FÖRST™

ST6D42

Operation & Maintenance Manual

English

CE

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Contents

1.0 Introduction

Thank you for becoming the owner of this Redwood Global Ltd, Först ST6D wood chipping machine. By observing the contents of this manual, we hope the chipper gives safe and productive service. This user manual is intended for the owner/operator to safely and effectively operate this chipper and carry out routine maintenance between services. This is not a comprehensive service manual. See Service Schedule for routine maintenance and when to take the chipper to a service specialist. For engine maintenance, please refer to the engine manual supplied with this chipper.

This chipper has been through a pre-delivery inspection before leaving the factory and is ready to use.

Before use and as a minimum, the safety and chipper operation sections covered in Chapter 2 be read and understood. Failure to do so could result in serious injury or loss of life to the operator and others nearby.

Also, damage to property and this chipper may occur. Please observe and obey all warning signs (decals) located on the chipper. Their meaning is covered in this manual under decals.

All personnel working with this chipper must be adequately trained in its use and most importantly, follow the advice on safe working practices.

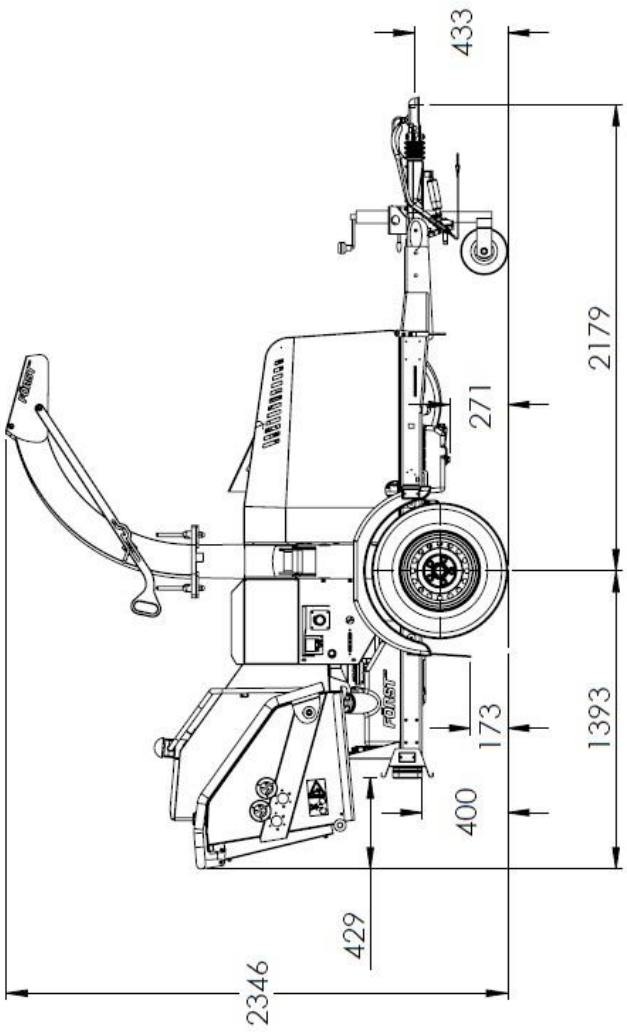
Redwood Global Ltd endeavour to continuously develop and improve its products. They reserve the right to make changes at any time, without notice or incurring any obligation.

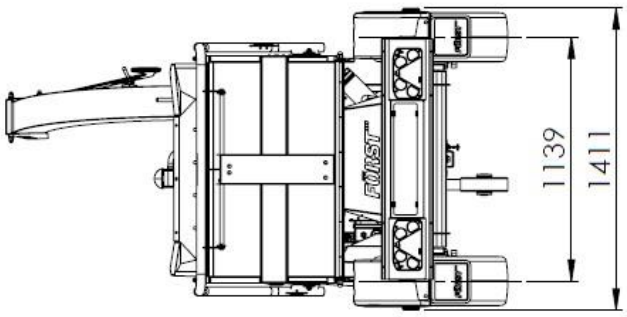
Continuous improvement will affect chipper design and production so there may be minor discrepancies between the actual product and this manual.

This manual must remain with the chipper for reference by operators and includes hiring or if the chipper is resold.

1.1 Purpose of Chipper

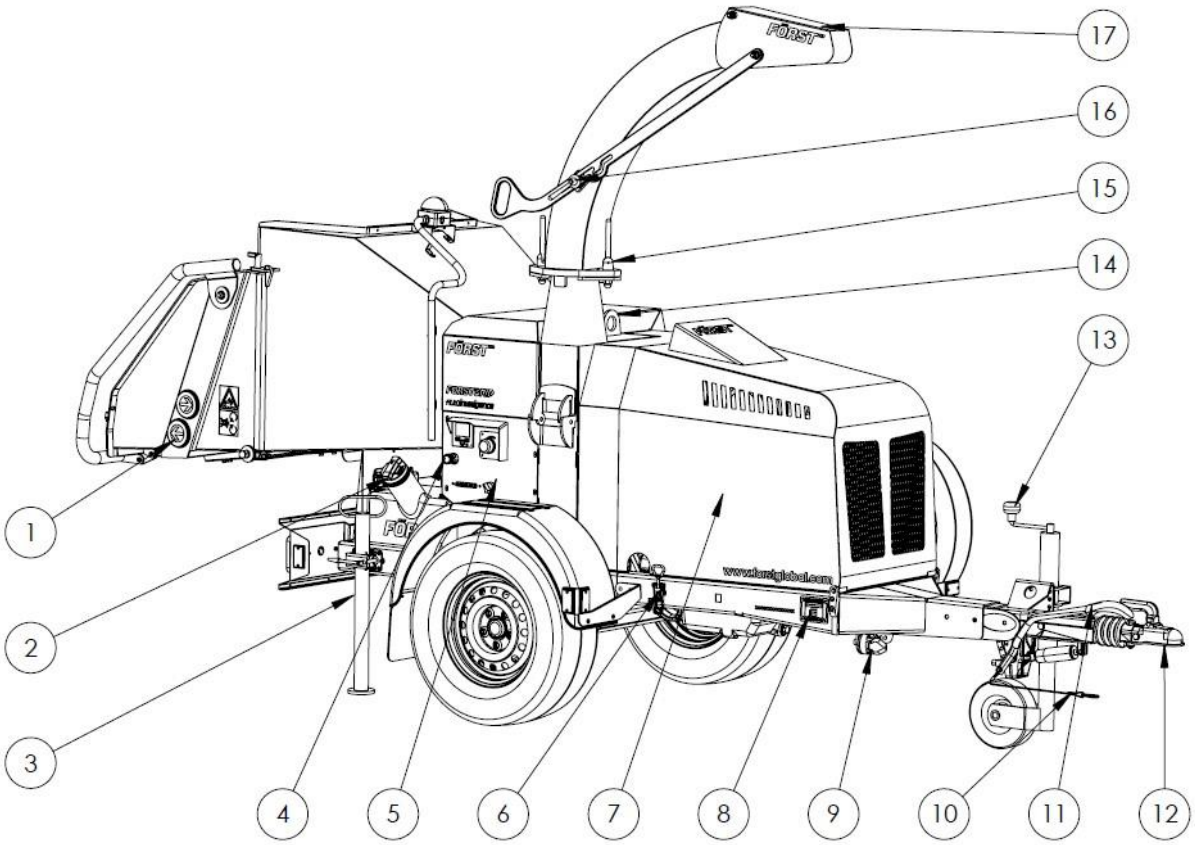
The Först ST6D is designed to reduce wood material up to 150mm diameter to woodchip. This chipper is capable of processing up to 5 tonnes of wood per hour.



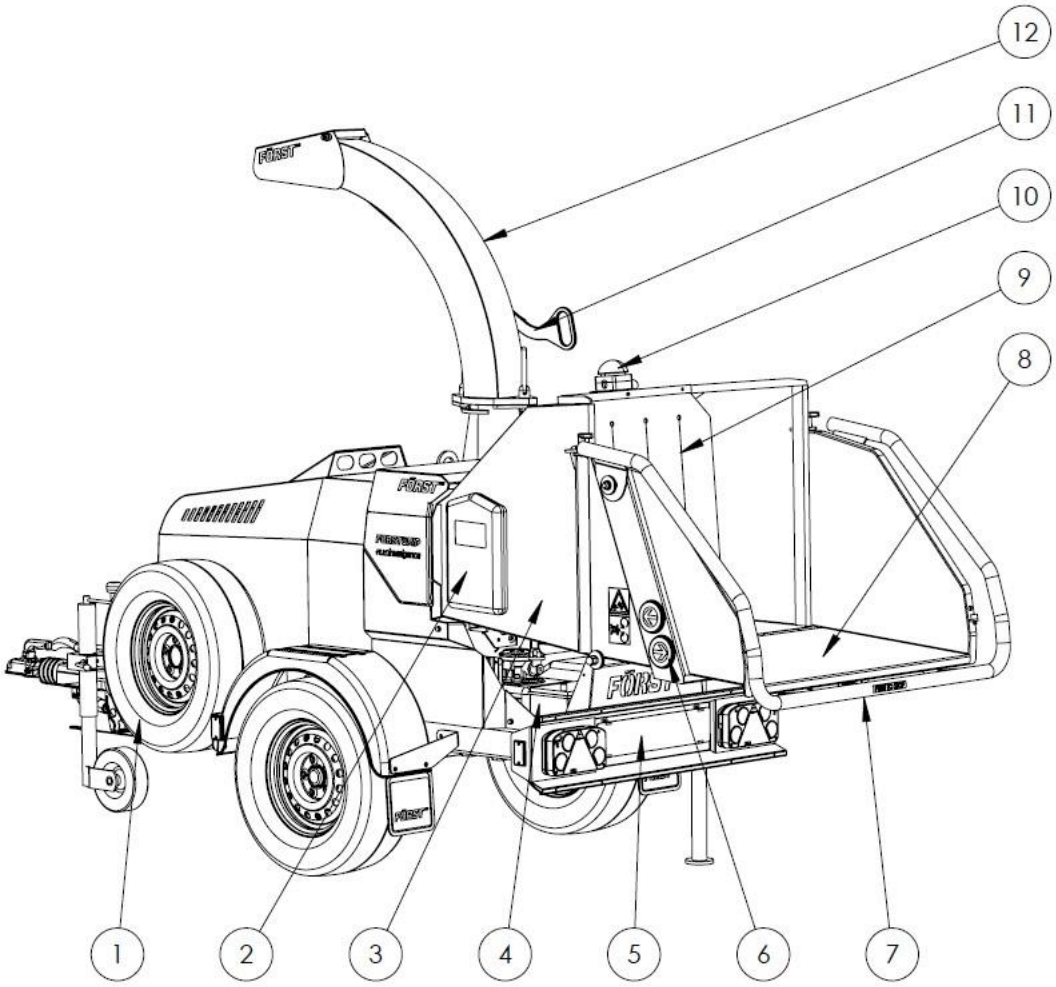


Engine	Doosan D18
Max. power	31kW (42hp)
Cooling	Water Cooled
Kerb weight	1165kg
Starting	Electric
Roller Feed	Twin hydraulic motors
Max. material diameter	150mm
Fuel Capacity	30 litres
Hydraulic Oil Capacity	17 litres
Material processing	5 tonnes/hour
Fuel type	EN590 Diesel

1.2 Exterior Components



1. Feed touch sensors
2. Fuel tank
3. Prop stand
4. Control valve speed adjust
5. Control panel
6. Bonnet latch
7. Bonnet
8. Statutory plate & VIN
9. Light socket
10. Breakaway cable
11. Handbrake
12. Tow hitch
13. Jockey wheel handle
14. Lifting point
15. Chute rotation clamp
16. Chute handle clamp
17. Chute hood



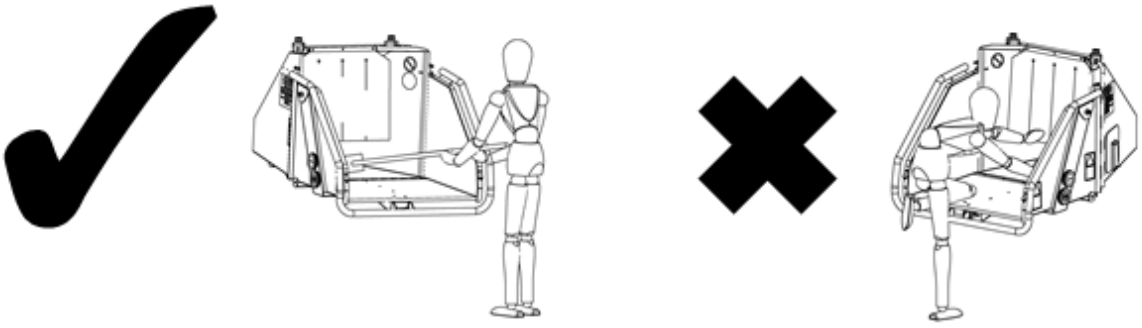
1. Spare wheel
2. Document box
3. Hopper
4. Battery
5. Number plate
6. Feed touch sensors
7. Stop bar
8. Hopper tray
9. Safety curtain
10. Emergency stop
11. Chute handle
12. Chute

2.0 Safety

2.1 Safety Working

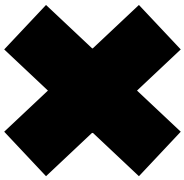
Before using this chipper, make sure that you are trained and fluent in its operation. Know the location of and how to use all the safety features. Know how to control the feed and stop the chipper in an emergency. Be familiar with the hazards and safe working practices to prevent injury and damage to property and chipper. Also be aware of the legal restrictions for personnel and towing with vehicles.

- The minimum age for service personnel is 18 years. Personnel aged 16 can use the chipper for training under supervision by a suitably trained person of 18 years or over.
- Operators and personnel working with this chipper must not be under the influence of alcohol, drugs or medication that would impair judgement, concentration or reaction times. Excessive tiredness is also a risk.
- In use, woodchip and debris are ejected with considerable force from the chute and can travel up to 10m. Make sure the chute directs woodchip to a safe location so that no one can be harmed or property damaged. Do not allow discharge to be directed onto roads or public rights of way.
- Maintain a 10m exclusion zone around the chipper and clearly mark if in a public area. Keep this area free of material build up.
- Make sure the chipper is on even, level and stable ground and cannot move or topple when in use. Use wheel chocks if necessary.
- Keep children and animals well away from the working area.
- The chipper operator must wear protective equipment:
  - Chainsaw safety helmet (EN 397) with mesh visor (EN 1731)
  - Correctly rated ear defenders (EN 352)
  - Work gloves with elasticated wrist bands.
  - Steel toe cap boots (EN345-1)
  - Close fitting heavy duty non-snag clothing. Hi-viz clothing (EN 471) if needed.
  - Protect breathing with a face mask if appropriate. Some plant material can give off harmful dust and poisonous vapours. This may cause respiratory problems or serious poisoning. Check the material to be processed before starting.
- **DO NOT** wear rings, bracelets, watches, jewellery or anything that could be caught on the material being fed and draw you into the chipper.
- All personnel operating or feeding material into the chipper must wear heavy duty non-snag clothing to help prevent being caught on material and drawn into the chipper. The feed mechanism of this chipper uses high powered hydraulic motors to drive sharp toothed rollers that feed material into the cutting blades. **DO NOT** take risks with it. **NEVER ASSIST ANY MATERIAL INTO THE FEED ROLLERS WITH HANDS OR FEET**. Use the wooden paddle or further long material if necessary.
- Never climb onto the hopper area while the chipper is in operation.
- **CAUTION!** – Keep hands and feet outside the hopper. Do not attempt to force material into the chipper by hand – use a piece of wood if necessary.
- Material can be forcibly ejected from the hopper towards the operator. Ensure full head and face protection is worn.
- Very twisted material should be trimmed into manageable pieces. Failure to do this can result in material extending outside the hopper, moving aggressively side-to-side creating a hazard to the operator.
- Do not try to force material over 150mm in diameter into the chipper.
- Carefully site the chipper so operators can work furthest from any local danger. For example, on a road side, place chipper so operators work on the verge and not in the road exposed to traffic



2.2 DO's and DON'Ts

- **DO** ensure that the starting of the chipper can cause no hazard before starting. i.e. no persons are in the hopper or in any other danger aera
- **DO** stop the chipper before making any adjustments, refuelling or cleaning
- **DO** make sure the chipper has stopped rotating and remove the ignition key before any maintenance or the chipper is left unattended. The belts and pulley are to be used to ensure visually that the chipper has stopped rotating
- **DO** ensure that the chipper is level, well supported and cannot move during use
- **DO** run the chipper at full throttle
- **DO** conduct regular chipper checks for visual fluid leaks
- **DO** take regular breaks. Wearing protective equipment can be hot and tiring leading to a lack of concentration, increasing the risk of having an accident
- **DO** keep hands, feet and clothing out of feed area, chute and moving parts
- **DO** always check the **all** of controls and safety devices (emergency stops, stop bar) **before** feeding any wood into the chipper
- **DO** remove any additional debris attached to the wood before commencing work i.e. nails, wire, rope etc



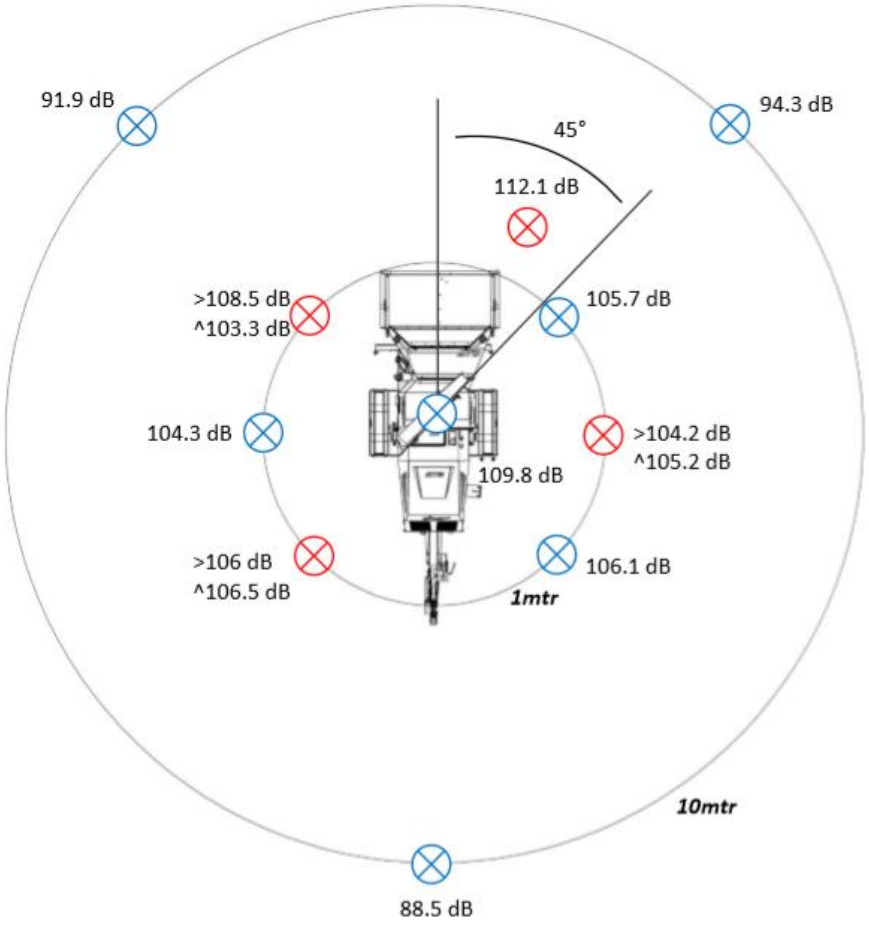
- **DO NOT** use chipper in poor visibility or insufficient light to see clearly
- **DO NOT** use or attempt to start the chipper without the discharge chute or guards correctly and securely fitted
- **DO NOT** stand directly in front of the in-feed hopper when using the chipper. Stand to one side
- **DO NOT** allow the following to enter the chipper as damage is likely:

Bricks	Metal
String	Glass
Cloth	Rubber
Plastic	Roots
Stones	Bedding Plants

- **DO NOT** stand in front of the chute
- **DO NOT** smoke when refuelling. Petrol fuel is highly flammable and explosive in certain conditions
- **DO NOT** let anyone who has not received instruction, operate the chipper
- **DO NOT** climb on the chipper at any time except for a tracked chipper ride-on plate where fitted
- **DO NOT** handle material partially engaged in the chipper while in operation
- **DO NOT** touch any exposed wiring whilst the chipper is running
- **DO NOT** restart the chipper immediately if an emergency stop has caused a shut down. Before disengaging the emergency stop a thorough inspection of the chipper should be carried out to ensure the safety conditions are being met

2.3 Noise Test Information

Chipper	ST6 D 42
Test	50mm x 50mm 4.2m long sawn pine



Noise levels above 85dB (A) will be experienced at the working position and within a 4-metre radius. Operators and personnel within a 4-metre radius must wear appropriate ear protection at all times while chipper is in operation to prevent the risk of hearing damage.

A-weighted emission sound pressure (beside operator's ear) LpA = 105.7dB(A). Peak C-weighted instantaneous sound pressure (beside operator's ear) LCpeak = 123.5dB(C). Results at 10 metre radii are calculated.

Guaranteed sound power level: 118dB(A)

As required by Forestry machinery - Wood chippers – Safety BS EN 13525 and in line with Machinery Directive 2006/42/EC.

3.0 Transportation & Storage

3.1 Towing the Chipper

- When towing the chipper, the maximum legal speed limit on UK roads is 60mph (96km/h).
- On very rough and uneven road surfaces, reduce speed to protect the chipper from undue vibration.
- When off road, avoid objects that may collide with the chipper underside.
- Avoid steep gradients when off road.
- Avoid excessively pot holed ground.

Exercise caution when reversing the chipper as the short wheel base will react quickly to steering.

- Keep tyre pressures inflated to 2.76 Bar or 40 psi.
- Check wheel nuts are tightened to between 90Nm and 100Nm.
- Tyres fitted to the ST6D must be 205/65R15C 102/100T with a load index of 102 = 850kgs and a speed rating of “T” which equates to 118mph (190km/h) which is above the UK permissible towing speed.
- Clear chipper of loose woodchip material before departing.
- Ensure the chute is securely fixed at the inboard position before departing.
- Ensure that the hopper tray is closed in the up position and the locking latch is fully engaged before departing.

3.2 Attaching and Detaching the Chipper

Attaching the Chipper

1. Check that the vehicle ball hitch is well greased.
2. Raise the chipper hitch by turning the jockey wheel handle anticlockwise until the hitch socket is above the vehicle hitch ball.
3. Reverse the vehicle until the ball is directly below the chipper hitch socket.
4. Attach the breakaway cable/secondary coupling to a suitably strong point on the vehicle, not the ball hitch.
5. Ensure the barrel lock is retracted from the tow head.
6. Grasp handle on tow head and push back catch with thumb.
7. Wind the jockey wheel handle clockwise to lower the hitch socket onto the ball hitch.
8. Release tow head handle and continue to wind the jockey wheel handle clockwise. The tow head should snap into place on the ball hitch. If it doesn’t, repeat previous two steps.
9. Wind jockey wheel up until fully retracted and the jockey wheel frame is seated in its notch on the stem. The chipper’s weight should be fully on the vehicle.
10. Release the jockey wheel clamp and slide the jockey wheel assembly fully up then tighten clamp.
11. Connect the vehicle trailer socket to the chipper socket with the connection lead. Check all chipper lights and tow vehicle lights are working correctly.
12. Insert the barrel lock for security.
13. The chipper is now properly attached to the tow vehicle.

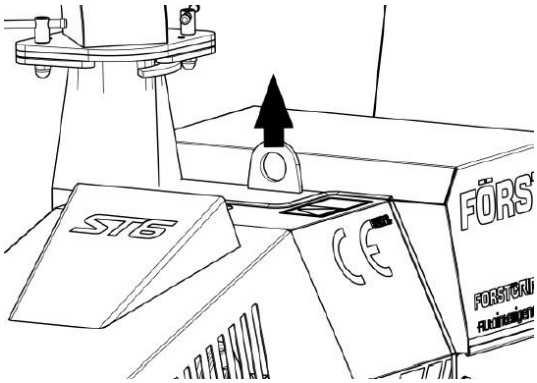
Detaching the Chipper

1. Ensure the machine will not roll away after being disconnected from the tow vehicle.
2. Disconnect the trailer socket from the tow vehicle.
3. Release the barrel lock.
4. Release the breakaway cable/secondary coupling.
5. Release the jockey wheel assembly clamp, fully lower the wheel and tighten the clamp.
6. Wind the jockey wheel handle anticlockwise until it starts to take the machine weight.
7. Grasp the tow head handle and release the catch with your thumb.
8. Wind the jockey wheel handle anticlockwise until the tow head is clear of the ball hitch.
9. Drive the tow vehicle clear of the machine.
10. Level the machine by winding the jockey wheel handle.
11. The machine is now fully detached from the tow vehicle.

3.2 Lifting the Chipper

The lifting eye is designed for securely holding the chipper's weight only. Do not use hoist hook directly on the lifting eye. Use a correctly rated safety shackle. Inspect lifting eye before each use and do not use if damaged.

Ensure the chamber lid bolts are secure and tightened to the correct torque (86 Nm).



3.3 Storage of the Chipper

For safe storage of the chipper, ensure the following points are met:

1. Chipper to be stored on a level, even surface
2. Hand brake must be applied
3. Hopper tray to be in the 'Up' Position

4.0 Chipper Operation

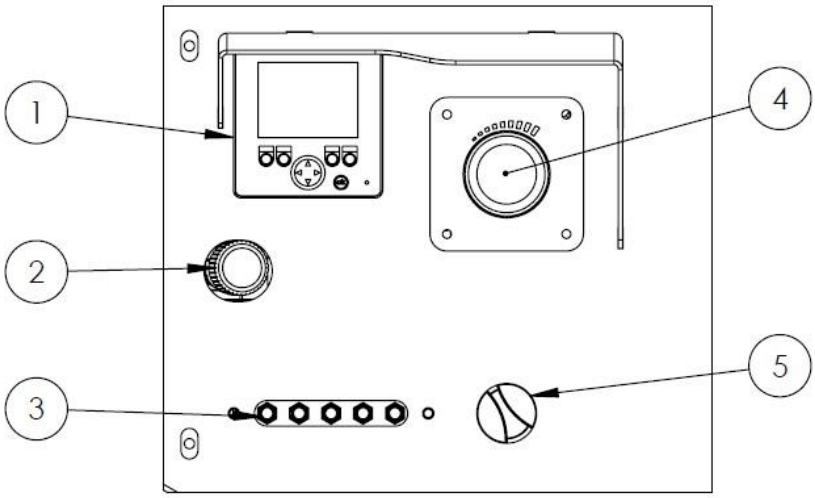
1. Fold down hopper tray
2. Start engine
    a. Turn ignition key to pre-heat
    b. Wait for display to indicate ‘start engine’
    c. Turn key to crank engine and release once firing
3. Allow engine to run for 30 seconds at idle, then increase revs to full
4. To feed material into chipper, tap the green button once
5. To stop, push the E-Stop button or push the red stop bar
6. To reverse the feed:
    a. Tap the orange button once for a momentary reverse
    b. Tap the orange button twice for continuous reverse
7. Stop the machine:
    a. Touch the E-stop or push the stop bar
    b. Reduce revs to idle
    c. Switch off ignition and remove key
8. Before transporting the machine:
    a. Sweep out debris from hopper
    b. Close hopper tray using the stop bar and engage the locking pins

4.1 Control Panel & Ignition

This chipper is fitted with an engine PLC (Programmable Logic Controller) system that manages the engine, feed and all safety features. The control panel is located on the right-side panel. Feed and engine speed are controlled with a “No Stress” function ensuring that cutting conditions are kept within optimum limits. This maximises throughput while minimising jams and blockages. There will be times when material is being cut and the feed will momentarily stop until engine speed increases. At this point, the feed will start without warning. Service warnings shown below will be displayed at certain intervals. The engine will not start until OK is pressed.

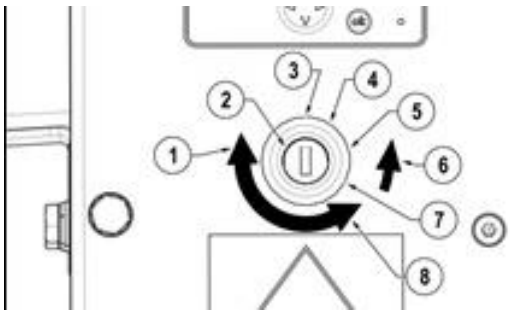
- First 20 Hour Warning: "Change Hydraulic Oil Filter"
- Every 20 Hour Warning: "Blade and Machine check required see manual"
- Every 500 Hour Service Warning: "Full Service recommended"

4.1.1 Control Panel



1. Control Panel
2. Feed speed adjust
3. Grease bank
4. Throttle
5. Ignition

4.1.2 Ignition Switch

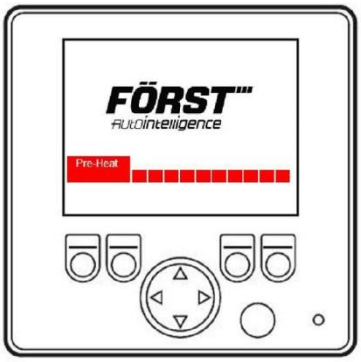


1. Key rotation in switch to start
2. Ignition switch positions & function
3. Off
4. Ignition
5. Pre-Heat
6. Spring biased to pre-heat when released
7. Start
8. Key rotation in switch to stop

Turn ignition key clockwise to first position, then to pre-heat, start display will show, enables pre-heat automatically showing start display + pre-heat.

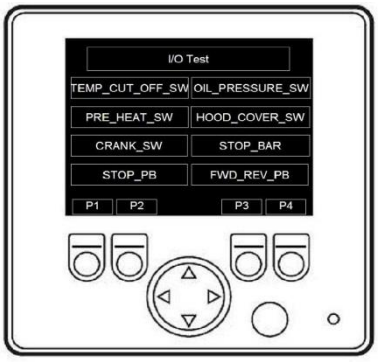
4.1.3 Control Panel

OR with Pre-heat

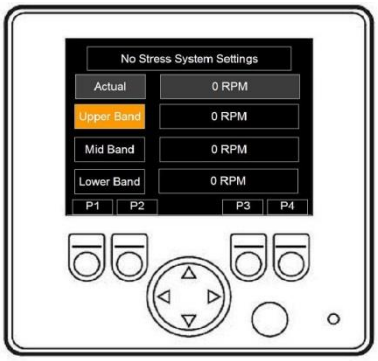


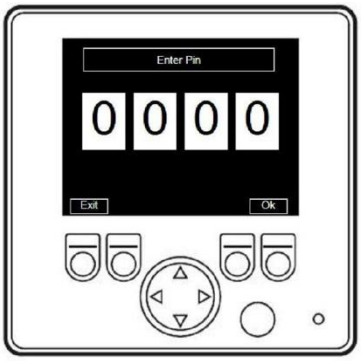
Turn ignition key fully clockwise to crank engine. Display will automatically go to P1

If engine fails to start, turn key to off position and start process again. P1 shows Working Hours and charging indicator text at the screen bottom centre.



P2 shows I/O tests. Tests all functions and safety controls.



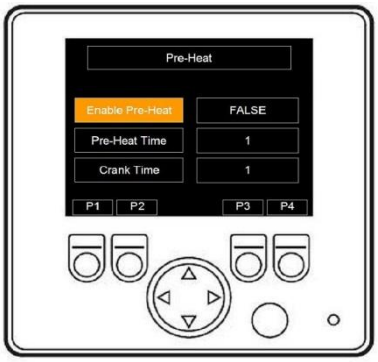


Pin screen

P3 shows No-Stress Settings

- Actual RPM
- Upper Band - 1400 RPM
- Mid Band – 1125 RPM
- Lower Band – 925 RPM
-

Pin screen automatically displays if any setting changes are attempted.

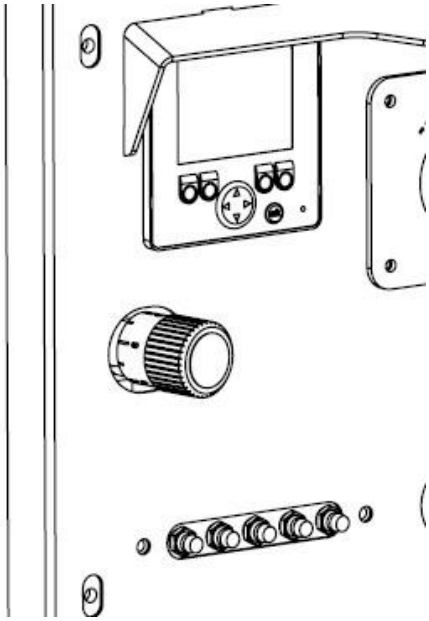


To stop engine, turn off with ignition key by turning fully anti-clockwise.

P4 shows Pre-Heat Settings

- Enable Pre-Heat – True
- Pre-Heat Time – 10
- Crank Time – 3

4.2 Feed Speed Adjustment



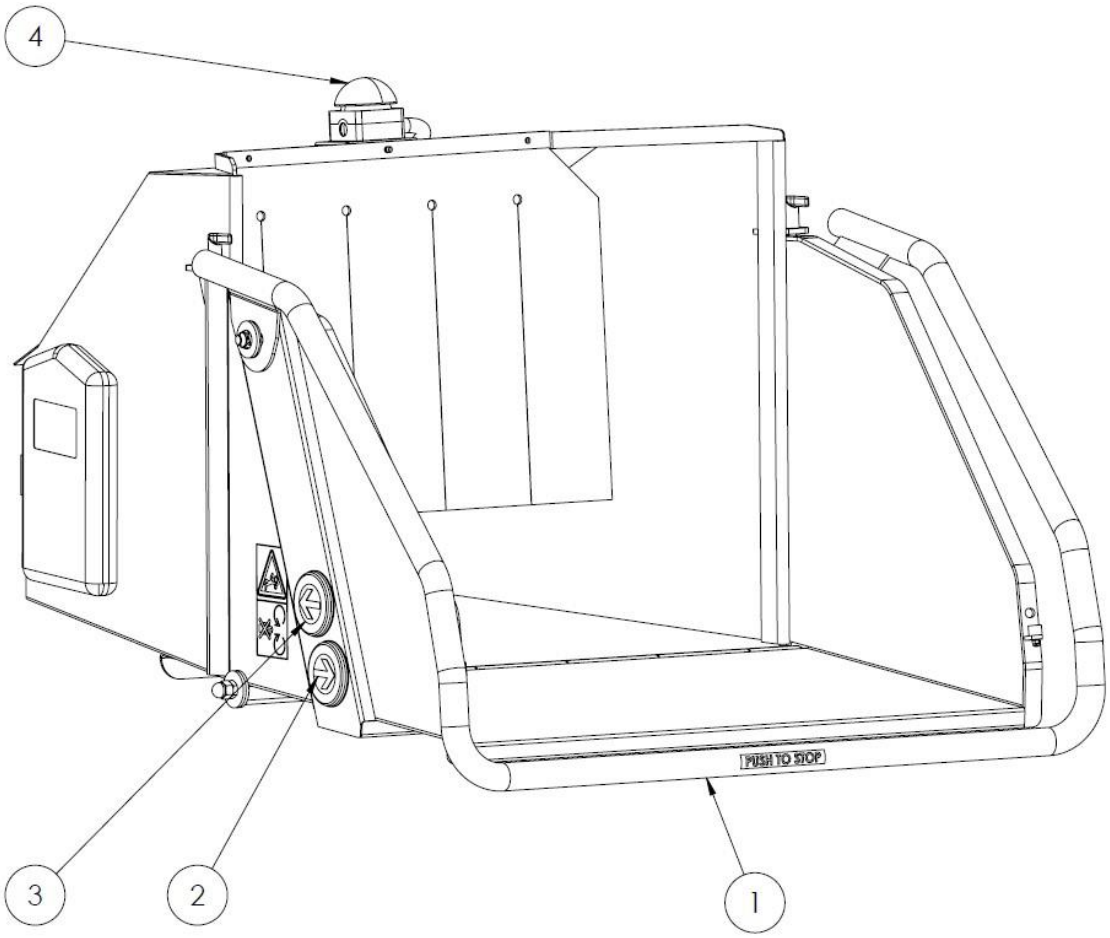
Control valve speed adjustment
Position indicated by pip

0 = minimum

10 = maximum

The feed speed can be adjusted to suit the material being chipped. Turn dial to align number with pip. Set feed speed so that the No-Stress operates as little as possible, this will give the highest throughput. When feeding Leylandii or leafy material, set feed roller speed to 4.5.

4.3 Emergency Stopping



1. Red Stop Bar
2. Orange reverse button
3. Green forward button
4. E-Stop

Before using the chipper:

1. Start the machine with the ignition key on the control panel.
2. With the engine running at full speed tap the green button (3) and the rollers will go into forward (chipping mode).
3. Tap the orange button and the rollers will go into a short reverse, tap it again and the rollers will continue in reverse.
4. To stop the feed rollers, push the red stop bar (1) and the rollers will stop instantly and or push the e-stop button and whole machine will shut down.
5. If any of these functions fail, turn off the machine and remove the key from the ignition switch and contact Redwood Global and ask for service.

4.4 Feed Jam & Blockages

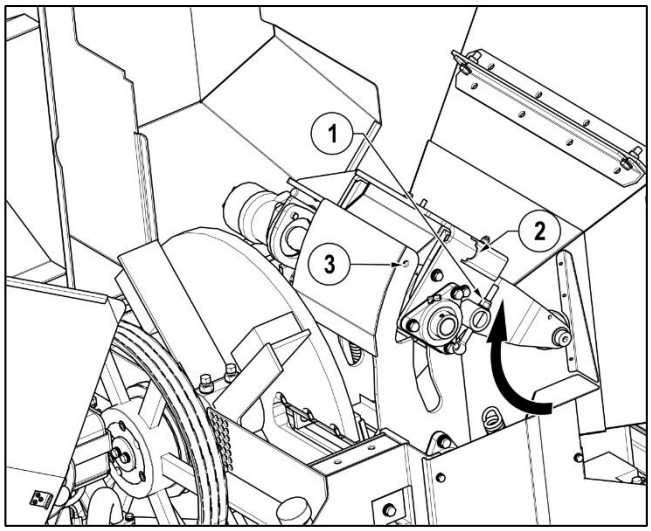
Be aware that whatever is fed into the machine has to come out of the chute. Always monitor the state of chip flow out of the chute. If it stops, **STOP FEEDING MATERIAL IMMEDIATELY**. Continuing to feed material will further compact a blockage and make it more difficult to clear.

If the chipping chamber or chute become blocked:

1. Stop the engine and remove ignition key
2. Remove chute and check that it is clear
3. If the chipping chamber is blocked, open the engine cover, then chipping chamber cover. **DO NOT REACH INTO THE CHIPPING CHAMBER WITH HANDS.** Beware that the flywheel within the chipping chamber has two sharp blades mounted on it and can move causing a serious injury risk. Wearing protective gloves and using a piece of wood, carefully clean out the chipping chamber

If feed becomes jammed:

1. Stop the engine and remove ignition key
2. Open engine and chipping chamber covers
3. Release feed roller spring tension on both sides by slackening off the eye bolt nuts and remove if necessary
4. Insert feed lift tool and lift top feed roller to fully open
5. Insert M12 screw into side of feed chamber and screw completely in If possible, lower top feed roller onto the screw to secure in the open position. This screw acts as a safety stop once the obstruction has been removed.
6. There should now be access to the feed chamber. Beware that this is the machines cutting zone. The top and bottom feed rollers have sharp teeth and the flywheel cutting blades are not far from them. **DO NOT PUT HANDS INTO THIS AREA.** Wearing protective gloves and using a piece of wood, carefully clear jammed material inside feed chamber
7. When clear, lift top feed roller via lifting tool, remove top feed M12 securing screw, lower top feed roller and remove lifting tool
8. Re-assemble feed tensioner springs and close covers



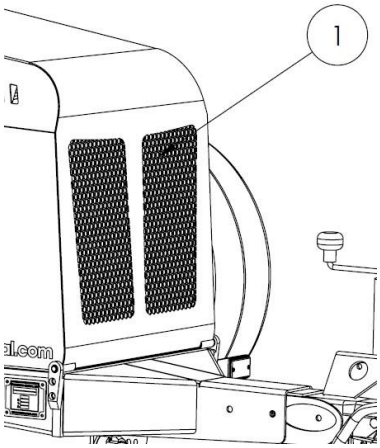
1. Slacken or remove spring tensioner nuts both sides before lifting feed roller
2. Insert top feed roller lifting tool into slot and lift
3. Insert m12 screw to hold feed in open position

5.0 Routine Maintenance

The following must be checked at least on a daily basis during use (also see Service schedule):

- Check engine oil
- Check water level in radiator
- Check debris screen on front of radiator and remove any debris
- Check hydraulic oil level. When the machine is new, the oil level may drop during initial use. Regularly check and top-up until level settles. If a top up is required, thoroughly clean around filler cap before removing to help prevent debris falling into oil tank, top up as required and replace filler cap
- Grease machine. Every 8 hours, one pump of grease to each of the six nipples at the central grease point manifold located near the control panel
- Check all fasteners are present and assembled to the correct torque
- Check proximity sensors on engine cover, removable hopper and trip bar are not damaged and working correctly. The trip bar sensor is the most vulnerable and if severely damaged could result in the trip bar not working
- Check drive belt tension and adjust as necessary
- Check pulleys and taper lock on flywheel shaft
- Check flywheel blades for damage and sharpness. Machine performance is adversely affected if blades are blunt or damaged. Replace and sharpen blades as required. Make sure that the blade seat is clean and free of damage before reassembly. Shims are available to adjust for blade size reduction after sharpening. Please refer to blade sharpening for size limits, adjustment shims and setting. Ensure blade fasteners are correctly installed and tightened to the appropriate torque. Check after 1 hours' work then weekly
- Anvil and side anvil are replaceable and double sided. Make sure that the anvil seat is clean and free of damage before reassembly
- Exercise extreme care to avoid injury when removing and replacing blades and anvils. The flywheel can turn creating crush and cutting points in and around the chipping chamber
- Check all hydraulic hoses and fittings after 5 hours' work. Beware of hydraulic oil leaks, they can cause serious injury while the engine is running and the system is under pressure. A leak can easily inject high pressure oil deep into flesh and blood stream requiring immediate medical attention. **DO NOT CHECK FOR LEAKS WHILE THE ENGINE IS RUNNING.** Hoses to the feed roller hydraulic motors are the most likely to become damaged as they are constantly moving during use. If hoses are replaced, all seals must be replaced at the same time. All replacement hoses must be rated to the pressure of the chipper hydraulic system
- Check top and bottom feed motor bracket bolts weekly

5.1 Debris Screen



1. Lift the bonnet and brush off any debris from **both** sides of the screen
2. Brush off any debris from the radiator

5.2 Engine Maintenance

Please refer to the engine manual supplied with this machine for the following:

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

5.3 Fastener tightening torques

Tightening Torques for class 8.8 and 10.9 fasteners				
	Class 8.8		Class 10.9	
	Nominal Torque (Nm)	Max/Min torque (Nm)	Nominal Torque (Nm)	Max/Min torque (Nm)
M6	10	9.5/10.4	14.5	14/15.3
M8	25	23.1/25.3	35	34/37.2
M10	49	46/51	72	68/75
M12	86	80/87	125	117/128
M12 x 1.5 Wheel Screws	95	90/100		
M16	210	194/214	310	285/314
M20	410	392/431	610	558/615
M24	710	675/743	1050	961/1059

All machine fastener torques should be regularly checked to the above table. In particular, those for the flywheel blades, flywheel bearings, axle assembly, hitch, road wheels and engine mounts.

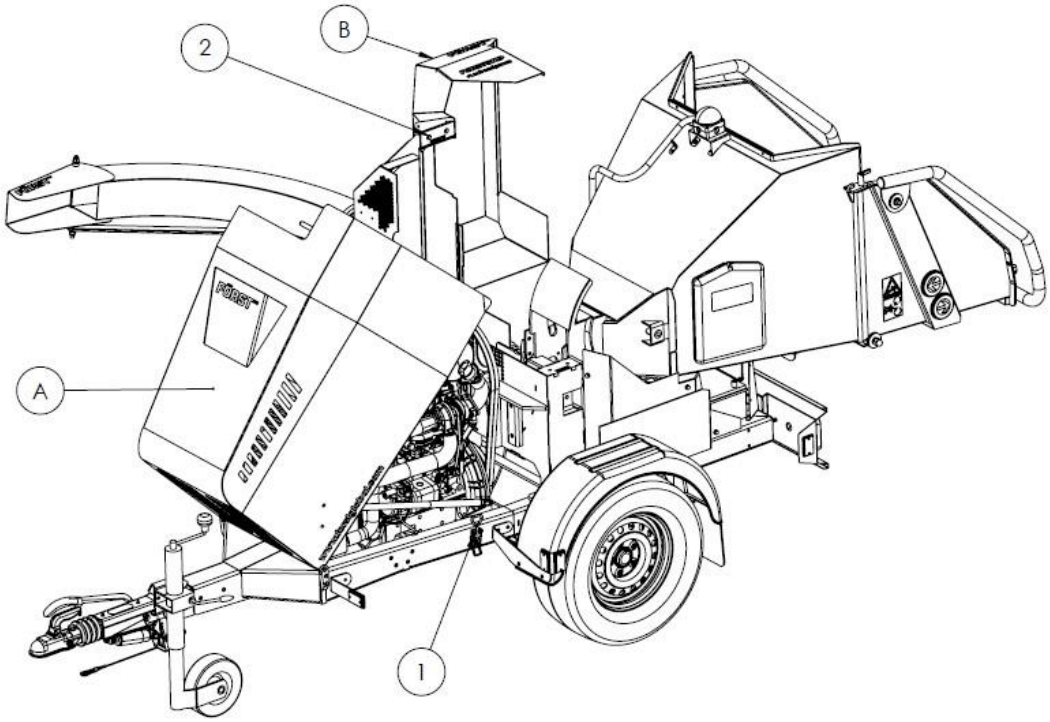
5.4 Service Schedule

Engine	Chipper	After first 5 hrs	Every 8 hrs / daily	After first 20 hrs	Every 20 hrs	After first 50 hrs	Every 50 hrs	Every 100 hrs	Every 250 hrs	Every 500 hrs	Every 1000 hrs
	Tighten hydraulic fittings	●									
Check engine oil level & top up if necessary	Check fasteners		●								
	Visual check for fluid leaks		●								
	Check drive belts		●								
	Grease bearings via central point on control panel		●								
	Change hydraulic filter cartridge			●							
	Check brake adjustment (wheeled only)				●						
	Check flywheel shaft bearings				●						
	Check cutting blade & anvil condition, change if required				●						
	Replace hydraulic oil filter element					●					
Check all engine components are serviceable after break-in period						●					
Check fuel hoses and clamp bands	Check feed roller tension springs & replace if required						●				
Replace oil filter	Check wear mark on towing hitch (wheeled only)						●				
Check wiring for damage & loose connections	Machine check over						●				
Check radiator hoses & clamp bands	Check feed roller bearings on motor side								●		
Check air intake hose	Replace bottom feed roller inner brass bush								●		
Drain water from fuel filter	Check & recharge battery								●		
Replace outer air filter									●		
Check and carry out forced Regen if required									●		
Check screen for fault codes, investigate and report									●		
Check cooling fan belt tension									●		
Replace inner air filter	Replace hydraulic oil filter element									●	
Engine oil change										●	
Replace engine oil filter										●	
Replace fuel filter element										●	
Clean out fuel tank										●	
Clean radiator										●	
										●	
Check coolant SG (-25°C or lower)										●	
										●	
Replace cooling fan belt											●
Drain and replace coolant	Drain and replace hydraulic oil										●
	Replace flywheel belts										●

5.5 Chipper Diagrams

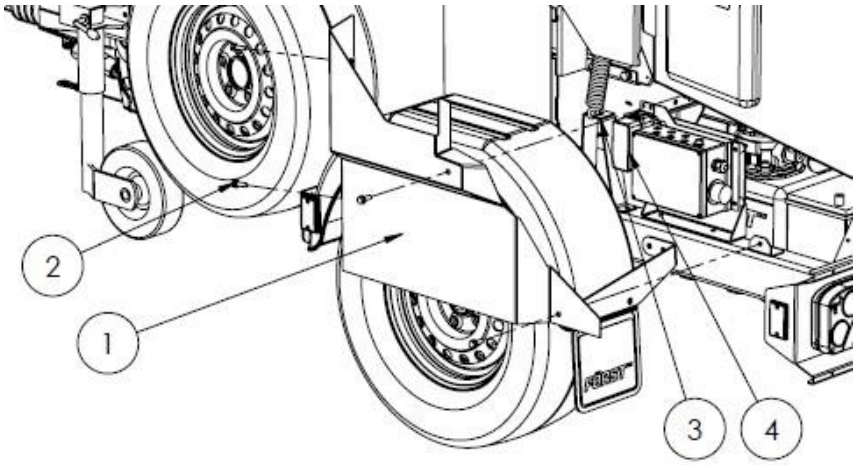
5.5.1 Main Covers

- Opening sequence: ‘A’ then ‘B’



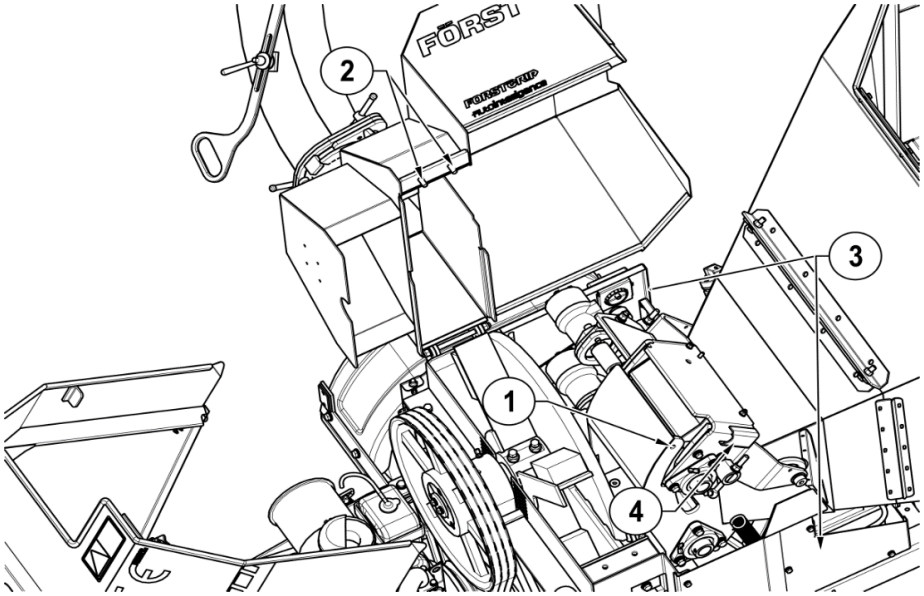
1. Engine cover latch (x2)
2. Chipping chamber cover bolts (x2 M12)

5.5.2 Side Panel



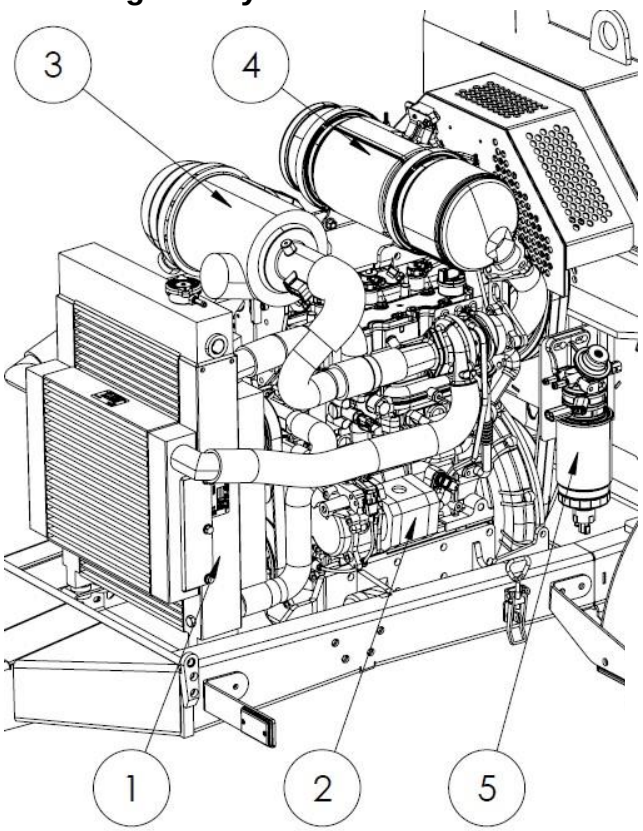
1. Side panel
2. 4 x Fasteners
3. Feed roller spring
4. Fuse / relay box

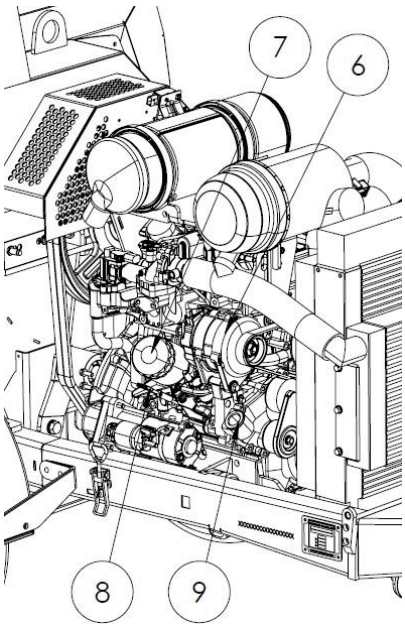
5.5.3 Top Feed Roller



1. Top feed roller M12 securing screw hole
2. Chipping chamber cover fixing bolts
3. Side panels
4. Top feed roller lifting tool socket

5.5.4 Engine Bay





1. Radiator
2. Hydraulic Pump
3. Air cleaner
4. DPF
5. Fuel filter
6. Alternator
7. Oil filter
8. Dipstick
9. Oil filler cap

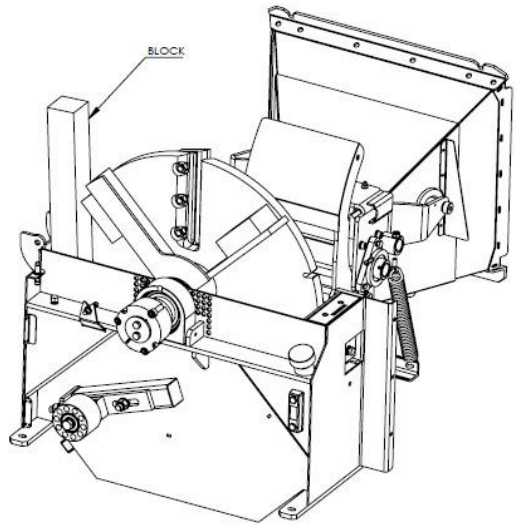
5.6 Blade Changing

WARNING – Rigger Gloves must be worn whilst changing the blades

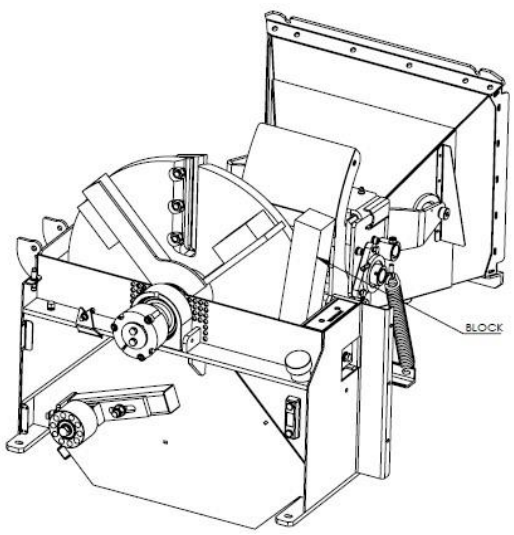
WARNING – It is essential that only genuine parts are used guaranteeing the correct grade of Blade, bolt, washer and nut

1. Turn off chipper and remove the ignition keys
2. Disconnect battery leads
3. Remove the two bolts holding the chipping chamber lid closed (5.5.1)
4. Carefully open the chipping chamber lid from the chute side and let it come to rest on the hinge stops
5. Turn flywheel to blade change position and insert locking timber (XX-05-006) (pic 1) *Note: timber to be replaced if split or damaged.*
6. Clean all debris from around the blade bolt and nut with a metal pick
7. With a 24mm socket undo the blade bolt nuts and remove bolts/nuts and washers steadying the blade with the other hand making sure it doesn't fall – WARNING these blades are sharp, rigger gloves must be worn
8. Carefully remove the blade from the flywheel
9. Clean blade seat on the flywheel thoroughly before fitting new or re-sharpened blades WARNING – the blades must not have any debris underneath them when tightened, the smallest amount of debris behind the blade could result in the blade coming loose causing damage to the machine
10. Re-fit blades, with new bolts, washers and nuts. Move the timber to the 2nd position (pic 2)
11. Shims may be required to keep the gap between the blade and the anvil on the inner edge (closest to the flywheel shaft) at 3mm
12. A calibrated torque wrench must be used to tighten the blade bolts to a torque setting of 310NM
13. Remove locking timber, rotate flywheel to next blade position and repeat 6-13
14. Close chipping chamber lid and re-fit bolts tightening to 86NM
15. Re-fit battery leads

WARNING – Failure to keep blades sharp will overload the engine and bearings which could result in machine breakdown.



Pic 1



Pic 2

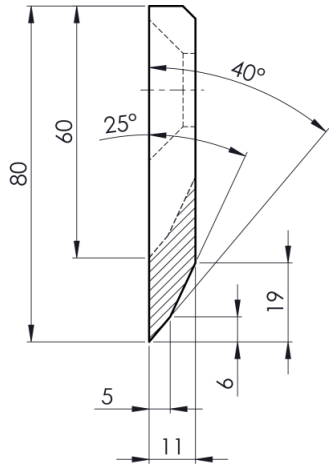
5.7 Blade Sharpening

For optimum performance, blades need to be kept sharp. Minimum safe blade size after sharpening is shown below. Also markon the blade. After sharpening, the blade gap must be re-set by using a blade shim. Shims are available in thicknesses of 0.5, 1, 1.5, 2 & 2.5mm as part numbers 14-03-042-05, -10, -15, -20 and -25. On no occasion must more than one shim be fitted under each blade at any time. A gap of 3mm must be set from the inner blade tip to anvil after sharpening by placing an appropriate shim under the blade (also see flywheel assembly). The outer blade tip is automatically set due to the anvil being set at an angle to the blade. With 3mm at the inner blade tip, the outer blade tip should be 5mm from the anvil as shown below.

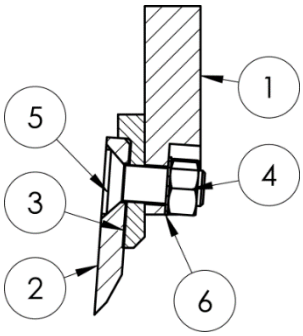
Blades must not be used beyond the wear mark. Failure to comply with this could result in damaging the machine, injury or loss of life.

The complete blade fastener set <u>must</u> be replaced every time blades are changed and torqued up to 310 Nm

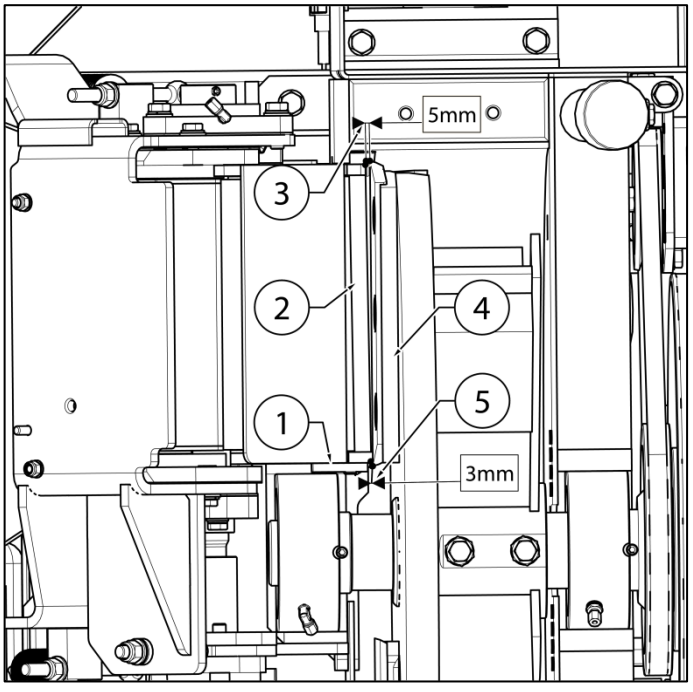
DO NOT Lubricate the Bolts when fitting.



Blade sharpening limit
80mm to 60mm



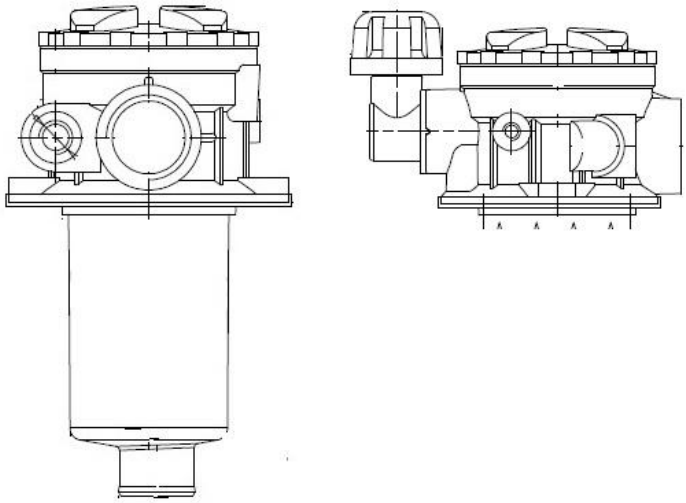
1. Flywheel
2. Flywheel blade
3. Blade shim
4. M16 x 10.9 hex nut
5. Blade bolt
6. M16 Serrated lock washer



1. Side Anvil
2. Anvil
3. Outside blade gap
4. Flywheel blade
5. Inside blade gap

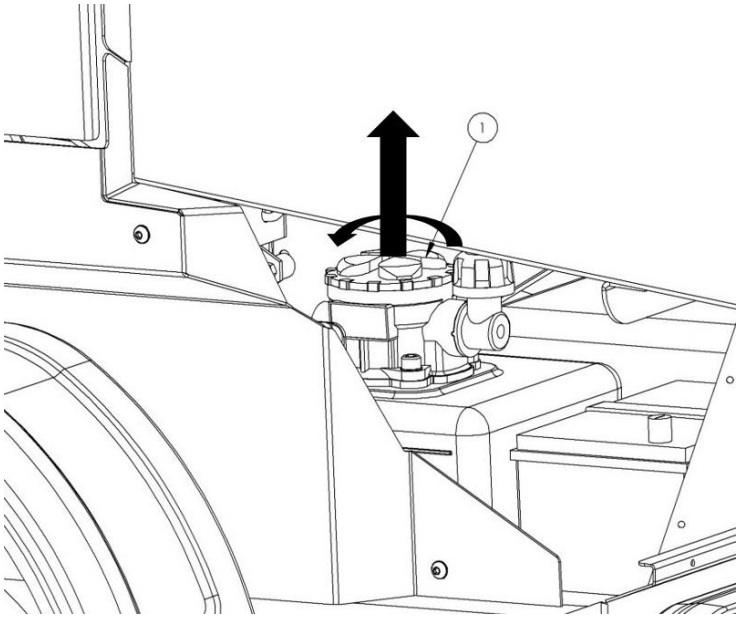
5.8 Hydraulic Oil Filter

Use protective plastic gloves to keep oil off skin, dispose of oil and filter in an environmentally responsible manner.



5.6.1 Removal and Replacement

1. The filter housing is accessed under the engine cover, in the top of the hydraulic tank.
2. Unscrew filter housing top, remove filter element and replace.
3. Screw on and tighten filter body with new filter element into filter housing.



5.9 Oils, Fluids and Lubricants

Engine Oil: SAE 10w40 API CJ-4 ACEA E9

Please consult your supplied Doosan engine operator's manual for oil quantities relating to your engine type.

Hydraulic Oil: ISO VG 46**.**

It is advised that the oil is checked and topped up to the RED LINE on the sight glass, when the machine is cold and on a level surface.

Fuel: EN590 Ultra-low sulphur diesel

Using fuel that is not to the above standard will case damage and lead to failures of the fuel injection and exhaust systems

Anti-Freeze: Mono-ethylene Glycol at a 50% mix ratio.

Please consult your supplied Doosan engine operator's manual for coolant quantities relating to your engine type.

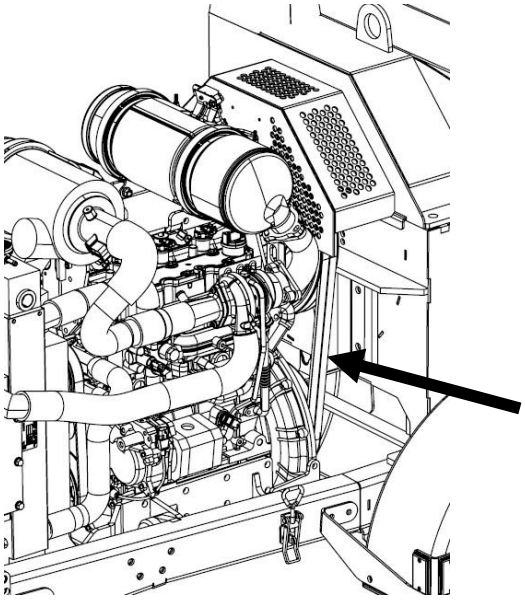
Grease: Lithium EP2 General Purpose. The greasing points can be found on the control panel. Please do not over grease 2 x pumps per grease nipple per week is sufficient.

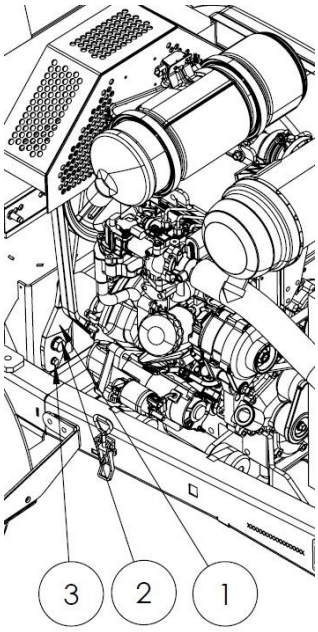
5.10 Drive belt tension

The flywheel V belts must be checked for tension and condition. If any belt shows signs of wear, surface damage, shredding, excessive glazing, or have been stretched to their limit, they must be replaced. Multiple belt drives must have all belts replaced at the same time. Belts that are too slack will cause poor cutting performance, excessive belt and pulley wear.

All drive belts are located under the engine cover. Tension checked at arrow shown below. Check and set tension as follows:

1. Slacken tensioner securing screws (2, 3)
2. Pull the tensioner assembly out to increase the tension (1)
3. For the correct tension, the belt should deflect by 6mm when 4.5kg of force is applied at the centre of the longest span shown by the arrow. This can be approximated by firmly gripping belt between finger and thumb and twisting. The belt should not be able to be rotated more than 90°.
4. Tighten both screws (2, 3)
5. Run machine and test.
6. Check belt tension





5.11 Battery

5.11.1 Battery safety information

1. Battery acid is highly corrosive. For safety reasons, wear eye protection when handling a battery. Do not tilt battery as acid could escape from vents.
2. Keep children away from acid and batteries.
3. Battery emits highly explosive hydrogen gas when charged. Do not allow fires, sparks, naked flames or smoking near the battery. Also avoid electrostatic discharges and electrical sparks when dealing with cables and electrical equipment.
4. First aid. If acid is splashed into eyes, immediately rinse with clean water for several minutes and consult a doctor without delay. If acid is swallowed, consult a doctor immediately. Neutralise acid splashes on the skin and clothes immediately with acid neutraliser (a solution of water and soda/baking soda) or soap suds, and rinse with plenty of clean water.
5. Battery case can become brittle. To help avoid this, do not store batteries in direct sunlight. Discharged batteries could freeze so store in a frost-free area.
6. Dispose of old batteries at an authorised collection point. Never dispose of in household waste.

5.11.2 Storage and transport

1. As batteries are acid filled, always store and transport them upright and prevent from tilting to avoid acid escape.
2. Store in a cool, dry, frost free place.
3. Do not remove the protective positive terminal cap.
4. Run a First-in First-Out (FIFO) warehouse management system.

5.11.3 Initial operation

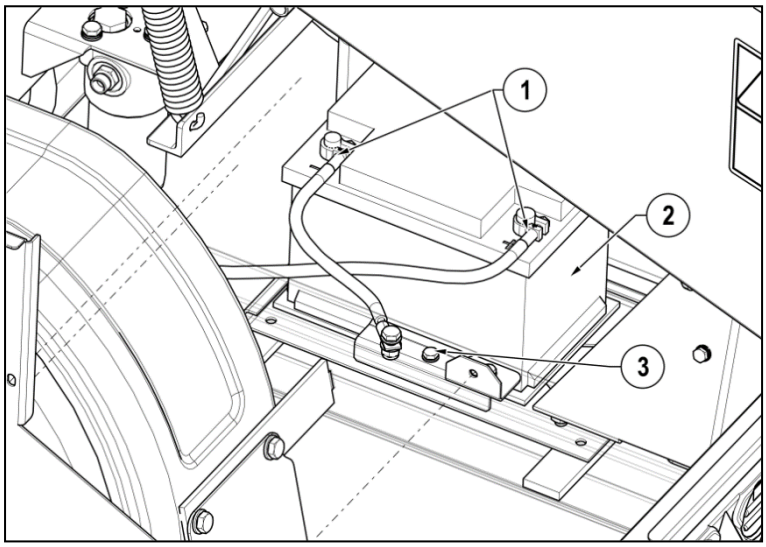
1. Batteries are filled with acid at a density of 1.28g/ml at 15°C during manufacture and are ready for use.
2. Recharge in case of insufficient starting power (see charging).

5.11.4 Battery removal & maintenance

To remove and replace battery:

1. Switch off engine and all electrical equipment.
2. To gain access to the battery, remove left side panel.
3. Avoid short circuiting the battery terminals and from positive to any metal machine part. Loose metal parts and tools commonly cause this.
4. Remove excessive debris from around the battery.
5. First remove negative lead at the battery, then the positive. Battery terminals are the take-off type and fastened with an M6 screw in to a ferrule on the cable end.
6. Slacken the M8 battery clamp screw.

7. Remove battery. Clean with a moist anti-static cloth to avoid electrostatic discharge and explosion risk. Charge and check electrolyte level if appropriate.
8. Clean out battery tray. Apply a thin film of petroleum jelly to terminals to prevent corrosion.
9. Replacement is the reversal of removal. Ensure to replace/fit any vent pipes. Leave at least one vent open otherwise there is an explosion risk. This also applies to old batteries removed for disposal/recycling. Swap new battery positive terminal protective cover to the old battery positive terminal to help prevent short circuits and sparks.



1. Take-off battery terminals fastened with M6 screw
2. Battery
3. Battery clamp M8

5.11.5 Charging

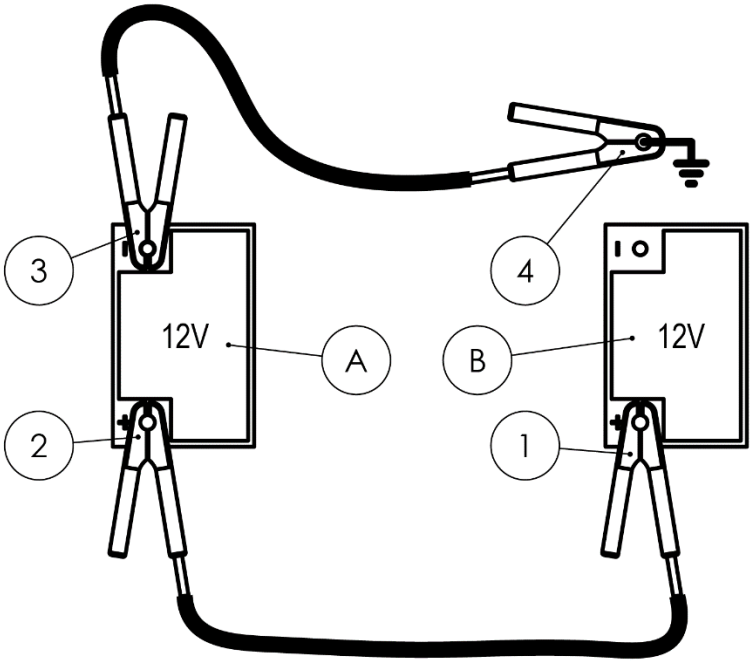
1. Remove battery from machine, disconnect negative terminal first.
2. Ensure good ventilation.
3. Use suitable direct current mains chargers only.
4. Connect battery positive terminal to charger output positive. Connect the negative terminal accordingly.
5. After connection, switch on charger. When charging is complete, switch off charger then disconnect battery.
6. Charging current recommendation is 10% of the battery Ah power rating.
7. Use a charger with a constant charging voltage of 14.4V.
8. If the acid temperature rises above 38°C, stop charging.
9. The battery is fully charged when the charging voltage or acid specific gravity has stopped rising for two hours.

5.11.6 Jump starting

1. Use a standardised jumper cable to DIN 72553 only and follow the instructions.
2. Only use batteries of the same voltage.
3. Switch off ignition on machine and support vehicle. The two must not touch and all lights/equipment must be turned off.

Connect in the sequence of 1 – 2 – 3 – 4 as shown and as follows: Connect one end of the red jump lead to the machine battery positive (+) terminal.

4. Connect the other end of the red jump lead to the support vehicle battery positive (+) terminal.
5. Connect one end of the black jump lead to the support vehicle battery negative (-) terminal.
6. Connect other end of the black jump lead to a machine metal part away from the battery e.g. onto the engine from under the chassis.
7. Make sure that the jump leads will not come into contact with moving parts.
8. Start the support vehicle engine and run at a medium idle speed for 15 seconds.
9. Start machine and run for 15 seconds.
10. Disconnect jump leads in the reverse order 4 – 3 – 2 – 1.



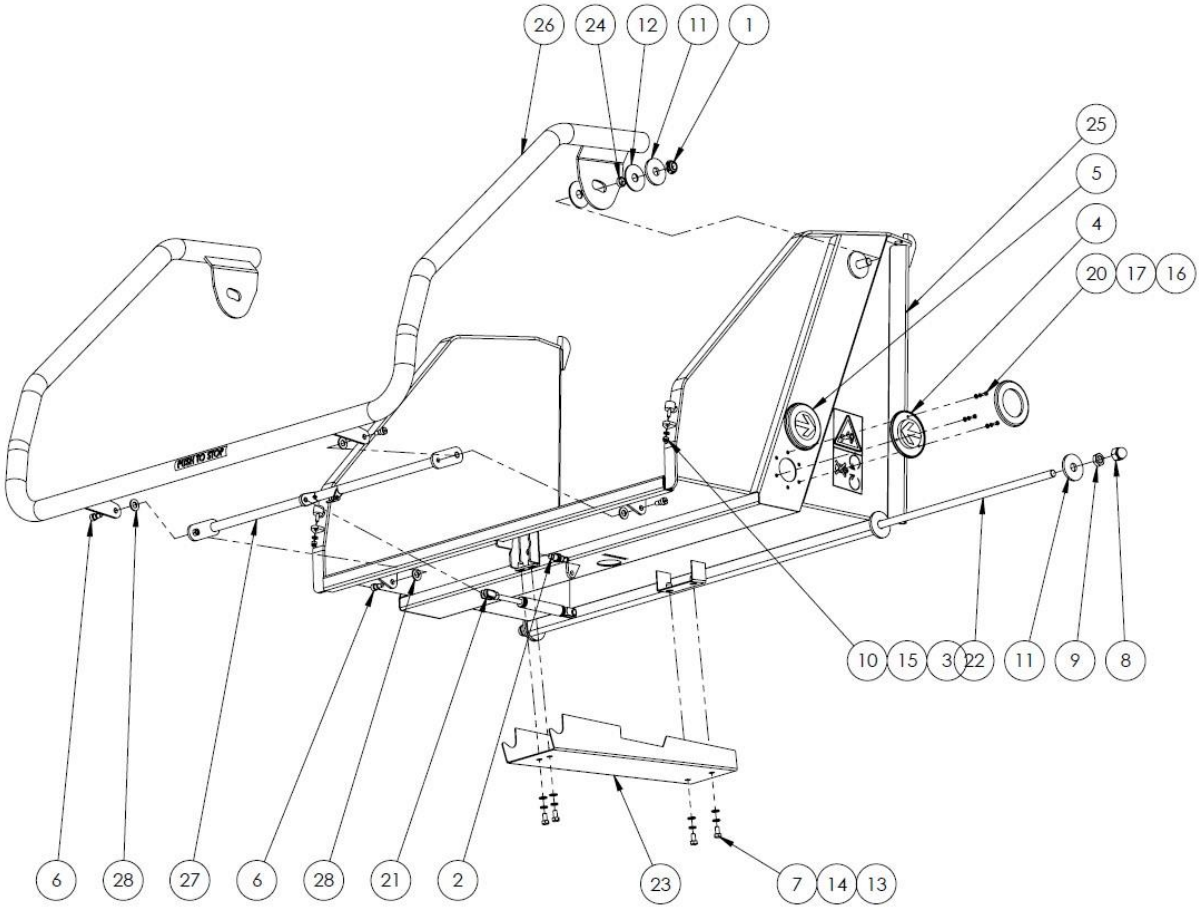
A	Donor

5.11.7 Taking battery out of service

1. Charge the battery and store in a cool but frost-free place or on the vehicle with the negative terminal disconnected.
2. Check the battery charge at regular intervals. Recharge if necessary.

6.0 Parts Lists & Diagrams

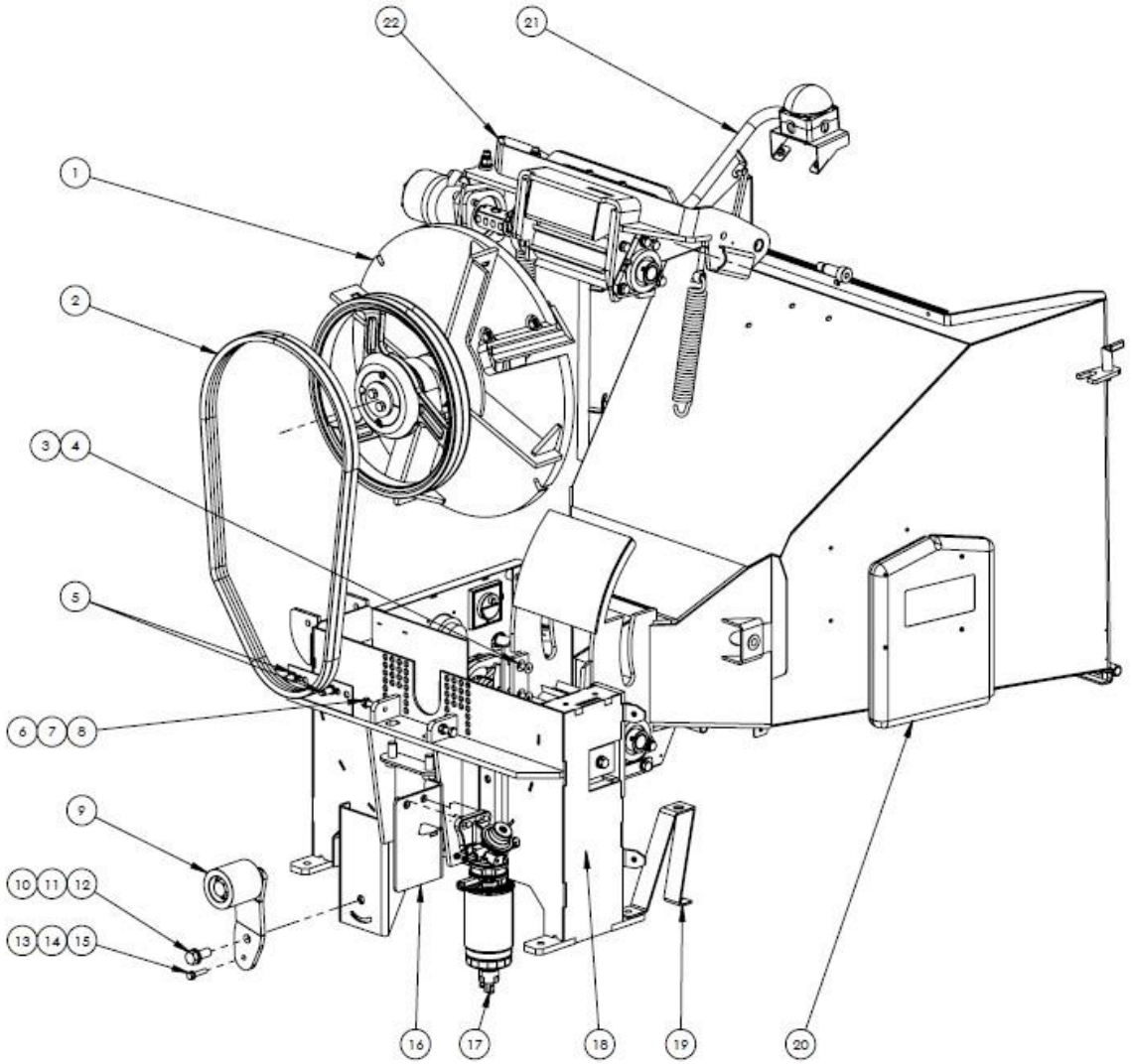
6.1 Tray & Stop Bar



Item	Part No	Description	Qty
1	12-05-050	Security Nut	2
2	12-10-072	Inductive prox sensor - Orange	1
3	12-10-090	Buffer 15 x 20 M6	2
4	12-10-380	Orange Reverse Button	2
5	12-10-383	Green Forward Button	2
6	12-10-399	M8 x 8 hex socket head Shoulder Bolt	4
7	12-12-404	M8x16 Gr.8.8 Hex Bolt	4
8	12-13-004	M16 Domed cap nut DIN 1587	2
9	12-13-009	M16 Hex thin nut ISO 4035	2
10	12-13-015	M6 Nyloc	2
11	12-14-001	M16 Washer extra large OD 56 x 5 THK ISO 7094	4
12	12-14-002	M16 Extra Large Nylon Washer	4
13	12-14-013	M8 Washer	4
14	12-14-014	M8 Spring Washer	4

Item	Part No	Description	Qty
15	12-14-017	M6 Washer	2
16	12-14-020	M4 Washer	12
17	12-14-027	M4 Spring Washer	12
18	12-26-048	Push to stop	1
19	12-30-016	Warning Draged into Feed Rollers Decal	2
20	12-99-006	M4x10 Pan head screw	12
21	12-A-061	Stop Bar Spring	1
22	22-01-008	Hopper tray hinge pin	1
23	24-03-124	Gas Strut Cover (under hopper tray)	1
24	24-05-011	Stop Bar Collar	2
25	24-19-054	HOPPER TRAY ASSEMBLY	1
26	24-19-076	Stop Bar Fabrication	1
27	24-19-077	Drive Bar Fabrication	1
28	31-14-001	M12 Normal Nylon Washer	4

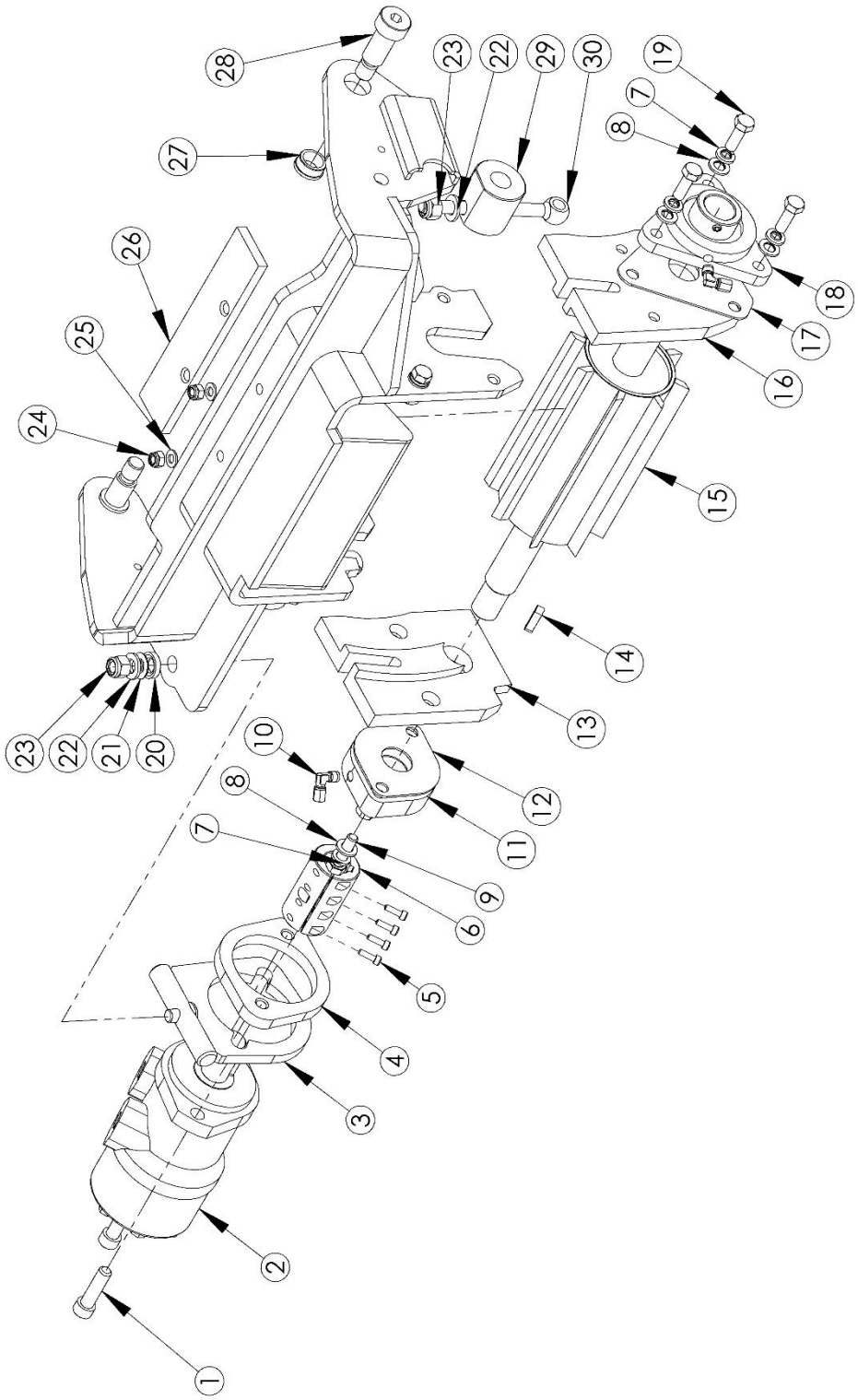
6.2 Chipping Chamber



Item	Part No	Description	Qty
1	12-A-081	Flywheel Assembly	1
2	12-10-335	B75 Optibelt Belt 1940LD/1900LID	2
3	12-12-505	M10x20 Gr.10.9 CSK Screw	2
4	12-01-002	Side anvil	1
5	12-10-071	Inductive proximity sensor kit	2
6	12-99-008	M10 Serrated Washer	5
7	12-13-006	M10 Plain Nut	2
8	12-12-509	M10x35 Gr.8.8 Hex Bolt	3
9	24-A-002	Belt tensioner assembly	1
10	12-14-005	M16 Washer	1
11	12-14-006.1	M16 Serrated Washer	3

Item	Part No	Description	Qty
12	WCM16X40	M16x40 Gr.8.8 Hex Bolt	1
13	12-14-013	M8 Washer	1
14	12-14-024	M8 Serrated Washer	1
15	12-12-403	M8x40 Gr.8.8 Hex Bolt	1
16	13-19-083	Filter Bracket Fabrication	1
17	50-99-002	D18_24 MAIN FUEL FILTER_180508	1
18	24-19-013	Hopper & Chip Chamber Weldment	1
19	24-19-057	Top Hat	1
20	12-05-045	CUSTOM PACK MANUAL CASE	1
21	12-A-084	E stop assembly	1
22	12-A-086	Top Feed Roller Assembly	1

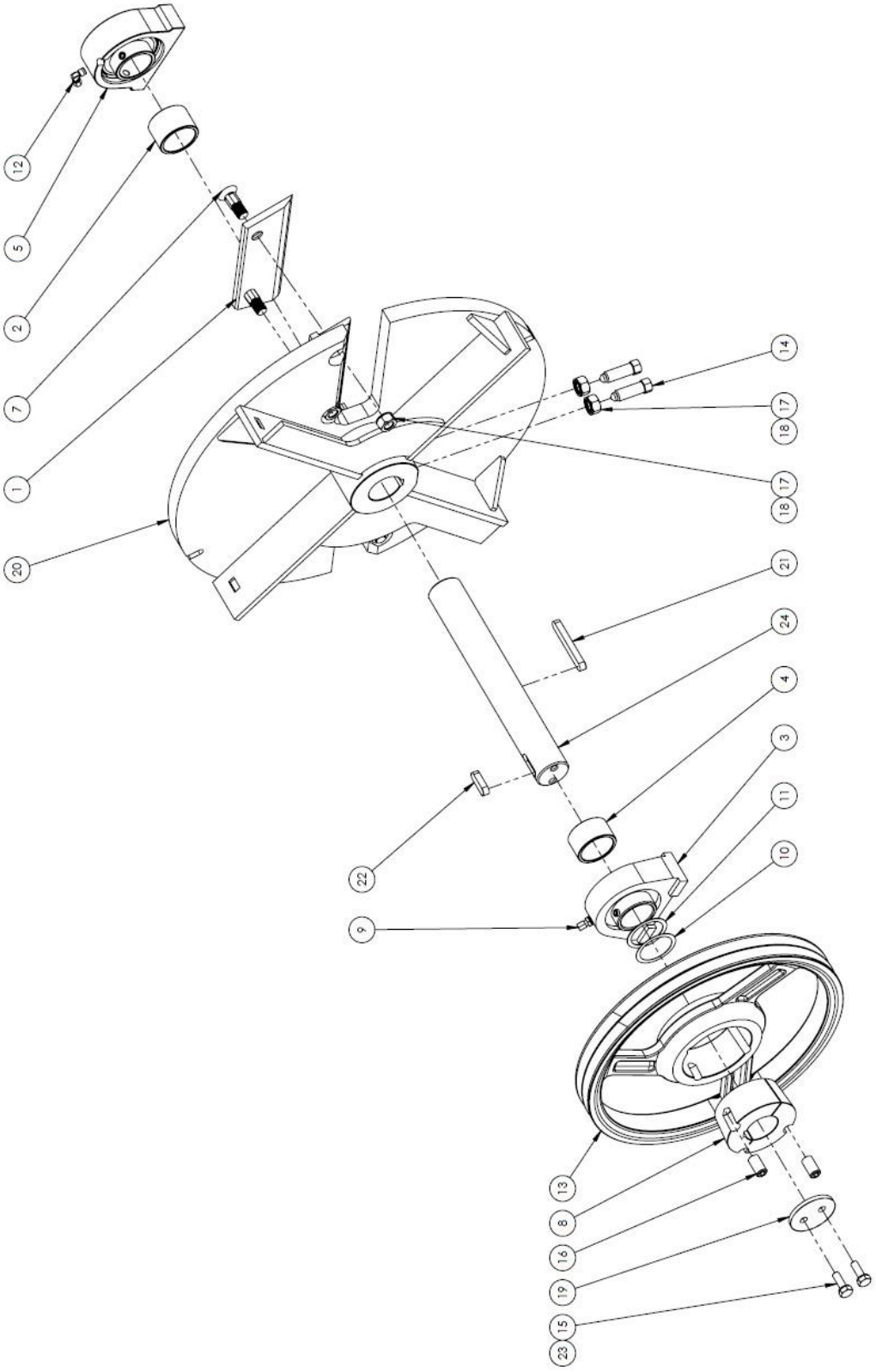
6.3 Top feed roller assembly



Item	Part No	Description	Qty
1	12-12-609	M12 x 45Lg 8.8 Socket Head Cap Screw	2
2	12-24-005	Hydraulic motor 199.6cc/rev	1
3	12-19-132-D	Feed motor bracket fab assy	1
4	12-19-133-D	Feed motor clamp	1
4a	12-03-201	Feed motor mount 3mm shim	1
5	12-12-308	M5 x 20Lg Skt. Head Cap Screw Zinc/Blk.	4
6	12-01-049	Rigid shaft coupling 25 ID	1
7	12-99-008.1	M10 Serrated Washer	5
8	12-14-009	M10 Washer ISO 7089	5
9	12-12-509	M10 x 35Lg 8.8 Hex Head screw	2
10	12-10-094	R1/8in BSPT 4mm male stud elbow	2
11	12-11-013	Self aligning flange bearing 2 hole 30 ID	1
12	12-03-102	Feed roller 2 hole bearing shim	1
13	24-01-052	Feed cheek RH 32mm slot	1
14	12-20-004	Rectangular key 30x8x7	1
15	24-19-064	Top feed roller and shaft	1

Item	Part No	Description	Qty
16	24-01-053	Feed cheek LH 32mm slot	1
17	12-03-042	Feed roller bearing shim	1
18	12-11-005	Self Aligning Flange Bearing 2Z 30 ID	1
19	12-12-502	M10 x 30Lg 8.8 Hex Head screw	3
20-21	12-10-195	M14 spherical dished washer set	1
22	12-14-038	M14 Washer ISO 7089	3
23	12-13-018	M14 nyloc nut ISO 7040	3
24	12-13-011	M8 nyloc nut ISO 7040	2
25	12-14-013	M8 washer ISO 7089	2
26	22-02-002	Top feed roller stop	1
27	12-11-004	Plain bearing 20 ID, 26 OD, 28 flange x 12 Lg	2
28	12-01-008	Shoulder screw M16 x 14Lg	4
29	12-01-061	Feed adjuster collar	2
30	12-12-613	M12 x 140 eyebolt DIN 444	2
31	24-19-055	Top feed housing fab assy	1

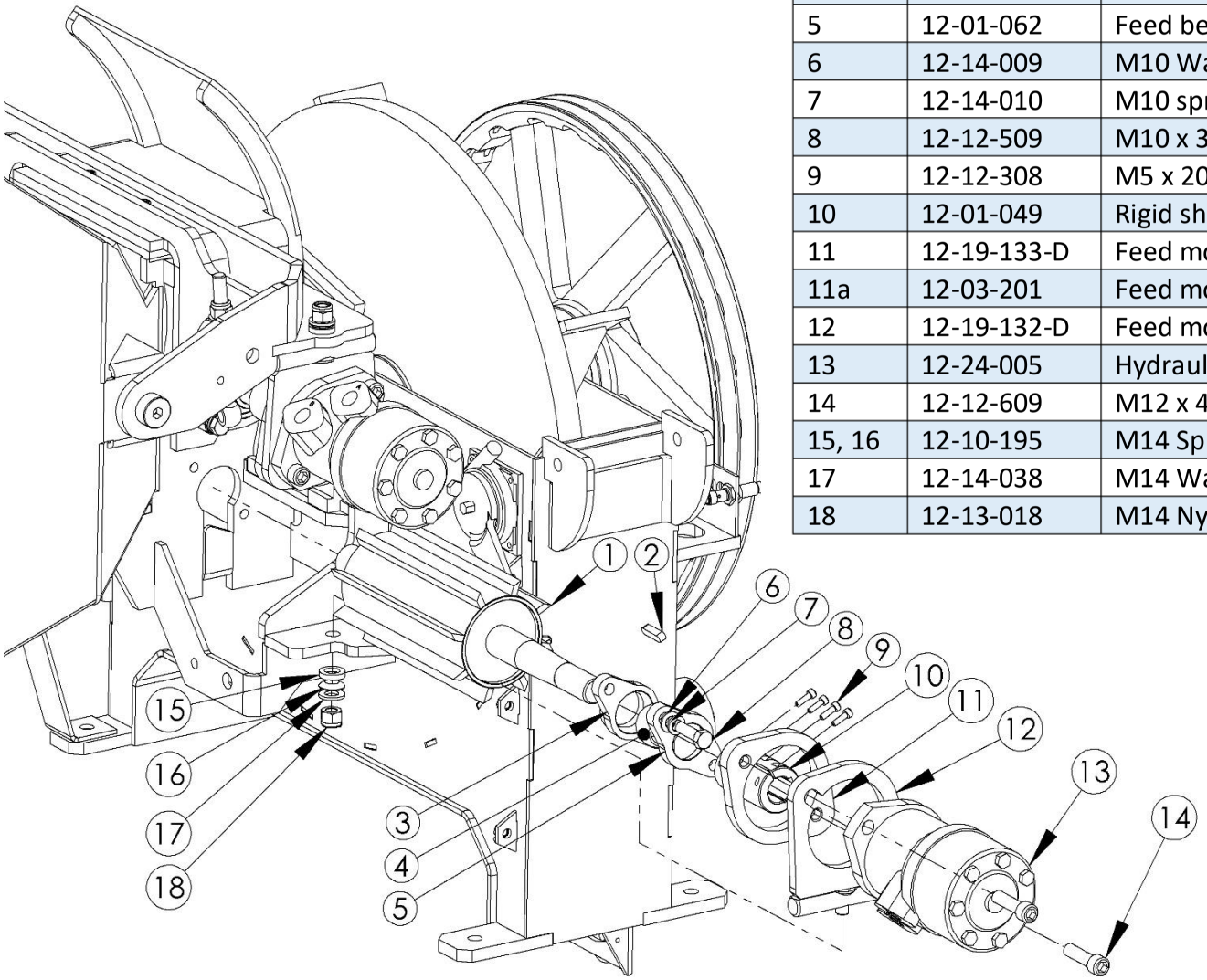
6.4 Flywheel Assembly



Item	Part No	Description	Qty
1	12-01-009	Flywheel blade	2
2	12-01-012	Flywheel shaft spacer	1
3	12-01-034	Bearing modification	1
4	12-01-046	Flywheel shaft spacer 1	1
5	12-01-064	Pillow block bearing 50 ID steel housing	1
6	12-01-064.1-NE	SNR Bearing for Pillow Block - 50mm ID	1
7	12-01-068	M16 Flywheel Blade Bolt	4
8	12-10-038	Taper lock bush 50 ID	1
9	12-10-075	G1/8in BSPP 4mm male stud coupling	1
10	12-10-085	Shim 50 ID x 62 OD x 0.5 THK DIN 988	1
11	12-10-086	Shim 50 ID x 62 OD x 1 THK DIN 988	1
12	12-10-094	R1/8in BSPT 4mm male stud elbow	1

Item	Part No	Description	Qty
13	12-10-369	Cast 2 Belt Flywheel Pulley - 400	1
14	12-12-1103	M16 x 50Lg 8.8 Hex Head screw cone	2
15	12-12-502	M10x30 Gr.8.8 Hex Bolt	2
16	12-12-901	5/8 x 1.25Lg BSW Dome End Socket S	2
17	12-13-007	M16 Gr.10.9 Plain Nut	6
18	12-14-006.1	M16 Serrated Washer	6
19	12-19-063	Pulley retainer	1
20	12-19-203	Square Flywheel Fabrication	1
21	12-20-002	14x9x90 Rounded Parallel Key	1
22	12-20-024	14x9x40 Rounded Parallel Key	1
23	12-99-008	M10 Serrated Washer	2
24	24-01-051	Flywheel shaft	1

6.5 Bottom Feed Roller



Item	Part No	Description	Quantity
1	24-19-065	Bottom feed roller and shaft	1
2	12-20-004	Rectangular key 30x8x7	1
3	12-01-053	Feed roller spherical bearing housing	1
4	12-01-052	Oilite 30 ID spherical bearing	1
5	12-01-062	Feed bearing clamp	1
6	12-14-009	M10 Washer ISO 7089	2
7	12-14-010	M10 spring washer DIN 128	2
8	12-12-509	M10 x 35Lg 8.8 Hex Head Screw	2
9	12-12-308	M5 x 20 Lg Socket Head Screw – Zinc Blk.	4
10	12-01-049	Rigid shaft coupling 25 ID	1
11	12-19-133-D	Feed motor clamp	1
11a	12-03-201	Feed motor clamp shim	1
12	12-19-132-D	Feed motor bracket fab. assy.	1
13	12-24-005	Hydraulic motor	1
14	12-12-609	M12 x 45 Lg 8.8 Socket Head Cap Screw	2
15, 16	12-10-195	M14 Spherical dished washer set	1
17	12-14-038	M14 Washer ISO 7089	1
18	12-13-018	M14 Nyloc nut ISO 7040	1

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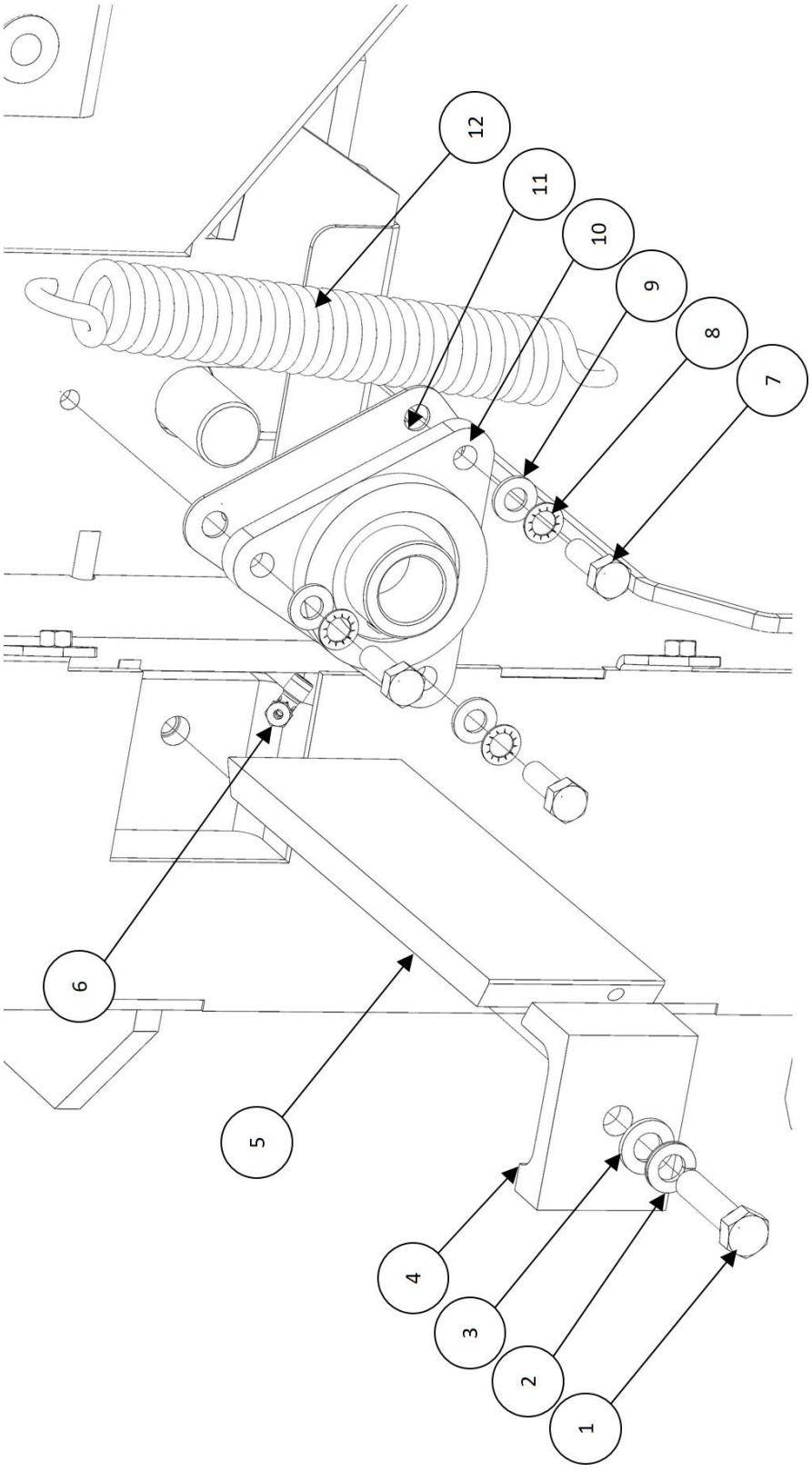
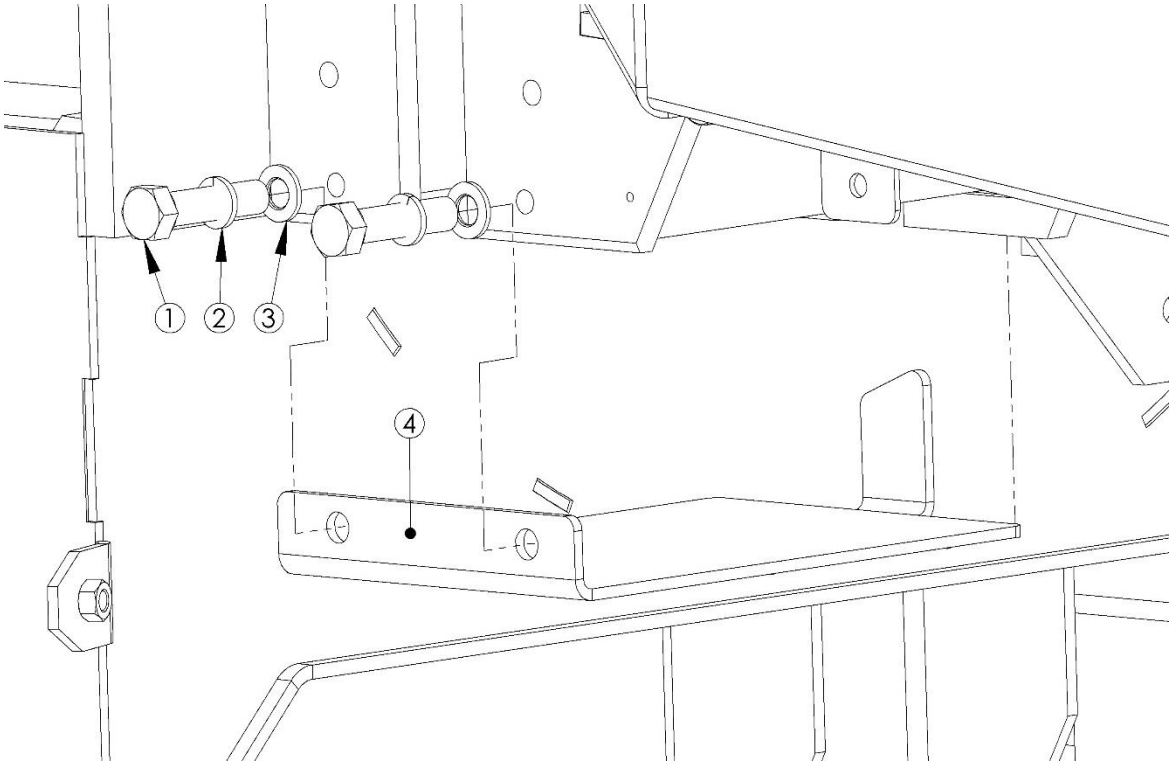
6.6 Anvil



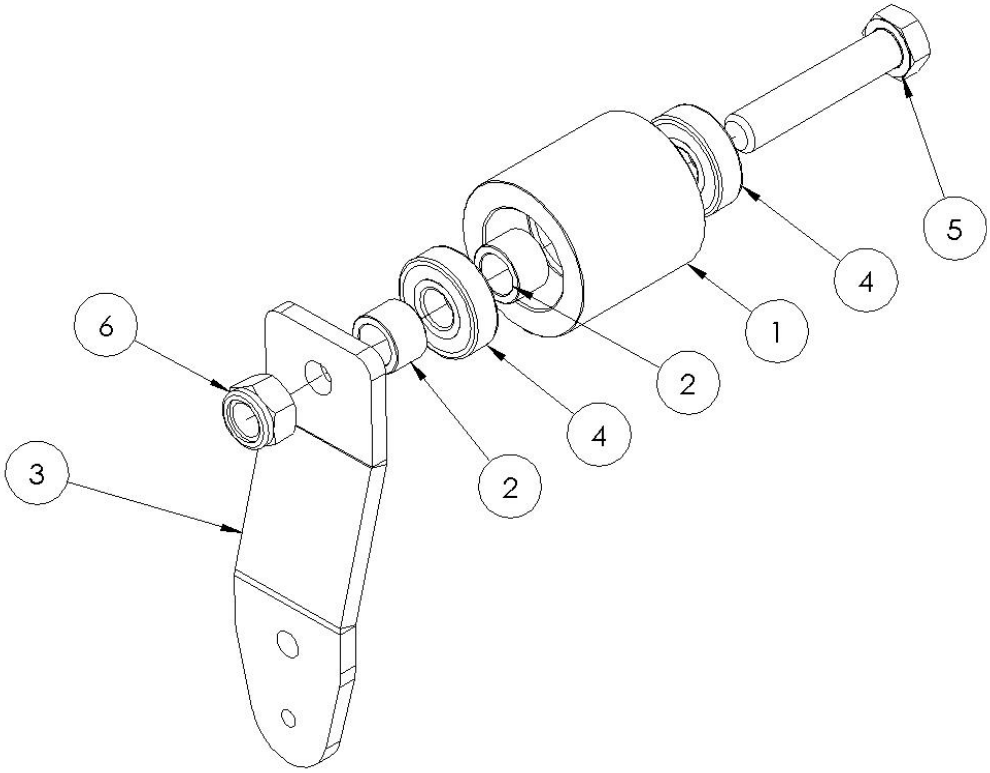
Item	Part No	Description
1	12-12-601	M12 x 50Lg 8.8 Hex Head screw
2	12-14-015	M12 Spring washer DIN 128
3	12-14-003	M12 Washer ISO 7089
4	12-01-003	Anvil clamp
5	12-01-013	Anvil
6	12-10-094	R1/8in BSPT 4mm male stud elbow
7	12-12-502	M10 x 30Lg 8.8 Hex Head screw
8	12-99-008	M10 Serrated Washer
9	12-14-009	M10 Washer (if required)

6.7 Stone Trap



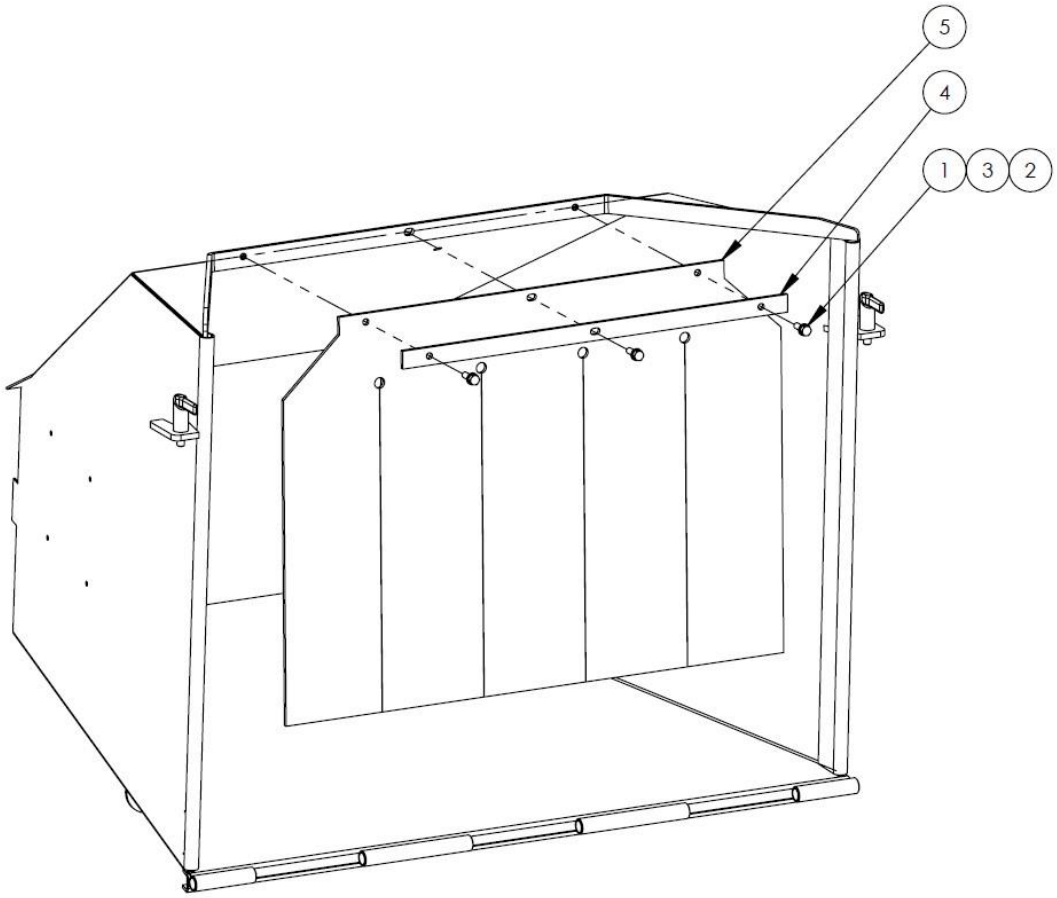
Item No	Part No	Description	Quantity
1	12-12-504	M10 x 20Lg 8.8 Hex Head screw	2
2	12-14-010	M10 Spring Washer DIN 128	2
3	12-14-009	M10 Washer ISO 7089	2
4	14-03-024	Feed roller cover	1

6.8 Belt Tensioner assembly



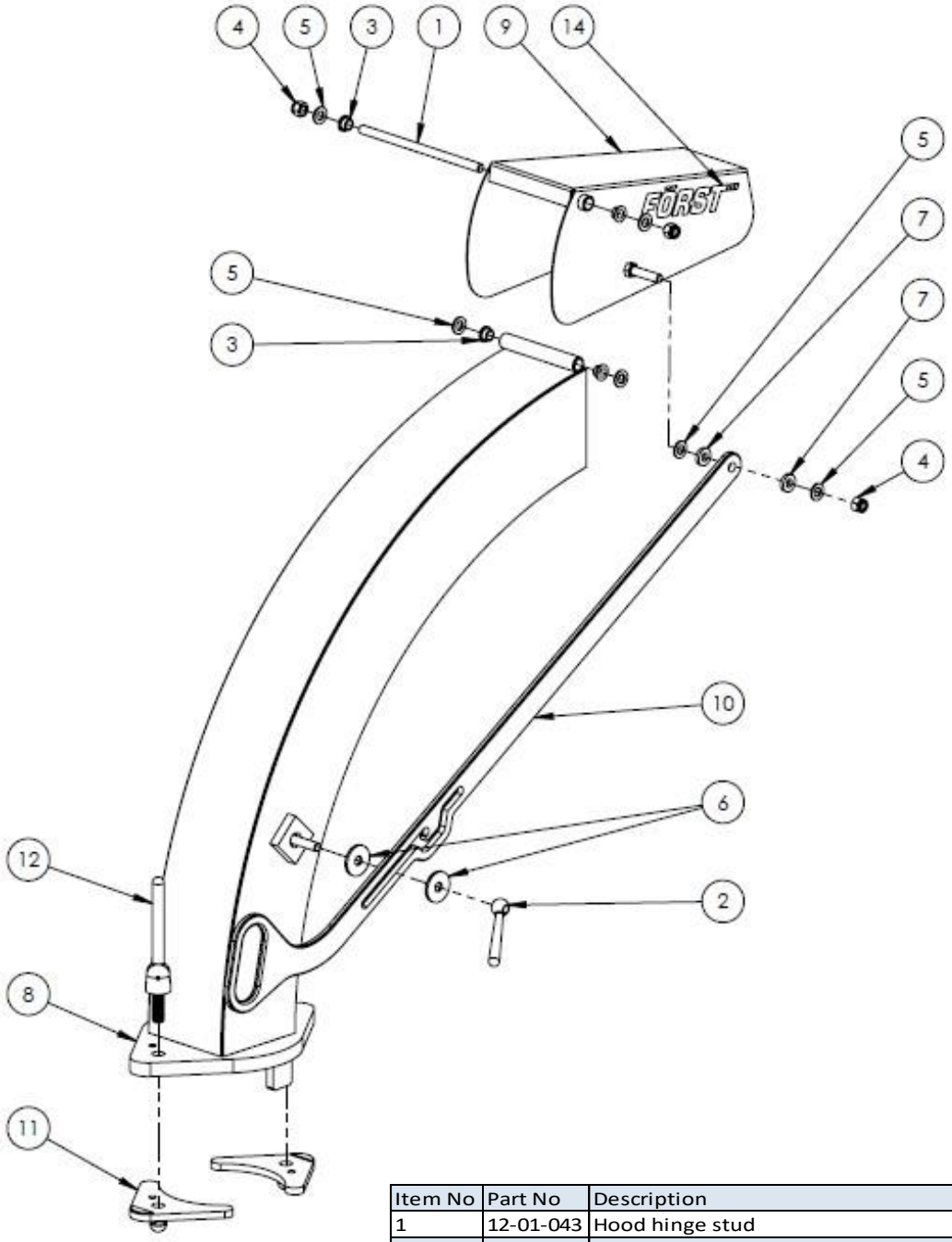
Item	Part No.	Description	Qty
1	24-01-060	Belt tensioner nylon pulley	1
2	24-05-003	Belt tensioner spacer	2
3	24-03-169	Belt tensioner plate	1
4	12-11-011	6304 2RS Deep groove ball bearing	2
5	12-12-211	M20 x 100 lg. 8.8 Hex bolt	1
6	12-10-182.P	M20 Nyloc nut	1

6.9 Safety Curtain



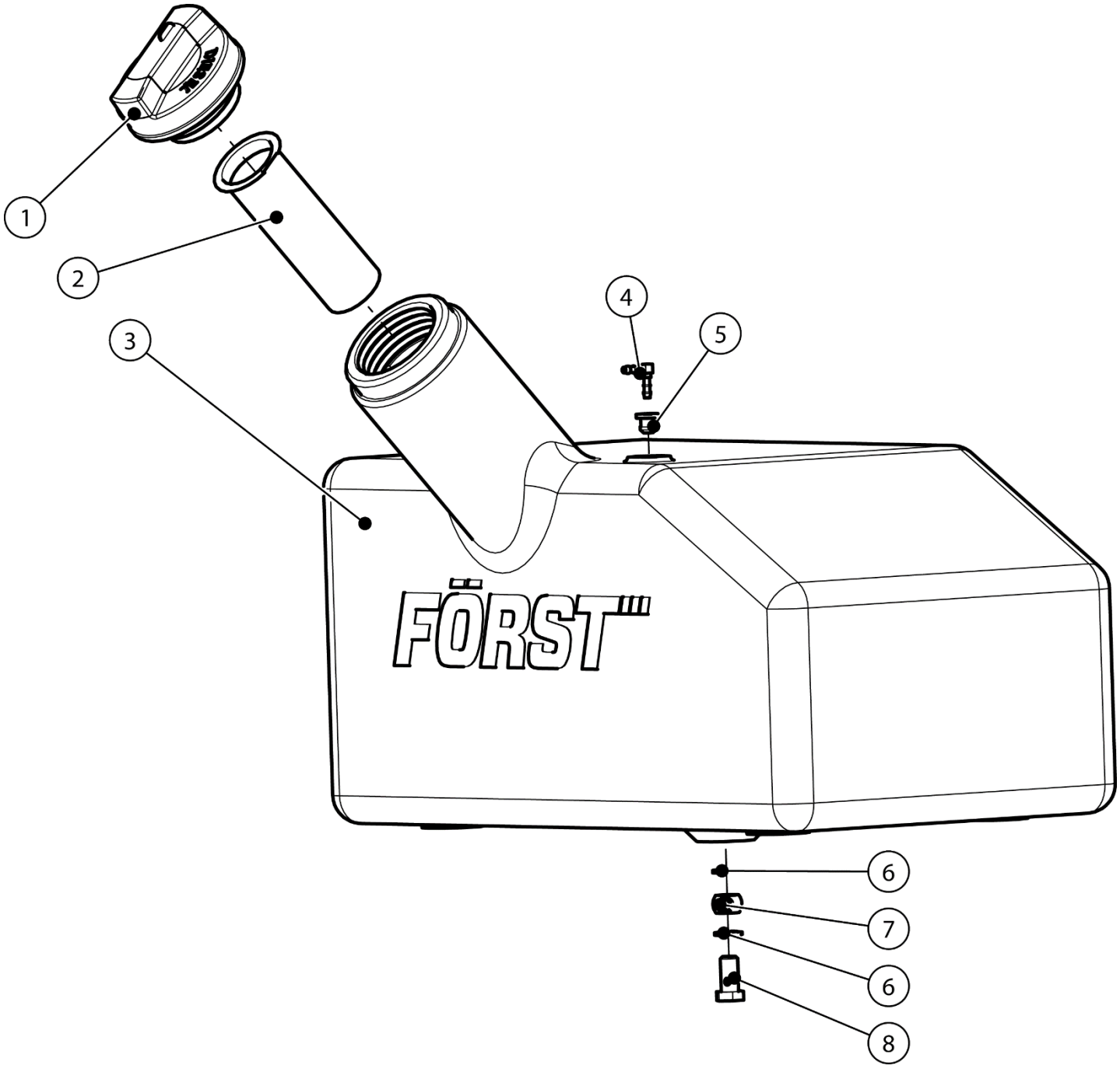
Item	Part No	Description	Qty
1	12-12-401	M8x25 Gr.8.8 Hex Bolt	3
2	12-14-013	M8 Washer	3
3	12-14-024	M8 Serrated Washer	3
4	22-03-071	Curtain Clamp	1
5	22-05-003	Safety Curtain	1

6.10 Chute Assembly



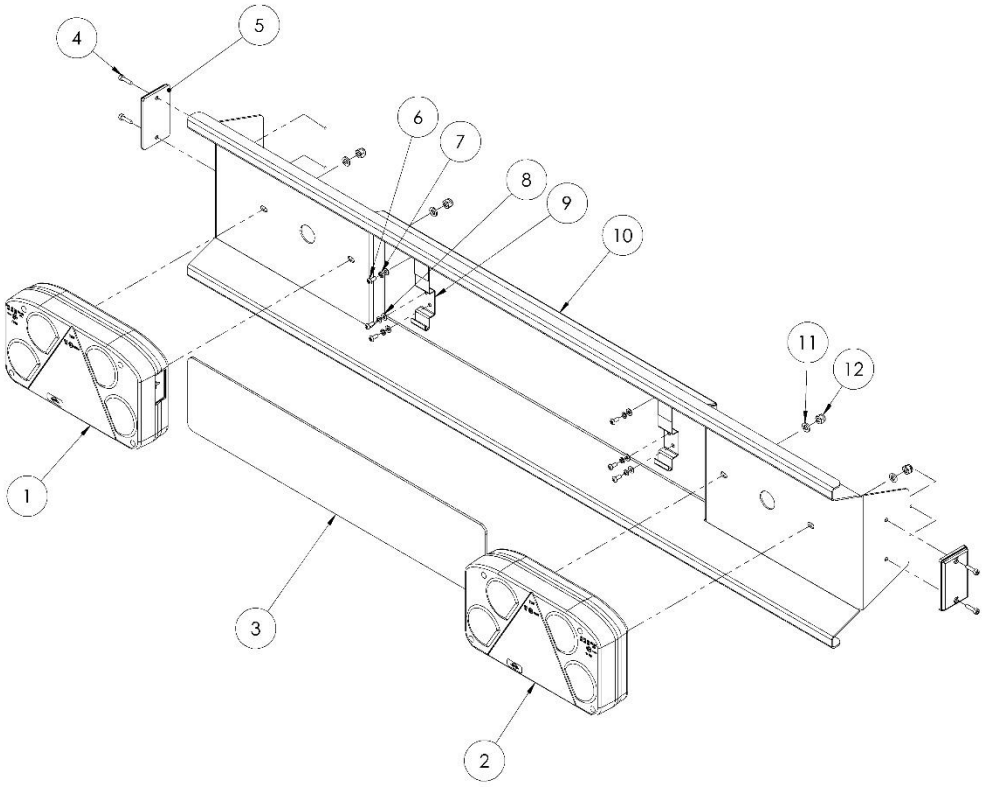
Item No	Part No	Description	Quantity
1	12-01-043	Hood hinge stud	1
2	12-10-004	M12 female steel handle	1
3	12-11-007	Plain bearing 12 ID, 16 OD, 22 flange x 10 Lg	4
4	12-13-003	M12 Nyloc	3
5	12-14-003	M12 Washer	6
6	12-14-004	M12 Washer extra large OD 44 x 4 THK ISO 7094	2
7	12-15-020	CNE60 Neoprene Washer 12mm x 25mm x 5mmT	2
8	12-19-051	Chute fab assy	1
9	12-19-054	Chute hood fab assy	1
10	12-19-055	Chute handle	1
11	12-19-056	Chute clamp fab assy	2
12	12-19-164	M16 Chute Clamp Assembly with 150mm Handle	2
13	12-20-001	Spring Pin Slotted 10 DIA x 30Lg ISO 8752	2
14	12-26-034	Forst small orange	2

6.11 Fuel tank assembly



Item	Part No	Description	Quantity
1	12-10-150	Fuel tank cap	1
1a	12-10-151	Lockable fuel cap (optional)	1
2	12-10-152	Fuel tank filter	1
3	12-02-001	Fuel tank 35L moulded assy	1
4	12-10-154	Fuel tank 5mm connector	1
5	12-10-153	Fuel tank 5mm grommet	1
6	12-14-008	M12 Bonded washer (Dowty)	2
7	12-10-027	Banjo M12	1
8	12-10-026	Banjo bolt M12	1

6.12 Light board assembly

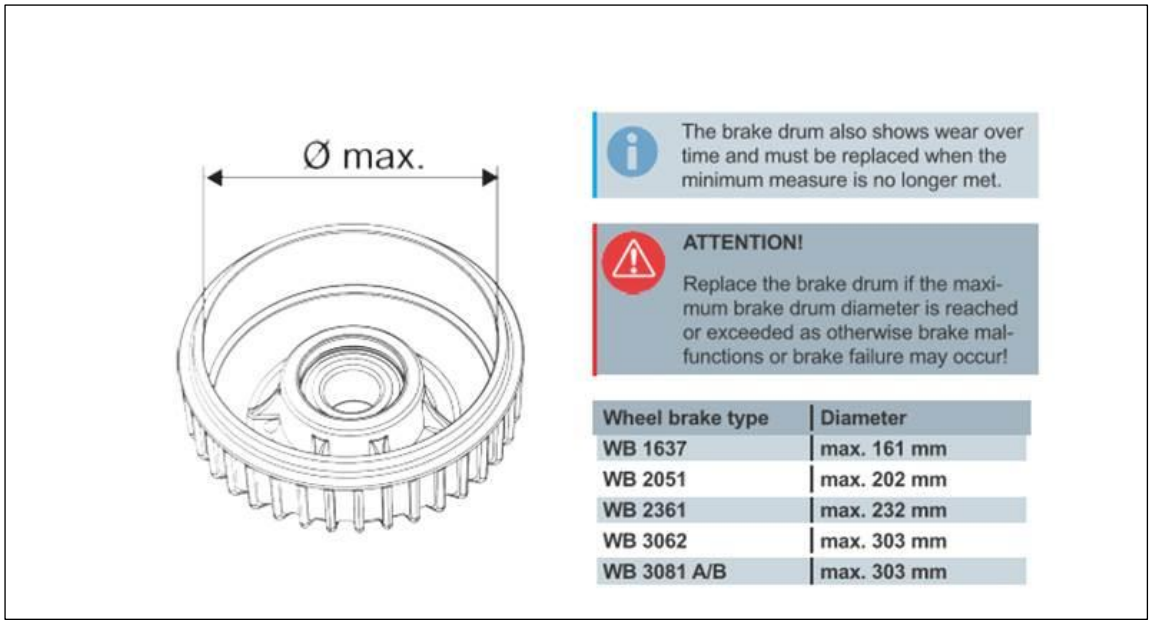


Item	Part No	Description	Quantity
1	12-10-248	Tail light left	1
1a	12-10-249	Left Tail Light Lens	1
2	14-19-040	Light board fab assy	1
3	12-10-100	Side reflector amber	2
4	12-14-017	M6 washer ISO 7089	4
5	12-13-015	M6 nyloc nut ISO 7040	4
6		Trailer number plate	1
7	12-99-006	M4 x 10 Pan Head Pozi Screw	6
8	12-14-021	M4 Spring washer DIN 128	6
9	12-14-020	M4 washer ISO 7089	6
10	12-10-097	Number plate holder (each)	2
11	12-10-250	Tail light right	1
11a	12-10-251	Right Tail Light Lens	1
	12-10-252	LED Loom complete	1
	12-10-253	Curly cable	1
Note: Light guards available on request Part no: 12-19-130			

6.13 Running gear – hitch & axle

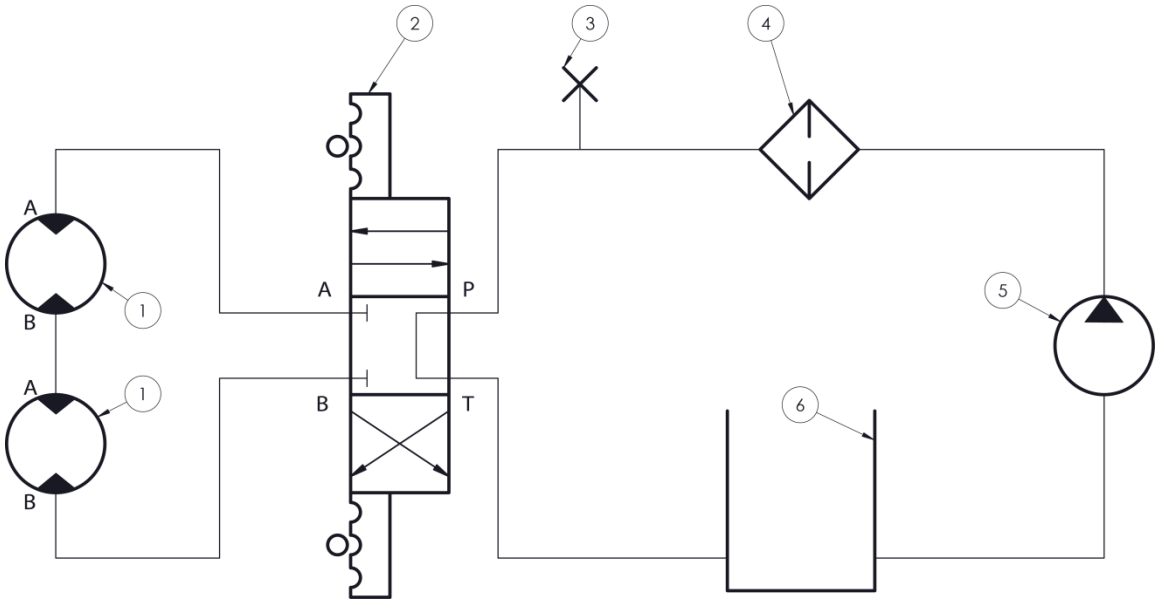
Please refer to maintenance instruction manual supplied with the machine.

Checking the internal diameter of the wheel drum for ware.



Wheel brake type	Diameter
WB 1637	max. 161 mm
WB 2051	max. 202 mm
WB 2361	max. 232 mm
WB 3062	max. 303 mm
WB 3081 A/B	max. 303 mm

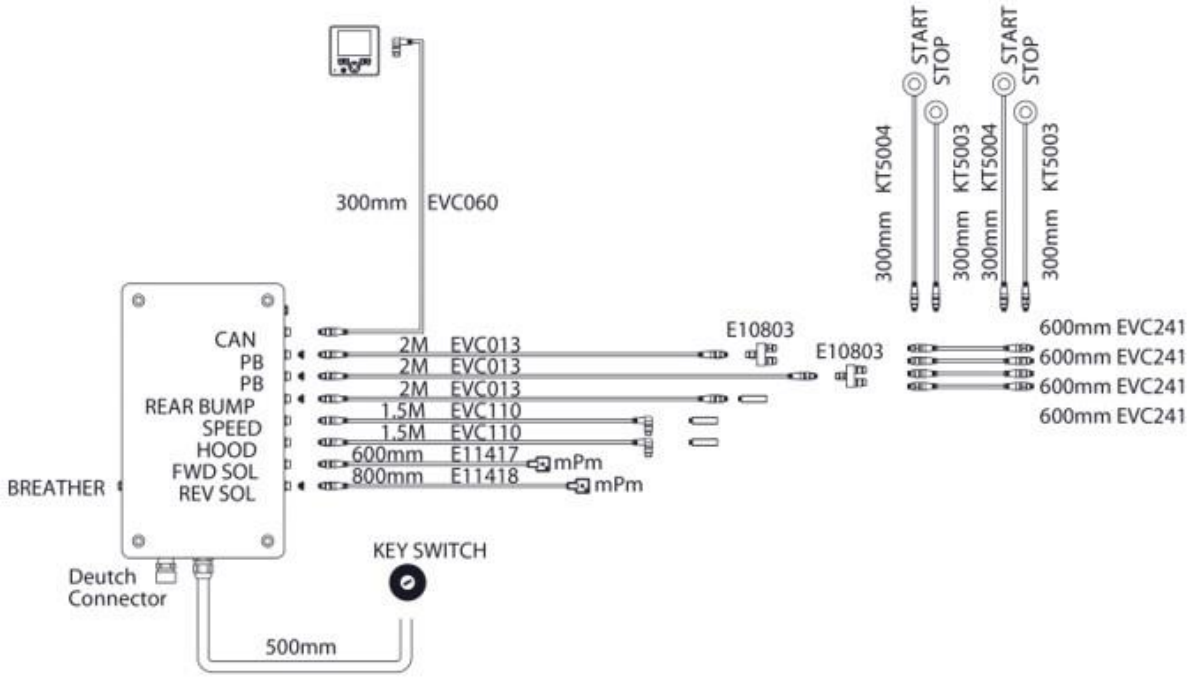
6.14 Hydraulics circuit diagram



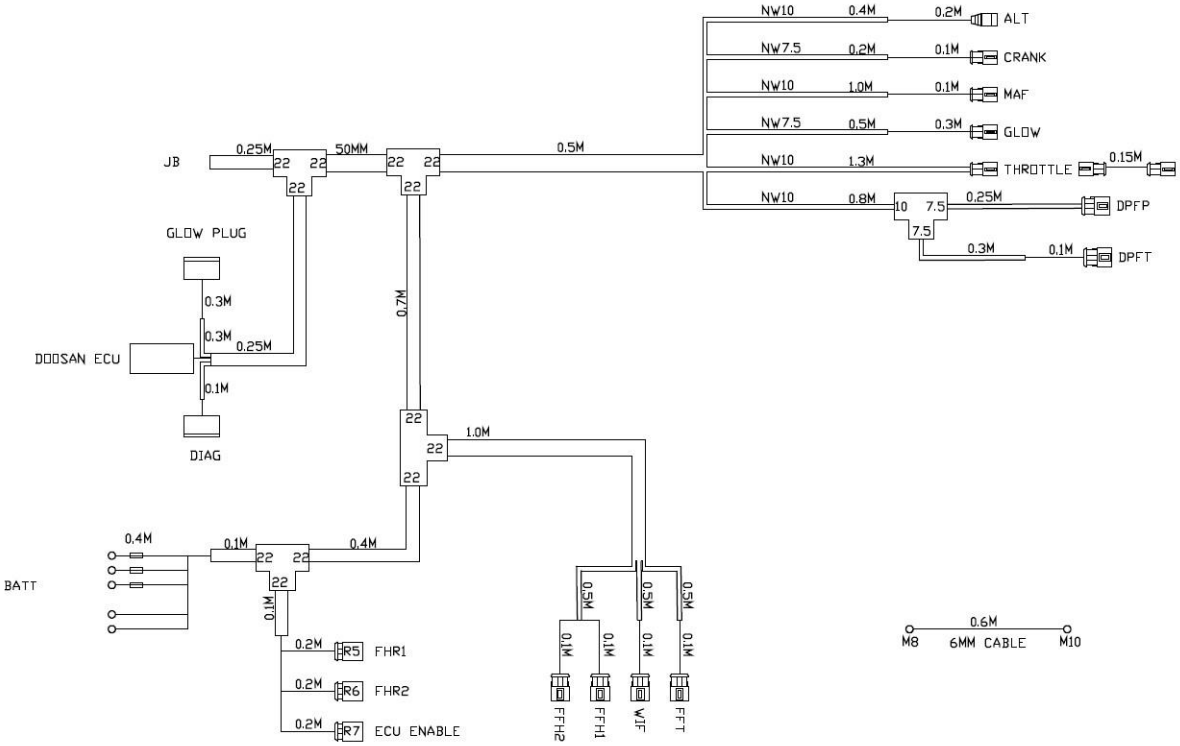
1. Motor
2. Control Valve
3. Test point
4. Filter
5. Pump
6. Oil tank

6.15 Electrical Circuit Diagrams

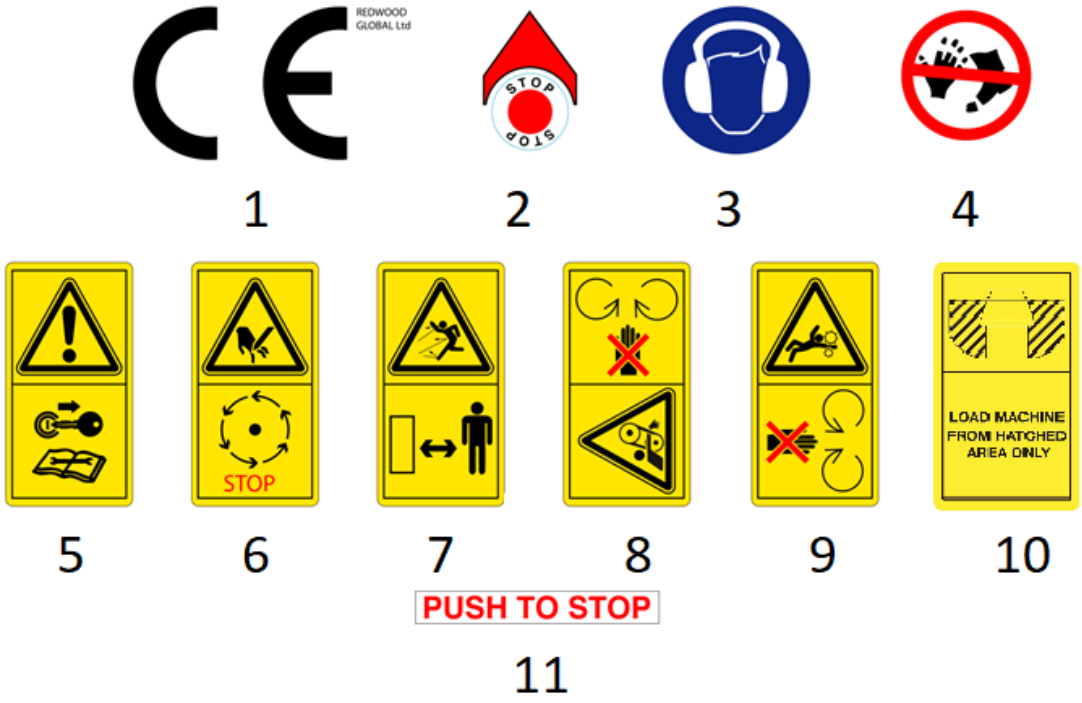
6.15.1 Touch Sensors



6.15.2 Wiring Harness



6.16 Decals



Decal meaning:

1. CE (Conformité Européenne or European Conformity) mark. Manufacturer's declaration that the product complies with the essential requirements of the relevant European health, safety and environment protection legislation
2. Ignition switch stop
3. Hearing and eye protection of an appropriate specification to be worn
4. Finger and toe amputation hazard
5. Refer to user manual
6. Allow machine to stop before touching
7. Danger from flying objects
8. Do not open or remove covers while engine is running
9. Keep away from rotating machine parts
10. Load the machine only from the sides of the hopper
11. Push to stop, trip bar operation

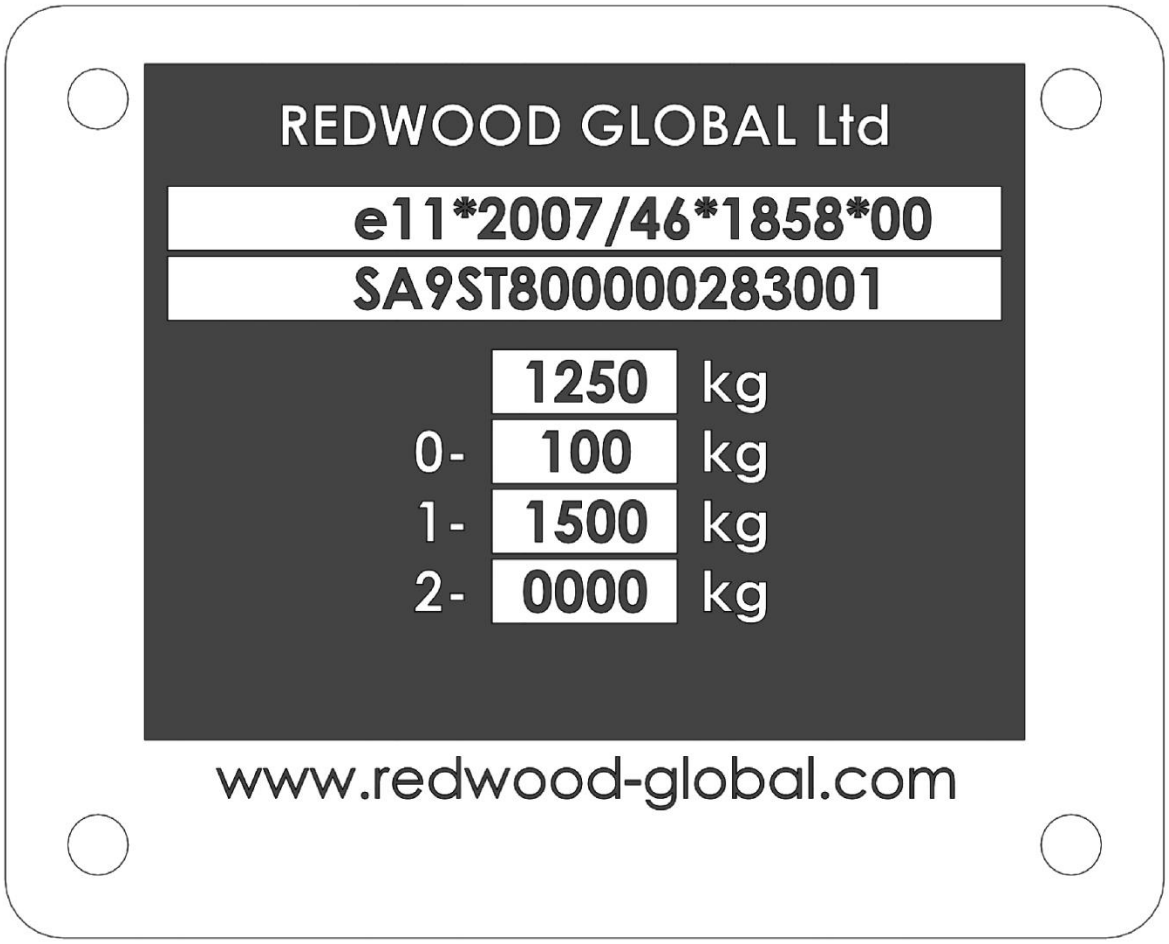
These decals are placed on the machine where the hazard or information applies.

6.17 Manufacturer's Statutory Plate

Information on the Manufacturer's plate in line order from top to bottom is as follows:

1. Manufacturing company & address
2. Serial Number
3. Machine designation
4. Mass
5. Power of prime mover
6. Year of construction
7. Sound Power Level
8. Drive rotation
9. Website & CE Mark

6.18 Vehicle Identification Number (VIN) Plate



Information on the VIN Plate in line order from top to bottom is as follows:

1. Manufacturing company.
2. Vehicle type approval number and construction date.
3. 17-digit Vehicle Identification Number (VIN) construction.
4. Gross Vehicle Weight (GVW).
5. 0 - Nose weight.
6. 1 - Axle mass.
7. 2 - Location.

7.0 Warranty and Certification

7.1 Warranty

7.1.1 Warranty Statement

1. Redwood Global Ltd guarantee all Först equipment supplied by them against any defect in manufacture and assembly – this guarantee is for a period of 12 months commencing on the date of sale to the first end user.
2. The guarantee will not apply to a failure where normal use has exhausted the life of a component.
3. Engine units are covered independently by their respective manufacturer's warranties.
4. Redwood Global Ltd's liability under this guarantee is limited to repair at Redwood Global Ltd's premises or at a selected Först dealer.
5. No liability will be accepted for consequential lost or damage of any kind.
6. The Redwood Global Ltd guarantee is restricted to the first Redwood Global Ltd user only and is not transferable except when authorized by Redwood Global Ltd.
7. The owner is responsible to make sure the chipper is operated at all times in accordance with the user manual.
8. The Redwood Global Ltd guarantee will be invalidated if any of the following points apply:
    - Failure to use genuine Först parts
    - Failure to perform routine servicing and maintenance
    - Failed parts or assembly have been interfered with
    - Chipper has been modified without written approval from Redwood Global Ltd
    - Chipper has been used to performed tasks contrary to those stated in the Redwood Global Ltd User Manual
    - Exclusions to the above warranty terms are – fair wear and tear on fuses and bulbs, tyres and brakes, lubrications and filters, blades and anvils, feed rollers and paintwork.
    - Where an extended warranty has been given this will be stated on the original chipper invoice and will be subject to further conditions as stated in our supplementary warranty terms

7.1.2 Warranty Claims

To obtain warranty service please contact Redwood Global Ltd for the nearest approved Först Dealer. Your nearest dealer can be obtained from Redwood Global Ltd at the address on the front of the User Manual. In the event of a failure Redwood Global Ltd must be notified within 7 working days.

7.2 Certification

FÖRST

CERTIFICATE & DECLARATION OF CONFORMITY FOR CE MARKING

Company contact details:
Redwood Global Ltd,
Unit 86, Livingstone Road, Walworth Business Park, Andover,
Hampshire. SP10 5NS. United Kingdom

Redwood Global Ltd declares that their:
Wood Chippers listed as the following models
TT6 Towed
ST6 Towed & TR6 on Tracks
ST8 Towed & TR8 on Tracks
XR8 on Tracks

are classified within the following EU Directives:
Machinery Directive 2006/42/EC
Electromagnetic Compatibility Directive 2004/108/EC

and further conform with the following EU Harmonized Standards:
EN13525:2005 + A2:2009
EN 982:1996+A1:2008
EN ISO 12100:2010
EN ISO 14982:2009

Dated: ……

Position of signatory: Managing Partner
Name of Signatory: Raymond Gardner
Signed below:

……

on behalf of Redwood Global Ltd

Daily Checks –ST6

Check	Further action	✔/✗
Nuts, bolts and washers secure	• Visual check of all nuts, bolts and washers for security	☐
Reflectors	• All reflectors fitted and undamaged	☐
Tow hitch assembly	• Wear indicator OK when connected • Brake away cable condition	☐ ☐
Handbrake lever	• Operates correctly • Holds machine when applied	☐ ☐
Jockey wheel assembly	• Free to operate correctly	☐
Lighting cable and adaptor	• Undamaged	☐
All fluid levels	• Engine oil • Coolant • Hydraulic	☐ ☐ ☐
Radiator or cooling fan(Briggs & Stratton only)	• Free from dirt and debris	☐
Exhaust	• Free from debris	☐
Flywheel belt tension	• Belts width in deflection	☐
Chute	• Chute clamps – function and security • Deflector handle – fitted and secure	☐ ☐
Throttle	• Tight enough to hold max RPM	☐
Fuel tank	• Fuel level and free from debris inside	☐
Stop bar	• Free to operate • Feed rollers stop when pressed	☐ ☐
E-Stop (if fitted)	• Free to operate • Feed rollers or engine stop when pressed	☐ ☐
Feed roller function	• Feed rollers operate backwards and forwards at max RPM	☐
Hopper tray buttons	• Free from damage • Function correctly	☐ ☐
Hopper tray catches	• Secure hopper tray	☐
Battery	• Terminals secure • Clamp secure	☐ ☐
Bonnet catches	• Secure • Function correctly	☐ ☐
Tyre and rim assemblies	• Undamaged	☐
Fluid leaks	• Visual check for any fluid leaks	☐
Lights check	• All lights working correctly	☐
Additional comments:		

Date of check:

Individual (print name):

Individual (signature):

Weekly Checks –ST6

Check	Further action	✔/✗
Carry out all daily checks		☐
Blade condition	• Replace if required	☐
Flywheel main bearings	• Good general condition • Free from damage	☐ ☐
Main anvil condition	• Turn/replace if required	☐
Top feed roller assembly	• Remove debris if found • All nuts and bolts secure	☐ ☐
Feed roller motor mounts	• Secure and undamaged	☐
Side panels	• Behind panel is clear of debris – remove panel if required	☐
Grease bearings	• 2 pumps of grease per grease nipple (if in a low ambient temperate, grease with engine running and feed rollers turning)	☐
Grease tow hitch assembly	• 2 pumps of grease at both grease nipples	☐
Electrical wiring	• Cables and conduit secure and undamaged	☐
Hydraulics	• Hoses secure • All components free of leaks	☐ ☐
Safety decals	• Decals are fitted and undamaged	☐
Bodywork	• Secure and undamaged	☐
Axle	• Wheel alignment • Axle mount condition, both sides • No wheel bearing freeplay	☐ ☐ ☐
Tyre and rim assembly	• Tyre tread depth – 1.6mm on central ¾ of tread • Wheel bolts torqued to 100Nm • Sidewall undamaged • Rim undamaged	☐ ☐ ☐ ☐
Service schedule	• Is machine due a service – see operator handbook for schedule	☐
Lubricate moving parts	• Suitable lubricant to be used	☐
Tyre pressure	• 205/65R15C • 1150kg-1170kg – 40psi • 1240kg-1260kg – 45psi • 1440kg-1460kg – 50psi	☐
Additional comments:		

Date of check:

Individual (print name):

Individual (signature):