using the chipper” tests (see page 11).
- WHEN the chipper is unhitched it should be made secure before starting work by applying the handbrake and lowering the jack stand and jockey wheel
- PRESS the green control button. The rollers will commence turning.
- STAND to one side of the feed funnel.
- PROCEED to feed material into the feed funnel.

CHIPPING

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 roller. The hydraulic feed rollers will pull the branch into the machine quite quickly. Large diameter material will have its feed rate automatically controlled by the engine management unit.

Sometimes a piece of wood that is a particularly awkward shape is too strong for the feed rollers to break. This will cause the top roller to either bounce up and down on the wood or both rollers to stall. If this occurs press the BLUE REVERSE button until the material has been released. Pull the material out of the feed funnel and trim it so the chipper can handle it.

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

BLOCKAGES

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

If the chipper becomes blocked, proceed as follows:

- STOP the engine and remove the ignition keys.
- REMOVE the discharge tube. Check that it is clear.
- WEARING gloves, reach into the rotor housing and scoop out the majority of the debris causing the blockage.

WARNING **Do not reach into the rotor housing with unprotected hands. There are sharp blades and any small movement of the rotor may cause serious injury.**

- REPLACE the discharge tube.
- RESTART the engine and increase to full speed.
- IN the event of heavy blockages the 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.

HYDRAULIC OIL LEVEL AND TEMPERATURE INDICATOR

These can be viewed on the back wall of the tank. Maximum, minimum and oil temperature marks are provided.

FUEL LEVEL INDICATOR

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

THE FOLLOWING PAGES DETAIL ONLY *BASIC* MAINTENANCE GUIDELINES SPECIFIC TO YOUR CHIPPER.

THIS IS NOT A WORKSHOP MANUAL.

THE FOLLOWING GUIDELINES ARE NOT EXHAUSTIVE AND DO NOT EXTEND TO GENERALLY ACCEPTED STANDARDS OF ENGINEERING/MECHANICAL MAINTENANCE THAT SHOULD BE APPLIED TO ANY PIECE OF MECHANICAL EQUIPMENT AND THE CHASSIS TO WHICH IT IS MOUNTED.

AUTHORISED TIMBERWOLF SERVICE AGENTS ARE FULLY TRAINED IN ALL ASPECTS OF TOTAL SERVICE AND MAINTENANCE OF TIMBERWOLF WOOD CHIPPERS. YOU ARE STRONGLY ADVISED TO TAKE YOUR CHIPPER TO AN AUTHORISED AGENT FOR ALL BUT THE MOST ROUTINE MAINTENANCE AND CHECKS.

TIMBERWOLF ACCEPTS NO RESPONSIBILITY FOR THE FAILURE OF THE OWNER/USER OF TIMBERWOLF CHIPPERS TO RECOGNISE GENERALLY ACCEPTED STANDARDS OF ENGINEERING/MECHANICAL MAINTENANCE AND APPLY THEM THROUGHOUT THE MACHINE.

THE FAILURE TO APPLY GENERALLY ACCEPTED STANDARDS OF MAINTENANCE, OR THE PERFORMANCE OF INAPPROPRIATE MAINTENANCE, MAY INVALIDATE WARRANTY IN WHOLE OR IN PART.

PLEASE REFER TO YOUR AUTHORISED TIMBERWOLF SERVICE AGENT FOR SERVICE AND MAINTENANCE.

SERVICE SCHEDULE

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

SERVICE SCHEDULE	Daily Check	50 Hours	100 Hours	500 Hours	1 Year
Check water.	✓				
Check radiator is clear.	✓				
Check engine oil - top up if necessary (10W-30).	✓				
Check for engine oil / hydraulic oil leaks.	✓				
Check fuel level.	✓				
Check feed funnel, feed roller cover, access covers, engine covers and discharge unit are securely fitted.	✓				
Check blades.	✓				
Clean air filter element.	**DEPENDING ON WORKING ENVIRONMENT**				
Check 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 hydraulic oil filter - every year or 100 hours after service or repair work to the hydraulic system.			✓	***OR***	✓
Replace hydraulic oil.			✓	***OR***	✓
Replace fuel pipes and clamp bands.					
Check coolant.		**REFER TO YOUR ENGINE**			
Change engine oil.		**SUPPLIERS MANUAL**			
Replace engine oil filter cartridge.					
Check valve clearance.					
Replace anvils when worn.	**RETURN TO DEALER FOR ANVIL CHANGE**				

NOTE: Your Timberwolf woodchipper is covered by a full 12 months parts and labour warranty. Subject to correct maintenance and proper machine usage, the bearings are guaranteed for 12 months regardless of hours worked by the machine. In conditions of 'heavy usage' - i.e. in excess of 500 hours per year - it is recommended that the bearings are changed annually to ensure that the machine retains optimum working performance.

SAFE MAINTENANCE

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

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

SPARES

Only fit genuine Timberwolf replacement blades, screws and chipper spares. Failure to do so will result in the invalidation of the warranty and may result in damage to the chipper, personal injury or even loss of life.

BATTERY REMOVAL AND MAINTENANCE

WARNING **Refer to the battery safety section on page 17 - 18.**

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

CHECK FITTINGS

The Timberwolf TW 280TFTR 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
Blade Bolts	M16	Standard	24mm Hex	125
Track Frame Bolts	M16	Standard	24mm Hex	80
Anvil Bolts	M12	Standard	10mm Allen Hex	65
General	M8	Standard	13 mm Hex	20
General	M10	Standard	17 mm Hex	45
General	M12	Standard	19 mm Hex	65
Drain Bung in Fuel Tank	3/8” BSP	-	22 mm Hex	25

COPPER EASE SAFETY INFORMATION

Product name: Copper Ease.

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

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

FIRST AID

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

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

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

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

BATTERY SAFETY INFORMATION

WARNING NOTES AND SAFETY REGULATIONS FOR FILLED LEAD-ACID BATTERIES

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

Keep children away from acid and batteries.

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

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

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

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

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

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

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

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

BATTERY SAFETY INFORMATION...cont.

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

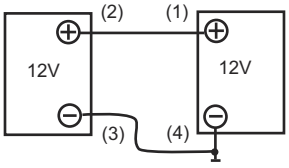
2. Initial operation
- The batteries are filled with acid at a density of 1.28g/ml during the manufacturing process and are ready for use.
- Recharge in case of insufficient starting power (cf. section 4).

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

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

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

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

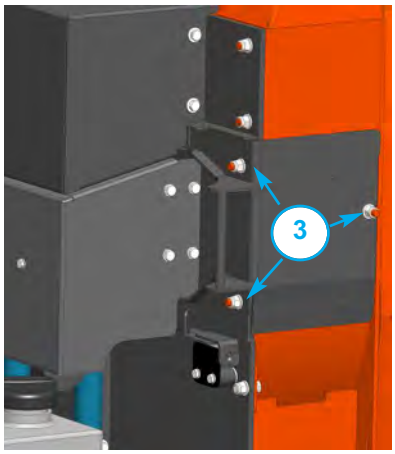


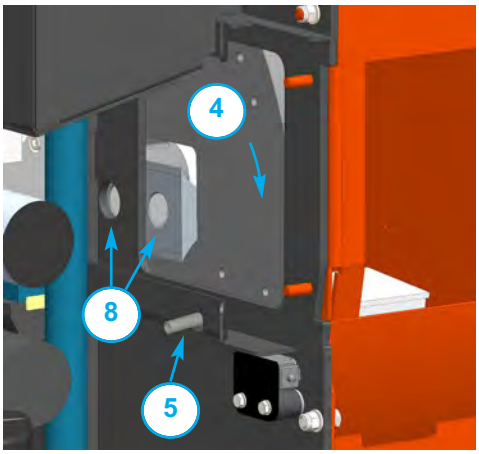
- Start the engine of the vehicle providing assistance, then start the engine of the vehicle requiring assistance for a maximum of 15 seconds.
- Disconnect the cables in reverse sequence (4-3-2-1).

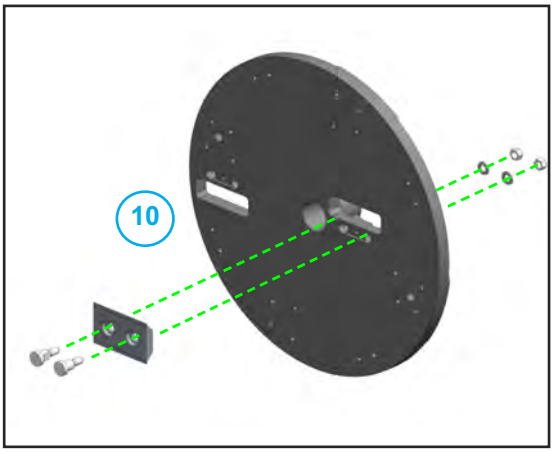
7. Taking the battery out of service
- Charge the battery; store in a cool place or in the vehicle with the negative terminal disconnected.
- Check the battery state of charge at regular intervals, and correct by recharging when necessary (cf. section 4).

CHANGE 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 40lb/ft.
19 Refit battery leads.

WARNING

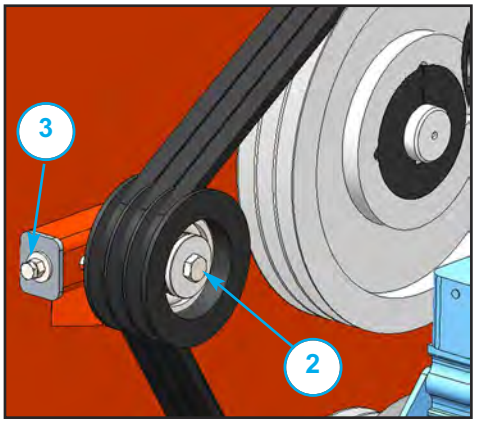
Always sharpen blades on a regular basis. Failure to do so will cause the machine to under perform and will overload engine and bearings causing machine breakdown. Blades must not be sharpened beyond the wear mark (see diagram). Failure to comply with this could result in machine damage, injury or loss 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.

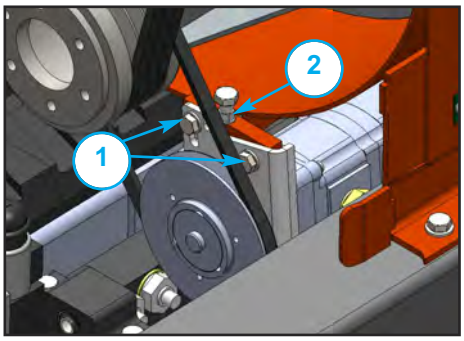
Belt failures due to lack of correct tensioning will not be covered under your Timberwolf warranty.

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



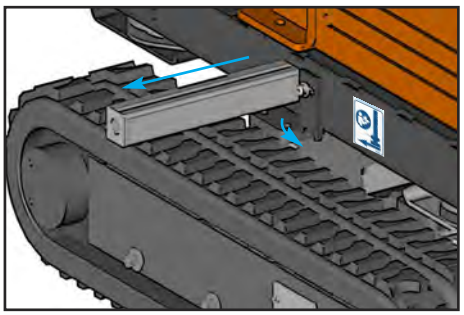
TENSION HYDRAULIC PUMP BELT

1. Loosen the 2 M10 bolts on the mounting pad.
2. Loosen the M8 lock nut.
3. Adjust M8 bolt to tension/slacken drive belt. For instructions on checking belt tension & correct belt tension values, please refer to the Timberwolf V-Belt Tensioning Data Table at the end of the manual.
3. Re-tighten lock nut and M10 bolts.



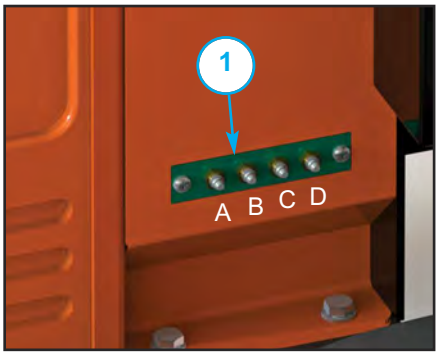
CHASSIS JACKING POINT

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



GREASE THE ROLLER SPLINE AND ROTOR BEARINGS

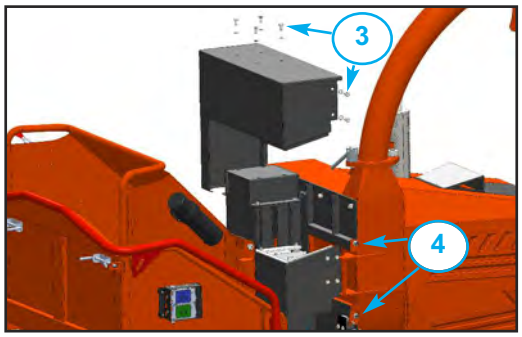
NOTE: This should be done regularly. In dirty and dusty conditions or during periods of hard work it should be weekly. If the bearings and splines are allowed to run dry premature wear will occur resulting in a breakdown and the need for replacement parts. This failure is not warranty. Early signs of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

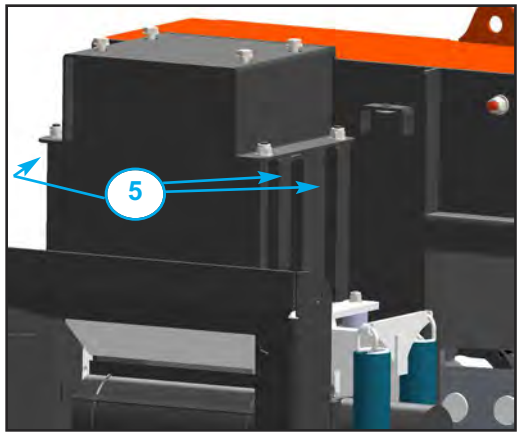


1. Locate the greasing panel.
2. Apply 4 pumps of grease to each nipple.
3. It is recommended to grease all the nipples whilst the engine is running and rollers are turning to distribute the grease evenly.
   DO NOT USE GRAPHITE BASED GREASE.
4. Both front and rear bearings are greased by nipples A and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

GREASE THE ROLLER BOX SLIDES

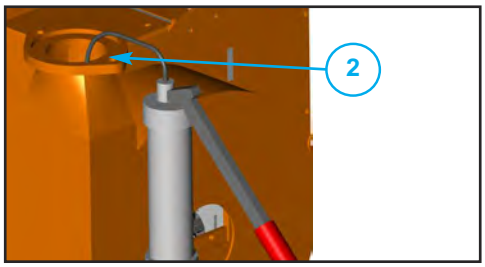
NOTE: This should be done regularly. In dirty or dusty conditions or during periods of hard work it should be done weekly. If the slides become dry the top roller will tend to hang up and the pulling-in power of the rollers will be much reduced. Excessive wear will ensue.





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 blade access hatch as 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 access hatch then top guard. Refit nuts and washers.
7. Refit battery leads.

GREASE THE DISCHARGE FLANGE



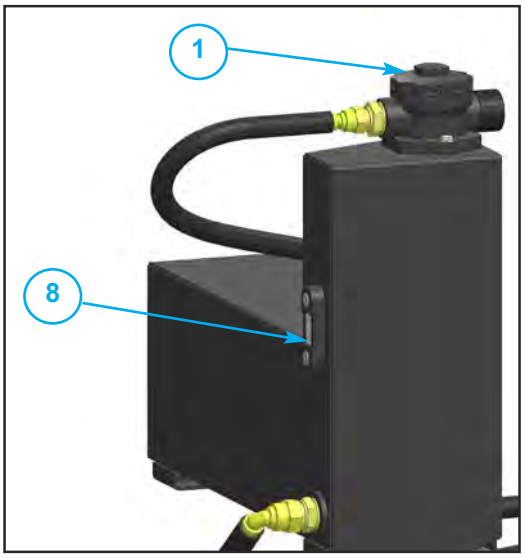
1. Remove the discharge tube.
2. Apply multipurpose grease to surface shown.
3. Refit discharge tube.

ENGINE SERVICING

All engine servicing must be performed in accordance with the Engine Manufacturer's Handbook provided with the machine. **FAILURE TO ADHERE TO THIS MAY INVALIDATE WARRANTY AND/OR SHORTEN ENGINE LIFE.**

CHANGE HYDRAULIC OIL AND FILTER

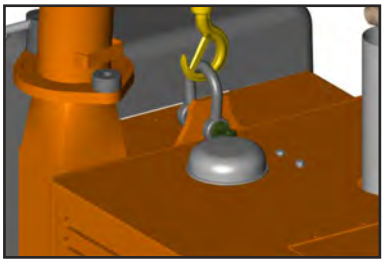
WARNING **Use plastic gloves to keep oil off skin and dispose of the used oil and filter in an ecologically sound way. The oil and filter should be changed once a year or at any time it becomes contaminated. Before starting check that the chipper is standing level and brush away loose chips.**



1. Locate the oil filter cartridge and unscrew (a filter strap or similar tool may be required to loosen the filter).
2. Apply a smear of oil onto the seal of the new filter.
3. Screw new filter on. Hand tighten only.
4. Loosen the four M8 bolts and remove the hydraulic tank cover.
5. Remove filler cap from tank.
6. Remove drain plug from the hydraulic oil tank and drain oil into a suitable container.
7. Replace drain plug.
8. Refill with VG 32 hydraulic oil until the level is between the min and max lines on the tank (about 46 litres).
9. Refit filler cap and hydraulic tank cover.

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

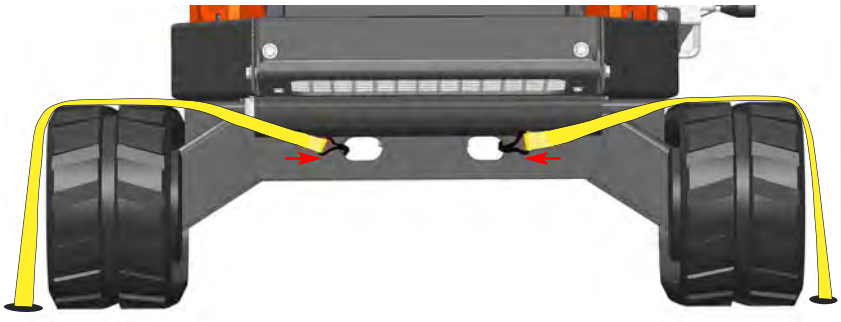
SAFE LIFTING & SECURING DOWN OF THE CHIPPER



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.

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 the machine to the carrier using correctly rated ratchet straps directly lashing from 4 points on the chassis bridge slots 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.



5000kgs x 50mm wide (minimum) ratchet strap

TRACK BASE MAINTENANCE

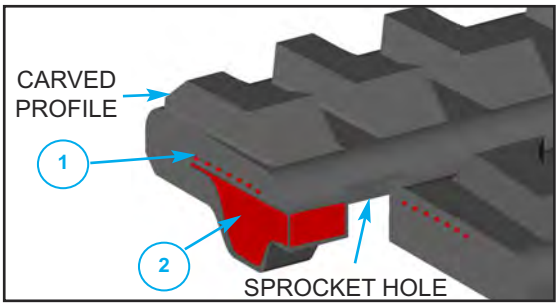
SAFE MAINTENANCE

- Solidly support the under carriage if it needs to be lifted up for maintenance (see Chassis Jacking Point section on page 20).
- 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.

CHECKING THE RUBBER TRACKS

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



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

BREAKAGES OF STEEL CABLES AND METAL CORES.

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

FATIGUE CRACKS AND ABRASION.

Cracks at the base of 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.

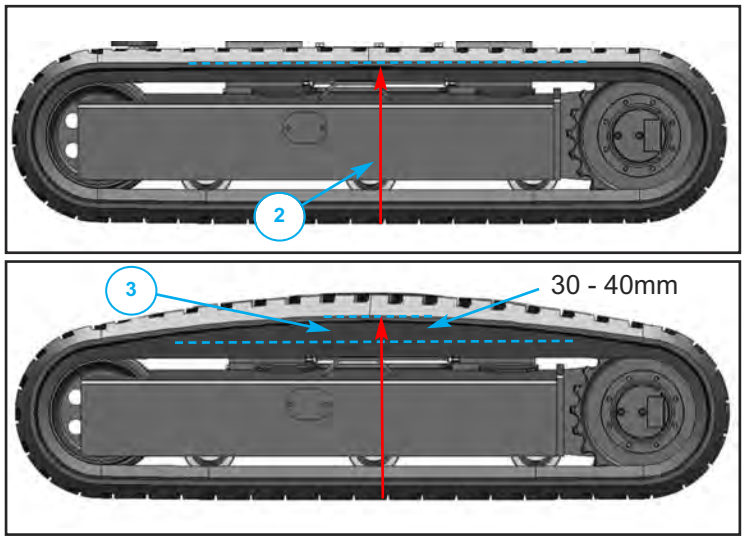
Cracks on the outside surface of the track are often due to contact with gravel, sharp stones and sharp materials such as sheet metal, nails and glass.

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.

CHECKING TRACK TENSION

1. Stop your machine on a flat and solid surface.
2. Measure from the ground to the inside edge of the track at the top central location.
3. Pull the top of the track upwards and measure the deflection.
4. The track tension is normal if the deflection is betwen 30 - 40mm.



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 pressurized. 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 under coverplate 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.

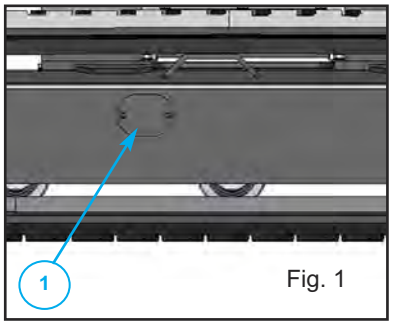


Fig. 1

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.

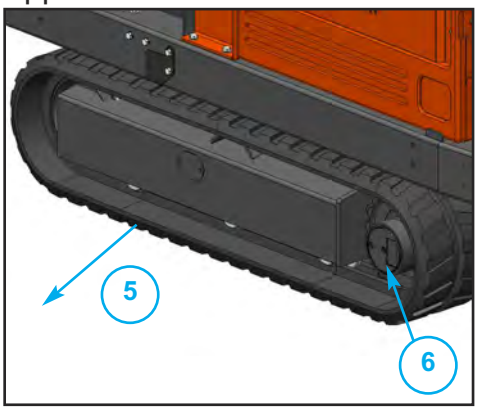
WARNING

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.

REMOVING THE RUBBER TRACKS

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

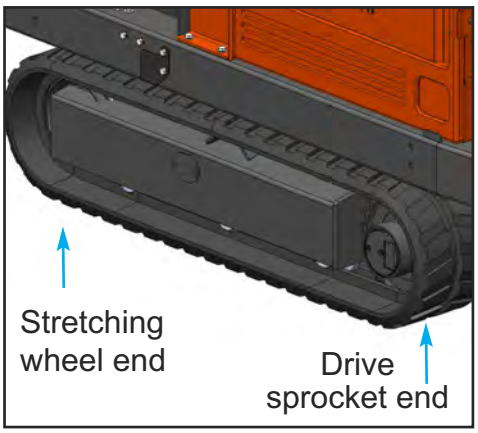
1. Stop your machine on a solid and level surface. Lift it up and support it in safe conditions.
2. Locate grease nipple under coverplate in side frame to access to the adjustment system (Fig. 1, page 24).
3. To loosen a track turn the grease nipple counter-clockwise slowly then the grease should begin 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. Using levers exercise force sideways to slide the track 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 pressurized grease may exit and cause injury to the machine operator.**

INSTALLING THE RUBBER TRACKS

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



1. Check that the grease contained in the hydraulic cylinder has been removed.
2. Mesh the track links in the sprocket and place the other end of the track on the track-stretching wheel.
3. Locate the track on the stretching wheel using levers if required.
4. Make sure track links mesh correctly in the sprocket and in the track stretching wheel.
5. Adjust track tension (see track loosening procedures on page 24).
6. Set the tracked undercarriage on the ground.

CHECKING SPROCKET WEAR

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

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

ENTEC INDUSTRIES LTD 12 MONTH CHIPPER WARRANTY

WARRANTY PERIOD

The warranty period for the woodchipper commences on the date of sale to the first end user and continues for a period of 12 months. This guarantee is to the first end user only and is not transferable except when an authorised Timberwolf Dealer has a woodchipper registered with Entec Industries Ltd as a hire chipper or long term demonstrator – in these situations they are duly authorised to transfer any remaining warranty period to their first end user. Any warranty offered by the Timberwolf Dealer beyond the original 12 month period will be wholly covered by said Dealer.

LIABILITY

Our obligation under this warranty is limited to repair at Entec Industries Ltd premises or at our option an Entec Industries Ltd approved Timberwolf dealer. No liability will be accepted for special, indirect, incidental, or consequential loss or damages of any kind.

WARRANTY STATEMENT

Entec Industries Ltd warrants to the first end user that;

- Your woodchipper shall be designed, built and equipped, at the point of sale, to meet all current applicable regulations.
- Your chipper shall be free from manufacturing defects both in materials and workmanship in normal service for the period mentioned above.

Warranty will not apply to a failure where normal use has exhausted the life of a component.

Engine units are covered independently by their respective manufacturer warranties.

OWNERS WARRANTY RESPONSIBILITIES

As the owner of an Entec Industries Ltd woodchipper you are responsible for the following;

- Operation of the woodchipper in accordance with the Entec Industries Ltd instruction manual.
- Performance of the required maintenance listed in your Entec Industries Ltd instruction manual.
- In the event of a failure the Entec Industries Ltd authorised Timberwolf dealer is to be notified within 10 days of failure and the equipment is to be made available for unmolested inspection by the dealer technician.

WARRANTY RESTRICTIONS

The Entec Industries Ltd warranty is restricted to the first end user only and is not transferable except when an authorised Timberwolf Dealer has a woodchipper registered with Entec Industries Ltd as a hire chipper or long term demonstrator – in these situations they are duly authorised to transfer any remaining warranty period to their first end user.

The Entec Industries Ltd warranty may be invalidated if any of the following apply;

- The failed parts or assembly is interfered with in any way.
- Normal maintenance has not been performed.
- Incorrect reassembly of components.
- The machine has undergone modifications not approved in writing by Entec Industries Ltd.
- In the case of tractor driven equipment, use has been on an unapproved tractor.

CERTIFICATE OF CONFORMITY

Entec Industries Ltd

Entec House,
Tomo Industrial Estate,
Stowmarket,
Suffolk IP14 5AY
Tel: 01449 765800 Fax: 01449 765801

EC Declaration of Conformity

CE

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

Machinery Directive; 2006/42/EC
(& other relevant directives)

and the National Laws and Regulations adopting these directives.

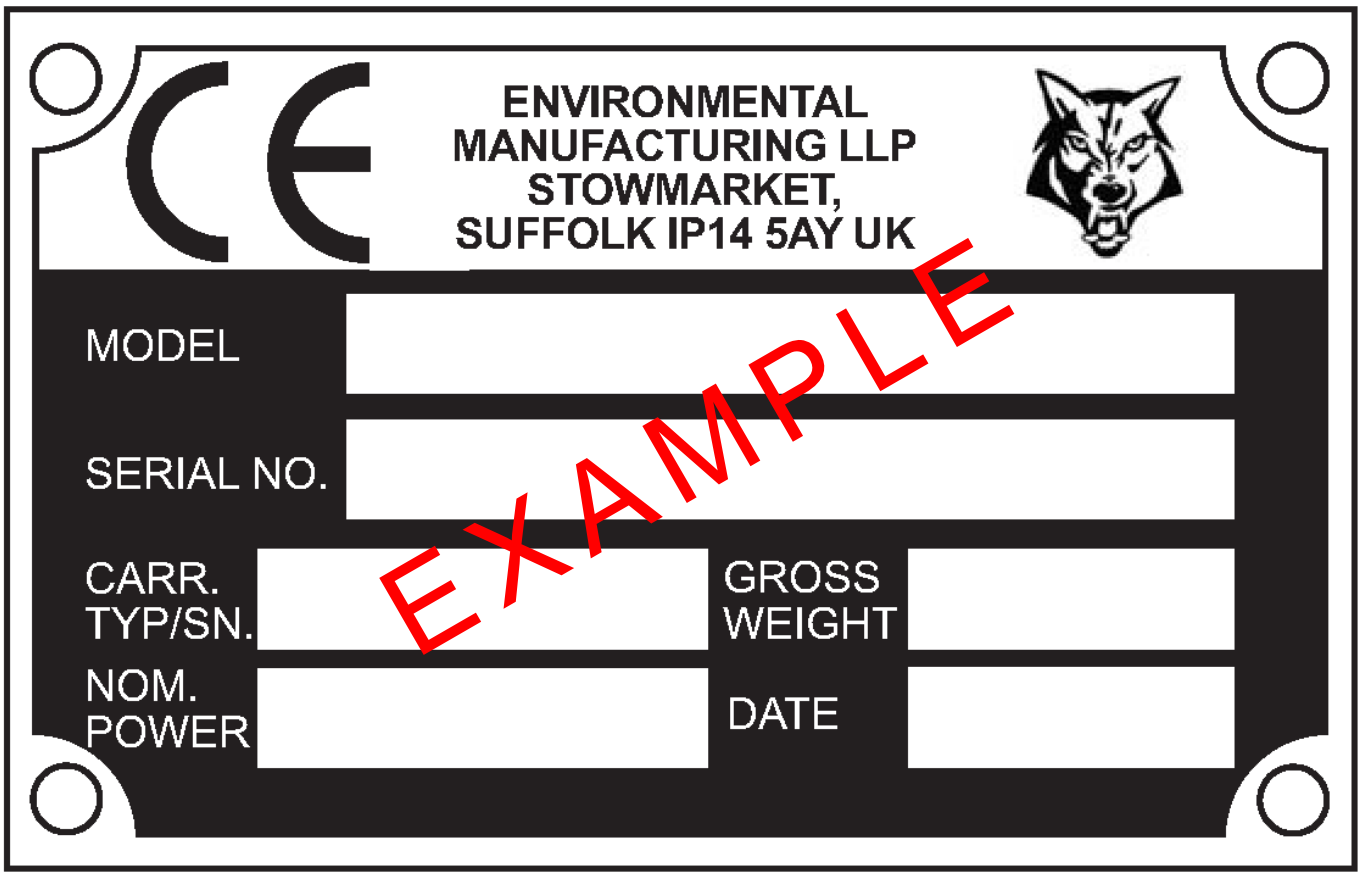
Designer/Manufacturer	**:**	Entec Industries
Description of Machinery	**:**	Self-powered portable machine intended to chip up tree waste prior to disposal.
Model	**:**	TW 280TFTR
Serial No.	**:**	*Serial Manufacture*

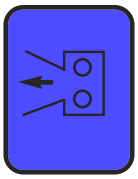
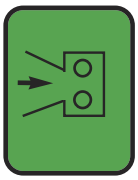
BSI Transposed Harmonised Standards applied: (including parts/clauses of):
BS EN: 13683:2003+A2:2011
BS EN ISO: 12100:2010
BS EN ISO: 14120:2015
BS EN ISO: 13849-1:2015
BS EN ISO: 60204-1:2006+A1:2009

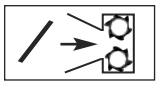
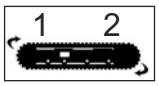
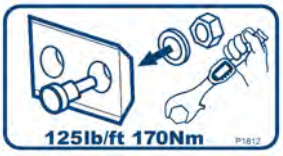
"Responsible" Person empowered to sign: _____Mr. Chris Perry
Position in Company: Managing Director

Date: 18/10/2016

IDENTIFICATION PLATE

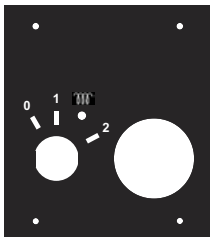


Decal	Description	Decal	Description
616 	Hot exhaust	4099 	Danger. Rotating blades. Keep hands and feet out.
617 	High velocity discharge - keep clear	2800 	Reverse feed
670 	Personal Protective Equipment required	2801 	Forward feed
1661 	Read the instruction manual for greasing and maintenance information	19517 	Warning Do not engage starter motor for more than 20 seconds. Allow one minute before attempting to start. Investigate reasons for failure to start. Excessive cranking will result in starter motor failure. This will not be covered under warranty.
1662 	The instruction manual with this machine contains important operating, maintenance and health and safety information. Failure to follow the information contained in the instruction manual may lead to death or serious injury.	2949 	**Lifting eye is designed to lift the machine's weight only.** Do not use hoist hook 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.
1399 	Push to stop.	3022 	Clean under blades before refitting or turning. Failure to do so may result in blade(s) coming loose and damage being caused to the rotor housing.
P691 	Do not pull here.	18393 	New drive belts need re-tensioning. When new belts are fitted check tension every 2-3 hours & adjust until tension remains constant.
C192-0105 	When the emergency stop button is pressed it must be pulled out again and the ignition switch turned off to reset the machine before attempting to restart	3059 	Jacking point. See manual for instructions.

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 inury or damage.
1745  1747 	Tracking mode Chipping mode	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.
P1810  P1811  P2157 	To go on relays. Forward Latch Engine Safety Tracking Speed	P1812 	Torque blade bolts to 125 lbs ft (170 Nm).
P1809  18653 	Auto back-off Close bucket and point discharge away from driving position. Protective equipment must be worn when driving machine.		

C192 - 0100

C192 - 0101



18008

1363

C192-0104

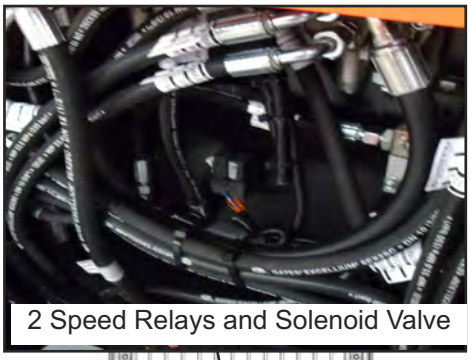
1746

P*3503

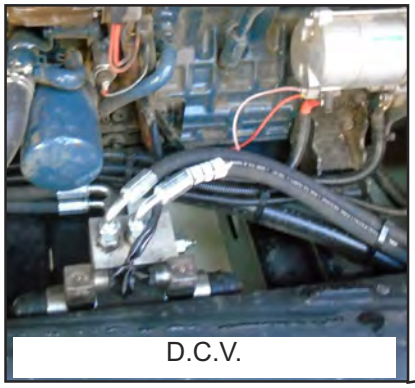
P*3504

P2281

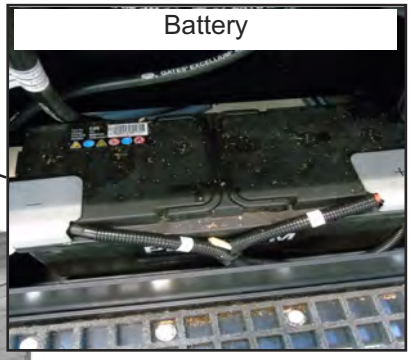
2689



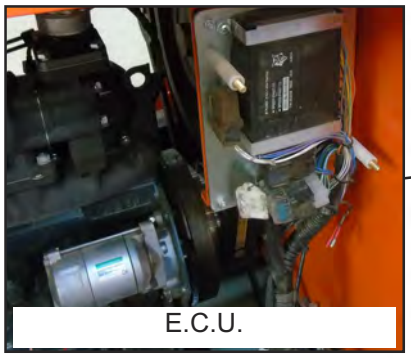
2 Speed Relays and Solenoid Valve



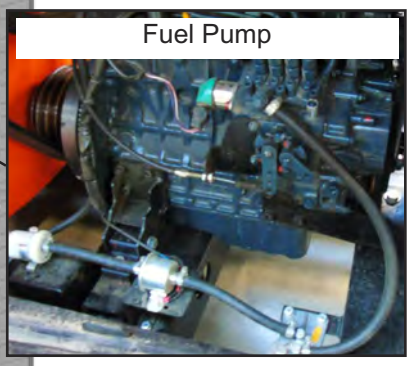
D.C.V.



Battery



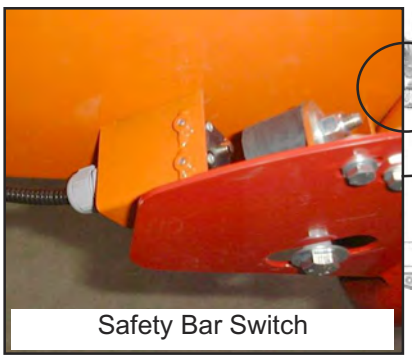
E.C.U.



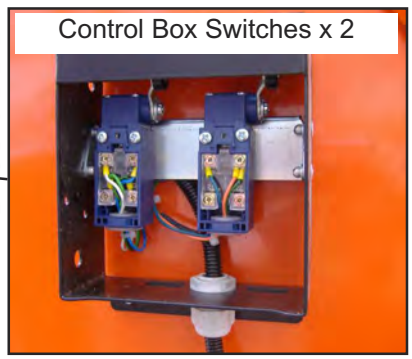
Fuel Pump

Funnel Loom Connector

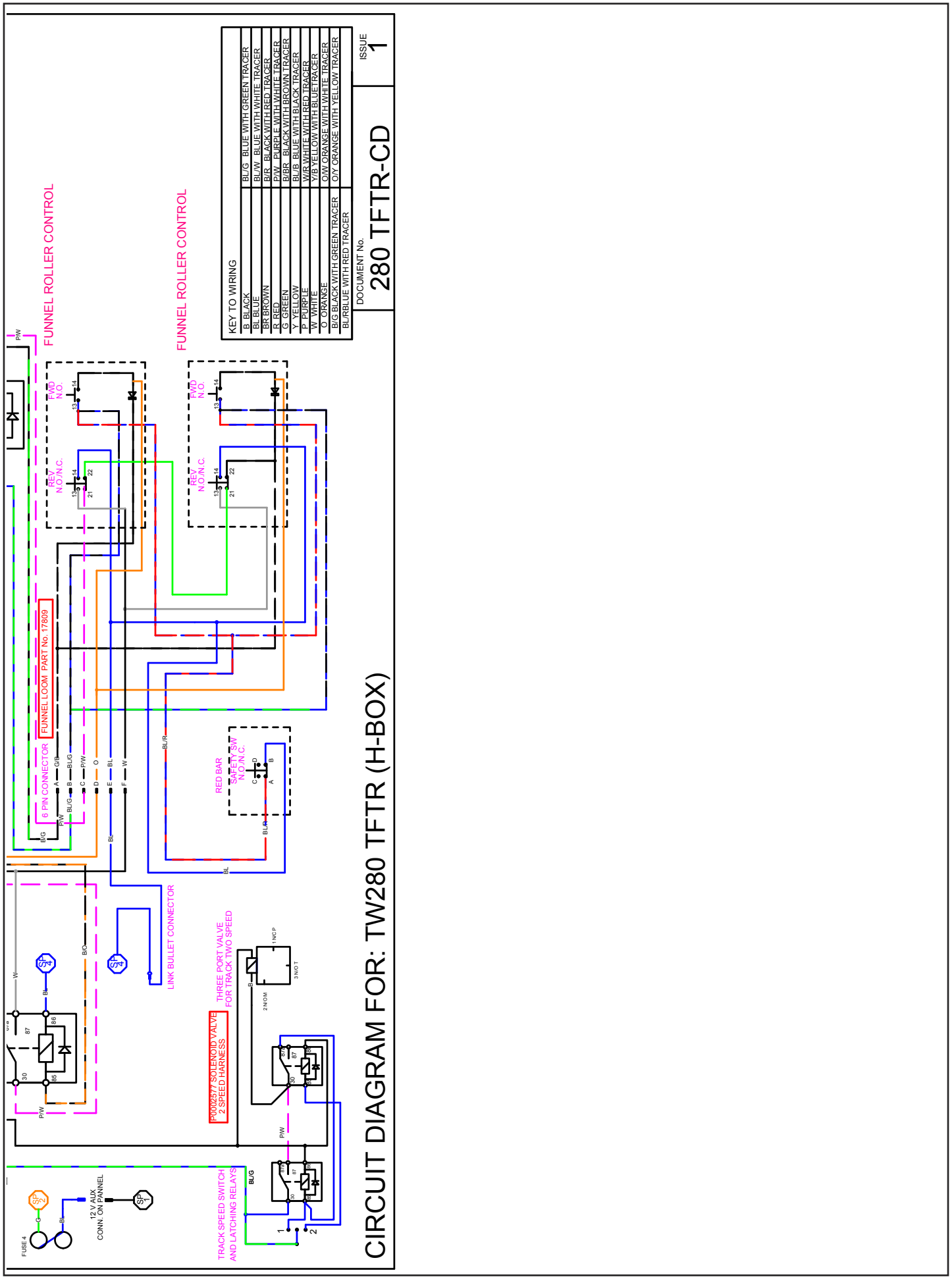
Access Hatch Switch



Safety Bar Switch

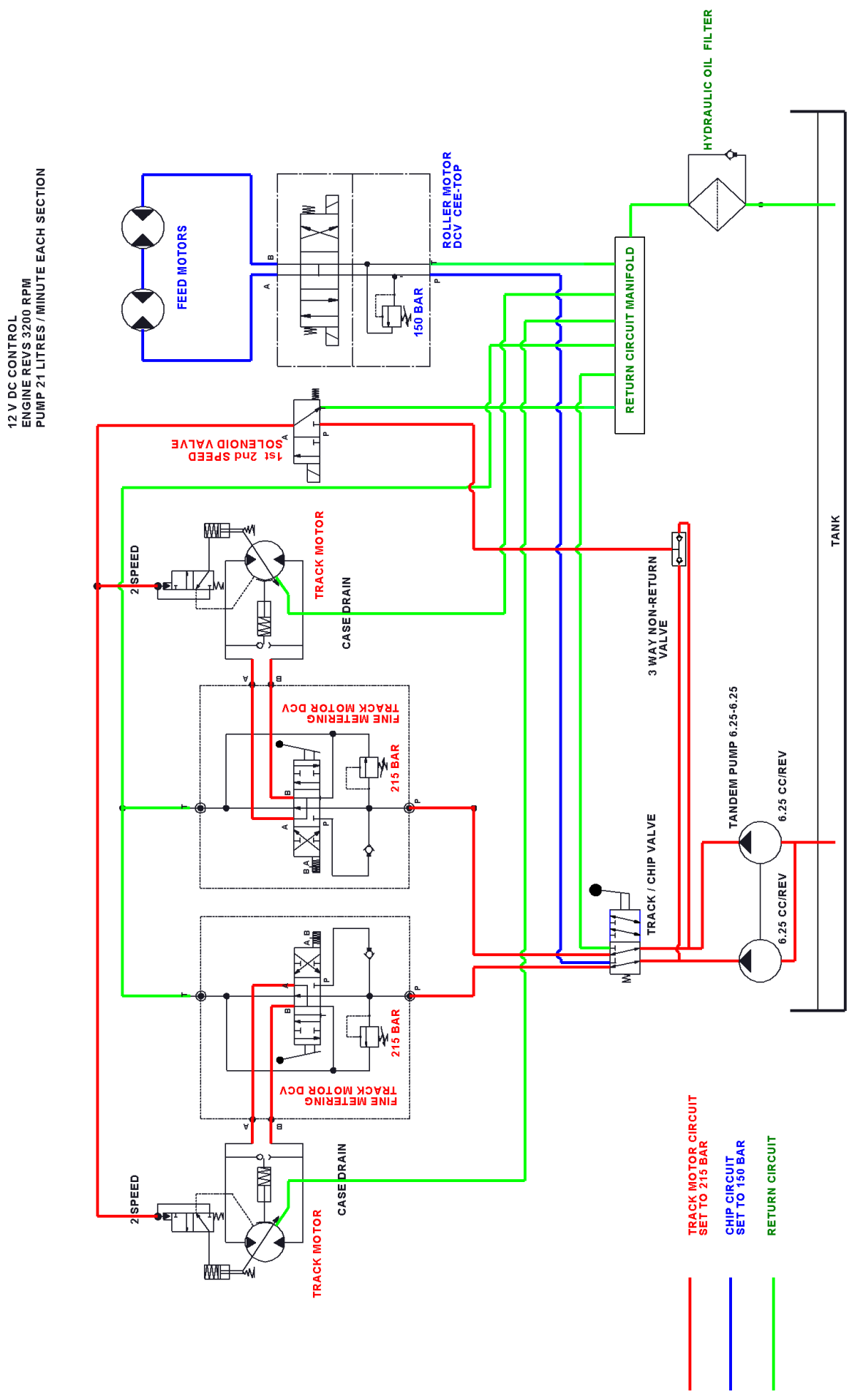


Control Box Switches x 2


CIRCUIT DIAGRAM FOR: TW280 TFTR (H-BOX)
DOCUMENT No. 280 TFTR-CD
ISSUE 1
KEY TO WIRING
B BLACK
BL BLUE
BR BROWN
R RED
G GREEN
Y YELLOW
P PURPLE
W WHITE
O ORANGE
B/G BLACK WITH GREEN TRACER
BL/RBLUE WITH RED TRACER
BL/G BLUE WITH GREEN TRACER
BL/W BLUE WITH WHITE TRACER
B/R BLACK WITH RED TRACER
P/W PURPLE WITH WHITE TRACER
B/BR BLACK WITH BROWN TRACER
BL/B BLUE WITH BLACK TRACER
W/R WHITE WITH RED TRACER
Y/B YELLOW WITH BLUE TRACER
O/W ORANGE WITH WHITE TRACER
O/Y ORANGE WITH YELLOW TRACER
FUNNEL ROLLER CONTROL
FWD N.O.
REV N.O./N.C.
6 PIN CONNECTOR
FUNNEL LOOM PART No. 17809
RED BAR SAFETY SW N.O./N.C.
LINK BULLET CONNECTOR
THREE PORT VALVE FOR TRACK TWO SPEED
P0002577 SOLENOID VALVE 2 SPEED HARNESS
TRACK SPEED SWITCH AND LATCHING RELAYS
12 V AUX CONN. ON PANNEL
FUSE 4

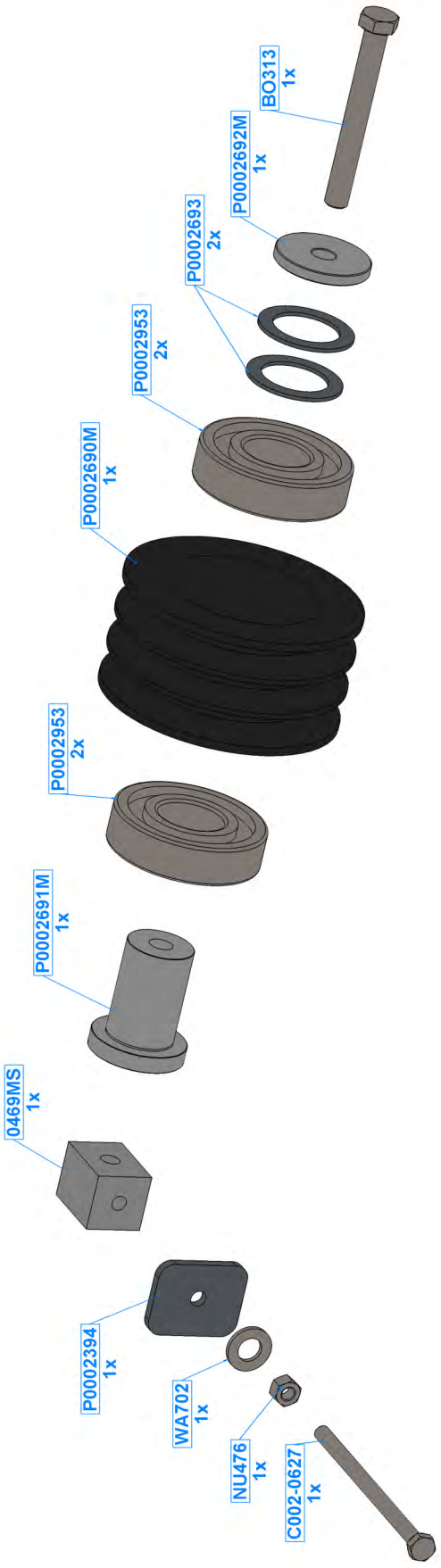
TW 280 TFTR HYDRAULIC CIRCUIT

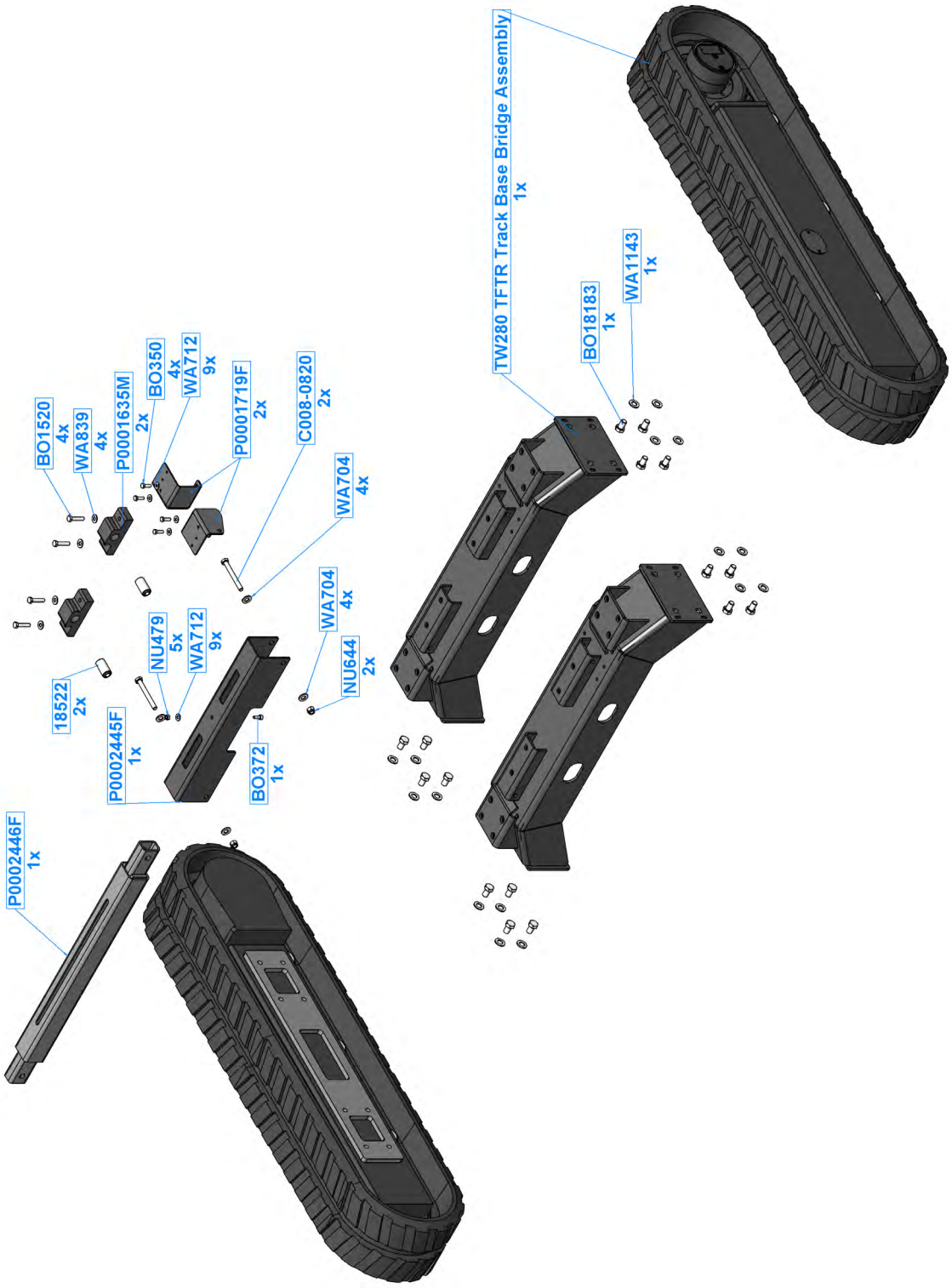
HOSE KIT PART No. P0002759

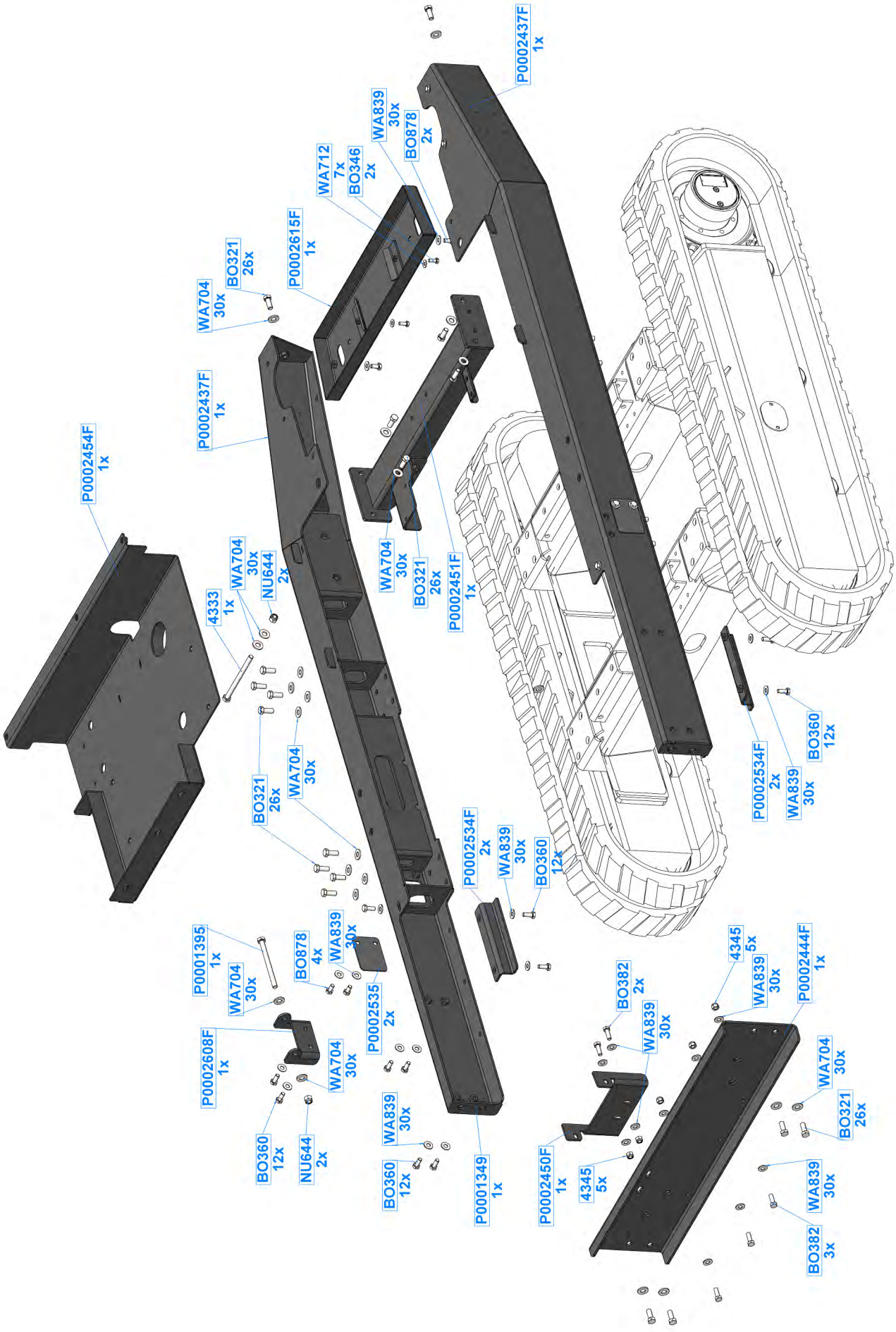


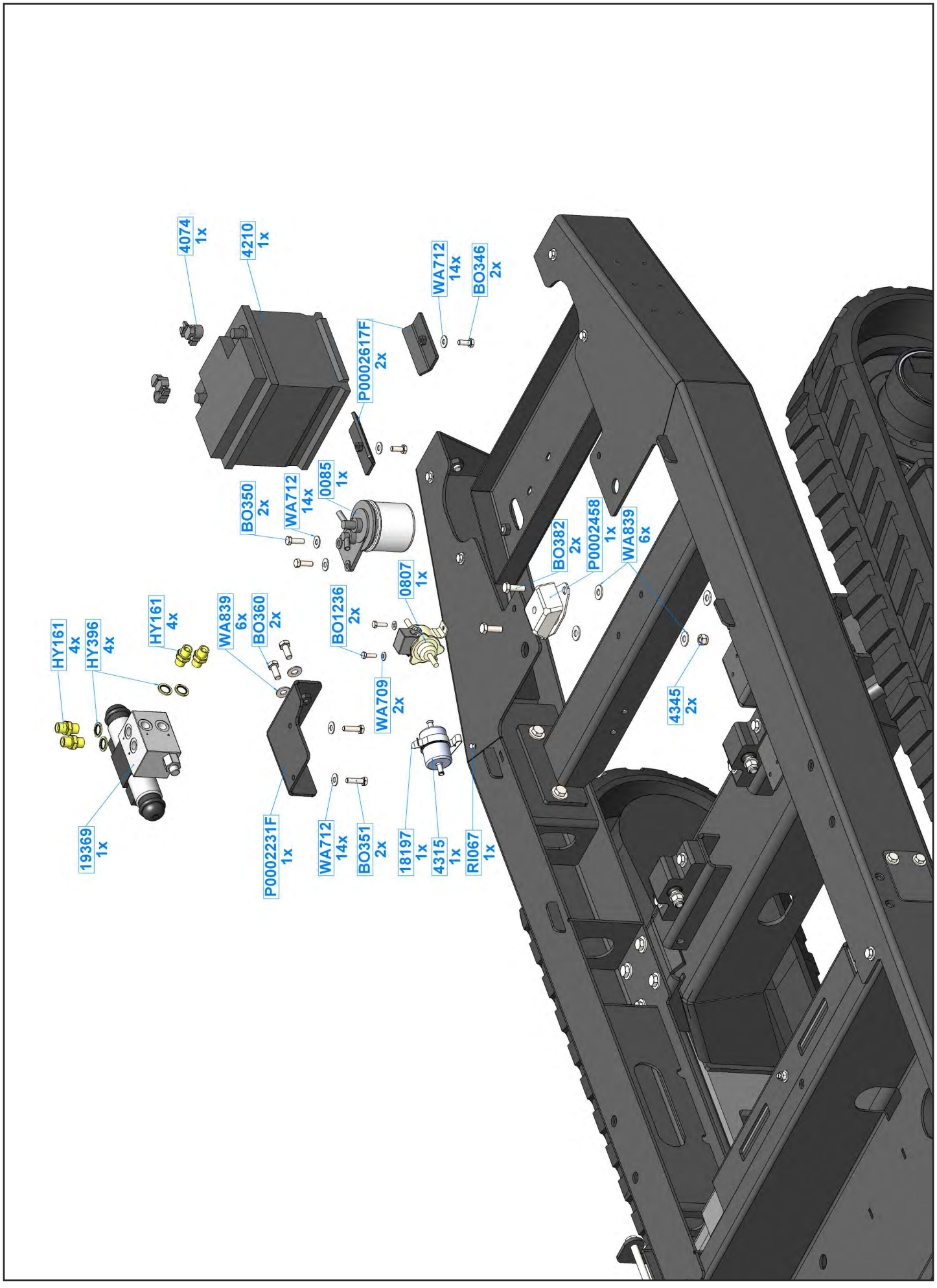
PARTS LISTS

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.


BO313
1x
P0002692M
1x
P0002693
2x
P0002953
2x
P0002690M
1x
P0002953
2x
P0002691M
1x
0469MS
1x
P0002394
1x
WA702
1x
NU476
1x
C002-0627
1x


TW280 TFTR Track Base Bridge Assembly 1x
BO18183 1x
WA1143 1x
BO1520 4x
WA839 4x
P0001635M 2x
BO350 4x
WA712 9x
P0001719F 2x
C008-0820 2x
WA704 4x
WA704 4x
NU644 2x
NU479 5x
WA712 9x
18522 2x
P0002445F 1x
BO372 1x
P0002446F 1x


P0002437F 1x
WA839 30x
BO878 2x
WA712 7x
BO346 2x
P0002615F 1x
WA704 30x
BO321 26x
P0002437F 1x
P0002454F 1x
4333 1x
WA704 30x
NU644 2x
WA704 30x
BO321 26x
P0002451F 1x
P0002534F 2x
WA839 30x
BO360 12x
BO321 26x
WA704 30x
P0002534F 2x
WA839 30x
BO360 12x
P0001395 1x
WA704 30x
BO878 4x
WA839 30x
P0002535 2x
P0002608F 1x
WA704 30x
BO360 12x
NU644 2x
WA839 30x
BO360 12x
P0001349 1x
4345 5x
WA839 30x
P0002444F 1x
BO382 2x
WA839 30x
WA704 30x
BO321 26x
P0002450F 1x
4345 5x
WA839 30x
BO382 3x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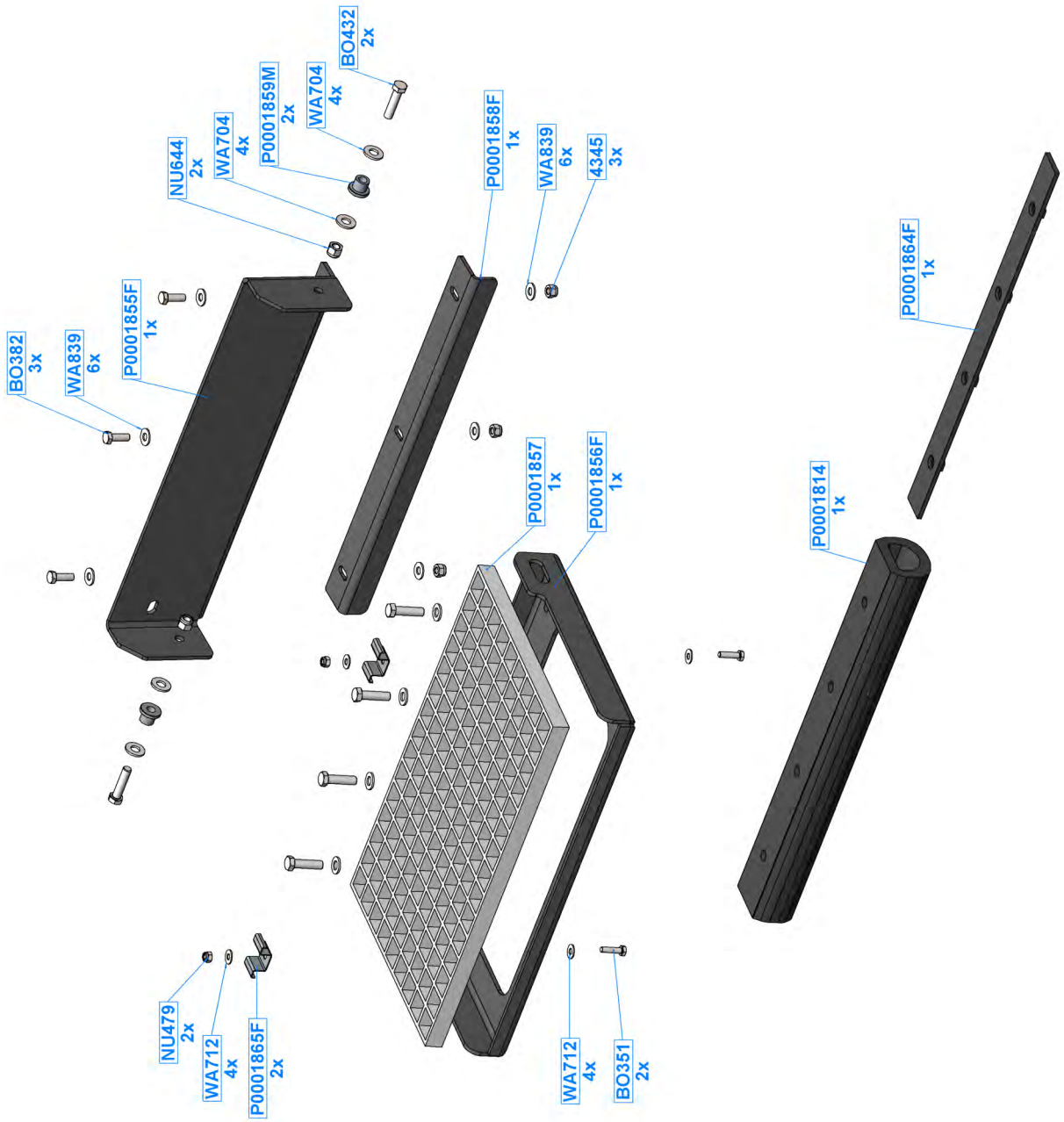
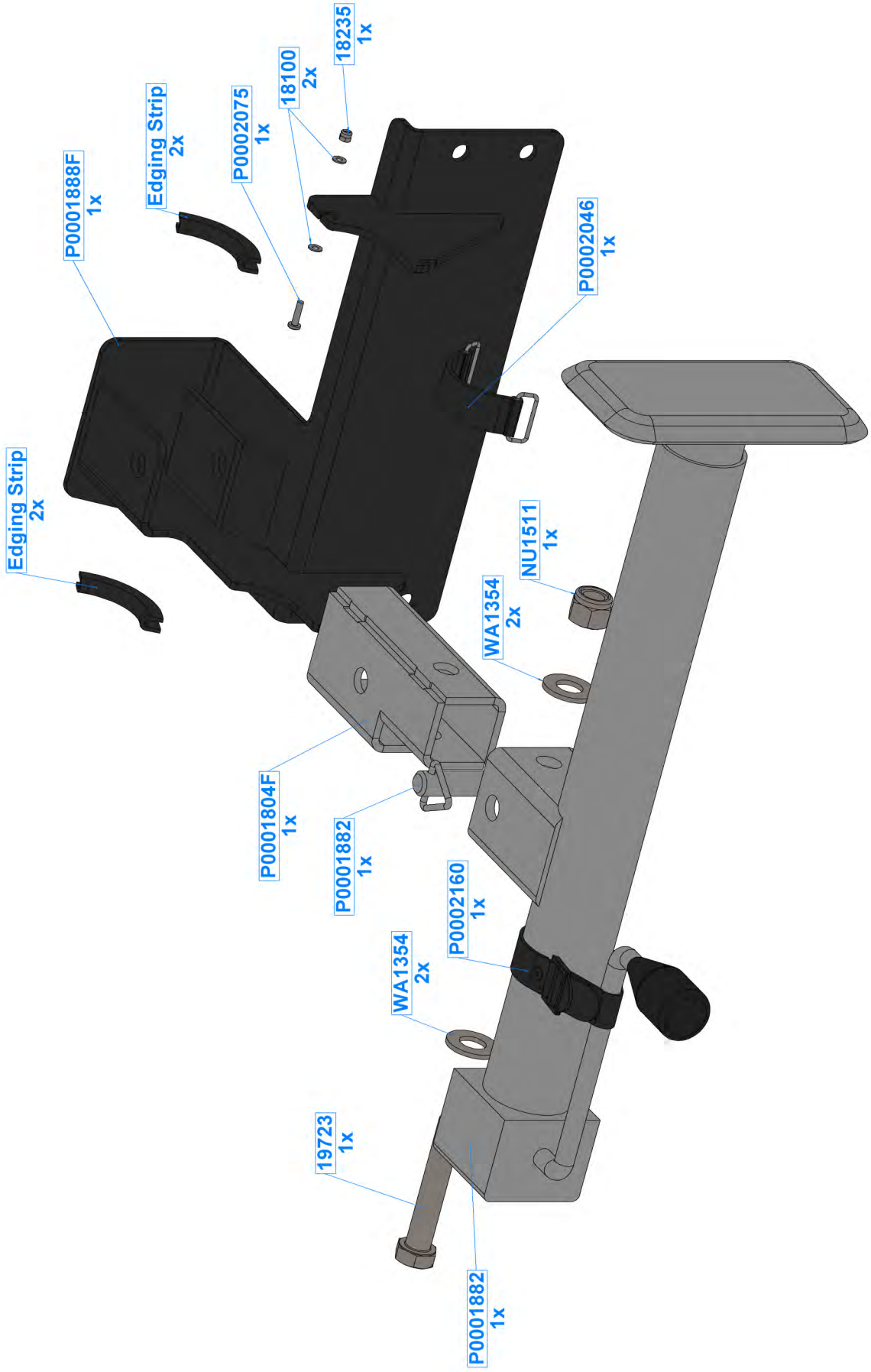
4210 1x
WA712 14x
BO346 2x
P0002617F 2x
BO350 2x
WA712 14x
0085 1x
BO382 2x
P0002458 1x
WA839 6x
HY161 4x
HY396 4x
HY161 4x
WA839 6x
BO360 2x
BO1236 2x
0807 1x
WA709 2x
4345 2x
19369 1x
P0002231F 1x
WA712 14x
BO351 2x
18197 1x
4315 1x
RI067 1x


BO432 2x
WA704 4x
P0001859M 2x
WA704 4x
NU644 2x
P0001858F 1x
WA839 6x
4345 3x
P0001864F 1x
BO382 3x
WA839 6x
P0001855F 1x
P0001857 1x
P0001856F 1x
P0001814 1x
NU479 2x
WA712 4x
P0001865F 2x
WA712 4x
BO351 2x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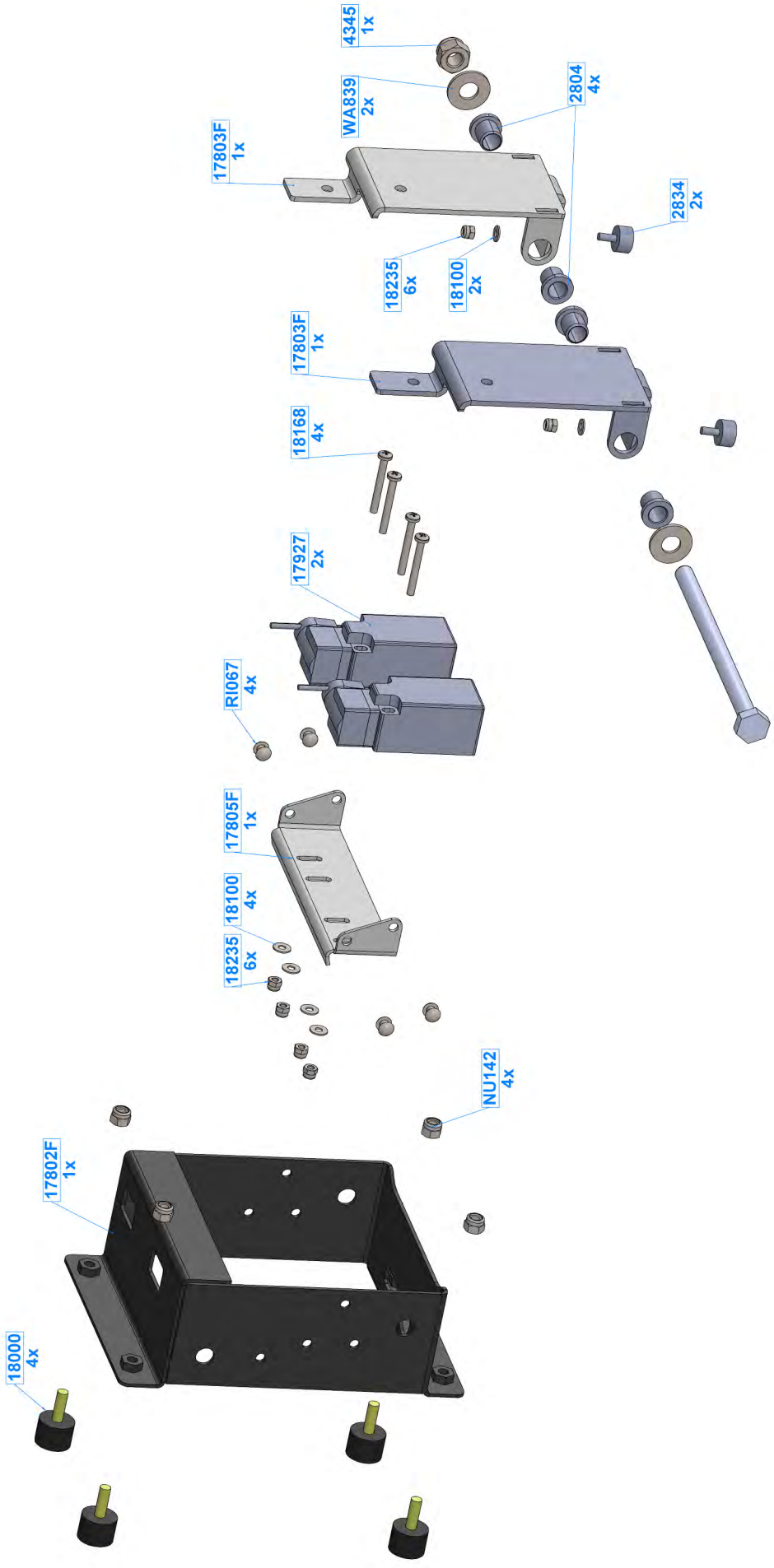
18100
2x
P0002075
1x
Edging Strip
2x
P0001888F
1x
P0002046
1x
Edging Strip
2x
NU1511
1x
WA1354
2x
P0001804F
1x
P0001882
1x
P0002160
1x
WA1354
2x
19723
1x
P0001882
1x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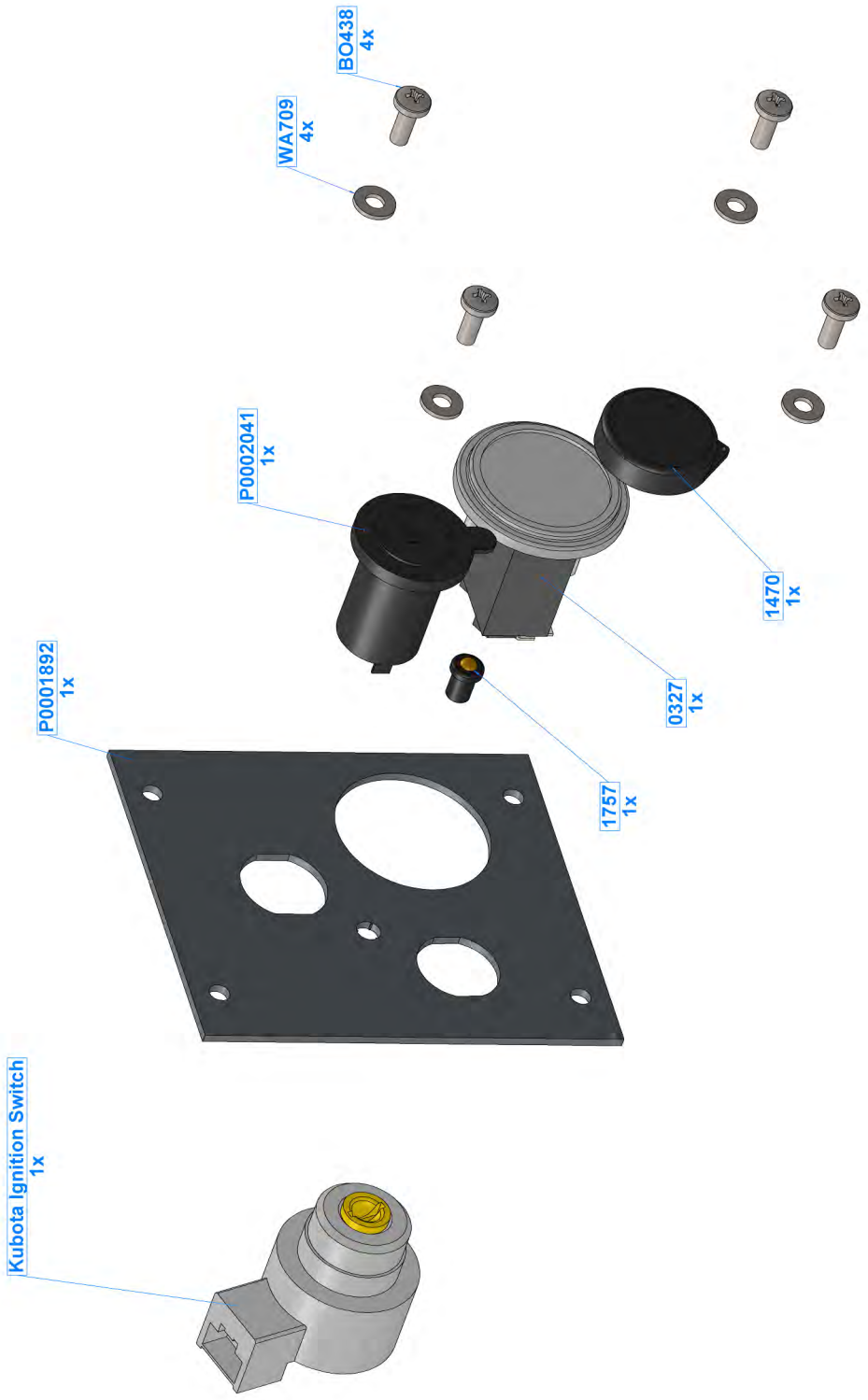
WA839 2x
2804 4x
17803F 1x
2834 2x
18235 6x
18100 2x
17803F 1x
18168 4x
17927 2x
RI067 4x
17805F 1x
18100 4x
18235 6x
NU142 4x
17802F 1x
18000 4x


BO438
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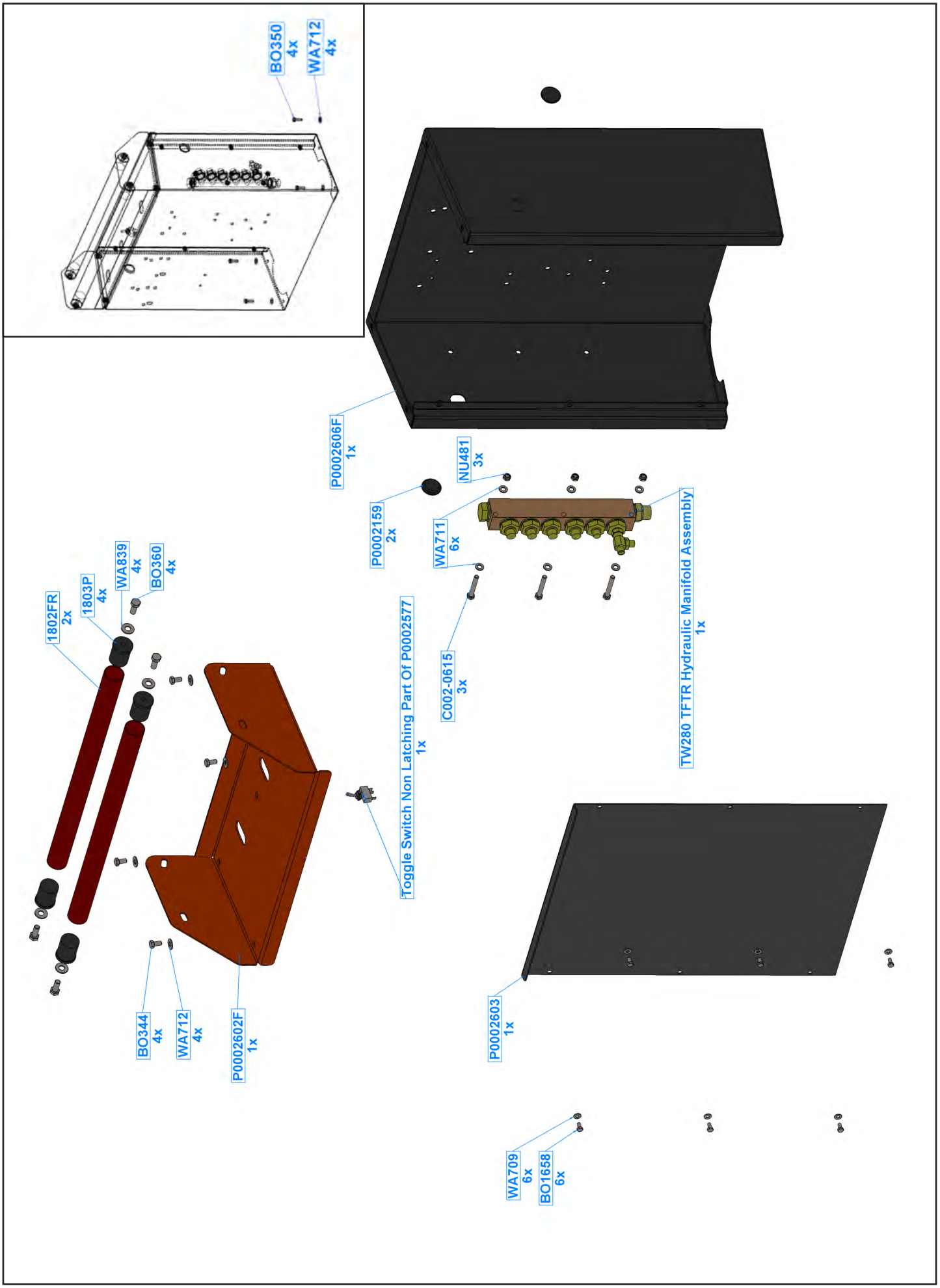
WA709
4x
P0002041
1x
1470
1x
P0001892
1x
0327
1x
1757
1x
Kubota Ignition Switch
1x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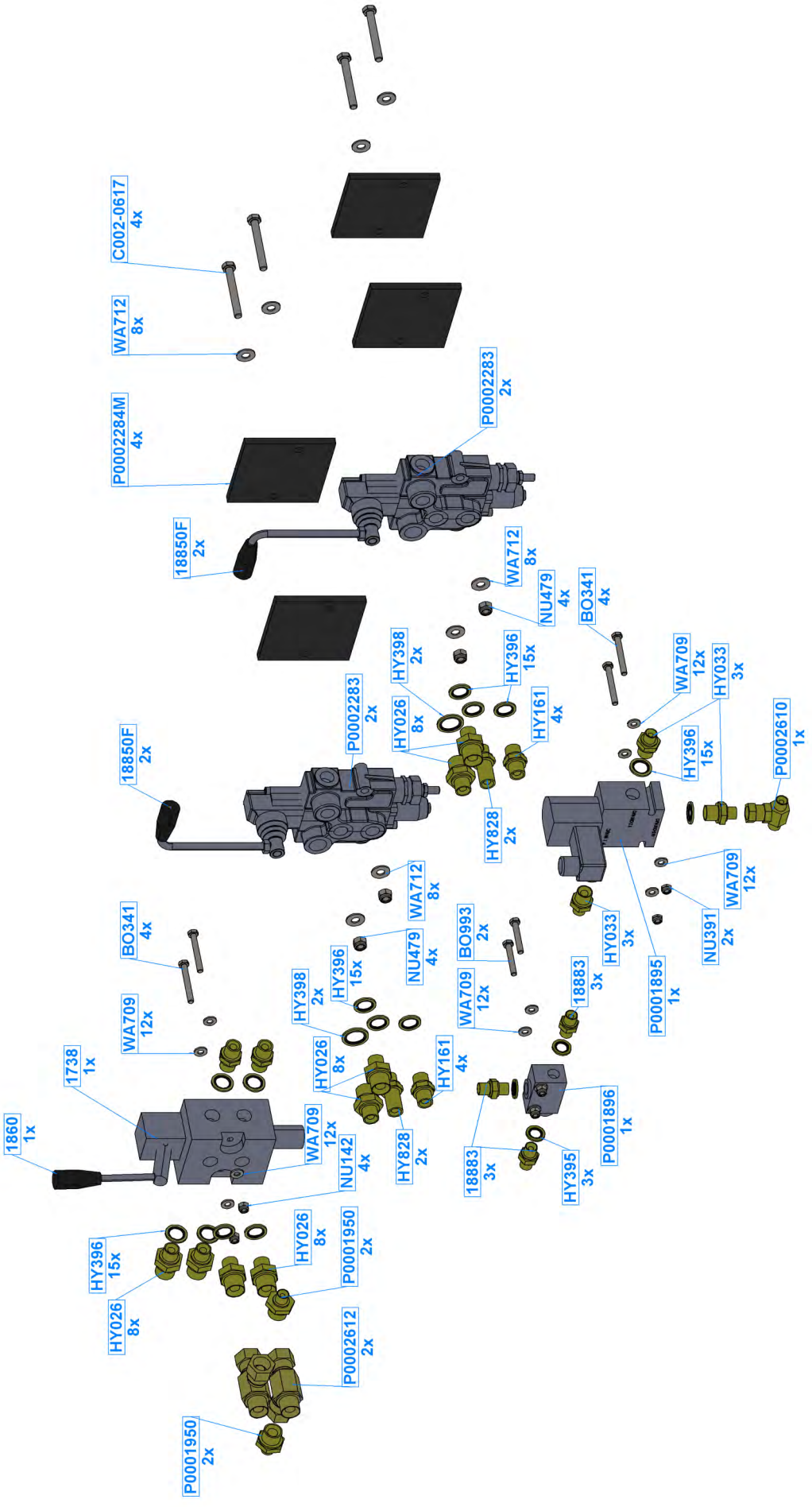
WA712 4x
P0002606F 1x
NU481 3x
P0002159 2x
WA711 6x
TW280 TFTR Hydraulic Manifold Assembly 1x
C002-0615 3x
Toggle Switch Non Latching Part Of P0002577 1x
1802FR 2x
1803P 4x
WA839 4x
BO360 4x
BO344 4x
WA712 4x
P0002602F 1x
P0002603 1x
WA709 6x
BO1658 6x


C002-0617 4x
WA712 8x
P0002284M 4x
P0002283 2x
18850F 2x
WA712 8x
NU479 4x
BO341 4x
HY398 2x
HY396 15x
HY026 8x
HY161 4x
P0002283 2x
18850F 2x
HY828 2x
WA709 12x
HY033 3x
HY396 15x
P0002610 1x
WA712 8x
NU479 4x
BO341 4x
WA709 12x
HY398 2x
HY396 15x
HY026 8x
HY161 4x
HY828 2x
BO993 2x
WA709 12x
18883 3x
HY033 3x
NU391 2x
WA709 12x
P0001895 1x
1738 1x
1860 1x
WA709 12x
NU142 4x
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P0002612 2x
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HY395 3x
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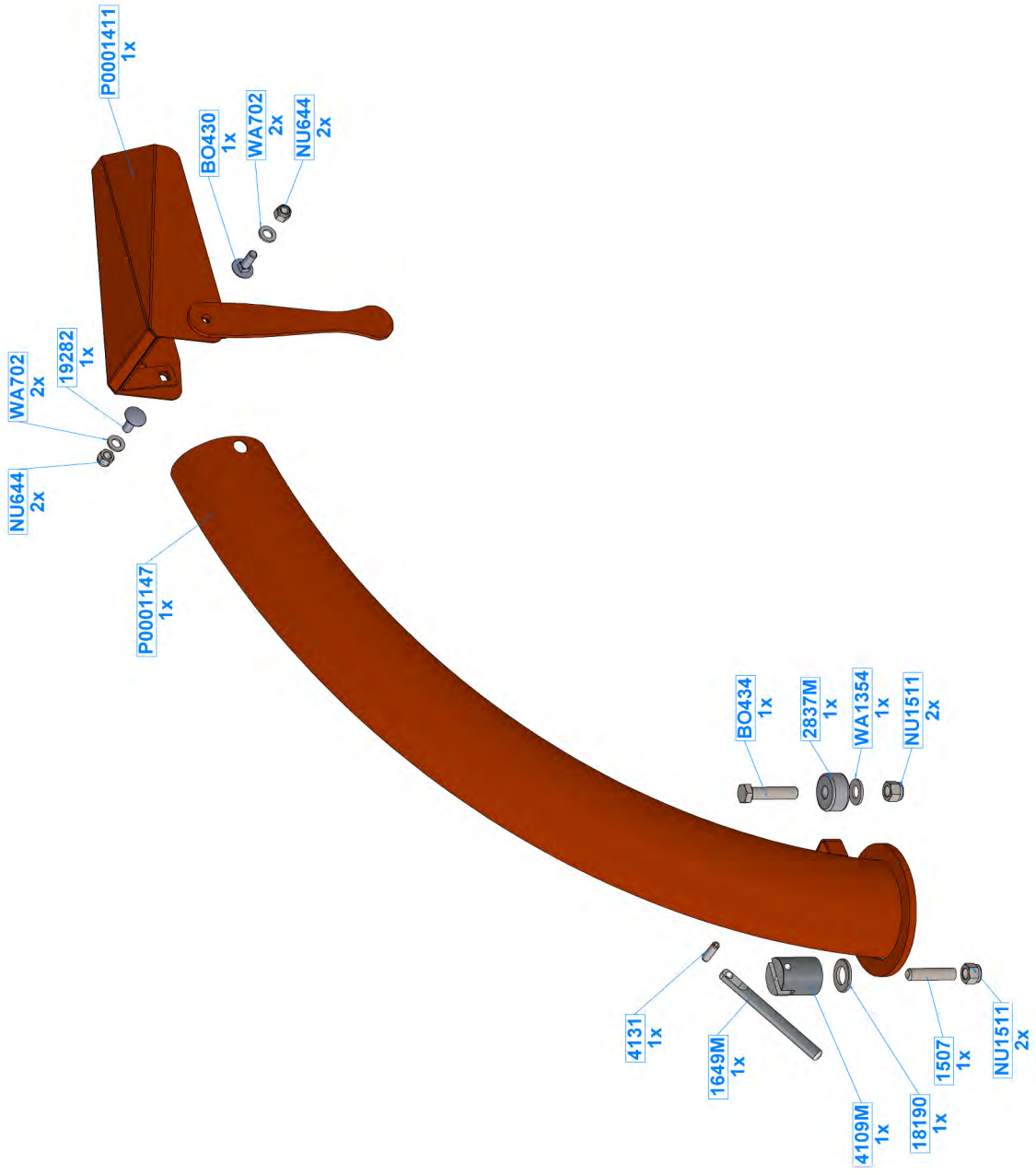
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WA702
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NU644
2x
19282
1x
WA702
2x
NU644
2x
P0001147
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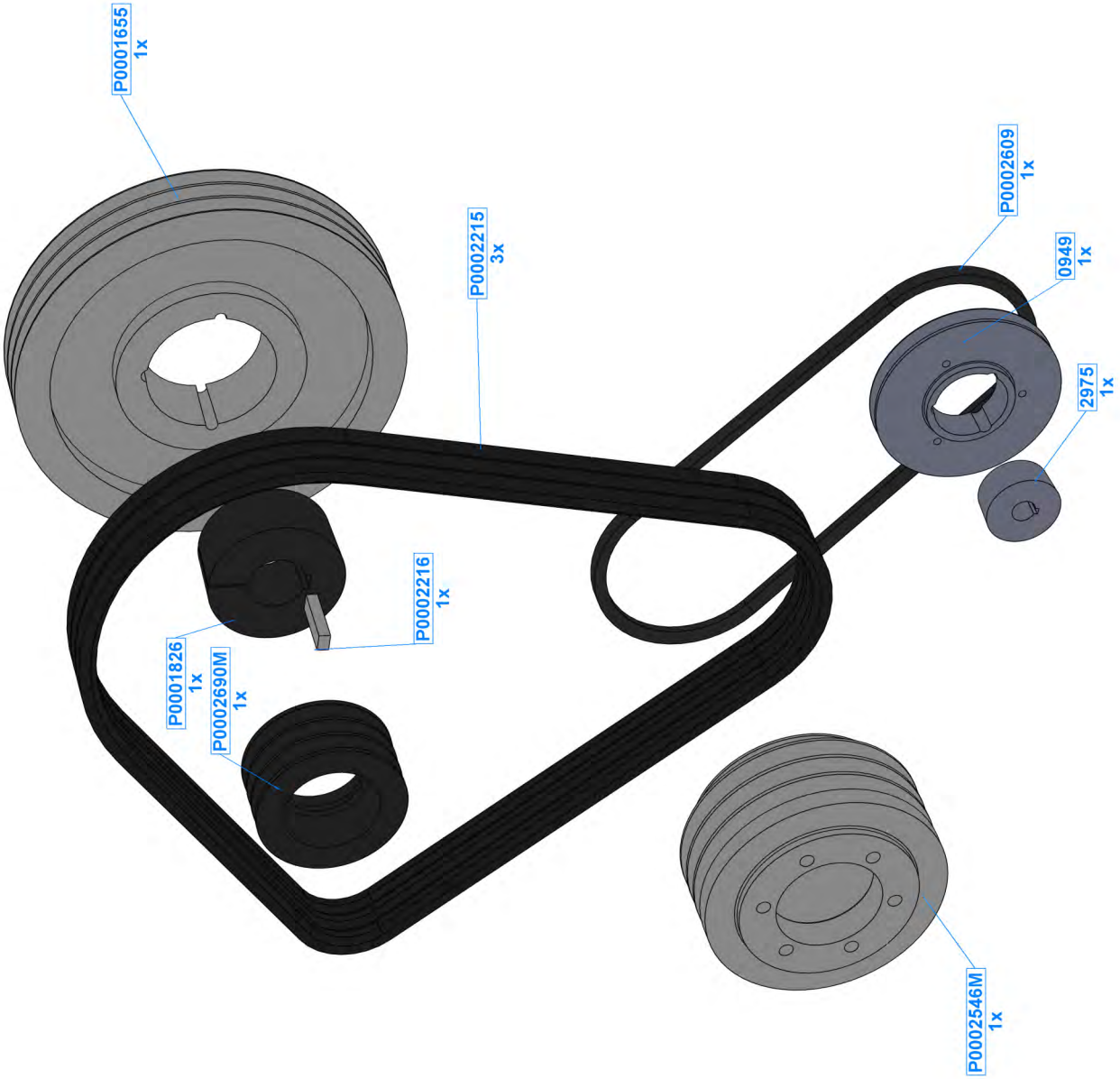
BO434
1x
2837M
1x
WA1354
1x
NU1511
2x
4131
1x
1649M
1x
4109M
1x
18190
1x
1507
1x
NU1511
2x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P0002215
3x
P0002609
1x
0949
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2975
1x
P0002216
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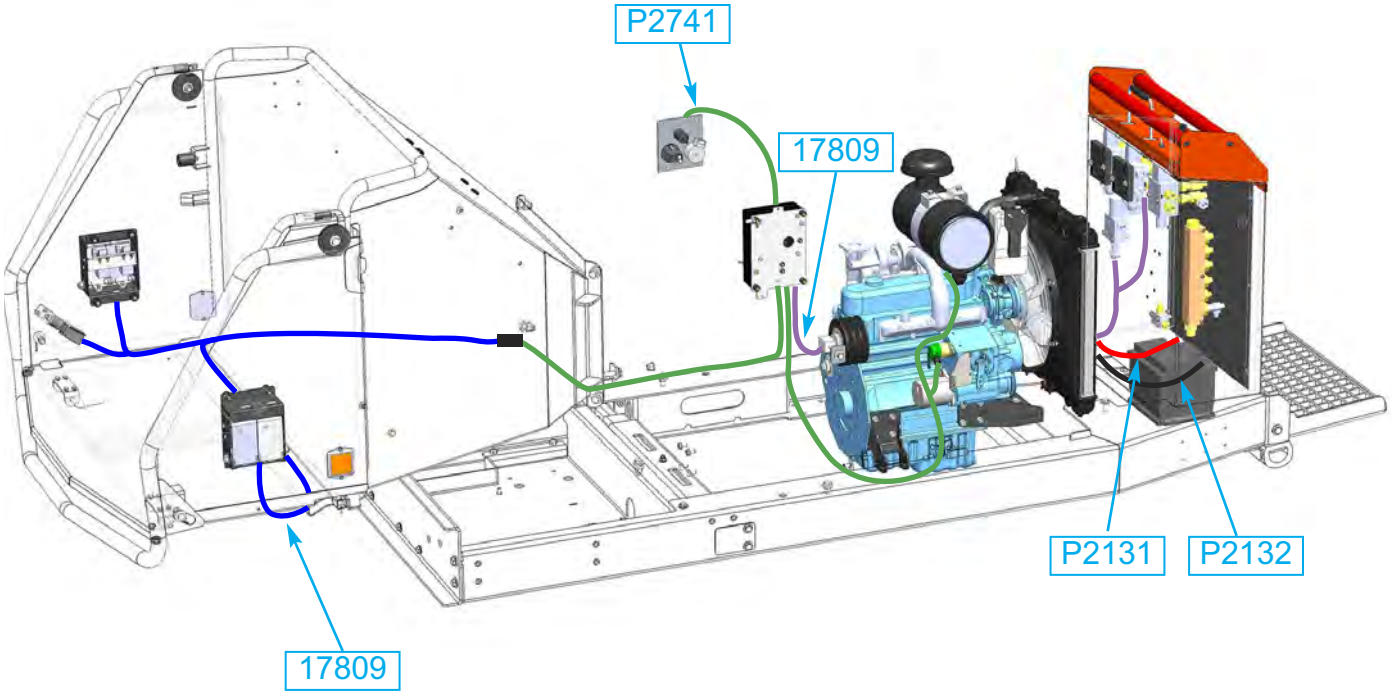
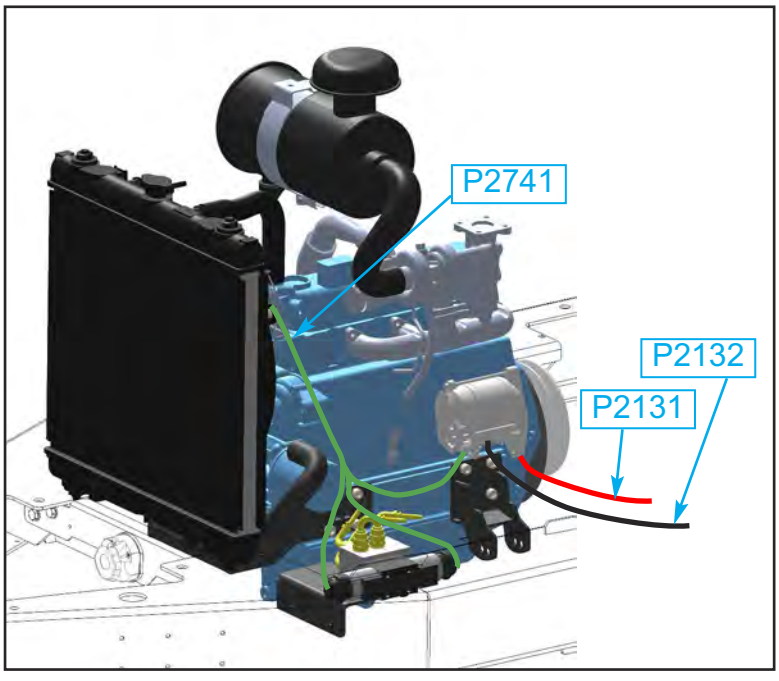
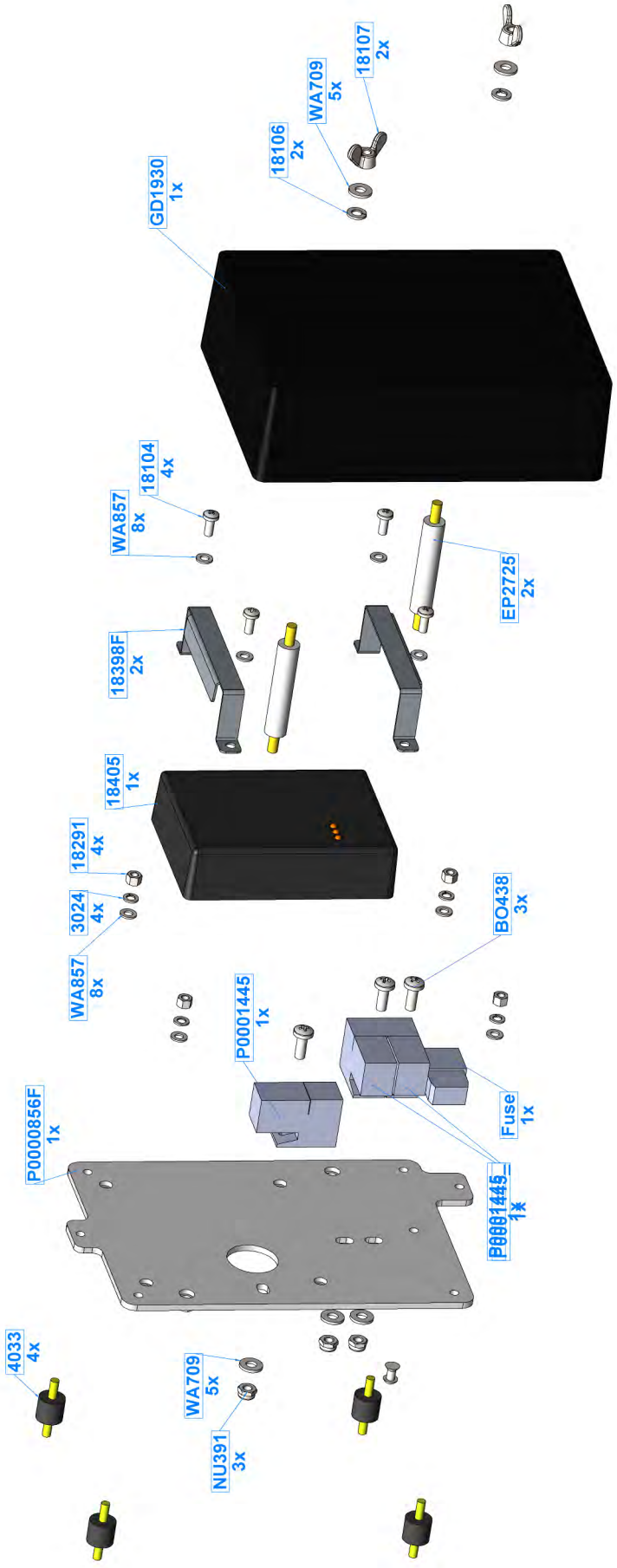
P0001826
1x
P0002690M
1x
P0002546M
1x


P2741
17809
P2131
P2132
17809


P2741
P2132
P2131


18107
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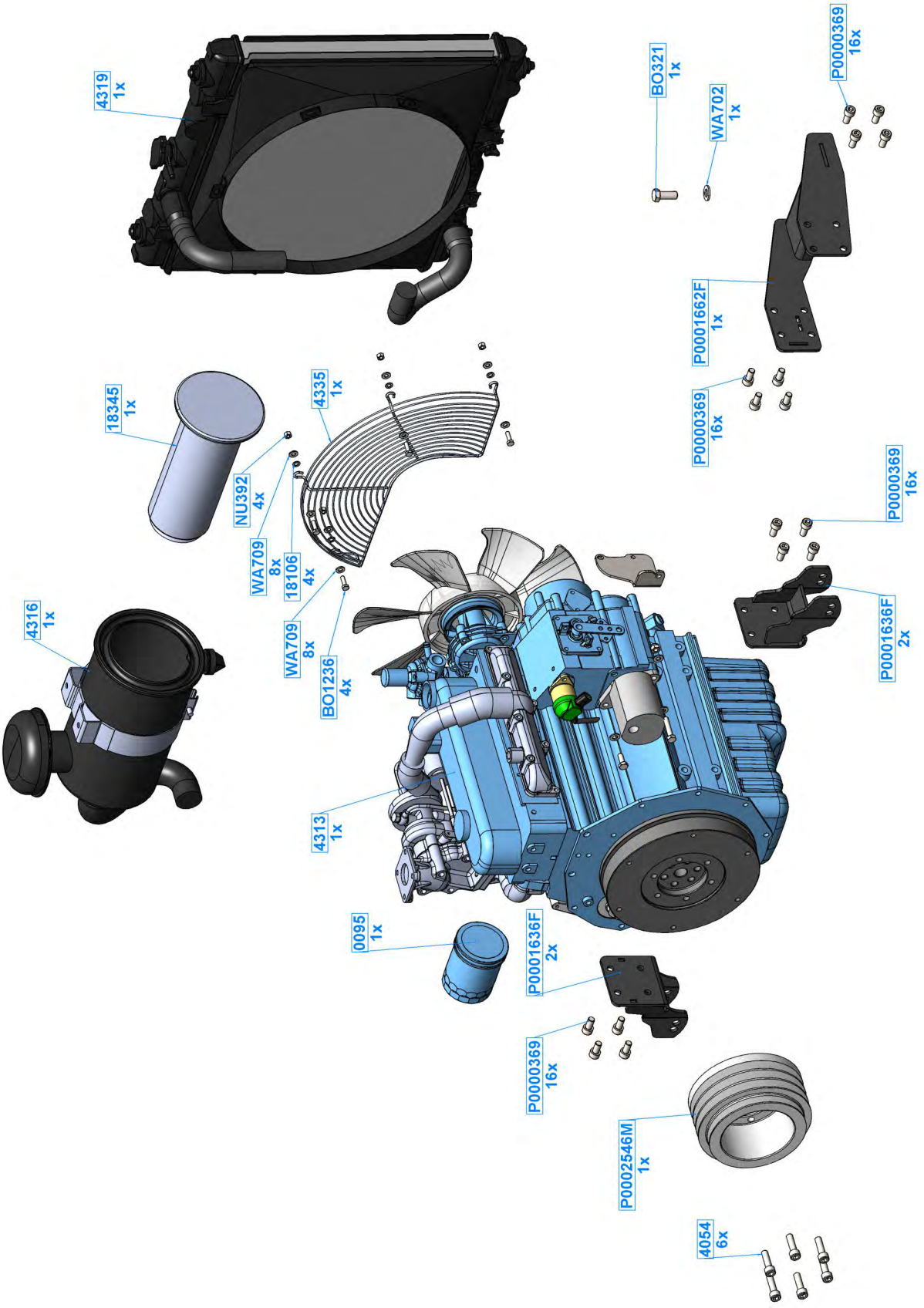
WA709
5x
18106
2x
GD1930
1x
18104
4x
WA857
8x
EP2725
2x
18398F
2x
18405
1x
18291
4x
3024
4x
WA857
8x
BO438
3x
P0001445
1x
Fuse
1x
P0000856F
1x
4033
4x
WA709
5x
NU391
3x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BO321 1x
WA702 1x
P0000369 16x
P0001662F 1x
P0000369 16x
18345 1x
4335 1x
NU392 4x
WA709 8x
18106 4x
WA709 8x
BO1236 4x
P0000369 16x
P0001636F 2x
4316 1x
4313 1x
0095 1x
P0001636F 2x
P0000369 16x
P0002546M 1x
4054 6x


P0001740 2x
P0002379F 1x
BO277 2x
WA702 2x
P0002521F 1x
WA711 2x
BO0346 2x
4320 1x
RI067 1x
0235 1x
BO360 4x
WA839 8x
P0002550F 1x
P0002365F 1x
2946 1x
P0002525F 1x
RI066 2x
P0002526F 1x
18104 4x
WA708 6x
2627 1x
P0002933F 1x
WA711 6x
BO0346 2x
BO435 5x
WA708 6x
WA839 8x
BO360 4x
NU052 2x
WA839 8x
P0001740 2x
18327_1 1x
WA711 4x
WA 1008 8x
NU476 4x
17988 3x
18456F 1x
BO350 4x
WA 1008 8x
17988 3x
BO435 5x
WA857 5x
BO878 2x
WA839 8x
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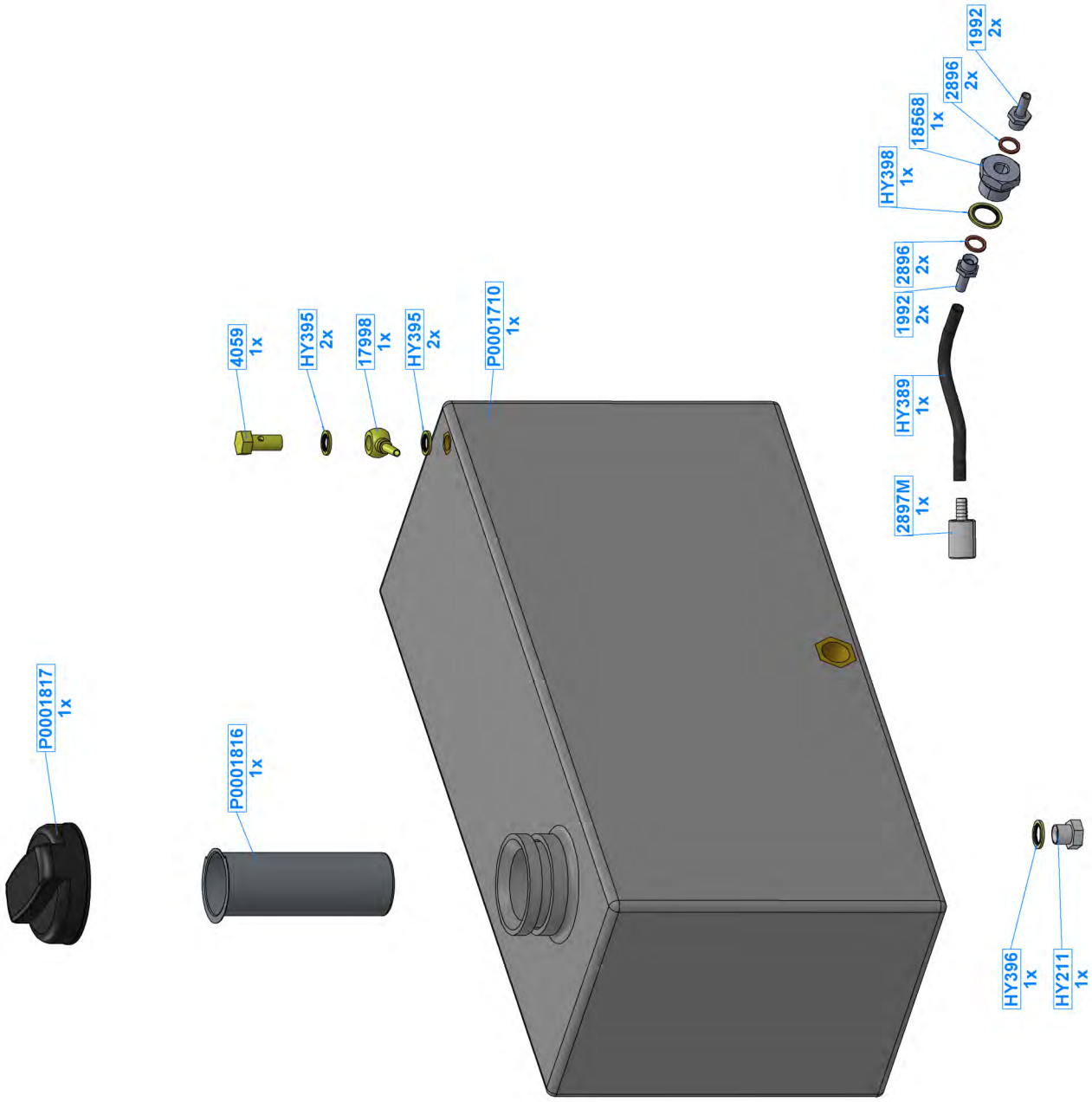
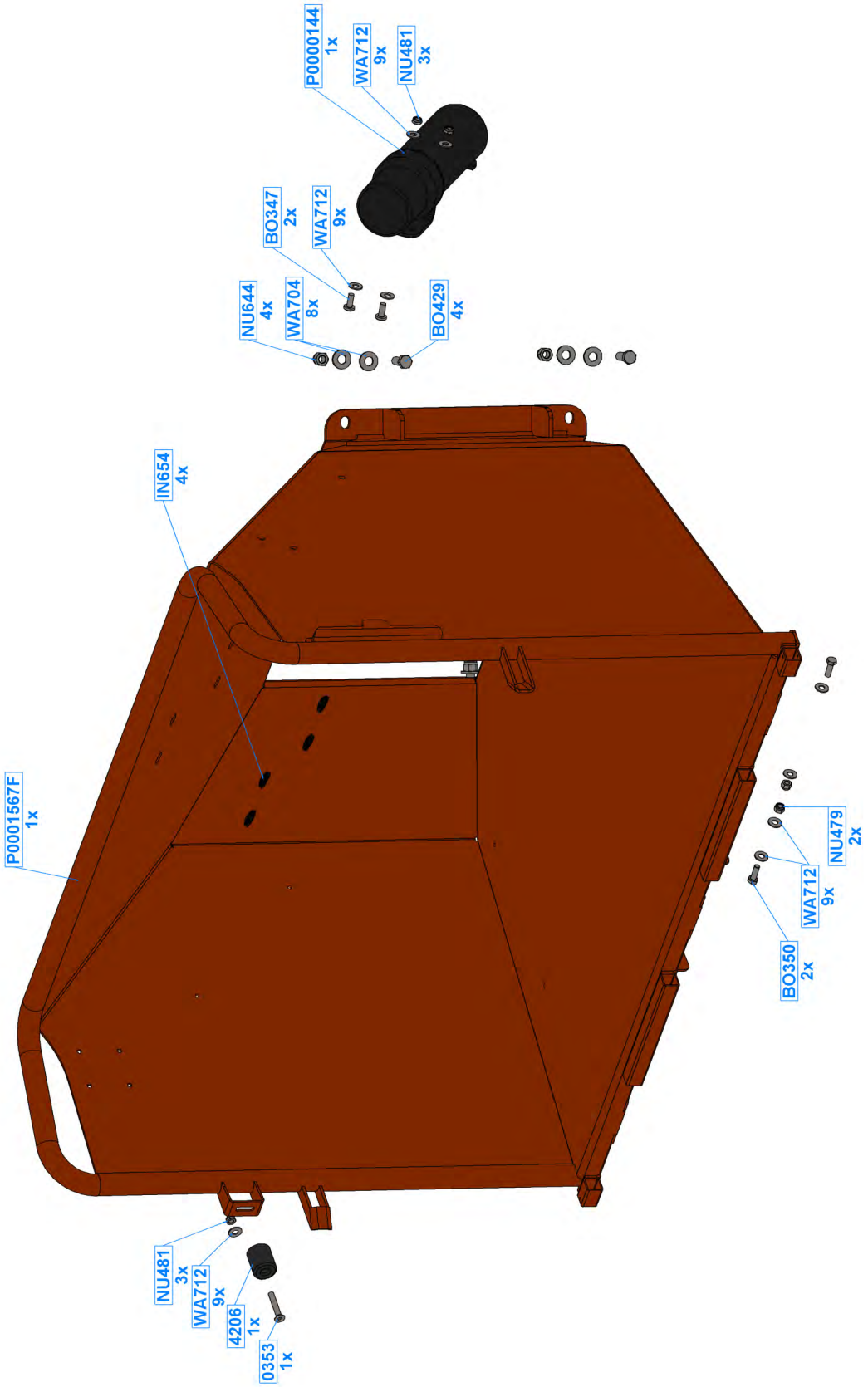
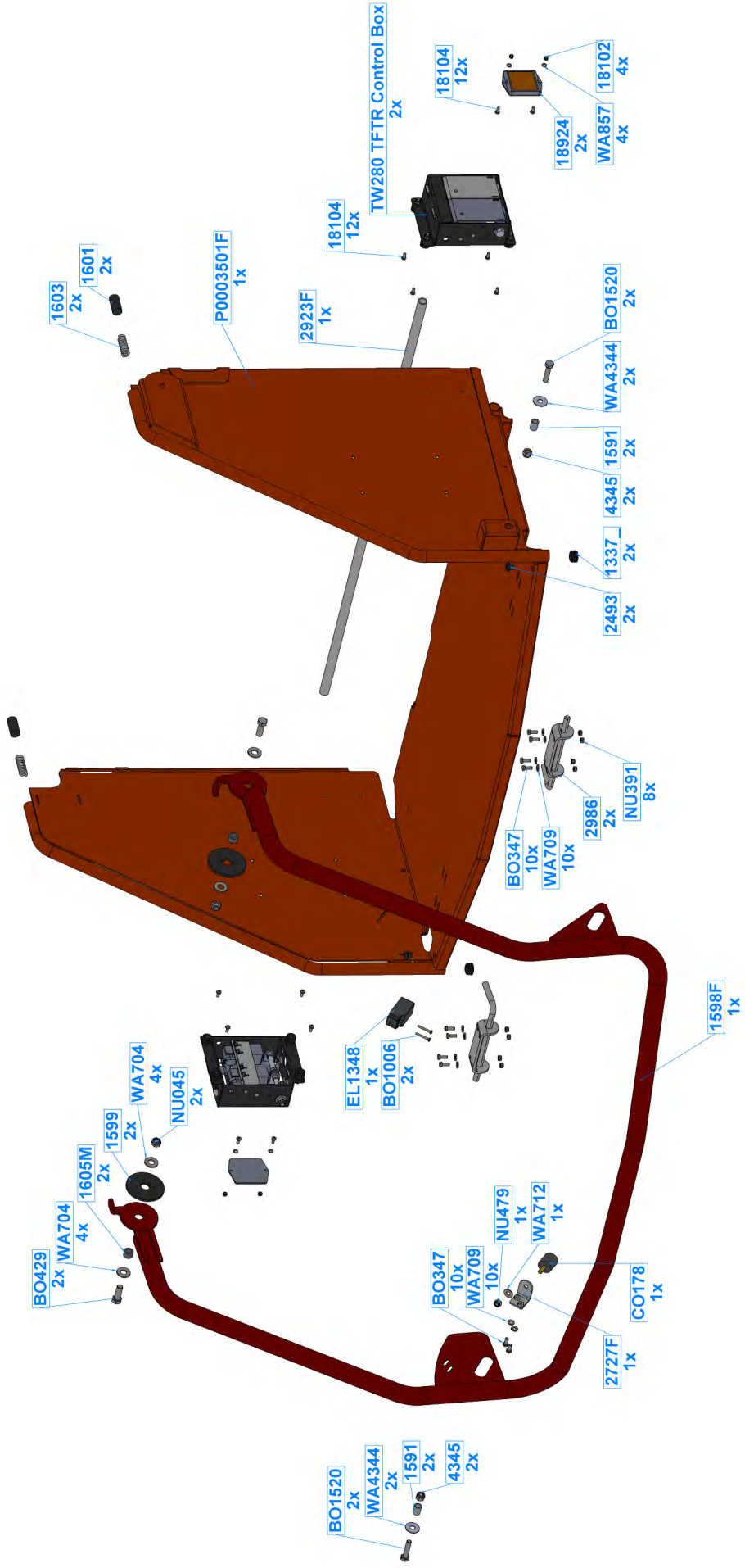
WA709 8x
BO347 8x
WA702 2x
BO277 2x
4343 8x
NU391 8x
P0002796 2x


1992 2x
2896 2x
18568 1x
HY398 1x
2896 2x
1992 2x
HY389 1x
2897M 1x
4059 1x
HY395 2x
17998 1x
HY395 2x
P0001710 1x
P0001817 1x
P0001816 1x
HY396 1x
HY211 1x


P0000144 1x
WA712 9x
NU481 3x
BO347 2x
WA712 9x
NU644 4x
WA704 8x
BO429 4x
IN654 4x
P0001567F 1x
NU479 2x
WA712 9x
BO350 2x
NU481 3x
WA712 9x
4206 1x
0353 1x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2986 2x
BO347 10x
WA709 10x
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EL1348 1x
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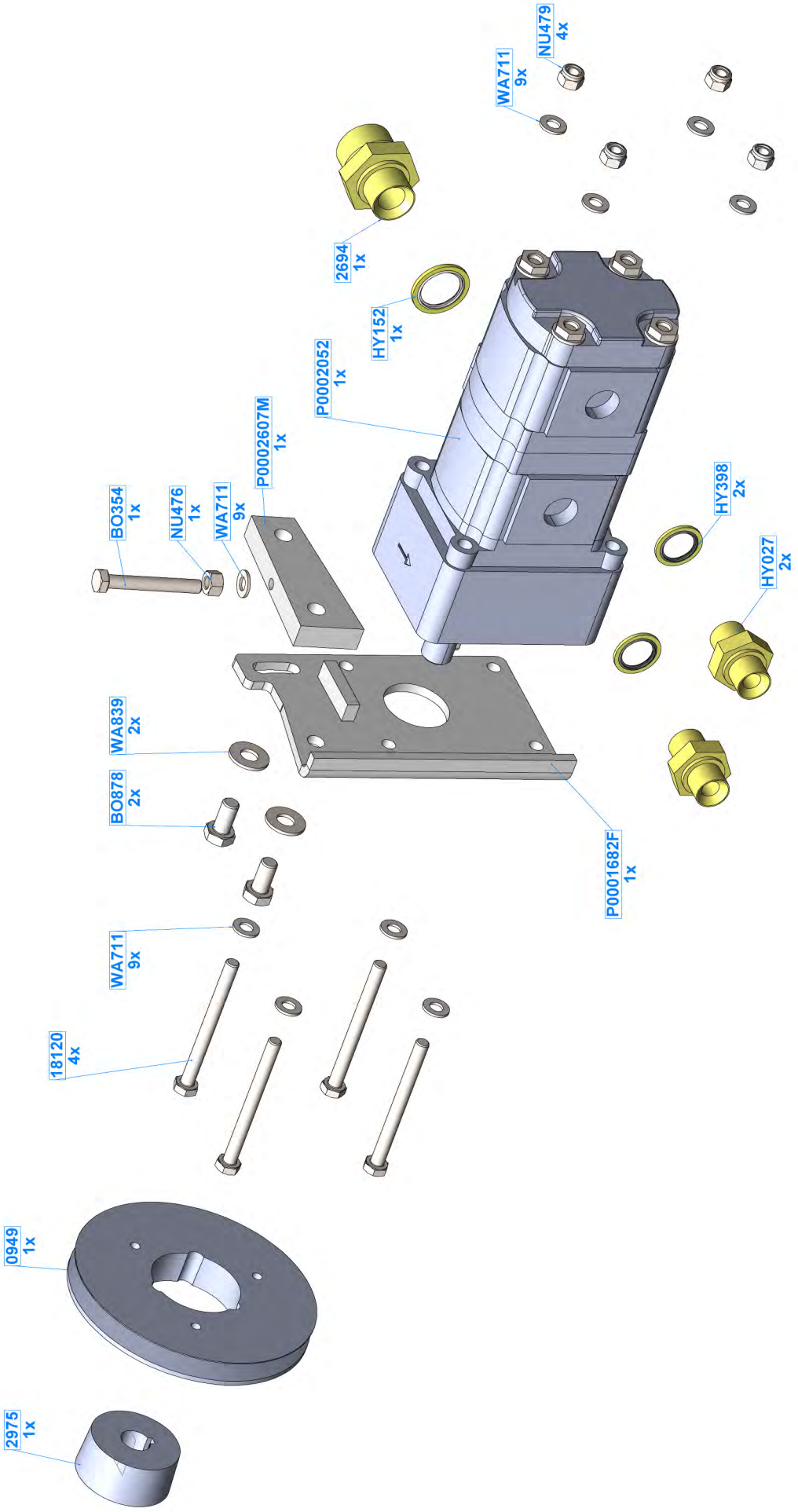
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WA711 9x
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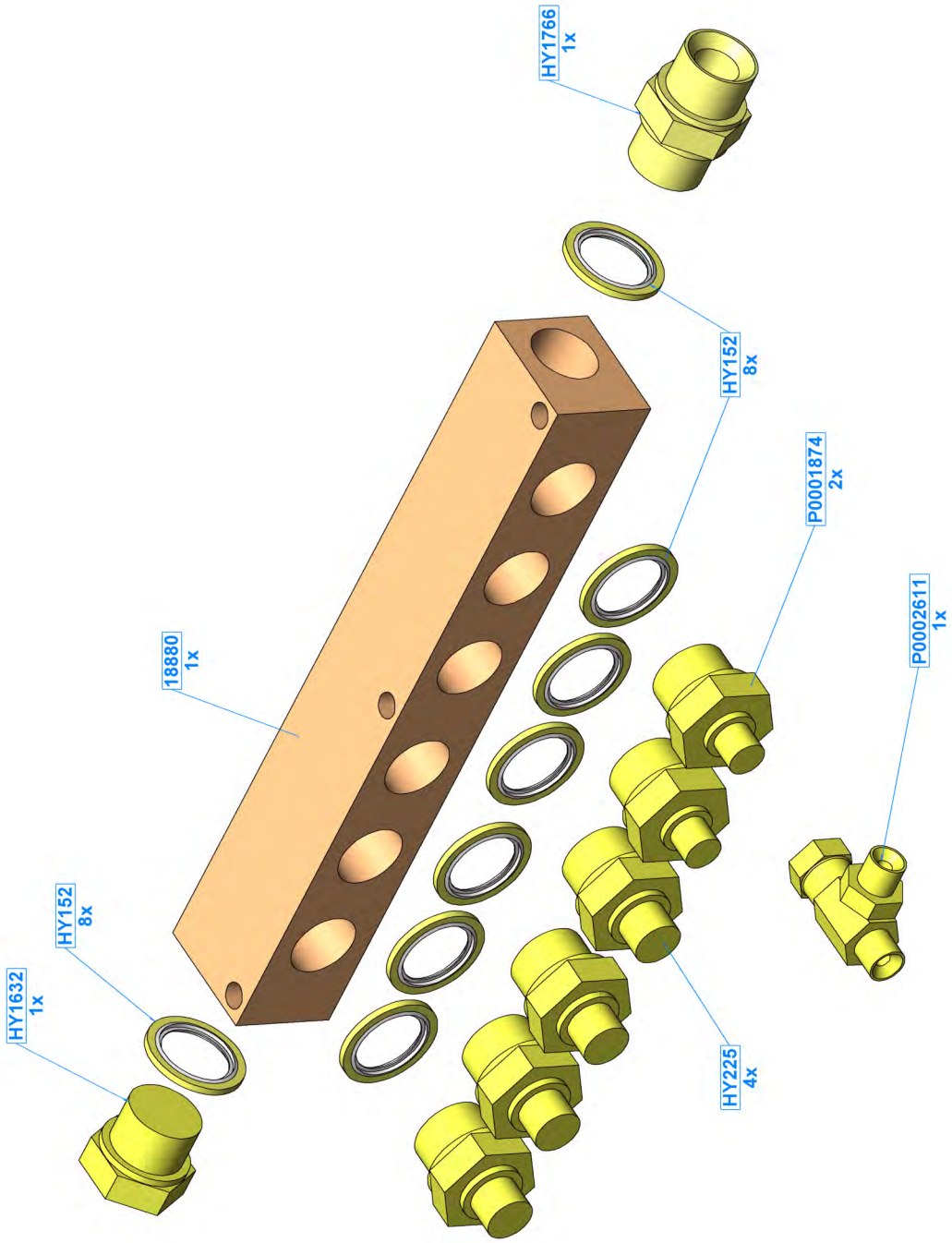
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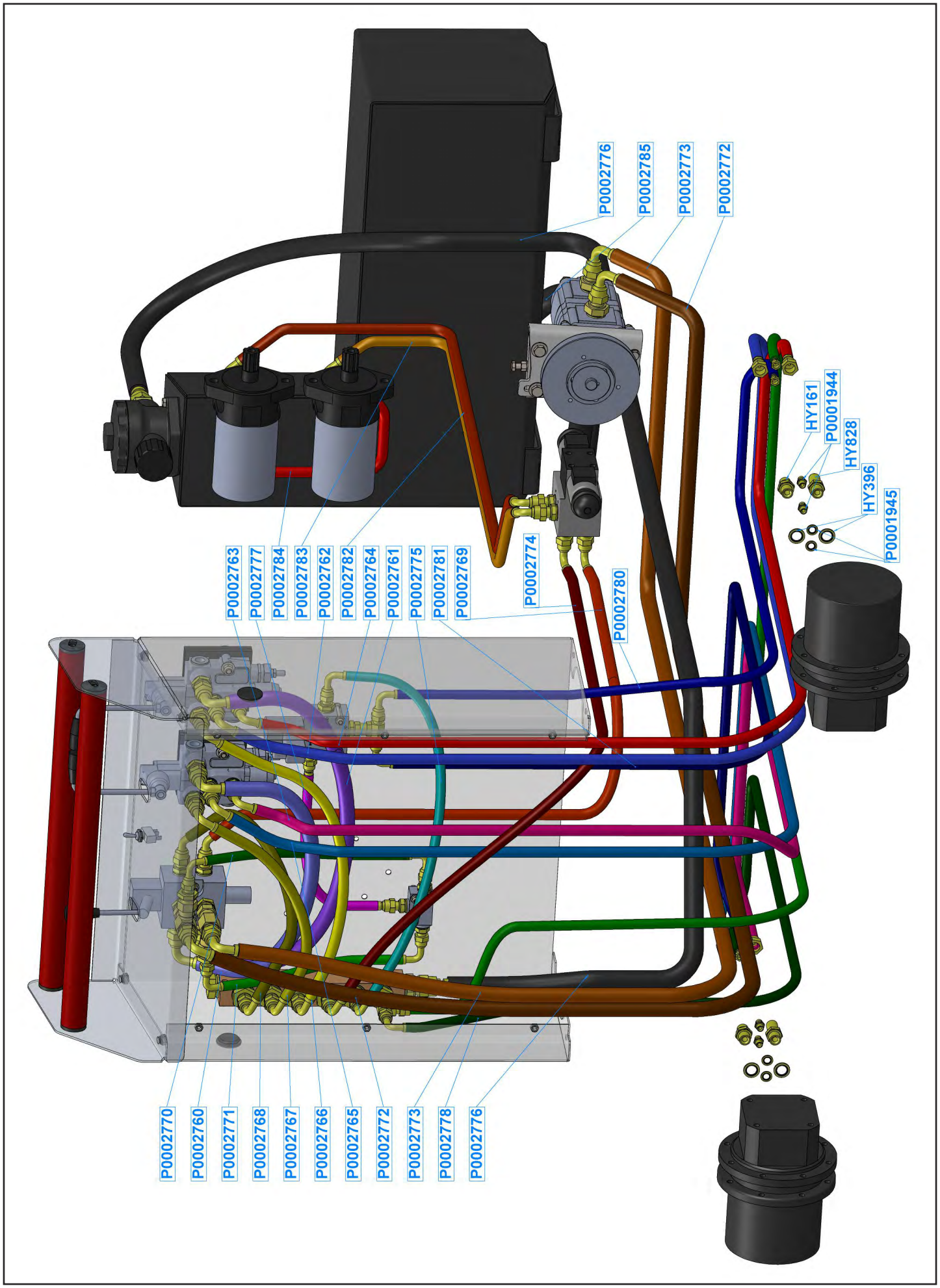
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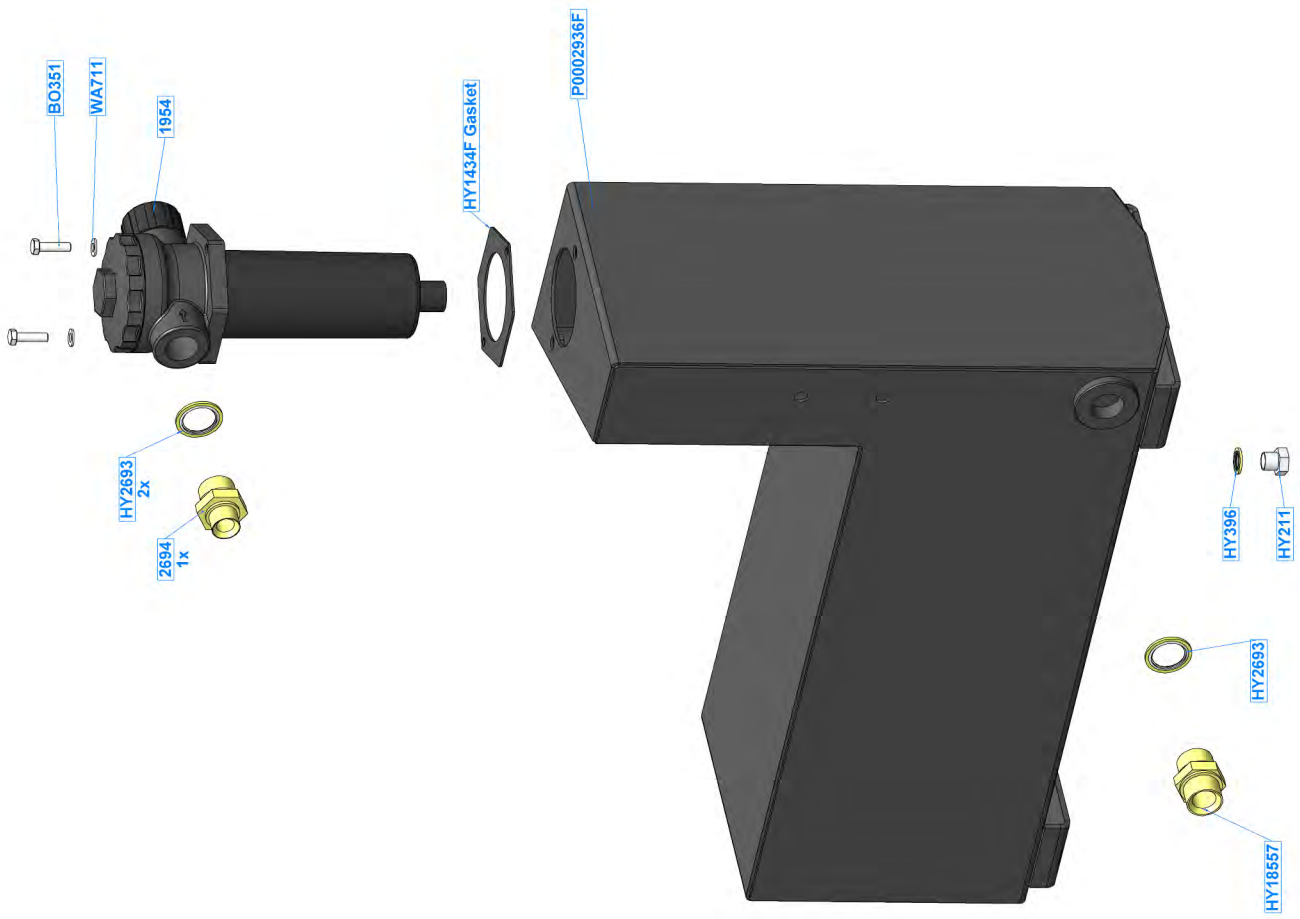
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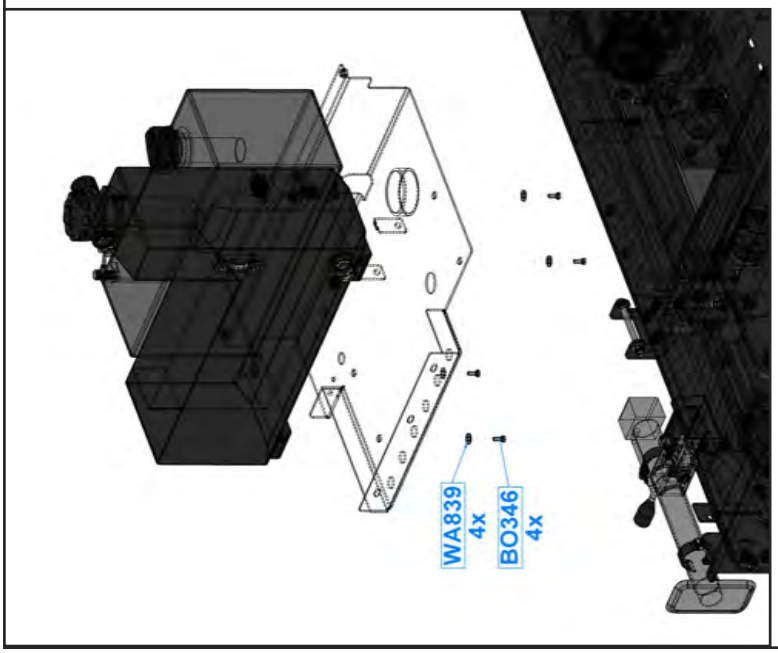
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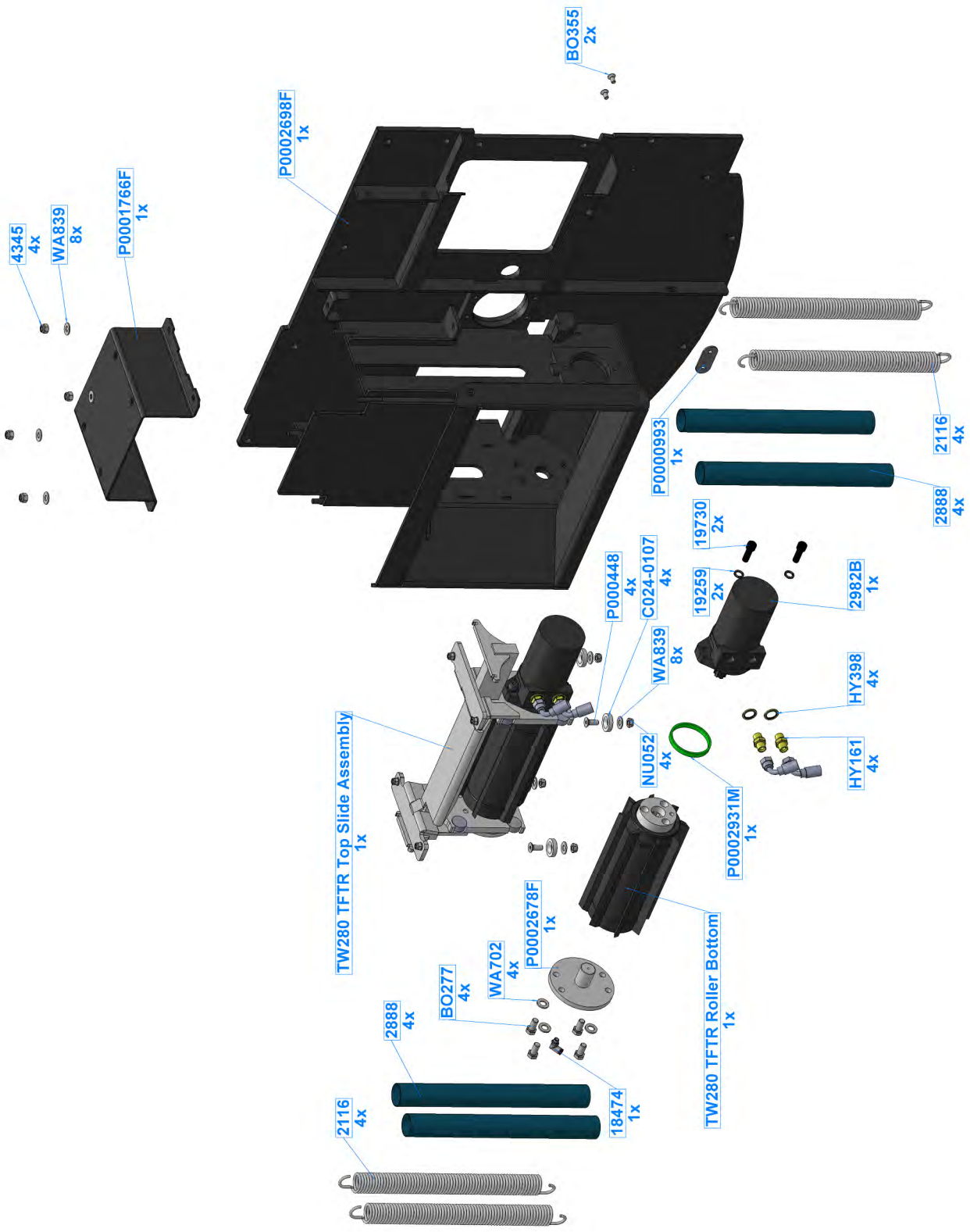
1163 Hydraulic Oil Level Guage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4x
C024-0107
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WA839
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HY398
4x
HY161
4x
NU052
4x
P0002931M
1x
TW280 TFTR Top Slide Assembly
1x
P0002678F
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TW280 TFTR Roller Bottom
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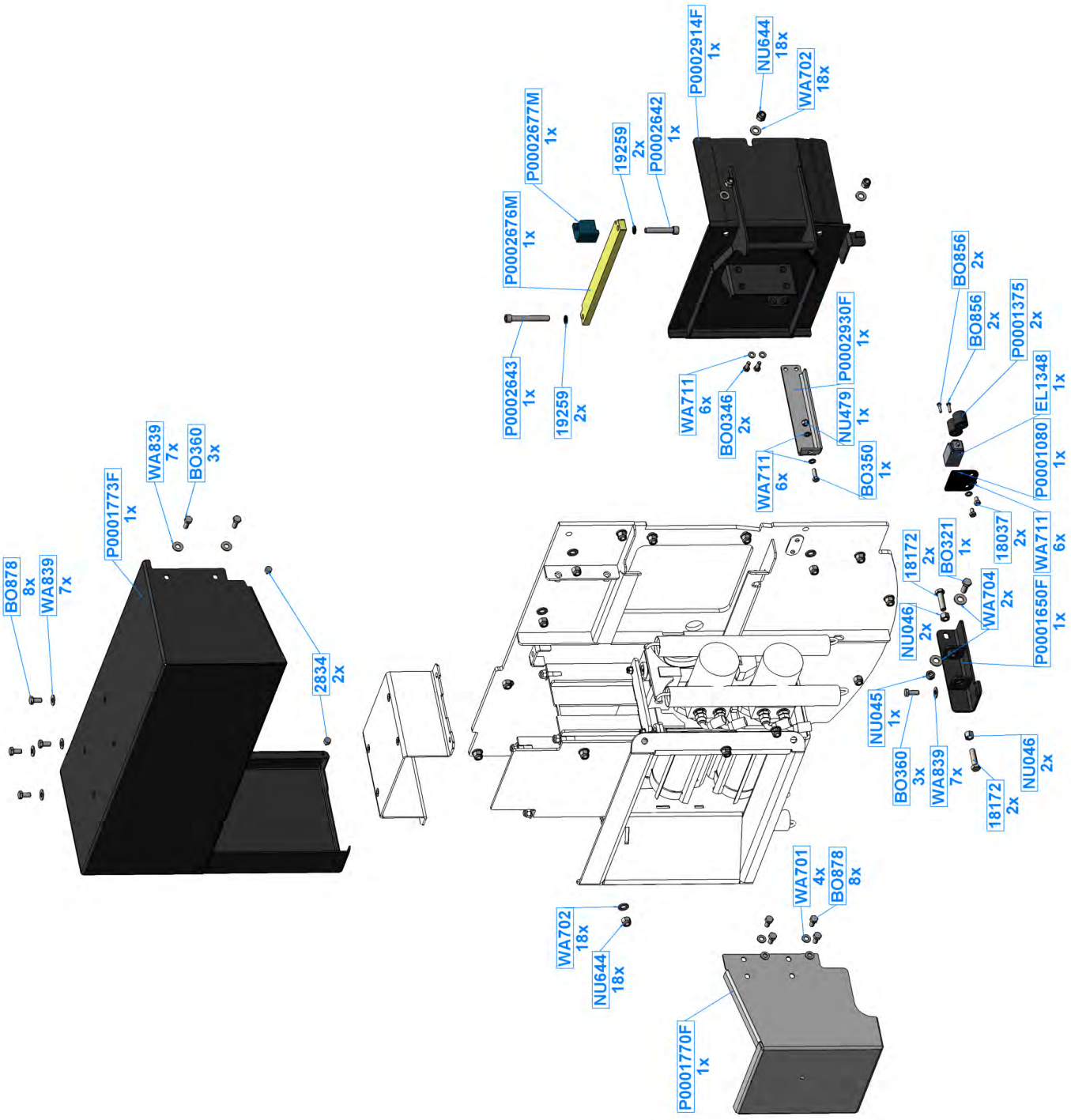
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NU479 1x
WA711 6x
BO350 1x
BO856 2x
BO856 2x
P0001375 2x
EL1348 1x
P0001080 1x
WA711 6x
18037 2x
BO321 1x
18172 2x
WA704 2x
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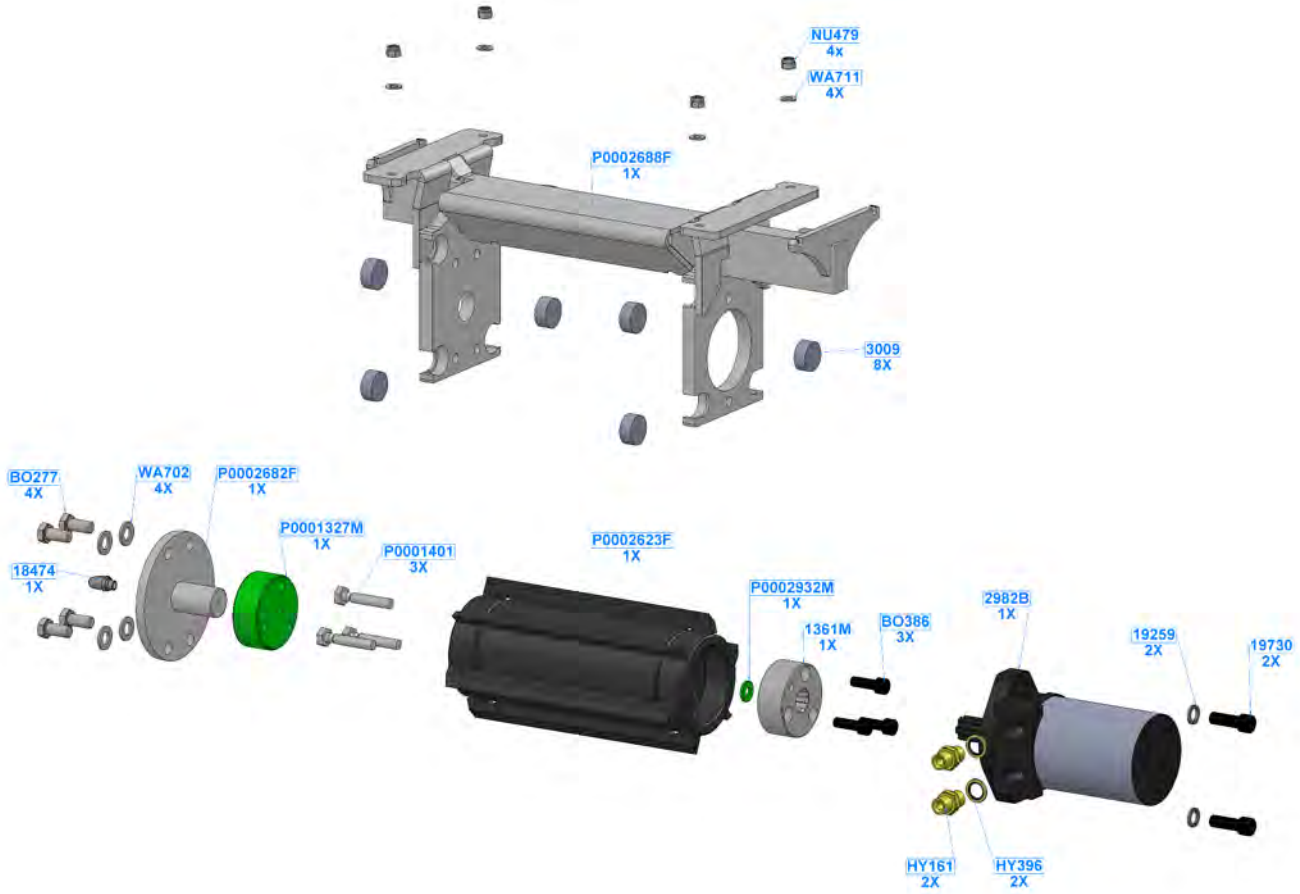
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P0001401
3X
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1X
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1361M
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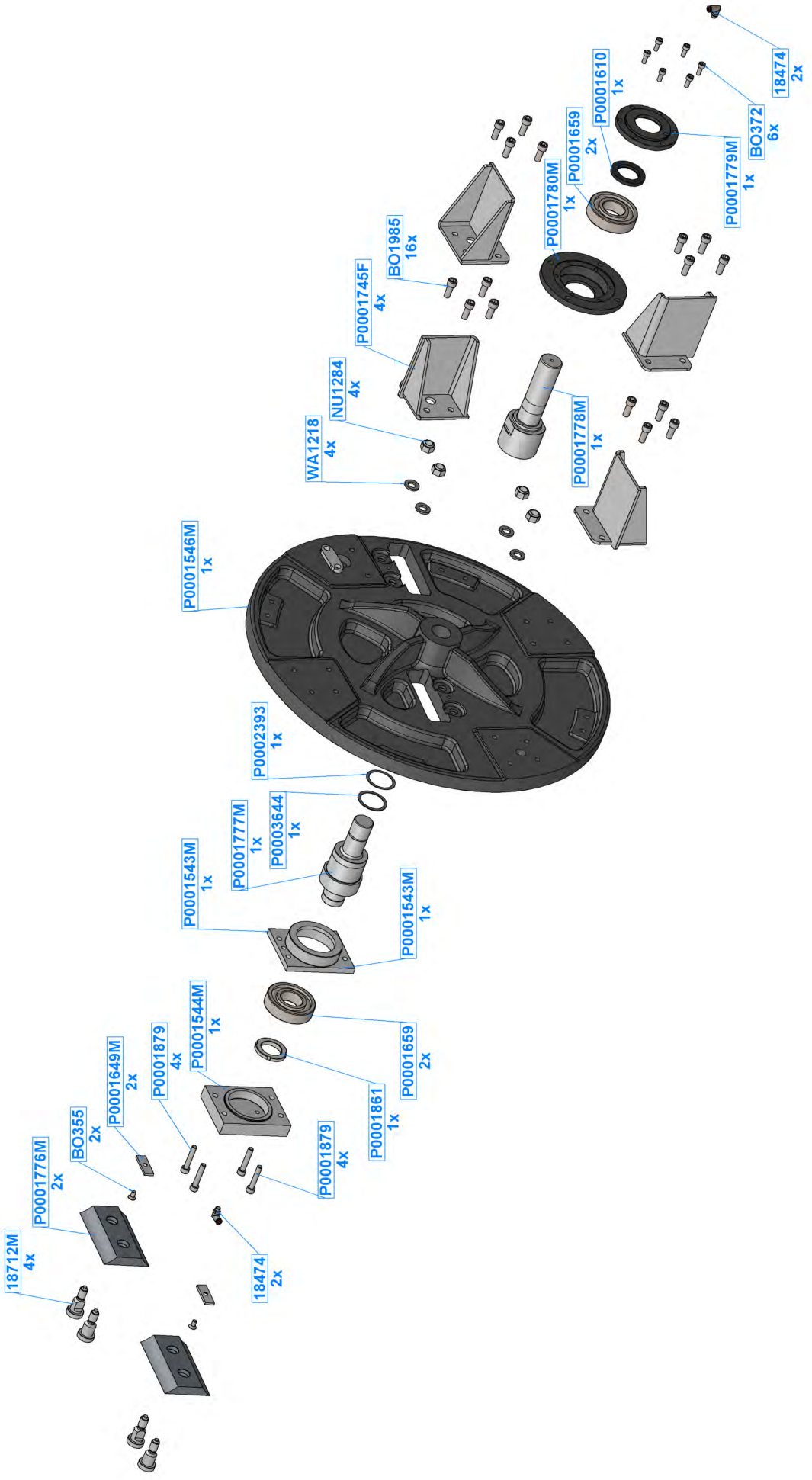
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P0003644 1x
P0001777M 1x
P0001543M 1x
P0001543M 1x
P0001659 2x
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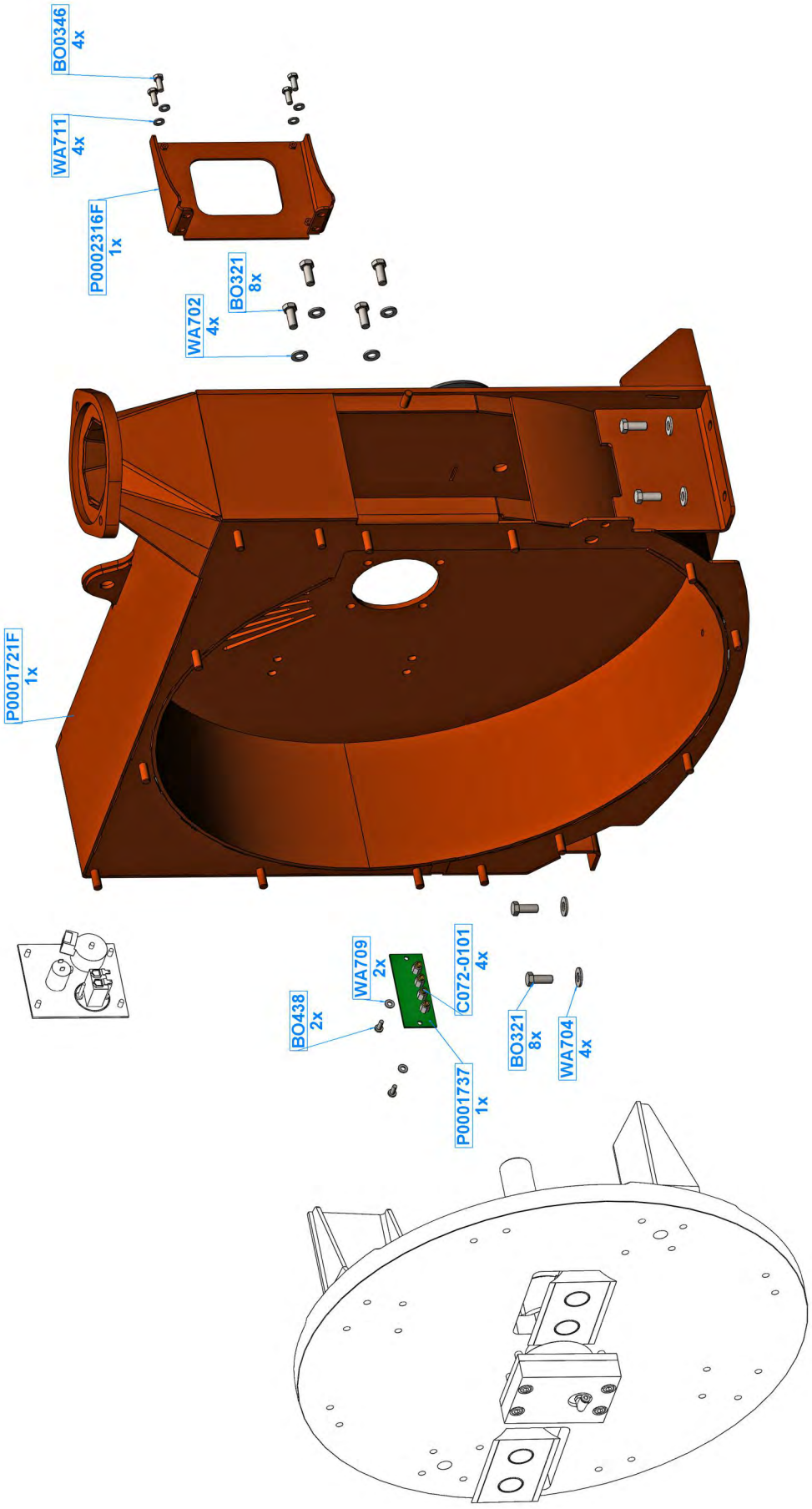
18474 2x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BO321 8x
WA702 4x
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WA709 2x
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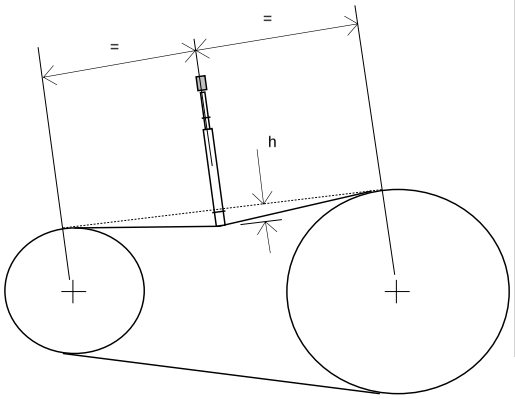
BO438 2x
BO321 8x
WA704 4x
P0001737 1x

TIMBERWOLF V-BELT TENSIONING DATA TABLE



METHOD:

1. SET THE DEFLECTION DISTANCE ON THE LOWER SCALE OF THE TENSION GAUGE SO THAT THE UNDERSIDE OF THE 'O'-RING EQUALS THE 'h' VALUE GIVEN IN THE TABLE BELOW

2. ENSURE THAT THE DEFLECTION FORCE SCALE IS ZERO'D BY PUSHING THE UPPER 'O'-RING ALL THE WAY DOWN

3. PLACE THE TENSION GAUGE IN THE CENTRE OF THE BELT SPAN AS SHOWN IN THE DIAGRAM LEFT

4. PRESS DOWNWARDS ON THE RUBBER BUFFER, DEFLECTING THE BELT UNTIL THE UNDERSIDE OF THE LOWER O'-RING IS LEVEL WITH THE BELT BEHIND (USE A STRAIGHT EDGE IF THERE IS ONLY 1 BELT)

5. TAKE THE READING FROM THE DEFLECTION SCALE OF THE TENSION METER (READ AT THE LOWER EDGE OF THE 'O'-RING) & COMPARE THIS VALUE WITH THAT GIVEN IN THE TABLE BELOW

6. TIGHTEN OR LOOSEN BELTS AS REQUIRED FOLLOWING PROCEDURE GIVEN IN THE OPERATOR'S MANUAL

TENSION GAUGES ARE AVAILABLE FROM TIMBERWOLF SPARES, QUOTING PART No. 18091

TIPS ON BELT TIGHTENING:

A) THERE WILL NORMALLY BE A RAPID DROP IN TENSION DURING THE RUN-IN PERIOD FOR NEW BELTS. WHEN NEW BELTS ARE FITTED, CHECK THE TENSION EVERY 2-3 HOURS & ADJUST UNTIL THE TENSION REMAINS CONSTANT

B) THE BEST TENSION FOR V-BELT DRIVES IS THE LOWEST TENSION AT WHICH THE BELTS DO NOT SLIP OR RATCHET UNDER THE HIGHEST LOAD CONDITION

C) TOO MUCH TENSION SHORTENS BELT & BEARING LIFE

D) TOO LITTLE TENSION WILL AFFECT THE PERFORMANCE OF YOUR MACHINE ESPECIALLY IN RESPECT OF NO-STRESS DEVICES

E) ENSURE THAT BELT DRIVES ARE KEPT FREE OF ANY FOREIGN MATERIALS

F) IF A BELT SLIPS - TIGHTEN IT!

	TW MODEL No.:			13/75G	18/100G	125PH	160PH	230DHB	280TDHB	230VTR	280TFTR	190TVGTR	350DHB(t)	PTO100	PTO150	S426 SHREDDER	S426TFTR SHREDDER	PTO S426 SHREDDER
ROTOR BELTS	Belt Mfr / Type			Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN	Gates Super HC-MN
	Belt Pitch Designation			SPA	SPA	SPA	SPA	SPA	SPB	SPA	SPA	SPA	SPB	SPA	SPA	SPB	SPB	SPB
	Belt Length			900.0	1060.0	1060.0	1027.0	1232.0	1600.0	1232.0	1232.0	1232.0	2530.0	900.0	900.0	2120.0	2120.0	1700.0
	Belt deflection*	**=**	**h**	**4.0**	**4.0**	**3.5**	**2.0**	**4.0**	**3.7**	**4.0**	**4.0**	**4.0**	**8.0**	**4.0**	**4.0**	**8.0**	**8.0**	**6.0**
	Force reading (Kgf)	**New belt**		**3.4 - 3.6**	**3.1 - 3.3**	**3.3 - 3.6**	**3.75 - 4**	**3.9 - 4.1**	**2.3 - 2.5**	**3.9 - 4.1**	**3.9 - 4.1**	**3.9 - 4.1**	**3.3 - 3.6**	**3.3 - 3.5**	**3.8 - 4.0**	**3.3 - 3.5***	**3.3 - 3.5**	**6.5 - 6.9**
		Used belt		3.0 - 3.2	2.8 - 3.0	2.8 - 3.1	3.2 - 3.5	3.4 - 3.6	2 -2.2	3.4 - 3.6	3.4 - 3.6	3.4 - 3.6	2.9 - 3.1	2.9 - 3.0	3.3 - 3.5	2.9 - 3.1*	2.9 - 3.1	5.6 - 6.0
PUMP BELT	Belt Mfr / Type			N/A	N/A	Gates Super HC-MN	Gates Super HC-MN	N/A	N/A	Quad Power III	Quad Power III	Gates Super HC-MN	N/A	N/A	Gates Super HC-MN	N/A	Gates Super HC-MN	N/A
	Belt Pitch Designation					SPA	SPA			SPA	XPA	SPA			SPA		SPA	
	Belt Length					950.0	934.0			850.0	982.0	950.0			925.0		1060.0	
	Belt deflection	**=**	**h**			**4.0**	**3.0**			**4.0**	**4.0**	**4.0**			**4.0**		**4.0**	
	Force reading (Kgf)	**New belt**				**1.9 - 2.0**	**3.4 - 3.7**			**2.3 - 2.4**	**2.3 - 2.4**	**2.3 - 2.4**			**2.0 - 2.2**		**2.7 - 2.9**	
		Used belt				1.7 - 1.8	2.9 - 3.2			2.0 - 2.1	2.0 - 2.1	2.0 - 2.2			1.8 - 2.0		2.3 - 2.5	

*Belt deflection between engine pulley and belt tensioner

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